



Banded leaf and sheath blight : A major constraint to maize production

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Maize (*Zea mays* L.) one of the tremendous demanding cereal crop holds rank third after wheat and rice originated from Mexico and Central America. Globally, maize is known as ‘Queen of the Cereals’ or ‘Miracle C₄ crop’ because of its genetic makeup conserve highest yield potentiality among the other cereals. It occupies an area about 9.28 million hectares having production of 26.74 million tonnes with average productivity of 2.88 t/ha in India during 2019-20. The major maize growing states that contribute to maize production are Madhya Pradesh, Karnataka, Maharashtra, Rajasthan, Uttar Pradesh, Bihar, Gujarat, Tamil Nadu, Jammu Kashmir and others. In Haryana, *Kharif* maize is cultivated over an area of 5.78 thousand hectares with average production of 17.12 thousand tones achieving productivity of 2.96t/ha. The major diseases prevalent in different agro-climatic zones

of India are leaf spot, seed rot and seedling blight, banded leaf and sheath blight, downy mildew, stalk rot, smut and rusts. In recent years major diseases occurs in Haryana are maydis leaf blight (*Bipolaris maydis*), banded leaf and sheath blight (*Rhizoctonia solani* f. sp. *sasakii*), bacterial stalk rot (*Dickeya zae*), common rust (*Puccinia sorghi*), Curvularia leaf spot (*Curvularia lunata*) and pythium stalk rot (*Pythium aphanidermatum*) are of great concern for impact on yield potentiality of maize.

Banded leaf and sheath blight (BLSB) of maize : In India, this disease was first reported from the Tarai region of Uttar Pradesh in 1966. The disease mainly occurs in hot humid foothill region in the Himalayas and plains covering states of Jammu and Kashmir, Himachal Pradesh, Almora, Sikkim, Meghalaya, Assam, Nagaland, Punjab,



Fig. 1: Symptoms of banded leaf and sheath blight on maize

Haryana, Rajasthan, Madhya Pradesh, Delhi, Uttar Pradesh and Bihar.

Causal organism: *Rhizoctonia solani* f. sp. *sasakii* : Banded leaf and sheath blight disease of maize is caused by a destructive and versatile pathogen *Rhizoctonia solani* f.sp. *sasakii* (teleomorph: *Corticium sasakii*, syn. *Thanetophorus cucumeris*) that causes loss in grain yield ranging from 11 to 40 per cent. Classification of *Rhizoctonia* complex is given on the basis of their anamorphic attributes because their teleomorph stages are occurred rarely and does not produce conidia. Firstly, the species of genus *Rhizoctonia* as *R.solani* was isolated from potato tubers by German scientist Julius Kuhn. The BLSB disease was first described and reported by Bertus in 1927 from Sri Lanka as a sclerotial disease of maize caused by *Rhizoctonia solani* Kuhn.

Symptoms:

– Symptoms of BLSB characterized by the presence of peculiar bands on leaf sheath and sclerotial bodies on affected parts of the plants.

– The symptoms appear on all aerial plant parts except tassel.

– The developing ear is completely damaged and dries up prematurely with the caking of husk leaves.

– The disease appears at the pre-flowering stage with formation of lesions and sclerotia on all the aerial parts of the plant.

Dispersal and survival of pathogen : The pathogen spreads from the basal sheath to the developing ear under favourable environmental conditions. The pathogen is soil-

borne, and disease starts from first leaf sheath and extends up to the ears to cause maximum damage. High relative humidity and rainfall significantly favour the development and spread of this disease. The optimum temperature of about 28°C and high relative humidity of more than 88 per cent favour rapid disease progress.

Economic importance : The magnitude of yield loss of maize is estimated by the degree of disease severity, susceptibility level of the host, and environmental conditions. Though, the magnitude of grain loss may go upto 100 per cent when the ear rot phase of BLSB under incessant rainfall predominates. In Haryana this disease has been occurring in severe form and causing 100 per cent loss in yield due to continuous rainfall in July and August. More over there is lack of stable resistance and management strategies in India.

Management of banded leaf and sheath blight of maize : Stripping of lower 2-3 leaves along with their sheath considerable reduces the disease incidence.

– Deep ploughing, sanitation and removal of previous crop debris from soil.

– Use crop rotation, avoiding water stress at flowering time to reduce disease incidence.

– Use of resistant/tolerant hybrids.

– Foliar spray of 0.2% Validamycin, 0.2% Carbendazim or 0.1% Moncern immediately after symptoms appearance. If needed, repeat the spray at 15 days interval.

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