

# **Unit D: Controlling Pests and Diseases in the Orchard**

## **Lesson 2: Using Pesticides in the Orchard**

# Terms

- Oral exposure
- Dermal exposure
- Inhalation exposure
- Eye exposure
- Applicator
- Toxicity
- Organic production

I. Controlling pests in the orchard will improve fruit quality and yield. The main concern is with insects which are killed with insecticides. The orchard grower needs to be very careful around these chemicals.

A. Before a pesticide can harm anyone, the person must first be exposed. There are four main routes that a pesticide can enter the body. They are:

- 1. Oral exposure**—(through the mouth and digestive system) may occur because of an accident, but is more likely to be the result of carelessness.
  - a. Blowing out a plugged nozzle with your mouth or smoking or eating without washing contaminated hands can result in oral exposure.
- 2. Dermal exposure**—(through the skin) This type of exposure can occur anytime a pesticide is mixed, applied, or handled.
  - a. The severity of dermal exposure depends on the dermal toxicity of the material, the rate of absorption through the skin, the size of the skin area contaminated, and the length of time the material is in contact with the skin.

- 3. Inhalation exposure**—(through the nose and respiratory system) This type of exposure results from breathing pesticide vapors, dusts, or spray particles.
  - a. In some cases, inhalation can be more serious than oral or dermal exposure due to the uptake of blood via the lungs and other membranes.
- 4. Eye exposure**—(through the eye) Eyes are very sensitive to most pesticide materials.
  - a. Eye protection should be worn when working with any pesticide.

II. Pesticides are a useful and productive tool used in production agriculture and horticulture; however, pesticides can pollute the environment and contaminate water and food supplies if not used properly. These chemicals can be dangerous to the applicator and other people and animals in the area if a few simple safety practices are not followed. The following is a general list of safety practices to follow when using pesticides.

- A. Know the pesticide—The **applicator** (person who applies the pesticide) must be informed about all aspects of the chemical.
  - 1. Labels on the containers provide much of the needed information. Use the pesticide according to the directions.
  - 2. Do not use pesticides for uses that they were not intended for.
  - 3. Use a pesticide with low **toxicity**—Toxicity refers to how poisonous the pesticide is.
  - 4. Use the pesticide that will do what needs to be done, but that is no stronger than needed.

- B. Use pesticides only when needed—  
Pesticides should only be used when pests need to be controlled.
  - 1. Using a pesticide without need damages the environment and wastes money.
- C. Do not contaminate resources—Pesticides can pollute the environment.
  - 1. They should never be dumped into streams or on the ground.
  - 2. Leftover pesticides should be disposed of properly by ensuring they do not leak into the ground.

- D. Wear protective clothing—Applicators need to protect themselves from pesticides when they are applying them.
  - 1. They should always wear protective clothing such as rubber gloves, a respirator, and any other protective gear called for on the label.
  - 2. The clothing should be properly washed after it is worn.
  - 3. Dispose of empty containers properly—Empty containers should never be thrown into creeks or gullies.
  - 4. Some manufacturers take empty containers back.
  - 5. Generally, empty containers should be rinsed out three times and returned for recycling or sent to an approved solid waste facility.

- E. Apply in good weather—Pesticides should be used when they will be most effective.
  - 1. Wind causes pesticides to drift. Sometimes drifting pesticides can damage other crops, water, or livestock.
- F. Use the correct equipment—This includes funnels to help in pouring, measuring, and mixing.
  - 1. Spraying equipment should be adjusted properly so it applies no more than is needed.
  - 2. This is important not only to protect the environment, but to save the producer as well.
- G. Know the right emergency measures—Anyone who applies, or is around people who are applying pesticides should know what to do in case of an accident.

III. There are hundreds of insects that can affect the growth and yield of fruit and vegetable crops. These pests can cause damage in a number of different ways.

- A. The most obvious way insects can affect plants is by consuming the foliage or fruit of the plant.
  - 1. This can not only affect the growth of the plant, but also result in poor quality and contamination of the edible parts of the fruit or vegetable crop.
  - 2. Insects can also do damage by piercing the plant and sucking nutrients from it. Insects also spread disease.
  - 3. Finally, the consumer does generally not tolerate the presence of insects on or in fruit or vegetables.
  - 4. Most products must be free of insect pests to be marketable.

B. Control of insect pests can be accomplished by using a number of practices. These include the following:

1. Chemical or biological insecticides.

a. Organic methods are also an option in fruit production.

i. **Organic production** does not use chemicals to control insects, weeds or diseases but rather relies on natural ingredients like soaps and oils to reduce the populations or prevent further outbreaks.

ii. There are numerous mixes used which use ingredients like liquid soap, essential oils from citrus fruits, and even beer.

iii. Recipes for these organic pest controls can be found on the internet or in books.

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2. Scheduling plantings to avoid times when insects are present in greatest number.
3. Use resistant or tolerant varieties.
4. Enhancement of beneficial insect populations.

# Review/Summary

1. What are the types of pesticide exposure?
2. What are some safety practices that should be followed when applying pesticides?
3. What are some ways pests can be controlled in the orchard.