

ANTHRACNOSE AND PHYLLODY DISEASES OF BLACK PEPPER IN INDIA

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Although about 17 diseases have been recorded in India both major and minor, two diseases which were considered negligible viz. Leaf disease and anthracnose are gaining importance because of the damage they cause to black pepper.

Anthracnose : *Colletotrichum gloeosporioides*, *Colletotrichum* sp.

SYMPTOM

Colletotrichum gloeosporioides causes yellowish brown angular lesions on the leaves and also infect berries at different stages of the development. If infection occurs at the early stages of berry development further development is arrested. When infection occurs on mature or semi mature berries a crack develops on the berry.

A new type of anthracnose disease is noticed in high altitudes of Kerala and Karnataka especially in Wynad and Coorg districts. The infection causes reddish brown round lesions both on semi mature and tender leaves. When it infects in severe form the leaves become distorted and crinkled. It also infects tender stems causing occasional blighting. The most important is the spike infection causing large scale spike shedding during May - June period before the onset of the heavy monsoon : spike shedding ranges from 5 - 25 causing considerable loss.

ETIOLOGY AND EPIDEMIOLOGY

In view of its minor incidence, earlier no detailed studies were carried out. Infection is noticed in mild

form through out the year. Infection of *C. gloeosporioides* is seen in severe form during September - October period. However the new leaf spot disease caused by *Colletotrichum* sp. causes greater damage during May - July period resulting in heavy spike shedding. The leaf spots are noticed on older leaves in a milder farm through out the year. This would ensure the presence of inoculum through out the year. The infection is also noticed in coconut based mixed cropping system when black pepper becomes one of the main components of the system. Considerable variation in severity was noticed in different varieties.

DISEASE MANAGEMENT

No detailed studies have been carried out. However, the premonsoon foliar spraying with 1% bordeaux mixture could check the infection effectively. According to the planters in Corg it is very effectively if done at a correct time especially coinciding with spike emergence.

However, detailed studies are warranted on this to understand its epidemiology, especially the nature of the survival and also on the compara-

tive efficacy of fungicide in order to achieve cheap and effective agrochemical compatible with biocontrol agents. This is a necessity to carry out studies on phyllosphere of black pepper to identify native organism which are effective against *Colletotrichum* spp. as biocontrol agents.

SPIKE SHEDDING

Apart from spike shedding caused by *Colletotrichum* spp. *Phytophthora capsici* and also to some extent due to flea beetle (*Longitarsus nigripennis*), spike shedding is also noticed during August - September period which appears to be a problem

PHYLLODY DISEASE

This is a new malady recorded in isolated pockets in Wynad district of Kerala and not in other areas where pepper is grown.

SYMPTOM

Malformation of spike is the main symptom. Both normal and malformed spikes are noticed in the same vines. The affected spikes appear like a green brush with conversion of all the flower into leaf like structures

showing varying degrees of abortion. A malformed bud also develops into a miniature fruiting laterals. In advanced stage of infection the leaves become small with pale yellowish colour and aggregate into tufts giving a witches broom appearance. Gradual reduction in the size and productivity is noticed resulting in decline of the affected vines.

ETIOLOGY AND EPIDEMIOLOGY

Presence of MLO's in the phloem tissue of the affected spikes incates the MLO etiology. However detailed stuides are warranted on this. Leaf hoppers association has been noticed with this and their role is yet to be ascertained on the transmission of the disease.

LITTLE LEAF DISEASE

The disease was noticed sporadically in few garden both in Idukky and Wynad districs. It was first noticed in a Govt' Nursery at Neriamangalam in Idukky.

SYMPTOMS

The leaves of the affected plants becomes small, leathery and occassionally wrinkled. The internodal distance of the branches become shorter and a telescoping effect of the shoot is noticed forming tubh of leaves. Both healthy and diseased branches are noticed.

ETIOLOGY AND EPIDEMIOLOGY

The present studies did'nt indicate any clue regarding its etiology. Leaf hopper and thrips are associated with the disease. High population of hoppers are noticed on the *Erythrina indica* the standard of black pepper. The leaf hoppers are yet to be identified and their role in the disease etiology is yet to be established.

Foliar sprays with micronutritiens with zinc and molybdenum did not alleviate the symptom these ruling out the possibility of the nutrient deficiency. Rooted cuttings raised from the runner shoots of the affected

plants clearly showed the typical symptoms, thereby indicating its systematic nature, detailed studies are in progress on the etiology and epidemiology.

DISEASE MANAGEMENT OF PHYLLODY AND LITTLE LEAF DISEASES

Since both Phyllody and little leaf disease are known to be systematic

diseases, chemical control measures would be ineffective. In order to check their further spread it is necessary to resort to their gradual eradication which is practical. Eradication of phyllody affected plants in Wynad resulted in gradual disappearance since their was restricted to a small pockets insect transmission is established, controlling the vector would be effective,. Further studies are in progress on this.