IMPORTANT DISEASES OF CASHEW AND THEIR CONTROL

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As in any other crop, one of the factors that limit the production of cashewnut in India is the attack by numerous pests and diseases. However, compared to the intensity of damage caused by pests, the magnitude of the disease problem is very low. A thorough knowledge of the symptoms produced by the disease, their causative agents, predisposing factors, etc. are important for evolving effective control schedules against them. Hence an attempt is made here to give a brief description of these. Though more than two dozens of fungi have been recorded on cashew, those of economic importance are only a few. The important diseases and their control measures are given below.

Inflorescence Blight

This is the most serious problem in cashew, especially in the West Coast. The characteristic symptoms are, as the very name indicates, the drying of floral parts. In addition to inflorescences, young shoots are also affected presenting scorched up symptoms.

Though it was presumed earlier that the malady was caused by combined attack by tea mosquito, *Helopeltis antonii* and fungi like *Gloeosporium mangiferae* and *Phompopsis anacardii*, and as such a combination spray with an insecticide and a fungicide was recommended for the control of the disease, investigations conducted recently at Central Plantation Crops Research Institute, Kasaragod showed that the disease was primarily caused by tea mosquito and the fungi associated with the malady were only secondary saprophytic colonizers. This finding is significant in that it helps in eliminating the fungicide from the spray schedule thereby reducing the spraying cost. The blight can be effectively controlled by spraying endosulfan 0.05 per cent at the time of emergence of new shoots and inflorescences and at fruit set.

A floral shoot die back has been reported from Nigeria recently. It is caused by the fungus *Lasiodiplodia theobromae* (=*Botryodiplodia theobromae*). Withering of petals and other floral parts followed by a gradual die back of the floral branches are the symptoms of the disease. Damage due to some insects predispose the peduncles to infection by the fungus.

Pink disease or die back

The disease is caused by the fungus *Corticium salmonicolor* (=*Pellicularia salmonicolor*) and occurs during the South West monsoon period. The branches infected by the fungus show white or pinkish growth on the bark. The fungus penetrates deep into the tissues resulting in the death of the shoot. At the end of the monsoon, the fungus can be seen on the branches as a film of silky threads. This is followed by splitting and peeling off of the bark. The affected shoot dries up from tip downwards and hence the name die-back. At times, the fungus causes severe stem bleeding. The mycelium which is silvery white at first, turns to pink in colour in later stages. The pink colouration is due to the presence of asexual spores in mass. The spores germinate in the presence of water and form the infective propagules. As a measure of control, the affected branches are to be pruned below the point of infection and destroyed preferably by burning, the cut and surface of the live branch is protected by application of Bordeaux paste and prophylactic sprays with Bordeaux mixture 1 per cent are given twice in May-June and October. Application of vitavax 0.1 per cent at the lesion site after scraping off the affected tissues controls the stem bleeding disease.

Damping off of Seedlings

The disease occurs in nursery beds or in nursery bags where poor drainage conditions prevail. Severe loss in the nursery was reported from Maharashtra earlier due to the disease. Roots or collar regions or both are involved in the attack. The disease was found to be caused by different fungi in different cashew growing states. Thus fungi like *Fusarium* sp., *Pythium* sp., *Phytophthera palmivora*, *Cylindrocladium scoparium* and *Selerotium rolfsii* were reported as pathogens in Kerala, Karnataka, Tamil Nadu, Andhra Pradesh and Maharashtra. The fungus *Pythium ultimum* causes severe root rotting of seedlings in Nigeria.

Provision of sufficient drainage conditions in the nursery beds/nursery bags and drenching them with organo-mercurial fungicides (0.1 per cent) or 1 per cent Bordeaux mixture are effective in controlling the disease. In Nigeria, incorporation of dexon in the soil at the rate of 113.6 kg/ha has been reported to control the disease.

Anthracnose Disease

This is also called 'seerai' in Tamil Nadu and was reported in epiphytotic form from Trichi in 1965. In

Brazil, anthracnose disease causes severe economic loss to the crop. The pathogen involved is *Collototrichum gloeosperiodes* (=*Gleosporium mangiferae*). The fungus infects tender leaves, twigs, inflorescences, nuts and apples. In the early stage, the attack is seen as shiny water soaked lesions which later turn to reddish-brown. A resinous exudation is seen at the lesion site. The lesions enlarge in size, the affected tender leaves crinkle and nuts and apples become shrivelled. The inflorescences become black as a result of attack. High humidity or rainfall is presumed to predispose the plant to infection as the disease is most virulent when rainfall coincides with the flowering season. Removal of affected parts of the plant, spraying the plants with Bordeaux mixture on Dithane M-45 and provision of wind breaks by growing tall trees like *Casuarina*, *Eucalyptus*, etc. to arrest the spread of the disease through windborne spores have been suggested to control the disease.

In addtion to the above major diseases, there are some minor diseases which at times occur in sporadic cases inflicting serious damages.

Shoot and leaf fall. The causal organism is *Phytophthora nicotianae* var. *nicotianae*. The disease occurs during the South West monsoon period as black linear lesions on the stem. The disease can be prevented by spraying Bordeaux mixture.

Decline in cashewnut. The disease is caused by *Pythium spinosum* affecting the fibrous roots. The affected trees die in 2-3 years after infection. In the initial stages defoliation and drying of twigs are noticed. Application of cheshunt compound in the base soil controls the disease.

Leaf spots. Many types of leaf spots have been reported on cashew: Grey blight (*Pestalotia dichaeta* and *P. microsprao*), red leaf spot (*Phyllosticta* s.p), brown leaf spot (*Collototrichum gloeosperiodes*) ferrugineous spot (*Phomatospera anacardicola*), red rust caused by an alga (*Cephaleuros mycoides*), leaf spot/rot (*Cylindrocladium quinquiseptatum*), sooty mould (*Capnodium* sp.) and leaf and vein blight (*Collototrichum* sp.). The leaf spots can be controlled by spraying Bordeaux mixture 1 per cent or zineb 0.2 per cent. Sooty mould can be controlled effectively spraying fish oil resin soap 1.5 kg in 100 l water followed by 2 per cent starch solution.

Powdery mildew. Cashew blossoms are affected by the fungus *Oidium* sp. in Maharashtra during cloudy days resulting in reduced fruit set. In Brazil, the pathogen is identified on *O. anacardii* and is found to attack leaves, shoots in addition to inflorescences. In severely attacked trees, the leaves become shrivelled and dry. Dusting of sulphur was recommended to control the disease.