# Sustainable Management of Rapeseed-mustard (*Brassica* spp.) Diseases for Higher Yield and Productivity in NEPZ of India

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**ABSTRACT**

Rapeseed-mustard is an important group of oilseed crops that contributes 32 per cent of the total oilseed production in India. Indian mustard [*Brassica juncea* (Linn.) Czern and Coss] is the most important oilseed crop cultivated in India, alone contributing about 80 per cent of total rapeseed-mustard. It is predominantly grown as *rabi* oilseed crop in Northern Indian states. In India, it occupies 6.0 mha area with 7.0 mt production and 1190 kg/ha productivity during 2012-13. Mustard productivity is constrained by many biotic and abiotic factors. A wide gap exists between the potential yield and the yield realized at the farmer's field due to a number of biotic and abiotic stresses to which mustard crop is exposed. Under field conditions, mustard crop is severely ravaged by various foliar diseases *viz*., *Alternaria* blight, white rust, downey mildew, powdery mildew, *Sclerotinia* Stem Rot which are considered important constraints in husbandry of rapeseed-mustard in India. To manage all the diseases in a unified way, integrated sustainable management approach alongwith adequate plant nutrition was attempted at IARI Regional Station, Pusa (Bihar) during two growing seasons, *i.e.*, *rabi* 2012-13 and 2013-14. The field experiments were carried out in Completely Randomized Block Design (CRBD) with three replications on a susceptible cultivar, Varuna to find out adequate, farmer friendly, cost effective sustainable management of all the mustard diseases and to give a munificent recommendation on management of mustard diseases the farmers. In the proposed study, seed treatment with propiconazole @ 1.0 ml/kg seed and metalaxyl @ 6.0 g/kg seed, removal of four lower leaves at 60 days after sowing alongwith foliar spray of propiconazole @1 ml/lit water and ridomil MZ72 WP @ 2.0 g/lit water and adequate balanced plant nutrition NPK+ $ZnSO_4$ @ 15.0 kg/ha + Boron @ 10.0 kg/ha + Sulphur @ 30.0 kg/ha as basal dose were tested singly and in combination for effective and integrated management of mustard diseases.

Among the 12 treatments tested, seed treatment with propiconazole (0.1%) plus two foliar spray of propiconazole (0.1%) at 65 and 77 DAS at 12 days interval significantly reduced both foliage and floral infections and found to be most effective in reducing *Alternaria* leaf and pod blight, white rust, *Sclerotinia* rot severity and incidence in field. However, application of micronutrients, *viz.* zinc sulphate, boron and sulphur in combination with seed treatment with propiconazole (0.1%) and removal four lower leaves at 60 DAS plus one foliar spray of propiconazole (0.1%) at 65 DAS gave highest yield per plot (4.56 kg/plot) and was found significantly effective in reducing disease severity and incidences of *Alternaria* leaf and pod blight, white rust, *Sclerotinia* rot and staghead in the field. This treatment significantly affected the yield and yield attributing traits like, number of primary and secondary branches/plant, number of siliqua/plant, number of seed/siliqua, siliqua weight/plant (g), seed yield/plant (g), plant height (cm), test weight (g) and biological yield (g) with low disease incidence in all the replicates.