LEC .30 APPLE - SPECIAL CULTURAL OPERATIONS, PHYSIOLOGICAL DISORDERS, PESTS AND DISEASES, MANAGEMENT PRACTICES

Special cultural operations

The drip or trickle irrigation system has high water use efficiency in apples. It also suits the tree in hill slopes. Mulching can be done with straw, hay or sawdust and other organic matter. Weed control can be achieved by application or herbicide such as Pitezin (Atrazine + Simazine + Propazine) @ 8 – 10 kg/ha, after weed emergence in 1.5 M band along tree rows. Nearer to rootzone littering of straw is advised to maintain organic matter and earth warm activity. Since herbicide can result in a significant reduction of earthworm population.

When there is chilling deficiency , the bud break will be poor. For bud break, application of Sandolin – A (Dinitro Ortho cresol) at 0.5% in 2% mineral oil emulsion during January is recommended. After bud break, flowring and petal fall. Alar @ 3000 ppm is applies which will encourage the duration of flowering.

To prevent fruit drop, AVG (Amino ethoxy Vinyl Glycine) 200 pm is sprayed which can increase the fruit set to 10 fold when applies between pink and petal fall.

Plant protection

Pests

1. Aphids (*Eriosoma lanigerum* and *Aphis pomi*)

Symptoms

They feed on new wood and roots to farm galls. Cold and wet condition favour the development of this pest.

Management

1. Destruction of eggs before hatching should be done by spraying tar oil or DNOC – petroleum oil, thoroughly wetting the bark of the tree. Spraying of organophosphorous insecticides (malathion 0.2%, phosphomidon 0.2% or dimethoate 0.2%) at green cluster stage will be effective.
2. Use wooly aphid resistant rootstocks like Northern spy, Robusta - 5
3. Its main natural enemy, are the parastoid, *Aphelinus mali* is an important control agent.

2. **Blossom thrips (*Thrips flavus*)**

Symptoms

The attacked flowers show withering symptoms, as a result either the fruits do not set or may fall off in the early stage of development. Heavily infested bloom produces distorted flowers that open on one side. Excreta are often deposited near the feeding site, which provides a suitable site for fungal infection.

Management

Chrysopa sp. And lady-bird beetle (*Coccinella septumpunctata*) are the most voracious predators of thrips.

Pre bloom spray at green tip stage with fenetrothion (-0.05%) reduces the population of thrips.

3. Red spider mites (Panoychus ulmi)

symptoms

the mites suck sap from the leaves, which may turn bronze. In severe infestation. the growth of the plant is markedly reduced.

Management

The component of integrated management of red spider mites is the regulation of predators *Typhlodromus pyri* and *Amblyseius andersoni*

Diseases

1. apple scab (Venturia ineequalis)

symptoms

velvety brown to olive green powdery lesions which turn mousy black with age, appear on the leaves and lead to premature yellowing of leaves, defoliation and fruit drop.

Scab spots n fruit results in misshapen and knotty fruits. Fissures or cracks develop in the scabbed areas which allow the entry of other pathogens, causing rot of fruit.

Management

Spray schedule

Spray No.	Tree stage	Fungicide/ 100lit of water
1.	Silver tip to green tip	Captafol (300g)/mancozeb (400g/ captan 50 WP (400g)
2.	Pink bud stage	Mancozeb (300g)
3.	Fruit set (pea stage)	Captan 50 WP (300g)
4.	Petal fall	Thiophanate methyl (50g)/ carbendazim (50g)
5.	Fruit set	Mancozeb (300g)
6.	Repeat fungicide of 5^{th} spray after 14 days	
7.	Pre harvest (20 – 25 days before)	Captafol (150g)/ mancozeb (300g)

2. Powdery mildew (*Podossphaera leucotricha*)

Symptoms

whitish powdery growth develops on both sides of leaves and twigs. The affected leaves are desorted in shape and small in size; become hard and brittle. The powdery coating on twigs finally disappears and a brown. Felt – like covering with black fruiting bodies is seen, in case of severe infection, leaf fall and premature fruit drop may occur. The young infected fruits show signs of rusting.

Management

Destruction of over wintering fungus structures reduction of inoculam by pruning shoots. Spraying triadimephon (0.05%) or pyrazophos (0.021%).

Harvest and yield

Fully mature when start developing colour can be harvested. The normal yield ranges from 100 – 150 tonnes/ ha in medium density planting.