Unsolicited Visitors of Monsoon

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Black pepper is one of the signature spices, which etched the footprint of Indian sub-continent in the global spice market. It has not only spiced up the culinary climate in the world, but also is much in demand for traditional medical formulations. Black pepper holds an unparalleled position in trade and commerce compared to other export-oriented spices.

Having originated in the lap of evergreen forests of Western Ghats, this perennial woody climber has deep roots in the southern states of Kerala, Karnataka and Tamil Nadu. It is also gaining wider acceptance in certain non-traditional regions such as Andaman and Nicobar Islands as well as North-Eastern states of India.

Fig. 1 Manifestation of symptoms of anthracnose

Black pepper is vulnerable to a range of pests and diseases, often posing serious threat to its economically viable and sustainable cultivation. Among all diseases, anthracnose also known as spike shedding and fungal pollu, is one of the severest. Along with foot rot and stunt diseases, anthracnose can have a crippling effect along black pepper growing tracts.

It is reported that the severity of anthracnose in plantations could vary from 28% to 34% resulting in a crop loss to the tune of 1.9 to 9.5%. Colletotrichum, the incitant of the disease infects economically important parts like spikes and berries besides foliage and shoots. Under field conditions, the initial symptoms appear as small dark necrotic spots surrounded by yellow halo on the leaves (Fig. 1).

In severe cases, expansion of the leaves is

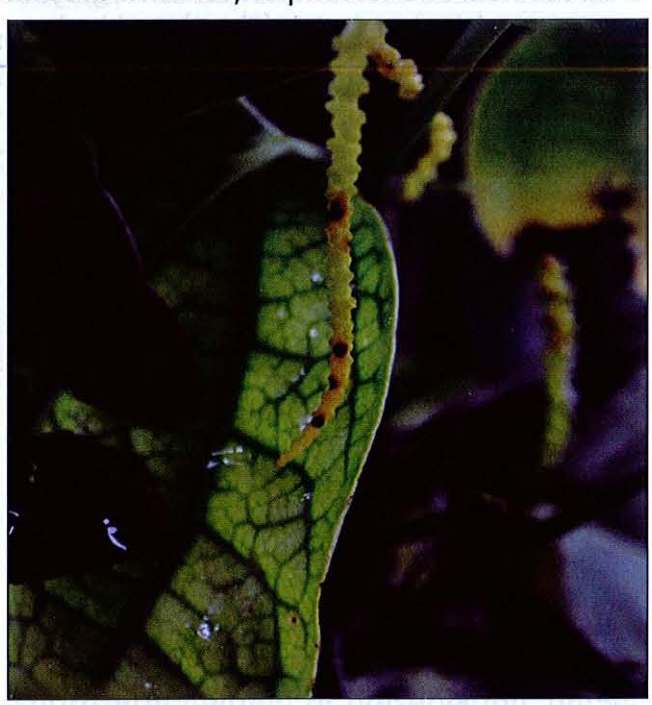

Fig. 2 Necrotic lesions on spikes

adversely affected subsequently leading to crinkling and defoliation. Infection on spikes (Fig. 2) results in spike shedding whereas, infection on mature berries leads to formation of brownish splits due to unequal development. In later stages, the discolouration gradually increases, and the berries exhibits characteristic cross splitting. Delayed infection of the leaves

Fig. 3 Leaves exhibiting anthracnose symptoms with characteristic shot-holes

leads to the formation of randomly distributed discrete necrotic lesions either with greyish centre or with shot-holes (Fig. 3) and lesions with dark brown margin on the older leaves of lateral branches (plagiotrophs).

Fig. 4 Foliar infection under nursery conditions

In nurseries, the symptoms manifest as small

Fig. 5 Necrotic lesions on runner shoots

pin-head sized dark brown necrotic spots (Fig. 4) more or less distributed throughout the entire leaf surface which later develop yellow halo surrounding the necrotic region. Whereas, on climbing shoots (orthotrophs) and runner shoots trailing on ground, the symptoms develop as linear necrotic lesions (Fig. 5).

Monsoon could serve as an external stimulus triggering the disease incidence under field conditions. Moreover, the misty conditions prevailing in high altitudinal regions provide a conducive environment for the pathogen to proliferate and induce disease. The foliar infection due to Colletotrichum is low during February to May and a rapid increase is observed in June (after the receipt of monsoon showers) which subsequently registers peak during September. The maximum temperature has unfavourable impact thereby adversely influencing disease development, while minimum temperature, rainfall, number of rainy days and atmospheric humidity favours disease initiation and subsequent spread. Colletotrichum could wreak havoc in nurseries and under field conditions, if appropriate management measures are not adopted timely.

The pathogen survives under field conditions either on the older leaves or on infected shoots. Since, black pepper is predominantly a vegetative-propagated crop, the infected runner shoots (with necrotic lesions) would serve as an alternative abode for the pathogen to survive during unfavourable weather conditions. The pathogen hibernating in the necrotic lesions on the runner shoots could be disseminated from field in the form of incipient infections to the nurseries.

In nurseries, the infected planting material acts as potential sources of primary inoculum from which the disease initiates and spreads resulting in severe defoliation. Hence, it is highly imperative to inactivate the quiescent pathogen from proliferation at the planting material production phase with an approach including pre-plant treatment of planting material with fungicides.

In nurseries, pre-planting treatment of two/three node cuttings by immersing in carbendazim - mancozeb (0.1%) for 30 minutes and spraying Bordeaux mixture (1%) alternating with carbendazim (0.1%) manages the disease. While under field conditions, aerial application of Bordeaux mixture (1%) is recommended to prevent the disease initiation as a prophylactic measure.

However, once the disease initiates and subsequently aggravates under field condition, aerial sprays with carbendazim - mancozeb (0.1%) is recommended to prevent further spread as a curative measure.

Preserving Garlic for Off-Season

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Every year in late spring/early summer, before fresh garlic comes on the market, there occurs a gap of a few months where the only alternative is imported, cheap Chinese garlic. If not, once the last clove of locally or homegrown garlic is consumed, quality garlic would be a distant dream till the next season. However, things changed last year.

Mr. Kamlesh Valaki, Sales Manager, Valaki Export, came up with an idea to purchase as much locally grown garlic as I could during autumn and winter and preserve them using different methods.

The first and simplest way to preserve garlic is to simply peel cloves and freeze them in zip-lock bags. This can be grated or slightly defrosted and chopped finely before using. The results are slightly on the water-logged side, but is a much better alternative to the icky, white option available in the market.

The second-best way to preserve garlic for use over the long winter months is by slightly cooking it in apple cider vinegar to acidify, before covering in extra virgin olive oil and refrigerating. This method is considered a short-term method of preservation, but will help get through the garlic drought.