

PILOT SCREENING OF INDIAN MUSTARD AGAINST SCLEROTINIA STEM ROT DISEASE IN THE ENDEMIC AREAS OF BHARATPUR DISTRICT

A.K. SHUKLA

National Research Centre on Rapeseed-Mustard, Bharatpur- 321303 (Rajasthan) India.

Sixteen varieties of Indian mustard were evaluated in two places of Mahchauli village of Bharatpur District (highly prone to Sclerotinia diseases of rapeseed-mustard) under natural conditions. Laxmi RL 1359, RH 819 and RGN 7 genotypes were showing some degree of tolerance and rests were moderately resistant and susceptible.

Keywords : Bharatpur; Endemic areas; Indian mustard; Sclerotinia stem rot; Screening.

Sclerotinia stem rot disease of rapeseed-mustard is caused by *Sclerotinia sclerotiorum* (Lib.) de Bary. The disease is the most common in temperate regions of the world. Earlier it was a minor disease in India but now a days it has become one of the most devastating diseases of rapeseed-mustard crop. Although it's occurrence was reported by Shaw and Ajrekar¹ in the beginning of 20th century. This disease have been reported from various states of India, viz., Rajasthan, Uttar Pradesh, Uttranchal, Madhya Pradesh, Chattishgarh, Bihar, Haryana, Punjab, Delhi and West Bangal and up to 35 per cent yield losses have been reported due to this disease². The pathogen survives in dead or live plants as a mycelium and as sclerotia (with seed as contaminant or on the soil surface or within the infected plant parts) and serve as the primary inoculum^{2,3}.

This disease is prevalent in various parts of Bharatpur district⁴ and at some places it shows endemic nature for example Mahachulli, Nadbai and Deeg^{4,5}.

Mustard mono cropping is predominant in Bharatpur district and adjoining areas, in view of that inoculum potential increases year after year and some time

the mustard cultivation is uneconomical due to this disease. Therefore, an attempt has been made to evaluate sixteen Indian mustard genotypes at two places of Mahachulli village of Bharatpur district of Rajasthan during 1998-99. These fields were heavily infested with this hazardous disease in the previous year. Five rows (30 cm apart) of each variety were planted in two farmer's field in nearby places and plant-to-plant distance was maintained at 10 cm by manual operations after sowing (within 15-20 days). Recommended cultivation practices of mustard crop were adopted through out the crop season.

Sclerotinia infestations were recorded of each variety at both places from the initiation of the disease and upto the harvesting time of the crop. Each infected plant was tagged and finally all the plants of each variety were counted before harvesting of the crop. On the basis of number of affected plants (per unit area, i.e., 7.5 sq m), these sixteen genotypes were grouped into three categories as shown in table 1.

Most of the released varieties of Indian mustard are susceptible to this disease and susceptibility level

Table 1. Performance of Indian mustard genotypes against Sclerotinia stem rot disease.

Number of affected plants per unit area (7.5 sq m)	Genotype	Category
Less than two plants	Laxmi, RL 1359, RH 819 and RGN 7	Tolerant
More than two but less than five plants	PCR 7, PCR 10, JMM 915, JMM 97-38 and RGN 9	Moderately tolerant
More than five plants	Pusa bold, Kranti, RH 30, JMM 93-37, JMM 941-1-2, Rohini and Varuna	Susceptible

varies from variety to variety⁶, it means we have to identify some of the tolerant variety. Based on the aforesaid experimental results Laxmi (0.5 plants affected per unit area), RL-1359 (0.5 plants affected per unit area), RH 819 and RGN 7 (1.5 plants affected per unit area) genotypes were showing some degree of tolerance on the basis of less number of affected plants in per unit area. Seven genotypes were ranked as susceptible category and among them Varuna and Rohini were highly susceptible (16-30 plants affected per unit area).

References

1. Shaw F J W and Ajrekar S L 1915, *Memories of Department of Agriculture, India, Botanical Series*, 7 177.
2. Shukla A K, Kumar A, Singh N B and Kolte S J 2003, *Manual on Management of Rapeseed-Mustard*. NRC on Rapeseed-Mustard, Bharatpur, pp 21-25.
3. Kolte S J 1985, *Diseases of Annual Edible Oilseed Crops. Vol. II : Rapeseed-Mustard and Sesame Diseases*. C R C Press, Boca Raton Florida, USA, 135p.
4. Shukla A K and Sharma R C 2000, Progressive prevalence of Sclerotinia stem rot of rapeseed-mustard in Bharatpur district of Rajasthan. Proceedings: international Conference "Integrated plant Disease Management for Sustainable Agriculture" Organized by Indian Phytopathological Society, New Delhi, Vol.II: 1050-1051.
5. Anonymous 1996, Annual Progress Report on Adaptive Trials Rabi 1995-96. Adaptive Trial Centre, Bharatpur, pp 50.
6. Kumar P R, Chauhan J S, Singh A K and Yadav S K 2000, *Rapeseed-Mustard varieties of India*. NRC on Rapeseed-Mustard, Bharatpur, PP 53-94.