Stemphylium Leaf Blight of Onion/Garlic

Pathogen: *Stemphylium vesicarium* (Anamorph)
Pleospora allii (Teleomorph)

Taxonomic Position of the Pathogen: Sub-Div.: Deuteromycotina, Class: Hyphomycetes, Order: Moniliales, family: Dematiaceae (**Perfect Stage:** Sub-Div.: Ascomycotina, Class: Dothideomycetes, Order: Pleosporales, Family: Pleosporaceae)

Distribution & Importance: Stemphylium blight of onion was first reported by Raghvendra Rao and Pavgi in 1975 from Varanasi (U.P.) in India. The disease is now widespread throughout the world and is now known to occur in Australia, America, Korea and Venezuela. Crop loss occurs through reduced photosynthetic area, resulting in smaller and lower-quality bulbs.

Symptoms: Initial symptoms on the leaves of onion/garlic as small, yellowish circular to oblong spots, 2-3 mm in diameter, which rapidly enlarge to spindle shaped lesions of dirty white or grey colour attaining a size of 4-5 cm in length and 1-1.5 cm in width with profuse sporulation in the centre of the lesion. Typically, these lesions are found in higher numbers on the side of leaves facing the prevailing wind. Over time, these small lesions grow along the leaf blade and coalesce into sunken, oval-shaped or elongated, brown blotches, with tan to brown centres. Concentric zones may also develop in their centre. In advanced stages, large necrotic areas form, which may girdle the leaf or seed stem, causing extensive blighting of the tissues.

Pathogen: Stemphylium leaf blight is caused by the fungus *Stemphylium vesicarium*, thereby the name of the disease. The teleomorph is *Pleospora allii. Stemphylium* sp. produces multicelled conidia with longitudinal and transverse septa (phaeodictyospores). Conidiophores are straight or occasionally branched, pale to brown in colour and have dark bands or swellings where they give rise to the conidia. Conidia are oblong to broadly oval and sometimes inequilateral in shape, pale to brown in colour, with 1 to 5 transverse septa and 1 to 2 longitudinal/oblique septa. Conidia are often constricted at the major transverse septa and a basal scar is usually prominent. Conidia range in size from 27 to 42 × 12 to 22 µm and do not form in chains. Mycelium morphology on agar media may be cottony or velvety, and range from white to light to dark gray or light olive. Pseudothecia are produced in or near SLB lesions on onion leaves. Pseudothecia are black, pinhead-like structures that typically form toward the end of the growing season on diseased leaves. Asci are bitunicate and cylindrical to clavate. Ascospores are ellipsoid and tapered to a point, pale yellow to brown, and range from 34 to 44 × 15 to 20 µm, with 3 to 7 transverse septa and 6 to 14 longitudinal septa.

Disease Cycle: Pathogen survives on infected plant debris and resumes growth during favourable weather conditions in spring. It then produces spores (conidia) that are spread to nearby plants by the wind. It normally invades dead and dying onion tissue, such as leaf tips, lesions caused by previous diseases, or simply injured tissue by insects (thrips). Long periods of warm wet conditions encourage disease development. Healthy leaves can thus also be attacked if the weather is warm (18-25°C) and the leaf surface is wet for more than 24 hours. Infection usually remains restricted to leaves and does not affect the bulb. Older leaves are more susceptible than young ones.

Management:

- Sow rows of plants in the direction of the prevailing wind to avoid long periods of leaf wetness.
- Reduce plant density to have a good airflow.
- Ensure adequate field drainage before planting.
- Avoid excessive nitrogen applications which can increase disease severity.
- Remove and bury plant debris and culls through cultivation after harvest.
- Use crop rotation for a period of 3-4 years.
- Select resistant varieties.
- Chemical Control: Spray with Fungicide Mancozeb 75.0% WP @ 2.5 g/litre of water