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## ALTERNARIA BLIGHT: WREAK HAVOC ON RAPESEED-MUSTARD

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### Abstract:

Rapeseed-mustard is an important oilseed crop in India and globally. These crops are vulnerable to attack of biotic and mesobiotic pathogens. Among fungal diseases, Alternaria leaf blight is the most devastating disease of Rapeseed-Mustard throughout the world. This disease is generally incited by *Alternaria brassicae*, *Alternaria brassicicola* and *Alternaria raphani* singly or by combination of all. Pathogens produce lesions surrounded by chlorotic areas on leaves, stems, siliquae and responsible for reduction in the photosynthetic areas and defoliation. The Alternaria leaf blight pathogens are seed-borne, soil-borne and air borne. The epidemiological factors viz. high rainfall and wet period augment the disease severity.

**Introduction:** Rapeseed- mustard is the third most important oilseed commodity in the world. India is the third largest producer which contributes 28.3% acreage and 19.8% production of global contribution (Bandopadhyay *et al.*, 2013). Rapeseed-mustard shares 32% of the total oilseed production in India. The leaves of the young plants are used as a green vegetable. The rapeseed-mustard usually contains 38-57% of erucic acid, 4.7-13% of linolenic acid and 27% of oleic and linoleic acids, which have high nutritive value for human health. Various biotic and abiotic factors are known to reduce yield of rapeseed-mustard. Among the biotic factors Alternaria blight disease has been recognized as primary limiting factor. This disease is known to cause up to 47% yield losses (Kolte, 1985) from India. The Alternaria leaf spot disease caused by *Alternaria Brassicae*, is more destructive and more frequently as compare to *Alternaria brassicicola* and *Alternaria raphani*. *A. brassicae* and *A. brassicicola* are ubiquitous in their distribution. Host-specific pathotoxin 'dextruxin B' is produced by *Alternaria brassicae*.

**Causal organism:** Alternaria leaf blight of oilseed brassicas is known to be incited by three species namely *Alternaria brassicae* (Berk.) Sacc., *Alternaria brassicicola* (Schw.) Wiltshire., and *Alternaria raphani* Groves and Skolko (Saharan and Mehta, 2002).

**Symptoms:** *A. brassicae*, *A. brassicicola*, and *A. raphani* produce symptoms on leaves, stem and siliquae of plants. Spots produced by *A. brassicae* are usually grey in colour whereas *A. brassicicola* produced black sooty velvety spots. Spots incited by *A. raphani* showed distinct yellow hallow around them. However, the symptoms may vary with the host and environment (Meena *et al.*, 2010). Symptoms are first seen on leaves near to ground with appearance of black points; at later stage these black points enlarge and develop into prominent, round, concentric spots of various sizes. With progress, the disease appears on middle and upper leaves with smaller sized spots, when defoliation of lower leaves occurs.

Later, round black conspicuous spots appear on siliquae and stem. Deep lesions on the siliquae cause infection in the seeds. *Alternaria* spot on leaves and siliquae reduces the photosynthetic area drastically and cause the formation of the small, discolored and shriveled seeds. *Alternaria* blight adversely affects the oil content in seed and quality of the seed (Meena *et al.*, 2010).

**Yield losses:** *Alternaria* blight appears constantly in rapeseed-mustard growing areas of the world. The disease causes an average yield loss of 46-47% in yellow sarson and 35-38% in mustard (Kolte *et al.*, 1987, 2002; Chattopadhyay, 2008). Kolte *et al.* (1987) reported that the disease causes losses in 1000-seed weight (g) of yellow sarson and mustard of 23 and 24%, respectively. In addition to quantitative loss, seed quality in terms of seed size, seed color and oil contents are also reduced due to the fungus infection. Ansari *et al.* (1988) reported the reduction in oil content of rapeseed cultivars vary between 14.58 and 35.97% and 14.12 - 29.07% in mustard cultivars in India.

#### **Management strategy against *Alternaria* Blight**

- Use of healthy certified seed, timely sowing, burning of crop debris of previous year, use of balance dose of fertilizer, maintenance of optimum plant population, and avoidance of irrigation at susceptible stage of crop (45 and 75 DAS) may help to minimize the disease incidence.
- Three spray of systemic fungicides Thiophanate Methyl, Ridomil MZ, and Carbendazim alone and in combination with four non systemic fungicides Captan, Mancozeb, Zineb, and Thiram in the field at 0.2% a.i.L<sup>-1</sup>.
- Spray of *Eucalyptus* and *Allium sativum* (garlic) leaf extracts significantly reduced the number of spots/leaf.
- Foliar application of *T. harzianum* and *P. fluorescens* effective in management of *Alternaria* blight.

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