

STUNTED (Little Leaf) AND PHYLLODY DISEASES OF BLACK PEPPER



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STUNTED DISEASE (Little leaf disease):

The disease was first noticed in black pepper nursery at District Agricultural Farm, Neriamangalam, Idukki, Kerala, during 1975. A similar disease was noticed in Pulpally of Wynad region in 1978 during routine surveys made by Scientists of National Research Centre for Spices (erstwhile CPCRI Regional Station), Calicut. Disease of similar nature was reported from Sri Lanka, Indonesia and Malaysia. Investigations are underway to identify the causal agent(s).



Chlorotic, leathery and crinkled leaves

Symptoms:

Leaves of affected vines appear small, crinkled, brittle, leathery and chlorotic patches/streaks are also noticed. In severe cases, the leaves become abnormally narrow and give a sickle shaped appearance. Intense interveinal chlorosis of leaves is also noticed. The internodes of vines become abnormally short leading to typical stunting of plants. Because of bunching of leaves and branches, the affected branches give a typical witches broom appearance in advanced stages.



Narrow, sickle shaped leaves and stunting symptoms

Nature of the disease :

Fully and partially disease affected vines are noticed in the same garden. In case of partially affected vines, both healthy shoots free from any disease symptoms and also branches with little leaf symptoms are observed. Fungal and bacterial pathogens could not be isolated from roots and shoots of affected plants. Cuttings raised from infected branches showed typical symptoms indicating its systemic nature and disease transmission through cuttings. Present investigations carried so far indicate that it is caused by a virus. Association of insects (thrips aphids, bugs and Jassids) is noticed with infected plants. However, their role as vectors of the disease spread is yet to be established. The disease spreads slowly and death of the affected plants is rare. They continue to decline and remain unproductive. Spraying of infected vines with zinc sulphate did not alleviate the symptoms.

PHYLLODY DISEASE:

This is also another disease, the causal agents of which are not known (disease of unknown etiology). This was recorded during 1986 in Puthady area of Wynad district of Kerala. The disease appears to be slightly different from little leaf disease.

Symptoms :

The diseased vines exhibit varying degrees of malformation of spikes and flowers. The affected spikes show elongated stalk and flowers show varying degrees

of abortion. The aborted flowers in a spike get transformed into narrow leaflike structures giving an appearance of a brush. In advanced stages, leaves of affected vines become small and chlorotic. Flower buds also develop into mini fruiting laterals with nodes and internodes. The berries in the affected spikes appear oval instead of round. Like stunted disease both healthy and infected branches are seen in a single vine.



Phyllody symptoms—malformation of spikes

Causal agent :

Association of jassids with diseased vines was noticed. Electronmicroscopic studies with affected spikes showed presence of mycoplasma like organisms (MLO's) in the sieve elements, indicating their possible involvement in disease syndrome.

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Disease management :

Since etiology of these two diseases is yet to be established, the measures that could effectively check the disease spread are of relevance.

1. Raising cuttings from diseased vines and also normal vines from infected gardens should be avoided.
2. Such diseased planting materials in nurseries should be separated and destroyed.
3. Infected vines in the garden should be uprooted and burnt, to reduce the disease spread, since such vines serve as source of inoculum.
4. Movement of planting materials from infected regions to disease free zones should be avoided.

Further studies on etiology, nature of spread, role of insect vectors if any, and also the effect of tetracyclines and zinc sulphate and other micronutrients on alleviation of symptoms of these two diseases are in progress.

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