

## **Pawpaw Pests and Diseases**

### **Fruit fly**

The adults deposit their eggs under the skin of mature and ripening fruit. Some fruit flies lay eggs on green pawpaw, but most of the eggs die due to the latex secreted when fruits are punctured by females while laying eggs. The eggs hatch into maggots which feed on the flesh of the fruit causing it to rot. This may cause fruit fall.

Spray PENTAGON 50EC 10ml/20l or LEXUS 247SC 8ml/20l or PRESENTO 200SP 5g/20l

### **Red spider mites**

They suck plant sap and this affects the general performance of the plant, e.g., poor plant growth, leaf drop, production of fruits with blemishes, etc.

Severe infestations occur during prolonged dry spells.

Spray ALONZE 50EC 5ml/20l or BAZOOKA 18EC 10ml/20l

### **Mealy bugs**

They suck sap from tender leaves, petioles and fruits. Severely attacked leaves and fruits drop. They also excrete honey dew on which sooty mold develops.

Spray KINGCODE ELITE 50EC 10ml/20l or PRESENTO 200SP 5g/20l or LOYALTY 700WDG 5g/20l

### **Thrips**

These are sap-sucking insects which attack and puncture shoots, leaves and flower buds as they feed. Severe infestation can cause flower abortion.

Spray ALONZE 50EC 5ml/20l or KINGCODE ELITE 50EC 10ml/20l or DEFENDER 25EC 40ml/20l

### **Whiteflies**

These are white sap-sucking pests whose infestation causes curling and distortion of leaves and an eventually drop.

They are also vectors of viral infections.

Spray as for Thrips above

### **Scales**

They cause damage by feeding on shoots, leaves and fruits.

As they feed, they release honey dew which facilitates the development of sooty mold.

Spray as for Mealy Bugs above

### **Nematodes**

These are small, microscopic wormlike parasites which feed on the plant roots resulting into formation of galls/swellings.

Infestation may cause the plant to topple over due to declined vigour.

Drench soil with ALONZE 50EC 10ml/20l or always mix basal fertilizer (50kg) with ADVENTURE 0.5GR 2kg.

## **Birds**

They feed mostly on the ripe fruits.

To prevent this, harvest fruits immediately they attain physiological maturity.

## **Diseases**

### **Damping off**

This is a soil borne infection which causes rotting of roots and stems leading to yellowing, leaf and fruit fall and subsequent death and toppling of the plant.

Drench soil with PYRAMID 700WP 100g/20l or CHANCETYL ELITE 800WDG 100g/20l.

### **Papaya Ring Spot**

This is a viral infection majorly spread by aphids or be mechanically transmitted. Infection causes mottling of leaves and vein clearing. In severe cases, the lobes of the leaves become distorted reducing the life size.

On the fruit, dark circles/rings are seen which remain green when the fruit ripens. Severely infected plants do not flower and die young.

Control aphids by spraying as described above in the Pests section.

### **Powdery mildew**

Plant parts are covered with whitish fungal growth.

Infection causes distortion of leaves and shoots. As the fruit develops, the white powder disappears leaving it grey-scared.

Premature fruit fall may occur.

Spray RANSOM 600WP 15g/20l or DUCASSE 250EC 20ml/20l

### **Anthracnose**

Infection is characterized by brown to black sunken lesions on the plant parts. Infected fruits rot.

Spray as for Powdery Mildew above.

### **Bunchy top disease**

This is a viral infection spread by leafhoppers whose symptoms include oil streaks on stem, yellowing of upper leaves, bunching and stunting of top leaves and death of plant top.

Control vectors (leafhoppers) as for whiteflies above in the Pests Section

### **Leaf spot**

Symptoms starts as small yellow spots which expand. In severe cases, the leaf drops. This greatly affects the performance of the plant.

Spray as for Anthracnose above.

### **Papaya mosaic**

This is a viral disease spread by aphids, which is more serious on young plants. Leaves show symptoms of reduced size, patches of dark-green tissue alternating with yellow-green.

Infected plants have reduced growth and fruits develop water soaked lesions with central solid spots.

Control aphids as described in the Pests section

### **Leaf curl**

This infection is transmitted by whiteflies and causes curling, crinkling, vein clearing& thickening and deformation of leaves. Defoliation occurs in severe cases.

Control whiteflies as described in the Pests section

### **Phytophthora stem & fruit rot**

Infection is characterized by water soaked lesions on unripe fruits and stems. Mature fruits are covered by white fungal growth.

Spray MILLIONAIRE 690WDG 40g/20l or FORTRESS GOLD 720WP 40g/20l

## **Nutrition & Nutritional Deficiencies**

Papaya nutrition is key for a year long high and quality fruit production.

Both basal and foliar fertilizers should be applied in order to ensure that the plants are supplied with both macro and micronutrient elements..

Basal fertilizers are absorbed by the plants through the roots and include DAP, CAN, NPK, UREA, among others. Farmyard manure could also be added, depending on the organic matter of the soil.

Foliar fertilizers are absorbed by the plants through the foliage and include OPTIMIZER, DIMIPHITE, ZINC GOLD, LAVENDER, GOLDCHANCE SERIES, VITABOR GOLD, among others.

Sufficient nutrient supply prevent deficiencies which weaken the plants making them susceptible to attack by pathogens.

### **Phosphorous deficiency**

Deficiency stops plant elongation and leaves become irregularly necrotic with a characteristic blue or dark green colour. Production is greatly reduced.

Correction; spray DIMIPHITE 30ml/20l or LAVENDER 20ml/20l

### **Potassium deficiency**

Leaf size reduces, with its margin being necrotic and fruit shape is distorted. In severe cases, fruits and leaves drop.

Correction; spray DIMIPHITE 30ml/20l or GOLDCHANCE SUPER FLOWERS & FRUITS 50g/20l

### **Nitrogen deficiency**

Leaf petioles become thin, short and compressed. Stunted growth is noted with leaves becoming pale and reduced. These lead to decreased yields.

Correction; spray LAVENDER 20ml/20l or GOLDCHANCE SUPER GROWTH 50g/20l or

### **Boron deficiency**

Deficiency first appears in shoot apical meristems and in fruits, majorly causing deformation. Mature plants are dwarfed and fruit set is greatly reduced.

In severe cases, surface of fruits is covered with lumps.

Correction; spray VITABOR GOLD 20ml/20l

### **Zinc deficiency**

Deficiency causes interveinal yellowing and malformation of leaves, rosetting of leaves thus reducing photosynthetic area. Young plants may die off.

Correction; Spray ZINC GOLD 10ml/20l

### **Maturity, Harvesting & Post-Harvest Handling**

Papaya plants start flowering 5-8 months after planting and fruits are ready for harvesting approximately 2 months after flowering stage. Maturity however depends on the variety. Harvesting is done by cutting off the fruit from the tree.

Note that fruits do not mature at the same time and thus only the mature ones should be harvested.

It is recommended that fruits be harvested just before ripening.

Fruits should be handled carefully to avoid bruises which could create avenues for entry of storage pathogens.

The harvested fruits should be washed in order to remove any substances which could affect its shelf life.

Bruised or fruits with any damages should not be stored together with the good ones.

Ripe fruits are rich in vitamins and other nutritive elements and are commonly used for desserts or processed into other products.

Yields per tree vary from 30 to 150 fruits annually, giving 35 to 50 tons of fruit per ha per year. A papaya plantation can be productive for over 10 years but the economical period is the first 3 to 4 years. It is therefore advisable to renew the plantation every 4 years.

### **NOTE**

- Whenever doing foliar sprays, always mix the product(s) with INTEGRA 3ml/20l. This is a sticker, spreader and penetrant which helps in improving the products' efficacy, giving more effective results.
- JAMBO CLEAN 100ml/20l is used to clean sooty mold which results after infestation with sap-sucking pests like mealybugs.
- CADILLAC 800WP is a preventive fungicide which should be used before a fungal infection has begun on the plant.
- OPTIMIZER 10ml/20l is a superior foliar fertilizer which helps in management of plant stress during adverse climatic conditions, plant immune build up, prevention of flower abortion, improvement of fruit quality & quantity among other benefits. It provides both macro and micronutrients and growth hormones to the plants.
- Alternation of various chemicals (especially fungicides and insecticides) throughout a crop's season help in preventing resistance build-up by the pest, which could happen if only a single chemical was used.
- All basal fertilizers and manures should be mixed with HUMIPower, which adds organic matter into the soil, improves nutrient uptake, stimulates beneficial microbial activities, promotes electrochemical balance and stimulates plant's development among other benefits.