



Arab Republic of Egypt
Ministry of Agriculture
and Land Reclamation Egypt
Agricultural Pesticides Committee



- Once formed, Agricultural Pesticides Committee (APC) developed a vision for the nature and framework of the action at the current stage. The quick publishing for the book of "Approved Recommendations for Agricultural pest control" was one of the items of this vision, the book which is now between the hands of readers.
- Here are some other features APC is striving to achieve on the following:
- The periodic review for the status for registered agricultural pesticides and under registration in the light of the local legislation, international references and their updates.
- Monitoring the phenomenon of adulteration and smuggling of pesticides
- Issuing the code of conduct and the guiding principles that govern the registration policies and handling the agricultural pesticides in Egypt.
- Support the cooperation between APC and several sectors of Ministry of Agriculture (MOA) and also the referred agencies in Ministry of Health.
- Establish a new mechanism for the cooperation between APC and the international references that interest in the registration and handling of the agricultural pesticides.
- Support the surveillance on the pesticides. And activation of the APC role in organizing field visits to the pesticide's shops, pesticides factories, training centers and experimental stations.
- Issuing protocols for the pesticide's assessment and the book of training programs.
- Support the programs of field training and raising the field awareness for all workers in the field of pesticides and raise the level of knowledge towards the safe and effective use of pesticides.
- Activating the role of APC in implementing extension awareness programs and technical workshops to communicate with stakeholders.
- Update the website of APC
- Establishing the Egyptian authority to manage the registration, handling and use of agricultural pesticides.

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Technical Recommendations for Agricultural Pest Control



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and Land Reclamation Egypt
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Agricultural Pest Control**

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The book of Technical Recommendations for Pesticide Use on Agricultural Pests in Egypt is a category of serial publications that appear in a new edition on yearly basis. The purpose of the book is to emphasize that the registration of pesticides is an important step prior to use on agricultural pests. The book shows the registered pesticides and their designated pests. The book demonstrates the unfailing endeavor of the Ministry of Agriculture to reduce health risks through sound management of pesticides, with the hope to improve the living standard of all, in an economically, socially, and environmentally sustainable manner.

As I present this important document, words fail to express my profound gratitude and appreciation to the Agricultural Pesticide Committee for adopting integrated pest management systems and for its commitment to healthy environment.

The Ministry of Agriculture focuses on improved food security for all citizens by increasing crop production through the adoption of sound agricultural techniques and procedures. The hope is to achieve national prosperity, and the well being of people.

God grant success

Mr. Elsayed Elkosayer



Minister of Agriculture and Land Reclamation

Preface

Pesticides are chemicals that kill or manage the population of pests. The wide use of pesticides against agricultural pests has had several benefits and caused many problems.

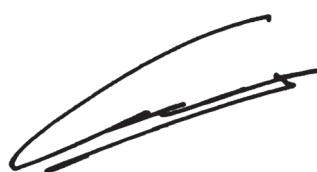
The benefits include increased food production, increased profits for farmers, and the prevention of diseases. However, there have also been many problems associated with pesticide use. When pesticides are used, they do not always stay in the locality where they are applied. They are mobile in the environment and often move through water, air and soil, and hence they travel and come in contact with other organisms and can cause harm.

The Pesticide Committee believes that Integrated Pest Management (IPM) is indispensable for pest management in Egyptian agriculture. This approach of pest management would prevail in the coming few years. It focuses on long-term prevention of pests or their damage through a combination of techniques such as biological control, habitat manipulation, modification of cultural practices, and use of resistant varieties. Pesticides are used only after conducting pest monitoring indicating they are needed. Pesticides are then applied with the goal of removing only the target pest. Control materials are selected and applied in a manner that minimizes risk to human health, beneficial and non-target organisms, and the environment.

As Chairman of the Pesticide Committee, I would like to take this opportunity to thank all members of the previous committee for the hard work they have accomplished, and commitment in building and growing the Pesticide Committee to what it is today. Thanks, are extended to members of the technical secretariat for their effort in writing and reviewing the contents of this volume.

We commit to Lord whatever we do. May joy and peace surround us, and God fills our lives with happiness, and bless our steps toward new horizons of success.

Prof. Dr. Mohamed Ibrahim Abdel Megeed



Chairman of the Agricultural Pesticide Committee

Contents

Subject	Page No
Chapter1: Agricultural Pest Control	3
I : The basics of pest control	3
II: Methods of pest control.	4
1- Natural factors	4
2- Applied control	5
2.1 Chemical control	5
2.1.1 General Introduction	5
2.1.2 Chemical pesticide classes	6
2.1.2.1 Insecticides	6
2.1.2.2 Miticdes	7
2.1.2.3 Nematocides	7
2.1.2.4 Rodenticides	8
2.1.2.5 Fungicides	8
2.1.2.6 Herbicides (weeds)	10
III. Pesticides formulations	13
IV. Methods of using pesticides	17
1. Dusting	17
2. Spraying	18
3. Granules	20
4. Poisonous baits	21
5. Fumigation	21
6. Aerosols	22
7. Other methods of use	23
V. Safe and safety in using pesticides	24
1. Precautions to be considered when preparing spray solutions	24
2. Precautions to be observed during spraying	24
3. Precautions to prevent pesticide poisoning	25



4. Factors to be considered when storing pesticides	25
5. Disposal of empty pesticide containers	26
6. Pesticide toxicity	26
7. Poisoning and first aid	27
VI. The Basics of Integrated Pest Management	29
Chapter 2: Certified Recommendations to control insects, mites, nematodes, rodents and fungi	33
I: Field Crop Pests	35
A. Winter Field Crop Pests	35
1. Wheat	35
2. Faba bean	39
3. Onion	40
4. Sugar beet	44
5. Clover	48
B. Summer Field Crop Pests	49
1. Cotton	49
2. Rice	58
3. Corn	60
4. Sugar cane	64
5. Peanut	65
6. Soya bean	68
II: Vegetables crop pests	71
1. Tomatoes	71
2. Potatoes	90
3. Pepper	104
4. Eggplant	106
5. Cucumber	107
6. Zucchini	115
7. Water melon	115
8. Melons	118

9. Cantaloupe	120
10. Phaseolus beans	122
11. Peas	125
12. Cabbage	128
13. Strawberry	128
14. Protected agriculture	132
15. Turf grass	133
III. Fruit Crop Pests	135
1. Citrus	135
2. Mango	143
3. Grape	146
4. Date palm trees	159
5. Olive	160
6. Guava	162
7. Apple	163
8. Pear	167
9. Plum	168
10. Peach	168
11. Apricot	171
12. Banana	171
IV: Other different crop pests	173
1. Stored product crops	173
2. Buildings in rural and modern cities	174
3. Fields, farms and orchards	175
Chapter 3: Certified Recommendations to control herbicides	177
I . Field crop pests	179
1. Wheat	179
2. Faba bean	183
3. Onion	184



4. Sugar beat	186
5. Clover	189
6. Cotton	189
7. Rice	190
8. Corn	196
9. Sugar Cane	198
10. Peanut	199
II. Vegetable crops	203
1. Tomatoes	203
2. Potatoes	205
3. Peas	209
4. Phaseofus beans	210
III. Fruit crop pests	211
1. Citrus	211
2. Grape	215
3. Stone fruits	217
4. Turf grass	219
5. Along road sides and ditch banks of sub canals and drains	220
Chapter IV: ANNEXES	221
Annex I: Pest control using biological control agents	223
Annex II: Guidelines for the control of citrus & orchard pests	227
Annex III: Fall Army Worm (FAW)	231
Annex IV: Guidelines for Termite Control	236
Annex V: Guidelines for controlling rodents	238
Annex VI: Guidelines for the control of ground snails	246
Annex VII: Machines and Apparatuses	252
Annex VIII: Guidelines for controlling snakes, bats and weasel	256
Annex IX: Minor crops	263

Chapter 1

Agricultural Pest Control



Chapter 1

Agricultural Pest Control

I: The basics of pest control

The pest is defined as any living organism that causes damage to humans or their property. Pests follow a wide range of organisms, including insects, mites, snails, rodents, nematodes, unwanted plants (weeds), fungi, bacteria, viruses and other plant diseases.

Pest control is intended to reduce the damage caused by the pest through removing it or preventing its access to the host or by creating unsuitable conditions for its reproduction or execution, but it survives the control process no matter how accurate its number of individuals can reactivate and multiply when the surrounding conditions improve.

The importance of studying the pest before control it:

Before controlling any pest, adequate and full information must be known about its ecology, biology and behavior. The following are the most important basic information that needed to be known before the control process:

1. Economic importance of the pest

The economic importance of the pest indicates to what extent it is economically feasible to control it. In this respect, it is not enough to estimate the average damage that an insect has caused to a crop in a number of years, but to estimate the maximum loss caused by the pest in its most severe cases - Many years could pass without showing the economic importance of the pest and then suddenly spread the pest in an epidemic way that may threaten the crop. The study should not be limited to the spread of the pest, but also the economic value of the infested crop.

2. Definition of the pest:

The main cause of the failure of the pest control may be the wrong definition, so the definition of the pest must be carefully defined before starting the control process.

3- Date and how to conduct the control:

The success of a pest control depends to a large extent on choosing the appropriate date and method to conduct the operation. Due to this selection, the conciliation may be much more important than the selection of the appropriate pesticide and the concentration used. The time and method of conducting the control process can be determined by studying the behavior and environment of the pests' spread to identify the weakest point at which the pest can be controlled.



II: Methods of pest control

Control methods are defined as processes that reduce the losses that pests cause to humans or their properties of plants and animals by limiting their spread and reproduction as much as possible. It is known that it is impossible to eliminate a particular type of pest in all parts of the world. In many cases, it has been possible to overcome some hazardous pests and turn them into minor secondary pests. Broad pest control includes all methods that make life difficult or impossible for the pest. The control process is carried out in several ways that can be divided as follows:

1. Natural factors:

Consists of a combination of natural factors that limit the spread of pests or reduce their numbers without human intervention. Natural control depends on the fact that there is no kind of pest that can increase steadily to infinity if there are to be some natural factors that limit this increase and maintain the natural balance between the enumeration of the pest and the conditions surrounding it and the most important natural factors:

1.1 Weather factors:

Include heat, humidity, wind and rain generally, it includes all the so-called weather factors.

1.2 Topographic factors:

Include natural barriers which limit the spread of pests such as mountains and deserts. These barriers often prevent the spread of the pest from one spot to another and act as natural protection against the invasion of migratory pests such as locusts. The soil type also interferes with insect reproduction, especially those that breed in soil such as Coleopterous insect pests that favor light fragile soils and wireworms that favor relatively dry soil.

1.3 Biological factors:

They are the natural enemies of insect pests, such as parasites, predators and diseases. The importance of these factors has been shown after the use of modern pesticides on a large scale, affecting the parasites and predators, thus reversing the natural balance between the pest and its natural enemies in favor of the pest. As a result, many of the pests, which were not known before as dangerous pests, for example, red spider and aphids appeared on many plant families and spread epidemically following the use of chlorinated hydrocarbon compounds.

Biological enemies play a major role in reducing the number of insects harmful to the plant and many of the parasites and predators follow the ranks of Coleoptera, Hymenoptera and Diptera.

1.3.1 Parasites:

They are organisms that ecto or endo parasites on or in the body or eggs of insects and their different stages, the insect in its different stages is called the host. The host is usually stronger, more active and larger than the parasite. The death of the host is not required as a result of the parasitism, although the death of the host occurs most often, the parasite does not need a large number of hosts to complete their life cycle and often only one or two hosts to complete their life cycle (see Annex I).

1.3.2 Predators:

They are organisms that prey on insects and their different stages are called in this case the Prey. Predators are usually larger, more active, and stronger than the prey. The predator needs a large number of preys during its life cycle and predation always follows the death of the victim (see Annex I).

1.3.3 Insect diseases:

Insects are susceptible to viral diseases, such as wilt disease, which affects the larvae of the apple fly, the polyhedrosis disease, which affects cotton leafworm, bacterial diseases of Japanese beetle larvae, and fungal infections of domestic flies.

1.4 Nutritional factors:

Of insects, which feed on many hosts, including what feeds on limited hosts in a certain plant family, including what feeds on one host - the more insect deprived of its preferred host, the more it helps to reduce the proliferation and spread.

2- Applied control:

These are human-induced methods to control pests that escape from natural factors. Man has benefited greatly from what he has observed in nature, such as factors limiting the spread of pests as heat, cold, vital enemies, resistant hosts and pesticides. Natural control can't eliminate the pests, but some individuals that re-activate and proliferate survives especially, if the appropriate conditions are available, which makes them a source of danger in their environment and so the man is forced to intervene to control the pest and reduce the numbers and this intervention in its different ways called Applied Control.

Applied control is divided into:

- | | |
|-----------------------|------------------------|
| 1. Mechanical control | 4.Agricultural control |
| 2. Biological control | 5.Legislative control |
| 3. Chemical control | 6.Behavioral control |

2.1 Chemical control

2.1.1 General Introduction

It is necessary to use chemical pesticides in a sound scientific manner to increase the cost of production and its great benefit in achieving the agricultural revolution as well as diminishing access to a new compound. Misuse should not be a factor which leads to the disappearance of many chemical pesticides under the pretense of their ineffectiveness. The statistics indicate to the phenomenon of increased consumption of chemical pesticides, despite the emergence of many problems associated with poor application. In this regard, the workers in the field of pest control identified a special philosophy based on many considerations which are economic, health, aesthetic, political, environmental, psychological and moral. These considerations need to be taken into account to make a decision to use chemical pesticides. In this sense, it is worth mentioning that all pesticides are without exception - toxic substances but vary in their toxicity considerably depending on their composition, and therefore we do not expect it to be harmless



and it is difficult to find a balance between the benefits on the one hand and the risks on the other. These aspects have considerations, and it is therefore difficult to make a decision amidst these very complex circumstances. The solution is always to make a decisive decision while trying to balance benefits and risks.

Chemical control is defined as the means of control in which chemicals or so-called pesticides are used when natural agents and applied methods fail to achieve effective and satisfactory control. The chemical pesticide is defined as a chemical that is treated individually or mixed with other substances for the purpose of killing, preventing, removing or minimizing pest damage. There are conditions that must be met in the successful chemical pesticide:

1. It is effective against the target pest and with low rate of application.
2. Easy to use and has a reasonable economical cost.
3. Pesticide residues on the food commodities should be lower than MRL.
4. Does not affect the health of the consumer or farm animals or beneficial organisms such as biological enemies, birds and fish.
5. Does not adversely affect the agricultural soil and beneficial organisms in which live in.

2.1.2 Chemical pesticide classes:

The term pesticides means the killer of the pest, since cide is derived from the Latin word Cida, meaning killing. The following are the most important sections of chemical pesticides:

1. Depending on the type of pest:

- Insecticide used to eliminate insects
- Acaricide used to eliminate the mites
- Nematicide used to eliminate nematodes
- Rodenticide used to eliminate rodents
- Moulluscicide used to eliminate snails
- Fungicide used to eliminate fungus
- Bactericide used to eliminate bacteria
- Herbicide used to eliminate herbs

2. Depending on the nature of the formulation: wettable powder-emulsifiable concentrated – granules ... etc

3. Depending on the method of use: spraying - dusting-fumigation.

2.1.2.1. Insecticides:

Insecticides affect insect pests either by immediate toxic action, kill them instantly or affect some of the insect's vital organs and die slowly. Insecticides are divided according to:

1- Classification based on the mode of entry:

1.1- Stomach poison:

pesticides enter through the mouth and lead to the killing of the insect after absorption in the stomach.

1.2- Contact poison:pesticides kill the insect by direct contact of the cuticle and penetrate the chemical, and include organic and natural organic pesticides.

1.3- Respiratory poison:pesticides in the form of invasive enter the body of the insect through respiratory system such as smokers.

2- Classification based on the mode of action:

2.1- Natural poison:They occur its action on the insect without chemical reactions. One of the most important parts is the oils that cover the body of the insect with a thin cover that deprives it of the oxygen of the air and dies by suffocation.

2.2- Protoplasmic poison:Their effect is accompanied by deposition of the cell protein and thus damage the protoplasm such as inorganic pesticides.

2.3- Respiratory poison:Its effect is accompanied by inhibition of cellular respiration enzymes (cytochrome - succinic dehydrogenase).

2.4- Neurotoxicity:Its effect is linked to the effect on enzymatic systems that are directly related to the nervous system such as choline esterase (modern organic pesticides)

3. Classification based on chemical structure:

3.1- Inorganic pesticides:such as sulfur compounds and copper metal.

3.2- Organic pesticides:such as some spray oils.

3.3- Synthetic organic pesticides:such as smoking gases, organic chlorinepesticides, organic phosphorus, carbamates and pyrethroids.

2.1.2.2 Miticides:

Miticides is one of the large groups that fall under the arthropod division and are located in the row of archinidia with a population of about 30 thousand species that cause serious damage to agricultural crops, where the plant juice was sucked, causing dryness and death of the infected parts.

Miticides are characterized by their specific specialization, high persistence, long survival and low toxicity against mammals. These pesticides may affect eggs, nymphs or adult animals. There are some pesticides that affect all stages. Miticides fall under different chemical groups, including oils, sulfur compounds, dinitrophenol compounds, organic chlorine pesticides and organic phosphorous pesticides.

2.1.2.3 Nematicides:

Nematode is one of the largest multi-cell animal groups after the class of insects in number and diversity. Nematode is one of the most important pests that attack agricultural crops. Although nematodes may affect the different parts of the plant, spend most of their lives in the soil or in the roots or in the parts under the surface of the soil such as tubers.

The control of nematodes include the use of non-chemical methods such as quarantine and horticultural hygiene, the use of varieties of resistant plant, solar sterilization of soil before planting, good soil fertilization and the removal of infested plants. Chemical compounds used



to eliminate nematodes are called nematicides. Nematicides are characterized by their ability to reduce the population density of nematodes in the soil within a short period of time, after which the crop can be grown. In addition, nematicide are usually used by soil treatment, which may have a significant impact on insect, fungal and herbaceous soil pests. One of the most serious defects of these pesticides is that their use requires expertise and tools at a high technical level in addition to the relatively high price.

Factors to be considered when using nematicidein soil:

1. The appropriate chemical pesticide should be selected due to vary of the susceptibility of the nematode species to the chemical pesticides. In general, it is preferable to use systemic insecticides to control intestinal nematodes within root tissues and to use high-volatile pesticides to control externally parasitic nematodes in soil.
2. Economic value of the crop: Avoid the use of fumigant nematicide on crops of low economic value due to their high prices. In such cases, non-fumigantsnematicide can be used for their cheap prices. Fumigant can be used on crops of high economic value, in greenhouses and nurseries.
3. The method of treatment depends on the nature of the chemical pesticide where high volatile pesticides are placed in the soil at a depth of 15-20m to be effective with the need to be covered with plastic plugs. Non-volatile pesticides used in liquid or granular form are placed on the soil surface.
4. The rate of application used varies depending on the type of soil. Heavy soil needs a larger amount of the pesticide than the light soil. Higher doses are used when the growing crop has deeper roots than the surface-rooted crop.

2.1.2.4 Rodenticides:

Rodents are serious pests that attack plant trees as well as the dangerous diseases they transmit. Despite the rapid reproduction of rodents, however, it was preyed by wild birds, and after the expansion of the use of broad spectrum chemical pesticides, and not to follow the methods of hygiene rodents spread in a way that calls for the need for regular programs to control them.

Rodent control depends on prevention and treatment methods. Prevention methods are based on depriving the mouse of food or reducing their number in different ways. This process is carried out in agricultural fields and rural or urban facilities - and depends on various means including chemical means.

Chemical means to control rodents are divided into the use of fumigation or stomach poisons, and in all cases necessary anti-poisoning is required for each chemical. stomach poisons are used in the form of fumigation and toxic baitswhich are themost recently used. Poisons in baits are classified according to the speed of mortality to fast-acting and slow-acting poisonswhich will be mentioned a separate supplement (Appendix V).

2.1.2.5 Fungicides:

The fungus is one of the most reasons of plant pathogens. It is economically important. The fungus causes various types of diseases. It may affect the root mass, causing root rot, and may affect the vegetative total of the plant, causing stem ulcers, leaves spots or dryness

or leaf and flowers death or fruit rot. There are some fungi that infect the systemic vessels in the roots and stalk and lead to the decay of the plant and then to its death. In order to control fungus, the life cycle of the fungus must be carefully defined and the factors that help it grow and spread. It can be said that fungal diseases that affect the vegetative range are relatively easy to control by fungicides when compared to systemic infections, and the discovery of a set of systemic pesticides in recent times made control possible.

Methods of control of fungi, including mechanical, agricultural, biological, legislative and chemical control. Chemical control (Fungicides) is one of the most widespread control methods to date, for the easy handling, application and quick and direct results.

Definition of fungicide:

Fungicide is derived from two Latin sections, Cida, meaning killing, Fungus meaning fungus. Hence, the fungicide is any substance or agent that has the ability to kill fungus, and according to this meaning, natural factors such as heat and ultraviolet radiation can be called Fungicides although, this expression is not accurate in this area since its use is limited only to chemicals. This term therefore reflects chemicals capable of killing fungus.

Classification of fungicides:

1. According to the mode of action:

1.1 Preventive pesticides:

Pesticides work on plant protection before they become infected. It works to prevent infection with fungus on the treated surface either by killing them or by creating physiological conditions that are not suitable for germination or killing the hypha when they try to penetrate the leaves. The pesticides used in this case should have an extended effect as well as their ability to stick to the host surface and tolerate the weather factors that are working to remove them.

Preventive fungicides are treated before contact the fungus germs with the plant surface. It needs to be successfully implemented an accurate information on the effect of weather factors on the spread of the disease and the need for an effective warning device to determine the level of spread of the disease. Preventive fungicides are the preferred method of control.

1.2 Curative pesticides:

If fungus penetrates the plant tissues and grows mycelium between the cuticle and the epidermis, it is necessary to intervene with insecticides to prevent new infection, spread the disease, prevent any new fungal growth, and kill the newly grown fungus.

1.3 Eradicated pesticides:

These compounds eliminate the fungus after the emergence of symptoms of the disease, and complete the multiplication of the cause of the disease, and it is an advanced stage of the previous case where the disease in this case has been able to provide protection places within the plant so that it is difficult to reach and eliminate it. The residual pesticides may succeed in the case of the pathogen that grows on the surface of the leaves. The fungi that grow deep in the tissue are difficult to reach except using systemic pesticides.



2. According to the method of application:

2.1 Pesticides treated on foliage:

Where the plant is treated with a spray solution or powdered dust and take into account the same conditions and specifications for pesticides.

2.2 Seed treatment pesticides:

Seed, tubers and kormats are treated with fungicides for the purpose of killing the pathogenic agent on or within the seed and protecting the seeds from infection with soil fungi. The seeds are immersed in a liquid preparation called the wet treatment of the seeds or surrounded by the pesticide powder, this is called the dry treatment of the seeds.

2.3 Soil pesticides:

Pesticides are treated on the soil surface or inside to eliminate endemic fungi in the soil. And thus lead to the protection of seeds from the invasion of fungi when planted, it could be treated in the form of liquids or powders fogging or granular and the action depends on the ability to volatilization or systemic characteristics. It has been treated as a fumigant substance. Soil treatment generally requires high rates of pesticide.

3. Classification according to chemical structure:

The previous classification methods are customary rather than realistic, as many pesticides act as eradicate pesticides, and at the same time as protective agents. Some pesticides are also suitable for use on leaves and fruits. At the same time suitable for seed treatments or soil treatments.

The classification by chemical structure is the most accurate division method where the fungicide used can be divided into:

1. Sulfur element.
2. Copper compounds.
3. Mercury compounds (suspended).
4. Dioxide compounds.
5. Nitrogen organic compounds
6. Quinones.
7. Phenols.
8. Asyl Alanine.
9. Carboxy Amides.
10. Benzamidozole
11. The Pyridines.
12. Antibiotics.

2.1.2.6 Herbicides:

Weed (herbs) is one of the most important constraints to agricultural production by its direct and indirect impact on the components of agricultural crops and animals. Their impact also affects the man himself. Grasses inhabited by insects and hosts plant diseases, as well as reptiles and rodents,

disrupting land and river transport, and causing the spread of fires. Herbs are defined as plants that grow in the wrong place or unwanted plants or plants that compete with humans in the cultivated land.

The methods of controlling weeds are limited to mechanical methods (hand-harvesting, hoeing, tillage, burning)- agricultural methods (using agricultural courses that do not fit the growth of grass, or use of clean grass-free seeds)-biological methods (inserting and spreading of hosts attacking weeds such as insects and fungus) - chemical methods using herbicides, which are 43% of the pesticides used.

Definition of herbicide:

A chemical compound that kills or inhibits the growth of weeds.

Preferential use of herbicides:

The benefits and advantages of chemical control with herbicides can be summarized as follows:

1. Reduce the costs of control by providing the wages and costs of mechanical control operations of herbs.
2. Do not damage the plant crop as a result of hoeing, which leads to the cutting roots of crops
3. Increasing productivity of the crop compared to mechanical means.
4. May raise the quality of some of the characteristics of crops, such as increasing the protein in the nectar when the use of tetrazine pesticides.

Herbicide classification:

There are many ways to classify herbicides, and it seems difficult to follow a certain system in the classification of herbicides with their diversity and increasing numbers constantly in addition to the difference in chemical qualities and degree of toxicity and the quality of weeds eliminated it and generally herbicides classified according to the purpose of division to:

• According to the application time:

1. Pre-emergence pesticides:

Where herbicide is used after preparing the land for agriculture and before planting the crop.

2- Pesticides before emergence:

Pesticides spray on the soil after planting the crop and before seedling appears above the soil surface.

3 - Pesticides post emergence:

The application is carried out after crop or grass shoots emerge from the surface of the soil.

• Classification according to the pesticide selectivity:

1. Selective pesticides:

Used to control growing weeds with crop without damaging the crop.

2. Non-selective pesticides:

It is used to control herbs in the absence of a growing crop where all plants are indiscriminately killed.



• **Classification according to method and place of use:**

Herbicides are used by spraying or dusting and are divided according to the place of use to:

Use on soil:

Either by spraying or dusting on the surface layer of the soil or mixing the pesticide with soil and the mixing may be superficial or deep.

Use on the green parts:

By general application on the whole area or application is directed to the grass only.

• **Classification according to the movement of the pesticide in the plant:**

1. Contact pesticides:

Kill the plants that touch them and have no ability to move or permeate to the plant tissues

-It also does not leave residues in the soil, so it does not kill weeds that may grow after spraying.

2. Systemic pesticides:

It has the characteristic of the transition within the plant and permeates the plant tissues, and occurs damage to areas far from the absorption area.

3. Sterile soil pesticides:

Persistent soil pesticides - Eliminate all growing plants and prevent any plant growth for a period of time - pesticides are characterized by their low solubility in water.

• **Classification by mode of action:**

1. Growth regulators.
2. Oxidation inhibitors.
3. Photosynthesis inhibitors.
4. Cell division inhibitors.
5. Chlorophyll inhibitors.
6. Limitations of amino acids metabolism.

• **Classification according to chemical structure:**

(A) Inorganic compounds.

(B) Organic compounds:

1. Non - Nitrogen compounds
2. Nitrogen organic compounds.
3. Substituted urea compounds.
4. Carbamate and Thiocarbamate compounds.
5. Nitrogen ring derivatives
6. Derivative phenol substitution.
7. Toluidine derivatives.

Important guidelines when using pesticides

1. Choose the appropriate pesticide for each crop based on the recommendations of the Ministry of Agriculture, taking into account not to use any recommendation for a crop on another crop.
2. Verify the name of the pesticide used and ensure that all the Instructions in the recommendations are followed in terms of rate, method of spraying, spraying time and the quantity of water required.
3. Ensure the validity of the tools used in the spraying of sprayers and motors and the absence of holes in it or in the hoses so as not to leak during the spraying process.
4. Use clean water so that no clogging of the piping occurs
5. Dissolve the pesticide, especially the powdered pesticides in an external bucket with an appropriate amount of water with good flipping, then add the solution to the tank and replenish the water with the continuation of flipping.
6. Use of standards and proper quantities of pesticides in preparation.
7. Avoid flipping by hand with the possibility of using a stick or tree branch, so as to protect the implementation of poisoning and damage.
8. Spraying using trained labor.
9. Uniformity and homogeneity of spraying so as not to leave places without spraying and not to spray in some areas without the other so as not to increase the concentration of the pesticide in those areas, which has a bad impact on the crop.
10. Ensure the age of trees in the case of application in fruit gardens according to the recommendations, as small age trees are more sensitive to pesticides.
11. Do not spray pesticides in the presence of plants under inappropriate conditions such as high temperature, frost, thirst, fast trees, salinity excess, wetlands.
12. Generally, do not spray during the wind or plant decay dew or when the rain is expected. Spraying should be postponed until the stability of the weather.
13. For sandy lands, especially for soil pesticides, the recommended rate should not be increased in any case as any increase due to repeated spraying or non-coverage of the area according to the recommendations results in significant damage to the plant, because the optional property is low for soil pesticides in sandy lands.

III - Pesticides formulations:

After the manufacture of the pesticide in a pure form is transferred to the stage of processing in an applicable form of the so-called preparation of the formulation. The process of preparing the chemical pesticide aims to improve the properties of the pesticide storage, handling, application, efficiency and safety. The formulation is the commercial form of the pesticide product that shall be applied (before diluting the pesticide in the application device). The success of the pesticide in the control of a pest depends on the formulation on which the pesticide is used, and on the appropriate conditions for the pesticide to remain effective during the presence of the pest.



The processing of pesticide formulation depends on the natural chemical properties of the pure compound. For example, pure compounds may exist in a liquid form and the other in a solid form. In terms of stability, some are stable under weather conditions, some are decomposed and in terms of volatility some of them have the ability to volatilize and others are weak or non-volatile. In terms of solubility some dissolve in water and some dissolve in oils and others do not dissolve in water or oils. These different characteristics represent the most important difficulties facing the process of the preparation.

The most important type of formulations

1. Liquid formulation
2. Dust formulation
3. Granules
4. Fumigants
5. Aerosols
6. Poisonous baits

Liquid formulation

Used by spraying, it is known that about 75% of the chemical pesticides are treated in the form of liquid products such as insecticides, fungicides and herbicides and the most important forms are:

1- Emulsifiable concentrates

It is an oil concentrate for the pure pesticide with the addition of auxiliaries for emulsification, which helps the oily concentrate of the pesticide to mix with water directly when spraying.

2- Oil concentrates

Oil formulation containing a high concentration of active ingredient used without dilution in the control of public health pests.

3 - Oil solutions

Diluted oily solution ready for immediate application - suitable in controlling household insects such as pyrethroid solutions in oils.

4 - Water solutions

It is a real solution that is the dissolved pesticides concentrates in water.

Dry formulation

The active material of the pesticide is mechanically mixed with the diluted inert material and then grinded until the particle size is from 3-30 microns. Not all chemical compounds are usable in dry form, but the valid compounds are those that are crystals and have a high degree of hardness to fit the grinding process .

The most important dry formulation:

1- Concentrated powders

Powders containing a high concentration of the active substance (25-75%) and are rarely used directly but are usually diluted with an inert substance. There are concentrated powders treated directly like sulfur.

2- Normal fogging powders (diluted)

Powders contain a low concentration of active ingredient (from 1-10%).

3 - Wettable powder

They are powders prepared with water, they form a suspension. This is one of the most efficient forms of dry formulation for their easy use and high stability on the treated surface compared to concentrated or regular powders for dusting. The wetting powder needs to be stable during storage - the speed of forming suspension - easy distribution and coverage on the treated surface - to stay on the treated surfaces for a long time.

4. Flowable powders in water

They are called concentrates or water-soluble concentrates, and are made up of very fine particles of the pesticide that do not dissolve in water but spread in it. Granular size is small between 2-3 microns.

Additional materials in spray solution

These substances are added to pesticide preparations to improve the quality or characteristics associated with pest control and the most important substances of these are:

1- Wet and spreading materials

Materials that help to contact the spraying solution with the treated surface. It is known that water falls on plant leaves accumulate in large drops and then slip away leaving the leaf surface dry. These materials reduce the surface tension of the water, leading to a lower angle of contact solution with the surface of the solution.

2- Adhesives

After the complete wetness of the treated surface is achieved, there must be adhesives that increase the residue's ability to stay above the wax-treated plant surfaces. It is not desirable to add them to spray solutions when treating vegetables and fruits so that the pesticide does not remain long. Examples of adhesives are cotton seed oil, glue and tween.

3- Emulsifying factors

Emulsifiers are responsible for installing emulsions to ensure the homogeneous dispersion of dissolved solvents in an organic solvent in the aquatic environment.

4- Synergists

Materials to be added to the pesticide formulation to increase its efficiency, which is non-toxic when treated separately. The most important of these synergists are bipronyl byotoxide, sesamine and propyl isome.

5. Safeners

These substances combine with compounds that cause damage and turn them into non-toxic substances such as the addition of lime to some formulation that may be called Correctors.



III. Pesticide Formulations

The following list includes common agricultural pesticide formulations published in the Manual on the Development and Use of FAO and WHO Standards for Pesticides in Rome, 2002 & modified in 2016.

No.	Code	Term	The definition
1	CS	Capsule suspension	Constant suspension of capsules in liquid usually used after water dilution
2	DC	Dispersible concentrate	A homogeneous liquid of solid material that can be diffused when diluted with water
3	DP	Dustable powder	Powder for dusting
4	DS	Powder for dry seed treatment	Powder for direct dry use with seeds
5	DT	Tablets for direct application	A preparation in the form of tablets for direct treatment
6	EC	Emulsifiable concentrate	Homogeneous liquid used as emulsifier when diluted with water
7	EG	Emulsifiable granules	Granules may contain substances that do not dissolve in water used in the form of emulsion of oil / water when diluted with water
8	EP	Emulsifiable powder	A powder containing non-soluble substances added as an emulsifier in water for the active substance is spread in the water in the form of emulsion
9	ES	Emulsion for seed treatment	Permanent emulsion to treat seeds directly or after water dilution
10	EW	Emulsion, oil in water	A heterogeneous liquid containing the solution of the pesticide in an organic solvent composed of oil pellets spread in the water medium
11	FS	Flowable concentrate for seed treatment	Fixed suspension to treat seeds directly or after water dilution
12	GR	Granules	Fluid structural grills with specified volume field for direct use
13	LS	Solution for seed treatment	A clear liquid for the treatment of seeds directly or after water dilution (liquid may contain soluble non-dissolved water)
14	ME	Micro-emulsion	A clear liquid concentrate containing oil and water used directly or after water dilution with a fine emulsion or emulsion
15	OD	Oil dispersion	A constant suspension of the active substance in a liquid that is not mixed with water and may contain other active substances and spreads when diluted with water when used
16	OL	Oil miscible liquid	A homogeneous liquid preparation used after dilution in an organic liquid
17	SC	Suspension concentrate = (Flowable concentrate)	Constant suspension of the active substance diluted with water before use
18	SE	Suspo-emulsion	A heterogeneous liquid containing an effective substance dispersed in the form of solid pellets in the water medium
19	SG	Water soluble granules	Emulsion in the form of dissolving granules in water forming a real solution
20	SL	Soluble concentrate	A clear, sparkling fluid used as a real solution of the active ingredient after water dilution

21	SP	Water soluble powder	Water soluble powder when used
22	SS	Water soluble powder for seed treatment	Powder dissolved in water before treatment of seeds
23	ST	Water soluble tablets	Water soluble tablets used in a single form composed of aqueous solution (the solution may contain soluble non-dissolved water)
24	UL	Ultra-Low volume liquid	A homogeneous solution is used with specialized machines in micro-spray
25	WG	Water dispersible granules	Granules dissolve and spread when mixed with water
26	WP	Wettable powder	Powder used as suspension after spreading in water
27	WS	Water dispersible powder for slurry seed treatment	Powder is spread at high concentrations in water before it is used on seeds in the form of paste
28	WT	Water dispersible tablets	In the form of tablets used in a single image, the active substance is dispersed in the water after its degradation
29	ZC	A mixed formulation of CS & SC	Suspended suspension of suspended capsules and concentrated suspensions used after water dilution
30	ZE	A mixed formulation of CS & SE	A non-homogeneous liquid of capsules of the active substance dispersed in the form of solid pellets in a water medium and diluted before use
31	ZW	A mixed formulation of CS & EW	A non-homogeneous liquid consisting of active ingredient dispersed in the form of capsules and fine pellets in an emulsifiable form that is diluted with water before use

IV- Methods of using pesticides

There are many ways to apply and treat chemical pesticides, including dusting, spraying, fumigation, aerosols, poisonous baits and granules. There are also other limited methods of use such as treatment of seedling, treatment of tree bark, trunk injection and treatment of telephone poles. The following is a brief description of the most important methods of treatment and means of application:

1- Dusting

One of the simplest methods of pesticide use in pest control and the most economical in terms of ease of application. Dusting powders are often equipped for direct use. The used machine is called dusters. This method is commonly used in the control of some pests affecting animals, some crops and vegetables, as well as in the control of grain pests, stored materials and house insects.

Factors determining the success of the dusting process

1. Processing dusting powders efficiency.
2. The natural properties of the active substance in terms of shape, size and density of grains.
3. The wind may prevent the proper distribution of the powder and the dry atmosphere does not help well the adhesion of dusting to the treated surface. Generally, it is preferred that the wind is quiet and the plant leaves are dewy and these conditions are only available in the early morning.



Advantages of dusting process:

1. The ease of dusting in areas where it is difficult to obtain water for spraying operations.
2. Dusting machines are lighter in weight, easier to operate and cheaper to spray.
3. Dusting powders are ready for use directly without dilution, which reduces the effort and provides employment.
4. Powders are often less harmful to humans, animals or plants than emulsifiers, as solvents help to absorb rapidly within animal or plant tissues.

2- Spraying:

One of the most common pest control methods, especially on plants, the active ingredient of the pesticide which is released in water either in the form of suspensions, emulsions or real solutions. The machines used in spraying are called sprayers. Spraying machines rely on the mechanical force to expel the spray fluid in the form of small droplets of between 30-200 microns which are distributed regularly on the treated surface. After treatment, the pesticide evaporates on the spray surface in the form of a thin film. The spray system is located under the following methods and is built on the basis of the amount of water needed to alleviate. As for the size of the active substance to the unit area, it is fixed in different ways:

2.1. Large-size spraying: In this method, pesticides diluted significantly with water (400-600 liters / acre). Spray solution is released on the form of large water droplets (200-400 microns) cover all the sprayed parts as so wash-like. They are used to control pests that spend most of their lives in one spot or slow-motion insects or that are protected by a waxy layer such as scale insects and powdery bugs. This method is used to spray vegetable plants and fruit trees, using a strong spray machine with high pressure to push the spray solution to all parts of the tree (spray motors).

2.2. Small-size spraying: In this method, the water dilution ratio is (40-50 l / fed) - and the droplet volume reaches 150 microns. Note that the smaller the size of the spray, the more evenly distributed spray fluids can be distributed. This method is easy to carry out and leaves the water needed for it. This method is used to fight fast moving insects (leaf worms - locusts) and does not require full coverage of the plant surface because the continuous activity of the insect enable it to contact the pesticide.

2.3. Ultra volume spraying: In this method, spraying is carried out with pesticide only, without dilution with water or after dilution with a small amount of water, not exceeding 10 liters/fed. Wet powders are not used in this method for the possibility of clogging. This method is usually used with aircrafts.

Specific factors for the successful spraying process

1. Covering the treated surface

It depends on:

- 1.1-Suitable volume of spray droplets (controlled by the type of nozzle) and the coverage rate of the surface treated with spray solution increases by the decrease in the size of spray droplets.
- 1.2-The homogeneous distribution of the pesticide and the type of machine used and the method used (movement of the man who is spraying).

2. Weather factors

- 2.1-Wind is considered as one of the most important factors affecting the success of the spraying process, causing the spray to be carried away from the place of treatment.
- 2.2-Avoid spraying during rainfall to avoid removal of spray residues.
- 2.3- It is recommended to start spraying throughout the day except in case of high temperature

3. The efficiency of spraying process

- 3.1. Spray efficiency depends on the total consumption of the amount of solution allocated to a given area.
- 3.2. Spraying should be done in the correct manner to ensure that the worker performs regular steps throughout the process
- 3.3. It is recommended to start spraying throughout the day except in case of high temperature.

Advantages of spraying operation

- 1- There is no need for certain air conditions during spraying while the wind is quiet and the dew is present in case of fogging.
- 2- Spray solutions stuck to the treated surfaces for longer than the fogging powders, making them more efficient in eliminating the pest.
- 3- Lack of waste from the pesticide compared to fumigation.

Disadvantages of spraying operation

1. It is difficult to conduct spraying in areas suffering from water shortage.
2. Spraying machines are less weight, more complex and more expensive than fogging machines.

Application equipment

1. Good equipment is selected to be suitable for performing the required operations.
2. The equipment must be in good condition until it performs its required role with the permanent observation of any leakage of the pesticide through which.
3. Clean the equipment well at the end of each working day and never allow to leave the residue of pesticides in the machine for the next day.
4. The water used in washing the equipment shall be disposed of so as not to cause contamination of the drinking water or the waterways. The quantities of the spray formulations should be calculated as accurately as possible, and if some of it remains, some parts of the field's side will be sprayed again with this surplus.

Spray equipment is an important factor in the efficiency of application. The pressure, the location of the sprinkler, the direction of the spray, the size and type of the sprinkler, and the exit rate of the solution are all important factors.

The machine should be inspected regularly and preferably on the day prior to spraying using clean water and under field conditions. Wettable powder formulations can cause blockage in the splitters and the spray solution will run off after a short period of use and will cause a change in the size of the spray granules if they are not cleaned well.



Calibration of application equipment:

The proper calibration of application equipment is an important factor determining the pesticide's efficiency in controlling the pest. False calibration can cause toxic damage to the plant, increase residue during harvest or environmental pollution, and waste the used pesticides. Before starting treatment with the pesticide, the performance of the application equipment should be ascertained for the size and area to be treated. Prior to calibration, the mechanical parts of the spray machine and nozzle must be examined, taking into account the lack of clogging, leakage, wrong pressure and control the exit rate of the liquid.

Application equipment

● - Spraying machines:

If the machine has many nozzles and until we have an equal distribution, the flow rate of the spray fluid must be from all these nozzles. This can be tested by filling half of the spray with water, running the pump and adjusting it to a suitable pressure and measuring the water volume out of each tank in a suitable bowl for a specified period of time. The volume of water coming out of each nozzle differed by more than 1% from the average of the rest of the nozzles that needed to be repaired. Adjust the speed of the tractor or the worker carrying the machine so that the quantity of filter fluid for the unit of space is the required and specified rate.

● - Dusting machines:

The dusting powders differ in their density which may affect the rate of treatment under the same machine conditions. Before starting the dusting process, it is recommended to test the powder flow rate of the dusting machine. Reducing or increasing the amount of dusting powder per feddan can be achieved by changing the speed of the traction machine or by adjusting the feed regulator with the dusting machine and repeating this process so that the estimated amount per feddan can be adjusted.

Note: For further information, refer to the specialized references for the use and maintenance of pesticide application machines.

3 - Granules:

Granules is one of the most common formulation in the control of soil pests and in the infiltration of small seedlings and protection from sucking insects, as well as in the control of corn borers and aquatic insects such as mosquitoes. Common granules currently contain systemic pesticides to control nematodes that inhabit soil. Granules are characterized by the largest size of granules 400-500 microns., The ratio of active substance in granules varies from 1-25%. And prepared by loading the pesticide whether liquid or solid dissolved in a suitable solvent by spraying on the carrier material, which has the ability to absorb such as bentonite and diatomite. Granules are used in the following ways:

1. Side treatment, by positioning granular next to plants and trees.
2. Broadcasting, where granules are propagated on the soil surface manually or mechanically.
3. Placing granules in soil trenches to control termites.

4 - Poisonous baits:

Special formulations are prepared to attract and kill some types of insects and rodents near or in the natural environment and used in solid or liquid form. In this method, the pesticide used is mixed with the preferred food that attracts the insect such as bran, cornstarch or rice when controlling locusts, hoppers, greasy cutworms or sugar solution when controlling flies. Poisonous baits are used to control insects that may not be suitable for spraying or dusting.

The baits consist of:

1- The base

The most important of which is apostasy alone or mixed with sawdust, cornstarch or cottonseed.

2- Poison (pesticide)

For this purpose, inorganic toxins such as zinc phosphide are used to control rodents or organic toxins in the control of fruit flies.

3. Carrier

Water is the carrier material in the liquid and wet baits. In the case of solid baits, the base is used as a carrier.

4 - Attractive material

A substance may be added to the bait to attract the pest and use molasses to prepare the bait. Fermented materials are also used to prepare the fruit fly taste.

Factors consider when using a toxic baits:

1 - Method of distribution of bait

It is often broadcast by hand, taking into consideration that the prose is regular and in a thin layer as much as possible while avoiding the presence of visible blocks so as not to attract birds.

2. Timing for distributing the bait

Always take into consideration that the bait is distributed before the pest's activity time, such as:

- 2.1- In the case of locusts and grass hoppers, the bait is scattered in the early morning (before sunrise) because the insects feed heavily at this time.
- 2.2- In the case of the mole cricket, the bait is scattered before sunset (provided that it is narrated in the day to force the digger out of the tunnel)
- 2.3- The case of the grassy cut worm, scatter the bait at sunset because the larvae are fed at night.

5- Fumigation:

The active substance of the pesticide is the form of gas molecules (at normal temperature and normal air pressure). This enables it to move, spread and permeate the material to be fumigated until it reaches the pest and kills it. It is also qualified for spreading outside the treated substances after the process is completed. The method of using fumigants is called fumigation, It is one of the



most important methods used in the control of pests that are difficult to reach by other methods, namely, pests that are hidden within grains or stored food, in the soil or protected under waxy shells (scale insects).

Methods of processing and handling of fumigants

1. Liquid substances such as carbon sulfate are traded in a liquid state.
2. Gaseous substances such as ecophosphate (phosphine), Gas is being distributed when used by lifting pressure on liquefied gas.
3. Solid materials are traded in the form of powders or tablets in cases where the solid substance interaction with the air humidity as the poison gas separated such as phosphine (sold in the form of phosphide aluminum or Magnesium).

Methods of use of smoking materials

Fumigation under normal atmospheric pressure:

1. Fumigating houses and empty mills.
2. Fumigating cereals and foodstuffs.
3. Fumigating trees: They are carried out under special tents that are not operated by gas and are sometimes referred to as pot method and are useful in controlling crustaceans.
4. Fumigating the soil in which the fumigant are used in a liquid form in a local way or by injection into the soil or as gases under the covers.

Vacuum fumigation:

It is usually carried out in the agricultural customs quarantine in cases where the speed is required. Where it is made in thick -walled iron cylinders connected to a vacuum pump. This method is characterized by shortening the gas exposure period (12-24 hours if fumigation are carried out under normal atmospheric pressure). While between 2-4 hours in the case of random fumigation). This is due to the fact that the lack of oxygen in the working space accelerates the breathing of the insects and thus accelerate the gas capture and poisoning, also low pressure has a fatal mechanical impact of insects.

6. Aerosols:

Aerosols are solvents containing very fine particles from the pesticide (1-30 microns). It can be said that aerosols are solutions for the active substance in the appropriate solvent as well as the carrier gaseous substance that may be dissolved in the pesticide solution or present under pressure. These solutions are placed in narrow-cored cylinders to break down the liquid as they pass through it, with carbon dioxide or low-boiling solutions such as freon or methyl chloride, the solution is dissolved and when the fluid is released into the air, the liquid evaporates leaving the pesticide in the form of fine particles suspended in the air.

It is worth mentioning that if the pesticide molecules are on the liquid state, the pesticide is the result of a mist form. If the particles are in the solid-state, the pesticide is in the form of smoke. This method differs from spraying that the pesticide particles are smaller than the

spray droplets, which makes it able to attach to the air for a limited period (10-30 minutes) enough to kill the flying insects that pass through it. It is also different from smoking in that the particles of the pesticide either on the solid or liquid form are not permeable inside the treated material but are deposited in the end on the treated surfaces affecting the insects. Generally, the aerosols are not able to carry them away from the treated areas and are used to control flying public health pests (Domestic flies).

7. Other methods of use:

1-Treatment of the seeds

It is used to protect the seed from attacking fungi that inhabit the soil, nematodes, insects or other pests, as well as to protect the vegetative and root populations of pests with a piercing and sucking pests as thrips, aphids and mites through the use of systemic pesticides applied to plant juices. The most important methods of seeds treatment:

A) Method of soaking

Where the seeds are soaked in the solution of the pesticide for a period of time varies depending on the type of pesticide and seed type.

B) Packaging method

Where the seed is wrapped with a pesticide loaded on a solid material with an adhesive.

2. Treatment of tree bark

Already characterized by specialized high act with -high cost- used on fruit trees and ornamental plants - it is common to treat bark with some fungicides or systemic insecticides to control powdery bugs and mites. In the case of volatile pesticides, it is preferred to cover them, while non-volatiles are used to paint tree trunks with brush. These can be applied in orchards containing few trees.

3- Treatment of telephone poles and granular wood panels

The poles of telephone, particleboard and other wood furniture can be treated in areas where termites are widespread in order to avoid long-term injury, requiring the use of pesticides that are highly persistent against decay and breakdown agents (Organic chlorinated compounds and pyrethroids). This method is also used in the prevention of fungi.

4 - Treatment of the pesticide in the trunk

In order to reduce the loss of the pesticide in the treatment of bark, the inside of the trunk are treated by making a tunnel in the bark where the pesticide is placed at a particular concentration. It is performed under conditions similar to sterilization where the bark is painted and the pesticide is placed at a particular concentration. This operation is done under conditions similar to sterilization where the bark is painted at the beginning and before cutting with a disinfectant and then cut to a depth of 3.5 cm with a specific sharp machine at a angle of 45 from the main axis of the tree. After placing the pesticide, the pieces are sealed and covered with a thin wooden or metallic cover with a thread that is then painted with a layer of vegetable wax. This process needs careful attention during implementation.



V - Safe and safety in using pesticides

1 - Precautions to be considered when preparing spray solutions:

- 1.1. When preparing spray solutions of wettable powder pesticides, weigh the required amount and add to a water bucket gradually, stirring with a stick until the textures are in the form of a liquid paste and then gradually reduce the paste with water while stirring till a homogeneous suspension is formed. Add the concentrated suspension to a barrel or whole tank and supplement with water and continue flipping.
- 1.2. In the preparation of spray solutions of emulsifier concentrates, the required amount of the pesticide is taken using a liter measurement. Then add the pesticide to twice the quantity of water in a bucket with constant stirring. Add the concentrated emulsifier to the barrel or tank of the spray machine and supplement with water while continuing stirring. Until we get the emulsion of the uniformity of the textures homogenous, and this is evidenced by the formation of abundant foam and the absence of oil stains on the surface.

2. Precautions to be observed during spraying

- 2.1- Use of the recommended dose with water dilution at prescribed rates.
- 2.2- Preparation of solutions in a timely manner and commensurate with the areas required to be treated.
- 2.3 - Do not stir pesticides solutions by hand and use a piece of wood.
- 2.4 - Avoid the use of salt water in the preparation of emulsifiable concentrates because it does not help the process of emulsification.
- 2.5 - start the spraying process in the morning after dew volatilization and continue throughout the day and stop the process during the afternoon when the temperature increases.
- 2.6 - Do not spray pesticides and plants in a thirst, in this case, irrigate and wait till the ground dry.
- 2.7- Spraying in the right way which ensures that the worker walks in regular, calm steps.
- 2.8- The nozzle bearer should be parallel to the surface of the earth and at a height of 30-40 cm from the top of the plants to ensure that the spray solution is distributed regularly to the plants.
- 2.9 - Avoid clogged of nozzle and when clogging one of them, spraying must stop until it is cleaned.
- 2.10- Use of good sprayers that maintain air pressure within them, good storage and maintenance of spray machines to ensure their validity as long as possible.
- 2.11- Avoid spraying against the wind to avoid falling of the pesticide away from the surface to be treated and to avoid exposure to applicator spraying.
- 2.12- It is necessary to consume the amount of spray solution allocated to a certain area to ensure the success of the process.

3. Precautions to prevent pesticide poisoning

- 3.1- Prohibition of the transfer of pesticides or presenting it with foodstuffs of humans and animals.
- 3.2- Pesticides shall be traded in their original packaging from the producing company, and prohibiting the placement of pesticides in containers other than the packages designated for them.
- 3.3- It is prohibited to use empty containers in the storage of food or beverages.
- 3.4 - Close the pesticide container well before moving it.
- 3.5- Sprayers should be healthy, free of wounds and free from chronic diseases.
- 3.6 - Wear a special robe, a glove and rubber boots.
- 3.7- Open pesticide containers gradually to prevent the release of trapped gases at once.
- 3.8- Placing banners on the sprayed areas to prohibit entry and eating of foodstuffs (vegetables or fruit).
- 3.9 - Avoid smoking or eating any food or drink at work.
- 3.10- Avoid dumping residues of spray solutions in irrigation channels and banks.
- 3.11- Clean the personal protective equipment used carefully, and wash the body well with soap and water after the end of work.
- 3.12- Do not wash clothes contaminated with pesticides in irrigation channels.
- 3.13-Exclude farm animals from fields when conducting spraying to protect them from pesticide spray and vapors.
- 3.14- Avoid collecting fruits before the expiration of the period of safety or allowed waiting after treatment with the pesticide.
- 3.15- Avoid the use of weeds in fields treated in animal feed.
- 3.16-Pesticides must be stored in stores that meet standard conditions.
- 3.17- The need to have an ambulance bag with each team of control men containing some materials for the first aid before the transfer of the person who was poisoned to the hospital for treatment.

4 - Factors to be considered when storing pesticides

- 4.1- Pesticide repositories should be away from residential areas, food factories and feed stores.
- 4.2- No leakage of water used in fire fighting in pesticide warehouses is allowed to the streams, ponds, wells, water tanks, farms, irrigation channels or other facilities
- 4.3- Do not store pesticides with oxidizing fertilizers such as ammonium nitrate fertilizers.



- 4.4- Pesticides should be stored in places of special specifications specified by the competent authorities and no other materials shall be stored with them.
- 4.5- Highly toxic pesticides and volatile and flammable pesticides should be stored in a place that can be properly controlled and secured.
- 4.6- Pesticide storage areas are marked with clear and prominent signs that are fixed in a manner that eliminates the presence of pesticides, with writing "danger" and the label "Skull and cross bones" followed by a word "poisoning" in Arabic and English.
- 4.7- Containers that leak, damage or pesticide contaminated materials shall be collected in a separate location away from the other containers. Then dispose of them and the leaked materials according to the factory instructions shown on the packages or issued by the competent authorities.
- 4.8- Storage of pesticides away from the ground on wooden floors or shelves.
- 4.9- The need to store each type of pesticide separately from other pesticides for easy circulation and disposal.
- 4.10- Periodic inspection of containers during storage to detect leakage or damage to pesticides - and provide warehouses with fillers such as lime, sand and sawdust for use in emergency leakage.
- 4.11- The need to take precautions for civil defense and fire fighting.

5. Disposal of empty pesticide containers:

Before disposing of empty pesticide containers, the contents of the packaging must be emptied and left to be drained for at least 30 seconds. The package shall be washed at least three times in a quantity of water not less than 10% of the packaging capacity. It is distributed to the largest possible area of land. The small packaging are then disposed of with incinerators if they are suitable so as not to burn. Take into consideration not to burn packaging contained explosive component such as chlorates. Holes can be made in metal containers and broke glass containers.

Large packaging that can't be burned (50-200 liters) can be returned to the seller and sent to special burial places after they have been punctured and reduced.

6. Pesticide toxicity:

Toxicity means the harmful or adverse effect of any substance or mixture of several substances on the organism and is divided into:

Acute toxicity is the harmful effect that occurs in the organism after exposure to the pesticide for a short period and one or several times in a short period.

Sub-chronic toxicity is the harmful effect of an organism as a result of frequent or continuous exposure to the pesticide for 30 to 90 days.

Chronic toxicity is the harmful effect of the organism as a result of repeated or continuous exposure to the pesticide for longer than half the life of the organism.

Generally, all pesticides can be considered toxic. The toxicity of a compound varies depending on the dose and susceptibility of the organism, whether human, plant or animal. The toxicity of the chemical is measured by LD₅₀ and is expressed in mg/kg of body weight, which kills 50% of all the experimental animal. White lab mice are used as test animals to determine that dose. The toxicity of various substances is measured based on LD₅₀ values by oral, contact and inhalation. The higher the LD₅₀ value, the greater the relative safety of the composite and vice versa.

The risk of the pesticide is not only oral, but it can be absorbed through the skin, eye and lungs. The pesticide's gravity is related to the different formulation of the product and is more dangerous with the increased concentration of the active substance. As a general rule, a pesticide product with a liquid form or an emulsifiable concentrate is more dangerous than whether the formulation of the same active ingredient is in the form of wet or granulated powder and accordingly the severity of pesticide preparations can be arranged in descending order:

Emulsifying Concentrates - Wettable Powders - Granules.

Classification of pesticides

according to their toxicity to mammals according to WHO tables.

Mammalian toxicity	Indicative sign	Indicative data color	class
Highly toxic	Skull and bones	Red	Ia
Very toxic	Skull and bones	Red	Ib
Harmful	X tag	Yellow	II
Warning	X tag	Blue	III
Warning	X tag	Green	U

The color of the card is determined on the basis of the acute toxicity of the active ingredient, according to the 2009 WHO Pesticide Risk Guidelines.

7- Poisoning and first aid:

Pesticide identification cards include symptoms of poisoning, first aid, and sometimes rapid treatment of poisoning. These can be referred to as:

1. General symptoms associated with poisoning:

Primary symptoms: dizziness - disorder - headache - stress - nausea - vomiting - excessive sweat - shortness of breath.

Intermediate symptoms: eye dysfunction - diarrhea - increased salivation - eye blemishes - excessive irritation - cramps in the eyelids - constriction of the pupil - the onset of mental confusion.

Late symptoms: fluid in the chest - jaunt - contractions - coma - loss of ability to control the excretion - Failure in the heart and respiratory system.



2- First Aid:

In case of poisoning or suspicion of poisoning, the competent physician shall be presented with the card affixed to the pesticide package or the names of the pesticides that have been exposed to the injured person at this time and in advance, preferably by notified with the common name on the card.

First aid when symptoms of simple poisoning appear:

- Keep the patient away from the source of poisoning.
- The patient should be reassured and calmed continuously.
- Remove contaminated clothing and wash the contaminated skin with cold water and soap.
- If the patient swallowed an emulsifiable concentrate or soluble solution in an organic solvent, he should not be induced to vomit before giving the solution of manezia or whisked egg whites or a solution of starch in copious quantities. In case of ingestion of other formulations or mixtures, the patient is induced to vomit by pushing a finger in the throat and repeat that until the vomiting is clear and free from the smell of pesticides.
- In the absence of vomiting, the patient is given three tablespoons of activated charcoal in half a glass of water and repeat the process as much as possible until the arrival of the doctor.
- If the pesticide spray reaches the eye, wash the eye with clean water for at least 15 minutes until the doctor arrives.

Aid when symptoms of acute poisoning appear:

- Put the patient under severe surveillance and if the patient is unaware he must not be given anything by mouth.
- Measure pulse and if stopped, a heart massage is required immediately.
- In case of spasm, the patient must be protected from harming himself.
- It is preferable to treat and transfer the unconscious patient in the position of supine on the side with the knees bend and reduce the head to the back.

3- Massage the heart:

When breathing stops, the patient should be lying on his back on a flat surface, head down and start ventilator process, taking a napkin between your mouth and the patient mouth to protect you from infection during the ventilator process.

To perform heart massage, follow the following steps:

Rest on your knees next to the patient so that your body is completely next to his head. Put your palm on the end of the rib cage with the other palm on. Use your weight, keep your arms free and press down no more than 5 cm on the rib cage regularly at about 60 times per minute. It is necessary to raise your hands completely after each pressure down and usually return the heart and breathe to work within 30 minutes.

Note:For more information, refer to any reference for first aid in cases of pesticide poisoning.

VI. The Basics of Integrated Pest Management

Integrated pest control means the use of some or all known pest control methods which are compatible with each other and do not interfere in their full coordination so as to reduce the number of pests below the critical economic limit

Integrated pest management (IPM) is characterized by the fact that it does not establish a new independent science, but rather seeks the links and relationships between several fields of science, bearing in mind that the primary objective is to preserve the integrity of the environment.

In order to implement the integrated pest management successfully we must be familiar with some important basics:

1. Accurate diagnosis to determine the type of the pest and to know its life cycle.
2. Identify the types of natural enemies present and study their activities.
3. Determine the level of infestation with the existing pest or lesions with an estimate of the damage caused by this pest.
4. Identification of harmful stage.
5. Know the appropriate environmental conditions to increase the number and vital enemies of the pest.
6. Determine the critical economic limit.
7. Rational use of pesticides:
 - a) The use of selective pesticides.
 - b) The use of pesticides which do not cause quick pest resistance.
 - c) The use of low-pollution pesticides for the environment either of relatively rapid degradation or in low doses.
 - d) Do not cause increase in the number of primary or secondary pests after spraying.

The philosophy of IPM is that it is natural to have the pest at certain levels that do not cause significant economic harm. The first line of defense is to rely on natural enemies, and follow agricultural methods and practices that adopt the increase in pest numbers and to increase pest numbers to cause significant economic damage greater than the control costs (higher than the critical economic limit), then the pesticide should be used.

Elements of IPM:

1. Control by agricultural means:

The processes that lead to healthy growth of plant, making the plant more resistant to the pest such as:

- a) Plant at an appropriate time.



- b) Follow the good agricultural methods in terms of selection of the appropriate category and regular timing of irrigation, processing the land well and get rid of weeds with fertilization at prescribed rates ... etc.
- c) Observance of plant density in the unit area.
- d) Follow an appropriate agricultural course.
- e) The use of plant traps by planting plants on the edges of the field, which are more attractive to the growth and reproduction of the pest, in addition to providing suitable shelter for natural enemies.
- f) Rapid disposal of crop residues and residues.
- g) The use of pest resistant plant varieties.

2. Mechanical control:

Sometimes referred to as automatic control where other machines or tools can be used such as:

- a) Plowing the earth, which leads to the killing of some pests by burying or exposing it to the sun or to predators and birds. This applies to some extent to the processes of hoeing.
- b) The use of traps, such as rat traps, insect traps, and nets for birds.
- c) The use of instruments that produce disturbing sounds to keep birds away.
- d) Use of nets to prevent the entry of insects.
- e) Collect egg blocks manually as in cotton leaf worm case.

It is clear from the above that mechanical control is an economical method of environment friendly, so it is best to use it whenever possible.

3- Biological control:

Pest levels can remain below the critical economic limit for the following reasons:

- a) Unsuitable weather conditions;
- b) Insufficient food sources.
- c) The existence of natural enemies of parasites, predators and pathogens.

Biological control is one of the most environmentally safe ways to apply and is an important component of integrated control programs.

One of the most important ways to preserve the natural enemies is to avoid the use of pesticides as long as possible, with the use of selective pesticides, which are characterized as more effective upon the pest compared to natural enemies.

The biological control depends on the use of biological enemies of the pests targeted in two ways either naturally depending on those already exist in nature or human intervention to work to encourage and multiply these enemies in the laboratory and launch in the fields and the most important features of this method:

- a) Safe to harm humans and the environment.
- b) Persistent where its numbers multiply naturally.
- c) Economic compared to other methods of control.
- d) Easy to apply.

This method can be relied on as long as the infestation levels are below the critical economic limit, but if the infestation exceeds this limit then the use of pesticides should be used.

Biological control elements:

1. Parasites.
2. Predators.
3. Pathogens such as bacteria and fungi.
4. The use of insects as natural enemies for weeds control.

4- Chemical control:

Chemical control is the last line of defense against the pest and should only be used when other means fail to reduce the levels of infestation to below the critical economic limit, and in all cases it is preferable to use selective pesticides.

Use of pheromones:

Pheromones are natural materials produced by the insects to attract the opposite sex to complete the process of sexual intercourse, and the nature of these materials that are highly specialized and have been able to know the chemical composition of them and their synthesis in the laboratory or the formation of similarities and use in the control methods in two main ways:

- a) The use of pheromone in monitoring the pest in nature, and this method helps a lot in knowing the critical economic limit and thus determine the timing of chemical treatment.
- b) Use of disruption pheromone directly in the control lead to disorder and confusion in the disposal of the opposite sex and thus failure of the process of intercourse and thus laying eggs are not enriched.
- c) The use of a pesticide with pheromone where the pheromone attracts the insect and kills the pesticide.



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Questions to be raised when resorting to chemical control:

- What is the necessary information that must be known before starting the control?
- What should you know about the pesticide to be used in the control?
- What is the recommended dosage and the correct way to use the pesticide?
- What are the safety periods after spraying and before harvesting?
- What is the critical economic threshold?
- How to determine periods of periodic examination?
- Method of recording results.

The information needed prior to control must also include:

- Type of crop
- Type of pest to be controlled
- Growth stages of crop and pest
- The existence of useful insects and honey bees
- Residues of the pesticide in the crop
- Prevailing weather conditions
- Have other methods of control been used before taking a chemical control decision?

Chapter 2

Certified Recommendations to control insects, mites, nematodes, rodents, and fungi

- I Field crop pests**
- II Vegetables crop pests**
- III Fruits crop pests**
- VI Miscllanous crop pests**



I-Field crop pests

A-Winter field crop pests

Wheat

Pest: Insects

Wheat aphid (*Diuraphis noxia*)

Symptoms of infestations:

Existence of red spots with centered black dots at leaves' blades near ground is the most significant symptom in the case of green aphid *Myzus persicae*, this symptom is followed by retarded growth, shriveling of leaves and finally death of various tissues, in case of oat aphid infestation, the infested leaves and sheath showed honeydew secretions and bring the sooty black mold fungus resulted in loss in grains weight as well as plant dwarfism in case of extensive infections.

● Time of symptoms appearance:

Symptoms of infestation could be seen two weeks later after seedlings, while you could never see insects unless reaching moderate or warm temperatures.

● Proper time of control:

The economic threshold that you can begin using insecticide determined when inspection of randomly selected plants showed at least 30 individual insects per one single plant, chemical insecticide should not be applied when florescence started.

● Guidelines:

Insecticides treatments should not be applied after spikes appearance.

Certified Recommendations:

Reg.No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	Mrl's values (kg/mg)		
						Codex	EU	EPA Tolerance
73	Sumithion 50% EC	Fenitrothion	250 cm ³ /100 L.w	Mod II	30	-	0.05	3
2713	Terminator 25% WG	Thiamethoxam	20 g/ L.w	U	45	0.05	0.05	0.02



Pest: Fungi**Loose smut****Symptoms of infections:**

The major symptom of loose smut is the "smutted" grain heads, which contain masses of black or brown spores where the grain would normally be. The spores completely replace the grain head so that there is no grain to be harvested on infected plants. The infected heads emerge from the boot one to three days earlier than those of healthy plants. This sooty mass is composed almost entirely of millions of microscopic smut spores (teliospores).



- **Time of symptoms appearance:**

When the ears are expelled, the infected ears are expelled yearly one or 3 days.

- **Proper time of control:**

Seeds are typically treated before planting with a systemic fungicide to kill any fungus that may be inside.

Certified Recommendations:

Reg.No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	Mrl's values (kg/mg)		
						Codex	EU	EPA Tolerance
1845	Gizmo 6% FS	Tebuconazole	0.6 cm ³ /kg seeds	Low III		0.15	0.3	0.15
1945	Dividend Extreme 11.5% FS	Difenoconazole 9.2% + Metalaxyl-M 2.3%	1.2 cm ³ /kg seeds	Low III		0.02 0.05	0.1 0.01	0.1 0.2
467	Raxil 2.5% FS	Tebuconazole	1.2 cm ³ /kg seeds	U		0.15	0.3	0.15
2154	Sunzole 2.5% SC	Triticonazole	2 cm ³ /kg seeds	U		-	0.01	0.01
2370	Keen 6% FS	Tebuconazole	0.6 cm ³ /kg seeds	Low III		0.15	0.3	0.15
1871	Hattric 6% FS	Tebuconazole	0.7 cm ³ /kg seeds	Low III		0.15	0.3	0.15

Powdery mildew**Symptoms of infections:**

Powdery mildew appears as white, cottony tufts of hyphae on the surfaces of infected wheat leaves, stems and heads. As the season progresses and plants approach maturity, tiny, round, black, fruiting bodies called cleistothecia begin to form within the tufts of hyphae.



- **Time of symptoms appearance:** Almost yearly through February and March.

- **Proper time of control:** When the injury appears high.

Certified Recommendations:

Reg.No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	Mr's values (kg/mg)		
						Codex	EU	EPA Tolerance
2089	Farmzole 25% EC	Propiconazole	15 cm ³ /100 L.w	U	35	0.09	0.09	0.3
2147	Menara 41% EC	Cyproconazole 16% + Propiconazole 25%	200 cm ³ /feddan	Low III	42	0.08 0.09	0.1 0.09	0.5 0.3

Yellow rust (stripes)

Symptoms of infections:

Yellow uredinia appear in rows somewhat linearly along the axis of the leaf (stripes). These small lesions, collectively, on an entire leaf can be the result of one urediniospore infecting the wheat leaf. More commonly a leaf will be infected by one or more spores in an epidemic. Infections can appear on the spikes and on the stems of wheat under severe epidemic conditions as well.



- **Time of symptoms appearance:** Almost start yearly through February is developing during March and April.
- **Proper time of control:** Once the symptom has appearance.

Certified Recommendations:

Reg.No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	Mr's values (kg/mg)		
						Codex	EU	EPA Tolerance
2090	Amistar Xtra 28% SC	Azoxystrobin 20% + Cyproconazole 8%	300 cm ³ /feddan	Mod II	35	0.2 0.08	0.5 0.1	0.2 0.05
1844	Opera 18.3% SE	Epoxiconazole 5% + Pyraclostrobin 13.3%	500 cm ³ /feddan	U	35	– 0.2	0.6 0.2	– 0.02
974	Eminent 12.5% EW	Tetraconazole	100 cm ³ /100 L.w	U	40	–	0.1	–
1546	Bilzole 25% EC	Propiconazole	200 cm ³ /feddan	U	35	0.09	0.09	0.3
20	Tilt 25% EC	Propiconazole	25 cm ³ /100 L.w	U	30	0.09	0.09	0.3
927	Fungshow 12.5% WP	Diniconazole	15 gm/100 L.w	U	–	–	0.01	–
1319	Crown 25% EC	Propiconazole	30 cm ³ /100 L.w	U	35	0.09	0.09	0.3
1802	Kinol 25% EC	Propiconazole	25 cm ³ /100 L.w	U	35	0.09	0.09	0.3
2147	Menara 41% EC	Cyproconazole 16% + Propiconazole 25%	200 cm ³ /feddan	Low III	42	0.08 0.09	0.1 0.09	0.05 0.3
1437	Montoro 30% EC	Difenoconazole 15% + Propiconazole 15%	40 cm ³ /100 L.w	Low III	–	0.02 0.09	0.1 0.09	0.1 0.3
1619	Nasrzol 25% EC	Propiconazole	30 cm ³ /100 L.w	U	35	0.09	0.09	0.3

Fusarium diseases of wheat

Symptoms of infections:

It is one of secondary diseases of wheat that distribute in the dried new reclaimed lands. Infected plants have crown and root discoloration and weakened root systems. This disease can also develop from above ground through leaf sheath and develop on the crown and lower nodes.

- **Time of symptoms appearance:** At the seedling and mature stages.
- **Proper time of control:**

Seeds treated with the recommended fungicide before planting.



Certified Recommendations:

Reg.No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	Mrl's values (kg/mg)		
						Codex	EU	EPA Tolerance
2016	Celest Extra 5% FS	Difenoconazole 2.5% + Fludioxonil 2.5%	2 cm ³ /kg seeds	Low III	-	0.02 -	0.1 0.01	0.1 -

Root rot of wheat

Symptoms of infections:

Wheat seed may be rotted and die prior to or shortly after germination (pre-damping off). Seedlings that do emerge may have rotted roots and stems, resulting in less vigorous plants that may also die (post-damping off). The disease caused absent to some cultivated plants.

- **Time of symptoms appearance:** Symptoms of the disease appear immediately after planting especially heavy clay land bad drainage.

- **Proper time of control:**

Treatment of seeds before planting.



Certified Recommendations:

Reg.No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	Mrl's values (kg/mg)		
						Codex	EU	EPA Tolerance
2489	Premis Ultra 2.5% FS	Triticonazole	2.5 cm ³ /kg seeds	U	-	-	0.01	0.01
2641	Panoramix 2% FS	<i>Trichoderma harzianum</i> + <i>Bacillus meagaterium</i> + <i>Bacillus subtilis</i>	4 cm ³ /kg seeds	U	-	-	-	-

Faba bean

Pest: Insects

Black Bean Aphid (*Aphis fabae*)

Symptoms of infestations:

Bean aphid can cover large sections of growing plants, typically starting at the tip of the plant. Severe infestations and high insect population resulted in honeydew secretions which serve as media for fungal growth called sooty mold, causing terminal leaves to appear black.

- **Time of symptoms appearance:** One week later after seedlings.

- **Proper time of control:**

As soon as random inspection indicate aphid infections.

- **Guidelines:**

Early detection of aphid infestation is very important for early treatment of the infested spots before aphid spreading because a majority of plant viruses are transmitted between host plants resulting in great loss of their yield, so, regular inspection is a crucial factor as soon as seedlings occurred to treat the infested spots immediately with the recommended insecticides before aphid spreading.



Certified Recommendations:

Reg.No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	Mrl's values (kg/mg)		
						Codex	EU	EPA Tolerance
1091	Oshin 20% SG	Dinotefuran	50 gm/100 L.w	U	2	–	0.01	–
1259	Marshal 20% EC	Carbosulfan	100 cm ³ /feddan	Mod II	7	–	0.005	–
1783	Malason / Extra 57% EC	Malathion	150 cm ³ /100 L.w	Low III	7	2	0.02	–
2235	Warrant 70% WG	Imidacloprid	30 gm/100 L.w	Mod II	7	–	2	–
2746	Forteen20% WG	Dinotefuran	50 gm/100 L.w	U	3	–	0.01	–

Pest: Fungi

Chocolate spot

Symptoms of infections:

Symptoms are varied, and range from small red/brown spots on leaves to complete blackening of the entire plant. Lesions may have a red-brown border, with a lighter colored interior.



- **Time of symptoms appearance:** It appears at December and increased during January and February

- **Proper time of Control:** Once the symptom has appearance

- **Guidelines:** Be careful the irrigation specially during January and February



Agricultural Pesticide Committee

Faba bean

Chocolate spot

Certified Recommendations:

Reg.No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	Mrl's values (kg/mg)		
						Codex	EU	EPA Tolerance
1088	Bio Zeid 2.5%WP	<i>Trichoderma album</i>	250 gm/100 L.w	U	-	-	-	-
411	Tridex 80% WP	Mancozeb	250 gm/100 L.w	U	14	-	0.1	5
1764	Rich 80% WP	Mancozeb	250 gm/100 L.w	U	21	-	0.1	5

Onion

Pest: Insects

Onion thrips (*Thrips tabaci*)

Symptoms of infestations:

Both adults and larvae cause damage that appears as a silvery streaking on leaves' blades, as heavy infestation occurred infested areas turned into brown color and dried. Yellow and orange onion thrips nymphs and dark winged adults could be seen on leaves with naked eyes in case of sever infections.



- **Time of symptoms appearance:** As soon as seedlings occurred.

- **Proper time of control:**

When random inspection of the infested plants shows a number of 10 nymphs and adults per one single plant.

- **Guidelines:**

Treatments could be conducted after one month from the cultivation date and when necessary in case of heavy infestation, it should be repeated after 15 days from the date of the first treatment.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	Mrl's values (kg/mg)		
						Codex	EU	EPA Tolerance
2057	Prove plus 3.4% ME	Emamectin benzoate	25cm ³ /100 L.w	Low III	7	-	0.01	-
2675	Thiaclofen 48% SC	Thiacloprid	50cm ³ /100 L.w	Mod II	14	-	0.01	-
2552	Delegate 25% WG	Spinetoram	50gm/feddan	U	1	0.01	0.05	2
1329	Radiant 12% SC	Spinetoram	120cm ³ /feddan	U	7	0.01	0.05	2
1259	Marshal 20% EC	Carbosulfan	200cm ³ /feddan(Black seed)	Mod II	7	-	0.002	-
1281	Marshal 25% WP	Carbosulfan	150gm/feddan (Black seed)	Mod II	10	-	0.002	-

Pest: Fungi**Downy mildew****Symptoms of infections:**

The first symptom observed is the brownish-purple velvet-like sporulation of the pathogen on healthy green leaves. As the disease progresses lesions which are slowly paler than the normal leaf color, enlarge and may girdle the leaf. These lesions progress to a pale yellow followed by brown necrosis resulting in collapse of the leaf tissue.

● Time of symptoms appearance:

At all the growth onion periods according to the environmental conditions.

● Proper time of control: When disease symptoms appear.**Certified Recommendations:**

Reg.No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	Mrl's values (kg/mg)		
						Codex	EU	EPA Tolerance
1713	Acrobate MZ 69% WG	Dimethomorph 9% + Mancozeb 60%	250 gm/100 L.w	U	7	0.6 0.5	0.6 1	0.6 1.5
1192	Amistar Top 32.5% SC	Azoxystrobin 20% + Difenoconazole 12.5%	300cm ³ /feddan	Low III	10	— 0.1	10 0.5	1 0.2
1738	Antracol 70% WG	Propineb	200gm/100 L.w	U	7	0.5	0.05	—
743	Tazolen 72% WP	Mancozeb 64% + Metalaxyl 8%	250 gm/100 L.w	Mod II	8	0.5 2	1 0.5	1.5 3
693	Delcup 23.5% L	Copper sulfate	1Liter/feddan	Mod II	6	—	5	—
763	Ridomil gold plus 71.5% WP	Copper oxychloride 69% + Metalaxyl-M2.5%	200 gm/100 L.w	Mod II	14	— 2	5 0.5	— 3
2250	Sim – mildew 72% WP	Cymoxanil 8% + Mancozeb 64%	150 gm/100 L.w	Mod II	5	— 0.5	0.01 1	0.05 1.5
1214	Champ DP 57.6% WG	Copper hydroxide	180 gm/100 L.w	Low II	3	—	5	—
1271	Folio Gold 53.75% SC	Chlorothalonil 50% + Metalaxyl-M3.79%	1 Liter/feddan	Mod II	14	1.5 2	0.01 0.5	0.5 3
304	Cobox 84% WP	Copper oxychloride	250 gm/100 L.w	Mod II	8	—	5	—
1234	Consento 45% SC	Fenamidone 7.5% + Propamocarb hydrochloride 37.5%	200 cm ³ /100 L.w	Low III	14	0.15 2	0.2 2	0.2 —
1639	Manzitop 70. 56 %WP	Copper oxychlpride 25% + Copper sulfate 25.56% + Mancozeb 20%	225 gm/100 L.w	Low III	10	— — 0.5	5 5 1	— — 1.5
2259	Mouler 69% WP	Dimethomorph 9% + Mancozeb 60%	250 gm/100 L.w	U	21	0.6 0.5	0.6 1	0.6 1.5

White rot

Symptoms of infections:

The first symptoms including yellowing, wilting and dropping of the older leaves. As the fungus invades the root system and basal plate it causes a rot, which eventually results in the collapse of the foliage. A soft rot gradually develops in the bulb and a thick white mycelial growth develops on the base of the bulb and covering by numerous black microsclerotia on the diseased tissues.

This disease usually appears on groups of plants in the field that are often widely spaced. However, large groups of plants may die suddenly when the fungus is abundant in the soil and conditions are favorable for disease.



● Time of symptoms appearance:

Infection occurs over a wide range of the end in December and first of January and continued to the end in February and first of March, then the disease stops at this time due to high temperature.

● Proper time of control:

Immerse the seedlings before planting with fungal disinfectants and then spray the recommended fungicides after six to twelfth weeks of planting.

Certified Recommendations:

Reg.No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	Mrl's values (kg/mg)		
						Codex	EU	EPA Tolerance
1715	Trust 25% EW	Tebuconazole	25cm ³ /1 L.w (Dipping seedling before planting) twice at rate 187.5 cm ³ /1 L.w	U	15	0.15	0.15	0.2
2216	Tebuzyn 25% EW	Tebuconazole	100 cm ³ /1 L.w	U	7	0.15	0.15	0.2
2422	Supercour 25% EC	Tebuconazole	25cm ³ /1 L.w (Dipping seedling before planting) twice at rate 187.5 cm ³ /100 L.w	U	7	0.15	0.15	0.2
360	Folicur 25% EC	Tebuconazole	25cm ³ /1 L.w (Dipping seedling before planting) twice at rate 187.5 cm ³ /100 L.w	U	28	0.15	0.15	0.2
2475	Pharmatebazole 43% SC	Tebuconazole	15cm ³ /1 L.w (Dipping seedling)	Low III	15	0.15	0.15	0.2

Purple blotch

Symptoms of infections:

Symptoms begin as water-soaked lesions that usually have a white center. Edges of lesions become brown to purple and the leaf turns yellow above and below the lesions. With time, dark brown to black concentric rings form throughout the lesions. Similar symptoms occur on seed stalks and infected stalks can collapse resulting in shriveled seed development.

• Time of symptoms appearance:

Infection occurs over a wide range of the end in February and first of March, usually this disease appears with the Downy mildew.



• Proper time of control:

Chemical sprays applied at regular intervals can effectively control leaf blotch and applied spray after 45-60 days or when leaf infection start.

Certified Recommendations:

Reg.No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	Mrl's values (kg/mg)		
						Codex	EU	EPA Tolerance
2380	Vldomax 62.5% WG	Cyprodinil 37.5% + Fludioxonil 25%	50gm/100 L.w	Low III	7	— 0.5	0.3 0.5	0.6 0.5
1630	Microrame 70% SC	Copper oxychloride	250 gm/100 L.w	Mod II	7	— 5	5	—

Sugar beet

Pest: Insects

Sugar beet beetle (*Cassida vittata*)

Symptoms of infestations:

Both larvae and adults cause rounded feeding holes on leaves, these holes form a characteristic “shot-hole” feeding appearance. In severe infestation, leaves showed a ragged appearance and might be completely ruptured.

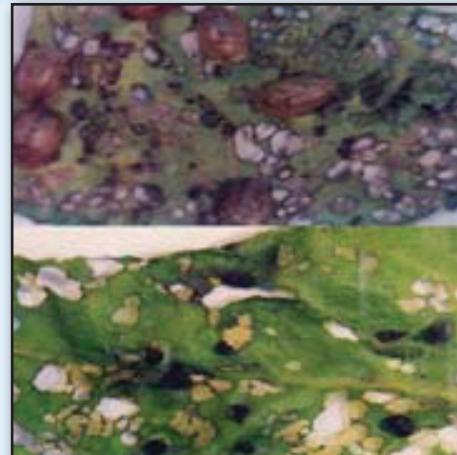
- **Time of symptoms appearance:** At the beginning of March.
- **Proper time of control:**

When mean number of larvae reached 15 larvae per 100 of the randomly inspected plants.

- **Guidelines:** Symptoms of infestations appear early in plantations that do not follow proper crop rotation, severe infestation observed during late plantations, so, it should be considered to conduct a recommended spray for the whole shoot system.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	Mrl's values (kg/mg)		
						Codex	EU	EPA Tolerance
1762	Emamex 5% SC	Emamectin benzoate	150 gm/feddan	Mod II	3	–	0.01	–
1488	Tak 48% EC	Chlorpyrifos	1 Liter/feddan	Mod II	3	0.05	0.05	1
2180	Truefos 48% EC	Chlorpyrifos	1 Liter/feddan	Mod II	7	0.05	0.05	1
1734	Dora 48% EC	Chlorpyrifos	1 Liter/feddan	Mod II	7	0.05	0.05	1
1329	Radiant 12% SC	Spinetoram	100 cm ³ /feddan	U	5	0.01	0.05	0.75
1259	Marshal 20% EC	Carbosulfan	250 cm ³ /feddan	Mod II	7	0.3	0.01	–



Cotton leaf worm (*Spodoptera littoralis*)

Symptoms of infestations:

Newly hatching larvae start feeding on the young foliage, leaves, buds and the stems of the young seedlings in the infested pits, which eventually may cause their death at early stages.

- **Time of symptoms appearance:**

Both two early plantations during August and September showed heavy infestation that causes damage and death of the seedlings after one month from cultivations, implanting the pits is required in such cases, especially when the field is neighboring to cotton plantations.

- **Proper time of control:**

When number of patches reaches 10 patches per 100 randomly selected plants.



● Guidelines:

Only infested pits should be treated with direct spray to the newly hatched larvae.

Certified Recommendations:

Reg.No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	Mrl's values (kg/mg)		
						Codex	EU	EPA Tolerance
2406	Uphold 36% SC	Methoxyfenozide 30% + Spinetoram 6%	125cm ³ /feddan	U	7	0.3 0.01	0.3 0.05	0.5 0.75
1253	Avaunt 15% EC	Indoxacarb	100cm ³ /feddan	Mod II	7	-	0.1	0.3
1394	Equo 10% EC	Novaluron	60 cm ³ /100 L.w	U	3	-	0.01	-
1947	Amazon 5.7% SG	Emamectin benzoate	80 gm/feddan	Mod II	10	-	0.01	-
1948	Opal 5.7% EC	Emamectin benzoate	100cm ³ /feddan	Mod II	7	-	0.01	-
2001	Olax 15% SC	Indoxacarb	105cm ³ /feddan	Mod II	7	-	0.1	0.3
1957	Owner 5% EC	Lufenuron	160 cm ³ /feddan	U	7	-	0.02	-
2466	Indomex 30% WG	Indoxacarb	80 gm/feddan	Mod II	7	-	0.1	0.3
1180	Pleo 50% EC	Pyridalyl	50 cm ³ /100 L.w	U	7	-	0.01	-
1488	Tak 48% EC	Chlorpyrifos	1 Liter/feddan	Mod II	3	0.05	0.05	1
1668	Goldben 90% SP	Methomyl	300 gm/feddan	High Ib	7	-	0.01	0.2
1362	Dynamo 5% SG	Emamectin benzoate	20 gm/100 L.w	Mod II	5	-	0.01	-
1962	Doflox 48% SC	Diflubenzuron	125 cm ³ /feddan	U	7	-	0.05	-
1636	Derakomyl 90% SP	Methomyl	300 gm/feddan	High Ib	7	-	0.01	0.2
1101	Dimilin 48% SC	Diflubenzuron	125 cm ³ /feddan	U	3	-	0.05	-
1212	Radical 0.5% EC	Emamectin benzoate	150 cm ³ /100 L.w	U	7	-	0.01	-
2438	Rano 24% SC	Methoxyfenozide	37.5 cm ³ /100 L.w	U	3	0.3	0.3	0.5
1052	Runner 24% SC	Methoxyfenozide	37.5 cm ³ /100 L.w	U	3	0.3	0.3	0.5
1732	Roxy 10% EC	Novaluron	60 cm ³ /100 L.w	U	7	-	0.01	-
1606	Cymax 5% EC	Lufenuron	160 cm ³ /feddan	U	3	-	0.02	-
1583	Speedo 5.7% WG	Emamectin benzoate	150 gm/feddan	Mod II	3	-	0.01	-
2009	Sokard 15% SC	Indoxacarb	25 cm ³ /100 L.w	Mod II	3	-	0.1	0.3
1420	Challenger Super 24% SC	Chlorfenapyr	50 cm ³ /100 L.w	Mod II	10	-	0.01	-
1597	Flax 15% SC	Indoxacarb	105 cm ³ /feddan	Mod II	3	-	0.1	0.3
2390	Ferari 5% EC	Lufenuron	160 cm ³ /feddan	U	14	-	0.02	-
1098	Virtu 5% SC	Chromafenozide	400 cm ³ /feddan	U	5	-	0.01	-
2493	Castello 10% EC	Lufenuron	80 cm ³ /feddan	U	7	-	0.01	-
2575	Cancun 40% SC	Triflumuron	120 cm ³ /feddan	U	7	-	0.05	-
1325	Killefuron 5% EC	Lufenuron	160 cm ³ /feddan	U	3	-	0.01	-
1404	Coragen 20% SC	Chlorantraniliprole	60 cm ³ /feddan	U	3	-	0.02	-
609	Match 5% EC	Lufenuron	160 cm ³ /feddan	U	14	-	0.01	-
2344	Magic smart 5% EC	Lufenuron	160 cm ³ /feddan	U	7	-	0.02	-
1073	Nomolt 15% SC	Teflubenzuron	50 cm ³ /100 L.w	U	28	-	0.01	-
2815	Kanglaoda 15% SC	Lufenuron	25 cm ³ /100 L.w	Mod II	7	-	0.1	0.3

Sugar beet

Sugar beet leaf fly

Sugar beet leaf fly (*Pegomya hyoscyami*)

Symptoms of infestations:

Larvae burrow between the layers of the leaf eating whole contents except the epidermis. Early damage is a slender, winding overlapping mines in the shape of pale yellow spot, but later these expand and become blotches on the leaves.

- **Time of symptoms appearance:**

During the period from November until April, eggs laid usually in masses on the lower surface of leaves.

- **Proper time of control:**

When infested leaves number reached 40 leaves per 100 of the randomly inspected plants.



Certified Recommendations:

Reg.No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	Mrl's values (kg/mg)		
						Codex	EU	EPA Tolerance
1003	Actara 25% WG	Thiamethoxam	20gm/100 L.w	U	30	-	0.02	-
2546	Imatrade 35% SC	Imidacloprid	300cm ³ /feddan	Mod II	7	-	0.5	0.05
1625	Pelexam 25% WG	Thiamethoxam	125 gm/feddan	U	7	-	0.02	-
1233	Gold 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	7	-	0.01	0.01
2310	Dodi 25% WG	Thiamethoxam	20gm/100 L.w	U	7	-	0.02	-
1447	Relozed 50% EC	Chloryrifos-methyl	1Liter/feddan	U	7	-	0.05	-
300	Sumithion KZ 50%EC	Fenitrothion	1Liter/feddan	Mod II	2	-	0.01	-
1402	Chinook 35% SC	Imidacloprid	300cm ³ /feddan	Mod II	5	-	0.5	0.05
466	Vertimec 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	14	-	0.01	0.01
2341	Mobectar 25% WG	Thiamethoxam	25gm/100 L.w	U	7	-	0.02	-

Pest: Fungi

Cercospora leaf spot

Symptoms of infections:

Small, round grey spots with a red-brown margin appear on old leaves about 2-5 cm diameter. Under humid conditions, tiny black eruptions bearing a grey felt of spores appear in the centre of the spots, especially on the underside of the leaves. With the disease progress the spot are cohere and spread on the leaves which eventually wither and still connected with the crown. Usually core leaves are healthy.

- **Time of symptoms appearance:**

Infection occurs over a wide range of the first in December until the February (from three months until four months) also this disease appears in early stage.



Proper timing of control: When disease symptoms appear.

Guidelines:

Cultivate reliable sources of the resistance to disease from reliable sources and collect the wastes of the previous crop and burn them with incineration, where the causative agent is ill and use an appropriate agricultural cycle in which the cultivation of beets is not repeated in the same land.

Certified Recommendations:

Reg.No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	Mrl's values (kg/mg)		
						Codex	EU	EPA Tolerance
1844	Opera 18.3% SE	Epoxiconazole 5% + Pyraclostrobin 13.3%	500 cm ³ /feddan	U	7	0.2	0.1 0.2	0.02
1419	Opus 12.5% SC	Epoxiconazole	400 cm ³ /feddan	U	5	-	0.1	-
1900	Airone 48.9% WG	Copper hydroxide 24.5% + Copper oxychloride 24.4%	325 gm/100 L.w	Low III	14	- -	5 5	-
947	Eminent 12.5% EW	Tetraconazole	100 cm ³ /100 L.w	U	21	-	0.05	0.05
247	Topsin-M 70% WP	Thiophanate-methyl	200gm/feddan	U	7	-	0.1	0.2
2348	Dragon 12.5% EW	Tetraconazole	100 cm ³ /100 L.w	U	7	-	0.05	0.05
1656	Rush up 12.5% SC	Epoxiconazole	400 cm ³ /feddan	U	7	-	0.1	-
945	Score 25% EC	Difenoconazole	50 cm ³ /100 L.w	U	14	0.2	0.2	0.3
360	Folicur 25% EC	Tebuconazole	50 cm ³ /100 L.w	U	7	-	0.05	0.05
2469	Fenozone 50% EC	Difenoconazole 25% + Propiconazole 25%	30cm ³ /100 L.w	Low III	7	0.2 0.02	0.2 0.15	0.3 0.3
2321	Kasumin 2% SL	Kasugamycin	250 cm ³ /100 L.w	U	7	-	0.01	-
1082	Crunch 25.63% SP	Copper sulfate	500 gm/feddan	Mod II	5	-	5	-
1437	Montoro 30% EC	Difenoconazole 15% + Propiconazole 15%	50 cm ³ /100 L.w	Low III	3	0.2 0.02	0.2 0.15	0.3 0.3
2755	Sequence 30% EC	Difenoconazole 15% + Propiconazole 15%	50 cm ³ /100 L.w	Low III	7	0.2 0.02	0.2 0.02	0.3 0.3
2802	Hurricane 25% EC	Pyraclostrobin	200 cm ³ / feddan	U	7	0.2	0.2	0.02
2811	Tilson max40% ME	Difenoconazole 20% + Propiconazole 20%	40 cm ³ /100 L.w	Low III	7	0.2 0.02	0.2 0.15	0.3 0.3
2715	Tebugreen 50% EC	Tebuconazole	50 gm/100 L.w	Low III	7	-	0.02	-

Pest: Nematode

Root knot nematode

Symptoms of infections:

Root symptoms induced by root-knot cause swollen areas (galls) on the roots of infected plants and tubers, wilt, yellow leaves and dwarf plants.

● Time of symptoms appearance:

Symptoms of the disease appear after a month of cultivation, and increase during in the season.

● Proper time of control:

Treatment after 4 weeks of planting.
● Guidelines: The nematocide uses a spray on the soil immediately before irrigation.





Agricultural Pesticide Committee

Sugar beet

Root knot nematode

Certified Recommendations:

Reg.No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	Mrl's values (kg/mg)		
						Codex	EU	EPA Tolerance
2523	Dellmyer 40% EC	Fenamiphos	3Liter/feddan	High Ib	45	-	0.1	-
1099	Rugby 20% CS	Cadusafos	4.5Liter/feddan	Mod II	70	-	0.01	-
2383	Caerfos 10% GR	Ethoprophos	30 kg/feddan	Mod II	60	-	0.02	-

Clover

Pest: Insects

Cotton leaf worm (*Spodoptera littoralis*)

Symptoms of infestations:

Larvae feed upon vegetative system, while full grown larvae and pupae found around plant roots and in the soil.

- Time of symptoms appearance:

Usually during October.

- Proper time of control:

When symptoms appear especially during early stages of growth.

- Guidelines:

Newly hatched larvae should be the main target of recommended spray.



Certified Recommendations:

Reg.No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	Mrl's values (kg/mg)		
						Codex	EU	EPA Tolerance
1245	Dipel DF 6.4% DF	<i>Bacillus thuringiensis</i>	200gm/feddan	U	-	-	0.01	-
510	Dipel 2 X 6.4% WP	<i>Bacillus thuringiensis</i>	200gm/feddan	U	-	-	0.01	-
2247	Copter 90% SP	Methomyl	300gm/feddan	High Ib	7	-	0.05	-
1018	Lannate 25% WP	Methomyl	200gm/100 L.w	Mod II	3	-	0.05	-

B- Summer field crop pests

Cotton

Pest: Insects

European mole cricket (*Gryllotalpa gryllotalpa*)

Symptoms of infestations:

Infested plants showed a ragged pale appearance and easily can be removed when pulled due to their loose roots, also, existence of tunnels (1-1.5 cm in diameter) on the soil surface especially towards the seedbeds. It is known that sever infections occurred with using composting fertilizers or when fields are near rural villages.

● Time of symptoms appearance:

Infestation occurs any time even at the beginning of sowing seeds in their seedbeds.

● Proper time of control:

As soon as symptoms of infections appears.

● Guidelines:

The insecticide should be applied in the form of toxic baits as following: 15 kg. of crushed corn + 20 liter water + the recommended insecticide, treatment have to be applied during the early morning, while the toxic bait should be applied before dusk settle in the form of continuous dots of the toxic bait formulation.

Certified Recommendations:



Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2088	Acetathrin Alnasr 4.6% EC	Acetamiprid 1.6% + Lambda-Cyhalothrin 3%	250cm ³ /feddan	Mod II	120	0.7 -	0.7 0.2	0.6 0.05
1822	Shot 2.5% EC	Deltamethrin	400cm ³ /feddan	U	120	-	0.02	0.04
1281	Marshal 25% WP	Carbosulfan	1 kg/feddan	Mod II	120	0.05	0.1	-

Black cutworm (*Agrotis ipsilon*)

Symptoms of infestations:

Larvae cut the seedlings at the soil surface level either completely and cause their death or partially feed on the seedlings thus causing their yellowish pale appearance and their wilt, also, presence of small green cuttings indicating the partial feeding upon the seedlings, infestation occurred in some seedbeds in the field and mostly did not overspread in the whole field.



- **Time of symptoms appearance:** During seedlings and before stem hardening.

- **Proper time of control:**

As soon as symptoms of infections appear.

- **Guidelines:**

The insecticide should be applied in the form of toxic baits as following: 25 kg. of crude flour + 20 liter water + the recommended insecticide per feddan (0.42 hectares), the toxic bait should be distributed beside the seedbeds in piles when sun set.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1281	Marshal 25% WP	Carbosulfan	1 kg/feddan (Toxic bait)	Mod II	120	0.05	0.1	-

Cotton seedling thrips (*Thrips tabaci*)

Symptoms of infestations:

Damage appears as a silvery streaking on leaves' blades, as heavy infestation occurred, also, presence of feces on the lower surface of the leaves, in case of sever infestations leaves become curled and finally died.



- **Time of symptoms appearance:**

As soon as seedlings occurred.

- **Proper time of control:**

As soon as symptoms of infestations appears.

- **Guidelines:**

In case of seeds treatment, it should be wetted with water, mixed well with the recommended insecticide, then let to be dried and finally after complete dryness it can be cultivated, otherwise, mechanical mixing with the recommended insecticide could be conducted.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
509	Gaucho 70% WS	Imidacloprid	7 gm/kg seeds	Mod II	-	-	1	6

White fly (*Bemisia tabaci*)

Symptoms of infestations:

Curling and curving of leaves' margins downward, adult insects could be seen easily.

● Time of symptoms appearance:

From Mid-March to Mid-May or from the first half of July until the end of the season.

● Proper time of control:

When number of insects ranges between 7-10 insect per one single plant of randomly selected plants or when the yellow trap catches 50 insect (cumulative number).

● Guidelines:

Spraying treatment should be applied directly on the vegetative system.

**Certified Recommendations:**

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
538	Applaud 25% SC	Buprofezin	600 cm ³ /feddan	U	-	-	0.5	0.35
1536	Engeo 24.7%SC	Lambda-cyhalothrin 10.6% + Thiamethoxam 14.1%	160 cm ³ /feddan	Mod II	-	-	0.2	0.05

Cotton Aphid (*Aphis gossypii*)

Symptoms of infestations:

Curling and curving of leaves' margins downward, presence of sticky honeydew secretions covered with dust, so, encouraging fungal growth, in sever infections, the leaves color turned black.

● Time of symptoms appearance:

From late March to late May and from Mid-June to Mid-August, inspection should be started from the field margins that facing wind or neighboring to other plantations.

● Proper time of control:

As soon as regular inspection indicate infestation symptoms at the field margins or other infested spots, treatments have to include the infested spots and the surrounding plants.





Agricultural Pesticide Committee

Cotton

Aphid

- Guidelines:**

In case of seeds treatment, it should be wetted with water, mixed well with the recommended insecticide, then let to be dried and finally after complete dryness it can be cultivated, otherwise, mechanical mixing with the recommended insecticide could be conducted.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
509	Gaucho 70% WS	Imidacloprid	7gm/kg seeds	Mod II	-	-	1	6
2432	New Cet 20% SP	Acetamiprid	25gm/100 L.w	Mod II	60	0.7	0.7	0.6

Cotton leaf worm (*Spodoptera littoralis*) Newly hatching larvae

Symptoms of infestations:

Presence of moving larvae, leaves erosion especially in the lower surface of the leaf due to feeding of first and second larval instars, in addition, the odor of hatching larvae.

- Time of symptoms appearance:**

Last week of May, beginning of June, infestation prevail according to the time of cultivation and weather conditions.

- Proper time of control:**

At the beginning of hatching where blotches exist.

- Guidelines:**

Bio-insecticides have to be applied when hatching occurred, on the other hand, application of traditional insecticides should be conducted when the color of blotched turned grey.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
580	Agerine 6.5% WP	<i>Bacillus thuringiensis</i>	250 gm/feddan	U	-	-	0.01	-
1387	Biotect 9.4% WP	<i>Bacillus thuringiensis</i>	300 gm/feddan	U	-	-	0.01	-

Cotton leaf worm (*Spodoptera littoralis*) Larval and adult stage

Symptoms of infestations:

Presence of moving larvae, leaves abrasion especially in the lower surface of the leaf due to feeding of first and second larval instars, the third larval instar causes holes less than 1cm. diameter while in case of fourth instar the hole diameter becomes more than 1cm., concerning, the fifth and sixth larval instars, they feed upon the majority of leaves or all leaves.

● Time of symptoms appearance:

During the last week of May, infestation become heavy during June, thus, showing the first generation during this month in cotton plantations.

● Proper time of control:

When number of moths reached 50 captured insect in water traps during continuous three days.

● Guidelines:

Bio-insecticides have to be applied when hatching occurred, on the other hand application of traditional insecticides should be conducted when blotches appear on leaves.

Certified Recommendations:



Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1219	Alsystin 48% SC	Triflumuron	100 cm ³ /feddan	U	60	–	0.2	–
2646	Easo 30% WG	Indoxacarb	60 gm/feddan	Mod II	60	1	1	2
1049	Topron 5% EC	Chlorfluazuron	400 cm ³ /feddan	U	–	–	0.01	–
1962	Doflox 48% SC	Diflubenzuron	125 cm ³ /feddan	U	60	–	0.05	0.2
2035	Deliron El-Nasr 72% EC	Profenofos	750 cm ³ /feddan	Mod II	14	3	3	2
25	Dursban H 48% EC	Chlorpyrifos	1 Liter/feddan	Mod II	30	0.3	0.05	0.2
1226	Dimeuron 10% EC	Hexaflumuron	200 cm ³ /feddan	U	–	–	0.01	–
2202	Dimifuron 25% WP	Diflubenzuron	250 gm/feddan	U	60	–	0.05	0.2
1101	Dimilin 48% SC	Diflubenzuron	125 cm ³ /feddan	U	–	–	0.05	0.2
2390	Ferari 5% EC	Lufenuron	160 cm ³ /feddan	U	60	–	0.02	–
2736	Defincer C 10% SC	Lambda cyhalothrin	50 cm ³ /100 L.w	Mod II	60	–	0.01	0.05
2785	Kafroseil 5% EC	Lufenuron	100 cm ³ / feddan	U	60	–	0.02	–
1379	Caprice 5% EC	Chlorfluazuron	400 cm ³ /feddan	U	60	–	0.01	–
1325	Killefuron 5% EC	Lufenuron	100 cm ³ /feddan	U	60	–	0.02	–
609	Match 5% EC	Lufenuron	100 cm ³ /feddan	U	60	–	0.02	–
2269	Newbenzeron 48% SC	Diflubenzuron	125 cm ³ /feddan	U	60	–	0.05	0.2

Pink and spin bollworms

Pectinophera gossypiella and Earias insulana

Symptoms of infestations:

In early infestation of bollworms it is difficult to detect the infestation in the beginning, but later, presence of exit holes in blooms indicating emergence of larvae to infest another blooms or for pupation, the exit hole has irregular margins and surrounded by feces.


• Time of symptoms appearance:

From beginning of July.

• Proper time of control:

Treatments should be applied at the same day that inspection indicate that 3% of randomly selected plants in 3 feddans were infested or when cartoon traps cached 8 moths per continuous 3 nights. Recommended insecticides should be sprayed at once when newly hatching larvae appear, while treatment can be delayed for one month until complete check conducted to evaluate infestation in case of older larvae(identified by size).

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1593	Agristar 5% EC	Lambda-cyhalothrin	375 cm ³ /feddan	Mod II	30	—	0.2	0.05
1426	Excellent 1.9% EC	Emamectin benzoate	300 cm ³ /feddan	Low III	30	0.002	0.01	0.025
1172	Icton 2.5% EC	Lambda-cyhalothrin	750 cm ³ /feddan	Mod II	21	—	2.0	0.05
1239	Axon 5% EC	Lambda-cyhalothrin	375 cm ³ /feddan	Mod II	—	—	2.0	0.05
1634	Alphazed 10% EC	Alpha-cypermethrin	250 cm ³ /feddan	Mod II	35	—	0.2	0.5
1042	Alphacyper 10% EC	Alpha-cypermethrin	250 cm ³ /feddan	Mod II	—	—	0.2	0.5
1536	Engeo 24.7%SC + Thiamethoxam 14.1%	Lambda-cyhalothrin 10.6%	160 cm ³ /feddan	Mod II	21	— —	0.2 0.02	0.05 0.1
2011	Andraws 5.7% WG	Emamectin benzoate	80 gm/feddan	Mod II	30	0.002	0.01	0.025
2365	Aim El Nasr 10% EC	Alpha-cypermethrin	250 cm ³ /feddan	Mod II	14	—	0.2	0.5
1237	Pasha 1..9% EC	Emamectin benzoate	300 cm ³ /feddan	Low III	30	0.002	0.01	0.025
1109	Affirm 5% SG	Emamectin benzoate	80 gm/feddan	Mod III	30	0.002	0.01	0.025

Cotton

Pink and spin bollworms

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
729	Pestban 48% EC	Chlorpyrifos	1 Liter/feddan	Mod II	13	0.3	0.05	0.2
480	Bulldock 12.5% SC	Beta-cyfluthrin	150 cm ³ /feddan	Mod II	-	0.7	0.02	1
657	Pyriban A 48% EC	Chlorpyrifos	1 Liter/feddan	Mod II	30	0.3	0.05	0.2
758	Pyrifos El Nasr 48% EC	Chlorpyrifos	1 Liter/feddan	Mod II	14	0.3	0.05	0.2
730	Teleton 72% EC	Profenofos	750 cm ³ /feddan	Mod II	14	3	3	2
1734	Dora 48% EC	Chlorpyrifos	1 Liter/feddan	Mod II	30	0.3	0.05	0.2
25	Dursban H 48% EC	Chlorpyrifos	1 Liter/feddan	Mod II	30	0.3	0.05	0.2
751	Dorsil 48% EC	Chlorpyrifos	1 Liter/feddan	Mod II	13	0.3	0.05	0.2
2495	Dolf-X 5% EC	Lambda-cyhalothrin	375 cm ³ /feddan	Mod II	30	-	0.2	0.05
2264	Renocam 48% EC	Chlorpyrifos	1 Liter/feddan	Mod II	30	0.3	0.05	0.2
844	Sparkill 25% EC	Cypermethrin	375 cm ³ /feddan	Mod II	-	-	0.2	0.5
845	Super Alpha 10% EC	Alpha-cypermethrin	250 cm ³ /feddan	Mod II	-	-	0.2	0.5
233	Sumi-alpha (KZ) 5% EC	Esfenvalerate	400 cm ³ /feddan	Mod II	21	0.05	0.05	0.2
601	Sumi-gold KZ 20% EC	Esfenvalerate	150 cm ³ /feddan	Mod II	21	0.05	0.05	0.2
478	Cyperco 20% EC	Cypermethrin	300 cm ³ /feddan	Mod II	-	-	0.2	0.5
2452	Cygron 10% EC	Alpha-cypermethrin 7% + Flufenoxuron 3%	250 cm ³ /feddan	Mod II	30	-	0.2	0.5
822	Sylian 72% EC	Profenofos	750 cm ³ /feddan	Mod II	4	3	3	2
1307	Vantex 6% CS	Gamma-cyhalothrin	100 cm ³ /feddan	Mod II	30	-	0.01	0.05
2196	Katron 5% EC	Lambda-cyhalothrin	375 cm ³ /feddan	Mod II	30	-	0.2	0.05
2022	Karilot El-Nasr 2.5%EC	Lambda-cyhalothrin	750 cm ³ /feddan	Mod II	-	-	0.2	0.05
2188	Cam-uron 10% EC	Hexaflumuron	200 cm ³ /feddan	U	30	-	0.01	-
1317	Camkron 72% EC	Profenofos	750 cm ³ /feddan	Mod II	30	3	3	2
1680	Kafrothrin 2.5% EC	Deltamethrin	350 cm ³ /feddan	U	30	-	0.02	0.04
662	Chlorzan 48% EC	Chlorpyrios	1 Liter/feddan	Mod II	-	0.3	0.05	0.2
1496	Chloro-plus 29% EC	Chlorpyrios 24% + Cypermethrin 5%	750 cm ³ /feddan	Mod II	35	0.3	0.05	0.2
1730	Chlorozed 48% EC	Chlorpyrifos	1 Liter/feddan	Mod II	30	0.3	0.05	0.2
740	Cord 72% EC	Profenofos	750 cm ³ /feddan	Mod II	4	3	3	2
1743	Lamda-cyhalothrin 5% CS	Lambda-cyhalothrin	375 cm ³ /feddan	Mod II	30	-	0.01	0.05
1973	Nasrthrin 25% EC	Cypermethrin	250 cm ³ /feddan	Mod II	14	-	0.2	0.5
2571	Nasrthrin super 10% EC	Cypermethrin	600 cm ³ /feddan	Mod II	14	-	0.2	0.5
589	Neomyl 90% SP	Methomyl	300 g/ feddan	High Ib	14	-	0.2	0.1
742	Helban 48% EC	Chlorpyrifos	1 L/ feddan	Mod II	13	0.3	0.05	0.2



Cotton

Red spider mite

Pest: Mites

Red spider mite (*Tetranychus urticae*)

Symptoms of infestations:

Presence of white spots on the upper surface of the leaves around midrib and extended to outside to spread on the whole leaf, then, followed by purple color on the lower surface of leaves.



- Time of symptoms appearance:

From Mid-March or Mid-May until end of the season.

- Proper time of control:

Started at seedlings stage when random inspection of the total plants showed 3-4 individuals per plant, also, in periods of vegetation growth and fluorescence when mean number of inspected plants showed 4 individuals per leaf per whole randomly inspected plants.

- Guidelines:

Spraying with recommended anti-mites should be applied as fanning spraying technique to make complete coverage treatment for both upper and lower leaves surfaces.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1159	Ortus super 5% EC	Fenpyroximate	50cm ³ /100 L.w	Low III	-	-	0.01	0.1
1020	Bermectine 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	22	0.01	0.01	0.02
1420	Challenger Super 24% SC	Chlorfenapyr	60cm ³ /100 L.w	Mod II	90	-	0.02	-
466	Vertimec 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	-	0.01	0.01	0.02

Pest: Fungi**Damping off and root rot disease****Symptoms of infections:**

Pre emergence damping-off refers to the disease condition in which the seedling is killed between germination and emerge neck from the soil. The death of seedlings resulting shortly after their emergence from the soil is termed post -emergence damping-off the latter is referred to as " post-damping off " when only stem girdling occurs. Rhizoctonia is usually the cause of sore shin. Root-rot may occur any time after germination of the seed but may not become conspicuous or cause severe damage until after the emergence of the seedling.

**● Time of symptoms appearance:**

Symptoms of the disease appear from sowing until month of cultivation, after that the diseases may be increase during in tow month from sowing.

● Proper time of control:

Treatment of seeds before planting with the recommended fungicide.

● Guidelines:

Treatment of seeds before planting, especially in early agriculture and in cold weather, and the neighboring lands for growing rice.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1586	Defender 11.1% SS	Copper sulfate anhydrous	5 gm/kg seeds	Low III	-	-	30	-
70	Rizolex T 50% WP	Thiram 30% + Tolclofos-methyl 20%	3gm/kg seeds	Mod II	-	-	0.1	-
764	Maxim XL 3.5% FS	Fludioxonil 2.5% + Metalaxyl-M 1%	2cm ³ /kg seeds	U	-	0.05	0.01	0.05
1045	Moncut 25% WP	Flutolanil	2gm/kg seeds	U	-	-	0.01	0.02



Rice

Pets: Insects

Rice blood worm (*Chironomus tepperi*)

Symptoms of infestations:

Larvae feed upon saplings causing them to be loose and accumulated above water surface leaving their seedbeds.

- Time of symptoms appearance:

In the first of May especially in field that irrigated with waste water or water mixed with drainage and waste.

- Proper time of control:

When symptoms of infestations appear especially in fields irrigated with waste or highly sanitation water.

- Guidelines:

Recommended insecticide spraying or sowing granules treatment should be applied one day after cultivation and should not be irrigated for one week,taking into account water compensation when irrigated later.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1703	Extra cap 10% GR	Ethoprophos	3kg/feddan	Mod II	100	-	0.02	-
2758	Evercap10% GR	Ethoprophos	3kg/feddan	Mod II	100	-	0.02	-
2670	Virtako 40% WG	Chlorantraniliprole 20% + Thiamethoxam 20%	35 gm/feddan	Low III	50	0.4 - 0.01	0.4 0.05 - 0.01	0.15 - - -
1069	Fenthion 50% EC	Fenitrothion	1.5Liter/feddan	Mod II	15	-	0.05	-
2435	Chlorus 10% GR	Chlorpyrifos	4kg/feddan	Mod II	100	0.5	0.05	-
377	Mocap 10% GR	Ethoprophos	3kg/feddan	Mod II	100	-	0.02	-
1430	Meritan 10% GR	Ethoprophos	3kg/feddan	Mod II	100	-	0.02	-
1495	Nemagold 10% GR	Ethoprophos	3kg/feddan	Mod II	100	-	0.02	-

Pest: Fungi

Rice blast

Symptoms of infections:

Typical leaf lesions during vegetative phase are spindle-shaped with grayish center and brown margins, about 1 x 3 cm in length and width. Lesions may initially appear gray-green and water-soaked with a darker green border and they expand rapidly to several centimeters in length. On susceptible cultivars, older lesions often become light tan in color with brown necrotic borders. Infection may also be found on stem nodes, flag leaves, and auricles. Panicle infection takes place at heading stage. Necks are often infected at the node by the rice blast fungus and infection leads to a condition called rotten neck or neck blast.

● Time of symptoms appearance:

Rice blast infection occurred through all rice growth stages, from nursery to reproductive stage. Blast infection takes place in the season beginning April-May to September-October.

● Proper time of control:

When disease symptoms appear and fungicides can be applied at first appearance of lesions of rice leaves and again at late booting stage with the infection of panicle blast.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1161	Icteem 75% WP	Tricyclazole	100gm/feddan(2 sprays)	Mod II	-	-	0.01	3
197	Beam 75% WP	Tricyclazole	100gm/feddan (2 sprays)	Mod II	35	-	0.01	3
535	Fuji-one 40% EC	Isoprothiolane	400cm ³ / feddan (2 sprays)	Low III	30	-	5	-
1581	Leader 45% EC	Prochloraz	400cm ³ /100 L.w	Low III	30	-	1	-
2157	Nasr Slazole 75% WP	Tricyclazole	100gm/ feddan (2sprayes)	Mod II	30	-	0.01	-



False smut

Symptoms of infections:

The disease infection symptoms are visible on rice panicles 15 days after heading as balls or galls replacing rice grains. At that time, the color of galls changes from silvery white to orange and then to dark olive or black. Individual rice grain transformed into a mass of yellow fruiting bodies. Infected grain has greenish smut balls with a velvety appearance. The smut ball appears small at first and grows gradually up to the size of 1 cm. It is seen in between the hulls and encloses the floral parts. Only few grains in a panicle are usually infected and the rest are normal. Infection usually occurs during the reproductive and ripening stages, infecting a few grains in the panicle and leaving the rest healthy.





Agricultural Pesticide Committee

Rice

False smut

- **Time of symptoms appearance:**

The disease infection appears on rice panicles two weeks after heading

- **Proper time of control:**

Fungicides can be applied at late booting stage, one week before heading.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
602	Copral 84.3% WP	Copper oxychloride	1kg/feddan	Mod II	16	-	10	-

Pest: Algae

Algae

Symptoms of infections:

Prevalent in the water that large slabs of algae cover the surface, causing smothering the emerging rice crop.

- **Proper time of control:**

After 10 days from rice seedling and when algae appearance.

- **Guidelines:**

It should be leaving the rice field dry two days before treatment and repeat the same treatment two or three times until disappeared algae.

Certified Recommendations:



Pest: Insects

Corn

Black cutworm (*Agrotis ipsilon*)

Symptoms of infestations:

Larvae attack seedlings of maize in the early stages of growth.

Complete cut of the small seedling at the level of the surface of the soil or slightly higher, leading to the wilting of the infested plants and then death and fall on the ground separated from their roots.

When searching under the infested plants, black curved larvae can be easily detected.

- **Time of symptoms appearance:**

In the early growth stages and seedlings.



● Guidelines:

Care of agricultural practices is necessary, such as, plowing, hoeing and removing weeds, you should not overuse organic fertilization, usage of light traps is necessary.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
844	Sparkill 25% EC	Cypermethrin	250cm ³ /feddan (poisoning bait)	Mod II	6	-	0.3	0.05
1705	Fury 10% EW	Zeta-cypermethrin	100cm ³ /feddan (poisoning bait)	Mod II	90	-	0.3	0.05
1799	Kythrin 50% EC	Cypermethrin	100cm ³ /feddan (poisoning bait)	Mod II	90	-	0.3	0.05

Corn Leaf Aphid
(*Rhopalosiphum maidis*)

Symptoms of infestations:

Only winter plantations are infested, while summer plantations avoid the infestation. Corn aphid attack plants after 40 days, winged individuals showed inside plant vegetation attacking the tassels and terminal leaves, on the course of days, in case of oat aphid, infections comes down to the middle nodes of the plant where it attack ears and their wings, insect exuvia and honeydew secretions cause fungal growth and stick the tassels with each other resulting in pollination reduction and reducing photosynthesis. Cotton aphid are include among corn aphid communities.



● Time of symptoms appearance:

During July, August and September especially in winter plantations after 40 days from the date of cultivation.

● Proper time of control:

When random inspection record presence of 10-15 wigless individual per 10 plants before fluorescence.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
152	Malason Cheminova 57% EC	Malathion	150cm ³ /100 L.w	Low III	3	0.05	8	8

Cotton leaf worm (*Spodoptera littoralis*)

Symptoms of infestations:

Existence of blotches on leaves' blades, larvae in their different stages, feeding patches on plant leaves and finally presence of larvae feces at the base of leaves.

- **Time of symptoms appearance:**

After 30-40 days from the date of cultivation

- **Proper time of control:**

When 10% of the inspected plants showed infestation and existence of at least one larvae per plant.

- **Guidelines:**

Corn field are severely infested with aphid especially in case of neighboring fields of vegetables and clover during August and September.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1668	Goldben 90% SP	Methomyl	300gm/feddan	High Ib	7	0.02	0.01	0.1
1013	Pilarmate 90% SP	Methomyl	300gm/feddan	High Ib	18	0.02	0.01	0.1

European corn borers (*Ostrinia nubilalis*)

Symptoms of infestations:

Presence of blotches on the lower surface of the plant leaves, presence of holes on the stem indicating larval entrance and slope of the tassels due to partial fraction.

- **Time of symptoms appearance:**

After 45 days from the date of cultivation.

- **Proper time of control:**

When number of randomly selected blotches on the lower surface of leaves reached 25 per 100 plant

- **Guidelines:**

For protection against moths attack, cultivars have to follow the instruction for the recommended cultivation dates (15 May to 15 June approximately). Also, complete coverage spray treatment with recommended insecticide should be applied to cover both surface of the leaves.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
729	Pestban 48% EC	Chlorpyrifos	1Liter/feddan	Mod II	12	0.05	0.05	0.05
1115	Pychlorex 48% EC	Chlorpyrifos	1.25Liter/feddan	Mod II	25	0.05	0.05	0.05
655	Tafaban 48% EC	Chlorpyrifos	1Liter/feddan	Mod II	10	0.05	0.05	0.05
1388	Takumi 20% WG	Flubendiamide	100gm/feddan	U	3	0.02	0.02	0.03
2460	Tempo-XL 30% EC	Chlorpyrifos 25% + Lufenuron 5%	500cm ³ /feddan	Mod II	60	0.05 – 0.05	0.05 – 0.05	0.05 – –
742	Helban 48% EC	Chlorpyrifos	1Liter/feddan	Mod II	10	0.05	0.05	0.05

Pest: Fungi**Root rot****Symptoms of infections:**

Include seed rot and damping-off of seedlings, as well as stunting, yellowing, and death of older plants. Elongated, sunken, red-brown lesions develop on roots and lower stems at or below the soil surface. Infected plants may be stunted with yellow.

• Time of symptoms appearance:

Symptoms of the disease appear from sowing stage.

• Proper time of control: Treatment of seeds before sowing.**Certified Recommendations:**

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2931	Drift 11% FS	Azoxystrobin 6.6% + Fludioxonil 1.1% + Metalaxyl-M 3.3%	1.5 cm ³ /kg seeds	Low III	90	0.02 – –	0.02 0.01 0.02	0.05 0.02 –
2149	Eleven 10% FS	Fludioxonil 4% + Tebuconazole 6%	0.8 cm ³ /kg seeds	U	90	– –	0.01 0.02	– 0.05
2489	Premis Ultra 2.5% FS	Triticonazole	2.5 cm ³ /kg seeds	U	60	–	0.01	0.01
1562	Tendro 40% FS	Thiram 20% + Carboxin 20%	3.5 cm ³ /kg seeds	Mod II	90	2 –	0.05 0.01	– 0.2
1586	Defender 11.1% SS	Copper sulfate anhydrous	5gm/kg seeds	Low III	90	–	10	–
1105	Flowsan 42.7% FS	Thiram	3 cm ³ /kg seeds	Mod II	90	2	0.05	–
2091	Vincit 2.5% SC	Flutriafol	4 cm ³ /kg seeds	U	90	0.01	0.01	0.01
1534	Metazed 38% SC	Thiram 30% + Metalaxyl 8%	3 cm ³ /kg seeds	Mod II	90	2 –	0.02 0.02	– 0.1
1871	Hattric 6% FS	Tebuconazole	1 cm ³ /kg seeds	U	90	–	0.02	0.05

Sugar cane

Pest: Insects

Sugar cane grubs

Symptoms of infestations:

Yellowish and wilting of the plant leaves which may cause dying of the growing plant apex and the whole plant.

- **Proper time of control:** when symptoms appear.
- **Guidelines:**

Splitting and making crevices in the cultivated lines and collecting the grubs from the soil as possible, in sever infestation sowing the recommended insecticides in the crevices before irrigation is necessary.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2141	Admafin 10% EC	Pyriproxyfen	50 cm ³ /100 L.w	U	10	-	0.05	1.1
2597	Impok 20% SP	Acetamiprid	35 gm/100 L.w	Mod II	10	-	0.01	-
1511	Admiral 10% EW	Pyriproxyfen	50 cm ³ /100 L.w	U	10	-	0.05	1.1
2364	Grendo 10% EC	Pyriproxyfen	50 cm ³ /100 L.w	U	7	-	0.05	1.1
1963	Glister 10% EC	Pyriproxyfen	50 cm ³ /100 L.w	U	7	-	0.05	1.1
585	Malatox 57% EC	Malathion	250 cm ³ /100 L.w	Low III	12	-	0.02	-
2465	Mospilan 20% SG	Acetamiprid	25 gm/100 L.w	Mod II	10	-	0.01	-
959	Mosiplan 20% SP	Acetamiprid	30 gm/100 L.w	Mod II	10	-	0.01	-
2509	Muligan 10% EC	Pyriproxyfen	50 cm ³ /100 L.w	U	7	-	0.05	1.1

Pest: Fungi

Sugar cane smut

Symptoms of infections:

Infected plants were elongated, thin, have tall nods, plant end up tillering much more than normal appear more grass-like. Leaves are more slender and narrow than healthy plants. Tillering plants and buds were grown rapidly and the terminal bud of the stalk produced a long (whip) like structure due to hormone disorder. The black smut whips never branched and talk a spiral form, covered by silver membrane and fully by reproductive black spores of smut which were transfer to gray and finally become black and then the whips were ruptures and infect nearby plants and infest the soil.



- **Time of symptoms appearance:**

Early infection begin after 3-4 months of planting, where new plants and Tiller plants.

- **Proper time of control:**

Seed buds treatment before planting and when the disease appear in the field or nearby fields

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2918	Trolls 25% EW	Tebuconazole	75 cm ³ / 100 L.w	U	75			

Peanut

Pest: mites

Red spider mite (*Tetranychus urticae*)

Symptoms of infections:

Presence of red spider mites on the lower surface of the leaves sucking the plant juice thus causing small rounded yellow patches turned into brown color in sever infections, mites individuals could be seen at the lower surface of the plant leaves with naked eye examination.

- **Time of symptoms appearance:**

From seedling until harvest time.

- **Proper time of control:**

When 5 moving individuals recorded on the lower surface of the compound leaf.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
976	Abamax 1.8% EC	Abamectin	40 cm ³ / 100 L.w	Mod II	17	0.005	0.01	0.01

Pest: Fungi

Damping off and root rot disease

Symptoms of infections:

Failure of seedlings to emerge from the soil (pre-emergence damping-off) or sudden wilt and death of seedlings shortly after emergence (post-emergence damping-off) are symptoms of seedling disease. A reddish brown to black decay of the roots, or the stem near the soil line are commonly observed on infected plants.

- **Time of symptoms appearance:** After seedling appeared above the soil surface
- **Proper time of control:** Treatment of seeds before planting with the recommended fungicide.

Guidelines:

When using seeds, use chlorine-free water such as canal water or an artesian well. If tap water is used, collect it before night and leave the water in a large container to ensure chlorine volatilization, and use clean utensils during use.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						CodeX	EU	EPA Tolerance
2114	Teramac 50% WP	Tolclofos-methyl	3gm/kg seeds	U	100	–	0.01	–
70	Rizolx – T50% WP	Thiram 30% + Tolclofos-methyl 20%	3gm/kg seeds	Mod II	–	0.1	0.1	–
1490	Rizomate 50% WP	Tolclofos-methyl	3gm/kg seeds	U	70	–	0.01	–
1119	No-Blight 50% WP	Thiram	4 gm/kg seeds	Mod II	153	0.1	0.1	–
2847	Deltalex 50% WP	Tolclofos-methyl	3 gm/kg seeds	U	100	–	0.01	–



Leaf spot

Symptoms of infections:

The first symptoms are small, pale yellow or blanched spots. The brown spots often are surrounded by a yellow halo; spots may expand or grow together. These soon enlarge and become tan to black.

- **Time of symptoms appearance:** Symptoms of the disease appear after a tow month of cultivation.
- **Proper time of control:** When disease symptoms appear.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2711	Brock super 50% EW	Difenconazole 25% + Propiconazole 25%	50 cm ³ / 100 L.w	Low III	50	0.01 -	0.05 0.01	- 0.2
1958	Emerald NRG 18%SC	Azoxystrobin 10% + Tetraconazole 8%	70 cm ³ / 100 L.w	U	7	0.2 0.15	0.2 0.02	0.2 0.03
2583	Rayok 25% EC	Difenconazole	50 cm ³ / 100 L.w	U	10	0.01	0.05	-
945	Score 25% EC	Difenconazole	50 cm ³ / 100 L.w	U	22	0.01	0.05	-
1501	Curve 25% EC	Difenconazole	50 cm ³ / 100 L.w	U	7	0.01	0.05	-

Pods rot

Symptoms of infections:

Pods show varying degrees of discoloration, from slight superficial brown and black spots to complete pod discolouration. Partial or complete rotting of pods and kernels may occur. This may be a dry rot to a mushy, wet rot.



● Time of symptoms appearance:

Symptoms of the disease appear in field before harvesting and develop in the store, especially when there are poor ventilation conditions in warehouses, containers and vessels during the shipping and export process.

● Proper time of control:

Soil treatment with the recommended fungicide after 50 days from planting.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1376	Balear 50% SC	Chlorothalonil	7.5 Liter/feddan	U	10	0.1	0.1	0.3
1045	Moncut 25% WP	Flutolanil	400 gm/feddan	U	40	-	0.01	0.5

Peanut root-knot nematode

Symptoms of infections:

Non-specific above-ground symptoms include patchy, stunted growth; discoloration and leaf chlorosis. The peanut root knot nematode is noted particularly for its production of galls on peanut pods. These galls also occur on peanut pegs and roots. When severe, the galls will impart a black, warty appearance to pods.



- **Time of symptoms appearance:**

Flowering stage, Fruiting stage, Seedling stage, Vegetative growing stage

- **Time of disease control:**

Nematicides are usually used as a soil treatment before planting.

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2739	Nemazone 10% GR	Fosthiazate	12.5 Kg/ feddan	Mod II	90	-	0.05	-

Soya bean

Pest: Insects

Black cutworm (*Agrotis ipsilon*)

Symptoms of infestations:

Larvae cut the seedlings at the soil surface level either completely and cause their death or partially feed on the seedlings thus causing their yellowish pale appearance and their wilt, also, presence of small green cuttings indicating the partial feeding upon the seedlings, infestation occurred in some seedbeds in the field and mostly did not overspread in the whole field.



- **Time of symptoms appearance:**

During seedlings and before stem hardening.

- **Proper time of control:**

As soon as symptoms of infections appear.

- **Guidelines:**

The insecticide should be applied in the form of toxic baits as following: 25 kg. of crude flour + 20 liter water + the recommended insecticide per feddan (0.42 hectares), the toxic bait should be distributed beside the seedbeds in piles when sun set.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
655	Tafaban 48% EC	Chlorpyrifos	1 Liter/feddan (toxic bait)	M0d II	14	0.1	0.05	0.3

**Cotton leaf worm
(*Spodoptera littoralis*)**

Symptoms of infestations:

Presence of blotches and hatching larvae start feeding on the young foliage, leaves and buds.

● Time of symptoms appearance:

Infestation commencement during second half of July and shows a peak in August, plants infested mostly during late stages of growth.

● Proper time of control:

When 25% of the vegetation system was attacked and consumed.

● Guidelines:

Spraying should be homogenous to cover lower surfaces of leaves and repeated when necessary.

**Certified Recommendations:**

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2031	Smayel 90% SP	Methomyl	300gm/feddan	High Ib	15	0.2	0.2	0.2
1198	Methocam 90% SP	Methomyl	300gm/feddan	High Ib	14	0.2	0.2	0.2



Soya bean

Red spider mite

Pest: Mites

Red spider mite (*Tetranychus urticae*)

Symptoms of infestations:

Presence of red spider mites on the lower surface of the leaves sucking the plant juice thus causing small rounded yellow patches turned into brown color, in sever infections, leaves completely wilted and died.

- **Time of symptoms appearance:**

From seedling until harvest time.

- **Proper time of control:**

When 5 moving individuals recorded as mean number per leaf for the randomly infested leaves.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1635	Akromax 1.8% EC	Abamectin	40 cm ³ / 100 L.w	Mod II	10	0.005	0.01	-
2369	Anti-Mite 40% WP	Pyridaben	50gm/100 L.w	Low III	10	-	0.05	-
514	Ortus 5% SC	Fenpyroximate	200cm ³ /feddan	Low III	12	-	0.01	-
1767	Tiger 97% EC	Mineral oil	4Liter/feddan	U	10	-	0.01	-
1233	Gold 1.8% EC	Abamectin	40 cm ³ / 100 L.w	Mod II	10	0.005	0.01	-
2073	Danisaraba 20% SC	Cyflumetofen	30 cm ³ / 100 L.w	U	7	-	-	-
1039	Diver 97% EC	Mineral oil	4Liter/feddan	U	10	-	0.01	-
553	Sanmite 20% WP	Pyridaben	100gm/100 L.w	Low III	15	-	0.05	-
237	Super misrona 94% EC	Mineral oil	1Liter/100 L.w	U	12	-	0.01	-
1643	Help star 20% EC	Pyridaben	100 cm ³ / 100 L.w	Low III	10	-	0.05	-
2741	Vinarest 20% WP	Pyridaben	100gm/100 L.w	Low III	15	-	0.05	-

II Vegetables crop pests

Tomatoes

Pest: Insects

European mole cricket (*Gryllotalpa gryllotalpa*)

Symptoms of infestations:

The European mole cricket feed upon the fine plant roots underground, infested plants showed a ragged pale appearance and easily can be removed when pulled due to their loose roots, also, existence of tunnels (1-1.5 cm in diameter) on the soil surface especially towards the seedbeds. It is known that severe infections occurred with using composting fertilizers or when fields are near rural villages.



● Time of symptoms appearance:

After shoot transportation to be implanted in the permanent soil.

● Proper time of control:

After irrigation, when tunnels seen on soil surface.

● Guidelines:

The insecticide should be applied in the form of toxic baits as following: 15 kg. of crushed corn + 20 liter water + the recommended insecticide, treatment have to be applied during the early morning, while the toxic bait should be applied before dusk settle in the form of continuous dots of the toxic bait formulation.

Certified Recommendations:

Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1313	Chlorfan 48% EC	Chlorpyrifos	1 Liter/feddan (toxic bait)	Mod II	-	-	0.01	-

Black cutworm *(Agrotis ipsilon)*

Symptoms of infestations:

Severe infestation occurred during winter and spring plantations, larvae cut the seedlings at the soil surface level either completely and cause their death or partially feeding on the seedlings thus causing their yellowish pale appearance and their wilt, also, presence of small green cuttings indicating the partial feeding upon the seedlings, curved larvae could be seen at the base of infested plants underground.



- **Timing of symptoms appearance:**

As soon as symptoms appear.

- **Proper timing of control:**

Just when symptoms of infections could be seen.

- **Guidelines:**

The insecticide should be applied in the form of toxic baits as following: 25 kg. of crude flour + 20 liter water + the recommended insecticide per feddan (0.42 hectares), the toxic bait should be distributed beside the seedbeds in piles when sun set.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
657	Pyriban A 48% EC	Chlorpyrifos	1 Liter/feddan (toxic bait)	Mod II	60	–	0.01	–
692	Terraguard 48% EC	Chlorpyrifos	1.25 Liter/feddan (toxic bait)	Mod II	30	–	0.01	–
25	Dursban H 48% EC	Chlorpyrifos	1 Liter/feddan (toxic bait)	Mod II	–	–	0.01	–
2673	Sparkill H 10% EC	Cypermethrin	600 cm ³ /feddan (toxic bait)	Mod II	60	0.2	0.5	0.2
845	Super Alpha 10% EC	Alpha-cypermethrin	250 cm ³ /feddan (toxic bait)	Mod II	60	0.2	0.5	0.2
2588	Foil 48% EC	Chlorpyrifos	1 Liter/feddan (toxic bait)	Mod II	60	–	0.01	–
2505	Febocroun 72% EC	Profenofos	750 cm ³ /feddan (toxic bait)	Mod II	60	10	10	–
1680	Kafrothrin 2.5% EC	Deltamethrin	250 cm ³ /feddan (toxic bait)	U	60	0.3	0.07	0.2
740	Cord 72% EC	Profenofos	750 cm ³ /feddan (toxic bait)	Mod II	60	10	10	–
2722	Gentrafos 48% EC	Chlorpyrifos	1 Liter/feddan (toxic bait)	Mod II	60	–	0.01	–
2879	Eitan Do 50% EC	Chlorpyrifos	1 Liter/feddan (toxic bait)	Mod II	45	–	0.01	–

White fly (*Bemesia tabaci*)

Symptoms of infestations:

Curling and curving of leaves with wilting and yellowish color in case of sever infections, when population increased, a sticky honeydew formed and serve as a media for mold fungi, after 20-30 days from the date of transportation to implant in permanent soil, symptoms of TYLC virus disease may appear causing curling and curving of leaves, plants dwarfism, malformations and great loss of flowering as well loss in the crop yield.



● Time of symptoms appearance:

From the beginning of May until late November

● Proper time of control:

A continuous program for control should be applied especially aftersiblings' transportation to permanent soil on the course of 45 days at least.

● Guidelines:

Spraying treatment should be applied directly on the vegetative system.

Certified Recommendations:

Reg. No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1820	Agri Flex 18.56% SC	Abamectin 3.32% + Thiamethoxam 15.24%	240cm ³ /feddan	Mod II	7	0.01 0.5	0.09 0.2	0.02 0.25
2472	Ace El-Nasr 20% SP	Acetamiprid	25gm/100 L.w	Mod II	7	0.2	0.5	0.2
2412	Aceta X 20% SP	Acetamiprid	25gm/100 L.w	Mod II	7	0.2	0.5	0.2
1311	Acetamore 20% SP	Acetamiprid	25gm/100 L.w	Mod II	10	0.2	0.5	0.2
957	Achook 0.15% EC	Azadirachtin	750cm ³ /feddan	U	1	–	1	–
555	Evisect S 50% SP	Thiocyclam hydrogen oxalate	500gm/feddan	Mod II	5	–	0.01	–
1991	Avenue 70% WG	Imidacloprid	120gm/feddan	Mod II	7	0.5	0.5	1
2561	Alphador 70% WG	Imidacloprid	200gm/feddan	Mod II	8	0.5	0.5	1
1003	Actara 25% WG	Thiamethoxam (Soil treatment)	350gm/feddan	U	6	0.5	0.2	0.25
2548	Explan 20% SP	Acetamiprid	25gm/100 L.w	Mod II	10	0.2	0.5	0.2
1434	Imidamex 70% WG	Imidacloprid	30gm/100 L.w	Mod II	10	0.5	0.5	1
2440	Infinity 5% EC	Etofenprox	175cm ³ /100 L.w	U	5	–	1	–
1999	Odax 70% SP	Acetamiprid	50gm/feddan	Mod II	7	0.2	0.5	0.2
1091	Oshin 20% SG	Dinotefuran	125gm/100 L.w	U	1	0.5	0.01	0.7
2458	Oikos 3.2% EC	Azadirachtin	100cm ³ /100 L.w	U	1	–	1	–
1263	Imaxi 35% SC	Imidacloprid	75cm ³ /100 L.w	Mod II	7	0.5	0.5	1
1339	Imidazed 20% SC	Imidacloprid	125cm ³ /100 L.w	Mod II	8	0.5	0.5	1
1688	Primo 10% SC	Etofenprox	187.5cm ³ /feddan	U	7	–	1	–
2813	Acetakill 20% SP	Acetamiprid	25gm/100 L.w	Mod II	7	0.2	0.5	0.2
2746	Forteen 20% WG	Dinotefuran	25gm/100 L.w	U	3	0.5	01..0	–
2880	Hi pixy 70% WG	Imidacloprid	120gm/feddan	Mod II	7	0.5	0.5	1



Agricultural Pesticide Committee

Tomatoes

White fly

Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2895	Mosprid 20% SP	Acetamiprid	25gm/100 L.w	Mod II	7	0.2	0.5	0.2
2907	Suprid 20% SP	Acetamiprid	25gm/100 L.w	Mod II	7	0.2	0.5	0.2
1148	Best 25% WP	Imidacloprid	75gm/100 L.w	Mod II	7	0.5	0.5	1
1028	Pestidor 25% WP	Imidacloprid	100 gm/100 L.w	Mod II	30	0.5	0.5	1
2379	Bel Green 20% SP	Acetamiprid	25gm/100 L.w	Mod II	7	0.2	0.5	0.2
2618	Planta 10% EC	Pyriproxyfen	75cm ³ /100 L.w	U	7	-	1	0.8
1663	Blanch 48% SC	Thiacloprid	120cm ³ /feddan	Mod II	7	0.5	0.5	-
2385	Benevia 10% OD	Cyantraniliprole	75cm ³ /100 L.w	U	3	-	1	2
2056	Pilote 25% WG	Thiamethoxam	80gm/feddan	U	7	0.5	0.2	0.25
1625	Pelexam 25% WG	Thiamethoxam	30gm/100 L.w	U	7	0.5	0.2	0.25
1235	Chess 50% WG	Pymetrozine	240gm/feddan	U	3	-	0.5	0.2
2006	Telfast 20% SP	Acetamiprid	25gm/100 L.w	Mod II	10	0.2	0.5	0.2
2545	Tolan 20% SP	Acetamiprid	25gm/100 L.w	Mod II	10	0.2	0.5	0.2
2092	Gate Fast 12% SC	Abamectin 2% + Thiamethoxam 10%	200cm ³ /feddan	Mod II	8	0.01 0.5	0.09 0.2	0.02 0.25
1928	Router - X 70% WG	Imidacloprid	30gm/100 L.w	Mod II	6	0.5	0.5	1
1832	Renova 25% WG	Thiamethoxam	20gm/100 L.w	U	7	0.5	0.2	0.25
2223	Cezamac 20% SP	Acetamiprid	25gm/100 L.w	Mod II	7	0.2	0.5	0.2
1221	Volley 20% SP	Acetamiprid	25gm/100 L.w	Mod II	10	0.2	0.5	0.2
2095	V-Citro 35% SC	Imidacloprid	50cm ³ /100 L.w	Mod II	7	0.5	0.5	1
2611	Venol 20% SP	Acetamiprid	25gm/100 L.w	Mod II	10	0.2	0.5	0.2
2621	Vetara 25% WG	Thiamethoxam	30gm/100 L.w	U	7	0.5	0.2	0.25
1149	Calypso 48% EC	Thiacloprid	120cm ³ /feddan	Mod II	4	0.5	0.5	-
1776	Kazaplan 20% SP	Acetamiprid	25gm/100 L.w	Mod II	7	0.2	0.5	0.2
2352	Closer 24% SC	Sulfoxaflor	100cm ³ /feddan	U	7	-	0.3	0.05
2236	Cobra 20% SL	Acetamiprid	100cm ³ /feddan	Mod II	7	0.2	0.5	0.2
1267	Commando 35% SC	Imidacloprid	75cm ³ /100 L.w	Mod II	5	0.5	0.5	1
1577	Condoprid 35% SC	Imidacloprid	120cm ³ /feddan	Mod II	7	0.5	0.5	1
1486	Confidor 20% OD	Imidacloprid	50cm ³ /100 L.w	Low III	7	0.5	0.5	1
1647	Lex 25% WG	Thiamethoxam	20gm/100 L.w	U	7	0.5	0.2	0.25
2640	Magknock 70% WG	Imidacloprid	70gm/100 L.w	Mod II	7	0.5	0.5	1
2465	Mospilan 20% SG	Acetamiprid	25gm/100 L.w	Mod II	10	0.2	0.5	0.2
959	Mosiplan 20% SP	Acetamiprid	25gm/100 L.w	Mod II	1	0.2	0.5	0.2
1757	Movento 10% SC	Spirotetramat	75cm ³ /100 L.w	U	7	-	2	2.5
2662	Merk Super 70% WG	Imidacloprid	30gm/100 L.w	Mod II	7	0.5	0.5	1
2688	Medal 25% WG	Thiamethoxam	20gm/100 L.w	U	7	0.5	0.2	0.25
2235	Warrant 70% WG	Imidacloprid	30gm/100 L.w	Mod II	7	0.5	0.5	1
2414	Yak 35% SC	Imidacloprid	75cm ³ /100 L.w	Mod II	3	0.5	0.5	1

Aphid (*Aphid spp.*)

Symptoms of infestations:

Aphid can cover large sections of growing plants, typically starting at the tip of the plant. Severe infections and high insect population resulted in honeydew secretions which encourage fungal growth called sooty mold, causing terminal leaves to appear black.



- **Time of symptoms appearance:**

From end of March until May and during August and September

- **Proper time of control:**

When randomly inspected plants record 1-2 individual ones per inspected plant.

- **Guidelines:**

Early detection of aphid infestation is very important for early treatment of the infested spots before aphid spreading because a majority of plant viruses are transmitted between host plants resulting in great loss of their yield, so, regular inspection is a crucial factor as soon as seedlings occurred to treat the infested spots immediately with the recommended insecticides before aphid spreading, complete coverage treatment is necessary.

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2506	Potegon 20% SP	Acetamiprid	25gm/100 L.w	Mod II	10	0.2	0.5	0.2
1221	Volley 20% SP	Acetamiprid	25gm/100 L.w	Mod II	10	0.2	0.5	0.2
1066	Confidate 35% SC	Imidacloprid	75cm ³ /100 L.w	Mod II	3	0.5	0.5	1

Tomato leaf miner (*Tuta absoluta*)

Symptoms of infestations:

Larvae make tunnels in leaves and fruits as well, pupation takes place in the soil.



- **Time of symptoms appearance:**

During summer plantations in the first of April and during autumn plantation starting from September.

- **Proper time of control:**

When number of tunnels reached 2-3 tunnels per one leaf of the randomly inspected plants.

- **Guidelines:**

Recommended insecticides spray has to cover the whole vegetative system.



Agricultural Pesticide Committee

Tomatoes

Tomato leaf miner

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1364	Agree 50% WG	<i>Bacillus Thuringiensis</i>	500gm/feddan	U	-	-	0.01	-
1253	Avaunt 15% EC	Indoxacarb	100cm ³ /feddan	Mod II	7	0.5	0.5	0.5
1109	Affirm 5% SG	Emamectin benzoate	120gm/feddan	Mod II	5	0.007	0.02	0.02
1426	Excellent 1.9% EC	Emamectin benzoate	300cm ³ /feddan	Low III	5	0.007	0.02	0.02
1394	Equo 10% EC	Novaluron	40cm ³ /100 L.w	U	3	-	1	1
1829	Alverde 24% SC	Metaflumizone	100cm ³ /100 L.w	U	7	0.6	0.6	0.6
2480	Indoprem 30% WG	Indoxacarb	15gm/100 L.w	Mod II	7	0.5	0.5	0.5
1884	Emacit 5% SG	Emamectin benzoate	120gm/feddan	Mod II	7	0.007	0.02	0.02
2639	Voliam Flexi 30% SC	Chlorantraniliprole 10% + Thiamethoxam 20%	120cm ³ /feddan	U	7	- 0.5	0.6 0.2	1.4 0.25
1753	Voliam Flexi 40%WG	Chlorantraniliprole20% + Thiamethoxam 20%	80gm/feddan	U	10	- 0.5	0.6 0.2	1.4 0.25
1388	Takumi 20% WG	Flubendiamide	50gm/100 L.w	U	7	2	0.2	-
1910	Trigard 75% WP	Cyromazine	50gm/100 L.w	U	7	-	0.6	0.5
2396	Twistrid 40% SP	Acetamiprid	20gm/100 L.w	Mod II	7	0.2	0.5	0.2
1245	Dipel DF 6.4% DF	<i>Bacillus Thuringiensis</i>	400gm/feddan	U	-	-	0.01	-
1226	Dimeuron10% EC	Hexaflumuron	200cm ³ /feddan	U	7	-	0.01	-
1329	Radiant 12% SC	Spinetoram	100cm ³ /feddan	U	5	0.06	0.5	0.4
2188	Cam-uron 10% EC	Hexaflumuron	200cm ³ /feddan	U	15	-	0.01	-
1404	Coragen 20% SC	Chlorantraniliprole	60cm ³ /feddan	U	7	-	0.6	1.4
2325	Livo Chem 5% EC	Lufenuron	80cm ³ /100 L.w	U	7	0.4	0.5	-

Cotton leaf worm (*Spodoptera littoralis*)

Symptoms of infestations:

Newly hatching larvae start feeding on the lower surface in rounded areas, in case of older larvae, direct chewing of leaves causing holes in leaves is a clear symptom and in some cases it attacks fruits and the apex of the plant.

- **Time of symptoms appearance:**

All year round in implant soil and in permanent soil as well.

- **Proper time of control:**

As soon as symptoms appear.

- **Guidelines:**

Treatment with recommended insecticide should be applied after irrigation, complete coverage treatment with insecticide spray have to be accomplished.



Certified Recommendations:

Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2689	Absolin 5% ME	Emamectin benzoate	75cm ³ /feddan	Mod II	5	0.007	0.02	0.02
2406	Uphold 36% SC	Methoxyfenozide 30% + Spinetoram 6%	125cm ³ /feddan	U	7	2 0.06	2 0.5	2 0.4
1109	Affirm 5% SG	Emamectin benzoate	60gm/feddan	Mod II	3	0.007	0.02	0.02
1426	Excellent 1.9% EC	Emamectin benzoate	250cm ³ /feddan	Low III	5	0.007	0.02	0.02
2549	Alfanet 20% SL	Methomyl	1.25Liter/feddan	Mod II	7	1	0.01	0.2
1524	Elector 2% EC	Emamectin benzoate	20cm ³ /100 L.w	Low III	7	0.007	0.02	0.02
2011	Andraws 5.7% WG	Emamectin benzoate	60gm/feddan	Mod II	7	0.007	0.02	0.02
2442	Andraws L 1.9% EC	Emamectin benzoate	250cm ³ /feddan	Low III	3	0.007	0.02	0.02
2531	Evocut 5.7% WG	Emamectin benzoate	60gm/feddan	Mod II	5	0.007	0.02	0.02
1587	Emmzoate 2.15% EC	Emamectin benzoate	150cm ³ /feddan	Low III	7	0.007	0.02	0.02
1884	Emacit 5% SG	Emamectin benzoate	60gm/feddan	Mod II	7	0.007	0.02	0.02
2387	Emmy – Miner 5.7% WG	Emamectin benzoate	60gm/feddan	Mod II	5	0.007	0.02	0.02
1237	Pasha 1..9% EC	Emamectin benzoate	250cm ³ /feddan	Low III	9	0.007	0.02	0.02
1629	Broact 5% SG	Emamectin benzoate	60gm/100 L.w	Mod II	3	0.007	0.02	0.02
1279	Pyrodan 50% EC	Chlorpyrifos-methyl	1Liter/feddan	U	3	1	0.5	-
2785	Kafroseil 5% EC	Lufenuron	160cm ³ /feddan	U	3	0.4	0.5	-
2824	Cutter EZ 24% SC	Methoxyfenozide	150cm ³ /feddan	U	7	2	2	2
2859	Camario 5% EC	Emamectin benzoate	60cm ³ /feddan	Mod II	7	0.007	0.02	0.02
2893	Embaco 5.7% WG	Emamectin benzoate	60gm/feddan	Mod II	3	3	0.02	0.02
2909	Benzo 5.7% WG	Emamectin benzoate	60gm/feddan	Mod II	3	3	0.02	0.02
1180	Pleo 50% EC	Pyridalyl	100cm ³ /feddan	U	2	-	1	1
1388	Takumi 20% WG	Flubendiamide	100gm/feddan	U	7	2	0.2	-
1057	Tracer 24% SC	Spinosad	50cm ³ /feddan (Newly hatching larvae)	U	3	0.3	0.7	0.4
2460	Tempo-XL 30% EC	Chlorpyrifos 25% + Lufenuron 5%	500cm ³ /feddan	Mod II	7	- 0.4	0.01 0.5	-
1740	Grand 5% EC	Lufenuron	50cm ³ /100 L.w	U	6	0.4	0.5	-
1668	Goldben 90% SP	Methomyl	300gm/feddan	High Ib	7	1	0.01	0.02



Agricultural Pesticide Committee

Tomatoes

Cotton leaf worm

Reg. No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2541	Jitu 90% SP	Methomyl	300gm/feddan	High Ib	7	1	0.01	0.02
1245	Dipel DF 6.4% DF.4	Bacillus Thuringiensis	200gm/feddan	U	-	-	0.01	-
1636	Derakomyl 90% SP	Methomyl	300gm/feddan	High Ib	7	1	0.01	0.2
1302	Diflorate 25% WP	Diflubenzuron	70gm/100 L.w	U	7	-	0.05	-
1675	Rideir 15% SC	Indoxacarb	26.5cm ³ /100 L.w	Mod II	7	0.5	0.5	0.5
1052	Runner 24% SC	Methoxyfenozide	37.5cm ³ /100 L.w	U	1	2	2	2
1732	Roxy 10% EC	Novaluron	200cm ³ /feddan	U	3	-	1	1
1447	Relozed 50% EC	Chlorpyrifos-methyl	1Liter/feddan	U	7	1	0.5	-
1583	Speedo 5.7% WG	Emamectin benzoate	80gm/feddan	Mod II	7	0.007	0.02	0.02
1303	Floxate 10% DC	Flufenoxuron	200cm ³ /feddan	U	10	-	0.5	-
1098	Virtu 5% SC	Chromafenozide	400cm ³ /feddan	U	2	-	0.01	-
2345	Carba - Worm 90%SP	Methomyl	300gm/feddan	High Ib	7	1	0.01	0.2
2672	Carbodox 15% SC	Indoxacarb	26.5cm ³ /100 L.w	Mod II	7	0.5	0.5	0.5
1816	Camry 5% SG	Emamectin benzoate	60gm/feddan	Mod II	3	0.007	0.02	0.02
1404	Coragen 20% SC	Chlorantraniliprole	60cm ³ /feddan	U	7	-	0.6	1.4
1807	Contac 90% SP	Methomyl	300gm/feddan	High Ib	7	1	0.01	0.2
531	Kuik 90% SP	Methomyl	300gm/feddan	High Ib	3	1	0.01	0.2
1572	King chem 5.7% WG	Emamectin benzoate	30gm/feddan	Mod II	10	0.007	0.02	0.02
1018	Lannate 25% WP	Methomyl	1.08 kg/feddan	Mod II	1	1	0.01	0.2
114	Lannate 90% SP	Methomyl	300gm/feddan	High Ib	3	1	0.01	0.2
1333	Linnton 90% SP	Methomyl	300gm/feddan	High Ib	13	1	0.01	0.2
1288	Linker 48% EC	Chlorpyrifos	250cm ³ /100 L.w	Mod II	15	-	0.01	-
609	Match 5% EC	Lufenuron	160cm ³ /feddan	U	7	0.4	0.5	-
1556	Minoclem 5.7% WG	Emamectin benzoate	60gm/feddan	Mod II	3	0.007	0.02	0.02
2427	Novo 10% DC	Flufenoxuron	200cm ³ /feddan	U	10	-	0.5	-
1061	Huayang 90% SP	Methomyl	300gm/feddan	High Ib	5	1	0.01	0.2
1875	Wanet 90% SP	Methomyl	300gm/feddan	High Ib	7	1	0.01	0.2
2770	Tretador 5.7% WG	Emamectin benzoate	60gm/feddan	Mod II	8	0.007	0.02	0.02
2911	Alaska 5.7% WG	Emamectin benzoate	60gm/feddan	Mod II	3	0.007	0.02	0.02
2916	Colem 5.7% WG	Emamectin benzoate	60gm/feddan	Mod II	3	0.007	0.02	0.02
2920	Marsa 24% SC	Methoxyfenozide	40cm ³ /100 L.w	U	3	2	2	2

Cotton bollworm (*Heliothis armigera*)

Symptoms of infestations:

Larvae damage reproductive system in plants including anther, stigma, and buds thus impeding fluorescence.

Margins of holes made by larvae as a result of feeding in fruits is cylindrical.

Larvae prefer feeding upon the unripe fruits than the ripe ones, especially at the base of pedicel where the front segments of the larvae inserted inside the fruit while the rest remain outside accompanied with presence of larvae feces at the entrance of the tunnel causing rotten and complete spoil of the fruit.

- Proper time of control:** When fruits start to be formed and as symptoms of infestations appear.

- Guidelines:**

Proper Agricultural practices and removing weeds that serve as intermediate host for the pest must totally done.

Collecting unripe infested fruits and damage them to kill larvae inside.

Using pheromone traps to catch and kill male moths.

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1329	Radiant 12% SC	Spinetoram	80cm ³ /feddan	U	5	0.06	0.5	0.4

Tomato fruit borer (*Helicoverpa armigera*)

Symptoms of infestations:

Damage in fruits and holes as a result of feeding.

- Time of symptoms appearance:**

When fruits are formed.

- Proper time of control:**

As soon as symptoms of infections appear





Agricultural Pesticide Committee

Tomatoes

Tomato fruit borer

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1394	Equo 10% EC	Novaluron	40cm ³ /100 L.w	U	3	-	1	1
1301	Emperor 0.5% EC	Emamectin benzoate	80cm ³ /100 L.w	U	7	0.007	0.02	0.02
1237	Pasha 1..9% EC	Emamectin benzoate	250cm ³ /feddan	Low III	3	0.007	0.02	0.02
2731	Perform 5% SG	Emamectin benzoate	20 gm/ 100 L.w	Mod II	7	0.007	0.07	0.02
1109	Affirm 5% SG	Emamectin benzoate	80gm/feddan	Mod II	3	0.007	0.02	0.02
1960	Penny 9% SC	Emamectin benzoate 1.5% + Indoxacarb 7.5%	150cm ³ /feddan	Mod II	5	0.007 0.5	0.02 0.5	0.02 0.5
1628	Tomaguard 5% SG	Emamectin benzoate	40gm/100 L.w	Mod II	7	0.007	0.02	0.2
2277	Surrender 5% SG	Emamectin benzoate	120gm/feddan	Mod II	3	0.007	0.02	0.02
1613	Vantage 14.5% SC	Indoxacarb	25cm ³ /100 L.w	Mod II	9	0.5	0.5	0.5
1493	Clalazole 2% EC	Emamectin benzoate	30cm ³ /100 L.w	Low III	7	0.007	0.02	0.02
1441	Hyperon 5% SG	Emamectin benzoate	80gm/feddan	Mod II	10	0.007	0.02	0.02

Leaf miner (*Liriomyza* spp.)

Symptoms of infestations:

Larvae feed and tunnel between the epidermal layers of the leaf narrow causing tunnels becomes wider at their ends and forming transparent leaves without tissues, these spots turned brown in color as a result of cells and tissues death.



- **Time of symptoms appearance:**

During March, April, May, August and September.

- **Proper time of control:**

When number of tunnels reached 2-3 tunnels per one of the randomly inspected leaves.

- **Guidelines:**

Vegetative system should be sprayed with recommended insecticide in a complete coverage treatment.

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
555	Evisect S 50% SP	Thiocyclam hydrogen oxalate	500gm/feddan	Mod II	5	-	0.01	-
2580	Itamec 1.8% EC	Abamectin	200cm ³ /feddan	Mod II	7	0.05	0.09	0.02
1458	Trivap 75% WP	Cyromazine	15gm/100 L.w	U	3	-	0.6	0.4

Pest: Mites

Red spider mite (*Tetranychus urticae*)

Symptoms of infestations:

Individuals feed upon the lower surface of the leaves resulting in bronze metallic spots on the upper surface of the leaves which extended to outside to spread on the whole leaf in a distinctive brown color, infestation is characterized by presence of spin threads on the lower surface of leaves to enable individuals to move and climb.

- **Time of symptoms appearance:**

During July.

- **Proper time of control:**

When number of individuals reached 7 per one leaf of the randomly inspected leaves.

- **Guidelines:**

Vegetative system should be sprayed with recommended insecticide in a complete coverage treatment including the lower surfaces of the leaves.

**Certified Recommendations:**

Reg. No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2332	Abantin super 5% ME	Abamectin	20cm ³ /100 L.w	Mod II	7	0.05	0.09	0.02
1691	Agrimec Gold 8.4%SC	Abamectin	60cm ³ /feddan	Mod II	7	0.05	0.09	0.02
2554	Acimic Super 8.4% SC	Abamectin	40cm ³ /feddan	Mod II	5	0.05	0.09	0.02
1363	Acramite 48% SC	Bifenazate	35cm ³ /100 L.w	U	8	0.5	0.5	2
2476	Exclar 50% SC	Clofentezine	50cm ³ /100 L.w	U	5	0.5	0.2	-
1426	Excellent 1.9% EC	Emamectin benzoate	70cm ³ /feddan	Low III	5	0.007	0.02	0.02
1215	Oberon 24% SC	Spiromesifen	40cm ³ /100 L.w	U	3	-	1	-
2241	Isomectin 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	7	0.05	0.09	0.02
2456	Everken 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	7	0.05	0.09	0.02
1582	Buprolord 25% SC	Buprofezin	400cm ³ /feddan	U	3	1	1	2
1672	Biomectin 5% EC	Abamectin	20cm ³ /100 L.w	Mod II	7	0.05	0.09	0.02
1233	Gold 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	7	0.05	0.09	0.02



Agricultural Pesticide Committee

Tomatoes

Red spider mite

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1956	Deltacare 10% EC	Hexythiazox	50cm ³ /100 L.w	U	7	0.1	0.5	0.5
1179	Delmite 7.5% SC	Sulfur	1Liter/feddan	Low III	3	-	-	-
1930	Diva 1.8% EW	Abamectin	40cm ³ /100 L.w	Mod II	7	0.05	0.09	0.02
1497	Zoro 3.6% EC	Abamectin	25cm ³ /100 L.w	Mod II	8	0.05	0.09	0.02
1365	Superkin 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	7	0.05	0.09	0.02
2532	Solo 24% SC	Bifenazate	80cm ³ /100 L.w	U	5	0.5	0.5	2
2282	Charade 36% SC	Chlorfenapyr	40cm ³ /100 L.w	Mod II	7	-	0.01	1
2151	Farmectin 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	7	0.05	0.09	0.02
1550	Value 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	8	0.05	0.09	0.02
2122	Vanty 24% SC	Chlorfenapyr	240cm ³ /feddan	Mod II	7	-	0.01	1
1925	Fego 5% CS	Abamectin	25cm ³ /100 L.w	Mod II	7	0.05	0.09	0.02
466	Vertimec 1.8% EC	Abamectin	160cm ³ /feddan	Mod II	14	0.05	0.09	0.02
1522	Kanemite15% SC	Acequinocyl	100cm ³ /100 L.w	U	10	-	0.2	0.7
2642	Cam-Mek Super 8.4% SC	Abamectin	60cm ³ /feddan	Mod II	7	0.05	0.09	0.02
2773	Spirimix 24% SC	Spirodiclofen	35cm ³ /100 L.w	U	14	0.5	0.5	-
2838	Rush 24% SC	Spirodiclofen	50cm ³ /100 L.w	U	10	0.5	0.5	-
2803	Solano 25% WP	Buprofezin	40 gm/feddan	U	7	1	1	2
2586	Komodo 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	7	0.05	0.09	0.02
1665	Cormit 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	7	0.05	0.09	0.02
1019	Maccomite 10% WP	Hexythiazox	20gm/100 L.w	U	6	0.1	0.5	0.5
1355	Mectil1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	7	0.05	0.09	0.02
2590	Mectyam 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	8	0.05	0.09	0.02
2609	Nasrthiazox 5.45% EC	Hexythiazox	40cm ³ /100 L.w	U	7	0.1	0.5	0.5
1955	Wondr 36% SC	Chlorfenapyr	180cm ³ /feddan	Mod II	7	-	0.01	1

Pest: Fungi**Fruit rots****Symptoms of infections:**

Deep and hard lesions differ in color depending on the causal pathogen in the areas where the fruits touch the soil or are exposed to high humidity.

- **Time of symptoms appearance:**

Symptoms occur when the weather conditions of moderate temperature and humidity are high since September.

- **Proper time of control:** When symptoms appear.

**Certified Recommendations:**

Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
938	Teldor 50% SC	Fenhexamid	600cm ³ /feddan	U	7	2	2	2

Root rot and damping off**Symptoms of infections:**

Many fungi cause these diseases resulting in pre and post emergence damping off which leads to a decrease in the number of plants in the field.



- **Time of symptoms appearance:** At the early stage or any growth stage of plant.

- **Proper time of control:**

Treatment of seeds or seedlings before planting.

Certified Recommendations:

Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2564	Atrio 80% WP	Tebuconazole	2gm/10 L.w	Low III	45	0.6	2	0.6
2743	Deltagold 48% EC	Metalaxyl-M	200 cm ³ /100 L.w	Mod II	45	0.5	0.3	1
2800	Dovex 50% SC	Azoxystrobin 20% + Tebuconazole 30%	1 cm ³ /1 L.w	Low III	45	3	3	0.02
1012	Aracur 72.2% SL	Propamocarb hydrochloride	1 cm ³ /1 L.w (seeds treatment)	U	15	2	4	2
1808	Previcur Energy 84% SL	Propamocorb hydrochloride 53% + Fosetyl Aluminium 31%	3 cm ³ /1 L.w	Low III	60	2	4 100	2 -



Agricultural Pesticide Committee

Tomatoes

Root rot and damping off

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1898	Pink-S 30% SL	Hymexazole	1 cm ³ /1 L.w	U	45	-	1	-
1553	Teko 80% WG	Fosetyl Aluminium	3gm/1 L.w	U	55	-	100	-
2153	Double 56% WP	Hymexazole 16% + Thiophanate-methyl 40%	1gm/1 L.w	U	45	-	1 1	-
2361	Restart 56% WP	Hymexazole 16% + Thiophanate-methyl 40%	400gm/feddan	U	45	-	1 1	-
2278	Sassco 25% EW	Tebuconazole	50cm ³ /100 L.w	U	60	0.7	0.9	1.3
1045	Moncut 25% WP	Flutolanil	3gm/kg seeds	U	-	-	0.01	-
1236	Uniform 390- 39% SE	Azoxystrobin 28.2% + Metalaxyl-M 10.8%	650cm ³ /feddan	Mod II	-	3 0.5	3 0.3	0.02 1
2740	Bio cure F 1.15% WP	Trichoderma viride	6gm/1 L.w (Nursery treatment)	U	-	-	-	-

Powdery mildew

Symptoms of infections:

Bright yellow blotches on the upper sides of the leaves and fungal spores appear on the lower side as white or gray. Blotches turn to brownish and dry.

● Time of symptoms appearance:

After two months of planting according to agricultural season.

● Proper time of control: When symptoms appear.

● Guidelines:

The spray solution must reach the upper and lower surface of the leaves.



Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2564	Atrio 80% WP	Tebuconazole	15gm/100 L.w	Low III	3	0.6	2	0.6
2047	Escudo Gold 24% SC	Azoxystrobin 8% + Tebuconazole 16%	125cm ³ /100 L.w	U	3	3 0.7	3 0.9	0.02 1.3
675	Ictaprite 98% D	Sulfur	30kg/feddan(dusting)	Low III	10	-	-	-
1527	Eufcco Sulfur 80% WG	Sulfur	250gm/100 L.w	Low III	3	-	-	-
1791	Pronto 32% SC	Azoxystrobin 12% + Tebuconazole 20%	400cm ³ /feddan	U	3	3 0.7	3 0.9	0.2 1.3
2226	Pugil CX 42.5% SC	Cymoxanil 5% + Chlorothalonil 37.5%	200cm ³ /100 L.w	Low III	7	- 5	0.4 6	0.2 5
1679	Thiovinal super 80% WG	Sulfur	3kg/feddan	Low III	3	-	-	-
2786	Brust 24.5% EC	Myclobutanil	25cm ³ /100 L.w	U	7	0.3	0.3	0.3
583	Domark 10% EC	Tetraconazole	50cm ³ /100 L.w	U	3	-	0.1	-

Tomatoes

Powdery mildew

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1787	Agricultural Soreil KZ 98% D	Sulfur	30kg/feddan (dusting)	Low III	3	-	-	-
2181	Cidelytop 14% DC	Difenoconazole 12.5% + Cyflufenamid 1.5%	250cm ³ /feddan	U	5	0.6 -	2 0.02	0.6 -
2578	Cabridust – D 98% DP	Sulfur	15kg/feddan	Low III	3	-	-	-
2522	Marfil 45% EW	Prochloraz	75cm ³ /100 L.w	Low III	10	-	0.05	-
2040	New Sulfur 98% D	Sulfur	30kg/feddan (dusting)	Low III	3	-	-	-

Early blight

Symptoms of infections:

Spots on the lower surface of the leaves extend to the upper leaves which characterized by circular rings around the center, stem canker and lesions on the fruits, especially at the stem end with concentric rings also. Their color is brown black to black.

● Time of symptoms appearance:

The infection occurs on the leaves, stems and fruits during moderate temperatures and high humidity.

● Proper time of control:

When symptoms appear, especially in the summer season.

Certified Recommendations:



Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1877	Arom 80 80% WP	Mancozeb	250gm/100 L.w	U	5	2	3	2.5
1041	Aromil plus 50% WP	Copper oxychloride 35% + Metalaxyl 15%	150 gm/100 L.w	Mod II	21	0.5	5 0.3	- 1
1792	Azostar 25% SC	Azoxystrobin	50cm ³ /100 L.w	U	3	3	3	0.2
1569	Atlas 25% EC	Difenoconazole	50cm ³ /100 L.w	U	8	0.6	2	0.6
1564	Acrozell 69% WP	Dimethomoroh 9% + Mancozeb 60%	250gm/100 L.w	U	10	2	1 3	1.5 2.5
2039	Inacop L 69% SC	Copper oxychloride	200cm ³ /100 L.w	Low III	3	-	5	-
1856	Open 72% SC	Chlorothalonil	350cm ³ /100 L.w	U	3	5	6	5
1146	Oxyplus 47.89% WP	Copper oxychloride	250gm/100 L.w	Low III	-	-	5	-
2434	Ever – Z 72% WP	Mancozeb 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	7	2 0.5	3 0.3	2.5 1
1653	Bormix 91.3% WP	Bordeaux mixture 88.3% + Cymoxanil 3%	400gm/100 L.w	Mod II	7	-	50 0.4	- 0.02
2877	Indosan 75% WG	Mancozeb	200gm/100 L.w	U	7	2	3	2.5
2834	Deflokem 25% EC	Difenoconazole	50cm ³ /100 L.w	U	7	0.6	2	0.6
2919	Vironex Copper 91.3% WP	Bordeaux mixture 88.3% + Cymoxanil 3%	400gm/100 L.w	Mod II	5	-	50 0.4	- 0.2
2903	Twin MZ 72% WP	Mancozeb 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	7	2 0.5	3 0.3	2.5 1



Agricultural Pesticide Committee

Tomatoes

Early blight

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
298	Polyram DF 80% DF	Metiram	250gm/100 L.w	U	7	2	3	-
1087	Bio Arc 6% WP	<i>Bacillus megaterium</i>	250gm/100 L.w	U	-	-	-	-
743	Tazolen 72% WP	Mancozeb 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	8	2 0.5	3 0.3	2.5 1
411	Tridex 80% WP	Mancozeb	250gm/100 L.w	U	14	2	3	2.5
410	Tridex Super 75% WG	Mancozeb	200gm/100 L.w	U	3	2	3	2.5
85	Galben Copper 69.8%WP	Benalaxyl 11% + Copper oxychloride 58.8%	250gm/100 L.w	Low III	20	0.2 -	0.5 5	-
2519	Jinfo 75% WG	Mancozeb	200gm/100 L.w	U	7	2	3	2.5
1801	Genozeb 80% WP	Mancozeb	250gm/100 L.w	U	5	2	3	2.5
735	Dicozeb 80% WP	Mancozeb	250gm/100 L.w	U	10	2	3	2.5
1804	Dragostar 25% EC	Difenoconazole	50cm ³ /100 L.w	U	3	0.6	2	0.6
2219	Dlemma 50% WP	Mancozeb 64% + Tebuconazole 5%	200gm/100 L.w	U	7	2 1	3 0.9	2.5 1.3
1485	Rado El Nasr 72% WP	Mancozeb 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	7	2 0.5	3 0.3	2.5 1
1774	Revus Top 50% SC	Difenoconazole 25% + Mandipropamid 25%	200cm ³ /feddan	Low III	7	0.6 0.3	2 3	0.6 1
1651	Remik 30% WG	Dimethomorph 22% + Metalaxyl 8%	150gm/100 L.w	Low III	7	- 0.5	1 0.3	1.5 1
1141	Zoom 2007 38.37% WP	Copper hydroxide	250gm/100 L.w	Low III	-	-	5	-
1800	Stop feng 70% WP	Propineb	300gm/100 L.w	U	3	2	2	-
945	Score 25% EC	Difenoconazole	50cm ³ /100 L.w	U	20	0.6	2	0.6
1075	Sereno 60% WG	Fenamidone 10% + Mancozeb 50%	150gm/100 L.w	Low III	7	2 2	1 3	1 2.5
1626	Sinoseen 80% WP	Mancozeb	250gm/100 L.w	U	7	2	3	2.5
2613	Fabolous 75% WP	Chlorothalonil 62.5% + Tebuconazole 12.5%	70gm/100 L.w	Low III	2	5 1	6 0.9	5 1.3
1026	Flint 50% WG	Trifloxystrobin	20gm/100 L.w	U	7	0.7	0.7	0.5
1105	Flowsan 42.7% FS	Thiram	200cm ³ /100 L.w	Mod II	3	2	3	-
674	Funguran OH 77% WP	Copper hydroxide	250gm/100 L.w	Mod II	10	-	5	-
2062	Volar CT 60% SC	Chlorothalonil 50% + Dimethomorph 10%	250cm ³ /100 L.w	U	7	5 -	6 1	5 1.5
2707	Cardex 80%WP	Mancozeb	250gm/100 L.w	U	7	2	3	2.5
2709	Mexonil 72% WP	Cymoxanil 8% + Mancozeb 64%	150gm/100 L.w	Mod II	5	- 2	0.4 3	0.2 2.5
2902	Fangsho plus 30% SC	Difenoconazole 15% + Propiconazole 15%	40cm ³ /100 L.w	Low III	3	0.6 3	2 3	0.6 3
2928	Metacel 72% WP	Mancozeb 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	7	2 0.5	3 0.3	2.5 1

Tomatoes

Early blight

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1089	Copper-hycide 77% WP	Copper hydroxide	250gm/100 L.w	Mod II	3	-	5	-
1758	Coboko 57% WG	Dimethomorph 13% + Propineb 44%	200gm/100 L.w	U	7	- 2	1 2	1.5 -
640	Kocide (2000) 53.8 % DF	Copper hydroxide	180gm/100 L.w	Mod II	6	-	5	-
1982	Magma52.5% WG	Cymoxanil 30% + Famoxadone 22.5%	50gm/100 L.w	Low III	7	- 2	0.4 2	0.2 1
1528	Manozed 80% WP	Mancozeb	250gm/100 L.w	U	7	2	3	2.5
1534	Metazed 38% SC	Metalaxyl 8% + Thiram 30%	250cm ³ /100 L.w	Mod II	7	0.5 2	0.3 3	1 -
1478	Mancoxyl 72% WP	Mancozeb 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	10	2 0.5	3 0.3	2.5 1
1119	No-Blight 50% WP	Thiram	200gm/100 L.w	Mod II	1	2	3	-
1386	Novicure 70% WG	Copper sulfate tribasic	175gm/100 L.w	Mod II	7	-	5	-
2342	New Copper 85% WP	Copper oxychloride	250gm/100 L.w	Mod II	3	-	5	-
1678	Uthane 80% WP	Mancozeb	250gm/100 L.w	U	5	2	3	2.5
1737	Eurozole 25% EC	Difenoconazole	50cm ³ /100 L.w	Mod II	3	0.6	2	0.6

Late blight

Symptoms of infections:

Large blotches appear water-soaked areas that enlarge rapidly, forming irregular, greenish black blotches on the stems, leaves and fruits - as these blotches grow and turn to dark and in the wet weather fluffy gray spores surround these spots on the lower surface of the leaves.



● Time of symptoms appearance:

The disease spreads in high humidity and low temperatures.

● Proper time of control: When symptoms appear, especially in the Nili season.

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1713	Acrobate MZ 69% WG	Dimethomorph 9% + Mancozeb 60%	250gm/100 L.w	U	7	- 2	1 3	1.5 2.5
546	Acrobat copper 73.2%WP	Copper oxychloride 67.2% + Dimethomorph 6%	150gm/100 L.w	Mod II	9	- -	5 1	- 1.5
2691	Acrobest Ultra 69% WG	Dimethomorph 9% + Mancozeb 60%	250gm/100 L.w	U	10	- 2	1 3	1.5 2.5



Agricultural Pesticide Committee

Tomatoes

Late blight

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
744	Anadol 80% WP	Mancozeb	250gm/100 L.w	U	8	2	3	2.5
2938	Azur 25% SC	Azoxystrobin	50 cm ³ /100 L.w	U	14	3	3	2.5
2940	Azur-top 32.5% SC	Azoxystrobin 20% + Difenoconazole 12.5%	75 cm ³ /100 L.w	Low III	7 0.6	3 0.6	3 2	2.5 0.6
1403	Prevex N 72.2% SL	Propamocarb hydrochloride	250 cm ³ /100	U	4	2	4	2
270	Previcur N 72.2% SL	Propamocarb hydrochloride	250 cm ³ /100	U	4	2	4	2
2254	Plasmoxyl 72% WP	Chlorothalonil 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	7 0.5	5 0.3	6 0.3	5 1
2156	Blue Copper 50% WP	Copper oxychloride	250gm/100 L.w	Mod II	3	-	5	-
1088	Bio Zeid 2.5% WP	<i>Trichoderma album</i>	250 gm/100 L.w	U	-	-	-	-
1789	Bioxan 72% WP	Cymoxanil 8% + Mancozeb 64%	150 gm/100 L.w	Mod II	8 2	- 2	0.4 3	0.2 2.5
411	Tridex 80% WP	Mancozeb	250 gm/100 L.w	U	14	2	3	2.5
410	Tridex Super 75%WG	Mancozeb	200gm/100 L.w	U	3	2	3	2.5
2492	Turbo 72% WP	Cymoxanil 8% + Mancozeb 64%	150 gm/100 L.w	Mod II	10 2	- 2	0.4 3	0.2 2.5
85	Galben Copper 69.8% WP	Benalaxyl 11% + Copper oxychloride 58.8%	250 gm/100 L.w	Low III	20 -	0.2 5	0.5 -	-
189	Dithane M-45 – 80% WP	Mancozeb	250 gm/100 L.w	U	10	2	3	2.5
1062	Rolex 50% WP	Copper oxychloride 59% + Metalaxyl 15%	150 gm/100 L.w	Mod II	15 0.5	- 0.5	5 0.3	- 1
1103	Redo-Copper 74% WP	Copper oxychloride 59% + Metalaxyl 15%	150 gm/100 L.w	Mod II	7 0.5	- 0.5	5 0.3	- 1
1211	Ridomil Gold MZ 68%WG	Mancozeb 64% + Metalaxyl . M 4%	200gm/100 L.w	Mod II	11 0.5	2 0.5	3 0.3	2.5 1
763	Ridomil gold plus 71.5%WP	Copper oxychloride 69% + Metalaxyl 2.5%	200gm/100 L.w	Mod II	3 0.5	- 0.5	5 0.3	- 1
1275	Zeus 72.2% SL	Propamocarb hydrochloride	250 cm ³ /100 L.w	U	7	2	4	2
2171	Sando copper 50% WP	Copper oxychloride 35% + Metalaxyl 15%	150 gm/100 L.w	Mod II	15 0.5	- 0.5	5 0.3	- 1
1075	Sereno 60% WG	Fenamidone 10% + Mancozeb 50%	150 gm/100 L.w	Low III	7 2	2 2	1 3	1 2.5
1489	Facomil 35% WP	Metalaxyl	75 gm/100 L.w	Low III	7	0.5	0.3	1
2524	Fortuna Gold 44% WG	Cymoxanil 4% + Mancozeb 48%	250 gm/100 L.w	Mod II	10 2	- 2	0.4 3	0.2 2.5
2829	Fitene Triplor 60.95% WG	Cymoxanil 2.85% + Copper oxychloride 28.1% + Fosetyl Aluminium 30%	450 gm/100 L.w	Mod II	3 -	- -	0.4 5 100	0.2 - -

Tomatoes

Late blight

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1371	Cuprostate Gold 72% WP	Cymoxanil 8% + Mancozeb 64%	150 gm/100 L.w	Mod II	12	— 2	0.4 3	0.2 2.5
1171	Cabrio Top 60% WG	Metiram 55% + Pyraclostrobin 5%	200gm/100 L.w	U	6	2 0.3	0.4 0.3	— 1.4
1839	Cabrio Duo 11.2% EC	Dimethomorph 7.2% + Pyraclostrobin 4%	200 cm ³ /100 L.w	U	7	— 0.3	1 0.3	1.5 1.4
2102	Katanga man 70% WP	Fosetyl-Aluminium 35% + Mancozeb 35%	250 gm/100 L.w	U	7	— 2	100 3	— 2.5
1338	Chlorothate 75% WP	Chlorothalonil	250 gm/100 L.w	U	5	5	6	5
2394	Clortosip 50% SC	Chlorothalonil	200 cm ³ /100 L.w	U	5	5	6	5
1542	Coprinco 77% DF	Copper hydroxide	150 gm/100 L.w	Mod II	5	—	5	—
1096	Curzate R 73.15% WP	Copper oxychloride 68.95% + Cymoxanil 4.2%	250 gm/100 L.w	Mod II	3	— —	5 0.4	— 0.2
2048	Chemoneb 70% WP	Propineb	250 gm/100 L.w	U	7	2	2	—
1008	Q-copper 84.04% WP	Copper oxychloride	250 gm/100 L.w	Mod II	12	—	5	—
1071	Cure-plus 74.5% WP	Copper oxychloride 59.5% + Metalaxyl 15%	150 gm/100 L.w	Mod II	21	— 0.5	5 0.3	— 1
2152	Lamanco 80% WP	Mancozeb	250 gm/100 L.w	U	7	2	3	2.5
2213	Master copper 50% WP	Copper oxychloride	250 gm/100 L.w	Mod II	3	—	5	—
2139	Micene triple 49.2 WP	Benalaxyl 6% + Cymoxanil 3.2 + Mancozeb 40%	250 gm/100 L.w	Low III	7	0.2 — 2	0.5 0.4 3	— 0.2 2.5
2594	Newmorph 70% WG	Cymoxanil 20% + Dimethomorph 50%	75 gm/100 L.w	Mod II	10	— —	0.4 1	0.2 1.5
2324	Heros 25% SC	Azoxystrobin	75 cm ³ /100 L.w	U	7	3	3	2.5

Root-knot nematode

Pest: Nematode

Symptoms of infections:

A knot appears on the roots followed by yellowing in the leaves, wilt and dwarf of plants and drop in yield.

- **Time of symptoms appearance:** From small seedling to fruit
- **Proper time of control:**

The discovery of any soil count at the beginning of the season is considered serious and treatment should be initiated immediately.





Agricultural Pesticide Committee

Tomatoes

Root-knot nematode

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1927	Oxineem El-Nasr 24% SL	Oxamyl	3Liter/feddan (twice) (Non treated seedlings)	High Ib	40	2	0.01	2
2458	Oikos 3.2% EC	Azadirachtin	400cm ³ /fedda (treated seedlings)	U	1	-	1	-
1616	Tervigo 2%SC	Abamectin	2.5Liter/feddan (treated seedlings)	Mod II	3	0.05	0.09	0.02
1701	Dento 40% EC	Fenamiphos	3Liter/feddan (twice)	High Ib	65	-	0.04	-
1099	Rugby 20% CS	Cadusafos	1.5Liter/feddan	Mod II	-	-	0.01	-
564	Vaydate 10% GR	Oxamyl	20kg/feddan	Mod II	15	2	0.01	2
122	Vaydate 24 % SL	Oxamyl	2Liter/feddan (twice) (treated seedlings) 3 Liter/feddan (twice) (Non treated seedlings)	High Ib	10	2	0.01	2
2415	Vyprotect 24% SL	Oxamyl	3Liter/feddan (Twice)	High Ib	50	2	0.01	2
1283	Fenatode 10% GR	Fenamiphos	20kg/feddan	Mod II	-	-	0.04	-
1139	Nemathorin10% G	Fosthiazate	12.5kg/feddan	Mod II	-	-	0.02	0.02
1395	Nemacap 20% EC	Ethoprophos	2.5Liter/100 L.w (Spray on the lines before planting)	Mod II	45	0.01	0.02	-
2805	Nemaprobe 10% GR	Fosthiazate	12.5 Kg/feddan (Non treated seedlings)	Mod II	50	-	0.02	0.02

Potatoes

Pest: Insects

European mole cricket (*Gryllotalpa gryllotalpa*)

Symptoms of infestations:

Infested plants showed a wilt appearance as a result of feeding upon root-tuber, also, existence of tunnels on the soil surface especially towards the seedbeds. It is known that sever infestations occurred with using composting fertilizers or when fields are near rural villages.

- **Time of symptoms appearance:**

Infestation occurs any time even at the beginning of implanting until harvest time.

- **Proper time of control:**

As soon as symptoms showed tunnels on soil surface and after irrigation.

- **Guidelines:**

The insecticide should be applied in the form of toxic baits as following: 15 kg. of crushed corn + 20 liter water + the recommended insecticide, treatment have to be applied during the early morning, while the toxic bait should be applied before dusk settle in the form of continuous dots of the toxic bait formulation.



Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
657	Pyriban A 48% EC	Chlorpyrifos	1Liter/feddan	Mod II	15	2	0.01	0.05
25	Dursban H 48% EC	Chlorpyrifos	1.25Liter/feddan	Mod II	-	2	0.01	0.05
662	Chlorzan 48% EC	Chlorpyrifos	1Liter/feddan	Mod II	50	2	0.01	0.05
1030	Chlorfos 48% EC	Chlorpyrifos	1Liter/feddan	Mod II	-	2	0.01	0.05
1496	Chloro-plus 29% EC	Chlorpyrifos 24% + Cypermethrin 5%	250cm ³ /feddan	Mod II	60	2 -	0.01 0.05	0.05 0.1

Black cutworm *(Agrotis ipsilon)*

Symptoms of infestations:

Larvae cut the siblings at the soil surface level either completely and cause their death or partially feed on the seedlings thus causing their yellowish pale appearance and their wilt, also, presence of small green cuttings indicating the partial feeding upon the seedlings, infestation occurred in some seedbeds in the field and mostly did not overspread in the whole field.

**● Time of symptoms appearance:**

During seedlings and before stem hardening.

● Proper time of control:

As soon as symptoms of infestations appear.

● Guidelines:

The insecticide should be applied in the form of toxic baits as following:

25 kg. of crude flour + 20 liter water + the recommended insecticide per feddan (0.42 hectares), the toxic bait should be distributed beside the seedbeds in piles when sun set.

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2660	Atifos Super 55% EC	Chlorpyrifos 50% + Cypermethrin 5%	1Liter/feddan	Mod II	60	2 -	0.01 0.05	0.05 0.1
1765	Effect power 5% EC	Lambda-cyhalothrin	200cm ³ /feddan	Mod II	60	-	0.02	0.02
1144	Ictafos 48% EC	Chlorpyrifos	1Liter/feddan	Mod II	-	2	0.01	0.05
1239	Axon 5% EC	Lambda-cyhalothrin	200cm ³ /feddan	Mod II	60	-	0.02	0.02
2479	Egysban 50% EC	Chlorpyrifos	1Liter/feddan	Mod II	60	2	0.01	0.05
1337	Pulsar 5% EC	Lambda-cyhalothrin	200cm ³ /feddan	Mod II	70	-	0.02	0.02



Agricultural Pesticide Committee

Potatoes

Black cutworm

Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
729	Pestban 48% EC	Chlorpyrifos	1Liter/feddan	Mod II	6	2	0.01	0.05
1913	Petaphos 48% EC	Chlorpyrifos	1Liter/feddan	Mod II	15	2	0.01	0.05
2630	Telecam 25% EC	Bifenthrin	200cm ³ /feddan	Mod II	60	0.05	0.05	0.05
2771	Nilfos 50% EC	Chlorpyrifos	1Liter/feddan	Mod II	45	2	0.01	0.05
2161	Top Star 5% EC	Lambda-cyhalothrin	200cm ³ /feddan	Mod II	60	-	0.02	0.02
751	Dorsil 48% EC	Chlorpyrifos	1Liter/feddan	Mod II	60	2	0.01	0.05
2495	Dolf-X 5% EC	Lambda-cyhalothrin	400cm ³ /feddan	Mod II	60	-	0.02	0.02
822	Sylian 72% EC	Profenofos	500cm ³ /feddan	Mod II	60	-	0.01	-
1307	Vantex 6% CS	Gamma-cyhalothrin	100cm ³ /feddan	Mod II	7	-	0.02	0.02
1317	Camkron 72% EC	Profenofos	750cm ³ /feddan	Mod II	60	-	0.01	-
1313	Chlorfan 48% EC	Chlorpyrifos	1Liter/feddan	U	60	2	0.01	0.05
2595	Lamba Val 5% EC	Lambda-cyhalothrin	200cm ³ /feddan	Mod II	60	-	0.02	0.02
2359	New power 5% EC	Lambda-cyhalothrin	200cm ³ /feddan	Mod II	60	-	0.02	0.02

Pest: Insects

Aphid (Aphid spp.)

Symptoms of infestations:

Sever infections and high insect population resulted in honeydew secretions which encouragefungal growth called sooty mold, causing wilting and death of the entire leaves, presence of nymphs and winged individuals, symptoms of viral infections appear on the plant leaves.



● Time of symptoms appearance:

From February until April and during the summer plantation.

● Proper time of control:

It is crucial to apply a protective program to avoid infestation as possible and impede the transmission of viral diseases especially Y-Virus infesting potatoes and transmitted by peach aphid.

● Guidelines:

Regular inspection is a crucial factor as soon as seedlings occurred to treat the infested spots immediately with the recommended insecticides before aphid spreading, complete coverage treatment for both leaves surfaces is necessary.

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1820	Agri Flex 18.56%SC	Abamectin 3.32% + Thiamethoxam 15.24%	240cm ³ /feddan	Mod II	14	0.005 -	0.01 0.07	0.01 0.25
2500	Imidapharm 60%ES	Imidacloprid	200 cm ³ /Ton (Seed treatment)	Mod II	65	-	0.5	0.4
1663	Blanch 48% SC	Thiacloprid	30cm ³ /100 L.w	Mod II	3	0.02	0.02	-
2265	Tirbo prid 48% SC	Thiacloprid	20cm ³ /100 L.w	Mod II	9	0.02	0.02	-
1235	Chess 50% WG	Pymetrozine	20gm/100 L.w	U	2	-	0.02	0.02
2034	Teppeki 50% WG	Flonicamid	20gm/100 L.w	Mod II	7	-	0.09	0.2
509	Gaucho 70% WS	Imidacloprid	150gm/Ton (Seed treatment)	Mod II	-	-	0.5	0.4
1690	Sinodor 70% WG	Imidacloprid	40gm/100 L.w	Mod II	7	-	0.5	0.4
1149	Calypso 48% EC	Thiacloprid	20cm ³ /100 L.w	Mod II	3	0.02	0.02	-
1908	Cruiser Max Potato 42% FS	Fludioxonil 8.4% + Thiamethoxam 33.6%	240cm ³ /Ton (Seed treatment)	Low III	60	5 -	5 0.07	6 0.25
2352	Closer 24% SC	Sulfoxaflor	50cm ³ /feddan	U	7	0.2-	0.03	0.3
2343	Lepinoide 25% WG	Thiamethoxam	20gm/100 L.w	U	6	-	0.07	0.25
1918	Motive 50% WDG	Pirimicarb	200gm/feddan	Mod II	3	-	0.05	-
1385	Monceren G 37% FS	Imidacloprid 12% + Pencycuron 25%	0.6cm ³ /kg seeds	Mod II	70	- -	0.05 0.1	0.4 -
2242	Navigator 48% SC	Thiacloprid	20cm ³ /100 L.w	Mod II	7	0.02	0.02	-
2889	Imidatop 70% WG	Imidacloprid	40gm/100 L.w	Mod II	7	-	0.5	0.4
2892	Niloxam 25% WG	Thiamethoxam	80gm/feddan	U	7	-	0.07	0.25

Potato tuber moth (*Phthorimaea operculella*)

Symptoms of infestations:

Existence of wide flat tunnels between the two epidermal layers of the leaves due to larval feeding, larvae also attack tubers near the soil surface exposed to their reach, larvae enter within the tubers making tunnels at the base of buds and go onto the tubers making tunnels.

● Time of symptoms appearance:

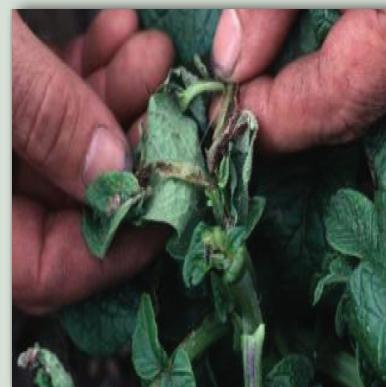
During the period from April to November every year, the highest infestation occurred during the summer and late summer plantations.

● Proper time of control:

When infestation rate reached 5% of the randomly inspected plants.

● Guidelines:

Spray with recommended insecticide have to include the whole vegetative system and repeated before sunset when necessary.





Agricultural Pesticide Committee

Potatoes

Potato tuber moth

Certified Recommendations:

Reg. No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1253	Avaunt 15% EC	Indoxacarb	25cm ³ /100 L.w	Mod II	7	0.02	0.02	0.01
2093	Aphost 30% WG	Indoxacarb	50gm/feddan	Mod II	7	0.02	0.02	0.01
2389	Bedlis 5% EC	Lufenuron	160cm ³ /feddan	U	7	0.01	0.05	-
1960	Penny 9% SC	Emamectinbenzoate 1.5% + Indoxacarb 7.5%	200cm ³ /feddan	Mod II	7	- 0.02	0.01 0.02	- 0.01
1057	Tracer 24% SC	Spinosad	30cm ³ /100 L.w	U	10	0.01	0.02	10
2322	Di Up 90% SP	Methomyl	300gm/feddan	High Ib	6	0.02	0.01	0.2
510	Dipel 2 X 6.4% WP	Bacillus thuringiensis	200gm/feddan	U	-	-	0.01	-
2393	Deltarab 15% SC	Indoxacarb	26cm ³ /100 L.w	Mod II	7	0.02	0.02	0.01
1052	Runner 24% SC	Methoxyfenozide	37.5cm ³ /100 L.w	U	7	-	0.01	0.02
1732	Roxy 10% EC	Novaluron	300cm ³ /feddan	U	3	0.01	0.2	0.01
300	Sumithion KZ 50% EC	Fenitrothion	1.5Liter/feddan	Mod II	3	-	0.01	-
1404	Coragen 20% SC	Chloranraniliprole	60cm ³ /feddan	U	7	-	0.02	0.3
609	Match 5% EC	Lufenuron	160cm ³ /feddan	U	21	0.01	0.05	-
2763	Shakomil 90% SP	Methomyl	300gm/feddan	High 1b	21	0.02	0.01	0.2
2871	Kingcarb 14.5% SC	Indoxacarrb	30cm ³ /100 L.w	Mod II	10	0.02	0.02	0.01
1340	Malathin 57% EC	Malathion	500cm ³ /100 L.w	Low III	7	-	0.02	8
588	Malason / Coromandel 57% EC	Malathion	2Liter/feddan	Low III	7	-	0.02	8
2329	Highdox 30% WG	Indoxacarb	15gm/100 L.w	Mod II	7	0.02	0.02	0.01
1061	Huayang 90% SP	Methomyl	300gm/feddan	High Ib	5	0.02	0.01	0.2

Cotton leaf worm (*Spodoptera littoralis*)

Symptoms of infestations:

Presence of blotches on plant leaves, larvae feed upon growing apex, presence of hole in leaves.

- **Time of symptoms appearance:**

In October and November during the two autumn and winter plantations.

- **Proper time of control:** When spot with blotches and newly hatched larvae appear.

- **Guidelines:**

Spray with recommended insecticide have to include the whole vegetative system after irrigation.



Certified Recommendations:

Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2920	Marsa 24% SC	Methoxyfenozide	40cm ³ /100 L.w	U	7	-	0.01	0.02
2922	Shino plus 30% SC	Chlorpyrifos	625cm ³ /feddan	Mod II	7	2	0.01	0.05
2115	Ematox 2% EC	Emamectin benzoate	100cm ³ /feddan	Low III	7	-	0.01	-
1726	Betavant 14.5% SC	Indoxacarb	110cm ³ /feddan	Mod II	7	0.02	0.02	0.01
1279	Pyrodan 50% EC	Chlorpyrifos methyl	1Liter/feddan	U	3	0.01	0.05	-
1812	Jasber 3.4% ME	Emamectin benzoate	120cm ³ /feddan	Low III	7	-	0.01	-
2363	Sunuron 5% EC	Lufenuron	160cm ³ /feddan	U	7	0.01	0.05	-
1379	Caprice 5% EC	Chlorfluazuron	400cm ³ /feddan	U	14	-	0.01	-
2445	Kamia 48% EC	Chlorpyrifos	1Liter/feddan	Mod II	7	2	0.01	0.05
2538	Komatch X 5% EC	Lufenuron	160cm ³ /feddan	U	7	0.01	0.05	-
531	Kuik 90% SP	Methomyl	300gm/feddan	High Ib	5	0.02	0.01	0.2
2615	Kuik Gold 40% SP	Methomyl	675gm/feddan	High Ib	7	0.02	0.01	0.2
609	Match 5% EC	Lufenuron	160cm ³ /feddan	U	21	0.01	0.05	-
1890	Metho max 90% SP	Methomyl	300gm/feddan	High Ib	7	0.02	0.01	0.2
1060	Methomate 90% SP	Methomyl	300gm/feddan	High Ib	6	0.02	0.01	0.2
1073	Nomolt 15% SC	Teflubenzuron	50cm ³ /100 L.w	U	5	0.05	0.05	-

Pest: Mites

Red spider mite (*Tetranychus urticae*)

Symptoms of infestations:

Presence of pale yellow plants at the middle of the field, bronze metallic spots on the upper surface of the leaves which extended to outside to spread on the whole leaf in a distinctive brown color, infestation is characterized by presence of spin threads on the lower surface of leaves to enable individuals to move and climb.

● Time of symptoms appearance:

During April in summer plantations and during September in autumn plantations.



● Proper time of control: When number of individuals

reached 5 per one leaf of the randomly inspected leaves.

● Guidelines:

Vegetative system should be sprayed with recommended insecticide in a complete coverage treatment including the lower surfaces of the leaves.



Agricultural Pesticide Committee

Potatoes

Red spider mite

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1093	Abalone 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	7	0.005	0.01	0.01
1977	Acinapyr 24% SC	Chlorfenapyr	60cm ³ /100 L.w	Mod II	7	-	0.01	-
1532	Efdal mectin 1.8% EC	Abamectin	160cm ³ /feddan	Mod II	5	0.005	0.01	0.01
2632	Acrex 24% SC	Chlorfenapyr	60cm ³ /100 L.w	Mod II	7	-	0.01	-
2092	Gate Fast 12% SC	Abamectin 2% + Thiamethoxam 10%	160cm ³ /feddan	Mod II	7	0.005 0.3	0.01 0.07	0.01 0.25
1233	Gold 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	9	0.005	0.01	0.01
1251	Demectin 1.8% EC	Abamectin	160cm ³ /feddan	Mod II	7	0.005	0.01	0.01
1420	Challenger Super 24% SC	Chlorfenapyr	60cm ³ /100 L.w	Mod II	10	-	0.01	-
2336	Capitol 24% SC	Chlorfenapyr	60cm ³ /100 L.w	Mod II	7	-	0.01	-
1136	Cam-Mek 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	14	0.005	0.01	0.01
1137	Crater 3.37% EC	Abamectin	30cm ³ /100 L.w	Mod II	12	0.005	0.01	0.01
2439	Chromic 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	7	0.005	0.01	0.01
2320	Concord 24% SC	Chlorfenapyr	60cm ³ /100 L.w	Mod II	10	-	0.01	-
1450	Lisu 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	3	0.005	0.01	0.01
2023	Nuspider 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	7	0.005	0.01	0.01
1696	Oplatin 5% EC	Abamectin	20cm ³ /100 L.w	Mod II	7	0.005	0.01	0.01

Pest: Fungi

Black scurf disease

Symptoms of infections:

Lesions on sprout tips cause delayed emergence or failure to emerge. Slightly sunken brown cankers of variable size and shape affect stolons and stems at or below the soil line. Cankers may girdle stems and result in aerial tuber formation, plant wilt, and death. Hard, dark brown or black sclerotia (fungus-resting bodies) of irregular size and shape form on the tuber surface. A white mycelial mat may develop on the stem base, but does little harm to the plant.



- **Time of symptoms appearance:** Time of tubers casting
- **Proper time of control:** The discovery tubers before planting.

Certified Recommendations:

Reg. No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1710	Amisto 25% SC	Azoxystrobin	1Liter/Tontubers	U	-	7	7	8
2455	Emesto Prime 5% FS	Penflufen	40cm ³ /100 kg tubers	U	65	-	0.01	0.01
1718	Biocontrol T34 12% WP	<i>Trichoderma asperellum</i>	250gm/Ton tubers	U	-	-	-	-
1718	Biocontrol T34 12% WP	<i>Trichoderma asperellum</i>	250gm/feddan-irrigating after planting	U	-	-	-	-
1182	Celest 10% FS	Fludioxonil	200cm ³ /Ton tubers	U	-	5	5	6
681	Vitavax (200) 40% FS	Carboxin 20% + Thiram 20%	750cm ³ / Tontubers	Mod II	60	- 0.2	0.05 0.3	-
1908	Cruiser Max Potato 42% FS	Fludioxonil 8.4% + Thiamethoxam 33.6%	240cm ³ /Ton tubers	Low III	60	5 -	5 0.07	6 0.25
1385	Monceren G 37% FS	Imidacloprid 12% + Pencycuron 25%	0.6cm ³ /kg tubers	Mod II	70	-	0.5 0.1	0.4
1411	Momento 25% SC	Pencycuron	1cm ³ /kg tubers	U	-	-	0.1	-
2933	Freemold 56% WP	Hymexazole 16% + Thiophanate methyl 40%	1 gm/ 1 L.w.	U	60	- 0.1	0.05 0.1	- 0.1

Early blight

Symptoms of infections:

Brown, angular, necrotic spots marked internally by a series of concentric rings form on leaves and to a lesser extent on stems. Leaf lesions are seldom circular because they are restricted by the larger leaf veins. Lesions usually develop around flowering time and become increasingly numerous as plants mature. Lesions first form on lower leaves.

● Time of symptoms appearance:

The infection occurs on the leaves, stems and fruits during moderate temperatures (25-30°C) and high humidity.

● Proper time of control: When symptoms appear, especially in the summer season.

Certified Recommendations:



Reg. No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
698	Equation Pro 52.5% WG	Cymoxanil 30% + Famoxadone 22.5%	40gm/100 L.w	Low III	15	- 2	0.01 0.02	0.05 0.02
2577	Alco 70% WP	Propineb	300gm/100 L.w	U	7	0.2	0.2	-
744	Anadol 80% WP	Mancozeb	250gm/100 L.w	U	10	0.2	0.3	0.2
1035	Index 77% WP	Copper hydroxide	250gm/100 L.w	Mod II	5	-	5	-
1503	Optima 25% EC	Difenoconazole	50cm ³ /100 L.w	U	5	4	0.1	4
1795	I.B. Core 72% WP	Cymoxanil 8% + Mancozeb 64%	250gm/100 L.w	Low III	3	- 0.2	0.01 0.3	0.05 0.2
1900	Airone 48.9% WG	Copper hydroxide 24.5% + Copper oxychloride 24.4%	50cm ³ /100 L.w	Low III	7	-	5 5	-



Agricultural Pesticide Committee

Potatoes

Early blight

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1598	Emthane 75% WG	Mancozeb	300gm/100 L.w	U	7	0.2	0.3	0.2
1646	Proxanil 45% SC	Cymoxanil 5% + Propamocarb hydrochloride 40%	250cm ³ /100 L.w	Low III	3	— 0.3	0.01 0.3	0.05 0.06
298	Polyram DF 80%DF	Metiram	200gm/100 L.w	U	14	0.2	0.3	0.2
2723	Outdo 32% SC	Azoxystrobin 20% + Propiconazole 12%	300cm ³ /feddan	Low III	7	7 —	7 0.01	8 —
2703	Rowancomil 72% WP	Mancozeb 64% + Metalaxyl 8%	200gm/100 L.w	Mod II	7	0.2 0.05	0.3 0.02	0.2 0.5
2765	Glider 40% EW	Difenoconazole	35cm ³ /100 L.w	Low III	7	4	0.1	4
2780	Cymdon 52.5% WG	Cymoxanil 30% + Famoxadone 22.5%	40gm/100 L.w	Low III	14	0.01 0.02	— 0.02	0.05 0.02
946	Bellkute 40% WP	Iminocadine tris (albesilate)	100 gm/100 L.w	Low III	7	—	0.01	—
2226	Pugil CX 42.5% SC	Chlorothalonil 37.5% + Cymoxanil 5%	200cm ³ /100 L.w	Low III	7	— —	0.01 0.01	0.1 0.05
743	Tazolen 72% WP	Mancozeb 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	14	0.2 0.05	0.3 0.02	0.2 0.5
411	Tridex 80% WP	Mancozeb	250gm/100 L.w	U	7	0.2	0.3	0.2
410	Tridex Super 75% WG	Mancozeb	200gm/100 L.w	U	3	0.2	0.3	0.2
1946	Toledo 43% SC	Tebuconazole	35cm ³ /100 L.w	Low III	5	—	0.02	—
1291	Gardner 25% EC	Difenoconazole	50cm ³ /100 L.w	U	10	4	0.1	4
2378	Ganger 50% WP	Fosetyl-Aluminium 28% + Mancozeb 22%	300gm/100 L.w	U	7	— 0.2	30 0.3	— 0.2
2299	Genex 72% WP	Mancozeb 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	7	0.2 0.05	0.3 0.02	0.2 0.5
1803	Difazol 25% EC	Difenoconazole	50cm ³ /100 L.w	U	14	4	0.1	4
1638	Daiify core 25% EC	Difenoconazole	50cm ³ /100 L.w	U	7	4	0.1	4
2219	Dlemma 50% WP	Mancozeb 45% + Tebuconazole 5%	200gm/100 L.w	U	7	0.2 —	0.3 0.02	0.2 —
1706	Decent 32.5% SC	Azoxystrobin 20% + Difenoconazole 12.5%	300cm ³ /feddan	Low III	3	7 4	7 0.1	8 4
1644	Duett-M 73% WG	Cymoxanil 5% + Mancozeb 68%	150gm/100 L.w	Mod II	3	— 0.2	0.01 0.3	0.05 0.2
2237	Roxyl M 72% WP	Mancozeb 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	7	0.2 0.05	0.3 0.02	0.2 0.5
2274	Ridozeen 72% WP	Mancozeb 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	7	0.2 0.05	0.3 0.02	0.2 0.5
1774	Revus Top 50% SC	Mancozeb 60% + Mandipropamid 5%	1kg/feddan	U	7	0.2 0.01	0.3 0.01	0.2 0.01
1651	Remik 30% WG	Dimethomorph 72% + Metalaxyl 8%	200gm/100 L.w	Low III	7	0.05 0.05	0.05 0.02	0.05 0.5
1439	Sandcure 72% WP	Mancozeb 64% + Metalaxyl 8%	250 gm/100 L.w	Mod II	3	0.2 0.05	0.3 0.05	0.2 0.5
1976	Sandozole 25% EC	Difenoconazole	50cm ³ /100 L.w	U	7	4	0.1	4
2357	Speedcide 25% EC	Difenoconazole	50cm ³ /100 L.w	U	7	4	0.1	4
1584	Spirit 80% WP	Mancozeb	250 gm/100 L.w	U	7	0.2	0.2	0.3
1576	Stone 50% WG	Dimethomorph	50 gm/100 L.w	U	7	0.05	0.05	0.05
2436	Scratch 76% WP	Cymoxamil 6% + Propineb 70%	350 gm/100 L.w	Mod II	7	0.01 0.2	— 0.2	0.05 —
945	Score 25% EC	Difenoconazole	50cm ³ /100 L.w	U	14	4	0.1	4
2809	Scooter top 25% EC	Difenoconazole	50cm ³ /100 L.w	U	14	4	0.1	4
2855	Freaky 32.5% SC	Azoxystrobin 20% + Difenoconazole 12.5%	300cm ³ /100 L.w	Low III	7	7 4	7 0.1	8 4
2761	Megal 80% WG	Azoxystrobin	16 gm/100 L.w	U	7	7	7	8

Potatoes

Early blight

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2775	Copforce Extra 52.1% WG	Copper hydroxid 46.1% + Cymoxanil 6%	800 gm/feddan	Mod II	7	-	5	-
2159	Scorpio 25% EC	Difenoconazole	50cm ³ /100 L.w	U	7	4	0.1	0.05
1455	Sogaat 72% WP	Mancozeb 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	7	0.2 0.05	0.3 0.02	0.2 0.5
1075	Sereno 60% WG	Fenamidone 10% + Mancozeb 50%	150gm/100 L.w	Low III	9	0.01 0.2	0.01 0.3	0.02 0.2
1526	Suncozeb 75% WDG	Mancozeb	200gm/100 L.w	U	7	0.2	0.3	0.2
2648	Fango 50% WG	Pyraclostrobin	70gm/100 L.w	U	7	0.02	0.02	0.04
1026	Flint 50% WG	Trifloxystrobin	20gm/100 L.w	U	7	0.02	0.02	0.04
1704	Flow EZ 80% WDG	Folpet	150gm/100 L.w	U	10	0.1	0.06	-
360	Folicur 25% EC	Tebuconazole	60cm ³ /100 L.w	U	10	-	0.02	-
2634	Vostok 72% WP	Mancozeb 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	7	0.2 0.05	0.3 0.02	0.2 0.5
2558	Fonel 52.5% WG	Cymoxanil 30% + Famoxadone 22.5%	40gm/100 L.w	Low III	7	- 0.02	0.01 0.02	0.05 0.02
1600	Cadillac 80% WP	Mancozeb	250gm/100 L.w	U	7	0.2	0.3	0.2
1171	Cabrio Top 11.2% EC	Metiram 55% + Pyraclostrobin 5%	200gm/100 L.w	U	5	0.2 0.02	0.03 0.02	0.2 0.04
1839	Cabrio Duo 11.2% EC	Dimethomorph 7.2% + Pyraclostrobin 5%	250cm ³ /100 L.w	U	10	0.05 0.02	0.05 0.02	0.05 0.04
372	Cuprous KZ 56.35% WP	Cuprous oxide	250gm/100 L.w	Mod II	11	-	5	-
1588	Copperpro 77% WP	Copper hydroxide	250gm/100 L.w	Mod II	7	-	5	-
1758	Coboko 57% WG	Dimethomorph 13% + Propineb 44%	150gm/100 L.w	U	3	0.05 0.2	0.05 0.2	0.05 -
640	Kocide (2000) 53.8 % DF	Copper hydroxide	180 gm/100 L.w	Mod II	5	-	5	-
1234	Consento 45% SC	Fenamidone 7.5% + Propamocarb hydrochloride 37.5%	200cm ³ /100 L.w	U	7	0.02 0.3	0.01 0.3	0.02 0.06
1501	Curve 25% EC	Difenoconazole	50cm ³ /100 L.w	U	5	4	0.1	4
734	Cure M 72% WP	Mancozeb 64% + Metalaxyl 8%	250 gm/100 L.w	Mod II	14	0.2 0.05	0.3 0.02	0.2 0.5
1994	Luna tranquility 50% SC	Fluopyram 12.5% + Pyrimethanil 37.5%	87.5cm ³ /100 L.w	Low III	10	0.03 0.05	0.1 0.05	0.02 0.05
1645	Matco gold 72% WP	Mancozeb 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	3	0.2 0.05	0.3 0.02	0.2 0.5
1982	Magma 52.5% WG	Cymoxanil 30% + Famoxadone 22.5%	50gm/100 L.w	Low II	3	- 0.02	0.01 0.02	0.05 0.02
2200	Morano 50% EC	Difenoconazole 25% + Propiconazole 25%	30cm ³ /100 L.w	Low III	7	4 -	0.1 0.01	4 -
1386	Novicure 70% WG	Copper sulfate (tribasic)	175gm/100 L.w	Mod II	3	-	5	-
1523	Nemo 70% WP	Propineb	300gm/100 L.w	U	3	0.2	0.2	-
1863	Euro tech 80% WP	Mancozeb	250gm/100 L.w	U	10	0.2	0.3	0.2
1988	Unimel 72% WP	Mancozeb 64% + Metalaxyl 8%	200gm/100 L.w	Mod II	7	0.2 0.05	0.3 0.02	0.2 0.5
2860	Ridostar 72% WP	Cymoxanil 8% + Mancozeb 64%	250gm/100 L.w	Mod I	7	- 0.2	0.01 0.3	0.05 0.2
2868	Metolex 72% WP	Mancozeb 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	8	0.2 0.05	0.3 0.02	0.2 0.5
2928	Matocel 72% WP	Mancozeb 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	7	0.2 0.05	0.3 0.02	0.2 0.5
1914	Bravotop 55% SC	Chlorothalonil 50% + Difenoconazole 5%	500 cm ³ /feddan	Low III	3	- 4	0.01 0.1	0.1 4

Late blight

Symptoms of infections:

Water-soaked lesions appear on foliage that, within a few days, becomes necrotic, turning brown when dry or black when wet. Under damp conditions, white mildew-like sporulation is visible, especially on the lower surface of leaves. A pale-yellow margin often forms around leaf lesions. Lesions on stems and petioles are black or brown. Stem lesions are brittle and stems frequently break at the point of the lesion. Under certain conditions, wilting can occur on stems with lesions.



- **Time of symptoms appearance:** The disease spreads in high humidity and low temperatures
- **Proper time of control:** When symptoms appear, especially in the Nili season.
- **Guidelines:**

The spray solution must reach the upper and lower surface of the leaves.

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1040	Aromil MZ 72% WP	Mancozeb 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	5	0.2 0.05	0.3 0.02	0.2 0.5
1713	Acrobate MZ 69% WG	Dimethomorph 9% + Mancozeb 60%	250gm/100 L.w	U	7	0.05 0.2	0.05 0.3	0.05 0.2
546	Acrobat copper 73.2% WP	Copper oxychloride 67.2% + Dimethomorph 6%	250gm/100 L.w	Mod II	20	– 0.05	5 0.05	– 0.05
2429	Acrobest Plus 46% WG	Copper oxychloride 40% + Dimethomorph 6%	250gm/100 L.w	Low III	9	– 0.05	5 0.05	– 1.5
698	Equation Pro 52.5% WG	Cymoxanil 30% + Famoxadone 22.5%	40gm/100 L.w	Low III	15	– 0.02	0.01 0.02	0.05 0.02
2014	Electis 75% WG	Mancozeb 66.7% + Zoxamide 8.3%	200gm/100 L.w	U	7	0.2 0.02	0.3 0.02	0.2 0.06
49	Antracol 70% WP	Propenib	250gm/100 L.w	U	3	0.2	2.0	–
1262	Infinito 68.75% SC	Fluopicolide 6.25% + Propamocarb hydrochloride 62.5%	125cm ³ /100 L.w	U	8	– 0.3	0.03 0.3	0.02 0.06
1997	Orvego 52.5% SC	Ametoctradin 30% + Dimethomorph 22.5%	80cm ³ /100 L.w	U	7	0.05 0.05	0.05 0.05	0.05 0.05
2874	Chairman Bro 25% WP	Cymoxanil 12.5% + Metalaxyl 12.5%	170gm/100 L.w	Low III	7	– 0.05	0.01 0.02	0.05 0.5
1146	Oxyplus 47.89% WP	Copper oxychloride	250gm/100 L.w	Low III	–	–	5	–
1396	Brado 72% SC	Chlorothalonil	875cm ³ /feddan	U	5	–	0.01	0.1
1914	Bravo Top 55% SP	Chlorothalonil 50% + Difenoconazole 5%	500cm ³ /feddan	Low III	3	– 4	0.01 0.01	0.1 0.1

Potatoes

Late blight

Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
699	Proplant 72.2% SL	Propamocarb hydrochloride	250cm ³ /100 L.w	U	14	0.3	0.3	0.06
1324	Procure 72.2% SL	Propamocarb hydrochloride	250cm ³ /100 L.w	U	3	0.3	0.3	0.06
1403	Prevex N 72.2% SL	Propamocarb hydrochloride	250cm ³ /100 L.w	U	10	0.3	0.3	0.06
270	Previcur N 72.2% SL	Propamocarb hydrochloride	250cm ³ /100 L.w	U	3	0.3	0.3	0.06
1851	Premitox forte 41% WP	Copper Complex 21% + Mancozeb 20%	250gm/100 L.w	Mod II	7	— 0.2	5 0.3	— 0.2
1813	Poka G 50% SC	Fluazinam	50cm ³ /100 L.w	U	5	—	0.02	0.02
411	Tridex 80% WP	Mancozeb	250gm/100 L.w	U	7	0.2	0.3	0.2
410	Tridex Super 75% WG	Mancozeb	200gm/100 L.w	U	3	0.2	0.3	0.2
1921	Triomax 66% WP	Copper oxychloride 50% + Cymoxanil 4% + Mancozeb 12%	250gm/100 L.w	Mod II	7	— — 0.2	5 0.01 0.3	— 0.05 0.2
84	Galben Mancozeb 58%WP	Benalaxyl 10% + Mancozeb 48%	250gm/100 L.w	U	14	0.02 0.2	0.05 0.3	— 0.2
85	Galben Copper 69.8% WP	Benalaxyl 11% + Copper oxychloride 58.8%	250gm/100 L.w	Low III	20	0.02 —	0.05 5	— —
1724	Goldstone 69% WP	Dimethomorph 9% + Mancozeb 60%	250gm/100 L.w	U	3	0.05 0.2	0.05 0.3	0.05 0.2
189	Dithane M-45 – 80% WP	Mancozeb	250gm/100 L.w	U	15	0.2	0.3	0.2
735	Dicozeb 80% WP	Mancozeb	250gm/100 L.w	U	8	0.2	0.3	0.2
2281	Dodjo 68% WG	Mancozeb 64% + Metalaxyl-M 4%	200gm/100 L.w	Mod II	21	0.2 0.05	0.3 0.02	0.2 0.5
1485	Rado El Nasr 72% WP	Mancozeb 64% + Metalaxyl 8%	300gm/100 L.w	Mod II	10	0.2 0.05	0.3 0.02	0.2 0.5
2066	Ranman 40% SC	Cyazofamid	30cm ³ /100 L.w	U	7	0.01	0.01	0.2
1062	Rolex 50% WP	Copper oxychloride 35% + Metalaxyl 15%	150gm/100 L.w	Mod II	10	— 0.05	5 0.02	— 0.5
1211	Ridomil Gold MZ 68%WG	Mancozeb 64% + Metalaxyl-M 4%	200gm/100 L.w	Mod II	8	0.2 0.05	0.3 0.02	0.2 0.5
763	Ridomil gold plus 71.5%WP	Copper oxychloride 69% + Metalaxyl 2.5%	200gm/100 L.w	Mod II	7	— 0.05	5 0.02	— 0.5
2721	Groxmax 86% WP	Boreaux mixture 83% + Cymoxanil 3%	400gm/100 L.w	Mod II	7	— —	5 0.01	— 0.05
2807	Persidiam 36% SC	Dimethomorph 18% + Zoxamid 18%	100cm ³ /100 L.w	U	7	0.05 0.02	0.05 0.02	0.05 0.06
2702	Kashan 20% SC	Cyazofamid	300cm ³ /100 L.w	U	7	0.01	0.01	0.02



Agricultural Pesticide Committee

Potatoes

Late blight

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1220	Revus 25% SC	Mandipropamid	50cm ³ /100 L.w	U	3	0.01	0.01	0.01
1774	Revus Top50% SC	Difenoconazole 25% + Mandipropamid 25%	200cm ³ /feddan	Low III	3	4 0.01	0.1 0.01	4 0.01
1354	Revus MZ 65% WG	Mancozeb 60% + Mandipropamid 25%	1kg/feddan	U	7	0.2 0.01	0.3 0.01	0.2 0.01
1873	Rival 72.2% SL	Propamocarb hydrochloride	250cm ³ /100 L.w	U	7	0.3	0.3	0.06
2292	Zan 50% SC	Fluazinam	50cm ³ /100 L.w	U	7	-	0.02	0.02
1953	Zignal 50% SC	Fluazinam	50cm ³ /100 L.w	U	7	-	0.02	0.02
1141	Zoom 2007 38.37% WP	Copper hydroxide	250 gm/100 L.w	Low III	-	-	5	-
2420	Strok 80% WP	Mancozeb	250 gm/100 L.w	U	7	0.2	0.3	0.2
2108	Stromac 25% SC	Azoxystrobin	50cm ³ /100 L.w	U	7	7	7	-
1075	Sereno 60% WG	Fenamidone 10% + Mancozeb 50%	150gm/100 L.w	Low III	9	0.02 0.2	0.01 0.3	0.02 0.2
2243	Cyfomane 10% SC	Cyazofamid	120cm ³ /100 L.w	U	7	0.01	0.01	0.02
1214	Champ DP 57.6% WG	Copper hydroxide	250gm/100 L.w	Mod II	1	-	5	-
1102	Shirlan 50% SC	Fluazinam	50cm ³ /100 L.w	U	7	-	0.02	0.02
2276	Fungi morth 69% WP	Dimethomorph9% + Pyraclostrobin 60%	250gm/100 L.w	U	7	0.05 0.2	0.05 0.3	0.05 0.2
674	Funguran OH 77%WP	Copper hydroxide	250gm/100 L.w	Mod II	7	-	5	-
2635	Foly Star 40% SL	Dimethomorph 20% + Fluazinam 20%	300cm ³ /feddan	U	7	0.05 -	0.05 0.02	0.05 0.02
2433	Fobeci 44.2% WP	Benalaxyl 6% + Cymoxanil 3.2% + Folpet 35%	250gm/100 L.w	Low III	7	0.02 - 0.1	0.05 0.01 0.06	- 0.05 -
2560	Forte – Pro 25% WP	Cymoxanil 5% + Dimethomorph20%	80gm/100 L.w	Low III	7	- 0.05	0.01 0.05	0.05 0.05
2015	Volar MZ 69% WP	Dimethomorph 9% + Mancozeb 60%	250gm/100 L.w	U	7	0.05 0.2	0.05 0.3	0.05 0.2
1271	Folio Gold 53.75% SC	Chlorothalonil 50% + Metalaxyl-M 3.75%	300cm ³ /100 L.w	Mod II	7	- 0.05	0.01 0.02	0.1 0.5
2045	Vegeclean 15% WG	Benthiavalicarb-isopropyl	50gm/100 L.w	U	7	-	0.02	-
2298	Kpakit 85% WP	Copper oxychloride	250 gm/100 L.w	Mod II	5	-	5	-
1839	Cabrio Duo 11.2% EC	Dimethomorph 7.2% + Pyaclostrobin 4%	250cm ³ /100 L.w	U	10	0.05 0.02	0.05 0.02	0.05 0.04
1234	Consento 45% SC	Fanamidone 7.5% + Propamocarb hydrochloride 37.5%	250cm ³ /100 L.w	Low III	7	0.02 0.3	0.01 0.3	0.02 0.06
1111	King 64.61% SC	Copper sulfate (tribasic)	200cm ³ /100 L.w	Mod II	23	-	5	-

Potatoes

Late blight

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1071	Cure-plus 74.5% WP	Copper oxychloride 59.5% + Metalaxyl 15%	150gm/100 L.w	Mod II	23	0.05	5 0.02	0.5
2079	Leimay 20% SC	Amisulbrom	40cm ³ /100 L.w	U	7	-	0.01	-
1814	Manfil 75% WG	Mancozeb	200gm/100 L.w	U	7	0.2	0.3	0.2
1079	Manco 80% WP	Mancozeb	250gm/100 L.w	U	10	0.2	0.3	0.2
1410	Manco El Nasr 80% WP	Mancozeb	250gm/100 L.w	U	5	0.2	0.3	0.2
1277	Mancosil plus 50% WP	Copper oxychloride 35% + Metalaxyl 15%	150gm/100 L.w	Mod II	15	0.05	5 0.02	0.5
2168	Metrodex 80%WP	Mancozeb	250 gm/100 L.w	U	7	0.2	0.3	0.2
1570	Morphee 71.3% WG	Dimethomorph 11.3% + Folpet 60%	800gm/feddan	U	14	0.05 0.1	0.05 0.06	0.05 -
1437	Montoro 30% EC	Difenoconazole 15% + Propiconazole 15%	50cm ³ /100 L.w	Low III	7	4 -	0.1 0.01	4 -
2481	Metalman 72% WP	Mancozeb 64% + Metalaxyl 8%	250 gm/100 L.w	Mod II	7	0.2 0.05	0.3 0.02	0.2 0.5
2529	Microstar 25% SC	Azoxystrobin	50cm ³ /100 L.w	U	7	7	7	-
1417	Nando 50% SC	Fluazinam	50cm ³ /100 L.w	U	7	-	0.02	0.02
1386	Novicure 70% WG	Copper sulfate (tribasic)	125gm/100 L.w	Mod II	3	-	5	-
2431	High Quijen One 52.5% WG	Cymoxanil 30% + Famoxadone 22.5	150gm/100 L.w	Low III	7	0.02	0.01 0.02	0.05 0.02
2272	Winnergold 53.75% SC	Chlorothalonil 50% + Metalaxyl-M 3.75%	300 cm ³ /100 L.w	Mod II	7	0.05	0.01 0.02	0.1 0.5

Pest: Nematodes

Root-knot nematode

Symptoms of infections:

A knot appears on the roots. The nematode's ability to survive unnoticed under the skin of tubers and in the dry soil adhering to them contributes to the spread of the disease.

- Time of symptoms appearance:

From small seedling to fruit

- Proper time of control: At the beginning of the season.

Certified Recommendations:



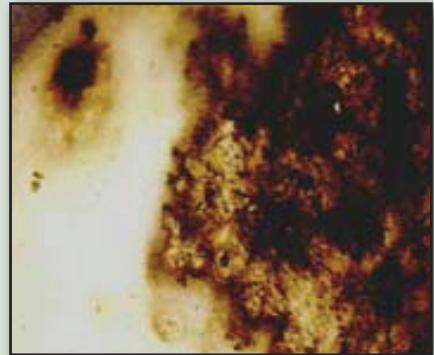
Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1616	Tervigo 2%SC	Abamectin	2.5 Liter/feddan	Mod II	45	0.01	0.005	0.01
1869	Nimayuk 10% GR	Ethoprophos	30 kg/feddan	Mod II	90	0.02	0.05	0.02

Lesion Nematodes

Symptoms of infections:

Root-lesion nematodes cause brown necrotic lesions in the cortical root tissue. Infected tubers show purple-brown pimples, pustules, or wart like protuberances. The plant's aerial parts generally develop poorly.

- **Time of symptoms appearance:** After planting by month.
- **Proper time of control:** when tuber planting.



Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2628	Nema fight 20% EC	Ethoprophos	2Liter/feddan	Mod II	-	0.05	0.05	0.02
377	Mocap 10% GR	Ethoprophos	30 Kg/feddan	Mod II	-	0.05	0.05	0.02

Pepper

Pest: Insects

Thrips (*Thrips spp.*)

Symptoms of infestations:

Both adults and larvae cause damage that appears as a silvery streaking on leaves and buds, heavy infestation turned infested areas into brown color and cause its dryness. Thrips causes dropping of flowers and impede its growth.



- **Time of symptoms appearance:**

As soon as seedlings occurred.

- **Proper time of control:** When random inspection of the infested plants shows a number of 10 nymphs and adults per one single plant.

- **Guidelines:**

Care of agricultural practices is necessary, such as, Plowing, hoeing and removing weeds, using blue traps for monitoring is very important for early detection.

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1329	Radiant 12% SC	Spinetoram	100cm ³ /feddan	U	6	-	0.5	0.5

White fly (*Bemisia tabaci*)

Symptoms of infestations:

Curling and curving of leaves' margins downward, adult insects could be seen easily with naked eye. Nymphs could be seen with lenses 10x.

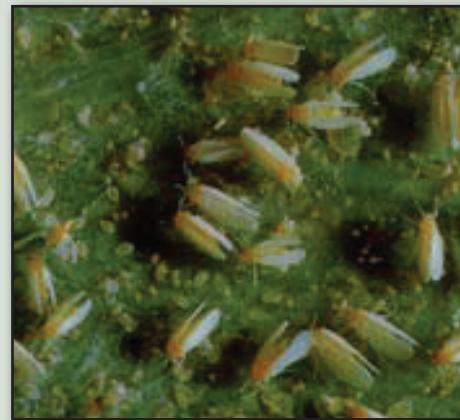
● Time of symptoms appearance:

As soon as seedlings occurred.

● Proper time of control: When number of insects reached 5 insect per one single plant of randomly selected plants.

● Guidelines:

Spraying treatment should be applied directly on the vegetative system and repeating of treatments is required when it is necessary.



Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1003	Actara 25% WG	Thiamethoxam	80gm/feddan	U	9	0.7	0.7	0.25
1954	Tedo 50% WG	Pymetrozine	50gm/100 L.W	U	3	-	3	0.2

Aphid

Symptoms of infestations:

Curling of leaves and terminal buds, presence of yellowish spots on wilt leaves and dwarfism of terminal buds and young leaves as well.

● Time of symptoms appearance:

During March and April and during August and September.

● Proper time of control:

When number of insects reached 1-2 individuals per one leaf of randomly selected leaves.

● Guidelines:

Complete coverage treatment spray should be applied.



Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2362	Supertox-1 48% SC	Clothianidin	200cm ³ /feddan	U	5	0.5	0.04	0.8



Pepper

Powdery mildew

Pest: Fungi

Powdery mildew

Symptoms of infections:

During initial stages of infection, light green to bright-yellow blotches appear on upper surfaces of leaves. These areas later turn necrotic. Infected leaves curl upward, and a powdery, white growth is visible on the underside of leaves. and later, the disease progresses up towards new growth. Affected leaves eventually turn yellow and necrotic.



- **Time of symptoms appearance:**

When environmental conditions are available (High relative humidity is not required for infection. Warm temperature and low light conditions generally favor disease development).

- **Proper time of control:** When symptoms appear

- **Guidelines:** The spray solution must reach the upper and lower surface of the leaves.

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2564	Atrio 80% WP	Tebuconazole	20gm/100 L.w	Low III	4	1	0.6	1.3
1856	Open 72% SC	Chlorothalonil	250cm ³ /100 L.w	U	7	7	0.01	6
2395	Pastel 56% SC	Azoxystrobin 6% + Chlorothalonil 50%	250cm ³ /100 L.w	U	10	3/7	3/0.01	3/6
2613	Fabolous 75% WP	Chlorothalonil 62.5% + Tebuconazole 12.5%	75gm/100 L.w	Low III	3	7/1	0.01/0.6	6/1.3

Eggplant

Red spider mite (*Tetranychus urticae*)

Symptoms of infestations:

Presence of white spots on the upper surface of the leaves around midrib and extended to outside to spread on the whole leaf, in sever infestation, leaves wilt and fall down.



- **Time of symptoms appearance:** From May to June

- **Proper time of control:** When mean number of inspected plants showed 5 individuals per leaf per whole randomly inspected plants.

● Guidelines:

Spraying with recommended anti-mites should be applied as fanning spraying technique to make complete coverage treatment for both upper and lower leaves surfaces.

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1215	Oberon 24% SC	Spiromesifen	50cm ³ /100 L.w	U	7	-	0.5	-
1159	Ortus super 5% EC	Fenpyroximate	50cm ³ /100 L.w	Low III	1	0.2	0.2	0.2
1582	Buprolord 25% SC	Buprofezin	400cm ³ /100 L.w	Low III	3	0.7	1	2
2684	Spiner 10% SC	Abamectin	10cm ³ /100 L.w	Mod II	3	0.05	0.09	0.02

Cucumber

Pest: Insects

**Wite fly
(*Bemesia tabaci*)**

Symptoms of infestations:

Curling and curving of leaves' margins downward, adult insects could be seen easily with naked eye. Nymphs could be seen with lenses 10x.

● Time of symptoms appearance:

From May to November during the late summer plantation, autumn and early winter plantations.

● Proper time of control: When number of insects reached 5 insect per one single plant of randomly selected plants.

● Guidelines:

Spraying treatment should be applied directly on the vegetative system and repeating of treatments is required when it is necessary.

Certified Recommendations:



Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1991	Avenue 70% WG	Imidacloprid	120gm/feddan	Mod II	5	1	1	0.5
2283	Antiflaiy 10% EC	Pyriproxyfen	75cm ³ /100 L.w	U	10	-	0.1	0.1
1215	Oberon 24% SC	Spiromesifen	240cm ³ /feddan	U	3	-	0.3	-
2649	Porten 20% SP	Acetamiprid	50gm/100 L.w	Mod II	7	0.3	0.3	0.5
2124	General 10% EC	Pyriproxyfen	75cm ³ /100 L.w	U	7	-	0.1	0.1
2190	Cup Extra 35% WG	Thiamethoxam 15% + Pymetrozine 20%	160gm/feddan	U	7	0.5	0.5	0.2
						-	1	0.1



Agricultural Pesticide Committee

Cucumber

White fly

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1260	Mallet 35% SC	Imidacloprid	30cm ³ /100 L.w	Mod II	5	1	1	0.5
2831	Sandpride 48% SC	Imidacloprid	45cm ³ /100 L.w	Mod II	5	1	1	0.5
2444	Outlock 20% SL	Acetamiprid	25cm ³ /100 L.w	Mod II	7	0.3	0.3	0.5
2567	Yamacho 35% SC	Imidacloprid	200 cm ³ /feddan	Mod II	5	1	1	0.5

Aphid (*Aphis spp.*)

Symptoms of infestations:

Curling of leaves , growing apex and presence of yellow spots on leaves, then wilt and die, malformations of growing apex and young leaves and finally spread of viral diseases.

- Time of symptoms appearance:

During March and April and during August and September

- Proper time of control: When mean number of randomly inspected leaves reached 1-2 individual per one leaf.

- Guidelines:

Complete coverage spray treatment with the recommended insecticide have to be applied.



Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1878	Aceta 20% SP	Acetamiprid	25gm/100 L.w	Mod II	7	0.3	0.3	0.5
1780	Edal Aftrid 20% SP	Acetamiprid	25gm/100 L.w	Mod II	7	0.3	0.3	0.5
1289	Imidor 35% SC	Imidacloprid	75cm ³ /100 L.w	Mod II	7	1	1	0.5
1235	Chess 50% WG	Pymetrozine	80gm/feddan	U	3	-	1	0.1
2002	Joun 70% WG	Imidacloprid	35gm/feddan	Mod II	5	1	1	0.5
1832	Renova 25% WG	Thiamethoxam	80gm/feddan	U	7	0.5	0.5	0.2
1859	Cetam 20% SL	Acetamiprid	25cm ³ /100 L.w	Mod II	7	0.3	0.3	0.5
1915	Cetamart 20% SP	Acetamiprid	25gm/100 L.w	Mod II	7	0.3	0.3	0.5
959	Mosiplan 20% SP	Acetamiprid	25gm/100 L.w	Mod II	3	0.3	0.3	0.5
1070	Mospildate 20% SP	Acetamiprid	25gm/100 L.w	Mod II	3	0.3	0.3	0.5
2518	Merva 20% SL	Acetamiprid	25cm ³ /100 L.w	Mod II	7	0.3	0.3	0.5
2782	Malathion Elnasr 57% EC	Malathion	15cm ³ /100 L.w	Low III	5	0.2	0.02	8
2738	Forcuct G 40% WG	Acetamiprid	15gm/100 L.w	Mod II	7	0.3	0.3	0.5
2756	Samprid 20% SP	Acetamiprid	25gm/100 L.w	Mod II	7	0.3	0.3	0.5

Leaf miner (*Liriomyza* spp.)

Symptoms of infestations:

Larvae feed and tunnel between the epidermal layers of the leaf narrow causing tunnels becomes wider at their ends and forming transparent leaves without tissues, these spots turned brown in a color as a result of cells and tissues death.

- **Time of symptoms appearance:**

During October – November and March-April.

- **Proper time of control:** When number of tunnels reached 2-3 tunnels per one of the randomly inspected leaves.

- **Guidelines:**

Vegetative system should be sprayed with recommended insecticide in a complete coverage treatment.



Certified Recommendations:

Reg. No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
975	Romactin 1.8% EC	Abamectin	30cm ³ /100 L.w	Mod II	8	0.03	0.04	0.05
2137	Simo 25% WG	Thiamethoxam	80gm/feddan	U	7	0.5	0.5	0.2
1647	Lex 25% WG	Thiamethoxam	60gm/feddan	U	7	0.5	0.5	0.2

Pest: Mites

Red spider mite (*Tetranychus urticae*)

Symptoms of infestations:

Presence of white spots on the upper surface of the leaves around midrib and extended to outside to spread on the whole leaf, in sever infestation, leaves wilt and fall down.

- **Time of symptoms appearance:**

During April-May and July - August

- **Proper time of control:** When mean number of inspected plants showed 5-7 individuals per leaf per whole randomly inspected plants.

- **Guidelines:**

Spraying with recommended anti-mites should be applied as fanning spraying technique to make complete coverage treatment for both upper and lower leaves surfaces.





Agricultural Pesticide Committee

Cucumber

Red spider mite

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1899	Abazeen 1.8% EC	Abamectin	50cm ³ /100 L.w	Mod II	3	0.03	0.04	0.05
1093	Abalone 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	7	0.03	0.04	0.05
1345	Abantin 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	7	0.03	0.04	0.05
1648	Prince 10% EC	Hexythiazox	20cm ³ /100 L.w	U	7	0.05	0.5	-
1771	Samcotin 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	7	0.03	0.04	0.05
2300	Vistro 50% SC	Clofentezine	30cm ³ /100 L.w	U	7	0.5	0.2	-
466	Vertimec 1.8% EC	Abamectin	160cm ³ /feddan	Mod II	7	0.03	0.04	0.05
174	KZ oil 95% EC	Mineral oil	1Liter/100 L.w	U	12	-	0.01	-
1912	Kirox 5% WP	Hexythiazox	40gm/100 L.w	U	7	0.05	0.5	-
1078	Killmite 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	8	0.03	0.04	0.05
1719	Marisol 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	7	0.03	0.04	0.05
2651	Maximic 8% SC	Abamectin	20cm ³ /100 L.w	Mod II	7	0.03	0.04	0.05
1019	Maccomite 10% WP	Hexythiazox	20gm/100 L.w	U	6	0.05	0.5	-
1116	Medamec 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	4	0.03	0.04	0.05
1423	Nissorun 5% EC	Hexythiazox	40cm ³ /100 L.w	U	7	0.05	0.5	-

Pest: Fungi

Fruit rots

Symptoms of infections:

Small, dark, shallow, circular lesions that can occur anywhere on the fruit surface. Symptoms occur where the fruit epidermis was in contact with the soil surface. Water-soaked areas of decay turn from tan to dark brown.



- **Time of symptoms appearance:** Symptoms occur when the weather conditions of moderate temperature and humidity are high in September.

- **Proper time of control:** When symptoms appear.

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1735	Pyrus 40% SC	Pyrimethanil	100cm ³ /100 L.w	U	7	0.7	0.7	-
938	Teldor 50% SC	Fenhexamid	600cm ³ /feddan	U	8	1	1	2

Root rot

Symptoms of infections:

Many fungi can cause a range of symptoms in cucurbits from pre-and post-damping-off in young seedlings to crown and root rot, leaf spots, foliar blights.

- **Time of symptoms appearance:** After planting after 21-30 days.
- **Proper time of control:** Treatment of seeds or seedlings before planting.
- **Guidelines:** Fungicide was applied by spraying it around the seedlings. Care for irrigation and not excessive the irrigation.



Certified Recommendations:

Reg. No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2683	Azoxam 44.7% SC	Azoxystrobin 32.2% Metalaxy [†] -M 12.5%	500cm ³ /feddan	Mod II	25	1 0.5	1 0.5	0.3 1
270	Previcur N 72.2% SL	Propamocarb hydrochloride	2.5cm ³ /1 L.w	U	7	5	5	1.5
2474	Premium 39.1% SC	Azoxystrobin 28.2% Metalaxy [†] -M 10.9%	650cm ³ /feddan	Mod II	45	1 0.5	1 0.5	0.3 1
1898	Pink-S 30% SL	Hymexazole	1cm ³ /1 L.w	U	45	–	0.05	–
1590	Tachichem 30% SL	Hymexazole	1.5cm ³ /1 L.w	U	45	–	0.05	–
687	Tachigaren 30% SL	Hymexazole	1cm ³ /1 L.w	U	20	–	0.05	–
247	Topsin-M 70% WP	Thiophanate-methyl	1gm/1 L.w	U	–	–	0.1	1
1586	Defender 11.1% SS	Copper sulfate anhydrous	2.5gm/1 L.w	Low III	50	–	5	–
2682	Deltagreen 30% SL	Hymexazole	1cm ³ /1 L.w	U	45	–	0.05	–
2271	Revanol 50% SL	8-Hydroxyquinoline sulfate	1cm ³ /1 L.w	Low III	50	–	0.01	–
1506	Combenix 70% WP	Thiophanate-methyl	1gm/1 L.w	U	45	–	0.1	1
1058	Hymexate 30% SL	Hymexazole	1cm ³ /1 L.w	U	–	–	0.05	–
1236	Uniform 39% SE	Azoxystrobin 28.2% Metalaxy [†] -M 10.8%	650cm ³ /feddan	Mod II	6	1 0.5	1 0.5	0.3 1
2795	Yamagreen 30% SL	Hymexazole	1 cm ³ /1 L.w	U	45	–	0.05	–
2894	Solstar 70% WP	Thiophanate methyl	1gm/1 L.w	U	45	–	0.1	1

Powdery mildew

Symptoms of infections:

Symptoms appear as pale-yellow spots on stems, petioles, and leaves. Infection may occur on the upper and/or lower leaf surface. As the spots enlarge, conidia are produced from affected tissue and the spots take on a powdery appearance. Infected leaves gradually turn yellow and may become brown and papery.



- **Time of symptoms appearance:** After 30-35 of planting.
- **Proper time of control:** When symptoms appear



Agricultural Pesticide Committee

Cucumber

Powdery mildew

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1083	Pandel 8% SC	Sulfur	100cm ³ /100 L.w	Low III	3	-	-	-
1453	Prev-AM 6% SL	Orange oil(d-limonene)	400cm ³ /100 L.w	U	1	-	-	-
946	Bellkute 40% WP	Iminoctadine tris (albesilate)	50gm/100 L.w	Low III	3	-	0.01	-
1438	Penazole 10% EC	Penconazole	25cm ³ /100 L.w	U	7	-	0.1	-
1087	Bio Arc 6% WP	<i>Bacillus megaterium</i>	250gm/100 L.w	U	-	-	-	-
1088	Bio Zeid 2.5% WP	<i>Trichoderma album</i>	250gm/100 L.w	U	-	-	-	-
1300	Talendo 20% EC	Proquinazid	25cm ³ /100 L.w	U	5	-	0.05	-
1054	Trifimine 15% EC	Triflumizole	25cm ³ /100 L.w	Low III	5	0.5	0.2	0.5
2453	Tertan 12.5% EW	Tetraconazole	40cm ³ /100 L.w	U	7	-	0.2	-
583	Domark 10% EC	Tetraconazole	50cm ³ /100 L.w	U	7	-	0.2	-
1265	Ritreat 5% EW	Cyflufenamid	20cm ³ /100 L.w	U	9	-	0.04	0.07
1152	Sulfonil 80% WG	Sulfur	200gm/100 L.w	Low III	3	-	-	-
1537	Sulpix 80% WG	Sulfur	200gm/100 L.w	Low III	3	-	-	-
521	Vectra 10% SC	Bromuconazole	100cm ³ /100 L.w	Low III	14	-	0.05	-
1097	Collis 30% SC	Bosalid 20% + Kresoxim-methyl 10%	50cm ³ /100 L.w	U	3	³ 0.05	⁴ 0.05	0.5 0.4
1778	Miracle 10% EC	Penconazole	25cm ³ /100 L.w	U	5	0.1	0.1	-
597	Microthiol special 80% WG	Sulfur	250gm/100 L.w	Low III	3	-	-	-
1560	Nativo 75% WG	Tebuconazole 50% + Trifloxystrobin 25%	125gm/feddan	Mod II	7	0.2 0.3	0.6 0.3	0.4 0.5
2832	Astron75% WG	Tebuconazole50% + Trifloxystrobin25%	125gm/100 L.w	Mod II	7	0.2 0.3	0.6 0.3	0.4 0.5
2850	Milder32.5% SC	Azoxystrobin20% + Difenconazole12.5%	200cm ³ /100 L.w	Low III	7	1 0.2	1 0.3	0.3 0.7
2875	Corridor40% EW	Prochloraz26.7% + Tebuconazole13.3%	35cm ³ /100 L.w	Low III	7	- 0.2	0.05 0.6	- 0.4

Downy mildew

Symptoms of infections:

Symptoms initially appear as small chlorotic lesions on older leaves, later appearing on the younger leaves. In humid environments, sporangia form on the underside of leaves, giving the appearance of a whitish-gray to purple fine downy growth. Lesions eventually coalesce and become necrotic, but may continue to expand until the entire leaf dies.

- **Time of symptoms appearance:** At any stage of plant growth.
- **Proper time of control:** When symptoms appear
- **Guidelines:** The spray solution must reach the upper and lower surface of the leaves.



Cucumber

Downy mildew

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1874	Astro 25% SC	Azoxystrobin	50cm ³ /100 L.w	U	3	1	1	0.3
546	Acrobat copper 73.2% WP	Copper oxychloride 67.2% + Dimethomorph 6%	150gm/100 L.w	Mod II	9	–	5	–
1027	Amistar 25% SC	Azoxystrobin	50cm ³ /100 L.w	U	3	1	1	0.3
1710	Amisto 25% SC	Azoxystrobin	50cm ³ /100 L.w	U	3	1	1	0.3
1262	Infinito 68.75% SC	Fluopicolide 6.25% + Propamocarb hydrochloride 62.5%	125cm ³ /100 L.w	U	8	0.5 5	0.5 5	0.5 1.5
2228	Private N 72.2% SL	Propamocarb hydrochloride	250cm ³ /100 L.w	U	7	5	5	1.5
1504	Propacure 72.2% SL	Propamocarb hydrochloride	250cm ³ /100 L.w	U	7	5	5	1.5
270	Previcur N 72.2% SL	Propamocarb hydrochloride	250cm ³ /100 L.w	U	7	5	5	1.5
1808	Previcur Energy 84%SL	Fosetyl Aluminium 31% + Propamocarb hydrochloride 53%	250cm ³ /100 L.w	U	3	– 5	75 5	– 1.5
1810	Blanc 25% SC	Azoxystrobin	50cm ³ /100 L.w	U	3	1	1	0.3
2608	Bolden M 45% WP	Cooper oxychloride 40% + Metalaxyl-M 5%	150gm/100 L.w	Mod II	10	– 0.5	5 0.5	– 1
1684	Pircore 72.2% SL	Propamocarb hydrochloride	250cm ³ /100 L.w	U	7	5	5	1.5
2378	Ganger 50% WP	Fosetyl Aluminium 28% + Mancozeb 22%	250gm/100 L.w	U	7	– 2	75 2	– 2
1558	Goldmil 72% WP	Cymoxanil 8% + Mancozeb 64%	250gm/100 L.w	Mod II	7	– 2	0.08 2	0.05 2
1211	Ridomil Gold MZ 68% WG	Mancozeb 64% + Metalaxyl-M 4%	200 gm/100 L.w	Mod II	10	– 0.5	2 0.5	– 1
763	Ridomil gold plus 71.5% WP	Cooper oxychloride 69% + Metalaxyl-M 2.5%	200 gm/100 L.w	Mod II	3	– 0.5	5 0.5	– 1
1220	Revus 25% SC	Mandipropamid	50 cm ³ /100 L.w	U	10	0.2	0.2	0.6
1873	Rival 72.2% SL	Propamocarb hydrochloride	250cm ³ /100 L.w	U	3	5	5	1.5
1651	Remik 30% WG	Dimethomorph 22% + Metalaxyl 8%	150 gm/100 L.w	Low III	7	0.5 0.5	0.03 0.5	0.5 1
1702	Zoxis 25% SC	Azoxystrobin	50 cm ³ /100 L.w	U	3	1	1	0.3
1846	Sardo 25% SC	Azoxystrobin	50 cm ³ /100 L.w	U	3	1	1	0.3
1075	Sereno 60% WG	Fenamidone 10% + Mancozeb 50%	150 gm/100 L.w	Low III	8	0.2 2	0.01 2	0.15 2
1698	Fantic M 69% WP	Benalaxy 4% + Mancozeb 65%	250 gm/100 L.w	U	7	– 2	0.05 2	– 2
1271	Folio Gold 53.75% SC	Chlorothalonil 50% + Metalaxyl-M 3.75%	300 cm ³ /100 L.w	Mod II	14	– 0.5	5 0.5	– 1
2163	Veulet 80% WP	Fosetyl-Aluminium	250 gm/100 L.w	U	3	–	75	–
2356	Kapect 40% WP	Copper oxychloride 30% + Cymoxanil 10%	250 gm/100 L.w	Mod II	7	–	5 0.08	– 0.05
2275	Caspertin 50% WP	Cymoxanil	50 gm/100 L.w	Low III	7	–	0.08	0.05
2394	Clortosip 50% SC	Chlorothalonil	125 cm ³ /100 L.w	U	7	3	5	5
2654	Quantas 72% WP	Mancozeb 64% + Metalaxyl 8%	250 gm/100 L.w	Mod II	7	– 0.5	2 0.5	– 1
1657	Cuprablau Z 61.5% WP	Copper oxychloride	200 gm/100 L.w	Low III	7	–	5	–
1108	Cuprozin 58.8% WP	Copper oxychloride	200 gm/100 L.w	Low III	15	–	5	–
2068	Curativebin 25%SC	Azoxystrobin	50 cm ³ /100 L.w	U	3	1	1	0.3
2620	Curzanton 50% WP	Cymoxanil	50 gm/100 L.w	Low III	7	–	0.08	0.05



Agricultural Pesticide Committee

Cucumber

Downy mildew

Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2257	Laikenia 44% WP	Cymoxanil 4% + Mancozeb 40%	150 gm/100 L.w	Mod II	5	2	0.08 2	0.05 2
2550	Linger Plus 36.4% SC	Chlorothalonil 33.1% + Metalaxyl-M 3.3%	300 cm ³ /100 L.w	Mod II	15	3 0.5	5 0.5	5 1
2326	Maestro Green 25% SC	Azoxystrobin	50 cm ³ /100 L.w	U	3	1	1	0.3
1938	Mexal 72% WP	Mancozeb 64% + Metalaxyl 8%	250 gm/100 L.w	Mod II	7	2 0.5	2 0.5	2 1
2326	Maestro Green 25% SC	Azoxystrobin	50cm ³ /100 L.w	U	3	1	1	0.3
2617	Mentacol Combi 76%WP	Cymoxanil 6% + Propineb 70%	200gm/100 L.w	Mod II	7	2	0.08 2	0.05 2
2409	Nasroxanil 72% WP	Cymaxanil 8% + Mancozeb 64%	250gm/100 L.w	Mod II	10	2	0.08 2	0.05 2
1741	UPLax 72% WP	Mancozeb 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	7	2 0.5	2 0.5	2 1
2702	Kashan 20% EC	Cyazofamid	300cm ³ /feddan	U	7	0.09	0.2	0.1
2800	Dovex 50% SC	Azoxystrobin 20% + Tebuconazole 30%	40cm ³ /100 L.w	Low III	5	1 0.2	1 0.6	0.3 0.4
2872	Nile Done 52.5% WG	Cymoxanil 30% + Famoxadone 22.4%	200gm/feddan	Low III	7	— 0.2	0.08 0.2	0.05 0.3

Gummy stem blight

Symptoms of infections:

Young seedlings can quickly damp-off following infection. On older plants, leaf symptoms appear as circular, dark tan to black spots surrounded by a yellow halo. Over time these lesions dry, crack and fall out, which is often called "shot-holing." Infection at the leaf margin begins as a wilt and progresses toward the center, resulting in leaf blight. Infected stems may develop cankers which produce a characteristic red or brown, gummy exudates. Severely infected stems may be girdled, resulting in vine death. Tiny black fruiting bodies (pycnidia or pseudothecia) may develop within the infected leaf or stem tissue. Fruit symptoms can range from small, water-soaked, oval or circular spots to large necrotic panels. Black fruiting bodies may develop within the lesions. Infection can lead to softening at the blossom end which may be brown or green. When the pedicel is infected, fruit abortion may occur.



- **Time of symptoms appearance:** At any stage of plant growth specially seedling stage.

- **Proper time of control:** When symptoms appear

Certified Recommendations:

Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1335	Daconil 72% SC	Chlorothalonil	250cm ³ /100 L.w	U	3	3	5	5
945	Score 25% EC	Difenoconazole	50cm ³ /100 L.w	U	—	0.2	0.3	0.7
1924	Chlorocal 75% WP	Chlorothalonil	250gm/100 L.w	U	5	3	5	5

Zucchini

Pest: Fungi

Powdery mildew

Symptoms of infections:

Symptoms appear as pale-yellow spots on stems, petioles, and leaves. Infection may occur on the upper and/or lower leaf surface. As the spots enlarge, conidia are produced from affected tissue and the spots take on a powdery appearance. Infected leaves gradually turn yellow and may become brown and papery.

- **Time of symptoms appearance:** After 3-4 weeks of planting.

- **Proper time of control:** When symptoms appear

- **Guidelines:**

The spray solution must reach the upper and lower surface of the leaves.



Certified Recommendations:

Reg. No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
603	H- Sulfur 80% WP	Sulfur	250gm/100 L.w	Low III	3	-	-	-
1662	Agroazole 10% EC	Penconazole	25cm ³ /100 L.w	U	3	-	0.1	-
295	Topas (100) 10% EC	Penconazole	25cm ³ /100 L.w	U	7	-	0.1	-
1482	Z sulfur 80% WDG	Sulfur	250gm/100 L.w	Low III	3	-	-	-
1998	Capido 80% WG	Sulfur	250gm/100 L.w	Low III	3	-	-	-
1733	Cool EZ 10% EC	Penconazole	25cm ³ /100 L.w	U	10	-	0.1	-

Water melon

Pest: Insects

Cotton leaf worm (*Spodoptera littoralis*)

Symptoms of infestations:

Due to larvae feeding, it causes holes in both young and old leaves, also, larvae may attack fruits making cavities inside.

- **Time of symptoms appearance:**

May and June

- **Proper time of control:** When 10% of the inspected plants showed infestation and existence of at least one larvae per plant.



Water melon
Cotton leaf worm
• Guidelines:

Care of agricultural practices is necessary, such as, Plowing, hoeing and removing weeds, you should not overuse organic fertilization, usage of light traps with sex attractants and fermented bait is necessary.

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1753	Voliam Flexi 40% WG	Chlorantraniliprole 20% + Thiamethoxam 20%	80gm/feddan	Low III	3	0.3 0.5	0.3 0.15	0.5 0.2

Pest: Mites
**Red spider mite
(Tetranychus urticae)**
Symptoms of infestations:

Presence of white spots on the upper surface of the leaves around midrib and extended to outside to spread on the whole leaf, wilting and curling of the yellow leaves especially in case of heavy infections.

• Time of symptoms appearance: Starting from May.

• Proper time of control:

When random inspection of the total plants showed 5 moving individuals per plant on both surfaces of leaves.

• Guidelines:

Spraying with recommended anti-mites should be applied as fanning spraying technique to make complete coverage treatment for both upper and lower leaves surfaces.

Certified Recommendations:


Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2418	Atramectin 1.8% EC	Abamectin	50cm ³ /100 L.w	Mod II	5	0.01	0.01	0.005
1748	Ignar 20% SC	Abamectin 2% + Sprodiclofen 18%	80cm ³ /feddan	High Ib	5	0.01 -	0.01 0.02	0.005 -
1788	Acarots 5% SC	Fenpyroximate	50cm ³ /100 L.w	Low III	10	-	0.01	0.1
514	Ortus 5% SC	Fenpyroximate	50cm ³ /100 L.w	Low III	3	-	0.01	0.1
1648	Prince 10% EC	Hexythiazox	20cm ³ /100 L.w	U	3	0.05	0.5	-
1020	Bermectine 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	5	0.01	0.01	0.005
1135	Transact 1.8% EC	Abamectin	50cm ³ /100 L.w	Mod II	5	0.01	0.01	0.005
2684	Spiner 10% SC	Abamectin	15cm ³ /100 L.w	Mod II	7	0.01	0.01	0.005
1937	Feto5% EC	Abamectin	15cm ³ /100 L.w	Mod II	5	0.01	0.01	0.005
1911	Congest 15% CS	Abamectin 3% + Imidacloprid 12%	30cm ³ /100 L.w	Mod II	7	0.01 0.2	0.01 0.2	0.005 0.5
1591	Magic mek1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	3	0.01	0.01	0.005
1019	Maccomite 10% WP	Hexythiazox	20gm/100 L.w	U	3	0.05	0.5	-
1423	Nissorun 5% EC	Hexythiazox	40cm ³ /100 L.w	U	5	0.05	0.5	-
2507	Hexymite 5% EC	Hexythiazox	200cm ³ /feddan	U	3	0.05	0.5	-
1641	Euromac 1.8% EC	Abamectin	50cm ³ /feddan	Mod II	7	0.01	0.01	0.005
2789	Ranger Gold 5% SC	Fenproximate	50cm ³ /100 L.w	Low III	10	-	0.01	0.1

Pest: Fungi**Powdery mildew****Symptoms of infections:**

Symptoms appear as pale-yellow spots on stems, petioles, and leaves. Infection may occur on the upper and/or lower leaf surface. As the spots enlarge, conidia are produced from affected tissue and the spots take on a powdery appearance. Infected leaves gradually turn yellow and may become brown and papery.

● Time of symptoms appearance:

Infection can take on the plant surface with high humidity is necessary and moderate temperatures (25-30), low light and dew formation.

● Proper time of control: When symptoms appear

● Guidelines: The spray solution must reach the upper and lower surface of the leaves and stopped spray a month before harvest.

**Certified Recommendations:**

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
583	Domark 10% EC	Tetraconazole	50cm ³ /100 L.w	U	7	-	0.05	-
2514	Sun flex 80% WG	Sulfur	250gm/100 L.w	Low III	10	-	-	-
1097	Collis 30% SC	Boscalid 20% + Kresoxim-methyl 10%	50cm ³ /100 L.w	U	7	3 -	3 0.3	1.6 0.4
540	Kumulus-S 80% WG	Sulfur	250gm/100 L.w	Low III	10	-	-	-
2677	Libra 12.5% EW	Tetraconazole	50cm ³ /100 L.w	U	7	-	0.05	-
1581	Leader 45% EC	Prochloraz	75cm ³ /100 L.w	Low III	7	-	0.05	-

Downy mildew**Symptoms of infections:**

Symptoms initially appear as small chlorotic lesions on older leaves, later appearing on the younger leaves. In humid environments, sporangia form on the underside of leaves, giving the appearance of a whitish-gray to purple fine downy growth. Lesions eventually coalesce and become necrotic, but may continue to expand until the entire leaf dies.

**● Time of symptoms appearance:**

After of planting to the end of agricultural season.

● Proper time of control: When symptoms appear

● Guidelines: The spray solution must reach the upper and lower surface of the leaves.

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2131	Maven 18.7% WG	Dimethomorph 12% + Pyraclostrobin 6.7%	100gm/100 L.w	U	7	0.5 0.5	0.5 0.5	0.5 0.5

Water melon

Gummy stem blight

Gummy stem blight

Symptoms of infections:

Young seedlings can quickly damp-off following infection. On older plants, leaf symptoms appear as circular, dark tan to black spots surrounded by a yellow halo. Over time these lesions dry, crack and fall out, which is often called "shot-holing." Infection at the leaf margin begins as a wilt and progresses toward the center, resulting in leaf blight. Infected stems may develop cankers which produce a characteristic red or brown, gummy exudates. Severely infected stems may be girdled, resulting in vine death. Tiny black fruiting bodies (pycnidia or pseudothecia) may develop within the infected leaf or stem tissue. Fruit symptoms can range from small, water-soaked, oval or circular spots to large necrotic panels. Black fruiting bodies may develop within the lesions.



- **Time of symptoms appearance:**

After of planting and all agricultural season specially seedling stage.

- **Proper time of control:** When symptoms appear.

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2226	Pugil CX 42.5% SC	Chlorothalonil 37.5% + Cymoxanil 5%	200cm ³ /100 L.w	Low III	7	—	1 0.4	5 0.05

Melon

Pest: Mites

Red spider mite (*Tetranychus urticae*)

Symptoms of infestations:

Presence of pale yellow spots, by time it accumulated and turned into brown color.



- **Time of symptoms appearance:** During May –June.

- **Proper time of control:** When random inspection of the total plants showed 5 moving individuals per plant on both surfaces of leaves.

- **Guidelines:**

Spraying with recommended spray have to make complete coverage treatment for both upper and lower leaves surfaces.

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
466	Vertimec 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	14	0.01	0.01	0.05

Pest: Fungi**Powdery mildew****Symptoms of infections:**

Symptoms appear as pale-yellow spots on stems, petioles, and leaves. Infection may occur on the upper and/or lower leaf surface. As the spots enlarge, conidia are produced from affected tissue and the spots take on a powdery appearance. Infected leaves gradually turn yellow and may become brown and papery.

Time of symptoms appearance:

Infection can take on the plant surface with high humidity is necessary and moderate temperatures (25-30), low light and dew formation.

Proper time of control: When symptoms appear

Guidelines:

The spray solution must reach the upper and lower surface of the leaves and stopped spray a month before harvest.

Certified Recommendations:

Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2402	Netor 22.6% SC	Chlorothalonil 16.6% + Tebuconazole 6%	250cm ³ /100 L.w	U	5	0.15	0.2	0.4

Gummy stem blight**Symptoms of infections:**

Young seedlings can quickly damp-off following infection. On older plants, leaf symptoms appear as circular, dark tan to black spots surrounded by a yellow halo. Over time these lesions dry, crack and fall out, which is often called "shot-holing." Infection at the leaf margin begins as a wilt and progresses toward the center, resulting in leaf blight. Infected stems may develop cankers which produce a characteristic red or brown, gummy exudates. Severely infected stems may be girdled, resulting in vine death. Tiny black fruiting bodies (pycnidia or pseudothecia) may develop within the infected leaf or stem tissue. Fruit symptoms can range from small, water-soaked, oval or circular spots to large necrotic panels. Black fruiting bodies may develop within the lesions.

**Time of symptoms appearance:**

After of planting and all agricultural season specially seedling stage.

Proper time of control: When symptoms appear.

Guidelines: General spread of the disease in warm areas and high temperatures and when there is high humidity.

Certified Recommendations:

Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1856	Open 72% SC	Chlorothalonil	250cm ³ /100 L.w	U	3	2	1	5

Cantaloupe

Pest: Mites

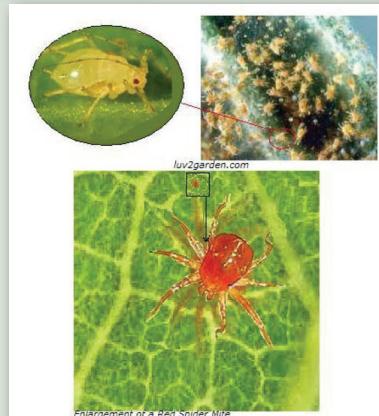
Red spider mite (*Tetranychus urticae*)

Symptoms of infestations:

Presence of yellow spots on the upper surface of the leaves around midrib and extended to outside to spread on the whole leaf followed by dryness in case of heavy infestations.

- **Time of symptoms appearance:** During May
- **Proper time of control:** When random inspection of the total plants showed 5 moving individuals per plant on both surfaces of leaves.
- **Guidelines:** Spraying with recommended spraying have to make complete coverage treatment for both upper and lower leaves surfaces.

Certified Recommendations:



Pest: Fungi

Powdery mildew

Symptoms of infections:

Symptoms appear as pale-yellow spots on stems, petioles, and leaves. Infection may occur on the upper and/or lower leaf surface. As the spots enlarge, conidia are produced from affected tissue and the spots take on a powdery appearance. Infected leaves gradually turn yellow and may become brown and papery. In general, cucurbit fruits are not directly attacked by powdery mildew fungi and rarely Symptoms appear on fruits.



- **Time of symptoms appearance:**

Infection can take on the plant surface with high humidity is necessary and moderate temperatures (25-30), low light and dew formation.

- **Proper time of control:** When symptoms appear
- **Guidelines:** Do not spray sulfur compounds at high temperatures so that they can be sprayed in the early morning or afternoon.

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1892	Dimit 10% WP	Hexythiazox	20gm/100 L.w	U	7	0.05	0.5	-
2733	Agresulfex 80% WG	Sulffer	250gm/100 L.w	Low III	3	-	-	-
1042	Thiovit Jet 80% WG	Sulfur	250gm/100 L.w	Low III	14	-	-	-
295	Topas 10% EC	Penconazole	25 cm ³ /100 L.w	U	7	0.1	0.1	-

Downy mildew

Symptoms of infections:

Symptoms initially appear as small chlorotic lesions on older leaves, later appearing on the younger leaves. In humid environments, sporangia form on the underside of leaves, giving the appearance of a whitish-gray to purple fine downy growth. Lesions eventually coalesce and become necrotic, but may continue to expand until the entire leaf dies.

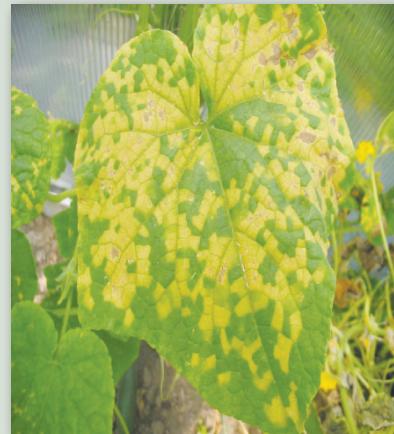
● Time of symptoms appearance:

After of planting to the end of agricultural season.

● Proper time of control: When symptoms appear

● Guidelines:

The spray solution must reach the upper and lower surface of the leaves.



Certified Recommendations:

Reg. No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2468	Azomex Plus 28% SC	Azoxystrobin 20% + Cyproconazole 8%	300cm ³ /feddan	Mod II	7	1 -	1 0.05	0.3 -
1706	Decent 32.5% SC	Azoxystrobin 20% + Difenoconazole 12.5%	200cm ³ /feddan	Low III	7	1 0.7	1 0.2	0.3 0.7
1774	Revus Top 50% SC	Difenoconazole 25% + Mandipropamid 25%	200cm ³ /feddan	Low III	7	0.7 0.5	0.2 3	0.7 0.6
2530	Xefo 45% WP	Copper oxychloride 40% + Metalaxyll-M 5%	200gm/100 L.w	Mod II	12	- 0.2	5 0.2	- 1
2436	Scratch 76% WP	Cymoxonil 6% + Propineb 70%	250gm/100 L.w	Mod II	5	- -	0.4 1	0.05 -
1901	Cuptox 85% WP	Copper oxychloride	250gm/100 L.w	Mod II	3	-	5	-
2643	Masterben 32.5% SC	Azoxystrobin 20% + Difenoconazole 12.5%	200cm ³ /feddan	Low III	10	1 0.7	1 0.2	0.3 0.7
2812	Fluamex plus 40% SC	Dimethomorph 20% + Fluazinam 20%	50 cm ³ /100 L.w	U	7	1.5 -	0.5 0.01	0.5 0.07

Gummy stem blight

Symptoms of infestations:

Young seedlings can quickly damp-off following infection. On older plants, leaf symptoms appear as circular, dark tan to black spots surrounded by a yellow halo. Over time these lesions dry, crack and fall out, which is often called "shot-holing." Infection at the leaf margin begins as a wilt and progresses toward the center, resulting in leaf blight. Infected stems may develop cankers which produce a characteristic red or brown, gummy exudates. Severely infected stems may be girdled, resulting in vine death. Tiny black fruiting bodies (pycnidia or pseudothecia) may develop within the infected leaf or stem tissue. Symptoms of the fruit can range from small, water-soaked, oval or circular spots to large necrotic panels. Black fruiting bodies may develop within the lesions.



- **Time of symptoms appearance:** After of planting and all agricultural season specially seedling stage.
- **Proper time of control:** When symptoms appear.

Certified Recommendations:

Reg. No.	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2395	Pastel 56% SC	Azoxystrobin 6% + Chlorothalonil 50%	250cm ³ /100 L.W	U	7	1 2	1 1	0.3 5

Phaseolus beans

Pest: Insects

Aphid (*Aphis spp.*)

Symptoms of infestations:

Wrinkles and curling of leaves, in addition, malformations and death of the growing apex. Presence of yellow spots as a result of piercing and sucking of the plant juice. The infested leaves showed honeydew secretions and accumulated black mold fungi, also, symptoms of mosaic virus appeared.



- **Time of symptoms appearance:**

All year round especially during summer and winter plantations, while infestation reduce during autumn plantations.

- **Proper time of control:** When random inspection of the total plants showed mean number of nymphs ranging between 6-8 individuals per leaf.
- **Guidelines:** Insecticides treatments spray should be focused on the lower leaves' surfaces.

Certified Recommendations:

Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2382	Orizon 50% WG	Pymetrozine	20gm/100 L.w	U	10	-	0.05	-
1235	Chess 50% WG	Pymetrozine	20gm/100 L.w	U	10	-	0.05	-
1492	Dancothoate 40% EC	Dimethoate	150cm ³ /100 L.w	Mod II	5	-	0.01	2
2362	Supertox-1 48% SC	Clothianidin	200cm ³ /feddan	U	7	2	0.02	-
1770	Suncloprid 35% SC	Imidacloprid	75cm ³ /100 L.w	Mod II	3	-	2	-
1080	Malatox 50% WP	Malathion	250gm/100 L.w	Low III	8	2	0.02	8
1918	Motive 50% WG	Pirimicarb	200gm/feddan	Mod II	7	-	0.2	-
2890	Actikil 50% EC	Pirimiphos-methyl	375cm ³ /100 L.w	Low III	15	-	0.01	-

Pest: Mites**Red spider mite
(*Tetranychus urticae*)****Symptoms of infestations:**

Presence of yellow to brownish spots around midrib and extended to outside to spread on the whole leaf, then, followed by dryness and wilt of leaves, in case of sever infections, spider mites individuals scratch the legumes causing yellow spots.



- Time of symptoms appearance:** When mean number of individuals reached 5 moving spider mites on both surfaces of one single leaf from the total randomly inspected leaves.
- Proper time of control:** Started at seedlings stage when random inspection of the total plants showed 3-4 individuals per plant, also, in periods of vegetation growth and fluorescence when mean number of inspected plants showed 4 individuals per leaf per whole randomly inspected plants.

Guidelines:

Spraying with recommended anti-mites should be complete coverage treatment for both upper and lower leaves surfaces.

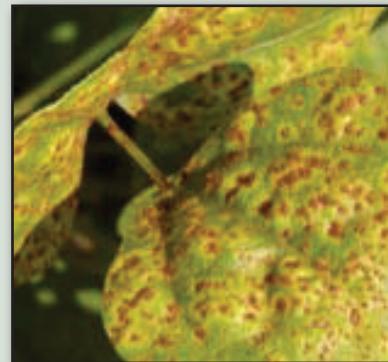
Certified Recommendations:

Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
688	Baroque 10% SC	Etoxazole	25cm ³ /100 L.w	U	15	-	0.01	-
1019	Maccomite 10% WP	Hexythiazox	20gm/100 L.w	U	10	-	0.5	0.4
2818	Dagrozoom 10% SC	Etoxazole	25cm ³ /100 L.w	U	15	-	0.01	-

Phaseolus beans
Rust
Pest: Fungi
Rust
Symptoms of infections:

Rust affects leaves and sometimes stems, petioles and pods. The first symptoms appear on the undersurface of leaves as tiny, white, raised spots. These spots gradually enlarge and form reddish-brown pustules, which eventually erupt.

- **Time of symptoms appearance:** The infection of rust start in Nili season.
- **Proper time of control:** When symptoms appear.


Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2875	Corridor 40% EW	Prochloraz 26.7% + Tebuconazole 13.3%	40cm ³ /100 L.w	Low III	10	—	0.05	—
583	Domark 10% EC	Tetraconazole	50cm ³ /100 L.w	U	15	0.3	2	0.1
2677	Libra 12.5% EW	Tetraconazole	50cm ³ /100 L.w	U	15	—	0.02	—

Leaf spot
Symptoms of infections:

Severe, multiple infections result in premature defoliation and lowering of plant vigor. Stem girdling can cause plant collapse.

- **Time of symptoms appearance:** Symptoms appear after 30-40 days of planting.
- **Proper time of control:** When symptoms appear.


Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
945	Score 25% EC	Difenoconazole	50cm ³ /100 L.w	U	20	0.7	1	—
2652	Fabric 30% SC	Kresoxim-methyl 15% + Tebuconazole 15%	35cm ³ /100 L.w	U	7	—	0.01	—

Root rot

Symptoms of infections:

Seeds may rot, or when growing, develop rot or pre and post-emergent damping-off. Reddish to dark brown root lesions can develop on epicotyls and hypocotyls. Brown discoloration occurring near the soil line on the epicotyls could girdle the stem.

● Time of symptoms appearance:

After seedling appeared above the soil surface.

● Proper time of control:

Seeds are typically treated with a fungicide before sowing.

Certified Recommendations:



Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1718	Biocontrol T34 12% WP	<i>Trichoderma asperellum</i>	2gm/kg seeds	U	-	-	-	-
1871	Hattric 6% FS	Tebuconazole	1 cm ³ /kg seeds	U	50	0.3	2	0.1

Peas

Pest: Insects

Aphid (*Aphis* spp.)

Symptoms of infestations:

Leaves wrinkling, presence of honeydew secretions causing plant dwarfism.

● Time of symptoms Appearance:

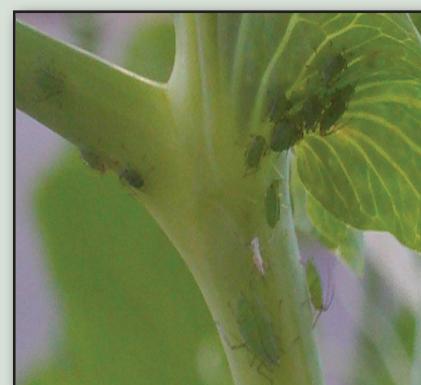
All year round especially during summer plantations.

● Proper time of Control:

When individuals and symptoms of infestations appear

● Guidelines:

Removing weeds and usage of yellow sticky traps to collect winged individuals.



Certified Recommendations:

Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1474	Nasr thoate 40% EC	Dimethoate	150cm ³ /100 L.w	Mod II	5	1	0.01	2
1883	Novaphos 48% EC	Chlorpyrifos	250cm ³ /100 L.w	Mod II	7	0.01	0.05	0.05

Cotton leaf worm (*Spodoptera littoralis*)

Symptoms of infestations:

Larvae feed upon leaves and legumes causing holes in leaves and malformations of legumes.

- Proper time of control:

After one month from the date of cultivation when larvae and symptoms of infestations were showed

- Guidelines:

Removing weeds and not to cultivate plants nearby other infested crops.

Certified Recommendations:



Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1835	Wormatin 5% EC	Lufenuron	160cm ³ /feddan	U	10	-	0.02	-

Pest: Fungi

Powdery mildew

Symptoms of infections:

First symptoms appear on the Lower surface of the foliage as very small, slightly discolored spots. These soon give rise to white powdery areas which continue to enlarge. As they do so, the white color and powdery appearance become more pronounced. Tissue beneath these areas may turn purplish, then brown. Multiple infections may cover the entire aboveground plant. Severely infected plants are unthrifty and have poor yield and quality. Small, oval, black.



- Time of symptoms appearance:

The infection is spread in the warm atmosphere and high heat during the day for a long time, low temperature at night and allows the intensification of the dew on the plants.

- Proper time of control: When symptoms appear.

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
295	Topas 10% EC	Penconazole	25cm ³ /100 L.w	U	14	-	0.05	-
2032	Sulfegin 80% WG	Sulfur	250gm/100 L.w	Low III	3	-	-	-
2851	Mystic Gold25% EW	Tebuconazole	50 cm ³ /100 L.w	U	7	-	0.2	-

Rust

Symptoms of infections:

Rust affects leaves and sometimes stems and pods. The first symptoms appear on the undersurface of leaves as tiny, white, raised spots. These spots gradually enlarge and form reddish-brown pustules, which eventually erupt to release rusty masses of spores. Plant vigor may be severely diminished.

- **Time of symptoms appearance:**

Spread of infection in the early spring and matching low temperature 18-25C° and high humidity.

- **Proper time of control:** When symptoms appear.

- **Guidelines:**

Cultivation of resistant varieties and buried the remains of pea plants quickly after harvest to get rid of the fungus spores to reduce the infection in the following season.

Certified Recommendations:



Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1024	Thiovit Jet 80% WG	Sulfur	250gm/100 L.w	Low III	14	-	-	-
2301	Dako S 80% WG	Sulfur	250gm/100 L.w	Low III	3	-	-	-
1656	Rush up 12.5% SC	Epoxiconazole	400cm³/feddan	U	7	-	0.1	-
1505	Sulfagro 80% WG	Sulfur	200gm/100 L.w	Low III	3	-	-	-
1763	Sufrevit 80% SC	Sulfur	200cm³/100 L.w	Low III	3	-	-	-
1529	Microthoate 80% WG	Sulfur	250gm/100 L.w	Low III	3	-	-	-
604	Helb Sulphur 98% DP	Sulfur	15kg/feddan(dusting)	Low III	3	-	-	-

Ascochyta blight

Symptoms of infections:

Purple spots develop on the surface of the foliage, stems, and pods. On leaves, the purple spots may enlarge to 5–6 mm in diameter and turn dark brown to black.



Certified Recommendations:

Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1273	Tecto 50% SC	Thiabendazole	150cm³/100 L.w	U	3	-	0.01	-
945	Score 25% EC	Difenoconazole	50cm³/100 L.w	U	14	0.7	1	-
86	Nemespor 80% WP	Mancozeb	250gm/100 L.w	U	14	-	0.1	-

Cabbage

Pest: Insects

Cotton leaf worm (*Spodoptera littoralis*)

Symptoms of infestations:

Larvae feed upon leaves causing holes and leaving feces on the leaves.

- Proper time of control:

During October, November and March, April.

- Guidelines:

Spraying with recommended insecticide should be complete coverage treatment for both upper and lower leaves' surfaces.



Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2262	Exboss 1.9% EC	Emamectin benzoate	250 cm ³ /feddan	Low III	10	-	0.01	0.05
1237	Pasha 1.9% EC	Emamectin benzoate	250 cm ³ /feddan	Low III	10	-	0.01	0.05
1109	Affirm 5% SG	Emamectin benzoate	60 gm/feddan	Mod II	7	-	0.01	0.05
2083	Promed 5% SG	Emamectin benzoate	60 gm/feddan	Mod II	10	-	0.01	0.05
1329	Radiant 12% SC	Spinetoram	35 cm ³ /feddan	U	3	0.3	0.05	-

Strawberry

Pest: Insects

Cotton leaf worm (*Spodoptera littoralis*)

Symptoms of infestations:

Newly hatching larvae feed upon lower surface of leaves causing holes.

- Time of symptoms appearance:

During November, December and March, April.

- Proper time of control:

During October, November and March, April.

- Guidelines:

Spraying with recommended insecticide has to cover the whole vegetative system.



Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1364	Agree 50% WG	<i>Bacillus thuringiensis</i>	250gm/feddan	U	-	-	0.01	-
1732	Roxy 10% EC	Novaluron	300cm ³ /feddan	U	10	0.5	0.01	-

Pest: Mites

Red spider mite (*Tetranychus urticae*)

Symptoms of infestations:

Presence of yellow spots on leaves, both surfaces of the leaves become rough with spots where individuals accumulated causing dryness, wilting and yellowish color of leaves.

• Time of symptoms appearance:

Two periods were estimated, the first was during late October and extended until first days of November, the second period was started from mid-March and extended during April.

• Proper time of control:

When mean number of individuals reached 5 moving spider mites on both surfaces of one leaf of the randomly inspected leaves.

• Guidelines:

Spraying with recommended anti-mites should be complete coverage treatment for both upper and lower leaves' surfaces.

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRI's values (mg/kg)		
						Codex	EU	EPA Tolerance
1691	Agrimec Gold 8.4%SC	Abamectin	60cm ³ /feddan	Mod II	10	0.15	0.15	0.05
1363	Acramite 48% SC	Bifenazate	35cm ³ /100 L.w	U	5	2	0.1	1.5
688	Baroque 10% SC	Etoxazole	25 cm ³ /100 L.w	U	15	-	0.05	-
1798	Pyromite 20% WP	Pyridaben	100gm/100 L.w	Low III	10	-	0.05	2.5
2612	Tambo 40% WP	Pyridaben	100 gm/100 L.w	Low III	10	-	0.05	2.5
2197	Deltamec 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	7	0.15	0.15	0.05
466	Vertimec 1.8% EC	Abamectin	60cm ³ /100 L.w	Mod II	7	0.15	0.15	0.05
1078	Killmite1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	8	0.15	0.15	0.05
1719	Marisol 1.8% EC	Abamectin	50cm ³ /100 L.w	Mod II	6	0.15	0.15	0.05
1019	Macomite 10% WP	Hexythiazox	20 gm/100 L.w	U	4	6	0.05	1
1285	Nasr Actin 1.8% EC	Abamectin	30cm ³ /100 L.w	Mod II	6	0.15	0.15	0.05
1643	Help star 20% EC	Pyridaben	100cm ³ /feddan	Low III	10	-	0.05	2.5
2071	Hexana 10% WP	Hexythiazox	80gm/feddan	U	7	6	0.05	1
2486	Hexygreen 5% EW	Hexythiazox	40cm ³ /100 L.w	U	7	6	0.05	1
2784	Flarmoni24% SC	Bifenazole	70 cm ³ /100 L.w	U	7	2	0.1	1.5
2904	Duramite24% SC	Bifenazole	70 cm ³ /100 L.w	U	7	2	0.1	1.5
2935	Acrinile20% WP	Pyridaben	100 gm/100 L.w	Low III	3	-	0.05	2.5

Pest: Fungi**Fruit rot****Symptoms of infections:**

It causes by many fungi, which causes soft mold, dry mold, and gray mold on the fruit.

● Time of symptoms appearance:

At the beginning of the formation of fruits during all stages of fruit growth.

● Proper time of control:

When symptoms appear.

**Certified Recommendations:**

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2046	Prolectus 50% WG	Fenpyrazamine	75gm/100 L.w	Low III	3	-	3	3
2270	Pyrimadol 40% SC	Pyrimethanil	100 cm ³ /100 L.w	U	3	-	0.05	-
1087	Bio Arc 6% WP	<i>Bacillus megaterium</i>	250 gm/100 L.w	U	-	-	-	-
2279	Ranger 50% SC	Fenhexamid	150cm ³ /100 L.w	U	2	10	0.05	3
1004	Switch 62.5% WG	Cyprodinil 37.5 + Fludioxonil 25%	75 gm/100 L.w	Low III	3	- 3	0.1 0.05	-
1994	Luna tranquility 50% SC	Fluopyram 12.5% + Pyrimethanil 37.5%	120cm ³ /100 L.w	Low III	7	0.4 - 0.05	0.1 - 0.05	1.5 - -
1631	Mystic 20% WP	Pyrimethanil	400gm/100 L.w	U	5	-	0.05	-

Powdery mildew**Symptoms of infections:**

This disease produces white patches of web-like growth that develop on both the lower and upper leaf surface. The edges of the leaves may curl upwards. Immature fruit may fail to ripen, become hard, crack and turn a reddish colour with raised seeds.

● Time of symptoms appearance:

Powdery mildew symptoms appear at warm conditions, and high humidity.

● Proper time of control:

When symptoms appear.



Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1610	Actamyl 70% WP	Thiophanatemethyl	60gm/100 L.w	U	3	-	0.1	7
247	Topsin-M 70% WP	Thiophanate methyl	60gm/100 L.w	U	3			
2193	Thioceutica 70% WP	Thiophanate methyl	80gm/100 L.w	U	3	-	0.1	7
1552	Suntop El-nasr 70%WP	Thiophanate methyl	80gm/100 L.w	U	7	-	0.1	7
2060	Novasat 70% WP	Thiophanate methyl	80gm/100 L.w	U	3	-	0.1	7
2766	Photon 70% WP	Thiophanate methyl	65 gm/100 L.w	U	7	-	0.1	7
2802	Hurricane 25% EC	Pyraclostrobin	50 cm ³ /100 L.w	U	7	1.5	0.1	-
2849	Mystic Pro 50% EC	Prochloraz 30% + Tebuconazole 20% + Tebuconazole	25 cm ³ /100 L.w	Low III	10	-	0.2	-
2870	Silatinit 25% EC	Myclobutanil	25 cm ³ /100 L.w	U	7	0.8	0.05	0.05

Leaf spot**Symptoms of infestations:**

Small reddish to purple spots, 3 to 5 mm in diameter, with light grey centre which appears on the top side of leaves. Severe infections can kill the leaf. The symptom on the fruit is a dark brown, sunken spot up to 3 mm wide.

**Time of symptoms appearance:**

At any stage during plant growth stages.

**Proper time of control:**

When symptoms appear.

Certified Recommendations:

Reg No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1502	Foltax 80% WG	Folpet	200gm/100 L.w	U	5	5	0.1	5
1817	Cortiano 50% WP	Captan	200gm/100 L.w	U	7	15	0.1	20



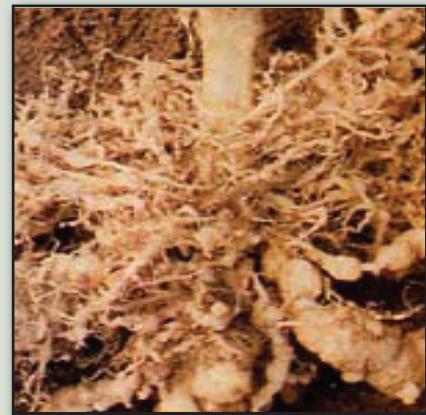
Protected agriculture (Protected cultivations)

Pest: Nematodes

Soil nematodes (Sterilizers)

Symptoms of infestations:

A knot appears on the roots (in the cucumber) followed by yellowing in the leaves, wilt and dwarf of plants and drop in yield.



- Time of symptoms appearance:

From small seedling to fruits stage.

- Proper time of control:

Sterilize the soil before planting for two months, When the nematode knot factor is about 2 a in the previous crop. Chemical control may be necessary when the nematode knot factor in plant less than about 2 in the previous crop.

- Guidelines:

The same treatments are used with different nematodes like reniform nematode.

Certified Recommendations:

Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1747	Agrocelhone NE 94.1 % EC	Dichloropropene 60.8% + Chloropicrin 33.3%	31 cm ³ /m ² (Strawberry – soil sterilization open field)	Mod II	-	-	0.05 0.01	-
1965	Paladin 94.8% EC	Dimethyl disulfide	50 gm/m ² (Soil sterilization open field)	Mod II	-	-	0.01	-
1392	Tamifume 69% SL	Metam potassium	100 cm ³ /m ² (Soil sterilization green house)	Mod II	-	-	0.1	-
1130	Solasan 51% SL	Metam Sodium	100 cm ³ /m ² (Soil sterilization green house)	Mod II	-	-	0.1	-
2097	Loser 98% MG	Dazomet	50 gm/m ² (Soil sterilization green house)	Mod II	75	-	0.1	-

Soil nematodes (Control)

Symptoms of infestations:

A simple of knots appears on the roots followed by yellowing in the leaves, wilt and dwarf of plants and drop in yield.

- **Time of symptoms appearance:**

From small seedling to fruits stage.

- **Proper time of control:**

When plant seedlings in slight infested soil (the nematode knot factor is less 2) or soil infested with different harmful nematodes.

- **Guidelines:** Control of harmful nematodes carried out when slight infested was in soil like root-knot nematodes.



Certified Recommendations:

Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
594	Rugby 10% GR	Cadusafos	5gm/m ² (green houses)	Mod II	-	-	0.01	-
1099	Rugby 20% CS	Cadusafos	2.5cm ³ /m ² (green houses)	Mod II	-	-	0.01	-

Turf grass

Pest: Insects

Scarab Beetles

Symptoms of infestations:

Yellowish spots of the plants in the form of irregular distributed batches. Grasses are loose from the ground and can be held as if a carpet.

- **Time of symptoms appearance:**

It is preferred to apply the chemical control before cultivation. Control have to be applied as soon as symptoms appear or when larvae can be seen.

- **Guidelines:**

Care of agricultural practices should be taken and not to use compost for fertilization as it may have living larvae.





Agricultural Pesticide Committee

Turf Grass

Scarab Beetles

Certified Recommendations:

Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2495	Dolf-X 5% EC	Lambda-cyhalothrin	375cm ³ /feddan	Mod II	-	-	-	-
1848	Simitar 10% CS	Lambda-cyhalothrin	350cm ³ /feddan	Mod II	-	-	-	-
1826	Meridian 25% WG	Thiamethoxam	350gm/feddan	U	-	-	-	-

Pest: Fungi

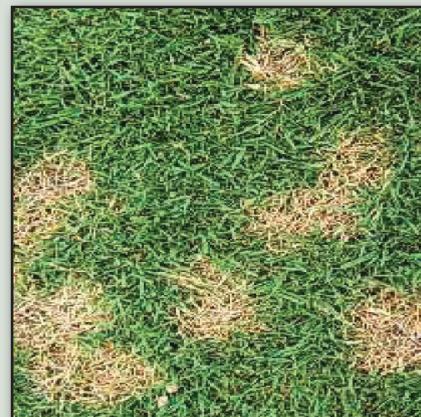
Leaf spot

Symptoms of infections:

The disease causes circular lesions to appear on the blades of grass. These lesions typically start out as tan or brown but can become dark brown or even black depending on the severity of the infection. Withering leaves- If lesions remain on grass for long periods of time, the blades will start to become yellowish and shriveled.

• Time of symptoms appearance:

When conditions are appropriate as lack of irrigation and nitrogen fertilization with high temperature and increased humidity and often occurs in Spring and Autumn.



Certified Recommendations:

Reg .No	Trade name and Conc	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2346	Headway 16.65% EC	Azoxystrobin 6.25% + Propiconazole 10.4%	3.75Liter/feddan	U	-	-	-	-

III. Fruit Crop Pests

Citrus

Pest: Insects

Citrus mealy bug (*Planococcus citri*)

Symptoms of infestations:

Presence of adults and nymphs with a sticky honeydew which serve as a media for black fungi growth and as a result ants come to feed upon the honeydew secreted by the insects.

● Time of symptoms appearance:

Adult insects are prevailing all year round. During winter, most species hide in tree bark crevices or migrate down to roots to crawl in the next spring to the newly growing vegetation.

● Proper time of control:

When 5% of all trees in the orchard showed infestation with the mealy bug, taking in consideration the ratio of the infested trees to the healthy ones, also, the ration of the infested leaves to the non-infested.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1003	Actara 25% WG	Thiamethoxam	25gm/100 L.w	U	32	0.5	0.15	0.4
2285	Romectin gold 32.8%SC	Abamectin 2.8% + Imidacloprid 30%	85cm ³ /100 L.w	Mod II	10	0.02 1	0.015 1	0.02 0.7
2366	Fabyan 25% WG	Thiamethoxam	25gm/100 L.w	U	5	0.5	0.15	0.4
2719	Snappy 25% WG	Thiamethoxam	25gm/100 L.w	U	10	0.5	0.15	0.4

Scale insects

Symptoms of infestations:

Presence of nymphs, adult insects and egg sacs on branches, twigs and leaves, adult insects accumulated on the mid-rib especially at the lower surface, growth of black fungi on leaves and fruits, presence of ants to feed upon the honeydew that secreted heavily by scale insects and in sever infestations, yellowish and wilting of leaves occurred, as well, small size and malformation of the formed fruits.



● Time of symptoms appearance:

All year round, insects have 4-5 generations per year, citrus trees, especially lemon are target hosts for scale insects.

- **Proper time of control:**

When 5% of the total trees' number in the orchard showed infestation after randomly inspected trees.

- **Guidelines:**

Spraying the recommended insecticide should be after irrigation, using spraying motor with proper stirring, spraying has to be applied in the early morning after dew evaporation.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
538	Applaud 25% SC	Buprofezin	600cm ³ /feddan	U	5	1	1	-
176	Alboleum 80% mayonaise	Mineral oil	2.5Liter/100 L.w (winter spry)	U	8	-	0.01	-
1465	Imidan 50% WP	Phosmet	140gm/100 L.w	Mod II	10	3	5.0	5
2381	Provry 10% EC	Pyriproxyfen	50cm ³ /100 L.w	U	7	0.5	0.6	0.5
1727	Proximo 10% EC	Pyriproxyfen	50cm ³ /100 L.w	U	10	0.5	0.6	0.5
1148	Best 25% WP	Imidacloprid	100gm/100 L.w	Mod II	7	1	1	0.7
1767	Tiger 97% EC	Mineral oil	1.5Liter/100 L.w (summer spry)	U	12	-	0.01	-
2175	Transform 50% WG	Sulfoxaflor	125gm/feddan	Low III	7	0.8	0.8	0.7
1492	Dancothoate 40% EC	Dimethoate	150cm ³ /100 L.w	Mod II	10	5	0.01	5
1039	Diver 97% EC	Mineral oil	1.5Liter/100 L.w (summer spry)	U	12	-	0.01	-
1935	Reldan 22.5% EC	Chlorpyrifos-methyl	300cm ³ /100 L.w	U	7	2	0.5	-
89	Super royal 95% EC	Mineral oil	1.5Liter/100 L.w (summer spry)	U	12	-	0.01	-
237	Super misrona 94% EC	Mineral oil	1.5Liter/100 L.w (summer spry)	U	12	-	0.01	-
1402	Chinook 35% SC	Imidacloprid	75cm ³ /100 L.w	Mod II	7	1	1	0.7
174	KZ oil 95% EC	Mineral oil	1.5Liter/100 L.w (summer spry)	U	12	-	0.01	-
1486	Confidor 20% OD	Imidacloprid	100cm ³ /100 L.w	Low III	7	1	1	0.7
236	Misrona 85% Mayonaise	Mineral oil	2.5Liter/100 L.w (winter spry)	U	8	-	0.01	-
1757	Movento 10% SC	Spirotetramat	40cm ³ /100 L.w	U	7	0.5	1	0.6
2596	Nasrfezin 25% SC	Buprofezin	150cm ³ /100 L.w	U	5	1	1	-

Fruit flies

Symptoms of infestations:

Presence of pricks on the fruit peel, changing in the color where pricks exist , the fruit become soft as a result of larval movement and feeding, finally, fruits fall down.

- **Time of symptoms appearance:**

During October and November.

- **Proper time of control:**

When symptoms of infestations appear.

- **Guidelines:**

Fallen infested fruits have to be burrowed in the soil or burned immediately to kill larvae inside fruits, application of partial spray and killing bundles should be considered.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
2482	Everhoat 40% EC	Dimethoate	75 cm ³ /20 L.w + 5% attractive substance	Mod II	7	5	0.01	5
738	Dimetox 40% EC	Dimethoate	75 cm ³ /20 L.w + 5% attractive substance	Mod II	7	5	0.01	5
151	Saydon / Cheminova 40% EC	Dimethoate	75 cm ³ /20 L.w + 5% attractive substance	Mod II	10	5	0.01	5
1344	Conserve 0.024%CB	Spinosad	500 cm ³ /10 L.w	U	1	0.3	0.3	-
585	Malatox 57% EC	Malathion	100 cm ³ /20 L.w + 5% attractive substance	Low III	8	7	2	8
1080	Malatox 50% WP	Malathion	100 gm/20 L.w + 5% attractive substance	Low III	6	7	2	8
654	Malathate 57% EC	Malathion	100 cm ³ /20 L.w + 5% attractive substance	Low III	3	7	2	8
1340	Malathin 57% EC	Malathion	100 cm ³ /20 L.w + 5% attractive substance	Low III	3	7	2	8
152	Malason Cheminova 57% EC	Malathion	100 cm ³ /20 L.w + 5% attractive substance	Low III	3	7	2	8
1474	Nasr thoate 40% EC	Dimethoate	100 cm ³ /20 L.w + 5% attractive substance	Mod II	3	5	0.01	5
2027	Nasr Lathion / Cheminova 57% EC	Malathion	100 cm ³ /20 L.w + 5% attractive substance	Low III	7	-	2	8
2798	Rocket 40% EC	Dimethoate	75 cm ³ /20 L.w + 5% attractive substance	Mod II	8	5	0.01	5

Citrus leaf miner (*Phyllocnistis citrella*)

Symptoms of infestations:

Presence of tunnels on any of the leaf surfaces due to larvae feeding between the two epidermal layers causing dryness and wilting of the leaves, soft nodes and buds may be infested as well and showed the tunnels clearly.

• Time of symptoms appearance:

Infestation prevailing all year round and it becomes as abundant as the soft growing trees and shrubs exists, also, it is more abundant in arboretum than in permanent soil.

• Proper time of control:

When symptoms of infestations appear.

**Certified Recommendations:**

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1345	Abantin 1.8% EC	Abamectin	30cm ³ /100 L.w	Mod II	7	0.02	0.015	0.02
1691	Agrimec Gold 8.4% SC	Abamectin	15 cm ³ /100 L.w	Mod II	10	0.02	0.015	0.02
1978	Aquaprimo 35% SC	Imidacloprid	75cm ³ /100 L.w	Mod II	7	1	1	0.7
1251	Demectin 1.8% EC	Abamectin	25cm ³ /100 L.w	Mod II	11	0.02	0.015	0.02
174	KZ oil 95% EC	Mineral oil	1.5Liter/100 L.w	U	12	-	0.01	-

Pest: Mites

Citrus brown mite (*Eutetranychus orientalis*)

Symptoms of infestations:

Presence of yellow spots on the upper leaf surface of the leaves which turn into brown, then, leaves dry and fall down, young fruits color become pale due to chlorophyll loss and sucking the juice causing a pale color and softness in the infested fruits.

• Time of symptoms appearance:

Starts at the beginning of March and increase in July until February of the upcoming season.

• Proper time of control:

When randomly inspection record 5 individuals per leaf of the total inspected leaves.

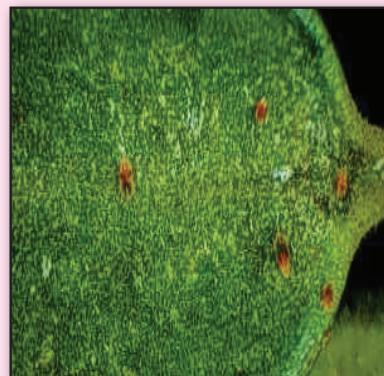
Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
514	Ortus 5% SC	Fenpyroximate	50cm ³ /100 L.w	Low III	14	0.5	0.5	0.5
1672	Biomectin 5% EC	Abamectin	20cm ³ /100 L.w	Mod II	10	0.02	0.015	0.02
2025	Dumper 55% SC	Fenbutatin oxide	100 cm ³ /100 L.w	U	3	5	5	20
1548	Magnifico 5% EC	Hexythiazox	40cm ³ /100 L.w	Mod II	7	0.5	1	0.35
2203	High Point 10% EC	Abamectin 1% + Hexythiazox 9%	30cm ³ /100 L.w	Mod II	7	0.02 0.5	0.015 1	0.02 0.35
2717	Afinex 5% EW	Hexythiazox	40cm ³ /20 L.w	Mod II	10	0.5	1	0.35
2776	Rotex 5% EC	Fenpyroximate	50 cm ³ /100 L.w	Low III	7	0.5	0.5	0.5
2794	Agrefox 5% SC	Fenpyroximate	50 cm ³ /100 L.w	Low III	14	0.5	0.5	0.5

Citrus red mite (*Panonychus citri*)

Symptoms of infestations:

The species attacks the lower surface of leaves turning them into yellow color, then, attacks fruits causing wiling and dryness to them. Presence of cracks in the fruits and turned into brown color. Presence of silvery pale scars in the fruits.

**• Time of symptoms appearance:** From March to August.**• Proper time of control:** As soon as symptoms of infestations appeared.**• Guidelines:** Care of agricultural practices such as removing weeds and permanent plant fences surrounding the orchard.**Certified Recommendations:**

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1748	Ignar 20% SC	Abamectin 2% + Spirodiclofen 18%	30cm ³ /100 L.w	Mod II	7	0.02 0.4	0.015 0.5	0.02 0.5
1159	Ortus super 5% EC	Fenpyroximate	50cm ³ /100 L.w	Low III	14	0.5	0.5	0.5

Pest: Mites

Citrus rust mite
(Phyllocoptruta oleivora)

Symptoms of infestations:

Appearance of rust brown spots on the lower surface of leaves starting from leaf margins and spread to cover the whole lower surface, also, rust brown spots showed on fruits at the center portion followed by increasing the infested area until cover the whole fruit in sever infestation, in case of lemon, a silver shiny color covers the leaves and fruits.

- **Time of symptoms appearance:**

Infestation starts in mid-May, increase in July and August and reduce in October, symptoms of infestations may appear so early in the beginning of January.



- **Proper time of control:**

When 5 individuals were recorded per leaf or fruit of the randomly inspected leaves or fruits in the orchard.

- **Guidelines:**

Spraying with recommended insecticide have to be applied as soon as symptoms of infestation appear and it has to be homogenous and repeated whenever necessary.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1632	Arcomin 3.6% EC	Abamectin	15cm ³ /100 L.w	Mod II	9	0.02	0.015	0.02
1150	Envidor 24% SC	Spirodiclofen	30cm ³ /100 L.w	U	10	0.4	0.5	0.5
1159	Ortus super 5% EC	Fenpyroximate	100cm ³ /100 L.w	Low III	14	0.5	0.5	0.5
975	Romactin 1.8% EC	Abamectin	30cm ³ /100 L.w	Mod II	8	0.02	0.015	0.02
553	Sanmite 20% WP	Pyridaben	50gm/100 L.w	Low III	7	-	0.5	0.5
1990	Citrogard 15% EC	Pyridaben	200cm ³ /100 L.w	Low III	7	-	0.5	0.5
1959	Smach 24% SC	Spirodiclofen	30cm ³ /100 L.w	U	14	0.4	0.5	0.5
466	Vertimec 1.8% EC	Abamectin	30cm ³ /100 L.w	Mod II	10	0.02	0.015	0.02
1400	Vermex 1.8% EC	Abamectin	30cm ³ /100 L.w	Mod II	9	0.02	0.015	0.02
1986	Concor 24% SC	Spirodiclofen	30cm ³ /100 L.w	U	7	0.4	0.5	0.5
2297	Listomed 24% SC	Spirodiclofen	30cm ³ /100 L.w	U	5	0.4	0.5	0.5
2374	Mister Green 1.8% EC	Abamectin	30cm ³ /100 L.w	Mod II	10	0.02	0.015	0.02
1809	High Keen 5.4% EC	Abamectin	15cm ³ /100 L.w	Mod II	10	0.02	0.015	0.02
2790	Wadnor 24% EC	Spirodichlofen	30cm ³ /100 L.w	U	5	0.4	0.5	0.5
2833	Spider Gold 5% ME	Abamectin	20 cm ³ /100 L.w	Mod II	10	0.02	0.015	0.02

Pest: Fungi**Fruit Rot (Blue mold and Green mold)****Symptoms of infections:**

Fruit injured during harvesting and handling may be infected by this fungus. The fungus enters the fruit only through wounds in the rind and these wounds soon turn to water soaked lesions. A white substance eventually forms on the lesion and as the lesion gets larger, the center will turn olive green and be outlined in white.

● Time of symptoms appearance:

This disease appears in the field at a stage of maturity of the fruit either in the store, fruits are vulnerable to injury in bad storage condition.

● Proper time of control:

When symptoms appear in the field or after collection and sorting before storage.

**Certified Recommendations:**

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1273	Tecto 50% SC	Thiabendazole	900cm ³ /100 L.w(after harvest)	U	2	7	7	10

Lichens**Symptoms of infections:**

Lichens may occur on the trunk, branches, and twigs of the tree, usually on old or neglected trees, does not harm the tree. Color varies, but gray green is the most common.

**● Time of symptoms appearance:** At any time of the year.**● Proper time of control:** At the beginning of lichen symptoms.**● Guidelines:** Citrus trees were sprayed with the recommended fungicide when symptoms appear and stopped before harvest with enough time.**Certified Recommendations:**

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1571	Acicop 85% WP	Copper oxychloride	300gm/100 L.w	Mod II	10	-	20	-
1035	Index 77% WP	Copper hydroxide	350gm/100 L.w	Mod II	15	-	20	-
2323	Dogerbakir 85% WP	Copper oxychloride	300gm/100 L.w	Mod II	21	-	20	-
1933	Florance 85% WP	Copper oxychloride	300gm/100 L.w	Mod II	7	-	20	-
602	Copral 84.3% WP	Copper oxychloride	500gm/100 L.w	Mod II	20	-	20	-
1154	Coprmine 85% WP	Copper oxychloride	500gm/100 L.w	Mod II	20	-	20	-
304	Cobox 84% WP	Copper oxychloride	300gm/100 L.w	Mod II	10	-	20	-
1565	Magican cu 85% WP	Copper oxychloride	500gm/100 L.w	Mod II	10	-	20	-

Gummosis

Symptoms of infections:

Disease starts as water soaked large patches on the basal portions of the stem near the ground level. Bark in such parts dries, shrinks and cracks and shreds in lengthwise vertical strips. Later profuse exudation of gum from the bark of the trunk occurs.

- **Time of symptoms appearance:** At any time of the year.
- **Proper time of control:** At the beginning of symptoms.



Certified Recommendations:

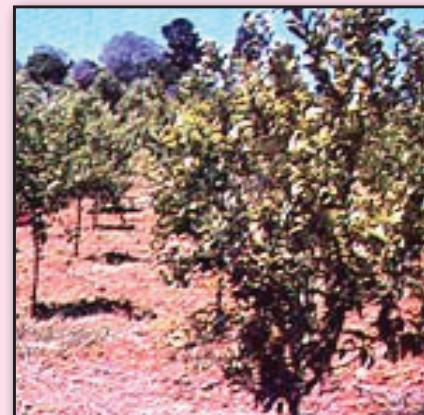
Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
45	Aliette 80% WP	Fosetyl-Aluminium	250 gm/100 L.w(spray)	U	-	-	75	-
45	Aliette 80% WP	Fosetyl-Aluminium	1kg/feddan (paint)	U	-	-	75	-
2416	Pirouette 80% WG	Fosetyl-Aluminium	250gm/100 L.w (Spray)	U	7	-	75	-
1553	Teko 80% WG	Fosetyl-Aluminium	1kg/feddan(paint)	U	7	-	75	-
1919	Faster Top 80% WP	Fosetyl-Aluminium	1kg/feddan (paint)	U	7	-	75	-
1904	Fuzykor 40% WP	Fosetyl-Aluminium	500gm/100 L.w	U	7	-	75	-
2217	Katanga Express 80% WG	Fosetyl-Aluminium	250gm/100 L.w (spray)	U	7	-	75	-
2535	Microfen 80% WP	Fosetyl-Aluminium	1kg/feddan (paint)	U	7	-	75	-
2107	Hector 80% WP	Fosetyl-Aluminium	150gm/100 L. w (spray)	U	3	-	75	-

Pest: Nematodes

Nematode slow decline (Citrus nematode) (in fruit trees)

Symptoms of infestations:

The initial above-ground symptoms of slow decline of citrus include less vigorous trees and slowing growth. Symptoms include leaf yellowing, sparse foliage, small, non-uniform fruit, and defoliated upper branches. Dieback is particularly noticeable in the upper portion of trees.



- **Time of symptoms appearance:**

The symptoms do not appear until ten years later, the death of shot, and the dryness of the branches.

- **Proper time of control:**

Where there are 4000 nematodes in 250 g soil at the beginning of the season (February and March).

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1894	Javelin 40% EC	Fenamiphos	3Liter/feddan (twice)	High Ib	60	-	0.02	-
1677	Jubitar-X 10% G	Fosthiazate	12.5kg/feddan	Mod II	80	-	0.02	-
594	Rugby 10% G	Cadusafos	24kg/feddan	Mod II	100	-	0.01	-



Agricultural Pesticide Committee

Citrus

Nematode slow decline

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
2536	Smart – N 40% EC	Ethoprophos	5Liter/ feddan (twice)	Mod II	35	–	0.02	–
122	Vaydate 24 % SL	Oxamyl	4Liter/ feddan (twice)	High Ib	7	5	0.01	3
2470	Formena 24% SL	Oxamyl	4Liter/ feddan (twice)	High Ib	60	5	0.01	3
2373	Krenkel 75% EC	Fosthiazate	2Liter/feddan	Mod II	80	–	0.02	–
1442	Nemaphos 40% EC	Fenamiphos	3Liter/ feddan (twice)	High Ib	150	–	0.02	–
2587	Nalmes 40% EC	Fenamiphos	3Liter/ feddan (twice)	High Ib	35	–	0.02	–

Nematode slow decline (Recently planted citrus)

Symptoms of infestations:

Symptoms include leaf yellowing, sparse foliage, small, non-uniform fruit, and defoliated upper branches. Dieback is particularly noticeable in the upper portion of trees.

● Time of symptoms appearance:

Symptoms appear on a limited number of citrus trees and then spread to most trees.

● Proper time of control:

Where there are 2400 nematodes in 250 g soil at the beginning of the season.

Certified Recommendations:



Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1865	Nemacur 40% EC	Fenamiphos	4Liter/ feddan (twice)	High Ib	–	–	0.02	–
60	Nemacur 10% GR	Fenamiphos	25kg/feddan	Mod II	–	–	0.02	–

Citrus (Orange)

Pest: Fungi

Black core rot

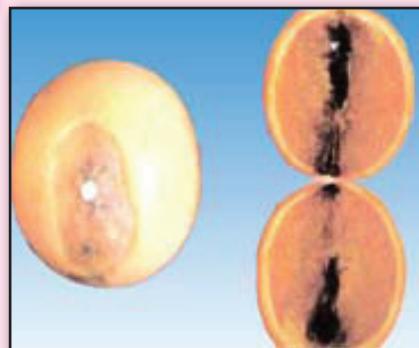
Symptoms of infections:

Black decay develops inside the fruit; the rind can also be discolored brown at the stem or astylar end. Affected fruit typically color prematurely and drop.

● Time of symptoms appearance:

Fungus enters the fruit during early fruit development, or through wounds or infections start of June.

● Proper time of control: Protective spraying as of start of May.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
2113	Depro 30% EC	Difenoconazole	40cm ³ /100 L.w	Low III	15	0.6	0.6	0.6
2315	Craft 30% EC	Difenoconazole 15% + Propiconazole 15%	40cm ³ /100 L.w	Low III	10	0.6 -	0.6 5	0.6 8
1437	Montoro 30% EC	Difenoconazole 15% + Propiconazole 15%	40cm ³ /100 L.w	Low III	10	0.6 -	0.6 5	0.6 8

Mango**Pest: Insects****Mealy bugs****Symptoms of infestations:**

Insects' bodies are covered with a white waxy material, the honeydew left by mealy bugs may bring sooty mold fungus and ants attracted for feeding.

**• Time of symptoms appearance:**

Symptoms of infestations are prevailing on the course of the year seasons but in winter it is reduced because the middle aged adults hide in bark crevices in tree trunks.

• Proper time of control:

When 5% of the randomly inspected trees in the orchard were infested, taking in consideration the ration of infested leaves per one tree.

• Guidelines:

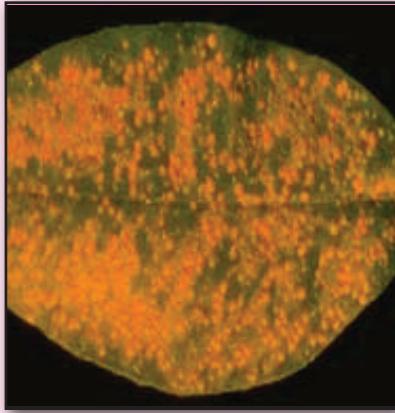
Care and precautions for mineral oils applications should be considered as recommended.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
236	Misrona 85% Mayonaise	Mineral oil	2Liter/100 L. w (winter spry)	U	8	-	0.01	-

Scale insects**Symptoms of infestations:**

Females and nymphs suck plant juices from leaves resulting in their yellowish and become wilt and stunted, concerning soft scale insect, the honeydew secretions serve as a media for sooty mold fungus growth.

**• Time of symptoms appearance:**

All year round and reached highest during June and August.

• Proper time of control: When 10% of the total trees' number in the orchard showed infestation after randomly inspected trees, or 10% of leaves of one tree.

• Guidelines:

Care and precautions for mineral oils applications should be considered as recommended.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1767	Tiger 97% EC	Mineral oil	1.5Liter/100 L. w (summer spry)	U	10	-	0.01	-
1039	Diver 97% EC	Mineral oil	1.5Liter/100 L. w (summer spry)	U	12	-	0.01	-
89	Super Royal Oil 95%EC	Mineral oil	1.5Liter/100 L. w (summer spry)	U	12	-	0.01	-
236	Misrona 85%Mayonaise	Mineral oil	2.5Liter/100 L. w (winter spry)	U	8	-	0.01	-

Fruit flies

Symptoms of infestations:

Presence of pricks on the fruit peel with gum like secretions in case of unripe fruits, the scars area become soften and secretions come out when the fruit is pressed.



- **Time of symptoms appearance:** During July and August.

- **Proper time of control:** When symptoms of infestations appear.

- **Guidelines:** Fallen infested fruits have to be buried in the soil or burned immediately to kill larvae inside fruits, application of partial spray and killing bundles should be considered.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
738	Dimetox 40% EC	Dimethoate	75 cm ³ /20 L.w + 5% attractive substance	Mod II	15	1	0.01	-
83	Roger-L 40% EC	Dimethoate	75 cm ³ /20 L.w + 5% attractive substance	Mod II	7	1	0.01	-
585	Malatox 57% EC	Malathion	100 cm ³ /20 L.w + 5% attractive substance	Low III	6	-	0.02	8
1080	Malatox 50% WP	Malathion	100gm/20 L.w + 5% attractive substance	Low III	3	-	0.02	8

Pest: Fungi

Powdery mildew

Symptoms of infections:

The characteristic symptom of the disease is the white superficial powdery fungal growth on leaves, stalk of panicles, flowers and young fruits. The affected flowers and fruits drop pre-maturely reducing the crop load considerably or might even prevent the fruit set.



- **Time of symptoms appearance:**

Since appears of early leaves and fruit.

- **Proper time of control:** When symptoms appear.

Certified Recommendations:

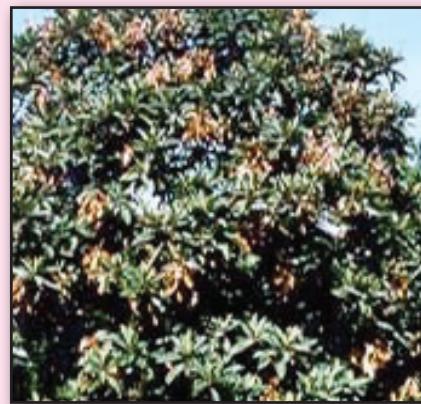
Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
603	H- Sulphur 80% WP	Sulfur	250gm/100 L.w	Low III	3	-	-	-
1781	Escudo 25% SC	Azoxystrobin	45cm ³ /100 L.w	U	7	0.7	0.7	2
2585	Eliminate 30% SC	Azoxystrobin 12% + Difenoconazole 18%	50cm ³ /100 L.w	Low III	15	0.7 0.07	0.7 0.1	2 0.01
1323	Empratour sulfur 80% WP	Sulfur	250gm/100 L.w	Low III	3	-	-	-
2220	Antalia 25% EC	Difenoconazole	50cm ³ /100 L.w	U	10	0.07	0.1	0.01
1825	Ecopro 25% EC	Propiconazole	20cm ³ /100 L.w	U	20	-	0.01	-
2112	Propimax 25% EC	Propiconazole	15cm ³ /100 L.w	U	19	-	0.01	-
2631	Propika 25% EC	Propiconazole	15cm ³ /100 L.w	U	7	-	0.01	-
1862	Pilartop M 70% WP	Thiophanate-methyl	60gm/100 L.w	U	7	-	1	-
1438	Penazole 10% EC	Penconazole	25cm ³ /100 L.w	U	10	-	0.05	-
1088	Bio Zeid 2.5% WP	<i>Trichoderma album</i>	250gm/100 L.w	U	-	-	-	-
20	Tilt 25% EC	Propiconazole	15cm ³ /100 L.w	U	19	-	0.01	-
247	Topsin -M 70% WP	Thiophanate-methyl	60gm/100 L.w	U	14	-	1	-
1931	Tommy 70% WP	Thiophanate-methyl	60gm/100 L.w	U	15	-	1	-
2043	Teliozed 25% EC	Propiconazole	15cm ³ /100 L.w	U	10	-	0.01	-
1549	Thiofex 80% WP	Sulfur	250gm/100 L.w	Low III	3	-	-	-
1024	Thiovit Jet 80% WG	Sulfur	250gm/100 L.w	Low III	14	-	-	-
1731	Dimex 70% WP	Thiophanate-methyl	65gm/100 L.w	U	7	-	1	-
2098	Dinoxy 32.5% SC	Azoxystrobin 20% + Difenoconazole 12.5%	60cm ³ /100 L.w	Low III	15	0.7 0.07	0.7 0.1	2 0.01
2584	San Gold 25% EC	Difenoconazole	50cm ³ /100 L.w	U	10	0.07	0.1	0.01
2167	Saupolo 80% WG	Sulfur	250gm/100 L.w	Low III	3	-	-	-
341	Sulfex 80% WP	Sulfur	250gm/100 L.w	Low III	3	-	-	-
1380	Sythane 24% EC	Myclobutanil	22cm ³ /100 L.w	U	14	-	-	0.02
2183	Vagen 25% EC	Propiconazole	15cm ³ /100 L.w	U	19	-	0.01	-
521	Vectra 10% SC	Bromuconazole	40cm ³ /100 L.w	Low III	20	-	0.05	-
1319	Crown 25% EC	Propiconazole	15cm ³ /100 L.w	U	10	-	0.01	-
1023	Hesta 70% WP	Thiophanate-methyl	65gm/100 L.w	U	15	-	1	-
2230	Eurozolex 25% EX	Propiconazole	17cm ³ /100 L.w	U	10	-	0.01	-
2737	Tobset 72% WP	Thiophanate-methyl	65gm/100 L.w	U	7	-	1	-
2891	Besttol 72% WP	Thiophanate-methyl	60 gm/100 L.w	U	10	-	1	-
2823	Zentop 72% WP	Thiophanate-methyl	60 gm/100 L.w	U	7	-	1	-
2897	Tiltic Super 25% EC	Propiconazole	20 cm ³ /100 L.w	U	10	-	0.01	-
2800	Dovex 50% EC	Azoxystrobin 20% + Tebuconazole 30%	25 cm ³ /100 L.w	Low III	7	0.7 0.05	0.7 0.1	2 0.15

Anthracnose

Symptoms of infections:

The anthracnose pathogen invades inflorescences, fruit, leaves and stems of mango. Leaf anthracnose appears as irregular-shaped black necrotic spots on both surfaces of the mango leaf. Lesions often coalesce to form large necrotic areas, frequently along the leaf margins. Severely affected leaves usually curl. Lesions develop primarily on young tissue and conidia are formed and can be observed in lesions of all ages. In older leaves, lesions do not develop, but latent infections are formed and the fungus remains dormant until the tissue senesces.

- **Time of symptoms appearance:** Starting of April.
- **Proper time of control:** When symptoms appear.





Agricultural Pesticide Committee

Mango

Anthracnose

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1781	Escudo 25% SC	Azoxystrobin	45cm ³ /100 L.w	U	7	0.7	0.7	2
49	Antracol 70% WP	Propineb	300gm/100 L.w	U	7	2	0.05	-
298	Polyram DF 80% DF	Metiram	400gm/100 L.w	U	14	2	2	-
945	Score 25% EC	Difenconazole	50cm ³ /100 L.w	U	30	0.07	0.1	0.01
640	Kocide (2000) 53.8 %DF	Copper hydroxide	300gm/100 L.w	Mod II	21	-	20	-
2574	Nasrstrobin 23% SC	Azoxystrobin	50cm ³ /100 L.w	U	7	0.7	0.7	2
1523	Nemo 70% WP	Propineb	300gm/100 L.w	U	7	2	0.05	-
2869	Fung kill 76% WP	Propineb + Cymoxanil	150 gm/100 L.w	Mod II	14	2	0.05	-
						-	0.1	4

Grape

Pest: Insects

Mealy bugs

Symptoms of infestations:

Appearance of white powdery insects on leaves and tree bark, the bark become loose and can be peeled easily, individuals exist under the bark secreting sticky honey dew that may bring sooty mold fungus covering the stem and giving it the black color.

● Time of symptoms appearance:

It is abundant during spring on leaves, stems and clusters, while in winter they decrease due to their hiding in bark crevices in the tree trunk.

● Proper time of control:

As soon as symptoms appear.

● Guidelines:

After pruning it is recommended to peel the bark and burn the pruned branches and twigs, spraying with recommended insecticide should be in the shape of umbrella and care has to be taken to avoid spraying during fluorescence and before fruits formed.

Certified Recommendations:



Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1820	Agri Flex 18.56%SC	Abamectin 3.32% + Thiamethoxam 15.24%	40 cm ³ /100 L.w	Mod II	28	0.01 -	0.01 0.4	0.02 0.3
1775	Imipower 35% SC	Imidacloprid	75 cm ³ /100 L.w	Mod II	7 leaves fruits 3	1	1	1
1148	Best 25% WP	Imidacloprid	100gm/100 L.w	Mod II	10 leaves fruits 7	1	1	1
80	Royal Oil 82% Mayonaise	Mineral oil	2 Liter/100 L. w (winter spray)	U	45 leaves fruits 90	-	0.01	-
1757	Movento 10% SC	Spirotetramat	80 cm ³ /100 L.w	U	10 leaves fruits 3	2	2	3

Fruit flies

Symptoms of infestations:

Presence of black scars on the fruit peel with gum like secretions i, the scares area become soften and secretions come out when the fruit is pressed, ripen fruits are infested and spoiled due to fungal infestation.

● Time of symptoms appearance:

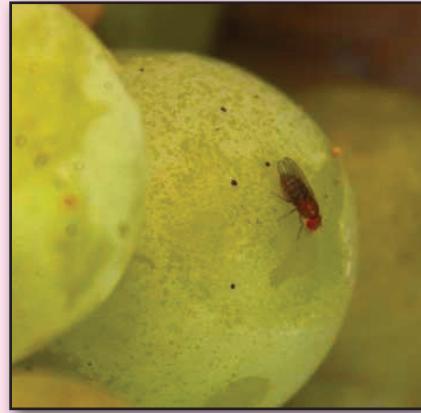
At the time of fruits formation and when symptoms appear.

● Proper time of control:

When symptoms of infestations appear.

● Guidelines:

Fallen infested fruits have to be burrowed in the soil or burned immediately to kill larvae inside fruits, application of partial spray and killing bundles should be considered.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1344	Conserve 0.024%CB	Spinosad	500cm ³ /4 L.w(Partial spray)	U	1	0.5	0.5	0.5

Grape berry moth (*Paralobesia viteana*)

Symptoms of infections:

Larvae spine tiny silken web to tie the fruits together during all growing stages (buds, unripe fruits, ripen fruits), it make bunches of fruits to feed inside.

● Time of symptoms appearance:

It has 3 generations from the first of April until July. The first generation feed on the fluorescence buds, the second on unripe fruits, while the third on the ripen fruits.

● Proper time of control:

As soon as symptoms of infestations appear.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1253	Avaunt 15% EC	Indoxacarb	25cm ³ /100 L.w	Mod II	7 leaves 3 fruits	2	2	5
1219	Alsystin 48% SC	Triflumuron	26.25cm ³ /100 L.w	U	15 leaves 10 fruits	-	0.2	-
2308	Benzafast 2.3% EC	Emamectin benzoate	40cm ³ /100 L.w	Low III	10 leaves 7 fruits	0.03	0.05	0.03
1057	Tracer 24% SC	Spinosad	20cm ³ /100 L.w	U	15	0.5	0.5	0.5
1245	Dipel DF 6.4% DF	<i>Bacillus Thuringiensis</i>	300gm/feddan	U	-	-	0.01	-
1329	Radiant 12% SC	Spinetoram	20cm ³ /100 L.w	U	7 leaves 5 fruits	0.3	0.5	0.5



Grape

Grape berry moth

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1052	Runner 24% SC	Methoxyfenozide	25cm ³ /100 L.w	U	7	1	1	1
1606	Cymax 5% EC	Lufenuron	40cm ³ /100 L.w	U	5 leaves 3 fruits	-	1	-
2109	Sega Top 5% EC	Lufenuron	40cm ³ /100 L.w	U	14	-	1	-
2581	Sempra 5% EC	Lufenuron	40cm ³ /100 L.w	U	10 leaves 7 fruits	-	1	-
2227	Glory 5% EC	Lufenuron	40cm ³ /100 L.w	U	12 leaves 3 fruits	2	2	2
1597	Flax 15% SC	Indoxacarb	25cm ³ /100 L.w	Mod II	10 leaves 7 fruits	-	0.2	-
1753	Voliam Flexi 40% WG	Chlorantraniliprole 20% + Thiamethoxam 20%	80 gm/feddan	Low III	15 leaves 10 fruits	-	1 0.4	2.5 -
2493	Castello 10% EC	Lufenuron	20cm ³ /100 L.w	U	10 leaves 3 fruits	-	1	-
2575	Cancun 40% SC	Triflumuron	30cm ³ /100 L.w	U	10 leaves 7 fruits	-	0.2	-
2284	Mettaro 30% WG	Indoxacarb	13.5gm/100 L.w	Mod II	15 leaves 10 fruits	2	2	5
2705	Yamason15% EC	Indoxacarb	25cm ³ /100 L.w	Mod II	10 leaves 7 fruits	2	2	2
2791	Camvaal15% EC	Indoxacarb	25cm ³ /100 L.w	Mod II	10 leaves 7 fruits	2	2	2

Pest: Mites

Red spider mite *(Tetranychus urticae)*

Symptoms of infestations:

Presence of yellow spots on the upper surface of leaves, in severe infestation it turns into brown color, leaves wilt and fallen.

- **Time of symptoms appearance:**

During March at the beginning of spring whenever leaves are formed and become intensive gradually during August and September.

- Proper time of control:

When mean number of individuals reached 5 moving spider mites on both surfaces of one leaf of the randomly inspected leaves.

- Guidelines:

Spraying with recommended anti-mites should be complete coverage treatment for both upper and lower leaves' surfaces.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
2624	X-Mite 24% SC	Chlorfenapyr	60cm ³ /100 L.w	Mod II	15 leaves 10 fruits	-	0.01	-
1159	Ortus super 5% EC	Fenpyroximate	50cm ³ /100 L.w	Low III	14	0.1	0.3	1
2349	Procar 5% EC	Hexythiazox	40cm ³ /100 L.w	U	14	1	1	1
2405	Truegold 5% SC	Fenpyroximate	75cm ³ /100 L.w	Low III	15 leaves 10 fruits	0.1	0.3	1

Grape

Red spider mite

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1391	Tinam 1.8% EC	Abamectin	50cm ³ /100 L.w	Mod II	15 leaves 12 fruits	0.01	0.01	0.02
2532	Solo 24% SC	Bifenazate	70cm ³ /100 L.w	U	7 leaves 3 fruits	0.7	0.7	0.75
1420	Challenger Super 24% SC	Chlufenapyr	60cm ³ /100 L.w	Mod II	21 leaves 7 fruits	-	0.01	-
2122	Vanty 24% SC	Chlorefenapyr	150cm ³ /100 L.w	Mod II	7	-	0.01	-
2166	Follow up 20.8% SC	Abamectin 0.5% + Clofentezine 20.3%	150cm ³ /100 L.w	Mod II	15 leaves 10 fruits	0.01 2	0.01 0.02	0.02 1
2320	Concord 24% SC	Chlufenapyr	60cm ³ /100 L.w	Mod II	15 leaves 10 fruits	-	0.01	-
1548	Magnifico 5% EC	Hexythiazox	40cm ³ /100 L.w	U	7 leaves 3 fruits	1	1	1

Pest: Fungi

Fruit rot

Symptoms of infections:

Infection forms small brown patches that turn black. Portions of the cluster wither and drop off. Fruit infection causes clusters to rot and berries to turn brown or a reddish color. The infected fruit may become covered with a grayish-tan powder containing the spores of the fungus.



Time of symptoms appearance:

The infection of fruit rots start in Jun to the end of season.

Proper time of control:

When symptoms appear.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1083	Pandel 8% SC	Sulfur	125cm ³ /100 L.w	U	1	-	-	-
2046	Prolectus 50% WG	Fenpyrazamine	50gm/100 L.w	Low III	10 leaves 3 fruits	-	3	3
1123	Bellis 38% WG	Boscalid 25.2% + Pyraclostrobin 12.8%	50gm/100 L.w	U	15	5 2	5 1	8.5 2
1718	Biocontrol T34 12%WP	Trichoderma asperellum	85gm/100 L.w	U	-	-	-	-
1617	Tairel F 52% WP	Benalaxyl 8% + Folpet 44%	250gm/100 L.w	U	28	0.3 10	0.3 6	50
938	Teldor 50% SC	Fenhexamid	50cm ³ /100 L.w	U	10	15	15	4
2610	Rukano 50% WG	Boscalid	100gm/100 L.w	U	15 leaves 10 fruits	5	5	8.5
1004	Switch 62.5% WG	Cyprodinil 37.5% + Fludioxonil 25%	50gm/100 L.w	Low III	21	2 3	5 3	2 5
2464	Fenamex 50% SC	Fenhexamid	50cm ³ /100 L.w	U	10 leaves 3 fruits	15	15	4
460	Captan Ultra 50% WP	Captan	300gm/100 L.w	U	28	25	0.03	25
1796	Cantus 50% WG	Boscalid	100gm/100 L.w	U	10 leaves 7 fruits	5	5	8.5

Powdery mildew

Symptoms of infections:

Young shoots growing from infected buds are the first to be covered with the powdery mycelia. Young, growing leaves, Green shoots, and berries.

● Time of symptoms appearance:

When appearance leaves, flowers, and fruits.

● Proper time of control: When symptoms appear.

● Guidelines: The fungicide was spraying when starting of growing leaves, green shoots, and berries long about 30 cm and repeat when disease severity increased.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
603	H-Sulphur 80% WP	Sulfur	250gm/100 L.w	Low III	5	-	-	-
1674	Spit 25% EC	Triadimenol	50cm ³ /100 L.w	Low III	10 leaves 1 fruits	0.3	0.3	-
1610	Actamyl 70% WP	Thiophanate-methyl	80gm/100 L.w	U	10 leaves 7 fruits	-	0.1	5
1452	Akotop 85% WG	Thiophanate-methyl	65gm/100 L.w	U	14	-	0.1	5
980	Acoidal 80% WG	Sulfur	200gm/100 L.w	Low III	7	-	-	-
2260	Altrazole 10% EC	Penconazole	15cm ³ /100 L.w	U	15 leaves 7 fruits	0.2	0.4	-
1710	Amisto 25% SC	Azoxystrobin	50cm ³ /100 L.w	U	10 leaves 3 fruits	2	3	2
2058	Indar 5% EW	Febuconazole	60cm ³ /100 L.w	U	10 leaves 7 fruits	1	1	1
1250	Insuf 80% WG	Sulfur	200gm/100 L.w	Low III	5 leaves 3 fruits	-	-	-
2186	Onil 25% EC	Triadimenol	35cm ³ /100 L.w	Low III	15 leaves 7 fruits	0.3	0.3	-
1083	Pandel 8% SC	Sulfur	125cm ³ /100 L.w	U	1	-	-	-
2085	Progrape 25% EC	Propiconazole	15cm ³ /100 L.w	U	10 leaves 7 fruits	-	0.3	-
1885	Brozin 70% WP	Thiophanate-methyl	80gm/100 L.w	U	10	-	0.1	5
1761	Plant Zoul 10% EC	Penconazole	10cm ³ /100 L.w	U	15 leaves 7 fruits	0.2	0.4	-
1867	BannerMax 70% WP	Thiophanate-methyl	80 gm/100 L.w	U	7	-	0.1	5
1621	Point mass 10% EC	Penconazole	10 cm ³ /100 L.w	U	15 leaves 3 fruits	0.2	0.4	-
946	Bellkute 40% WP	Iminoctadine tris(albesilate)	50 gm/100 L.w	Low III	5	-	0.1	-
1123	Bellis 38% WG	Boscalid 25.2% + Pyraclostrobin 12.8%	50 gm/100 L.w	U	15	5 2	5 1	8.5 2
2521	Benozed 25% EC	Propiconazole	15 cm ³ /100 L.w	U	10 leaves 7 fruits	-	0.3	-
1300	Talendo 20% EC	Proquinazid	20 cm ³ /100 L.w	U	18 leaves 14 fruits	-	0.5	0.5
2222	Trimex 10% EC	Penconazole	30 cm ³ /100 L.w	U	15 leaves 3 fruits	0.2	0.4	-
2461	Trinol 25% EC	Triadimenol	50 cm ³ /100 L.w	Low III	10	0.3	0.3	-

Grape

Powdery mildew

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
295	Topas 10% EC	Penconazole	10 cm ³ /100 L.w	U	15 leaves 3 fruits	0.2	0.4	-
247	Topsin-M 70% WP	Thiophanate-methyl	80 gm/100 L.w	U	14	-	0.1	5
1320	Tiolene 71.76% SC	Sulfur	100 cm ³ /100 L.w	Low III	5 leaves 3 fruits	-	-	-
2614	Therofan 80% WG	Sulfur	250 gm/100 L.w	Low III	3 leaves 3 fruits	-	-	-
1322	Thiofan 80% WG	Sulfur	250 gm/100 L.w	Low III	5 leaves 3 fruits	-	-	-
1024	Thiovit Jet 80% WG	Sulfur	250 gm/100 L.w	Low III	3 leaves 2 fruits	-	-	-
2579	Gatten 5% EC	Flutianil	20 cm ³ /100 L.w	U	5 leaves 10 fruits	-	0.01	-
1830	Gentraxil 70% WP	Thiophanate-methyl	80 gm/100 L.w	U	10 leaves 3 fruits	-	0.1	5
2423	Dayofan 80% WP	Sulfur	250 gm/100 L.w	Low III	5 leaves 3 fruits	-	-	-
2400	Deltamax 25% EC	Propiconazole	50 cm ³ /100 L.w	U	10 leaves 7 fruits	-	0.3	-
2645	Deltadoom 25% EC	Difenoconazole	50 cm ³ /100 L.w	U	10 leaves 7 fruits	3	3	4
583	Domark 10% EC	Tetraconazole	40 cm ³ /100 L.w	U	11 leaves 3 fruits	-	0.5	0.2
2419	Depostar Top 32.5% SC	Azoxystrobin 20% + Difenoconazole 12.5%	75cm ³ /100 L.w	Low III	15 leaves 10 fruits	2 3	3 3	2 4
2125	Divide 60% WG	Metiram 55% + Pyraclostrobin 5%	100gm/100 L.w	U	15 leaves 10 fruits	5 2	5 1	5 2
1642	Dimac 25% EC	Difenoconazole	50cm ³ /100 L.w	U	21	3	3	4
2208	Dynali 9% DC	Cyflufenamid3% + Difenoconazole 6%	250cm ³ /feddan	U	21	- 3	0.15 3	0.3 4
2730	Efosan Gold70% WP	Thiophanate-methyl	80 gm/100 L.w	U	15 leaves 10 fruits	-	0.1	5
2744	Arvica30% SC	Boscalid20% + Kresokim-methyl10%	50cm ³ /100 L.w	U	15 leaves 10 fruits	5 1	5 1	8.5 1
2906	Greens50% WG	Trifloxystrobin	20 gm/100 L.w	U	14 leaves 5 fruits	3	3	2
2923	Prosulfo80% WG	Sulfur	250 gm/100 L.w	Low III	7 leaves 3 fruits	-	-	-
1265	Ritreap 5% EW	Cyflufenamid	15cm ³ /100 L.w	U	10 leaves 7 fruits	-	0.15	0.3



Agricultural Pesticide Committee

Grape

Powdery mildew

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1950	Micronized Soreil KZ 70% WP	Sulfur	250gm/100 L.w	Low III	3	-	-	-
1763	Sufrevit 80% SC	Sulfur	200cm ³ /100 L.w	Low III	5 leaves 3 fruits	-	-	-
1104	Sulgran 80% WG	Sulfur	250gm/100 L.w	Low III	5	-	-	-
1827	Solfan KZ 70% SC	Sulfur	150cm ³ /100 L.w	Low III	3	-	-	-
2313	Soli Sulpher 80% WG	Sulfur	250gm/100 L.w	Low III	5 leaves 3 fruits	-	-	-
1380	Sythane 24% EC	Myclobutanil	17cm ³ /100 L.w	U	14	0.9	1	1
1552	Suntop El-nasr 70% WP	Thiophanate-methyl	80gm/100 L.w	U	17	-	0.1	5
2514	Sun flex 80% WG	Sulfur	250gm/100 L.w	Low III	5 leaves 3 fruits	-	-	-
1026	Flint 50% WG	Trifloxystrobin	20gm/100 L.w	U	35	3	3	2
2589	Flopin 60% WG	Pyraclostrobin 5% + Metiram 55%	100gm/100 L.w	U	15	2 5	1 5	2 5
927	Fungshow 12.5% WP	Diniconazole	15gm/100 L.w	U	15	-	0.01	-
1076	Fungcure 70% WP	Thiophanate-methyl	100gm/100 L.w	U	10 leaves 8 fruits	-	0.1	5
1615	Fit 25% EC	Propiconazole	10cm ³ /100 L.w	U	10 leaves 7 fruits	-	0.3	-
1754	Vivando 50% SC	Metrafenone	20cm ³ /100 L.w	U	21 leaves 7 fruits	5	0.01	4.5
521	Vectra 10% SC	Bromuconazole	30cm ³ /100 L.w	Low III	15	-	0.5	-
1171	Cabrio Top 60% WG	Pyraclostrobin 5% + Metiram 55%	100gm/100 L.w	U	35	5 2	5 1	5 2
1319	Crown 25% EC	Propiconazole	15cm ³ /100 L.w	U	15 leaves 3 fruits	-	0.3	-
1097	Collis 30% SC	Boscalid 20% + Kresoxim-methyl 10%	50cm ³ /100 L.w	U	10	5 1	5 1	8.5 1
1506	Combenix 70% WP	Thiophanate-methyl	80gm/100 L.w	U	10 leaves 7 fruits	-	0.1	5
540	Kumulus-S 80% WG	Sulfur	250gm/100 L.w	Low III	10	-	-	-
1793	Concept 25% SC	Flutriafol	45cm ³ /100 L.w	Low III	10 leaves 7 fruits	0.8	0.8	1.5
2131	Maven 18.7% WG	Dimethomorph 12% + Pyraclostrobin 6.7%	100gm/100 L.w	U	21 leaves 15 fruits	3 2	3 1	3 2
2229	Mydreagon 25% EC	Myclobutanil	130cm ³ /100 L.w	U	21	0.9	1	1

Grape

Powdery mildew

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
2375	Mycosam 25% EC	Propiconazole	15cm ³ /100 L.w	U	10 leaves 7 fruits	-	0.3	-
2511	Muringo 12.5% WP	Diniconazole	15gm/100 L.w	U	15	-	0.01	-
1699	Metador 25% EC	Propiconazole	15cm ³ /100 L.w	U	10 leaves 7 fruits	-	0.3	-
2720	Rawa Star Pro 32.5% SC	Difenoconazol 12.5% + Azoxystrobin 20%	75cm ³ /100 L.w	Low III	15 leaves 10 fruits	2	3	4
2796	Deepzol 30% EC	Difenoconazol 15% + Propiconazole 15%	40 cm ³ /100 L.w (Twice)	Low III	15 leaves 7 fruits	3	3	4
2841	Servo 50% WG	Kresokim-methyl	15gm/100 L.w	U	14	1	1	1
2883	Kazuoo 80% WG	Sulfur	250 gm/100 L.w	Low III	3	-	-	-
2925	Fremor 25% SC	Flutriafol	45 cm ³ /100 L.w	Low III	10 leaves 5 fruits	0.8	0.8	1.5
2762	Welles38% WG	Boscalid 25.5% + Pyraclostrobin 12.5%	50 gm/100 L.w	U	15 leaves 10 fruits	5	5	8.5
1374	Microbagen 80% WP	Sulfur	250gm/100 L.w	Low III	5 leaves 3 fruits	-	-	-
597	Microthiol special 80% WG	Sulfur	250gm/100 L.w	Low III	7	-	-	-
1368	Microsulfur 80% WG	Sulfur	250gm/100 L.w	Low III	5 leaves 3 fruits	-	-	-
1897	Microvit KZ 80% WP	Sulfur	250gm/100 L.w	Low III	3	-	-	-
2569	Micronite – S 80% WP	Sulfur	500gm/100 L.w	Low III	5 leaves 3 fruits	-	-	-
1507	Milvet 80% WG	Sulfur	250gm/100 L.w	Low III	5 leaves 3 fruits	-	-	-
1560	Nativo 75% WG	Tebuconazole 50% + Trifloxystrobin 25%	125gm/feddan	Mod II	15 leaves 3 fruits	6 3	0.5 3	5 2
1421	Nilbu 12.5% EC	Myclobutanil	40cm ³ /100 L.w	U	12 leaves 7 fruits	0.9	1	1
1554	Hivit 80% WG	Sulfur	250gm/100 L.w	Low III	4 leaves 3 fruits	-	-	-
2591	Hot Shot 30% EC	Difenoconazole 15% + Propiconazole 15%	50cm ³ /100 L.w	Low III	15 leaves 7 fruits	3 -	3 0.3	4 -
1266	Heliosoufre 70% SC	Sulfur	125 cm ³ /100 L.w	Low III	5 leaves 3 fruits	-	-	-

Grape

Downy mildew

Downy mildew

Symptoms of infections:

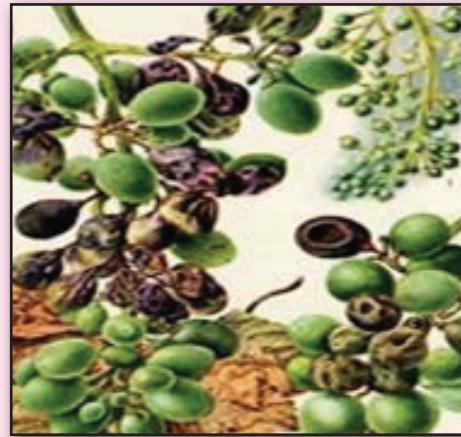
Leaf lesions are angular and yellow to reddish-brown. Fungal sporulation is a dense, white, cottony growth on the undersides of leaves.

• Time of symptoms appearance:

The infection starts in mid-May until the end of season.

• Proper time of control:

When symptoms appear.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1792	Azostar 25% SC	Azoxystrobin	50cm ³ /100 L.w	U	12 leaves 3 fruits	2	3	2
1516	EfdalBakirox 87% WP	Copper oxychloride	300gm/100 L.w	Mod II	15 leaves 6 fruits	-	50	-
1756	EfdalMaco M-45 80%WP	Mancozeb	250gm/100 L.w	U	15 leaves 3 fruits	5	5	1.5
546	Acrobat copper 73.7%WP	Copper oxychloride 67.7% + Dimethomorph 6%	150gm/100 L.w	Mod II	20 leaves 1 fruits	- 3	50 3	- 3
1357	Extra 25% SC	Azoxystrobin	50cm ³ /100 L.w	U	7	2	3	2
698	Equation Pro 52.5% WG	Cymoxanil 30% + Famoxadone 22.5%	30gm/100 L.w	Low III	25	- 2	0.3 2	0.1 4
1027	Amistar 25% SC	Azoxystrobin	50cm ³ /100 L.w	U	6	2	3	2
744	Anadol 80% WP	Mancozeb	250gm/100 L.w	U	10 leaves 7 fruits	5	5	1.5
2039	Inacop L 69% SC	Copper oxychloride	200cm ³ /100 L.w	Low III	10 leaves 3 fruits	-	50	-
49	Antracol 70% WP	Propineb	300gm/100 L.w	U	10	5	1	-
1035	Index 77% WP	Copper hydroxide	250gm/100 L.w	Mod II	20	-	50	-
1525	Indofil M-45 80% WP	Mancozeb	250gm/100 L.w	U	15 leaves 3 fruits	5	5	1.5
1900	Airone 48.9% WG	Copper hydroxide 24.4% + Copper oxychloride 24.5%	250gm/100 L.w	Low III	15 leaves 7 fruits	- -	50 50	- -
1208	Oxi-Cup 84% WG	Copper oxychloride	300gm/100 L.w	Mod II	15 leaves 6 fruits	-	50	-

Grape

Downy mildew

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1451	Patrol 46% SC	Copper hydroxide	200cm ³ /100 L.w	Low III	15 leaves 5 fruits	-	50	-
2681	Promot 72.2% SL	Propamocorb hydro-chloride	250cm ³ /100 L.w	U	15 leaves 7 fruits	-	0.01	-
1142	Blue Jet 85% WG	Copper oxychloride	250gm/100 L.w	Mod II	20	-	50	-
1258	Bordeaux Caffaro 74.81% WP	Bordeaux mixture	300gm/100 L.w	U	19	-	50	-
2657	Peak 74% WP	Copper oxychloride 68% + Dimethomorph 6%	150gm/100 L.w	Mod II	15 leaves 10 fruits	- 3	50 3	- 3
1416	Trust Copper 85% WP	Copper oxychloride	250gm/100 L.w	Mod II	15 leaves 6 fruits	-	50	-
411	Tridex 80% WP	Mancozeb	250gm/100 L.w	U	30	5	5	1.5
410	Tridex Super 75% WG	Mancozeb	200gm/100 L.w	U	10	5	5	1.5
1617	Tairel F 52% WP	Benalaxyl 8% + Folpet 44%	250gm/100 L.w	U	15 leaves 10 fruits	0.3 10	0.3 6	- 50
2921	Budget 25% WP	Metalaxyl	100 gm/100 L.w	Low III	10 leaves 7 fruits	1	2	2
2936	Catcher 61.4% WG	Copper hydroxide	250gm/100 L.w	Mod II	15 leaves 7 fruits	-	50	-
2760	Simo Z72% WP	Cymoxanil 8% + Mancozeb 64%	250gm/100 L.w	Mod II	15 leaves 10 fruits	- 5	0.3 5	0.1 1.5
2817	Del Cup Gold 23.5% SL	Copper sulfate	250cm ³ /100 L.w	Mod II	10 leaves 7 fruits	-	50	-
2881	Demstro 70% WG	Azoxystrobin 20% + Dimethomorph 50%	50 gm/100 L.w	U	7	2 3	3 3	2 3
84	Galben Mancozeb 58% WP	Benalaxyl 10% + Mancozeb 48%	150gm/100 L.w	U	14	0.3 5	0.3 5	- 1.5
2378	Ganger 50% WP	Fosetyl-Aluminium 28% + Mancozeb 22%	250gm/100 L.w	U	7 leaves 3 fruits	- 5	100 5	- 1.5
1752	Diayam 80% WP	Mancozeb	250gm/100 L.w	U	15 leaves 3 fruits	5	5	1.5
189	Dithane M-45 - 80% WP	Mancozeb	250gm/100 L.w	U	10 leaves 7 fruits	5	5	1.5
2174	Diroof 50% WG	Dimethomorph	50gm/100 L.w	U	15 leaves 3 fruits	3	3	3
735	Dicozeb 80% WP	Mancozeb	250gm/100 L.w	U	12	5	5	1.5
1327	Roxyl plus 68.9% WP	Copper hydroxide 53.9% + Metalaxyl 15%	150gm/100 L.w	Mod II	21 leaves 12 fruits	- 1	50 2	- 2
1062	Rolex 50% WP	Copper oxychloride 35% + Metalaxyl 15%	150gm/100 L.w	Mod II	15	- 1	50 2	- 2
2644	Robak 69% WP	Dimethomorph 9% + Mancozeb 60%	250gm/100 L.w	U	10 leaves 7 fruits	3 5	3 5	3 1.5
1103	Redo-Copper 74% WP	Copper oxychloride 59% + Metalaxyl 15%	150gm/100 L.w	Mod II	15	- 1	50 2	- 2
2477	Romel 72 WP	Mancozeb 64% + Metalaxyl 8%	200gm/100 L.w	Mod II	15 leaves 10 fruits	5 1	5 2	1.5 2
2512	Sand Pelaour 72% WP	Cymoxanil 8% + Mancozeb 64%	150gm/100 L.w	Mod II	15 leaves 10 fruits	- 5	0.3 5	0.1 1.5



Agricultural Pesticide Committee

Grape

Downy mildew

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1585	Sand flower 72% WP	Cymoxanil 8% + Mancozeb 64%	150gm/100 L.w	Mod II	15 leaves 10 fruits	— 5	0.3 5	0.1 1.5
1439	Sandcure 72% WP	Mancozeb 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	7 leaves 3 fruits	— 1	50 2	— 2
2261	Spidoll 52.5% DF	Cymoxanil 30% + Famoxadone 22.5%	40gm/100 L.w	Low III	15 leaves 10 fruits	— 2	0.3 2	0.1 4
2853	Claiwa75% WG	Mancozeb	200 gm/100 L.w	U	10	5	5	1.5
2926	Copcare 80% WP	Copper oxychloride	250 gm/100 L.w	Mod II	15 leaves 7 fruits	—	50	—
1256	Starcopper 50% WP	Copper oxychloride	250gm/100 L.w	Low III	14 leaves 1 fruits	—	50	—
1576	Stone 50% WG	Dimethomorph	50gm/100 L.w	U	3	3	3	3
1903	Smart Copper 85% WP	Copper oxychloride	300gm/100 L.w	Mod II	21	—	50	—
1455	Sogaat 72% WP	Mancozeb 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	7 leaves 3 fruits	5 1	5 2	1.5 2
1422	Cikeycu 25.5% WP	Cymoxanil 3% + Bordeaux mixtare 22.5%	300gm/100 L.w	Mod II	21 leaves 10 fruits	— —	0.3 50	0.1 —
375	Champion 77% WP	Copper hydroxide	180gm/100 L.w	Mod II	23	—	50	—
1698	Fantic M 69% WP	Benalaxyl 4% + Mancozeb 65%	250gm/100 L.w	U	15 leaves 7 fruits	0.3 5	0.3 5	— 1.5
2629	Fungieb 80% WP	Mancozeb	200gm/100 L.w	U	5	5	5	1.5
1231	Fungicop 62% WG	Copper hydroxide	250gm/100 L.w	Mod II	21	—	50	—
1261	Phostrol 53.6% SL	Phoshorous acid salts	250cm ³ /100 L.w	U	—	—	—	—
1517	Volar73% WP	Copper oxychloride 67% + Dimethomorph 6%	150gm/100 L.w	Mod II	12 leaves 3 fruits	— 3	50 3	— 3
1238	Verderame 74% wP	Bordeaus mixture	300gm/100 L.w	U	15 leaves 5 fruits	—	50	—
460	Captan Ultra 50% WP	Captan	240gm/100 L.w	U	28	25	0.3	25
1694	Captan Ultra 80% WG	Captan	150gm/100 L.w	U	21 leaves 10 fruits	25	0.3	25
2356	Kapect 40% WP	Copper oxychloride30% + Cymoxanil 10%	250gm/100 L.w	Mod II	15 leaves 10 fruits	— —	50 0.3	— 0.1
2619	Cairozad 73.15% WG	Copper oxychloride 68.95% + Cymoxanil 4.2%	200gm/100 L.w	Mod II	15 leaves 10 fruits	— —	50 0.3	— 0.1
1901	Cuptox 85% WP	Copper oxychloride	250gm/100 L.w	Mod II	14	—	50	—
1232	Copromac 85% WG	Copper oxychloride	250gm/100 L.w	Mod II	19	—	50	—
1839	Cabrio Duo 11.2% EC	Dimethomorph 7.2% + Pyraclostrobin 4%	200cm ³ /100 L.w	U	28	3 2	3 1	3 2
2898	Mobedo50% WP	Dimethomorph	50 gm/100 L.w	U	15	3	3	3
2761	Megal 80% WG	Azoxystrobin	16 gm/100 L.w	U	10 leaves 7 fruits	2	3	2
2814	LandCure Mix72% WP	Mancozeb 64% + Mtalaxy l8%	250 gm/100 L.w	Mod II	15	5 1	5 2	1.5 2
1082	Crunch 25.63% SP	Copper sulfate	125gm/100 L.w	Mod II	12 leaves 16 fruits	—	50	—
1815	Cop Guard 77% WP	Copper hydroxide	250gm/100 L.w	Mod II	10 leaves 3 fruits	—	50	—

Grape

Downy mildew

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
2266	Coprax 77% WP	Copper hydroxide	250gm/100 L.w	Mod II	14 leaves 10 fruits	-	50	-
2411	Copper – Z 85% WP	Copper oxychloride	300gm/100 L.w	Mod II	15 leaves 3 fruits	-	50	-
610	Cuprarikh 84% WP	Copper oxychloride	300gm/100 L.w	Mod II	19	-	50	-
1108	Cuprozin 58.8% WP	Copper oxychloride	200gm/100 L.w	Low III	20	-	50	-
602	Copral 84.3% WP	Copper oxychloride	300gm/100 L.w	Mod II	21	-	50	-
1089	Copper-hycide 77% WP	Copper hydroxide	250gm/100 L.w	Mod II	21	-	50	-
307	Cuproxit 34.5% FL	(Copper sulfate (tribasic	300 cm ³ /100 L.w	Mod II	15 leaves 9 fruits	-	50	-
624	Cuprocaffaro 86.04% WP	Copper oxychloride	300gm/100 L.w	Mod II	20	-	50	-
2515	Cost 77% WP	Copper hydroxide	250gm/100 L.w	Mod II	15 leaves 10 fruits	-	50	-
640	Kocide (2000) 53.8 % DF	Copper hydroxide	180gm/100 L.w	Mod II	21	-	50	-
1096	Curzate R 73.15% WP	Copper oxychloride 68.95% + Cymoxanil 4.2%	200gm/100 L.w	Mod II	10 leaves 7 fruits	-	50 0.3	- 0.1
920	Curenox 85% WP	Copper oxychloride	300gm/100 L.w	Mod II	21	-	50	-
1111	King 64.61% SC	Copper sulfate (tribasic)	150 cm ³ /100 L.w	Mod II	20 leaves 6 fruits	-	50	-
1008	Q-copper 84.04% WP	Copper oxychloride	300gm/100 L.w	Mod II	21 leaves 6 fruits	-	50	-
1071	Cure-plus 74.5% WP	Copper oxychloride 59.5% + Metalaxyl 15%	150gm/100 L.w	Mod II	21	- 1	50 2	- 2
734	Cure M 72% WP	Mancozeb 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	15	5 1	5 2	1.5 2
1410	Manco El Nasr 80% WP	Mancozeb	250gm/100 L.w	U	10 leaves 7 fruits	5	5	1.5
1568	Mancodex M 80% WP	Mancozeb	250gm/100 L.w	U	10 leaves 7 fruits	5	5	1.5
2446	Mancolax 70% WP	Mancozeb 60% + Metalaxyl 10%	200gm/100 L.w	Mod II	15 leaves 10 fruits	5 1	5 2	1.5 2
2101	ManoMeta 72% WP	Mancozeb 64% + Metalaxyl 8%	250gm/100 L.w	Mod II	15 leaves 10 fruits	5 1	5 2	1.5 2
1707	Manex 72% WP	Cymoxanil 8% + Metalaxyl 64%	150gm/100 L.w	Mod II	15 leaves 10 fruits	- 5	0.3 5	0.1 0.5
1543	Mobestar 25% SC	Azoxystrobin	50cm ³ /100 L.w	U	15 leaves	fruits 7	2	3
2139	Micene triple 49.2 WP	Banalaxyl 6% + Cymoxanil 3.2% + Mancozeb 40%	250gm/100 L.w	Low III	15 leaves 10 fruits	0.3 - 5	0.3 0.3 5	- 0.1 1.5
1021	Milor-Cu74% WP	Copper oxychloride 59% + Metalaxyl 15%	150gm/100 L.w	Mod II	20	- 1	50 2	- 2
1578	Novacopper 85% WP	Copper oxychloride	250gm/100 L.w	Mod II	15 leaves 7 fruits	-	50	-



Agricultural Pesticide Committee

Grape

Downy mildew

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1889	Novostar 30% WG	Azoxystrobin 20% + Dimethomorph 10%	50gm/100 L.w	U	15 leaves 7 fruits	2 3	3 3	2 3
1386	Novicure 70% WG	(Copper sulfate tribasic	250gm/100 L.w	Mod II	19 leaves 5 fruits	-	50	-
1566	Hi-copper 85% WP	Copper oxychloride	250gm/100 L.w	Mod II	15 leaves 3 fruits	-	50	-
1153	Hidrocob 77% WP	Copper hydroxide	250gm/100 L.w	Mod II	20	-	50	-
1660	Hydro Q 77% WP	Copper hydroxide	250gm/100 L.w	Mod II	15 leaves 6 fruits	-	50	-
1274	HelioCUvre 62% SC	Copper hydroxide	125 cm ³ /100 L.w	Mod II	21	-	50	-

Pest: Nematodes

Rot knot nematodes

Symptoms of infestations:

Lesions and knots on secondary roots and yellowing of vegetative system.



● Time of symptoms appearance:

From seedlings stage until the end of the season.

● Proper time of control:

Where there are any numbers of nematodes in the soil at the beginning of the season necessary to use Chemical control.

● Guidelines:

Grapes are infected with the root knot nematode and also use the same treatments in the control of root knot nematodes..

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
2117	Oxanem 24% SL	Oxamyl	5Liter/feddan (2spryes)	High Ib	15	-	0.01	-
1677	Jubitar-X 10% G	Fosthiazate	12.5kg/feddan	Mod II	45	-	0.02	-
2148	Divit 40% EC	Fenamiphos	6Liter/feddan	High Ib	15	-	0.03	0.1
1868	Fibermax 10% GR	Ethoprophos	40kg/feddan	Mod II	80	-	0.02	-
1370	Vytex 24% SL	Oxamyl	5Liter/feddan (2spryes)	High Ib	-	-	0.01	-
2373	Krenkel 75% EC	Fosthiazate	2.5Liter/feddan (2spryes)	Mod II	60	-	0.02	-
2074	Nimazate 10% GR	Fosthiazate	12.5kg/feddan	Mod II	30	-	0.02	-
1442	Nemaphos 40% EC	Fenamiphos	2.5Liter/feddan (2spryes)	High Ib	60	-	0.03	0.1

Date palm trees

Insect: pests

Red palm weevil (*Rhynchophorus ferrugineus*)

Symptoms of infestations:

Oozing of brown sticky secretions with bad odor from hole in the tree trunk, in sever advanced infestations, the tree trunk showed cavities and tunnels containing all developmental stages including adult weevils. In case of offshoots, the growing apex dried and die, while in case of trees the head containing meristem tissues may die and fall causing death of the whole tree.

- **Time of symptoms appearance:** All year round
- **Proper time of control:** When symptoms of infestations appeared.
- **Guidelines:**

For treatment, the recommended insecticide solution has to be injected within the tree trunk at the site of infestation in a hole prepared by digging an iron rod (10-15 cm length – diameter 1.5cm), similar hole have to be done in a circle around the infestation spot because larvae move in all directions, the process of injection must be continuous until the insecticide solution comes out. Inspection can be conducted after 5-7days. Each infestation spot should be treated individually.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
758	Pyrifos El Nasr 48% EC	Chlorpyrifos	4 cm ³ /L.w	Mod II	15	-	0.05	-
655	Tafaban 48% EC	Chlorpyrifos	3 cm ³ /L.w	Mod II	7	-	0.05	-
1488	Tak 48% EC	Chlorpyrifos	3 cm ³ /L.w	Mod II	7	-	0.05	-
622	Chlorzan 48% EC	Chlorpyrifos	3 cm ³ /L.w	Mod II	15	-	0.05	-
1030	Chlorfos 48% EC	Chlorpyrifos	3 cm ³ /L.w	Mod II	15	-	0.05	-
1106	Medban 48% EC	Chlorpyrifos	3 cm ³ /L.w	Mod II	15	-	0.05	-
589	Neomyl 90% SP	Methomyl	2 gm/L.w	High Ib	15	-	0.01	-
1468	HachiHachi 15% EC	Tolfenpyrad	3 cm ³ /L.w	Mod II	7	-	0.01	-

Olive

Pest: Insects

Scale insects

Symptoms of infestations:

Different instars and stages of the insect are present on branches, twigs, leaves and fruits causing leaves wilt and fall due to sucking of the plant juice, the olive scale insect *parlatoria oleae* cause death to twigs and large branches and finally the whole tree, infested fruits have red spots, while in case of soft scale insect, the honeydew secretions are exist.

- **Time of symptoms appearance:**

The different stages and instars are prevailing all year round, concerning the soft scale insect it is abundant during August and September, while both *polliniapollini* and *Saissetia oleae* has three generations per year.

- **Proper time of control:** After harvest and during storage.

- **Guidelines:** Care and necessary precautions should be considered when applying mineral oils.

Certified Recommendations



Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
237	Super misrona 94% EC	Mineral oil	1.5Liter/100 L.w	U	12	-	0.01	-

Olive leaf worm (*Dasineura oleae*)

Symptoms of infestations:

Maggot larvae feed on leaves, buds, flowers and fruits, newly growing shoots and buds are spoiled and damaged before fruits formation.

- **Proper time of control:**

From the beginning of May and spray with recommended insecticide should be monthly.

- **Guidelines:**

Weeds and fallen leaves should be removed to prevent pupation.

Certified Recommendations:



Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
510	Diple (DF) 6.4% DF	<i>Bacillus thuringiensis</i>	200 gm/feddan	U	-	-	0.01	-

Olive fruit fly (*Bactrocera oleae*)

Symptoms of infestations:

The infested spot of the fruit become pale grey in color as a result of larval feeding, infested spots become spongy and the unripe fruits cracked and fall.

• Time of symptoms appearance:

Symptoms appear at the beginning of July in the northwestern coast region, while, in Fayoum governorate it started at the end of September and extended until October.

• Proper time of control:

When the ratio of the infested fruits reached 7-10% of the randomly inspected fruits in the orchard.

• Guidelines:

Catch and kill traps should be used with partial spray treatment.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
609	Match 5% EC	Lufenuron	160cm ³ pesticide+ 800 cm ³ attractive substance40/traps/feddan	U	5	-	0.01	-



Pest: Fungi

Leaf spot

Symptoms of infections:

Dark brown spots on the leaves surrounded by a yellow halo-like bird's eye.



• Time of symptoms appearance:

At the last mid-August until the end of season.

• Proper time of control:

When symptoms appear.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
306	Nasr Copper 85% WP	Copper oxychloride	250gm/100 L.w	Mod II	21	-	30	-

Guava

Pest: Insects

Scale insects (*Pulvenaria urbicola*)

Symptoms of infestations:

Both nymphs and adults are exist on leaves, branches and fruits, the sticky honeydew may bring black mold fungus which attract ants for feeding as well.

- **Time of symptoms appearance:**

Nymphs and adults are prevailing all year round, while, spending the winter season in the form of egg sacs or adults hidden in the bark crevices at the tree trunk.

- **Proper time of control:**

When infestation percent reached 5% of the total randomly inspected trees in the orchard.

- **Guidelines:** Complete coverage treatment with recommended insecticide should not applied during hot weather, it is preferred to be during spring season whenever nymphs are abundant.

Certified Recommendations:



Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
176	Alboleum 80% mayonaise	Mineral oil	2.5Liter/100 L.w (winter spray)	U	8	-	0.01	-
174	KZ oil 95% EC	Mineral oil	1.5Liter/100 L. w (summer spray)	U	12	-	0.01	-

Fruit flies

Symptoms of infestations:

Presence of dark green pricks on the fruit peel, the fruit become soft as a result of larval movement and feeding, fruit fluids flow outside from the holes in the fruit at the soft spots.



- **Time of symptoms appearance:** During August and September.
- **Proper time of control:** When symptoms of infestations appear.
- **Guidelines:** Fallen infested fruits have to be buried in the soil or burned immediately to kill larvae inside fruits, application of partial spray and killing bundles should be considered.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
176	Alboleum 80% mayonaise	Mineral oil	2.5Liter/100 L.w (winter spray)	U	8	-	0.01	-
732	Agrothoate 40% EC	Dimethoate	75cm ³ /20 L.w + 5% attractive substance	Mod II	20	-	0.01	-
2769	Megathoate 40% EC	Dimethoate	75 cm ³ /20 L.w + 5% attractive substance	Mod II	7	-	0.01	-

Pest: Fungi**Leaf spot****Symptoms of infestations:**

The disease caused by *Cercospora psidii* or *Cercospora sawadae*. Symptoms may occur on leaves, stems and fruit. Small lesions (2-8 mm) appear as irregular to sub-circular, dark smokey brown on the upper leaf surface, with a darker brown, diffuse border. Under high humidity, sporulation of the causal fungus may be seen in lesion centers as greenish-gray, felty tufts of mycelium. Individual lesions may coalesce to form large areas of necrotic tissue.

- **Time of symptoms appearance:** Disease increases from December to February.

- **Proper time of control:** When symptoms appear.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1192	Amistar Top - 32.5%SC	Azoxystrobin 20% + Difenoconazole 12.5	50cm ³ /100 L.w	Low III	7	-	0.01	2
2918	Trolls 25% EW	Tebuconazole	50cm ³ /100 L.w	U	3	-	0.02	-

Apple**Pest: Mites****The European red mite
(panonychus ulmi) "winter eggs"****Symptoms of infestations:**

Presence of red color on branches, cones and buds' pits due to accumulation of dark red eggs of the mites.

- **Time of symptoms appearance:**

Symptoms started at the first days of October

- **Proper time of control:**

When number of eggs reached 10 per terminal bud of the randomly inspected buds.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1811	Abroch 5% SC	Fenpyroximate	50cm ³ /100 L.w	Low III	30	0.3	0.03	0.3
1150	Envidor 24% SC	Spirodiclofen	25cm ³ /100 L.w	U	3	0.8	0.8	2.4
174	KZ oil 95% EC	Mineral oil	1.5Liter/100 L.w	U	10	-	0.01	-

Apple

European red mite

The European red mite (*panonychus ulmi*) "moving stages"

Symptoms of infestations:

Newly hatching larvae in red color attack flowering buds at late February and beginning of March damaging them, these larvae developed into adults, their females laid their eggs after mating to give new progeny attacking newly growth leaves, this species of spider mite is abundant on the upper surface of leaves and in sever infestation it covers both surfaces of the leaves. Individuals' population increase gradually until reaches its peak in September.



- Time of symptoms appearance:

Females laid their eggs during late November and first week of March, larvae attack the flowering buds and cause their damage at the same period.

- Proper time of control:

Control measures can be started from the first of January until March.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
2073	Danisaraba 20% SC	Cyflumetofen	40cm ³ /100 L.w	U	7	–	0.4	0.3
2096	Vanishar 24% SC	Chlorfenapyr	100cm ³ /100 L.w	Mod II	7	–	0.01	–
2166	Follow up 20.8% SC	Abamectin 0.5% + Clofentezine 20.3%	150cm ³ /100 L.w	Mod II	7	0.01 0.5	0.03 0.5	0.2 0.5

Red spider mite (*Tetranychus urticae*)

Symptoms of infestations:

Presence of white spots on the upper surface of the leaves around midrib and extended to outside to spread on the whole leaf, then, followed by leaves wilt and fall.



- Time of symptoms appearance:

According to the weather conditions during March, April and May.

- Proper time of control: When randomly inspection showed 5 individuals per leaf of the totally inspected leaves.

- Guidelines:

Spraying with recommended anti-mites should be applied as fanning spraying technique to make complete coverage treatment for both upper and lower leaves surfaces.

Apple

Red spider mite

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1175	Agromec 1.8% EC	Abamectin	50cm ³ /100 L.w	Mod II	9	0.01	0.03	0.02
1286	Arrow 1.8% EC	Abamectin	40cm ³ /100 L.w	Mod II	9	0.01	0.03	0.02
2017	Acari Z 5% EC	Fenpyroximate	50cm ³ /100 L.w	Low III	3	0.3	0.3	0.3
1159	Ortus super 5% EC	Fenpyroximate	50cm ³ /100 L.w	Low III	14	0.3	0.3	0.3
2582	Greeno 10% WP	Hexythiazox	20gm/100 L.w	U	3	0.4	1	0.4
688	Baroque 10% SC	Etoxazole	25cm ³ /100 L.w	U	15	0.07	0.07	0.2
1930	Diva 1.8% EW	Abamectin	40cm ³ /100 L.w	Mod II	8	0.01	0.03	0.02
2041	Spirotex 24% SC	Spirodiclofen	30cm ³ /100 L.w	U	7	0.8	0.8	2.4
2532	Solo 24% SC	Bifenazate	70cm ³ /100 L.w	U	7	—	0.7	1.2
1911	Congest 15% CS	Abamectin 3% + Imidacloprid 12%	40cm ³ /100 L.w	Mod II	7	0.01 0.5	0.03 0.5	0.02 0.5
1986	Concor 24% SC	Spirodiclofen	30cm ³ /100 L.w	U	7	0.8	0.8	2.4
1019	Macomite 10% WP	Hexythiazox	20gm/100 L.w	U	12	0.4	1	0.4
2835	Fire Mite 10% WP	Hexythiazox	20gm/100 L.w	U	10	0.4	1	0.4
2876	Sinboset 15% EW	Pyridaben	100 cm ³ /100 L.w	Low III	7	—	0.5	0.5
2852	Cumozol 20% SC	Etoxazole	12.5 cm ³ /100 L.w	U	10	0.07	0.07	0.2

Pest: Fungi

Powdery mildew

Symptoms of infections:

Powdery mildew of apple produces symptoms on young shoots, leaves, blossoms, and fruit. In general, symptoms are most noticeable on the leaves and fruit. Young shoots and all parts of plant the first to be covered with the powdery mycelia.

● Time of symptoms appearance:

When start young, growing leaves, green shoots, and flowers.

● Proper time of control:

When symptoms appear.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1123	Bellis 38% WG	Boscalid + Pyraclostrobin	30gm/100 L.w	U	9	2 0.5	2 0.5	3 1.5
1401	Penco 10% EC	Penconazole	25cm ³ /100 L.w	U	7	0.2	0.2	—
1054	Trifimine 15% EC	Triflumizole	17.5cm ³ /100 L.w	Low III	7	—	0.5	0.5
247	Topsin-M 70% WP	Thiophanate-methyl	65gm/100 L.w	U	3	—	0.5	2
2647	Epomex 12.5% SC	Epoxiconazole	60cm ³ /100 L.w	U	7	—	—	0.05
1906	Tomfix 25% EW	Tebuconazole	50cm ³ /100 L.w	U	10	1	0.3	0.05
2562	Divora 40% SC	Cyproconazole	30cm ³ /100 L.w	Mod II	7	—	—	0.1
2080	Soreil KZ 95% WP	Sulfur	10kgm/100 L.w (painting of branches)	Low III	30	—	—	—
2294	Sevron 50% WG	Kresoxim-methyl	50gm/100 L.w	U	3	0.2	0.2	0.5
2671	Kaso 50% WG	Kresoxim-methyl	50gm/100 L.w	U	15	0.2	0.2	0.5



Agricultural Pesticide Committee

Apple

Powdery mildew

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1319	Crown 25% EC	Propiconazole	15cm ³ /100 L.w	U	8	–	0.15	–
1294	Kreso 30% SC	Kresoxim-methyl	50cm ³ /100 L.w	U	7	0.2	0.2	0.5
1308	Conazole 10% EC	Penconazole	25cm ³ /100 L.w	U	5	0.2	0.2	–
2556	Mega - Top 70% WP	Thiophanate-methyl	65gm/100 L.w	U	7	–	0.5	2
597	Microthiol special 80%WG	Sulfur	250gm/100 L.w	Low III	7	–	–	–
1023	Hesta 70% WP	Thiophanate-methyl	65gm/100 L.w	U	8	–	0.5	2
2648	Fango 50% WG	Pyraclostrobin	50gm/100 L.w	U	7	0.5	0.5	1.5
2735	Klop 50% WP	Difenoconazole 6% + Thiophanate-methyl 44%	60gm/100 L.w	Low III	10	–	0.8	1
						–	0.5	2

Scab

Symptoms of infections:

Symptoms on fruit are similar to those found on leaves. Scabby spots are sunken and tan and may have velvety spores in the center. As these spots mature, they become larger and turn brown and corky. Infected fruit becomes distorted and may crack allowing entry of secondary organisms. Severely affected fruit may drop, especially when young.

- **Time of symptoms appearance:**

when starting flowers and fruits stage.

- **Proper time of control:** When symptoms appear.

Certified Recommendations:



Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1602	Apocalypse 70% WP	Thiophanate-methyl	65gm/100 L.w	U	7	–	0.5	2
1431	Akoby 50% SC	Kresoxim-methyl	10cm ³ /100 L.w	U	21	0.2	0.2	0.5
1454	Alpha captan 80% WG	Captan	200gm/100 L.w	U	21	–	10	25
2206	Onest 70% WP	Thiophanate-methyl	65gm/100 L.w	U	14	–	0.5	2
1847	Trostir 25% EC	Difenoconazole	50cm ³ /100 L.w	U	7	–	0.8	1
2437	Thiogro 70% WP	Thiophanate-methyl	65gm/100 L.w	U	7	–	0.5	2
2140	Splash 80% WG	Captan	150gm/100 L.w	U	7	–	10	25
460	Captan Ultra 50% WP	Captan	200gm/100 L.w	U	21	–	10	25
1694	Captan Ultra 80% WG	Captan	125gm/100 L.w	U	7	–	10	25
372	Cuprous KZ 56.35% WP	Cuprous oxide	250gm/100 L.w	Mod II	12	–	5	–
2132	Noscab 50% WG	Kresoxim-methyl	10gm/100 L.w	U	21	0.2	0.2	0.5
2667	Hima Top 70% WP	Thiophanate-methyl	65gm/100 L.w	U	7	–	0.5	2
2930	Thio Top 70% WP	Thiophanate-methyl	65gm/100 L.w	U	7	–	0.5	2
2905	Thiethyl 70% WP	Thiophanate-methyl	65gm/100 L.w	U	7	–	0.5	2
2734	Ictaclean 70% WP	Thiophanate-methyl	65gm/100 L.w	U	7	–	0.5	2
2764	Scabdel 70% WP	Thiophanate-methyl	65gm/100 L.w	U	7	–	0.5	2
2819	Vixen 38% WG	Boscalid 25.2% + Pyraclostrobin 12.8%	30gm/100 L.w	U	7	2	2	3
						0.5	0.5	1.5

Pear

Pest: Fungi

Lichens

Symptoms of infections:

Lichens may occur on the trunk, branches, and twigs of the tree, usually on old or neglected trees, does not harm the tree color varies, but gray green is the most common.

● Time of symptoms appearance:

Any time of the year.

● Proper time of control:

When symptoms appear.

Certified Recommendations:



Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
304	Cobox 84% WP	Copper oxychloride	500gm/100 L.w	Mod II	10	-	5	-

Pest: Bacteria

Fire blight

Symptoms of infestations:

Young pear trees are especially at risk. Initial symptoms appear as dead blossom and infection of growing shoots. When cut, cankers present on larger. Branches are dark green-brown, often water soaked and with an indistinct margin between healthy and infected tissue. Infected fruits have dark water-soaked areas resembling a bruise. Milky bacterial ooze may be present especially at high humidity and rainfall.

● Time of symptoms appearance:

The infection of plant startin spring in the second week in April (Where weather conditions are suitable for the spread of bacterial vaccine), after opening the flowers where they fade and turn to black.

● Proper time of control:

Chemical control may be necessary at the begining of fire blight symptoms.

Certified Recommendations:



Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1056	Starner 20% WP	Oxolinic acid	150gm/100 L.w	Low III	7	-	-	-
1261	Phostrol 53.6% SL	Phosphorous acids Salts	250cm ³ /100 L.w	U	-	-	-	-
2637	Neroseen 6% WP	Kasugamycin	200gm/100 L.w	U	7	-	0.01	-

Plum

Pest: insects

Fruit flies

Symptoms of infestations:

Presence of gummy spots in the place of pricks (scars) made in the unripe fruits. In ripe fruits the spots of scars become soft and the fruit fluid comes out through these scars as a result of larvae feeding and movement inside the fruits, bacteria and viruses find their way inside the fruit as well resulting in complete damage of the fruit and finally their fall.

- **Time of symptoms appearance:**

During May and June.

- **Proper time of control:**

When symptoms of infestations appear.

- **Guidelines:**

Not to cultivate fruit species which serve as alternative hosts for this pest.

Infested fallen fruits have to be collected and buried in the soil to kill larvae inside. Care of agricultural practice such as plowing and removing weeds. Intensive irrigation after harvest to kill pupae in the soil.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
665	Ictathion 57% EC	Malathion	100cm ³ /20 L.w + 5% attractive substance	Low III	7	-	0.02	8

Peach

Pest: Insects

Aphid (*Aphis spp.*)

Symptoms of infestations:

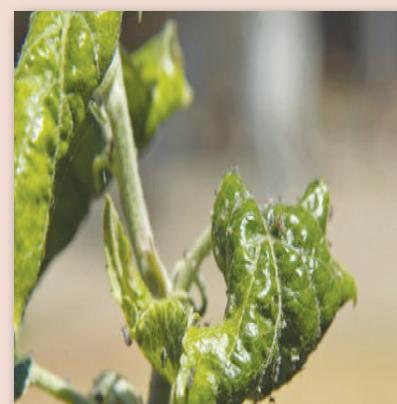
Symptoms of infestations started with the new growth of leaves especially the terminal leaves which become wrinkled and curled. Insects secrete a sticky honeydew which may bring mold fungus and dust causing much reduction in photosynthesis process.

- **Proper time of control:**

When insects appear on plants in the month of March.

- **Guidelines:**

Care of agricultural practices such as removing weeds and using yellow light traps to catch and kill winged individuals.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1954	Tedo 50% WG	Pymetrozine	20gm/100 L.w	U	10	-	0.03	-

Pest: Mites

Red spider mite (Tetranychus urticae)

Symptoms of infestations:

Presence of pale yellow spots on the upper surface of the leaves around midrib and extended to outside to spread on the whole leaf, then, followed by complete yellowish of leaves, wilt and finally their fall.



- **Time of symptoms appearance:**

According to weather conditions during March, April and May.

- **Proper time of control:**

When randomly inspected leaves showed 5 individuals per leaf or more.

- **Guidelines:** Spraying with recommended anti-mites have to be complete coverage treatment for both upper and lower leaves surfaces.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1850	Spiro 24% SC	Spirodiclofen	30cm ³ /100 L.w	U	3	2	2	1
1420	Challenger Super 24%SC	Chlorfenapyr	60cm ³ /100 L.w	Mod II	10	-	0.01	0.01
1673	Sun fenpyr 24% SC	Chlorfenapyr	60cm ³ /100 L.w	Mod II	7	-	0.01	0.01
2203	High Point 10% EC	Abamectin 1% + Hexythiazox 9%	25cm ³ /100 L.w	Mod II	7	0.03 0.3	0.02 1	0.09 1
2836	Chloroshen 36% SC	Chlorfenapyr	50cm ³ /100 L.w	Mod II	7	-	0.01	0.01
2912	Pestpyr 36% SC	Chlorfenapyr	40cm ³ /100 L.w	Mod II	10	-	0.01	0.01

Pest: Fungi

Powdery mildew

Symptoms of infections:

Powdery mildew symptoms appear on young shoots, leaves, blossoms, and fruit. In general, symptoms are most noticeable on the leaves and fruit. Young shoots and all part of plant the first to be covered with the powdery mycelia.



- **Time of symptoms appearance:**

Symptoms appear on young, growing leaves, green shoots, and flowers.

- **Proper time of control:**

When symptoms appear.



Agricultural Pesticide Committee

Peach

Powdery mildew

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
2735	Klop 50% WP	Difenoconazole 6% + Thiophanate-methyl 44%	60 gm/100 L.w	Low III	3	0.5	0.5	2.5
2918	Trolls25% EW	Tebuconazole	50 cm ³ /100 L.w	U	10	—	2	3
2150	Fungi – Pro 45% EW	Prochloraz	75cm ³ /100 L.w	Low III	5	—	0.05	—
1581	Leader 45% EC	Prochloraz	75cm ³ /100 L.w	Low III	7	—	0.05	—

Rust

Symptoms of infections:

Rust causes cankers to form on branches, followed by the appearance of pale yellow-green spots on both upper and lower leaf surfaces. The spots have an angular shape and eventually turn bright yellow. Spots on leaf undersides develop brown / orange spores. In some areas, rust damage extends to the fruit.

- Time of symptoms appearance:

Symptoms appear during of March and April.

- Proper time of control:

Chemical control may be necessary at the beginning of March.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
2562	Divora 40% SC	Cyproconazole	30cm ³ /100 L.w	Modv II	3	—	0.1	—
1604	Mytonil 25% EC	Myclobutanil	25 cm ³ /100 L.w	U	7	3	0.5	2

Leaf curl

Symptoms of infections:

Leaf curl shows up in the spring as reddish areas on new leaves, which then thicken and crinkle, causing them to “curl”.

- Time of symptoms appearance:

The infection of plant in mid of March.

- Proper time of control:

When symptoms appear.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
375	Champion 77% WP	Copper hydroxide	180gm/100 L.w	Mod II	12	—	5	—

Apricot

Pest: Fungi

Powdery mildew

Symptoms of infections:

Powdery mildew appears as web like white growth on fruit, leaves, and stems. Older lesions on fruit are scabby and form red or brown splotches.



- **Time of symptoms appearance:**

When bloom and fruit development.

- **Proper time of control:**

When symptoms appear.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
974	Eminent 12.5% EW	Tetraconazole	25 cm ³ /100 L.w	U	14	-	0.1	-
2317	Topcol 10% EC	Penconazole	25 cm ³ /100 L.w	U	7	-	0.1	-
2677	Libra 12.5% EW	Tetraconazole	25 cm ³ /100 L.w	U	10	-	0.1	-

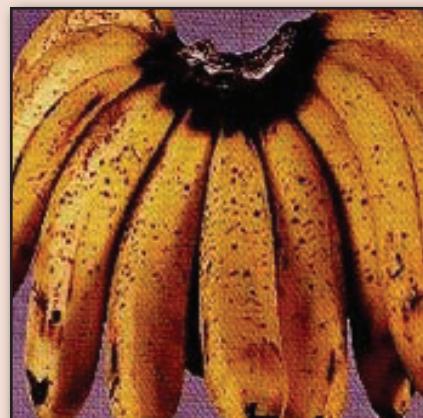
Banana

Pest: Fungi

Fruit rot

Symptoms of infections:

Fungal infection starts at harvest, and the first symptoms appear only after packaging and shipping. Symptoms begin with a mycelium development on the crown surface, followed by an internal development. This internal development can, subsequently, affect the peduncle and the whole fruit, leading to softening and blackening of the fruit tissue.



- **Time of symptoms appearance:**

Infection shows the maturity of banana fingers during storage and shopping time.

- **Proper time of control:** Chemical control may be necessary at the after harvesting and storage.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1273	Tecto 50% SC	Thiabendazole	100cm ³ /100 L.w	U	2	5	6	3



Pest: Nematodes

Root knot nematode

Symptoms of infestations:

Lesion and knot on secondary rots - show leaves lesions are yellow.

- **Time of symptoms appearance:**

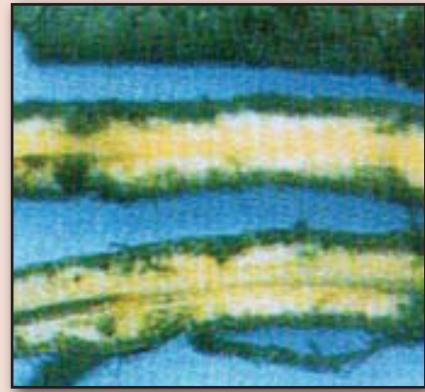
All the season specially when root growth.

- **Proper time of control:**

Where there are any numbers of larvae of rot knot nematode in soil at the beginning of the season necessary to use Chemical control.

- **Guidelines:**

The nematicide should be added in the absence of the fruits on the banana trees, and the nematocide should be placed in the holes twice on each of them for four months. It should be using the same treatments in case of infected bananas with the other harmful nematodes like Citrus nematode and Spiral nematode.



Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
2355	Oxamytod 24% SL	Oxamyl	15cm ³ /hole (twice)	High Ib	7	–	0.01	0.3
2077	Ethokill 10% GR	Ethoprophos	30gm/hole (Twice)	Mod II	7	0.02	0.02	0.02
594	Rugby 10% GR	Cadusafos	20gm/hole (twice)	Mod II	–	0.01	0.01	0.01
1099	Rugby 20% CS	Cadusafos	10cm ³ /hole (twice)	Mod II	–	0.01	0.01	0.01
2145	Root phos 10% GR	Ethoprophos	30gm/hole(twice)	Mod II	7	0.02	0.02	0.02
122	Vaydate 24 % SL	Oxamyl	15cm ³ /hole (twice)	High Ib	7	–	0.01	0.3
2138	Viva 24% SL	Oxamyl	15cm ³ /hole (twice)	High Ib	7	–	0.01	0.3
1139	Nemathorin10% GR	Fosthiazate	3gm/m ²	Mod II	3	–	0.05	–
1495	Nemagold 10% GR	Ethoprophos	30gm/hole (twice)	Mod II	7	0.02	0.02	0.02
60	Nemacur 10% GR	Fenamiphos	30gm/hole(twice)	Mod II	60	–	0.03	0.1
1442	Nemaphos 40% EC	Fenamiphos	12cm ³ /hole(twice)	High Ib	7	–	0.03	0.1
1869	Nimayuk 10% GR	Ethoprophos	30gm/hole(twice)	Mod II	8	0.02	0.02	0.02
1595	Hidet star 24% SL	Oxamyl	15cm ³ /hole (twice)	High Ib	7	–	0.01	0.3
2536	Smart – N 40% EC	Ethoprophos	10cm ³ /hole (twice)	Mod II	7	0.02	0.02	0.02
2605	Haireyd 24% SL	Oxamyl	15cm ³ /hole (twice)	High Ib	7	–	0.01	0.3

IV. Other different crop pests

Stored product crops

Pest: Insects

Stored product insects

Symptoms of infestations:

Presence of adult moths or beetles in the stores where seeds or grains are backed. Presence of partially chewed grains or exit holes indicating emerging of adult moths or beetles. Existence of bad odor in the store and high temperature and high percent of co₂ gas.

● **Time of symptoms appearance:** All year round

● **Proper time of control:** When storing stars.

● Guidelines:

Protection starts at during the first days of storing to prevent insect attack early, this process need highly qualified technicians to get it done in a proper safe way.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1264	Aluphos 56% Tablets	Aluminium phosphide	3tab./m ³	High Ib	Ventilate long enough after treatment	-	0.05	0.1
1463	ECO ₂ Fume100% GA	Phosphine 2% + Carbon Dioxide 98%	50gm/m ³	High Ib	Ventilate long enough after treatment	-	0.05	0.1
1381	Pestoxin 56% Tablets	Aluminium phosphide	3tab./m ³	High Ib	Ventilate long enough after treatment	-	0.05	0.1
1029	pastoxin 56% pellets	Aluminium phosphide	15 pellets/m ³	High Ib	Ventilate long enough after treatment	-	0.05	0.1
4	Gastoxin 57% Tablet	Aluminium phosphide	3tab./m ³	High Ib	Ventilate long enough after treatment	-	0.05	0.1
2425	Royal Phos 56% Tablets	Aluminium phosphide	3tab./m ³	High Ib	Ventilate long enough after treatment	-	0.05	0.1
1195	Sanphos 56% Tablets	Aluminium phosphide	3tab./m ³	High Ib	Ventilate long enough after treatment	-	0.05	0.1
673	Celphos 57% Tablets	Aluminium phosphide	3tab./m ³	High Ib	Ventilate long enough after treatment	-	0.05	0.1





Agricultural Pesticide Committee

Stored product crops

Stored product insects

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
445	Phostoxin 56% Tablets	Aluminium phosphide	3tab./m ³	High Ib	Ventilate long enough after treatment	-	0.05	0.1
1459	Phosguard 56% Tablets	Aluminium phosphide	3tab./m ³	High Ib	Ventilate long enough after treatment	-	0.05	0.1
1457	Phosphide El Nasr 56% Pellets	Aluminium phosphide	5 pellets/m ³	High Ib	Ventilate long enough after treatment	-	0.05	0.1
1530	Phosphide El Nasr 56%Tablets	Aluminium phosphide	3tab./m ³	High Ib	Ventilate long enough after treatment	-	0.05	0.1
2559	Fomaphos 57% Tablets	Aluminium phosphide	3tab./m ³	High Ib	Ventilate long enough after treatment	-	0.05	0.1
1255	Fumixin 57% Tablets	Aluminium phosphide	3tab./m ³	High Ib	Ventilate long enough after treatment	-	0.05	0.1
565	Quikphos 57% Tablet	Aluminium phosphide	3tab./m ³	High Ib	Ventilate long enough after treatment	-	0.05	0.1
275	Magtoxin 66% Tablets	Magnesium phosphide	3tab./m ³	High Ib	Ventilate long enough after treatment	-	0.05	0.1
1272	Magic-Oxam 56% Tablets	Aluminium phosphide	3tab./m ³	High Ib	Ventilate long enough after treatment	-	0.05	0.1
1449	Hoxin 56% Tablets	Aluminium phosphide	3tab./m ³	High Ib	Ventilate long enough after treatment	-	0.05	0.1

Buildings in rural and modern cities

Pest: Insects

Termite

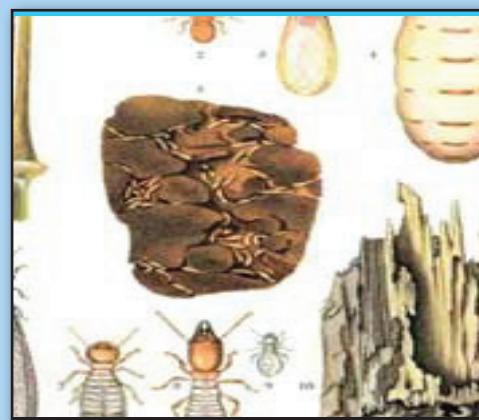
Symptoms of infestations:

Presence of mud tunnels on walls or ceilings indicate existence of subterranean termite, while, presence of cavities with compact powder and fine granules (feaces) in the wood indicate infestation with wood termite. When wood broken the tunnels and individuals are seen clearly.

- Time of symptoms appearance:

All year round

- Proper time of control: When symptoms of infestations appeared.



- Guidelines:**

To be sure that the insecticide solution reached to the colony individuals a trench have to be dug in the soil around the area of infestation in depth and width 30cm, the recommended insecticide solutions is poured until complete imbibition, the infested area have to be bored at equal distances for each 1 square meter and each hole is injected with 4 liters of the insecticide solution.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
657	Pyriban A 48% EC	Chlorpyrifos	2 Liter/100 L.w	Mod II	-	-	-	-
2020	Goldenfos 48% EC	Chlorpyrifos	2 Liter/100 L.w	Mod II	-	-	-	-
2372	Foseled 48% EC	Chlorpyrifos	2 Liter/100 L.w	Mod II	-	-	-	-
662	Chlorzan 48% EC	Chlorpyrifos	2 Liter/100 L.w	Mod II	-	-	-	-
742	Helban 48% EC	Chlorpyrifos	2 Liter/100 L.w	Mod II	-	-	-	-

Fields, farms and orchards

Pest: Vertebrate

Rats

Symptoms of infestations:

In fields, rats feed on seeds and grains when planted, also, attack seedlings and fruits. In orchards, rats feed on growing buds, tree barks and fruits.

- Time of symptoms appearance:**

All year round

- Proper time of control:**

From the date of cultivation until harvest time.

- Guidelines:**

Anticoagulant insecticide have to be used in the field since beginning of cultivation process and for one week until the toxic bait is consumed.





Agricultural Pesticide Committee

Fields, farms and orchards

Rats

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
2195	Ratox 80% P	Zinc phosphide	0.7kg/feddan	High Ib	-	-	-	-
2251	Ratonar 80% P	Zinc phosphide	0.7kg/feddan	High Ib	-	-	-	-
157	Super caid KZ 0.005% Bait on wheat grains	Bromadiolone	1.85kg/feddan	U	-	-	-	-
102	Zinc phosphide El-Nasr 80% P	Zinc phosphide	0.7kg/feddan	High Ib	-	-	-	-

Pest: Invertebrate

Snails

Symptoms of infestations:

Snails attack any vegetative parts of the plant especially the soft parts and their damage can be extensive due to the large variety they eat including tree trunks, branches, twigs, leaves and fruits resulting in reducing its marketing value.



● Time of symptoms appearance:

Soil snails are nocturnal their seasonal abundance and activity occurred during spring, autumn and winter, their activity increased as humidity increase with moderate temperature. During summer months, snails are stuck to wooden support, plant stems, branches and palm trunks where they stop moving and activity and close their shell opening with membranous structure to prevent loosing water and maintain their humid bodies during summer seasons.

● Proper time of control:

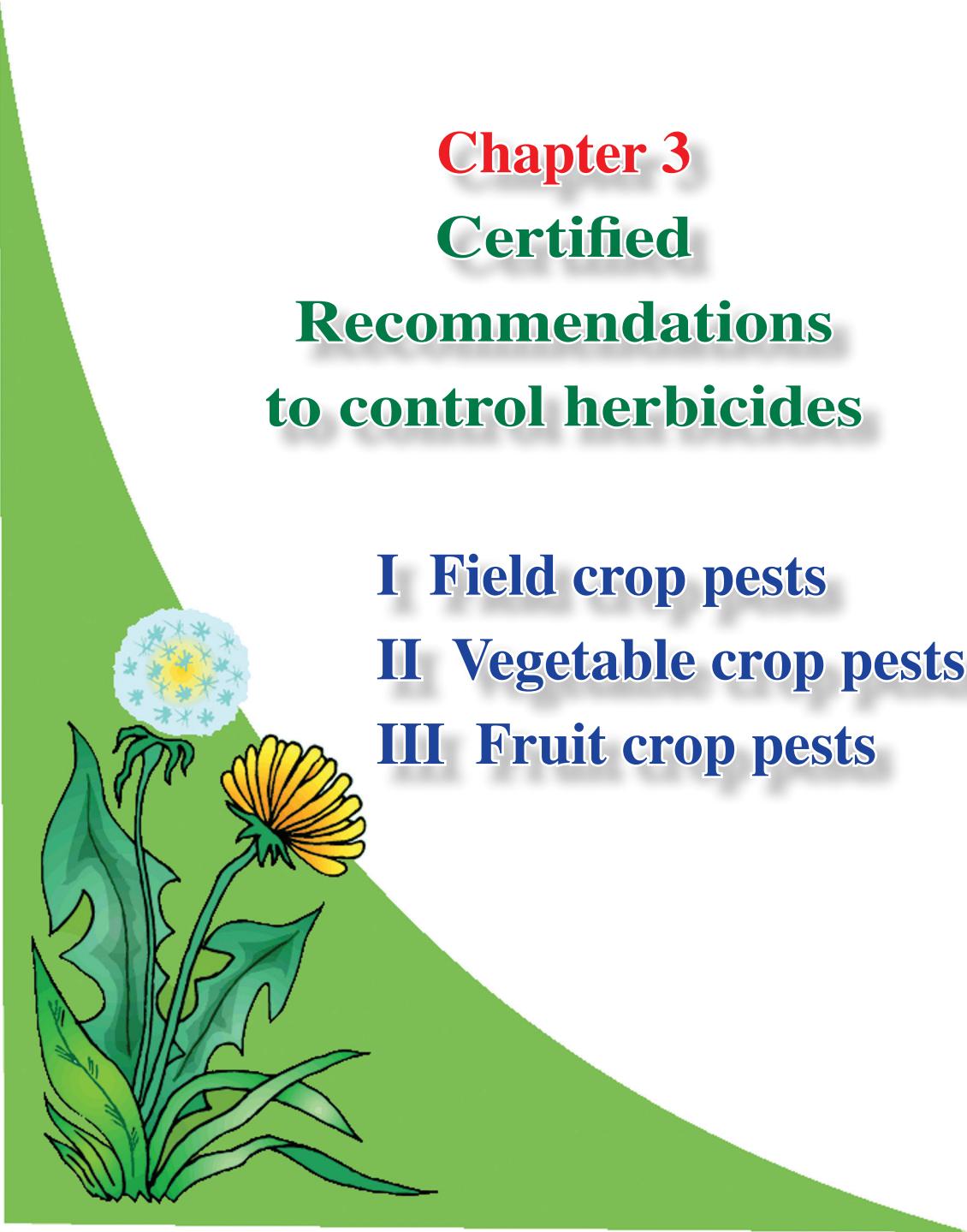
Snails' program control should be applied using toxic baits during their seasonal abundance from February until May.

● Guidelines:

The toxic bait recommended per feddan have to include 5 kgm. of indelicate flour and half kilo of molasses mixed together with 2.5 liters of water. The toxic bait have to be applied in the form of piles between plants and around tree trunk over a humid wet soil.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI (day)	MRL's values (kg/mg)		
						Codex	EU	EPA Tolerance
1203	Gastrox E 5% G	Metaldehyde	2kg/feddan	Low III	-	-	-	-
1032	Neomyl 20% SL	Methomyl	1Liter/feddan	Mod II	-	-	-	-



Chapter 3

Certified

Recommendations

to control herbicides

- I Field crop pests**
- II Vegetable crop pests**
- III Fruit crop pests**

I – Field crop pests

Wheat

Annual broad leaved weeds (*dicots*)



Sea beet



Sow thistles

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1399	Ownostar 75% DF (1)	Tribenuron-methyl	8 gm/feddan	U	120	–	0.01	0.05
2539	Broadway Star + Surfer (Adjuvant) 8.5% WG(5)	Florasulam 1.42% + Pyrosulam 7.08%	90 gm/feddan + 200 cm ³ adjuvant	Low III	90	– –	0.01 0.01	0.01 0.01
2473	Bromo Plus 24% EC (2)	Bromoxynil octanoate	1 litre/feddan	Mod II	90	–	0.05	0.05
244	Brominal W 24% EC(2)	Bromoxynil octanoate	1 litre/feddan	Mod II	–	–	0.05	0.05
1280	Tribionate 75% DF (1)	Tribenuron-methyl	8 gm/feddan	U	–	–	0.01	0.05
2602	Togon 20% WP (1)	Fluroxypyr 17.3% + Tribenuron-methyl 2.7%	120 gm/feddan	U	100	– –	0.1 0.01	0.5 0.05
2547	Trigos 36% OD (4)	Florasulam 1% + MCPA-sodium 35%	250 cm ³ /feddan	Mod II	100	– 0.2	0.01 0.2	0.01 1
1290	Granary 75% DF (1)	Tribenuron-methyl	8 gm/feddan	U	–	–	0.01	0.05
1939	Gerostar 75% WG (1)	Tribenuron-methyl	8 gm/feddan	U	120	–	0.01	0.05
872	Derby 17.5% SC (3)	Florasulam 7.5% + Flumetsulam 10%	30 cm ³ /feddan	U	–	–	0.01 0.01	0.01 –
2668	Dixy Mac 17.5% SC (3)	Florasulam 7.5% + Flumetsulam 10%	30 cm ³ /feddan	U	90	–	0.01 0.01	0.01 –
2533	Dimo Up 48% SL (1)	Dicamba	250 cm ³ /feddan	Low III	100	2	2	2
2528	Rondo 40% SP (1)	Bromoxynil 20% + MCPA-sodium 20%	600 gm/feddan	Mod II	100	– 0.2	0.05 0.2	0.05 1
1412	Skylla 75% WG (1)	Tribenuron-methyl	8 gm/feddan	U	60	–	0.01	0.05
2600	Foldex 28% WP (1)	Carfentrazone-ethyl 12% + Tribenuron-methyl 16%	35 gm/feddan	U	100	– –	0.05 0.01	0.08 0.05

Wheat
Annual broad leaved weeds

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2706	Arena 7% OD (2)	Clodinafop-Propargyl 6.5% + Tribenuron-methyl 0.5%	500 cm ³ /feddan	U	100	-	0.02	0.02
						-	0.01	0.01
2788	Dolvic 1% OD (2)	Florasulam 0.25% + Mesosulfuron-methyl 0.75%	750 cm ³ /feddan	U	100	-	0.01	0.01
						-	0.01	0.1
2878	Zeenstar 75% WG (1)	Tribenuron-methyl	8 gm/feddan	U	100	-	0.01	0.05
1640	Cash cool 75% WG (1)	Tribenuron-methyl	8 gm/feddan	U	120	-	0.01	0.05
2534	More 55% WP (1)	Fenoxprop-P-ethyl 45% + Tribenuron-methyl 8% + Thifensulfuron methyl 2%	100 gm/feddan	U	90	-	0.1	-
						-	0.01	0.05
						-	0.01	-

- (1). Post emergence herbicide at stage 2 – 4 leaves of wheat.
- (2). Post emergence herbicide at stage 3 – 5 leaves of wheat.
- (3). Post emergence herbicide before one days from the first irrigation.
- (4). Post emergence herbicide at stage 2-4 leaves of annual weeds.
- (5). Post emergence herbicide after 25-35 days from sowing.

Ray grass (*Lolium temulentum*)


Ryegrass

Ryegrass

Guidelines: Post emergence herbicide after 10 – 15 days from sowing.

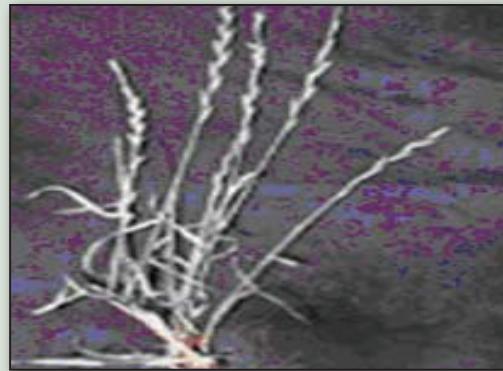
Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2386	Boxer Gold 92% EC	Prosulfocarb 80% + S-metolachlor 12%	1 litre/feddan	Mod II	120	-	0.01 0.05	-

Annual grassy weeds



Spring wild oat



Ryegrass

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1736	Avalanche 40% WG (1)	Tralkoxydim	250 gm/feddan	Low III	120	–	0.01	0.02
1257	Axial 4.5% EC (2)	Pinoxaden	550 cm ³ /feddan	U	–	–	1	1.3
2504	Axial 5% EC (2)	Pinoxaden	500cm ³ /feddan	U	90	–	1	1.3
1287	Action 15% WP (3)	Clodinafop-propargyl	140 gm/feddan	U	–	–	0.02	0.02
1406	Akopic Super 24% EC (3)	Clodinafop-propargyl	100 cm ³ /feddan	U	120	–	0.02	0.02
1794	Aldo 15% WP (3)	Clodinafop-propargyl	140 gm/feddan	U	120	–	0.02	0.02
2255	Alarm 7.5% EW (4)	Fenoxaprop-P-ethyl	500 cm ³ /feddan	U	120	–	0.1	0.05
2539	Broadway Star 8.5% WG + Surfer (Adjuvant) 72% SL (5)	Florasulam 1.42% + Pyrosulam 7.08%	110 gm/feddan + 200 cm ³ adjuvant	Low III	90	–	0.01	0.01
2598	Brioch 15% WP (3)	Clodinafop-propargyl 10% + Tribenuron-methy 5%	200 gm/feddan		U	100	–	0.02
2218	Antilope 10% EC (3)	Clodinafop-propargyl	200 cm ³ /feddan	U	120	–	0.02	0.02
582	Puma Super 7.5% EW (4)	Fenoxaprop-P-ethyl	500 cm ³ /feddan	U	–	–	0.1	0.05
1373	Traxos 4.5% EC (2)	Clodinafop-propargyl + Pinoxaden	500 cm ³ /feddan	U	60	–	0.02	0.02
2484	Traxos 5% EC (2)	Clodinafop-propargyl + Pinoxaden	500 cm ³ /feddan	U	90	–	0.02	0.02
2267	Topkan 15% WP (3)	Clodinafop-propargyl	140 gm/feddan	U	110	–	0.02	0.02
690	Topik 15% WP (3)	Clodinafop-propargyl	140 gm/feddan	U	–	–	0.02	0.02
2491	Santo 17.5% EC (1)	Fenoxaprop-P-ethyl 7.5% + Tralkoxydim 10%	400 cm ³ /feddan	U	100	–	0.1	0.05
1693	Facto36% EC (4)	Diclofop-methyl	750 cm ³ /feddan	Low III	120	–	0.05	0.1
2067	Foxtrot 6.9% EW (4)	Fenoxaprop-P-ethyl	500 cm ³ /feddan	U	120	–	0.1	0.05
2424	Future 7.5% EW (1)	Fenoxaprop-P-ethyl	500 cm ³ /feddan	U	90	–	0.1	0.05
2513	Kastro Up 7.5% EW (1)	Fenoxaprop-P-ethyl	500 cm ³ /feddan	U	100	–	0.1	0.05



Agricultural Pesticide Committee

Wheat

Annual grassy weeds

1934	Clodimex 24% EC(3)	Clodinafop-propargyl	105 cm ³ /feddan	U	120	-	0.02	0.02
1513	Columbus 15% WP (3)	Clodinafop-propargyl	140 gm/feddan	U	60	-	0.02	0.02
2502	Clonapharm 15% WP (3)	Clodinafop-propargyl	140 gm/feddan	U	90	-	0.02	0.02
2517	Koback 24% EC(3)	Clodinafop-propargyl	100 cm ³ /feddan	U	90	-	0.02	0.02
2029	Herbeno 24% EC(3)	Clodinafop-propargyl	100 cm ³ /feddan	U	120	-	0.02	0.02
1510	Hock 15% WP (3)	Clodinafop-propargyl	140 gm/feddan	U	60	-	0.02	0.02
2028	Hero 15% WP (3)	Clodinafop-propargyl	140 gm/feddan	U	120	-	0.02	0.02
1920	One touch 15% WP (3)	Clodinafop-propargyl	140 gm/feddan	U	95	-	0.02	0.02
2706	Arena 7% OD (1)	Clodinafop-Propargyl 6.5% + Tribenuron-methyl 0.5%	350cm ³ /feddan	U	100	-	0.02	0.02
						-	0.01	0.01

- (1). Post emergence herbicide at stage 4 – 5 leaves of wheat.
- (2). Post emergence herbicide application within 15 days after the first irrigation.
- (3). Post emergence herbicide application within one month after the first irrigation.
- (4). Post emergence herbicide at stage 2 – 4 leaves of wheat.
- (5). Post emergence herbicide after 25 – 35 days from sowing.

Annual broad leaved and grassy weeds



Bur clover



Chicory

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1472	Atlantis 1.2% OD(1)	Iodosulfuron-methyl-sodium 0.2% + Mesosulfuron-methyl sodium 1%	400cm ³ /feddan	U	120	-	0.01	0.02
						-	0.01	0.03
1334	Pallas 4.5% OD (2)	Pyroxsulam	160 cm ³ /feddan	U	60	-	0.01	0.01

- (1). Post emergence herbicide at stage 2 – 4 leaves of wheat.
- (2). Post emergence herbicide at stage 3 – 5 leaves of wheat

Faba bean

Annual grassy weeds



Annual meadow grass



Synonyms

Guidelines: Post emergence herbicide at stage 2 – 4 leaves of grassy weeds.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1627	Tomex super 24% EC	Clethodim	300 cm ³ /feddan	U	45	2	2	3.5
697	Select super 12.5% EC	Clethodim	250 cm ³ /feddan	U	65	2	2	3.5

Onion

Annual broad leaved and grassy weeds



Bishop's weed



White mustard

Certified Recommendations

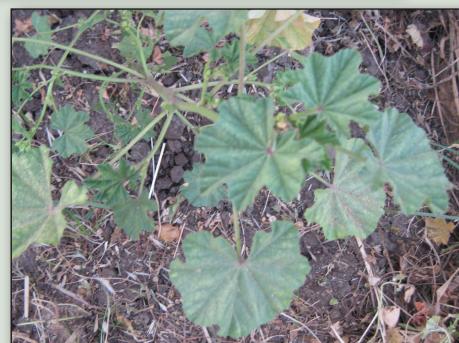
Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1840	Oxyfen 24% EC (2)	Oxyfluorfen	750 cm ³ /feddan	U	30	–	0.05	0.05
1473	Omega 33% EC (1)	Pendimethalin	2 Litre/feddan	Low III	30	–	0.05	0.1
2655	Pendate 33% EC (1)	Pendimethalin	2 Litre/feddan	Low III	45	–	0.05	0.1
1989	Goal 4 F 48% SC (2)	Oxyfluorfen	400 cm ³ /feddan	U	30	–	0.05	0.05
2199	Goalenic 24% EC (2)	Oxyfluorfen	750 cm ³ /feddan	U	30	–	0.05	0.05
1443	Stomp Extra 45.5% CS (1)	Pendimethalin	1.5Litre/feddan	Low III	75	–	0.05	0.1
2601	Super Top 33% EC (1)	Pendimethalin	2.5 Litre/feddan	Low III	30	–	0.05	0.1
2258	Flowro 24% EC (2)	Oxyfluorfen	750 cm ³ /feddan	U	40	–	0.05	0.05
2467	Fenfen 24% EC (2)	Oxyfluorfen	750 cm ³ /feddan	U	30	–	0.05	0.05
2537	Pharmafen 24% EC (2)	Oxyfluorfen	750 cm ³ /feddan	U	30	–	0.05	0.05
2638	Nasr Goal Super 24%EC (2)	Oxyfluorfen	750 cm ³ /feddan	U	30	–	0.05	0.05
2856	Glosan 24% EC (2)	Oxyfluorfen	750 cm ³ /feddan	U	30	–	0.05	0.05
2901	Herbalin 33% EC (1)	Pedimethalin	2.25 Litre/feddan	Low III	45	–	0.05	0.1

- (1) Preplanting after seedbed preparation and before sowing irrigation the transplanting onion nursery
- (2) Post emergence herbicide after 21 days from transplanting.

Annual broad leaved weeds (dicots)



Toothed medic, Bur clover



Cheese weed mallow

Guidelines:

Post emergence herbicide after 20 – 25 days from onion transplanting.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1178	Ecopart 2% SC	Pyraflufen-ethyl	200 cm ³ /feddan	U	30	–	0.02	–

Annual grassy weeds



Ryegrass



Cogono grass

Guidelines:

Post emergence herbicide after 21 days from onion transplanting.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1293	Isofop 12.5% EC	Haloxyfop-P-butyl	2Litre/feddan	U	30	–	0.3	0.5
1992	Gallant super 10.8% EC	Haloxyfop-P-methyl	200 cm ³ /feddan	Low III	35	0.02	0.02	–
1821	Giako 10.8% EC	Haloxyfop-P-methyl	650 cm ³ /feddan	Low III	35	0.02	0.02	–

Onion

Annual and perennial grassy weeds

Annual and perennial grassy weeds



Signal grass



Sandbar

Post emergence herbicide at stage 2 – 4 leaves of annual grassy weed and 10 – 15 cm •
Guidelines: height of perennial grassy weeds.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1110	Fusilade Forte 15 % EC	Fluazifop-P-butyl	1.25 Litre/feddan	U	28	-	0.3	0.5

Sugar beat

Annual broad leaved and grassy weeds



Shepherds purse



Wild mustard

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1611	Betanal MaxxPro 20.9% OD (1)	Desmedipham 4.7% + Ethofumesate 7.5% + Phenmedipham 6% + Lenacil 2.7%	500 cm ³ /feddan	U	70	-	0.05 0.2 0.05 0.1	0.1 0.3 0.1 -

Sugar beat

Annual broad leaved and grassy weeds

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1891	Bison 40% SE (2)	Desmedipham 5% + Ethofumesate 20% + Phenmedipham 15%	1.25 litre/feddan	U	70	— — —	0.05 0.2 0.05	0.1 0.3 0.1
1541	Tegro 27.4% EC (2)	Desmedipham 7.1% + Ethofumesate 11.2% + Phenmedipham 9.1%	1 litre/feddan	U	60	— — —	0.05 0.2 0.05	0.1 0.3 0.1
1397	Goltix 70% SC (3)	Metamitron	2 litre/feddan	Mod II	120	—	0.2	—
1398	Goltix Plus 50% SC (1)	Ethofumesate 15% + Metamitron 35%	1.5 litre/feddan	Low III	120	— —	0.2 0.2	—
2485	Revenge 56.5% SC (3)	Metamitron 52.5% + Quinclorac 4%	1.25 litre/feddan	Low III	70	— —	0.2 0.2	0.3 —
1669	Cross 41% WG (1)	Ethofumesate 6.5% + Metamitron 28% + Phenmedipham 6.5%	2.5 kg/feddan	Low III	70	— — —	0.01 0.2 0.05	0.3 — 0.1

- (1). Post emergence herbicide at stage 3 – 6 true leaves of sugar beat.
- (2). Post emergence herbicide at stage 2 true leaves of sugar beat.
- (3). Pre sowing after seedbed preparation and set sugar beat seeds sowing hill then application the herbicide and sowing irrigation.

Annual broad leaved weeds (dicots)



White mustard



Scarlet pimpernel

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2303	Ethomex 27.4% EC (1)	Desmedipham 7.1% + Ethofumesate 11.2% + Phenmedipham 9.1%	1 litre/feddan	U	90	— — —	0.05 0.2 0.05	0.1 0.3 0.1
1870	Pop-S 50% WG (2)	Triflusulfuron-methyl	20 + 20 gm/feddan	U	65	—	0.01	0.05
1649	Betasana trio 20.5% SC (2)	Desmedipham 1.5% + Ethofumesate 11.5% + Phenmedipham 7.5%	900 + 900 cm ³ /feddan	U	60	— — —	0.05 0.2 0.05	0.1 0.3 0.1



Agricultural Pesticide Committee

Sugar beat

Annual broad leaved weeds (dicots)

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2158	Beto 27.4% E (1)	Desmedipham 7.1% + Ethofumesate 11.2% + Phenmedipham 9.1%	1 litre/feddan	U	60	-	0.05 0.2 0.05	0.1 0.3 0.1
1541	Tegro 27.4% EC (1)	Desmedipham 7.1% + Ethofumesate 11.2% + Phenmedipham 9.1%	1 litre/feddan	U	60	- - -	0.05 0.2 0.05	0.1 0.3 0.1
1515	Safari 50% WG (1)	Triflusulfuron-methyl	12 gm/feddan	U	65	-	0.01	0.05

- (1). Post emergence at stage two true leaves of sugar beat.
- (2). Post emergence herbicide at stage 2 true leaves of sugar beat and frequency application herbicide at the same rate after 8 days from the first time.

Annual grassy weeds



Annual beard grass



Spring wild oat

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1992	Gallant super 10.8% EC (1)	Haloxyfop-P-methyl	200 cm ³ /feddan	Low III	70	0.4	0.2	-
1821	Giaka 10.8% EC (1)	Haloxyfop-P-methyl	500 cm ³ /feddan	Low III	70	0.4	0.2	-
697	Select super 12.5% EC (2)	Clethodim	500 cm ³ /feddan	U	70	0.1	0.5	0.2
2542	Halo top 10.8% EC (1)	Haloxyfop-P-methyl	500 cm ³ /feddan	Low III	50	0.4	0.2	-

- (1) Post emergence herbicide at stage two true leaves of sugar beat.
- (2) Post emergence herbicide at stage 2 – 4 leaves of weeds.

Clover

Annual broad leaved and grassy weeds



Chicory



Petty spurge

Guidelines: Pre emergence herbicide application after seedbed preparations and disperse or direct clover seeds then spray of herbicide and sowing irrigation.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2178	Kerb Flo 40% SC	Propyzamide	1.25 litre/feddan	U	30	-	0.05	-

Cotton

Annual broad leaved and grassy weeds



Junglerice



Bladder hibiscus

Guidelines: Pre emergence herbicide after seedbed preparations and set cotton seeds in hill then spray of herbicide and sowing irrigation.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
245	Amex 48% EC	Butralin	2.5 litre/feddan	Low III	188	-	0.02	-
1547	Stolin 50% EC	Pendimethalin	1.7 litre/feddan	Low III	90	-	0.05	0.1
2358	Pendazed 50% EC	Pendimethalin	1.7 litre/feddan	Low III	90	-	0.05	0.1
1443	Stomp Extra 45.5% CS	Pendimethalin	1.7 litre/feddan	Low III	-	-	0.05	0.1

Cotton

Annual perennial grassy weeds

Annual perennial grassy weeds



Large crabgrass



Crow foot grass

Guidelines: Post emergence at stage 2-4 leaves of annual grassy weeds or at 10-15 cm of perennial grassy weeds heights.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1151	Pantera 4% EC	Quizalofop-P-tefuryl	cm ³ /feddan 500	U	-	-	0.15	0.1

Rice

Rice nursery

Jungle rice – Barnyard grass – Small flower umbrella a plant



Small flower umbrella plant



Guidelines: Cooperated the herbicide with earth dust or thin sandy or agricultural gypsum then disperse it is mixed after 7 – 10 days from sowing.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
267	Kafrosaturn 50% EC	Thiobencarb	2 litre/feddan	Low III	20	-	0.01	0.2

Transplanted rice
Jungle rice, Barnyard grass& Small flower umbrella a plant



Barnyard grass



Barnyard grass seedling

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2555	Erijan 12% EC(1)	Pretilachlor	1.25 litre/feddan	U	100	-	0.01	-
1200	Granite 24% SC(2)	Penoxulam	35 cm ³ /feddan	U	-	-	0.01	0.02
261	Saturn 50% EC(3)	Thiobencarb	2 litre/feddan	Low III	-	-	0.01	0.02
1310	Sayno 50% EC(3)	Thiobencarb	2 litre/feddan	Low III	90	-	0.01	0.02
1207	Citron 50% EC(3)	Thiobencarb	2 litre/feddan	Low III	85	-	0.01	0.02
267	Kafrosaturn50% EC (3)	Thiobencarb	2 litre/feddan	Low III	20	-	0.01	0.02

- (1). Spray herbicide after one day after rice transplanting.
- (2). Spray herbicide after 4 days from rice transplanting.
- (3). Cooperated the herbicide with earth dust or sandy or agricultural gypsum (Calcium phosphate) then broadcasting it is mixed after seven days from transplanting.

Rice
Jungle rice and Barnyard grass

Transplanted rice Jungle rice and Barnyard grass


Barnyard grass

Jungle rice
Guidelines: Post emergence at stage two leaves of rice until beginning tailoring.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2249	Pindar 13.6% OD	Penoxsulam 1.6% + Triclopyr-butotyl 12%	900 cm ³ /feddan	Low III	100	— —	0.01 1	0.02 0.3

Transplanted rice

Small flower umbella a plant, Foxtail sedge, Purple nut sedge & broad leaved weeds


Foxtail sedge

False daisy
Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2525	Amibon 75% WP (4)	Halosulfuron-methyl	20 gm/feddan	U	100	—	0.01	0.05
1205	Inpul 75% WG(4)	Halosulfuron-methyl	20 gm/feddan	U	—	—	0.01	0.05
1985	Easyrun 48% AS (1)	Bentazone	1.5 litre/feddan	Low III	100	—	0.01	0.05

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2104	Bentasmart 48% AS(1)	Bentazone	1 litre/feddan	Low III	100	–	0.01	0.05
2126	Bentamax 48% AS(1)	Bentazone	1.5 litre/feddan	Low III	90	–	0.01	0.05
2249	Pindar 13.6% OD (2)	Penoxsulam 1.6% + Triclopyr-butotyl 12%	900 cm ³ /feddan	Low III	100	– –	0.01 1	0.02 0.3
1849	Tornado 48% AS (1)	Bentazone	1.5 litre/feddan	Low III	90	–	0.01	0.05
1209	Gulliver 50% WG (3)	Azimsulfuron	12 gm/feddan	U	–	–	0.01	–
1881	Dimond 75% WG (4)	Halosulfuron-methyl	20 gm/feddan	U	100	–	0.01	0.05
782	Sirius 10% WP(6)	Pyrazosulfuron-ethyl	80 gm/feddan	U	–	–	–	–
2128	Fire ten 10% WP(6)	Pyrazosulfuron-ethyl	80 gm/feddan	U	100	–	–	–
2686	Korsar 48% SL(1)	Bentazone	1.5 litre/feddan	Low III	90	–	0.01	0.05
1744	Nataro 48% AS(1)	Bentazone	1.5 litre/feddan	Low III	100	–	0.01	0.05
1923	Nimfix 60% WG(5)	Bensulfuron-methyl	50 gm/feddan	U	100	–	0.01	0.02

- (1). Cooperated the herbicide with earth dust or sandy or agricultural gypsum (Calcium phosphate) then broadcasting it is mixed after 12 - 15 days from rice transplanting.
- (2). Spray herbicide at stage two leaves of rice until beginning tailoring.
- (3). Spray herbicide after one week after rice transplanting until beginning tailoring.
- (4). Spray herbicide after 15 – 45 days from rice transplanting.
- (5). After 10 – 15 days from rice transplanting drained water irrigation from field and spray herbicide with 120 L.w /fed. then after one day follow up irrigation.
- (6). Cooperated the herbicide with earth dust or sandy or agricultural gypsum (Calcium phosphate) then broadcasting it is mixed after 5 - 10 days from rice transplanting and left water irrigation cover weed plants at least 4 - 5 days.

Broadcast seeded rice Jungle rice, Barnyard grass& Small flower umbrella a plant



Barnyard grass seedling



Jungle rice seedling

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2333	Avoid 2% SL(1)	Bispyribac-sodium	800 cm ³ /feddan	U	90	–	0.01	0.02

Rice
Jungle rice, Barnyard grass& Small flower umbrella a plant

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2133	Oriental 40% SC(1)	Bispyribac-sodium	42 cm ³ /feddan	U	100	-	0.01	0.02
2516	Birlon 2% SL(1)	Bispyribac-sodium	800 cm ³ /feddan	U	100	-	0.01	0.02
1880	Top Shot 6% OD(3)	Penoxsulam 1% + Cyhalofop-butyl 5%	1 Litre/feddan	U	90	-	0.01 0.01	0.02 0.4
1984	Rizobac 10% SC(1)	Bispyribac-sodium	160 cm ³ /feddan	U	100	-	0.01	0.02
1126	Rainbow 2.5% OD(3)	Penoxsulam	400 cm ³ /feddan	U	-	-	0.01	0.02
2337	Sato EL-Nasr 50% EC(4)	Thiobencarb	2litre/feddan	Low III	90	-	0.01	0.2
261	Saturn 50% EC(4)	Thiobencarb	2litre/feddan	Low III	-	-	0.01	0.2
1745	Steam 36% EC (2)	Propanil	4 litre/feddan	Low III	100	-	0.01	10
1207	Citron 50% EC(4)	Thiobencarb	2litre/feddan	Low III	85	-	0.01	0.2
1460	Sunbishi 2% SC (1)	Bispyribac-sodium	800 cm ³ /feddan	U	90	-	0.01	0.02
267	Kafrosaturn 50% EC(4)	Thiobencarb	2litre/feddan	Low III	20	-	0.01	0.2
696	Nominee 2% SL (1)	Bispyribac-sodium	800 cm ³ /feddan	U	85	-	0.01	0.02
1382	Nominee 3% SL(1)	Bispyribac-sodium	400 cm ³ /feddan	U	90	-	0.01	0.02
1902	Nominee KZ 2% SL (1)	Bispyribac-sodium	800 cm ³ /feddan	U	100	-	0.01	0.02
1987	Nominee KZ 3% SL(1)	Bispyribac-sodium	400 cm ³ /feddan	U	100	-	0.01	0.02

- (1). Drained water irrigation after 14 – 18 days from sowing rice and after one days spray the herbicide then after two days follow up irrigation with left water irrigation cover weed plants at least 3 - 5 days.
- (2). Spray the herbicide at stage 3 – 5 leaves of rice after drained water irrigation by two days and follow up irrigation.
- (3). Spray the herbicide after 8 – 15 days of sowing rice after drained water irrigation by one day and follow up irrigation after one day.
- (4). Cooperated the herbicide with earth dust or sandy or agricultural gypsum (Calcium phosphate) then broadcasting it is mixed after 7 - 10 days from sowing rice.

Broadcast seeded rice Jungle rice and Barnyard grass


Jungle rice seedling

Jungle rice
Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1697	Bazooka 10% EC (1)	Cyhalofop-butyl	1.2litre/feddan	U	100	-	0.01	0.4
2249	Pindar 13.6% OD (2)	Penoxsulam 1.6% + Triclopyr-butotyl 12%	900 cm ³ /feddan	Low III	100	-	0.01 0.1	0.2 0.3

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2110	Vogal 30% WP (3)	Bispyribac-soduim	70 gm/feddan	U	100	-	0.01	0.02
1739	Queen 75% WG (4)	Quinclorac	300 gm/feddan	Low III	100	-	5	5
663	Whip- super 7.5% EW (5)	Fenoxaprop-P-ethyl	350cm ³ /feddan	U	-	-	0.01	0.05

- (1). Spray the herbicide after 15 – 20 days of sowing rice after drained water irrigation by 3 days and follow up irrigation after one day with left water irrigation cover weed plants at least 3 - 4 days.
- (2). Spray the herbicide at stage two leaves of rice until beginning tailoring.
- (3). Water is drained from the field after 14 – 18 days of sowing rice after drained water irrigation by two days and follow up irrigation after two days with left water irrigation cover weed plants at least 3 - 5 days.
- (4). Spray the herbicide after 10 – 12 days of sowing rice after drained water irrigation by two days and follow up irrigation after one day with left water irrigation cover weed plants at least 3 days.
- (5). Spray the herbicide with 120 L water/fed. at stage four leaves of rice until beginning tailoring with drained water irrigation before spray by two days and follow up irrigation after two day.

Broadcast seeded rice

Small flower umbrella a plant, Foxtail sedge, Purple nut sedge & broad leaved weeds



Tooth cup



Scirpus maritimus

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1205	Input 75% WG(1)	Halosulfuron-methyl	20 gm/feddan	U	100	-	0.01	0.05
142	Basagran 48% AS(2)	Bentazone	1.5 litre/feddan	Low III	70	-	0.1	0.05
2249	Pindar 13.6% OD(3)	Penoxsulam 1.6% + Triclopyr-butotyl 12%	900 cm ³ /feddan	Low III	100	-	0.01 0.1	0.02 0.3
2024	Dribble 48% SL(2)	Bentazone	1.5 litre/feddan	Low III	100	-	0.1	0.05
2311	Repair 18% TB(4)	Quinclorac 16.5% + Bensulfuron-methyl 1.5%	1.25 kg/feddan	Low III	100	-	5 0.01	5 0.02
2727	Dazzle 75% WG (1)	Halosulfuron-methyl	20 gm/feddan	U	100	-	0.01	0.05



Agricultural Pesticide Committee

Rice

Small flower umbrella a plant, Foxtail sedge, Purple nut sedge and broad leaved weeds

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2854	Up Grade 46% SL (2)	Bentazone 40% NCPA ⁺ 6%	1 litre/feddan	Mod II	100	-	0.1	0.05
2896	Sweeper 48% SL (2)	Bentazone	1.5 litre/feddan	Low III	100	-	0.05	0.05
2339	Star rice 10% WP(5)	Pyrazosulfuron-ethyl	80 gm/feddan	U	100	-	-	-
782	Sirius 10% WP(5)	Pyrazosulfuron-ethyl	80 gm/feddan	U	-	-	-	-

1. Spray the herbicide with 120 L. water/fed. after 12 – 15 days of sowing rice after drained water irrigation by one day and follow up irrigation after one day.
2. After 12 – 15 days from broadcast rice drained water irrigation from field and broadcasting the mixed of herbicide with earth dust or sandy or agricultural gypsum (Calcium phosphate).
3. Spray the herbicide at stage two leaves of rice until beginning tailoring.
4. Spray the herbicide after 8 – 12 days broadcasting rice.
5. After 10 days from broadcast rice, broadcasting the mixed of herbicide with earth dust or sandy or agricultural gypsum (Calcium phosphate) with the height of water irrigation about 3 – 5 cm and left at least 4 – 5 days.

Corn

Broad leaved weeds

Cocklebur, Common purslane, Spurge and Field bindweed



Common purslane



Cocklebur

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2024	Dribble 48% SL (1)	Bentazone	750 cm ³ /feddan	U	90	-	0.1	0.05
311	Starane 20% EC (2)	Fluroxypyr	200 cm ³ /feddan	U	30	-	0.05	0.02
2078	Cleaner 20% EC (2)	Fluroxypyr-meptyl	200 cm ³ /feddan	U	90	-	0.05	0.02

1. Post emergence at stage 3 – 4 leaves of maize, broadcasting spray.
2. Post emergence after two weeks from sowing or at stage 2 – 5 leaves of Cocklebur, broadcasting spray.

Annual broad leaved and grassy weeds



Nalta jute, Jews mallow



Black nightshade

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2129	Atazan 75% WG (1)	Nicosulfuron	50 gm/feddan	U	90	–	0.01	0.1
2118	Active 6% SC (1)	Nicosulfuron	400 cm ³ /feddan	U	30	–	0.01	0.1
1361	Equip 2.25% OD (2)	Foramsulfuron	750 cm ³ /feddan	U	90	–	0.01	–
2497	Gardo 96% EC (3)	S-metolachlor	300 cm ³ /feddan	Low III	90	–	0.05	–
1435	Doramex Plus 82.5% WG (1)	Nicosulfacon 70% + Thifensulfuron-methyl 12.5%	25 gm/feddan	U	90	–	0.01 0.01	0.1 –
1443	Stomp Extra 45.5% CS (4)	Pendimethalin	1.5 litre/feddan	Low III	–	–	0.05	0.1
2273	Shield 4% OD (2)	Nicosulfuron	400 cm ³ /feddan	U	90	–	0.01	0.1
1393	Marine El Nasr 70% WG (4)	Metribuzin	300 gm/feddan	Mod II	90	–	0.1	0.05
1970	Maister Power 4.53% OD (1)	Foramsulfuron-sodium 3.35% + Iodosulfuron-methyl-sodium 0.11% + Thiencarbazone-methyl 1.07%	500 cm ³ /feddan	U	90	– – –	0.01 0.01 0.01	– 0.03 0.01
2072	Monster 35% SE (5)	Bromoxynil 10% + Terbutylazine 25%	500 cm ³ /feddan	Mod II	90	– –	0.1 0.1	0.05 –
2792	Shamshon 75% WG (1)	Nicosulfuron	30 gm/feddan	U	90	–	0.01	0.1

- (1). Post emergence at stage 2 – 6 leaves of maize, broadcasting spray.
- (2). Early post emergence before one day from the first irrigation, broadcasting spray.
- (3). Pre emergence in new land after seedbed preparation and sowing seeds then spray the herbicide and sowing irrigation.
- (4). Broadcasting spray after seedbed preparation and sowing irrigation
- (5). Early post emergence 10 - 15 days from sowing.

Corn
Purple nut sedge

Purple nut sedge


Purple nut sedge

Purple nut sedge seedling

Guidelines: Post emergence at stage 2 – 3 leaves of purple nut sedge, broadcast spray.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1205	Inpul 75% WG	Halosulfuron-methyl	25 gm/feddan	U	90	–	0.01	0.05
2727	Dazzle 75% WG	Halosulfuron-methyl	25 gm/feddan	U	75	–	0.01	0.05

Sugar cane

Broad leaved weeds

Cocklebur, Common purslane, Spurge and Field bindweed


Morning glory

Field bindweed

Guidelines: Post emergence at height 40 – 60 cm of spring sugar cane, broadcasting spray.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
351	Garlon-4 48% EC	Triclopyr-butotyl	400 cm ³ /feddan	Mod II	35	–	0.1	–
311	Starane 20% EC	Fluroxypyr	400 cm ³ /feddan	U	–	–	0.05	–
2510	Supertri 83.4% EC	Triclopyr-butotyl	250cm ³ /feddan	Mod II	30	–	0.1	–

Annual broad leaved weeds (dicots)



Crow foot grass



Milkweed

Guidelines:

Pre emergence after seedbed preparation and sowing cutting of sugar cane then spray the herbicide and sowing irrigation.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2304	Lumax 53.75% SE	Mesotrione 3.75% + S-metolachlor 37.5% + Terbutylazine12.5%	1.7 litre/feddan	Low III	60	0.01 — —	0.01 0.05 0.05	0.01 — —
2857	Dinamic 70% WG	Amicarbazone	700 gm/feddan	Mod II	35	—	0.01	—

Peanut

Annual grassy weeds



Signal grass



Diplachne

Guidelines:

Post emergence at stage 2 – 4 leaves of annual grassy weeds.



Agricultural Pesticide Committee

Peanut

Annual grassy weeds

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1559	Grasskill 12.5% EC	Fluazifop-P-butyl	1 litre/feddan	U	50	-	0.01	1.5
1369	Selfop 12.5% EC	Fluazifop-P-butyl	1 litre/feddan	U	-	-	0.01	1.5
1692	Phuzx 15% EC	Fluazifop-P-butyl	1 litre/feddan	U	60	-	0.01	1.5
2867	Flozetop Super 15% EC	Fluazifop-P-butyl	2 litre/feddan	U	100	-	0.01	1.5
2172	Fuse hd 15% EC	Fluazifop-P-butyl	1 litre/feddan	U	60	-	0.01	1.5
2633	Kuroki 18% EC	Clomazone 11% + Fomesafen 5.5% + Quinalofop-P-ethyl 1.5%	1.25 litre/feddan	U	90	- - -	0.02 0.2 0.1	- - -

Annual broad leaved and grassy weeds



Malta cross, Puncture vine



Henbit nettle, Dead nettle

Guidelines:

Pre emergence after seedbed preparation and sowing seeds of pea nut then spray and sowing irrigation.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2119	Capital 33% EC	Pendimethalin	2 litre/feddan	Low III	90	-	0.05	0.1
2899	Clipping 24% EC	Clethodim	500 cm ³ / feddan	U	90	5	5	3

Annual and perennial grassy weeds



Bermuda grass



Crow footgrass seeding

Guidelines:

Post emergence at stage 2 – 4 leaves of annual grassy weeds or at height 10 – 15 cm of perennial grassy weeds.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2899	Clipping 24% EC	Clethodim	500 Cm ³ /feddan	U	90	5	5	3
2462	Everfop 15% EC	Fluazifop-P-butyl	1.5 litre/feddan	U	60	–	0.01	1.5
2134	Select Ultra 24% EC	Clethodim	500 cm ³ /feddan	U	90	5	5	3
697	Select super 12.5% EC	Clethodim	1 litre/feddan	U	–	5	5	3
2211	Fine 22.5% EC	Clethodim 15% + Haloxyfop-R-methyl 7.5%	800 cm ³ /feddan	Mod II	100	5 5	5 0.01	3 –
1156	Fuzilade max 12.5% EC	Fluazifop-P-butyl	1.5 litre/feddan	U	–	–	0.01	1.5
2136	Motion 5% EC	Quizalofop-P-ethyl	1 litre/feddan	U	90	–	0.05	–
1936	Onecide 15% EC	Fluazifop-P-butyl	1 litre/feddan	U	60	–	0.01	1.5
1926	Weak Up mix 22.5% EC	Clethodim 15% + Haloxyfop-P-methyl 7.5%	400 cm ³ /feddan	Low III	90	5 5	5 0.01	3 –

Peanut
Purple nut sedge

Purple nut sedge


Purple nut sedge

Purple nut sedge
Guidelines:
Broadcast spray (general) at 10-15 cm height of Purple nut sedg weed.
Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2725	Sheto 24% SL	Imazapic	100 cm ³ /feddan	U	90	0.05	0.05	0.1

II – Vegetable crops

Tomatoes

Annual grassy weeds



Bromus



Annual beard grass

Guidelines:

Post emergence at stage 2 – 5 leaves of annual grassy weeds, broadcasting spray.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2430	Promex 10% EC	Propaquizafop	500 cm ³ /feddan	U	45	-	0.05	-
926	Targa Super 5% EC	Quizalofop-P-ethyl	500 cm ³ /feddan	U	30	-	0.4	-
1708	Tundra 10% EC	Propaquizafop	350 cm ³ /feddan	U	45	-	0.05	-
1992	Gallant super 10.8% EC	Haloxylfop-P-methyl	300 cm ³ /feddan	Low III	45	-	0.01	-
2061	Granof 22.5% EC	Clethodim 15% + Haloxylfop-P-methyl 7.5%	400 cm ³ /feddan	Mod II	50	1 -	1 0.01	1 -
697	Select super 12.5% EC	Clethodim	500 cm ³ /feddan	U	25	1	1	1
1650	Secret 12% EC	Clethodim	500 cm ³ /feddan	U	45	1	1	1
2144	Sino super 12% EC	Clethodim	500 cm ³ /feddan	U	45	1	1	1
1854	Sunodim Super 12.5% EC	Clethodim	500 cm ³ /feddan	U	60	1	1	1
2211	Fine 22.5% EC	Clethodim 15% + Haloxylfop-P-methyl 7.5%	400 cm ³ /feddan	Mod II	45	1 -	1 0.01	1 -
1983	Freno 24% EC	Clethodim	260 cm ³ /feddan	U	60	1	1	1
2520	Quizamex 5% EC	Quizalofop-P-ethyl	500 cm ³ /feddan	U	45	-	0.4	-
2690	Miura 12.5% EC	Quizalofop-P-ethyl	200 cm ³ /feddan	U	30	-	0.4	-

Tomatoes

Annual broad leaved and grassy weeds

Annual broad leaved and grassy weeds



White goosefoot



Prickly sida

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1681	Armada 75% WG (1)	Metribuzin	240 gm/feddan	Mod II	60	-	0.1	0.1
1512	Tmozin 70% WP (1)	Metribuzin	300 gm/feddan	Mod II	45	-	0.1	0.1
1487	Grow stop 50% EC (2)	Pendimethalin	1.7 litre/feddan	Low III	60	-	0.05	0.1
1687	Sencor 60% SC (1)	Metribuzin	350 cm ³ /feddan	Mod II	45	-	0.1	0.1
1133	Senior 70% WP (1)	Metribuzin	300 gm/feddan	Mod II	15	-	0.1	0.1
2287	Metri 70% WP (1)	Metribuzin	300 gm/feddan	Mod II	60	-	0.1	0.1
1383	Unimark 70% WG (1)	Metribuzin	300 gm/feddan	Mod II	45	-	0.1	0.1

- (1). Broadcast spray after two weeks from transplanting.
- (2). Spray after seedbed preparation and setting.

Annual and perennial grassy weeds



Sandbar



Lesser camary grass seedling

Guidelines:

Post emergence at stage 2 – 4 leaves of annual grassy weeds or at height 10 – 15 cm of perennial grassy weeds, broadcast spray.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1156	Fuzilade max 12.5% EC	Fluazifop-P-butyl	1.5 litre/feddan	U	-	-	0.1	-
663	Whip- super 7.5% EW	Fenoxyprop-P-butyl	500 cm ³ /feddan	U	30	-	0.1	-

Potatoes

Annual broad leaved and grassy weeds



Cheese weed mallow



Sun spurge



Agricultural Pesticide Committee

Potatoes

Annual broad leaved and grassy weeds

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2457	Egyscor 70% WP (1)	Metribuzin	300 gm/feddan	Mod II	60	-	0.1	0.6
1491	Titus 25% DF (2)	Rimsulfuron	25 gm/feddan	U	60	-	0.01	0.1
2059	Dacor 70% WP (1)	Metribuzin	300 gm/feddan	Mod II	14	-	0.1	0.6
2371	Respect 45% CS (1)	Pendimethalin	1.5 litre/feddan	Low III	60	-	0.05	0.1
1282	Rometri 48% SC (1)	Metribuzin	450 cm ³ /feddan	Mod II	-	-	0.1	0.6
1589	Starcor 70% WG (1)	Metribuzin	300 gm/feddan	Mod II	60	-	0.1	0.6
1687	Sencor 60% SC (1)	Metribuzin	350 cm ³ /feddan	Mod II	60	-	0.1	0.6
1909	City Core 70% WG (1)	Metribuzin	300 gm/feddan	Mod II	70	-	0.1	0.6
2397	Cynozed 70% WP (1)	Metribuzin	300 gm/feddan	Mod II	60	-	0.1	0.6
2633	Kuroki 18% EC (1)	Clomazone 11% + Fomesafen 5.5% + Quizalofop-P-ethyl 1.5%	1 litre/feddan	U	60	-	0.01	-
						-	0.01	0.025
						-	0.2	-
1393	Marine El Nasr 70% WG (1)	Metribuzin	300 gm/feddan	Mod II	60	-	0.1	0.6
2687	Metro Core 70% WP (1)	Metribuzin	300 gm/feddan	Mod II	60	-	0.1	0.6
2232	Meterit 70% WG (1)	Metribuzin	300 gm/feddan	Mod II	60	-	0.1	0.6
2471	Mendor 48% SC (1)	Metribuzin	450 cm ³ /feddan	Mod II	60	-	0.1	0.6
2724	Tribot 70% SC (1)	Metribuzin	300 cm ³ /feddan	Mod II	60	-	0.1	0.6
2816	Fenox 60% SC (1)	Metribuzin	350 gm/feddan	Mod II	60	-	0.1	0.6

- (1). After sowing and direct spray of the herbicide on growth weeds before appears potatoes seedling above soil surface.
- (2). Broadcast spray at stage 2-4 true leaves of potatoes

Annual broad leaved weeds



Prickly dock



Prickly sida

Guidelines:

After sowing and direct spray of the herbicide on growth weeds before appears potatoes seedling above soil surface.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1178	Ecopart 2% SC	Pyrafluefn-ethyl	250 cm ³ /feddan	U	60	-	0.02	0.02

Annual and perennial grassy weeds



Annual meadow grass



Green bristle grass

Guidelines:

Post emergence at stage 2 – 4 leaves of annual grassy weeds or at height 10 – 15 cm of perennial grassy weeds, broadcast spray.



Agricultural Pesticide Committee

Potatoes

Annual and perennial grassy weeds

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1151	Pantera 4% EC	Quizalofop-P-tefuryl	500 cm ³ /feddan	U	-	-	0.2	-
1992	Gallant super 10.8% EC	Haloxylfop-P-methyl	200 cm ³ /feddan	Low III	45	-	0.01	-
2289	Sunazifop super 12.5% EC	Fluazifop-P-butyl	2 litre/feddan	U	60	-	0.15	1
1110	Fusilade Forte 15 % EC	Fluazifop-P-butyl	1.4 litre/feddan	U	56	-	0.15	1
1936	Onecide 15% EC	Fluazifop-P-butyl	1.4 litre/feddan	U	60	-	0.15	1

Pre-harvest desiccation, destruction of potatoes haulms



Potatoes before treatment



Potatoes after treatment

Guidelines:

Broadcast spray before harvesting of potatoes by two weeks.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2000	Break 20% SL	Diquat dibromide	1.5 litre/feddan	Mod II	7	0.1	0.1	0.1
1833	Burnout 20% SL	Glufosinate ammonium	1.5 litre/feddan	U	7	0.1	0.03	0.8
2572	Roksan 20% SL	Diquat dibromide	1.5 litre/feddan	Mod II	7	0.1	0.1	0.1
1254	Reglone (200) 20% SL	Diquat dibromide	1.5 litre/feddan	Mod II	10	0.1	0.1	0.1
1768	Sunforce 20% SL	Diquat dibromide	1.5 litre/feddan	Mod II	7	0.1	0.1	0.1
2787	Feedback 20% SL	Diquat dibromide	1.5 litre/feddan	Mod II	7	0.1	0.1	0.1
2932	Best-Buy 20% SL	Glufosin ammoniumnate	1.5 litre/feddan	U	7	0.1	0.03	0.08

Purple nut sedge



Purple nut sedge seedling



Purple nut sedge

Guidelines:

Post emergence at stage 3 – 4 leaves of purple nut sedge, broadcast spray.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1711	Brond 25% WG	Rimsulfuron	25 gm/feddan	U	60	–	0.01	0.1
1966	Rimex 25% WG	Rimsulfuron	25 gm/feddan	U	60	–	0.01	0.1
2924	Rgelex 25% WG	Rimsulfuron	25 gm/feddan	U	75	–	0.01	0.1

Peas

Annual broad leaved and grassy weeds



Prickly dock



Syrian vetch

Guidelines:

Pre emergence after seedbed preparation and sowing dried seed then spray the herbicide and application sowing irrigation or after seedbed preparation spray the herbicide then application pre sowing irrigation at sowing by hearty method.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
245	Amex 48% EC	Butralin	2.5 litre/feddan	Low III	45	–	0.01	–

Peas
Annual broad leaved weeds

Annual broad leaved weeds


Sow thistle

Common vetch
Guidelines:

Post emergence at stage 2 – 4 leaves of peas, broadcasting.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2135	Alfagran 48% AS	Bentazone	500 cm ³ /feddan	Low III	60	1.5	0.3	1

Phaseolus beans

Annual and perennial grassy weeds


Large crabgrass

Rubella
Guidelines:

Post emergence at stage 2 – 4 leaves of annual grassy weeds or at height 10 – 15 cm of perennial grassy weeds, broadcast spray.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2377	Fusichem 12.5% EC	Fluazifop-P-butyl	1.5 litre/feddan	U	45	-	4	-

III – Fruit crop pests

Citrus

Annual and perennial grassy weeds



Giant



reedAbutilon pannosum

Guidelines:

Post emergence, direct spray on weeds at height 10 – 15 cm of weeds by using a knapsack sprayer (C P 3) and nozzle TK₁ at a volume rate of water 125 litre/feddan

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1818	Allegory 47.6% SL	Glyphosate isopropylammonium + MCPA-isopropylammonium	1 litre/feddan	Mod II	10	– –	0.5 0.05	0.5 –
2121	Agrisate 48% SL	Glyphosate sopropylammonium	2.5 litre/feddan	U	15	–	0.5	0.5
741	Baron 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	–	0.5	0.5
2318	Bround X 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	–	0.5	0.5
2021	Beta up 75.7% SG	Glyphosate ammonium	1.5 kg /feddan	U	10	–	0.5	0.5
1044	Pilarsato 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	–	0.5	0.5
2176	Tiller 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	30	–	0.5	0.5
1806	Glyphoceutica 62% SL	Glyphosate isopropylammonium	1.25litre/feddan	U	10	–	0.5	0.5
1047	Glysate 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	20	–	0.5	0.5
2937	Krack 20% SL	Glufosinate – ammonium	2 litre/feddan	U	7	0.05	0.05	0.15



Agricultural Pesticide Committee

Citrus

Annual and perennial grassy weeds

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2767	Weed-Sata 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	30	-	0.5	0.5
2842	Sportage 20% SL	Glufosinate – ammonium	1.5 litre/feddan	U	7	0.05	0.05	0.15
2843	Glu Herb 20% SL	Glufosinate – ammonium	1.5 litre/feddan	U	14	0.05	0.05	0.15
2848	Miras 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	30	-	0.5	0.5
2913	Grizzly 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	-	0.5	0.5
2837	Arvoiset Star 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	30	-	0.5	0.5
1784	Glyphosmart 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	-	0.5	0.5
1980	G Brand Up 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	-	0.5	0.5
2192	Delta star 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	-	0.5	0.5
2653	Glatirine 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	2	-	0.5	0.5
2401	Glyphoherb 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	-	0.5	0.5
1879	San white 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	-	0.5	0.5
2105	Scrap 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	15	-	0.5	0.5
1555	Sinoup 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	-	0.5	0.5
679	Sun Up 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	20	-	0.5	0.5
1895	Camsato 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	-	0.5	0.5
1494	Credit 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	-	0.5	0.5
682	Clinic 48% AC	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	-	0.5	0.5
2224	Lyphase 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	-	0.5	0.5
2338	Mamba Max 60.8% SL	Glyphosate dimethyl-ammonium	1.8 litre/feddan	U	12	-	0.5	0.5
1872	Nasa 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	-	0.5	0.5
469	Herbazed 48% WSC	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	-	0.5	0.5
1671	Herbsate 48% WSC	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	-	0.5	0.5
1964	Herp off 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	-	0.5	0.5
733	Herphosate 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	20	-	0.5	0.5
2376	Weed Killer 74.7% SG	Glyphosate ammonium	1.5 kg/feddan	U	10	-	0.5	0.5
2082	Weed stop 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	-	0.5	0.5
1971	Eurosate 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	-	0.5	0.5

Annual broad leaved and grassy weeds



Thornapple



Common purslane seedling

Special instructions:

Post emergence, direct spray on early active growth of annual weeds without contact herbicide spray of citrus tree.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1759	Glyweed 48% SL	Glyphosate isopropylammonium	1 litre/feddan	U	10	-	0.5	0.5
2338	Mamba Max 60.8% SL	Glyphosate dimethyl-ammonium	750 cm ³ /feddan	U	10	-	0.5	0.5
2666	Locker 17% ME	Glufosinate ammonium 14.2% + Oxyfluorfen 2.8%	1.5 litre/feddan	U	10	0.05 -	0.05	0.15 1
2937	Krack 20% SL	Glufosinate-ammonium	1 litre/feddan	U	7	0.05	0.05	0.15

Annual and perennial grassy weeds



Steud seedling



Cogongrass seedling

Special instructions:

At stage 2 - 4 leaves of annual grassy weeds or at height 10 – 15 cm of perennial grassy weeds post emergence, direct spray on weeds.

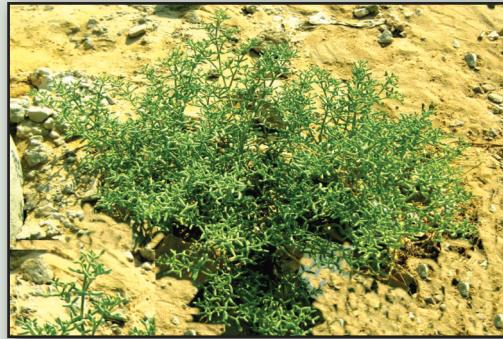
Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1369	Selfop 12.5% EC	Fluazifop-P-butyl	2 litre/feddan	U	5	-	0.01	0.03
2127	Fop super 5% EC	Quizalofop-P-ethyl	1.25 litre/feddan	U	10	-	0.05	-

Annual broad leaved weeds (*dicots*)



Sour clover



Ylang ylang

Guidelines:

Post emergence, direct spray on early active growth of annual broad leaved weeds without contact herbicide spray of citrus tree leaves.

Certified Recommendations:

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1178	Ecopart 2% SC	Pyraflufen-ethyl	250 cm ³ /feddan	U	60	-	0.02	-

Annual broad and narrow leaved weeds and fieldbindweed



Great plantain



Field bindweed

Guidelines:

Post emergence, direct spray on early active of growth weeds without contact herbicide spray of citrus tree leaves.

Certified Recommendations:

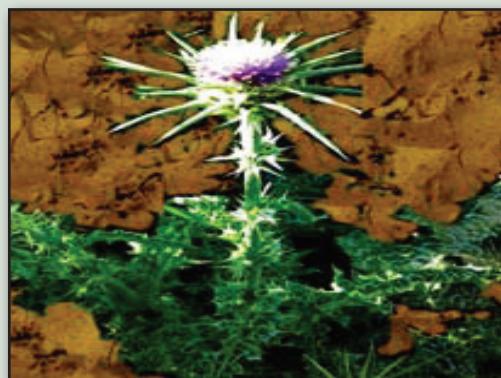
Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2225	Doxar 12% EC	Oxadiazon	2.5 litre/feddan	U	10	-	0.05	-

Grape

Annual and perennial weeds



Fleabane



Marys thistle

Guidelines:

Post emergence, direct spray on weeds at height 10 – 15 cm of weeds by using a knapsack sprayer (C P 3) and nozzle TK₁ at a volume rate of water 125 l/ feddan.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2563	Track Up 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10 fruit 10 leaves	-	0.5	-
1759	Glyweed 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10 fruit 8 leaves	-	0.5	-
1448	Glypho Elnasr 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	-	0.5	-
2305	Jest 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10 fruit 10 leaves	-	0.5	-
542	Rophosate 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	-	0.5	-
1479	Satup 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	-	0.5	-
2391	Samori 75.7% SG	Glyphosate ammonium	1.2 kg/feddan	U	10 fruit 10 leaves	-	0.5	-
679	Sun Up 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	20	-	0.5	-
469	Herbazed 48% WSC	Glyphosate isopropylammonium	2.5 litre/feddan	U	20	-	0.5	-
733	Herphosate 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10 fruit 10 leaves	-	0.5	-
2417	Huntox 95% SG	Glyphosate ammonium	1 kg/feddan	U	10 fruit 10 leaves	-	0.5	-

Grape
Annual and perennial grassy weeds

Annual and perennial grassy weeds


Sandbar

Common read
Guidelines:

Post emergence, direct spray on weeds at height 10 – 15 cm of perennial grassy weeds or at stage 2 - 4 leaves of annual grassy weeds.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
697	Select super 12.5% EC	Clethodim	1 litre/feddan	U	-	-	1	-
2018	Clisk 12% EC	Clethodim	1 litre/feddan	U	60 leaves 60 fruit	-	1	-
1926	Weak Up mix 22.5% EC	Clethodim 15% + Haloxlyfop-P-methyl 7.2%	700cm ³ /feddan	Low III	60 leaves 60 fruit	0.02	1 0.01	-
2778	Selfect star 12% EC	Clethodim	1.25 litre/feddan	U	60 leaves 60 fruit	-	1	-
2845	Clio super 12.5% EC	Clethodim	1 litre/feddan	U	60 leaves 60 fruit	-	1	-

Stone fruits

Annual and perennial weeds



Smooth pigweed.



Kochia

Guidelines:

Post emergence, direct spray on early active growth weeds without contact herbicide spray of fruit trees.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1166	Ouragan 4 - 39.6% SL	Glyphosate diammonium	2.5 litre/feddan	U	10	-	0.1	0.2
741	Baron 48% SL	Glyphosate isopropylammonium	2.5 litre/feddan	U	10	-	0.1	0.2
567	Buggy 24% SG	Glyphosate ammonium	2.5kg/feddan	U	10	-	0.1	0.2
1721	Tragli 48% SL	Glyphosate isopropylammonium	2.5litre/feddan	U	10	-	0.1	0.2
1448	Glypho Elnasr 48% SL	Glyphosate isopropylammonium	2.5litre/feddan	U	10	-	0.1	0.2
2064	Glypho Eid 48% SL	Glyphosate isopropylammonium	2.5litre/feddan	U	10	-	0.1	0.2
2316	Glypho up 48% SL	Glyphosate isopropylammonium	2.5litre/feddan	U	10	-	0.1	0.2
2392	Glyphotox 48% SL	Glyphosate isopropylammonium	2.5litre/feddan	U	10	-	0.1	0.2
2839	Glykil 48% SL	Glyphosate isopropylammonium	2.5litre/feddan	U	10	-	0.1	0.2
1304	Round Up Star 44.1% SL	Glyphosate potassium	2.5litre/feddan	U	10	-	0.1	0.2
1122	Round up Max 75% SG	Glyphosate monoammonium	1.2 kg/feddan	U	20	-	0.1	0.2
1695	Sweep 48% SL	Glyphosate isopropylammonium	2.5litre/feddan	U	10	-	0.1	0.2
1390	Dexo 48% SL	Glyphosate isopropylammonium	2.5litre/feddan	U	10	-	0.1	0.2
2443	Field Up 48% SL	Glyphosate isopropylammonium	2.5litre/feddan	U	10	-	0.1	0.2
1213	Klash 48% SL	Glyphosate isopropylammonium	2.5litre/feddan	U	10	-	0.1	0.2
2666	Locker 17% ME	Glufosinate ammonium 14.2% + Oxyfluorfen 2.8%	2litre/feddan	U	7	0.15 -	0.15 0.05	0.25 0.05
2448	Nasr Herb 48% SL	Glyphosate isopropylammonium	2.5litre/feddan	U	7	-	0.1	0.2
2417	Huntox 95% SG	Glyphosate ammonium	1 kg/feddan	U	10	-	0.1	0.2
469	Herbazed 48% WSC	Glyphosate isopropylammonium	2.5litre/feddan	U	10	-	0.1	0.2

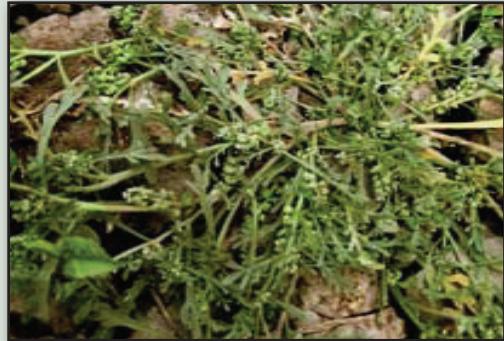
Stone fruits

Annual broad leaved and grassy weeds

Annual broad leaved and grassy weeds



Small nettle



Water cress

Guidelines:

Post emergence, direct spray on early active growth of annual weeds without contact herbicide spray of fruit trees.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
2636	Attraction 80% SG	Glyphosate ammonium 75% + MCPA sodium 5%	1 kg/feddan	Mod II	10	–	0.1 0.05	0.2 –
1181	Touchdown Hi Tech 50% SL	Glyphosate monopotassium	1.8 litre/feddan	U	10	–	0.1	0.2
2693	Glypho El Nasr Gold 50% SL	Glyphosate potassium	2 litre/feddan	U	10	–	0.1	0.2
1240	Glyfon 24% WSC	Glyphosate isopropyl ammonium	1.5 litre/feddan	U	10	–	0.1	0.2

Annual and perennial grassy weeds



Bermuda grass seedling



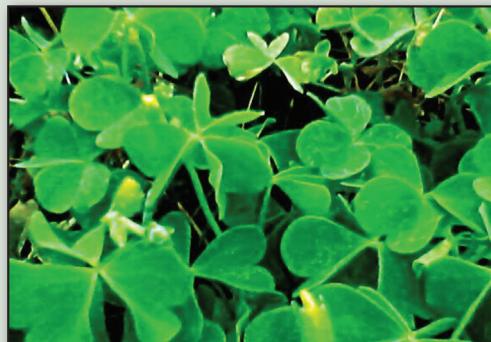
Common reed

Guidelines:

Post emergence, direct spray on early active growth weeds at height 7 – 10 cm.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
926	Targa super 5% EC	Quizalofop-P-ethyl	1.25 litre/feddan	U	10	-	0.2	-
2155	Votaled 12.5% EC	Fluazifop-P-butyl	2 litre/feddan	U	10	-	0.1	-

Turf grass**Annual summer broad leaved and grassy weeds**

Dentated Dock



Small white fumitory

Guidelines:

Broadcasting spray after hand weeding or hand hoeing

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
1905	Barricade 65% WG	Prodiamine	400 gm/feddan	U	-	-	-	-



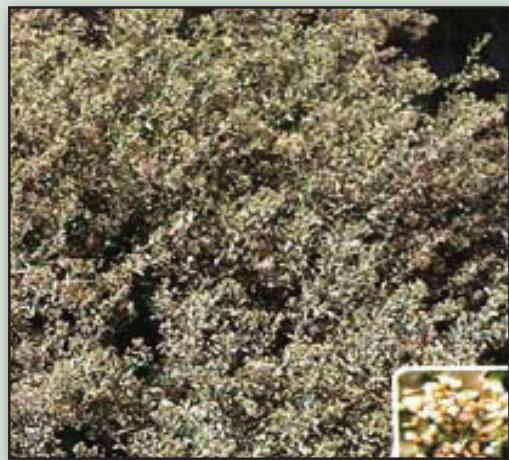
Agricultural Pesticide Committee

Along road sides and ditch banks of sub canals and drains

Annual and perennial weeds



Halfa grass



Ploughmans spike mard

Guidelines:

Post emergence, direct spray on active grass perennial weeds at height 10 – 15 cm or annual weed at 2-4 leaves by using a knapsack sprayer (C P 3) and nozzle TK1 at a volume rate of water 125 Litre/ feddan.

Certified Recommendations

Reg. No.	Trade name and Conc.	Common name	Rate of application	WHO Toxicity classification	PHI Day	MRL's values (mg/kg)		
						Codex	EU	EPA Tolerance
741	Baron 48% SL	Glyphosate isopropylammonium	2.5litre/feddan	U	-	-	-	-
469	Herbazed 48% WSC	Glyphosate isopropylammonium	2.5litre/feddan	U	-	-	-	-

Chapter 4

Annexes



Annex I

Biological Control

Natural enemies are used in the biological control by their normal natural existence, which is one of the natural control methods, or by human intervention to promote and multiply these enemies. In this case, this method is known as applied biological control. The use of the biological pest control method requires full knowledge of the pest's life history, In their areas of deployment as well as an assessment of the role played by these enemies and therefore the use of this method in the control needs some time and effort before obtaining tangible results from reliance on them.

There are many successful examples where biological control is superior to other control methods used by humans. However, despite the many advantages of biological control, it is not wise at all when dealing with an economically significant pest in a large area or in new areas to be fully accredited a can't be considered as the single or even most effective weapon from the applied point of view. Therefore, modern pest control systems have evolved and integrated into what is known as integrated control or pest management programs It is an application of all control methods available individually or in combination in a single program that maximizes the use of all methods of reducing the number of pests while at the same time achieving the rationalization of the use of pesticides and preserving natural enemies and, most importantly, reducing the chances of pollution of the environment, plant and animal crops.

Definition of biological control:

The reliance on or use of living organisms (natural enemies) to reduce the intensity of the number of animal and plant pests to below the economic action threshold level.

Advantages:

1. Safe does not harm humans and the environment and is a prerequisite for the selection, care and use.
2. Sustainable, where their numbers multiply naturally
3. Economical, cost-effective compared to other control methods.
4. Easy to apply and do not need many hands.

Elements:

1. Parasites
2. Predators
3. Pathogens

Parasitism:

A phenomenon in which a living organism lives in or on another organism that accompanies it and feeds on it and eventually causes its death and defines the attacking organism with the parasite and the parasitic organism with host.

Predation:

The phenomenon of attacking a living organism of another organism for the purpose of feeding it for a specified period, then moving from it to another organism and so on until the end of the feeding period. The attacking organism is known by the Predator and the attacked one by the Prey.



Pathogen:

A pathogenic organism that causes the death of pests as a result of pathological injury, such as bacteria, viruses, fungi, protozoa and nematoda.

The distinction between parasitism and predation:

The distinction between parasitism and predation is based on:

- 1- The Parasite's concomitant to the host during one's phase of nutrition: incomplete feeding (nymphs and larvae) or full feeding (adult), and generally the parasites are more specialized than predators where predators feed on more than one of their prey.
- 2- The morphological mutations in some members of the natural enemy to serve vital processes such as ovipositors in the parasites, and the mouth parts, as is the case in the aphid lion or legs of the mantis to help catch the prey in case of predators.
- 3- The size of the natural enemy is vital to the size of the victim. the parasite size is usually much smaller than the size of a host while the predator is larger than its prey.
- 4- The extent of damage to the victim where the intrusion does not cause immediate death to the host while predation causes immediate death to his prey. The phenomenon of collateral is the most important thing to distinguish between parasites and predators.

First: Parasites

Classified according to the parasitized stage:

Egg parasitoids:

In which the female parasite lays eggs in the host eggs and completes the life cycle within it and therefore does not hatch the host eggs such as the *Trichogramma* parasite which parasitise on the eggs of many lepidopterous insects in other cases, hatch the egg inner with the eggs of the parasite where the parasite larvae feed on the larva of the host leads to death, then the pupa of the parasite consists of the whole insect.

Larval Parasitism:

It is divided into:

a) External parasitism:

In which the female parasite lays its eggs externally on the body of the larva of the host after anesthesia, the parasite eggs hatch and its larvae also feed externally on the larva of the host to complete its life cycle such as the Bracon parasite, which parasite on the larvae of pink boll worm and corn borer.

b) Internal parasitism:

In which the female parasite develops its eggs inside or outside the body of the host, the eggs of the parasite hatch and the larvae penetrate the body of the host and remain inside to feed on the inner contents until the feeding phase (larva) develops into pupa often outside the body of the host such as the Microplitis or the Tachina fly Which are intrudes on the larvae of the cotton leaf worm or parasites that are internally parasite on whiteflies.

Pupal parasitism:

A female parasite puts its eggs inside the host's pupa and grow up the entire parasite, until the entire parasitoid emerges from it, such as Brachemeria, which parasite on the pupa.

Adults parasitism on:

The female parasite lays its eggs on the adult body and when the eggs hatch, the larvae enter to feed on the inner contents of the host, examples of which are parasites of Aphids (the adult is transformed from one to the so-called monomides).

2- Attacking sequence:

Initial parasitism: It is attacking the parasite of the host and not others.

Hyper parasitism: The parasite attacks another parasite. (external or Intra) on lesion, divided into secondary and triple parasitism and sometimes a quadrant as it happens in some types of aphid parasites.

3- The number of parasite resulting from one individual fed by on the host:

Individual parasitism: Only one member of the parasite succeeds in feeding and growing on or within a single individual of the host.

Multiple parasitism: It feeds and grows more than one member of the parasite on or within a single member of the host (may the number of parasite members emerging from one individual from the host is up to a few hundreds).

Most parasitic insects belong to the ranks of Hymenoptera and Diptera.

Second: predators:

Most types of insect predators include the following:

1- **Predacious beetles:** (follow the order of Coleoptera) such as:

- **Ground beetles:** Like kalosoma beetle that attacks at night, lepidopterous larvae and pupae found in soil (such as larvae and pupas of cotton leaf worm).
- **Ladybird beetle:** As ladybird 11 Dot and ladybird samni, black, cypress, and Rodalia Ladybird beetles preying larve and adults of aphids, whiteflies, scale insects and mealybugs eggs and new hatching larvae of many of lepidopterous insects.

2- **Predacious Flies:** (followed by the order Diptara) like the surf flies: preying on its larvae and some cortical insects and insect bugs. While the whole insect feeds on the nectar of the Flowers.

3- **Mantis:** (follows order of orthoptera) like the big and small mantis, preys beetles, ants and flies.

4- **Aphid lion:** (follow The order of Neuroptera) prey to its larvae of aphid, white flies, cortical insects and modern hatching of many horsh in the wings, while the whole insects live in most species free non-predatory living.

5- **Ant Lion insects:** (following The order of Neuroptera) primarily prey on the Ants.

6- **August Shortfall:** (following The order of Dermeptera) ground nocturnal insects that prey on the larvae and pupas of many of the squamous wings in the soil as well as some earthworms and Earth Beetles.

7- **Predacious wasps:** They follow the rank of Hymenoptera and often live in social and sometimes solitary living, such as:

- Blue wasps: which prey on bees and some other types of wasps.
- wasp of the date, bee wolf and yellow wasp: and prey on honeybees.
- mudzineer: preying squamous larvae like a cotton leaf worm.



- 8- **Predacious mites:** Prey on some types of thrips and mites harmful plant Spiders
- 9- **Real Spiders:** One of the most important and common predators in all the agro-ecological circles, is to efficiently prey on many species of prey, whether flying or creeping.
- 10- **Predacious vertebrates:** such as fish, birds and reptiles, which partially or completely prey on many insect species.

Third: pathogens

Microorganisms such as bacteria, viruses, protozoa and nematoda in agricultural environments

Different where some of them naturally attack many types of insect pests causing their death, and these organisms are also used in the bio-control applied by industrial propagation and applied in nature in the same ways of spraying pesticides with the infection spread among insects and it kills as a result of feeding on the contaminated plant parts with germs. These pathogens update the infection about the path of the stomach or through the respiratory tract.

Advantages of microbial control:

- 1- Microbial pesticides are less dangerous to humans and animals than chemical pesticides because most of these microbes specialize on insects and do not infect humans.
- 2- The rare occurrence of harmful mutations in microbial pathogens.
- 3- The residual effect of microbial pesticides lasts for long periods.

Disadvantages:

1. The cost of manufacturing is still relatively high compared to chemical pesticides.
2. Their use needs special weather conditions, for example, the fungus needs a high relative humidity, and some viruses need high or low heat.
3. Not for the Etiology. Diseases the ability to spread and movement from one place to another, unlike parasitic and predatory insects.

Annex II

Guidelines for the control of citrus pests

The policy of the Ministry of Agriculture and Land Reclamation aims to limit the use of chemical pesticides in the control of agricultural pests in general and pests of orchards and vegetables especially to preserve the environment and the biological enemies that attack the pests and avoid the toxic effects of residues of these pesticides with fruits to be suitable for domestic consumption and export.

First: Guidelines of Fruit Flies Control:

Fruit flies are one of the most important and most dangerous insect pests on fruits (citrus - peach - guava - mango - plum - nectarine - apricot), causing great damage to fruits if the control is neglected in a timely manner because the insect puts the eggs inside the fruit, which cannot be controlled after the injury, in this context, a number of procedures are being taken to combat and control the spread of this pest, including:

- 1- The Agricultural Pesticides Committee has amended the recommendations of the use of pesticides to replace low-pre-harvest pesticides such as the group of Pyrethroid, Spinosyn to preserve the health of Egyptians and to support Egyptian agricultural exports. In this context, the necessary scientific studies are carried out through the Agricultural Pesticides Committee for emergency projects.
- 2- The Agricultural Pesticides Committee issued interim recommendations for one year to control this pest and encourage companies to register pesticides with low PHI periods to provide a safe, clean and fit product for domestic consumption and export abroad by reducing the trial years to one year instead of two years.
- 3- Training programs for different levels (small farmers, followers and executives) are carried out within 40 training programs for four governorates: Beheira, Qalubia, Dakahlia and Ismailia (10 programs for each governorate) to raise public awareness and make leaflets guidelines are distributed to all beneficiaries of this program.
- 4- Attractive traps are distributed in the four governorates to assess the level of infection weekly through followers to determine the appropriate time to intervene with pesticides recommended through the Ministry of Agriculture.
- 5- Implementation of the mechanism of providing pesticides and attractants in cooperative organization, and is collected directly from farmers as is the case with the cotton crop.
- 6- A technical report shall be submitted every three months showing the achievements made to be presented to HE the Minister of Agriculture and Land Reclamation.

- Preparation of an integrated program to control Fruit flies (peach fly - Mediterranean fruit fly) in orchards on their hosts at the level of the governorates, which came as follows:

A- The cultivated areas in the groves of the citrus flies:

Estimated area of one million three hundred and thirty-seven thousand eight hundred and fifty-eight acres.



B- Recommended Spraying Program (Partial Spraying)

1. The program depends mainly on the use of pesticides with appropriate safety intervals.
2. The spraying program starts no more than three weeks before the crop reaches the physiological maturity stage, according to each crop, and continues until ten days before the harvest is completed.
3. Spray every 7 days through spray a line of trees and leave a line or spray a line and leave two lines depending on the level of injury.
4. Spray on the tree trunk or leaves as far away as possible from the fruits.
5. Spray the north side of the tree with a quantity ranging from 50 to 100 cm³ of the pesticide solution according to the size of the vegetative total so that the amount of spraying on the part of the tree area (30 cm × 30 cm) approximately.

C- The formulation used in spraying:

1. Spray formulation depends on the quality of the pesticide used and whether it contains a food attractant or not.
2. The recommended pesticide and attractant should be prepared in a single package, either mixed or separate, and the companies should be notified to take this into account.

D- Recommendations for control operations

- Pheromone traps are used at a rate of one trap for every 5 acres in order to estimate the insect population in which the Fruit flies control procedures are initiated chemically. It is important to use those traps in the mango and guava gardens adjacent or mixed with citrus and more intensively to predict the presence of the fly in the citrus gardens.
- The pesticide shall be used in addition to the attractive material to combat these insect without causing contamination of the fruits, as follows:

1- Partial spraying:

Spraying the main stems or leaves as far away as possible from the fruits according to the age of the tree and its physiological condition though that one line of trees is sprayed and another is left, or one line is sprayed and two lines are left. The number of treated tree lines as well as the number of spraying per season depends on the density of flies in the traps, and the pesticide is processed before spraying as follows:

- In the case of the recommended pesticide and attractant mixed in one package, the pesticide and attractant are added to the appropriate amount of water in accordance with the recommendation of the Agricultural Pesticides Committee.
- If the recommended pesticide and attractant are in one package and separated, the recommended rate of pesticide is added in addition to 5% attractant (1 liter) and the solution is supplemented to 20 liters with water.

2- Killing bundles:

They are pieces of a 20 cm long, 10 cm diameter woven canvas bag, also stuffed with canvas, immerse the bags in the formulation for at least 4 hours until they are saturated and then attach to the trees so that do not touch the fruits at all and the bags should always be kept wet by constantly supplying them with the mixture. It should be noted that only partial spraying can be used as a complete method of control while killing bundles are not used alone but are used in combination with partial spraying.

3- Collecting and burying fruit falling:

Collect the falling fruits which are not suitable for marketing and placed in the plastic bags of chemical fertilizers so that are intact and well closed and left on the walkers exposed to direct sunlight, which leads to the high temperature of the interior and then the death of flies larvae in those fruits and other fruit lesions which reduce the occurrence of infestation, Infested and deciduous fruits can also be disposed of by burying them in a pit at a depth of 50 cm and it is necessary to apply this procedure in mango and guava gardens and other neighboring or mixed hosts.

4- Immersion of the garden with water:

The garden is immersed immediately after harvesting. This treatment must be done first in mango gardens and guava and other neighboring or mixed hosts in order to kill the larvae and virgins in the garden soil. This reduces the movement of flies to the other gardens. This treatment does not conflict with horticultural recommendations, taking into account the following:

1. The safety period (PHI) must be observed for each pesticide, collecting takes place only after the end of the grace period.
2. The farm and the land around must be always clean
3. The need to adhere to appropriate personal protection tools to prevent contamination with pesticides.
4. Washing spray tools after the completion of the spraying process and do not get rid of washing water in the waterways, as well as the disposal of empty containers in safe burial.

③ Attractive traps:

1. Sex Attractant Traps (Jackson Traps)

The attractants range of the trap are between 1 and 2 kilometers, the traps of sexual attractants are suspended at the rate of one trap per 5 acres to estimate the insect population in the region on which to determine the date of commencement of control process, the trap used in monitoring using sexual attractants is Jackson's paper trap.

2 - Food attractant traps

They are different types of traps containing food attractants in a liquid form that attracts insects, and the effective range is 20 meters (radius of 20 m), and can be used to intensify the suspension of traps as a mean of control. Examples of food attractant traps: Mcphail trap or plastic water bottles .

3. Killing bundles traps (produced by the Plant Protection Research Institute)

A new trap produced by the Plant Protection Research Institute has been developed to place the attractant inside it in solid form (baguettes). These packets last for 45 days in summer and 60 days in winter. These traps are suspended outside the farm, allowing trapping of flies and hindering access to the farm. If traps are delayed and the flies enter the farm, they must be suspended at a density of 12 traps/acre so that these traps serve as a successful control against fruit flies instead of using chemical pesticides.



Second: Guidelines for the use of mineral oils against scale insects and mealybug during summer months:

- 1- The land should be irrigated.
- 2- Shake the oil pack before using.
- 3- Using a good spraying machine.
- 4- Taking into account spraying in the early morning or afternoon.
- 5- Mineral oils should not be used before or after treatment with sulfur til at least 15 days. Don't apply in case of tree thirst.
- 6- Spray should be stopped if the temperature rises above 32°C.
- 7- Spray should be avoided during the wind.

Winter treatment is done using a winter oil in the event of a high incidence during the winter.

Third: Guidelines for combating citrus leaf worm:

The larva digs curling tunnels inside the newly grown leaves and feeds on its internal contents, reducing its photosynthesis. Eventually, the infested parts in the leaves and the soft branches dried, Newly formed leaves were curled.

This lesion is treated as follows:

1. Treatment of young trees and seedlings:

Young trees and seedlings are sprayed with a summer oil periodically every 2-3 weeks depending on the severity of the infestation.

2. Treatment of mature trees:

Severe infestation occurs in warm months i.e. during summer and autumn, and because the rate of growth of the summer cycle is limited compared to the growth cycles in spring and autumn, and the prevailing temperatures during the spring growth cycle are not suitable for insect activity, Therefore, the infestation is very limited and therefore it is not recommended to control the pest during this period, which helps to give an opportunity for the natural enemies of this pest to multiply and increase in number.

As for the autumn's growth, it is necessary to control the pest during this period, for the importance of autumn growth in carrying the fruits of the following year, therefore, the pest controlled during this period with the same treatment used for modern trees.

Generally, recommended fertilization, especially the potassium fertilization and non-osmotic fertilization, should be considered, and the pruning should be balanced.

Annex III

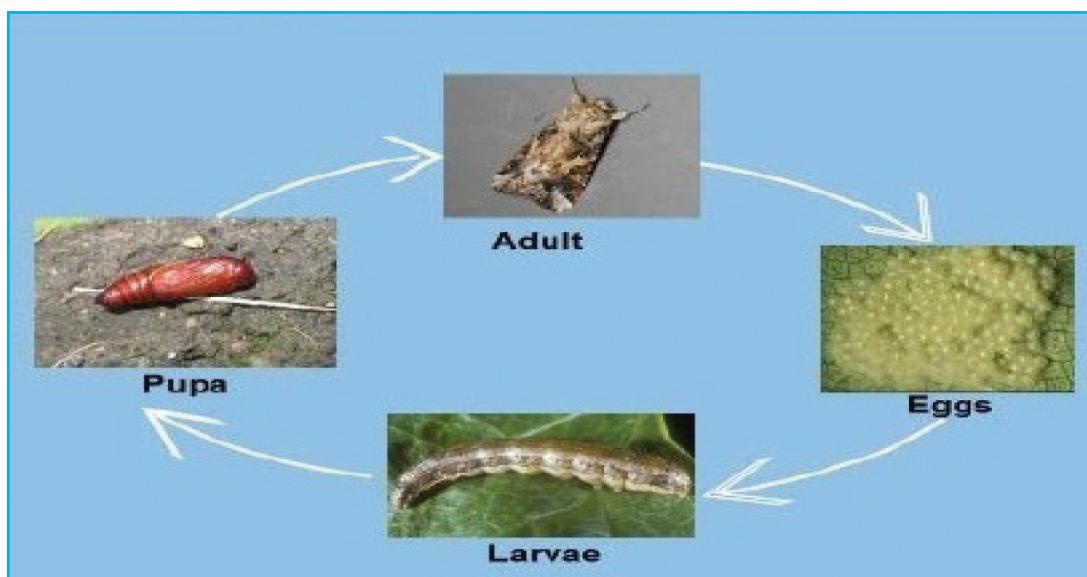
Fall Army Worm (FAW)

Spodoptera frugiperda (J.E.Cmith)

It is an immigrant insect that has moved from the tropics in the Central and Eastern regions of North and South America to the African continent in 2016-2017, where it was recorded in 26 African countries starting from Nigeria, Benin and Togo in 2016 and then spreading in the rest of the continent.

This pest has more than one hundred plant hosts, the most important of which is corn - rice - sorghum - sugar cane - sugar beet - cabbage - soybean - alfalfa - cotton - tomatoes - potatoes.

Life cycle of the insect:



- The insect completes its life cycle during 30 days in summer, 60 days in spring and autumn and takes 90 days in winter.
- The number of generations of butterfly in the year varies according to climatic conditions. The number of eggs laid by the female butterfly of 1500-2000 eggs and eggs placed in layers 3-4 layer – every layer contain 150-200 eggs, eggs hatch after 5 days in the summer.



- The larvae have 6 instars²³ and the larval stage takes from 14-30 days according to the surrounding environmental conditions - and does not turn into the diapauses - the larvae have a cannibalism behavior.



- The pupal stage takes 9-30 days. The pupa is surrounded by a cocoon of silk and soil, the duration of pupa varies according to climatic conditions - it turns into pupa in the soil and does not fall into diapauses.



- The adult stage takes about 10 to 21 days and the female lays eggs during the early part of her life - the insect is nocturnal and mating occurs at night.



Insect Flying Range:

- The ability to fly in newly emerged moths at age of 1 day is low and increases by age up to 5 days and then the speed and distance of flight decrease after that until the age of 10 days, with the development of the reproductive system.
- The highest average flight speed, duration and distance are usually for female moths aged 5 days and male butterflies aged 10 days indicating that the ability to fly may vary by sex.

Insect Behavior:

- **Nocturnal insect:** so light traps can be used in counting, generally, whether fisheries or pheromone traps are used they are not accurately reflect the density of the insect, but indicates the presence of moths, when the presence of butterflies is confirmed, the search for eggs and larvae is a must.
- **Polygamous insect:** The female can mate more than once and the male can copulate more than one female. Generally, the female can mate once a night and there is an order for females with the ability to mate with preference for females who have not previously mated and then mated once and then mated more than once and so on.

Critical intervention limit:

Critical intervention limit at the presence of 5% eggs masses or an infestation of 25% of the number of tested plants.

Agricultural control:

- Early planting.
- Loading on bean reduces infection by 20-30%
- Use early maturing varieties
- Plant traps can be used (exit from newly grown maize plants)
- Planting resistant plant varieties that are able to withstand infestation

Mechanical practices:

- Collect the larvae by hand
- Deep plough to kill pupae
- Put sand or ash in corn cavities

Chemical control:

- Insecticides in rotations when the infestation reaches 25%.
- Topical treatment in highly infested isolated areas.
- Spray early in the morning or after sunset.
- The use of pesticides granules on corn plant.
- Use of pesticides with irrigation water.

Biological control:

- Egg parasites *Trichogramma sp.*

Trichogramma spp. parasitizing spodoptera eggs



- Larval parasites *Habrobracon hebetor*

Another parasitoid: Habrobracon hebetor



H. Hebetor developing on larvae of the MFM

Monitoring and scouting

- Use of light black and pheromone traps.
- Pheromone traps attached to the top of the green parts.
- Insects caught reflect the presence of moths in the area but do not represent the degree of infestation.
- When making sure there are moths must be looking for eggs and larvae.
- Infestation is estimated in 20 plants/5 zones (i.e. 100 plants) or 10 plants/10 zones.
- Sex pheromone is a mixture of 5 chemicals.

Precautionary actions to be followed:

1. The need for teams to detect the presence of the insect on the border adjacent to northern Sudan.
2. Dissemination of light and pheromone traps on the borders of Sudan.
3. Support the detection teams with pesticides and application machines to intervene when necessary.
4. Alert all border ports to take the necessary quarantine procedures to prevent the entry of this pest.
5. Some pesticides that can be recommended:
 - Emamectin Benzate
 - *Bacillus thuringiensis*
 - Acetamiprid
 - Imidacloprid
 - Lambda cyhalothrin

Use pesticides only when necessary - recommended pesticides are used in Egypt.

6. Establishing a database of all available information on the rapid spread of this pest, especially in Central, West and South Africa.
7. The importance of coordinating with FAO and identifying their experiences in Africa and the measures that have been taken whether to monitor or control this pest.
8. The importance of knowing the vital enemies of the pest in its native habitats in the continents of North and South America, especially the parasites of wasps and tachina flies.
9. Finally, the degree and speed of the spread of the insect is very high and it is necessary to quickly take procedures to secure borders adjacent to Sudan.
10. The need to send some researchers in courses to study the spread, nature and causes of insect endemicity in some countries of Central, West and South Africa.

Annex IV

Guidelines for Termites Control

Termites live a social life in the form of colonies and they are totally different from true ants they attack cellulose in all its forms where they attack the leaves, fabrics, carpets and rugs containing a cotton mixture even seen hoof to spend a living in sponge Industrial used in the filling of furniture the insect caused significant losses and even collapses of some timber-dependent houses in their support.

The termite insect cannot be seen directly, but only through the effects of its destruction and the manifestations of the injury it causes, where it lives hidden beneath the surface of the earth or within the pieces of furniture, floors and wooden veins and attacks its targets by tunnels stretching from the lower surface of the earth upwards in the form of tubes on the walls or the trees far from light and dry.

Termite types are divided into:

- 1. Ground termites (Dry wood termites)** it is the termite species that live and attack dry wood, whether raw or processed, or trees after drying and characterized by some properties of wood borers (the overwhelming beetles of wood) and the number of individuals in their colonies ranges between 100-300 individuals and has not relation with Soil.
- 2. Underground termite (subterranean termite)** the types of this group are very dangerous, where they live closely linked to the soil and the number of the colony varies from 50,000 to a few million and attacks any cellulosic material or its derivatives above or during the Earth's surface.

Symptoms of termite infestation:

1. The presence of small holes in the wood is usually the guide to complete insect exit in propagation and reproduction periods (spring and Autumn) especially near doors and windows.
2. The presence of powdered sand pellets under the pieces of wood furniture that are infested and usually have a light cream or dark color depending on the type of wood that made the furniture from it and this granular powder is the output of the colony and the same granular powder is sometimes prominent above some sites in the affected parquet.
3. Termites feed on the hay slices that bind the mud granules in the mud bricks.
4. Weakness in some locations on the surface of furniture or parquet and wooden flooring as a result of digging and feeding the insect beneath the surface.
5. The disintegration and collapse of the walls built of “raw” adobe bricks as a result of feeding the termites on the hay slices that bind the mud granules in the brick Mold.
6. Corrosion of wooden furniture and wooden logs that carry the ceiling.
7. Hear a sound in the ceilings made of palm flakes and corn.
8. The presence of clay pipes on the walls inside and outside in the injured building made of brick or building using clay blended with hay as an association for the rows of bricks or stone used in Construction.

9. The presence of thin wings in large numbers and sometimes dead winged insects on the places of deployment of the new infestation.
10. Adhesion of carpets, mats and rugs to the land.
11. Yellowish of the affected trees and their wilting as clay tunnels appear on the trunk.

Protection Methods:

- 1- Disposal of cellulosic substances and plant residues in the land to be established.
- 2- In the construction of rural buildings, a cement bench (ground mat) should be constructed under which it recommended pesticide have to be applied.
- 3- In the case of concrete buildings, the base as well as construction timber should be treated with pesticides before the construction is completed.
- 4- In the affected areas, a building permit should not be extracted until after the control specialist in the Directorate of Agriculture examined the land and treated it in case of injury.
- 5- Termite traps can be used to detect infestation.
- 6- Prevention should be done for industrial facilities that produce cellulosic materials.

Treatment Methods:

1. A recommended pesticide in a rate of 20 cm³ per liter of water should be applied.
2. In the affected homes and facilities a trench is made under the walls of the building completely and around the building with a depth of 30 cm and 30 cm width each longitudinal meter should be filled with 4 liters of the diluted pesticide formulation.
3. Making holes in diameter of 30 cm and 30 cm depth at one meter distance between each of them in houses with diller machine.
4. Treatment of wood used for windows or doors with the dissolved pesticide formulation in kerosene at a rate of 1%.
5. Contact the termite control specialists in the Agriculture Directorates to oversee the control operations.
6. Cracking clay tunnels from walls and trees.
7. Digging a trench like the former around the trees against the insect to be around the tree and away from the trunk by about 50 cm.
8. In barns and warehouses, a wooden tables should be treated with pesticides to store food grains and materials.

Important Remarks:

1. No spraying of walls and roofs with pesticides because of its toxicity to the residents of housing and lack of feasibility.
2. Do not conduct chemical transactions near water sources (drinking taps, water pumps, canals and drains).
3. The pesticide should not be mixed with cement in construction unless certain properties of cement are available so that the pesticide does not deteriorate and loses its effectiveness.



Annex V

Guidelines for controlling rodents

The importance of rodents as a pest is that they are small, rapid reproduction animals that are easy to hide and live under different environmental conditions. They are associated with human transmitted from one place to another, and the natural or industrial barriers between countries do not stand as a barrier but they pass it easily, feeding on his food, causing damage to his property and a carrier of epidemiological diseases affecting humans.

The successful control program for this pest is based on understanding of its nature and general capabilities that help it to survive under different environmental conditions, as well as an understanding of its actual needs for living in general and the needs of each species in particular. Rodents, like any animal, need to have three important vital factors for their survival: water, food, and a suitable hiding place from their enemies and protect them from the external fluctuations. If these three factors are not available in one place or lack of one factor, this place is not suitable for the living and breeding of rodents.

In order for the control process to be successful, we must identify the main factors that limit the survival and reproduction of this pest under different environmental conditions.

How to detect the presence of rodents:

The presence of rodents is shown by observing live rodents wandering at night or day if the numerical density is high, as well as the presence of infestation symptoms in the field, store or other rural facilities, which include biting stems, such as wheat, barley, rice, attacking the developing leaves, cutting branches of fruit trees and attacking fruits in addition to the presence of bright soft stool and burrows, which foot and tail traces and presence of some food are located at the entrances of the hole. As well as the existence of the traces of the biting, the crumbs of grain and the rupture of packaging in the Shun and warehouses as well as the phenomenon of motivation shown by pets in homes.

How to prevent harms of rodents:

Protection methods are based on:

- 1 – depriving the rodents from sources of food and water.
- 2 - depriving the rodents of the appropriate housing.

I. Protection in agricultural fields:

- 1- Remove and burn weeds and herbs especially on bridges.
- 2- Disposal of the remnants of plants or neglected material in fields and orchards.
- 3- Removal of garbage piles in villages.

- 4- Remove the remnants of grain in the fennel or storage places and not leave the accumulated tools or waste disposal as they are a shelter of rodents then disinfect it.
- 5- Locating the burrows and demolish them or immerse them in water to kill the young.

II. Protection New Rural Facilities:

- 1- Construction of a concrete base with mortar in a thickness of about 10 cm.
- 2- Not to build brick buildings (raw) and especially the foundation and built a meter high from the surface of the earth with red bricks, taking into account the lining.
- 3- Tightening the bishop and not to leave gaps in it.
- 4- The height of the window openings in the ground floor should not be less than 75 cm, since the rodents ability to jump does not exceed half a meter.
- 5- Tight doors and windows so as not to leave a space between them and the floors or walls.
- 6- Do not leave waste or garbage around the building.
- 7- Do not leave the branches of shade trees hanging on the buildings so as not to become a bridge to the rodents to move into the houses.
- 8- At least one third of the pigeons shall be built with red bricks after being coated with a smooth layer that does not allow the rat to climb.

III. Protection existing rural enterprises:

- 1 - Search for burrows and cracks and fill with cement and broken glass.
- 2 - Making shelves around the towers of the pigeon from the outside and inside from iron or zinc with length of about half a meter and making a sharp angle with the walls and cover the doors and windows with wire.

The most important methods used in the control rodents:

First: Control by relying on natural enemies and natural factors:

- 1- The use of predators (such as cats - dogs - birds prey).
- 2- Change the nature of the place (by controlling the factors necessary for the pest to live - the safest and least expensive in the long run).

Second: Mechanical control:

- 1- Traps (excellent in the case of very few numbers of rodents - expensive and need to many labors).
- 2- Ultrasonic and electromagnetic devices (temporary - expensive - not successful enough in fields).
- 3- Adhesive surfaces. (Inside buildings, warehouses, painting of the tree trunk).
- 4- Barriers, fences and electrified wires. (Guaranteed for protection - expensive).

Third: Chemical control:

1. Repellent materials (not sufficiently effective - odor / bait expulsion).
2. Toxic gases (stores / burrows)



3. Rodenticides:

The best and most common and successful methods in the control of rodents will be addressed in detail with mentioning the appropriate conditions for the use of each pesticide as well as the use of fixed bait stations and their importance in the control of mice as well as the most important factors leading to the success or failure of the program of field control of rodents using these pesticides that can be taken into consideration or avoided to ensure the economic efficiency of the program.

Known rodenticides are classified into two sections based on the speed of their effect as follows:

(A) Quick-acting pesticides:

Which are highly toxic to mammals and are highly efficient in killing rodents. If mixed with the appropriate food and acceptable taste for rodents, as we can now hide the taste and smell of the chemical substance which has become one of the most effective poisonous baits in the process of control.

Usually rodents are very careful when choosing their food. If the poison is found in its environment for the first time, it takes caution when approaching it and then taste very little of it at first. If it feels the discomfort or pain from eating the toxic chemical in the bait, it does not approach it again because it is linked in its memory between the taste of the toxic substance and illness effects that it caused and therefore do not accept the consumption of poison or even any other taste, whether poisonous or non-toxic used in the preparation of this poisonous substance or poisonous food that was mixed with them. Thus, the control process fails as a result of this condition and is called baits shyness.

In order to overcome the phenomenon of avoidance of this bait, it must precede the status of the bait by placing similar amounts of the same taste without adding toxic substance to it and distribute this non-poisonous taste in the same distribution sites that will distribute the bait for 2-3 nights before the distribution of bait directly. It is preferable to leave a day of separation without baits and then distribute the poison. In this case, the rodents will get used to eating non-poisonous taste and accept it with appetites. If we change it with poisonous taste, then the rodents 's desire to eat after it gets used to it will reached its peak, leading to the success of the control process so that the number of rodents in the region can be eliminated in the same night. The use of quick-acting rodenticides is preferred in the following cases:

- 1 - when the number of rodents very high in the region, which requires the elimination quickly to avoid harm.
- 2 - In case of spread of epidemics and diseases transmitted by rodents.
- 3 - In the case of control of rodents in the sewers and landfills and some stores.
- 4- If the air humidity is high, it is feared for the safety of slow-acting baits.

The zinc-phosphide bait control is as follows:

- 1 - Explore and identify the focal points of infestation on the canals, bridges, banks and irrigation channels and under the palm and fruits trees by observing the signs of their presence.

- 2- Medium crush of corn grain, taking into account that the quantity will be crushed in size suitable to the size of the labor that will do the work so as not to store corn grain for a long time and lose the quality of attracting rodents.
- 3- Mix crushed corn grain with zinc phosphide in batches that each batch containing one kg of crushed corn until the mixing is homogeneous so that the concentration of zinc phosphide is 1.5% in summer and 2% in winter with the addition of food oil by 1% in winter only and to be added after mixing the grains with zinc phosphide.
- 4- The control process is carried out by placing the zinc phosphide bait by a spoon of about 10-15 mg in the hole and not outside it.
- 5- Control operations are conducted in the evening and before the departure of mice at night to look for food, so as not to continue to put the bait for a long time before the departure of rodents, noting that the addition done inside all the holes.
- 6- In places where it is not possible to distinguish burrows such as halva and grass, the zinc phosphide bait can be placed at the same rates in paper cones in these places.
- 7- Zinc-phosphide control is performed twice a year (every six months) after harvesting of winter crops and summer crops.
- 8 - The control of rodents with the taste of phosphide zinc within the sheep, warehouses and animal production stations and just treat in and around the facilities.
- 9- Zinc phosphide bait may be used in households by placing it on tomato, cucumber, and fried fish.

B) Anti-Coagulant rodenticides:

It is the anticoagulant rodenticide that has a cumulative effect in the body. The rodents usually needs to take 3-4 rates (meals) to die. This makes these formulations safer for humans and farm animals. The human weight is greater than the weight of the rodents hundreds of times. So it needs a larger rate of the same formulation to affect as well as other animals. The cumulative effect of these rodenticide requires that they remain in the field enough time where rodents to take the lethal dose until all in the area have been eliminated (at least two weeks).

This type of rodenticide when mixed with different food baits becomes very efficient in the elimination of rodents because the rodents does not detect the taste of anti-clotting bait easily and does not link the taste of the chemical substance with its impact in the body because its deadly impact is late and indirect which is internal and external bleeding and it is not related to the process of nutrition or taste of food so there is no case of avoidance of taste when using these rodenticides- also do not need to develop non-toxic bait before the deployment of toxic food as mentioned in the case of poisonous baits that use quick-acting rodenticide because the period of the bait in the field is long and sufficient to mice to get used to eating and appetite it - usually the first death occurs after the treatment by about 3-4 days depending on the type of rodenticide and type of rodents.



Agricultural Pesticide Committee

The modern species of these substances give the lethal effect after one feeding dose, although death occurs only after 3-4 days.

The most important types of multiple doses anticoagulants are: Coumatetralyl-Chlorophacinone.

One of the single - dose anticoagulants is:Bromadaiolone-Brodifacoum.

The importance of using baits stations rodenticide control:

Used baits stations are different sized boxes made of cardboard, wood or plastic, where rodenticide is placed in a suitable quantity and provided with openings allowing rodents to enter and feed inside and then exit. The basic idea of these stations is that they provide the rodents with appropriate safe conditions to hide while feeding. The rodents usually do not accept the food in an exposed open place, but prefer to feed in covered places out of sight so as not to be vulnerable to attacking by their vital enemies. By providing hiding places with bait stations and providing them with appropriate bait, the ability of rodents to eat poisonous baits increases significantly.

These stations have many benefits, including: -

- 1- Savings in using of toxic baits that scattered in stations only.
- 2- To protect baits from corruption and decomposition, because they are not exposed to weather conditions directly such as rain and sunlight.
- 3- Protecting humans and pets from the possibility of wrong handling of the rodenticides as it is trapped inside the station.
- 4- Higher efficiency in the control process because it provides adequate hiding for rodents during feeding thus, eat enough to kill them.

How to implement an integrated rodent control program:

When evaluating the damage and identifying the number of rodents in farms, fields or establishments for the first time, the following program can be followed:

- 1- Identify the types of rodents in the region.
- 2- To identify the appearance of infestation of rodents in the region and distinguish them from other similar infestation.
- 3- After the discovery of rodents and to confirm the appearance of infestation, we begin to assess the need for comprehensive control - the economics of control - and whether it is necessary to conduct it or not. In the case of rodents, the least number of them is a damage that requires control, especially if we know its enormous ability to move from one place to another in addition to the ability to reproduce.
- 4- If the importance and necessity of control is proved, we begin to review the available alternatives such as changing the nature of the place and cleaning the field, the use of traps, the use of metal barriers or sheets or the use of chemical pesticides, etc.

- 5- We then begin to study the appropriateness of the means of control available to the existing mice so that we choose the most appropriate methods that give us the best results in eliminating the pest with the lowest costs and less harm to the environment and less risks to public health.
- 6- After the disposal of rodents a monitoring process must be conducted continuously for the possibility of appearing again in the treated area. The rodents usually migrate and move from infested areas to nearby sound and become a source for rodents. And here begins the role of preventive control.

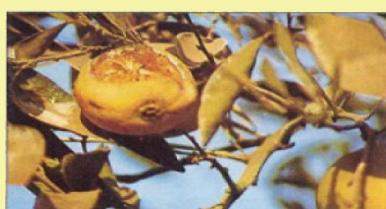
Preventive control is carried out by distributing bait stations in the area in the same manner as in the control. These stations are supplied with a non-toxic taste (wheat / corn) and checked every week or two to see if there is a lack of food or not as evidence of having and visiting rodents. Once we have discovered the deficiency, we know that the rodents have returned to the place again. In this case, we put the poison bait in the stations instead of the non-poison, in order to eliminate the intruders in order to ensure the protection of the place.



Tomato



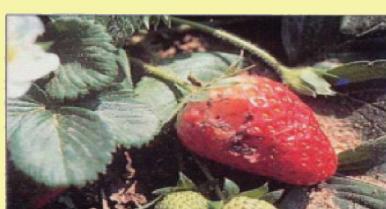
Broad bean



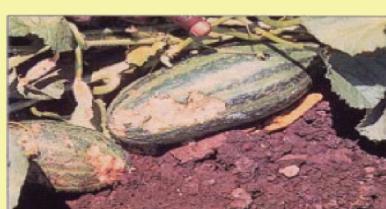
Citrus



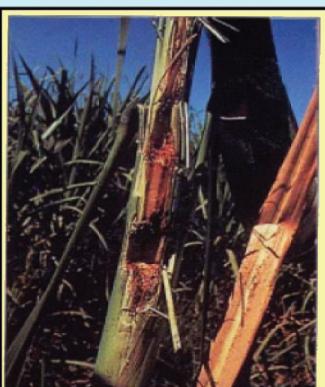
Pepper



Strawberry



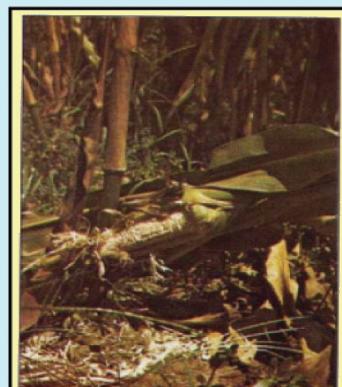
Squash



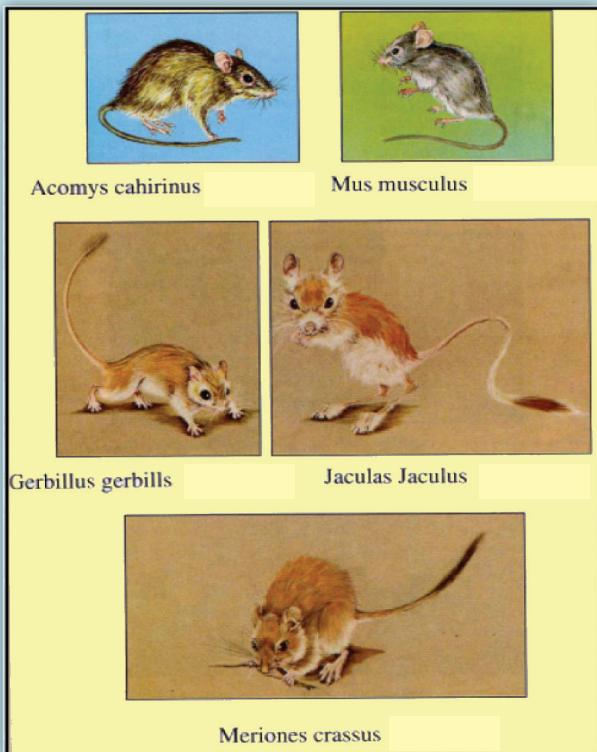
Sugar cane



Wheat



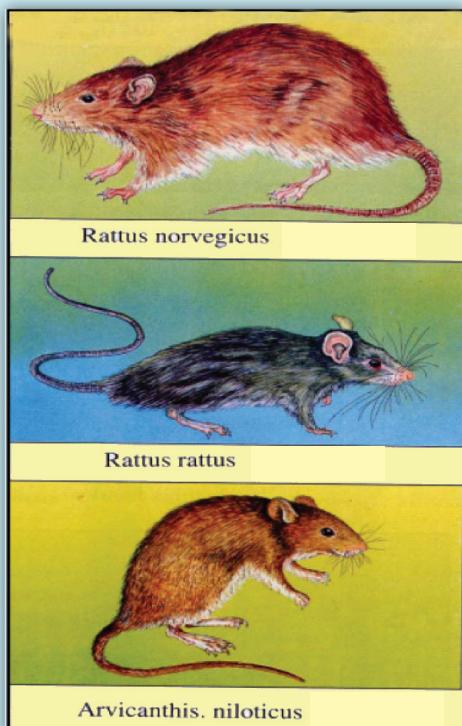
Corn



mus musculus



Rattus rattus



Rattus norvegicus





Annex VI

Guidelines for the control of ground snails

Introduction:

Land snails and slugs belong to the Phylum: Mollusca and to the range of the abdomen and to the Class: Gastropoda under the subclass: Pulmonata Endothelium Order: Stylommatophora. Snails are characterized than the slugs by the presence of a limbic shell on the back that hide in when danger or unsuitable environmental conditions. While, slugs are naked (they have a small concise shell). Land snails and slugs are considered as pests that attack various crops in Egypt, especially in coastal areas where temperatures are moderate throughout the year. This pest has started to appear and spread in agricultural fields, fruit and vegetable farms and ornamental plants in some agricultural areas in the new lands west of Alexandria where the temperatures and high humidity have been extended in some governorates of Middle and Upper Egypt. So, they need to be addressed to reduce their hazardous.

Factors that have helped to spread this pest epidemically

- 1- Transferring seedlings and soil to non-infested areas
- 2 - Transfer of woven and jungle which the snails attached to and used as a fence around the orchards.
- 3- Neglecting of weed control as it is one of the important hosts of this pest, and the dense weeds provide the wet environment and shady places suitable heavily growth of snails.
- 4- Excessive in the irrigation process, providing adequate humidity for a long time.
- 5- Lack of interest in the process of serving agricultural land before planting and not exposed to the sun for a sufficient time.
- 6- Continued cultivation of agricultural land throughout the season, which allowed the diversity of agricultural crops throughout the year and helped to create suitable environments for growth and reproduction.
- 7- Lack of knowledge of the life cycle of this pest.
- 8- Failure to complete the integrated control process and neglecting of collection snails during the summer and eliminate it.

Types of snails and slugs

Snails in the Egyptian agricultural environment can be classified into several types depending on the type of food.

First: Herbivorous (Snails eating weed and plants)

1. *Monach sp*

It is the most common kind and spread in large numbers in the fields of clover, vegetables, cotton, wheat and some ornamental plants. This type spend the summer rest hiding under the grass which grows on the bridges of canals and banks at depths of up to 5 cm and then starts its activity at the beginning of autumn and until the end of the spring in other agricultural fields. It is called a glassy because of its semi-transparent white color.

2. *Helicella vestalis*

This species is characterized by a navel and the color of the shell is tends to white and has a clearly colored helix. The top is black. This type is spread over many fruit trees such as guava, citrus, mango, banana and palm.

3. *Eobania vermiculata*

It is a large snail with a strong shell and surrounded by a broad flange, and on the shell there are five dark brown helical rolls, the navel is unclear and spread over most fruit trees, ornamental plants and vegetables.

4. *Helix sp*

Similar to the former snail but without the presence of a wide lip. The shell is spherical shape with the lines its color between olive and reddish brown and the number of twists up to 4 laps, this snail spread on the ornamental plants and fruit trees, especially in the Nubaria and the North West Coast and spend its inactivity period hiding among the weeds or stuck the fruit trees and re-activate in spring.

5. *Theba pisana*

A small snail with a fragile shell that is easy to break, white or pale brown, with blackish brown spiral stripes and are widely spread in gardens, nurseries, ornamental plants and some field crops.

6. *Cochilecella acuta*

A small conical cone attaches by large numbers on branches and trunk of fruit trees and activates during the spring.

7. *Lehmannia marginata*

8. *Deroceras reticulatum*

9. *Deroceras leave*

These slugs are widely spread over ornamental plants, wooded interiors and most fruit trees.

Second: Carnivorous (Snails eat meat and animal tissue)

Oxychilus sp.

Third: Omnivorous (Snails eat everything)

1- *Rumoina decollate (linne)*

One of the names of this conch snail is the macaroni cone - or the top peeled snail

Life cycle of snails and slugs:

Snail and slugs are Hermaphrodite animals, but two animals must be met together to fertilize, sperm are exchanged between them. Animals usually mature before ova in most species or after the process of meeting the two animals. This is done during autumn and spring.

After fertilization, each animal builds a hole in the disintegrated soil, it is a shallow hole in most species of 3-10 cm, and some other species may stimulate deep spawning to put eggs in. The number of eggs ranges from 50 to 200 depending on the type of snail. After the process of putting eggs is finished, the animal extracts an attractive material and covers the eggs with it and put them in the soil.

After about 10-21 days young go out of eggs. The small individuals are completely like mothers but are sexually immature and are hatching late autumn and early winter.

When the young go out directly, they feed on the egg cover and on the root capillaries of the plants and the dupal material in the soil. Continuing in forming the shell rings gradually until they reach the end when they reach the stage of sexual maturity in a period of 10-12 months. Snails and slugs live for different periods of different kinds and may reach up to three years and their activity and reproduction depends on the temperature and humidity of the surrounding medium.



Behavior of snails and slugs

Animals are growing and activate in the presence of moderate temperature and high humidity and therefore they active during the autumn and spring and stop its activity or decrease during summer. They are night animals, that their activity and feeding on plants increase in the dark and late night hiding in the soil or sticking to the branches of trees at sunrise and high temperature.

Integrated control of land snails and slugs:

First: Agricultural methods

This is an important processes and more influential than other processes:

- 1- Plowing and hoeing and flipping of the soil to expose the eggs and the young to the sun to dry and dead.
- 2- Taking care of the soil and get rid of weeds periodically.
- 3- Disposal of the remnants of previous crops and their waste as some types of snails spend the summer inactivity period on these wastes
- 4- Taking care of trimming the infested branches and get red of them by burning and choose the appropriate breeding methods that lead to opening the fruit trees and expose it to the sun to reduces the infestation of snails.
- 5- Clean windbreaks and trees surrounding the farm.
- 6- Prolonging the period of irrigation and non-waste to reduce the proportion of soil and thus humidity and accordingly reduce the activity of snails.

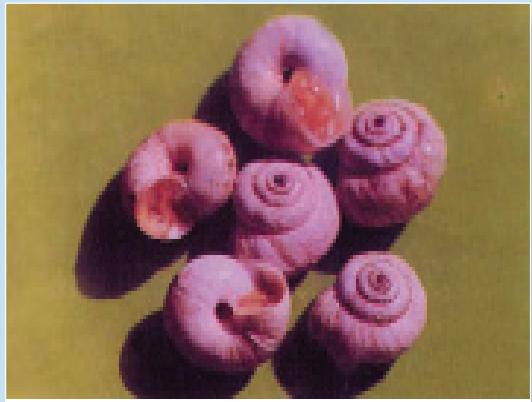
Second: mechanical methods

- 1- Collecting snails manually from under trees, branches, trunks and burning it.
- 2- Put the piles of compost in the corners of the infested fields as the snails are attracted to them and then collected and burned.
- 3- Laying rolls of wet lettuce or moistened news papers with water under the trees to collect snails and then burning.
- 4- Put attractive baits such as the mixture of honey and apostasy (95: 5) or boiled mashed potatoes in pottery vessels and put them on the Kanya and bytoon at sunset then collect the snails in the morning to burn them.
- 5- Collecting clover before sunset and distributed in the form of small piles then lift these piles the next morning and collect snails from below and burn it.

Third: chemical methods

Prior the chemical control process, consider the following:

- 1- Study the environmental factors surrounding the neighboring fields which intended to control the pest in.
- 2- Conducting an inventory of the species of snails scattered throughout the region.
- 3- Study the seasonal oscillation of the enumeration of these species and the knowledge of the period of activity and comfort and inactivity for each type, and the identification of places where the animal spends the period of rest and comfort to determine the appropriate time for control operations
- 4- The use of the pesticide that is appropriate to the nature of the crop.



European snail, *Helix* sp



Sand snail, *Helicella vestalis*



Monacha sp



Small conical snail (*Cochlicella acuta*)



Desert snail, *Ermina*



Rumina decollate desertorum

Sanials Symptoms of Infestation on plants



Chemical compounds used in controlling snails

It uses a pesticide for snails such as methyldehyde, methocarb and methomyl, but methyldehyde compound (Such as HastroxE 5%) causes the loss of snails and slugs a large proportion of water when eaten or contact with the animal as a result of continuous extractions resulting in the dryness and death of the animal, but this compound is not useful in humidity environments such as green houses and nurseries for the ability of the animal to compensate lost water from its body.

Method of preparation of poisonous baits:

Preparation of the bait by adding some pesticides by 2 parts to a mixture of honey and apostasy by 3 parts honey + 95 part apostasy and add water to form a paste with the addition of an attractive material for animals about one kilo of blue walls coating powder.

In the case of horticulture, the baits are placed on plastic pieces around the fruit trees. In the case of the clover fields and vegetables, they are placed in pottery vessels on the kenaya and the tilapia.

The conditions to be followed when putting poisonous baits in agricultural fields:

- 1- Place the baits in the early morning or at sunset.
- 2- The soil should have an appropriate amount of moisture.
- 3- Not to perform irrigation after placing the bait for five days.
- 4- The bait should be placed in circles around the trees and on plastic parts.
- 5- Place the bait around plants grown at large distances such as potatoes, artichokes, melons and cabbage.
- 6- Place the bait between the plants and between the pots and vessels in the case of controlling within the greenhouse.

One of the modern methods in the chemical control of soil molluscs is the use of methods that have no harmful effects on the environment by using urea spray solution on tree trunks especially during the period of inactivity as well as spraying it over the weeds where the snails are abundant but on condition that the urea solution (from 10 to 12%) does not reach the vegetative parts of trees or any other crop. This research was published through the Working Group of Plant Protection station in 2009 and it was also possible to activate these control methods by adding black honey or molasses as an attractive material to accelerate the arrival of the urea transformer to the snail. By this method the snails conjoined on tree trunks, beams and weed can be eliminated by 100%.



Annex VII

Machines and Apparatuses

The purpose of using pesticide application machines is to give homogeneous and regular distribution of pesticide particles to the infested place and with minimal loss or contamination of non-target crops, water sources, soil or the environment as general. The most popular pesticide application machines are formulation sprayers and powder dusting machines.

The pesticide application machinery and equipment must be safe and able to operate efficiently under field conditions. It should be ensured that the pesticide is not leaking, and the machine should be easy to clean from inside and outside.

Common Ground Spray Size:

1- Small spray volume:

Ranging from 4.1 - 60 liters/fed and used in hand sprayers and dorsal spray engines. It is preferable to use soluble pesticides formulations or emulsifiable econcentrate, usually used to control pests of vegetable and field crops.

2- Medium spraying size:

Ranging between 6-600 liters/fed and used with dorsal and ground sprayers, and tractors and is suitable for all types of pesticide preparations to control horticultural pests and field crops.

3 - High size spraying:

From 200-600 liters/fed using ground spray engines and tractors to control tree and shrub pests and in cases of high infestation.

Spray calculations:

- The amount of pesticide used to treat a given area - the dose rate of the pesticide (liter/fed) × the number of fed.
- The amount of the spray solution used to treat a given area = the size of the spray solution recommended in liters/fed × the number of fed.
- The amount of the pesticide in the spray solution = the size of the spray solution in liters - the volume of water in liters.

Sprayers Productivity (F/h):

- Treated area per m²/min = width of spray (m) × speed (m/min).
- Machine productivity per feddan/ hour = Area treated m²/min × 60

$$4200$$

- Machine disposition rate (used size/spraying machine/min) = Machine productivity fed/hour × Spray size.
- Spraying volume (liters/fed) = $4200 \times \text{Disposal rate (liter/min)}$

$$\text{Pace (m/min)} \times \text{width of spray (m)}$$

- Flow rate (m/min) = Spray size (m/s) x Pace (m/min) x spraying volume(Liter/fed) $4200 \div (m^2)$.

- The amount of pesticide to be added in each machine gun=

$$\frac{\text{pesticide use rate (L/feddan)} \times \text{Tank size (liters)}}{\text{Spray Size (L/Feddan)}}$$

Example:

Pesticide use rate per feddan

1 liter/feddan

The volume of the spray is

80 liters/acre

The size of the tank is

20 liters

The quantity of the pesticide in each machine blower

$$\frac{1 \times 20}{80} = 0.25 \text{ liters}$$

i, e, 1/4 liter of pesticide is taken and supplemented to 19.75 liters of water per machine gun.

Steps for calibration of Ground Sprayers:

In order for the spraying process to be done correctly, the machine used should be calibrated and calibration includes the following main points:

- 1- Determination of the pressure of the machine according to the type of pesticide used. Often 30 strokes of the spray arm/minute is appropriate when the machine with a single bore and 40 strikes when there is more than two nozzle on the machine.
- 2- Spraying speed (m/min)
- 3- Width of the sprayer nozzle (m)
- 4- The height of the spray/meter, which is the distance from the nozzle to the top of the cultivated plant
- 5- Sprinkler spray rate (liter/min)

This leads to knowledge of the size of the volume of spray solution per feddan (liter/fed) and the time required to spray the feddan and how many feddan are sprayed by machine gun every hour?

Steps to calibrate back motors when spraying orchards:

- 1- The number of trees in feddan is calculated.
- 2- The volume of the spray (liter/fed) shall be divided by the number of trees per feddan to give the necessary dose for each tree.
- 3- Time of spraying one tree from all directions is calculated, noting that the time is sufficient for air with spraying solution to reach the highest area of the leaves.
- 4- The required disposal rate is calculated which is consistent with the dosage required for the feddan. It is preferable to move the air hose from the bottom of the tree to ensure that the spray solution is distributed. The spray area should not be less than 1 m away to ensure that the spray is connected to the top part of the tree.

The importance of calibration of spraying machine used to spray vegetables and orchards:

The purpose of using the spraying machine is to deliver a quantity of pesticide (effective dose) to the unit of area on the treated surface. Accordingly, the following should be taken into account:

- 1- If the rate of use of a particular pesticide is (liter/fed) when using the normal motor with 400 liters of water and replaced with another spray machine that can cover the same feddan with a quantity of



spray solution of 100 liters only, this means adding the same rate of (use/Fed) to the amount of water 99 liters so that the spray solution is 100 liters/fed with the stability of all calibration conditions, especially the speed of spraying.

- 2- If the goal is to spray the plants of new cultivation, it is noted that the calibration machine to spray the entire area of the feddan will be enough to spray three or four feddan because new early plants germination consumed in fact represent only a total of 1/3 or 1/4 acres.
- 3- If you use a machine to spray the orchard trees and note that every 100 liters of spray solution is sufficient to spray only ten trees (different lengths), the new machine is calibrated using water to determine the amount of water needed to cover the same number of trees.

Always ensure that a fixed amount of the pesticide is delivered on the treated surface regardless of the type of machine used or the volume of water used, taking into account the calibration conditions of the flow rate of spray and pressure, etc.

Steps to be followed before spraying:

- 1- Identification of the pest to identify the recommended pesticide to control it
- 2- Determine the area to be sprayed in time for treatment.
- 3- Determination of the required amount of pesticide to spray one feddan of the data affixed to the pesticide packaging.
- 4- Pesticide required to spray the affected area = pesticide required to spray one acre × number of infected feddan.
- 5- Filling the whole tank of the machine with water.
- 6- Spray the amount of water in the tank on the crop to be treated.
- 7- From the above, it is possible to know the sprayed area that can be covered by machine gun.
- 8- If the sprayed area is equal to four kerate, for example, spraying one acre should fill the machine tank six times.
- 9- From the steps of calibrating the machine of the size of the spray solution required for the feddan is defined as the number of moles needed to spray one acre.

Precautions to be taken when preparing the machine for work:

- 1- Man must deal with the machine very carefully, since the content of the machine is very toxic and cause serious diseases and adverse side effects and excessive use of them to pollute the environment.
- 2- If a part of the contents of the machine is spilled on the tank from the outside, it will be transferred to the person by means of clothes wet with water and sweat. To avoid this, wash the machine tank thoroughly from the outside.
- 3- Avoid filling the machine completely to the nozzle
- 4- The machine is carefully carried to avoid pollution
- 5- During preparations to start spraying, wear protective clothing and masks to avoid contamination during contact or inhalation.
- 6- Determine the area to be sprayed in time for treatment.

Spray operation:

The appropriate distance between sprinkler sprays and plants are important factors to ensure that the spray solution is evenly distributed over all parts of the plant.

- The speed and regularity of the road should be maintained during spraying as was the machine calibration time.
- Do not stop or talk while spraying with others and spray trigger is open.
- The regularity of the number of hits should be taken into account as they were in the calibration.
- In case of any leakage of the machine, stop immediately to repair any defect in the machine.
- When observing any clogging or irregularity of the spray cone, stop and clean the shrapnel properly and the sprayer should have new unused parts so as not to hang during work.
- Do not walk in areas that have already been sprayed, and people should not enter in the face of spraying spray.

Relationship of air conditions to spraying operations:

Wind play an important role in the failure or success of spraying operations. The following table shows the relationship of wind power to different spraying methods:

Wind power	Description of wind condition	Spray irrigation	Target spraying	Spraying of herbicides
There is no wind	The smoke rises vertically	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Light winds	Smoky smoke movement	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Medium winds	Fixed movement of branches and leaves	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Strong wind	Small branches move and rise	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Spraying is prohibited when rain falls and spraying begins after the dew flies from the plants.

Spraying shall be stopped if the temperature exceeds 36 ° C in the shade, especially in the case of mineral oils or the relative humidity less than 50%.

The specific factor for the continuation of the drift spray is the existence of enough winds to move a cloth banner length of 1 m and width 10-15 cm installed on the sarcophagus length of 2 m to determine the path of the spray and non-deviation and indicate the intensity and direction of the wind. In the case of dusting, the presence of dew on the plants is preferred to help the adhesion of the pesticide on the treated surface.

Cleaning the spray machine and nozzles:

- The spray tank is completely discharged from residual pesticides after spraying away from the irrigation channels and green grass that any animal may feed on.
- Spray clean and pure water a few times to ensure that all pesticide residues are removed from all parts of the machine and is thoroughly dried before storage..
- The nozzles must always be clean and have a sound nozzle. The clogged clamps can be cleaned by immersing them in water or subjected to severe airflow from the air pressure or tooth brush. It is wrong to clean them with mouth blowing or by using wires, pins or any sharp objects, as this changes all the characteristics of the balsam.
- The nozzles should be changed when it is not working to always get a good spray.
- For the parts used, it is preferable to remove the different parts and clean each part and assemble it again.



Annex VIII

Guidelines for

Controlling snakes, bats and Weasel

Snakes, bats and the weasel of animals, which man usually take a hostile position from them because of their non preferable look and the nature of its feeding is disgusting to him or the severity of the toxicity of some of its members, but they are useful organisms in the environment in which they live. Snakes and weasel feeds on mice and usually spread in environments where mice densely be. Bats, most of which feed on flying insects, accordingly, purify the atmosphere of large numbers of insect pests and we will now present the life cycle and places of preference of each of these animals and the nature of feeding in addition to methods of control in case of bothering human or caused harm in the environment In which lives in.

Firstly:Snakes

Snakes are of Squamata reptiles which are spread all over the world and there are about 3000 species and sub species. They are animals that do not hear sounds in the air but are able to sense the frequency of the sounds from the ground they touch.

Nature of the favorite place snakes live in:

Snakes are slow-moving animals and live in their favorite places where they have the suitable food. Some live in the cracks of the soil, usually from small species, some over trees and dense grass, others live in lakes, marshes and mountains. Generally, they prefer the cold, wet, dark places in the country side and the city. They are easy to find in neglected places, under accumulated waste, in flower beds, on the sides of canals and drains, in thick wet grasses in neglected fields, in rural house bases, cracks in walls, they prefer places where large number of rats and frogs that feed on them.

Nature of Snakes'Feed:

different types of Snakes are predatory animals, each species feeds on types of food that are proportional to its size. They can prey on animals larger than their head size. The upper and lower jaws are not bonded together or with the bones of the skull, allowing them to separate when swallowing large prey. Their food is usually made up of small rodents in their environment, especially mice, bird eggs and small birds in the nest. Some feed on frogs, various insects, earthworms and lizards. Snakes living in water feed mainly on frogs and fish. Digestion is very slow in snakes and it may take several weeks to digest the meal. It digest all the pieces of the prey and the bones except teeth and feathers. We can know what the snake fed (swallowing) by examining her stool.

Life cycle and reproduction of snakes:

Snakes are specialized animals with a long tubular body without legs and ears from the outside or inside and have no eyelids. All the internal organs of the body are rectangular and have a long cleft lip which is used in sniffing. It captures particles of gases produced by different odors and enters the mouth

where these particles are analyzed and defined by the brain to identify their surroundings environment.

Because they are cold blooded, the temperature of the body is kept at the appropriate levels due to changes in the behavior of the animal and not to internal physiological changes, so snakes can tolerate very high temperatures or very low and usually pass in the inactivity period during the cold winter months or during the hot summer months and in both cases they do not consume food or very little of during these periods.

Some snakes lay eggs and others carry eggs that hatch in their bodies and give birth ones. They usually leave eggs without care, which hatch after 3 days to 3 months in some species. The cobra is one of the few species that may take care of eggs for a while. The snakes change old skin with fresh skin three times a year as they grow in size.

Harms of snakes:

The snakes are mostly not poisonous and few of them are poisonous and sometimes extremely dangerous. They usually do not attack a person but may have to do so if attacked and usually reacted by pretending to die or issuing faint sounds, opening their mouths to terrorism or swirling around themselves and attacking the attacker and biting him. But most often try to escape to the nearest safe hiding place and if a man encounters a snake, it is difficult for him to remain coherent until it distinguishes between the poisonous and non-toxic species. Damage of snakes to humans is limited to biting and poisoning.

Some types of snakes





How to prevent damages of snakes:

As mentioned before, snakes play an important role in reducing the number of rodents in the environments in which they live so most of the time they can be considered useful organisms, but if the numbers increased in some areas, they cause damage and discomfort to humans so their numbers must be organized so as to avoid these damage.

protection:

Immunization of buildings and fences against rats prevents snakes from entering, all larger slots of a quarter of an inch must be sealed tightly as well as the corners of doors and windows and around the pipes in the outer walls as well and also the various cracks of walls and fences.

Changing nature of location:

The main food for snakes in agricultural environments is rodents of all kinds, especially mice. To get rid of snakes, we must change the preferred environmental conditions for rats in the area. This means removing areas where mice live and feed such as garbage pools, waste accumulations and remaining grasses on canals, drains, dark wet places and uninhabited areas.

Poisonous baits:

In places with limited water sources, a 1-part portion of 4% nicotine sulphate can be used, added to 250 part of water, to be placed in a flat metal dish and distributed to dishes or vessels in the field and in snake-gathering areas. A small amount of yogurt can be added to the bait as an attractive structure of snakes.

Chicken eggs can be injected with a quick-acting vertebrate insecticide (such as zinc phosphide) and the treated eggs are distributed at the spot where the snakes were seen.

Poisonous gases:

The snakes' burrows can be fumigated by one of the toxic gases used in fumigation.

Different ways to eliminate snakes:

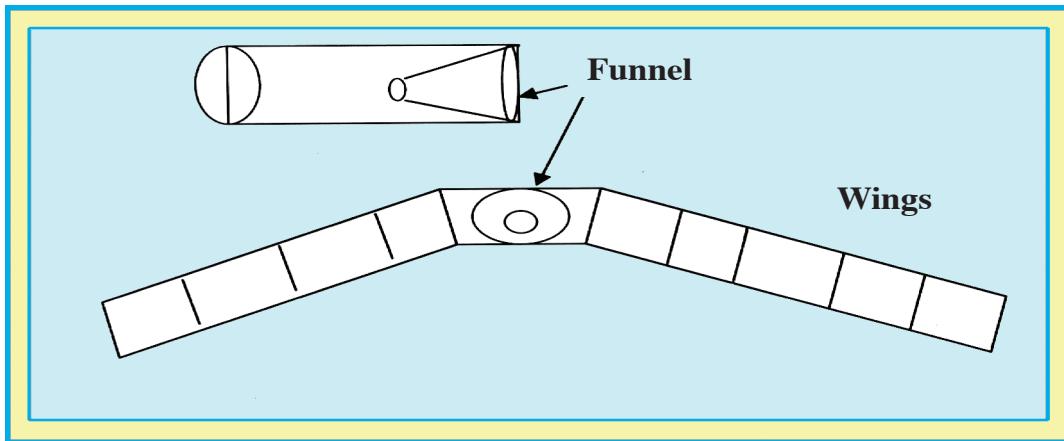
It is possible to eliminate snakes in their holes using a suitable length and diameter hose of rubber and enter into the hole and then pour in the amount of gasoline and as pumping air at the outer edge it speeds the passage of gasoline and immersion of snakes in the hole and eliminate.

Snakes can also be attracted to the area by making piles of water-soaked canvas and distributing piles to the infested area. Each pile will then be covered with pieces of dry canvas to minimize water loss by evaporation and darkening. The piles are left for a week or two in the area. The snakes gather in the dark wet piles. Then the piles are collected in the day time to ensure that the snakes are in the piles and then they are rotated in a deep pit where the snakes are burned.

The adhesive surfaces used in the control of rats can be used to catch snakes by applying the adhesive material to a wooden board and placing it in the movement of snakes to be attached and easy to dispose of.

Traps:

One of the most popular traps used for snake hunting is the repressive trap made of wire with a thickness of one quarter to one half of an inch (6-12 mm) and a length of 75 cm and a height of 60 cm for wings (used to guide the snake to enter the repress slot) and the repress is 30 x 12 cm (as in the attached figure).



Second: Bats

Bats are the only mammals that have the ability to fly and follow the order of Chiroptera, the second mammal order in terms of number of individuals (after the order of rodents), including 18 families followed by about 900 species spread in different environments in the world. Most of these species feed on insects and some of them feed on fruit and there are several types of blood suckers.

Bats live in groups where they take abandoned places close to the gardens and caves as a shelter. Others live individually in dense trees and cracks in buildings.

Nature of bats favorite place:

The favorite places for bats to live are caves, dense trees, old mines and uninhabited buildings. They usually look for food around water sources, gardens, forests, fields and buildings, as well as abandoned archaeological sites, castles and places of worship. It usually starts at sunset and goes straight after leaving the hiding places to the nearest drinking water source.

Nutrition:

Most of the bats do not cause harm to humans, and most of them feed on flying insects, and the amount of insects consumed has been recorded for 500 bat is about 500,000 insect per night. They are very active in attacking prey, and have a great ability to maneuver in the air.

The animal lives in large numbers in abandoned places and may resort to attacking and feeding fruit trees such as orange, mango, olives, apricots, apples, pears, dates, grapes, figs, etc.

Bats are active after sunset, where they are looking for fruits to feed them. As you see them, they attack the fruits of falling dates and during drying, they extend their activity throughout the night, hiding in the abandoned places.



Bats

Life cycle and reproduction:

Mating is performed in autumn and winter and females retain sperm of males until the spring season where oocytes are formed and fertilized. Pregnant females then gather in groups inside caves, mines, abandoned buildings or in any dark, safe place - they do not build nests - and give birth to their young children from April to July.

Most females give birth to one individual in the foresight and some give birth to two individuals while giving birth to a very small proportion of 3-4 individuals. The babies grow quickly and can fly after 3 weeks of delivery. After the weaning phase in July and August, young and female groups begin to spread and occupy new places.

Some bats migrate for very large distances up to 1600 kilometers, and some of them go through inactive period. Bats live for an average of about 10 years and some up to 29-30 years old.

Bats emit high-frequency audible noises not recognized for human beings. These sounds collide with the various obstructions that exist in the air during the flight of the bat. The frequency is reflected by the sensitive hearing organs of the bat, thus avoiding obstacles. In the same way, the bat can determine the location of the flying insect in flight, accompanied by tremendous speed and maneuverability.

Methods of control and treatment:

First: when you know where they live:

Fumigation can be used by burning sulfur 30 gm + 1 gm per cubic meter of hot pepper. Some pesticides, such as phostoxin, gastoxin and kiwifacus, which produce gas can be used to eliminate bats and take precautions for gas safety and protection for 24-48 hours. Close the place completely.

Secondly: When you do not know where they live

Preparation of a poisonous bait with a kernel-free dates+ Zinc phosphide 3% by weight and grafted on trees in visible places.

Third: Weasels

The Weasels follows the Mustelidae family, which has the smallest predators in the world and members of this family occupy all environments from the far north to the tropics. Members of this family have an important role in the ecosystem, where they feed heavily on harmful living organisms of similar or smaller size, especially rodents.

The Weasels is characterized by long cylindrical body and relatively short legs, and round ears as well as anal glands that produce a distinctive odor. Male animals are clearly larger than females.

Nature of the favorite place of the Weasels:

They are preferred to live in poultry farms, ducks and rural dwellings where these animals are located, as well as in places where the number of rats is increasing, especially the big cities such as Cairo. Some people assume that the increase in the number of rats in these cities to a large extent to the presence of the Weasels.

Feeding and distinctive behavior:

The Weasels is a nightlife animals that begins its activity and search for food after sunset, but it can be seen in broad daylight if their number increases and needs to be fed. Because of its small size and elongation, it loses heat energy more often than normal body and corresponding size animals. Therefore, it must compensate for this loss of heat continued to be very strong in nutrition and predation.

The weasels walks in groups and produces disturbing sounds especially when attacking the prey, causing temporary paralysis to be easy to prey. They also produce sounds when they occur in traps and are usually accompanied by a foul odor. Females are easier to catch than males.

The difference in size between males and females helps in the emergence of a kind of integration between them in the feeding on the various types of prey in the same place. There is no competition in the feeding between the sexes in the same place, despite the animal's appetite and the severity of its nutritional needs, which helps to increase its efficiency in predation.

Prevention of Weasels Damage:

Means of immunization against the attack of mice in buildings and farms are sufficient to prevent the entry of the weasels. It enters the openings made by mice in the walls and doors. Also, removing the places favored by the mice and making the place unsuitable for living in whether in the village, field or city helps to reduce the number of mice and accordingly the weasels feeding on them.

The mice traps can be used for hunting with using the appropriate taste which is fresh or liver meat, with a little zinc phosphide or a quick-acting pesticide added to the baits inside the trap.



Annex IX

(Minor crops)

Based on the role of the Agricultural Pesticides Committee included in the Agriculture Law No. 53 of 1966 and the related ministerial decrees, the latest one is the ministerial decree No. 974 of 2017.

The Committee works hard to cover all Egyptian crops with technical recommendations for agricultural pesticides in order to control agricultural pests in all its forms, with emphasis on the safe and effective use of pesticides to ensure the safe access of Egyptian food and the safety of the Egyptian environment. In this regard, the Committee reviewed all the crops and economic pests that affect them and the Committee has the recommendations of agricultural pesticides to control them, where it was recorded certain crops that are cultivated in areas less than 50 thousand feddans, The Committee considers the necessity and importance of the availability of recommendations to complement the pest management system in Egypt. The following are the crops and their cultivated areas in Egypt for each of them and suggested pesticides that can be considered for experimentation. In order to ensure that there are approved recommendations for all crops, the crops listed in each of the following items can be considered as a crop group so that the pesticide is recommended - in case of passing the promotion limits - on the crop group and not on a single crop:

There are crops cultivated in small areas less than 50 thousands Feddans. These crops hadn't a specific pest control program for the Feddans of their pests. The pesticide committee has developed a control program to put these pests under control.



Agricultural Pesticide Committee

a. Bulbous vegetables

The pests that may be affected and some of the proposed pesticides to control them

No	Crop	Area (in feddan)	The pests that may be affected and some of the proposed pesticides to control them					
			Insects	Pesticides	Diseases	Pesticides	Weeds	Herbicides
1.	Garlic	31570	Onion trips	Emanetecin benzoate- Pyridalil- Spirotoram/Spirotetramat	White rot	Tebuconazole	Selender-Wild Lesser-canary Ryegrasses	Oato- grass- Dentated
			The dry bulb mite	Chlorfenapyr -Spirotetramat	Downy mildew	Azoxystrobin – Difenconazole – Dimethomorph - Mandipropomid	Bishop's weed dock mustard goosefoot-Small-flowered mallow-Sour clover-Burr clover	Clethodim Fluazifop-P-butyl Butralin Fluroxypyr
			Onion maggot	Spinetoram - Spinosad	Leaf blight	Pyraclostrobin - Boscalid - Dimethomorph	-Prickly -Chicory -Wild Butralin	
			Garlic butterfly	Emanetecin benzoate – Lufenuron – <i>Bacillus thuringiensis</i>	Rust	Pyraclostrobin – Trifloxystrobin – Tetraconazole - Propiconazole		

b. Oil crops

The pests that may be affected and some of the proposed pesticides to control them

No	Crop	Area (in feddan)	The pests that may be affected and some of the proposed pesticides to control them					
			Insects	Pesticides	Diseases	Pesticides	Weeds	Herbicides
2.			White fly		Root rot	Fludioxonil – Tebuconazole – Flutolanil		
3.	Sesame	69838	Cotton leaf worm		Wilt		Common purslane- CockleBurr -Malta cross -Morning glory- Jungle rice-Large crabgrass -Signal grass	Pendimethalin -Butralin - Bentazon Fluazifop-P-butyl Clethodim
4.			death's Head Hawk moth					
5.			White fly	Acemiprid – Thiamethoxam – Pyrethozine- Emanetecine benzoate	leaf spot	Difenconazole – Fludioxonil		
6.			Aphid					
7.	Sunflower	15678	Cotton leaf worm		Charcoal rot	Thiram – Tolclofos methyl		
8.			Green bug			Trichoderma harzianum – Pyraclostrobin – Boscalid – Metiram		
	Total Area		85516					

c. Vegetable seeds

No	Crop	Area (in feddan)	The pests that may be affected and some of the proposed pesticides to control them				
			Insects	Pesticides	Diseases	Pesticides	Weeds
9.	Sweet potato	28401	Aphid	Pymetrozine - Flonicamid – Sulfoxostor - Thiamethoxam	Stem canker	Fludioxonil- Metalaxyll-M- Tebuconazole	
			Cotton leaf worm	Emamectin benzoate – Indoxacarb – Lufenuron – Methomyl - Teflubenzuron	Southern Blight	Fludioxonil – Flutolanil	Summer weeds: Common purslane- CockleBurr -Malta cross- Morning glory -Jungle rice -Large crabgrass- Signal grass
			White fly	Acetamiprid – Buprofezin - Thiamethoxam	Root - rot	Difenoconazole – Copper sulfate – Propiconazole	Pendimethal- in-Metribuz- in-Clethodim - Fluazifop-P- butyl
			Red spider mite	Abamectin – Chlorfenapy – Spirodiclofen - Pyridaben			
			Wireworms	Chlorpyrifos - Ethoprophos			
10.	Taro	6545	Mealy bug	Spirotetramat - Thiamethoxam	Root rot	Fludioxonil - Metalaxyll-M- Tebuconazole	Winter weeds: Selender-Wild oat-
			Red spider mite	Abamectin – Pyridaben – Spirodiclofen	leaf pot	Azoxystrobin - Tetraconazole – Epoxiconazole	Lesser-canary grass- Ryegrasses -Dentated Dock -Sow-thistle -Bishop's weed- Prickly dock- Chicory -Wild mustard- Sea beet-White goosefoot -Small-flowered mallow- Sour clover-Burr clover
						Oxyfluorfen Fluazifop-P- butyl Butralin - Metribuzin	
			Total Area	34946			

d. Radish vegetables

Agricultural Pesticide Committee



No	Crop	Area (in fed- dan)	The pests that may be affected and some of the proposed pesticides to control them				
			Insects	Pesticides	Diseases	Pesticides	Weeds
11.	Carrot	1877	Cotton leaf worm	Emanectin benzoate – Bacillus thuringiensis	Powdery mil- dew	Pyraclostrobin - Boscalid - Metiram – Azoxystrobin - Difenoconazole	Winter weeds:
			Gibbium psylloidea	Thiacloprid - Pyrimetazine - Indoxacarb	leaf pot	Difenoconazole - Azoxystrobin - Epoxiconazole – Tetraconazole	Selender-Wild oat- Lesser-canary grass-
			Red spider mite	Abamectin – Pyridaben - Spirodiclofen	Sclerotinia stem rot	Fludioxonil - Flutolanil – Fluazinam	Rye grasses -Dentated Ryegrasses
					Root-knot nematode	Ethoprophos – Fenamiphos – Abamectin	Dock -Sow-thistle- Bishop's weed -Prickly dock -Chicory -Wild mustard - Sea beet- - Clethodim
12.	Radish	908	Aphid	Flonicamid - Acetamiprid	Root rot	Fludioxonil - Tetraconazole – Tebuconazole - Difenoconazole	Metrizuzin
			White fly	Buprofezin – Abamectin – Thiamethoxam - Acetamiprid	Fusarium wilt	Fludioxonil – Flutolanil – MetalaxyM – Tebuconazole	-Small-flowered mallow-Sour clover-Burr clover
	Turnips	4373	Cabbage stem borer	Spinosad - Chlorthaniliprole	Sclerotinia stem rot	Fludioxonil - Fluazinam	Flutolanil
	Total Area	24068					

e. Cucurbits

No	Crop	Area (in feddan)	The pests that may be affected and some of the proposed pesticides to control them				
			Insects	Pesticides	Diseases	Pesticides	Weeds
13.	Melon pulp	22315	Aphid	Pymitrozine - Flonicamid -Acetamiprid -Pirimicarb	Downy mildew	Azoxystrobin - Dimethomorph -Difenoconazole -Mandipropamid	
14.	Shahd	7288	White fly	Buprofezin - Abamectin -Thiamethoxam - Acet-amiprid	Powdery mildew	Penconazole - Tetracconazole -Difenoconazole -Pyraclostrobin- Boscalid - Sulfur	Summer weeds: Common purslane- CockleBurr -Malta cross -Morning glory- Jungle rice -Large crabgrass -Signal grass
15.	Cucurbit	3947	Pumpkin fly	Spinosad	Gummy stem blight	Chlorothalonil - Difenoconazole - Pyraclostrobin - Dimethomorph	Pendimethalin- Metribuzin - Clethodim - Fluazifop-P-butyl
16.	Zucchini pulp	2506	Cotton leaf worm	Enamectin benzoate - <i>Bacillus thuringiensis</i> -Lefenuron - Indoxacarb			
17.	Pumpkin	314	Leaf miner	Cyromazine - Thiamethoxam	Winter weeds: Sleender-Wild oat- Lesser-canary grass- Ryegrasses -Dentated Dock -Sow-thistle -Bishop's weed -Prickly dock -Chicory -Wild mustard -Sea beet- White goosefoot-Small-flowered mallow-Sour clover-Burr clover	Oxyfluorfen Fluazifop- P-butyl Butralin - Metribuzin	
Total Area		23780					



Agricultural Pesticide Committee

f. Other vegetables

No	Crop	Area (in feddan)	The pests that may be affected and some of the proposed pesticides to control them				
			Insects	Pesticides	Diseases	Pesticides	Weeds
			White fly	Acetamiprid – Thiamethoxam – Dinotefuran – Buprofezin	Root rot & wilt	Fludioxonil – MetalaxyI M – Tebuconazole - Flutolanil	
			Cotton leaf worm	Emamectin benzoate – Lufenuron - Indoxacarb	Powdery mildew	Pyraclostrobin- Boscalid - Sulfur - Metiram - Azoxystrobin – Difenoconazole	Common purslane- CockleBurr -Malta cross- butyl
19.	Okra	11592	Pink and spin bollworms	Spinetoram	Flower blight	Difenoconazole – Pyraclostrobin – Dithianon – Metiram	Morning glory -Jungle rice- Large crabgrass -Signal grass
			Red spider mite	Abamectin- Pyridaben - Spirodiclofen	leaf pot	Propiconazole – Epoxiconazole – Copper sulfate	Pendimethalin Clethodim Butralin
			Leaf Hoppers (Jassids)	Sulfur	Root-knot nematode	Ethoprophos – Oxamyl – Abamectin – Paeclomy ceslilacinus	
			Aphid	Pymetrozine – Flonicamid – Pirimicarb – Acetamiprid	Root rot	Fludixonil - MetalaxyI-M – Flutolanil - Tebuconazole	Selender-Wild canary grass-Ryegrasses- Dentated Dock -Sow- thistle -Bishop's weed- Prickly dock -Chicory -Wild mustard -Sea beet-White goosefoot-Small-flowered mallow-Sour clover
20.	Artichoke	40841	Cotton leaf worm	Emamectin benzoate – Lufenuron – Indoxacarb - <i>Bacillus thuringiensis</i>	stem rot	Fludixonil – Tebuconazole – Tebuconazole	Fluazifop-P- butyl Pendimethalin Clethodim Butralin
			Vanessa cardui	Methomyl – Lufenuron - Indoxacarb			
			Safflower fly	Spinosad – Spinetoram			
	Total Area	52433					

g.

Fibers

The pests that may be affected and some of the proposed pesticides to control them						
No	Crop	Area (in feddan)	Insects	Pesticides	Diseases	Pesticides
					Weeds	Herbicides
21.	Flax	14404	Aphid	Pirimicarb - Methomyl - Pymerozine	Root rot	Triticonazole - Flutolanil
			Common flax	Dinotefuran - Pyridalil	Powdery mildev	Propiconazole - Cyproconazole
			Black cutworm	Teflubenzuron - Deltamethrin	Rust	Azoxystrobin - Cyflufenamid flowered mallow-Sour clover- Burr clover



Agricultural Pesticide Committee

h. Legumes

No	Crop	Area (in feddan)	The pests that may be affected and some of the proposed pesticides to control them					
			Insects	Pesticides	Diseases	Pesticides	Weeds	Herbicides
22.	Lentils	2510	Black cutworm	Lambda-cyhalothrin – Chlorpyrifos -	Root rot & wilt	Fludioxonil – Metalaxyl – Tebuconazole	Lentils–Fenugreek–Chickpea - Thermoses	
			Thrips	Spinetoram - Enamectin benzoate	Rust	Tetraconazole – Propiconazole	Selender- Wild oat-Lesser-canary grass–Ryegrasses- Dentated Dock -Sow-thistle- Bishop’s weed -Prickly dock- Chicory -Wild mustard -Sea beet–White flowered mallow–Sour clover–Burr clover	
			Leaf miner	Abamectin – Cyromazine - Thiamethoxam	Gray mold leaf pot	Pyraclostrobin – Boscalid – Dimeethomorph Difenoconazole - Azoxystrobin - Tetraconazole – Epoxiconazole	Pendimethalin- Fluazifop-P- butyl- Clethodim - Butralin	
23.	Fenugreek	8216	White fly	Pirimiphos methyl - Dioneteturon,	Cowpea Summer weeds:			
24.	Chickpeas	4522	Red spider mite	Abamectin	Common purslane -CockleBurr- Malta cross -Morning glory- Jungle rice -Large crabgrass- Signal grass			
25.	Cowpea	18264	Aphid	Pymetrozine : Flonicamid				
26.	Thermos	496	cowpea pod borer	Spinetoram – Methoxyfenozide				
Total Area			34008					

j. Vegetable leaf

The pests that may be affected and some of the proposed pesticides to control them						
No	Crop	Area (in feddan)	Insects	Pesticides	Diseases	Pesticides
30.	Lettuce	10744	Cotton leaf worm	Emaneectin benzoate – Indoxacarb - Lufenuron	Root rot	Fludioxonil – Tebuconazole
31.	Thermos	10484	Aphid	Pymetrozine – Flonicamid – Acetamiprid	Wilt	Difenconazole - Triticonazole
32.	parsley	5474	White fly	Thiamethoxam – Buprofezin - Acetamiprid	Sclerotinia stem rot	Fludioxonil – Fluazinam
33.	spinach	5284	Leaf miner	Cyromazine – Thiamethoxam	leaf pot azole – Epoxiconazole - Copper sulfate	Difenoconazole – Propicon-thistle -Bishop's weed-
34.	Dill	4411	Thrips	Spinetoram – Spirotetramat - Emaneectin benzoate	Powdery midew	Pyraclostrobin – Boscalid – Metiram - Azoxystrobin – Penconazole - Prochloraz
35.	Rocca	4092	Cabbage Flea Beetle	Emaneectin benzoate – Spinetoram	Downy mildew	Prickly dock -Chicory- Wild mustard -Sea beet-White goosefoot- Small-flowered mallow- Sour clover-Burr clover
36.	Egyptian leek	2194	Pegomya hyoscyami Beet	Thiamethoxam – Chlorpyrifos methyl (Leaf miner)	AZOXYSTROBIN – Dimehomorph-Copper oxychloride - Metalaxyl	Sunner weeds: Common purslane- CockleBurr -Malta cross-Morning glory -Jungle rice -Large crabgrass- Signal grass
37.	Leek	24	Onion fly	Spinetoram - Spinosad		
38.	Cactus (green – dry)	5354				
39.	Celery	150				
40.	Salt	61				
41.	mauve	55				
Total Area		48318				



Agricultural Pesticide Committee

K. Vegetables (cabbage - cauliflower - broccoli)

No	Crop	Area (in feddan)	The pests that may be affected and some of the proposed pesticides to control them				
			Insects	Pesticides	Diseases	Pesticides	Weeds
27.	cabbage	46137	Aphid	Pymetrozine - Flonicamid- Pirimicarb	Root rot & wilt	Fludioxonil – Difenoconazole – Triticonazole – Tebuconazole –	
			White fly	Buprofezin - Acetamiprid	Downy mildew	Azoxystrobin – Difenoconazole – Dimethomorph - Mandiproponid	Wild oat-Lesser-canary grass-Ryegrasses- Dactylis glomerata
			Cotton leaf worm	Thiamethoxam - Emanectin benzoate – Lufenuron – Indoxacarb	Powdery mildew	Pyraclostrobin – Boscalid- Azoxystrobin – Difenoconazole – Metiram	Pendimethalin Prickly dock-Chicory - Wild mustard -Sea thistle -Bishop's weed- Butralin – Metribuzin Clethodim
28.	cauliflower	13752	Cabbage stem borer	Chlorantraniliprole – Indoxacarb – Spinosad	Sclerotinia stem rot	Fludioxonil – Fluazinam – Tebuconazole	beet-White goosefoot- Small-flowered mallow- Sour clover-Burr clover -Fluazifop-P-butyl
29.	broccoli	519	Red spider mite	Abamectin – Pymetrozine – Spirodiclofen	Leaf spot	Copper sulfate - Spirotetramat	
			Cabbage white butterfly	Spinetoram - Methoxyfenozide			
	Total Area	60408					

L. Medicinal and aromatic plants

No	Crop	Area (in feddan)	The pests that may be affected and some of the proposed pesticides to control them				
			Insects	Pesticides	Diseases	Pesticides	Weeds
42.	Basil	141	Aphid	Pymetrozine - Flonicamid – Pirimicarb - Acetamiprid	Root rot & wilt	Flutolanil - Fludioxonil – Tebuconazole - <i>Bacillus subtilis</i>	
43.	Majororam	3425	Thrips	Spinetoram - Emamectin benzoate – Spirotetramat	Powdery mildew	Orange- oil – Sulfur – <i>Trichoderma harzianum</i> - <i>Bacillus megaterium</i>	Winter crops:
44.	Mint	2324	White fly	Buprofezin - Thiamethoxam – Acetamiprid	Downy mildew	Copper Hydroxide - Copper oxychloride - <i>Trichoderma album</i>	Majororam- Peppermint- Pelargonium graveolens
45.	Peppermint	1854	Mealy bug	Spirotetramat – Thiamethoxam – Mineral oil	leaf pot	Difenoconazole- Propiconazole – Tebuconazole - Copper sulfate	-Sage – Chamomile- Anise–Cumin–Black seed - Cloves
46.	Pelargonium graveolens	4565	Cotton leaf worm	Emamectin benzoate – Lufenuron - <i>Bacillus thuringiensis</i>	Rust	Pyraclostrobin – Tetraconazole - Epoxiconazole	Winter weeds: Selder- Wild oat- Lesser
47.	Lemon grass	551	common red spider mite	Hexythiazox – Abamectin – Pyridaben	Sclerotinia stem rot	Fludioxonil - Fluazinam	-canary grass- Ryegrasses- Dentated Dock -Sow-thistle -Bishop's weed- Prickly dock -Chicory- Wild mustard -Sea beet-White goosefoot- Small-flowered mallow- Sour clover-Burr clover Summer crops: Basil-Mint-Lemon grass-Thyme-Morenga-Henna-Hibiscus Summer weeds: Common purslane- CockleBurr -Livid amaranth-Prickly Sida -Matta cross -Jungle rice -Large crabgrass
48.	Thyme	532	Black cut-worm	Lambda cyhalothrin – Chlorpyrifos	Dry rot & stem rot	Toclofos methyl – Thiram – Fludioxonil - Metalaxyl-M -Tebuconazole	Pendimethalin – Butralin - Bentazon - Clethodim -Fluazifop-P-Butyl
49.		137	Leaf miner	Abamectin – Cyromazine – Thiamethoxam			
50.	Sage leaves						
51.	Henna	842	Moringa	Cabbage Flea Beetle	Emamectin benzoate – Spinetoram		
52.	Chamomile	15071	Craway				
53.		14653	Hibiscus				
54.		12051	Fennel				
55.		4355	Anise				
56.		2816	Cumin				
57.		2587	Black seed				
59.	Cloves	3					
Total Area		66829					

M. Floriculture

Agricultural Pesticide Committee



The Pests that may be affected and some of the proposed pesticides to control them						
No	Crop	Area (in feddan)	Insects	Pesticides	Diseases	Pesticides
						Weeds
60.	Rose	98	Aphid	Pymetrozine - Flonicamid - Pirimicarb - Acetamiprid	Root rot, wilt and stem rot	Fludioxonil -- Metalaxyl M -- Tebuconazole - Flutolanil
61.	Dahlia	50	Thrips	Spinetoram - Emanetin benzoate - Spirotetramat	Leaf spot & flower blight	Difenoconazole - Propiconazole - Aoxystrobin - Epoxiconazole
62.	Winter violet	41	White fly	Buprofezin - Thiamethoxam - Acetamiprid	Powdery mildew	Orange- oil – Sulfur - <i>Trichoderma harzianum</i> - <i>Bacillus megaterium</i>
63.	Bird of paradise	15	Mealy bug	Spirotetramat – Thiamethoxam – Mineral oil	Rust	Pyraclostrobin – Tetraconazole - Epoxiconazole
64.	Chrysanthemum (winter)	1195	Scale insects	Buprofezin – Pyriproxyfen – Mineral oil	Nematode	Ethoprophos – Oxamyl - Cadusafos
65.	Jasmine (Summer)	403	Tropinota squalida Scop	Chlorpyrifos - Ethoprophos	Blight of Butrites	Pyraclostrobin – Boscalid – Dimethomorph - Difenoconazole
66.	Arola	10	Leaf miner	Abamectin – Cyromazine - Thiamethoxam	Fusarium wilt	Summer weeds: Common purslane- CockleBurr -Smooth pigweed–Prickly Sida -Malta cross-Sun spurge -Jungle rice- Large crabgrass
67.	Gladus	7	common red spider mite	Hexythiazox – Abamectin - Pyridaben	Fludioxonil – Metalaxyl-M - Flutolanil - Tetraconazole	-Fluazifop-P- butyl
68.	Gypsophila	6				
69.	Asparagus	4				
70.	Solidago	3				
71.	Cloves	4				
Total Area		1836				

Reference of areas: Bulletin of the Economic Affairs Sector, Ministry of Agriculture 2016-2017