

Management of monsoon-associated diseases in major spices

Monsoon season provides an ideal environment for spice farming. Monsoon season, though beneficial for crop growth, also provides favourable weather conditions for the spread of various diseases in spices which might assume severe proportions, if adequate management measures are delayed or not adopted timely as per recommendations prescribed for each crop. After summer, the spell of south west monsoon is gathering strength across several spice growing regions. Considering the situation, it is advised to adopt the recommended disease management measures in a time bound manner, besides keeping a constant monitoring on disease development under field conditions. Monsoon-associated diseases are considered as a threat to major spice crops including black pepper, cardamom, ginger, turmeric and nutmeg. The ambient atmospheric temperature, moisture and atmospheric humidity prevailing during monsoon plays a vital role in the outbreak of several diseases that spreads through planting material, soil, water, wind and agricultural implements.

Phytophthora induced diseases are wide spread and devastating during monsoon in spices like black pepper (foot rot), cardamom (*Azhukal*/capsule rot) and nutmeg (leaf fall/fruit rot). As a part of phytosanitary measures, dead/severely affected plants and plant parts should be removed from the field and destroyed. Provisions should be made to prevent water stagnation by providing adequate drainage facilities. In endemic areas where diseases exhibits a recurring pattern, to protect leaves as well as fruits, prophylactic sprays with Bordeaux mixture (1%) shall be undertaken during May-June and August-September. Further, based on recommendations, metalaxyl-mancozeb (0.125%) or potassium phosphonate (0.3%) may be used as an alternative. In order to prevent disease spread through soil in black pepper and ginger, basin of the vines (black pepper) and beds (ginger) should be drenched thoroughly with copper oxychloride (0.2%) or metalaxyl-mancozeb (0.125%).

Rhizome and soft rots are the major diseases caused by *Pythium* in spices like cardamom and ginger/turmeric, respectively. Since water stagnation aggravates the diseases, care should be taken to provide adequate drainage. Uproot and destroy diseased plants besides drenching the beds with mancozeb (0.3%). To manage the rot diseases, based on the recommendations in respective crops, copper oxychloride (0.2%) or metalaxyl-mancozeb (0.125%) or potassium phosphonate (0.3%) may be used during the months of May-June and August-September.

Bacterial wilt is a serious problem in ginger cultivation. Before adopting management measures the disease should be confirmed by performing 'ooze test'. After confirmation, the infected plants should be uprooted and destroyed and the beds should be drenched with copper oxychloride (0.2%) to prevent further spread.

Spike shedding/anthracnose of black pepper, which is of common occurrence under misty conditions in high altitude regions, can be managed with foliar sprays of Bordeaux mixture (1%) or carbendazim-mancozeb (0.1%).