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Abstract

Novel Source of Biotic Stress Resistance Identified from Brassica Species and its Wild Relatives †

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Abstract: In rapeseed and mustard, the major diseases (downy mildew, white rust, *Alternaria* blight and *Sclerotinia* stem rot) cause 37–47%loss in pod formation and 17–54% reduction in grain yield. The identification of new sources of resistance is a high priority in breeding programs. About 3000 germplasm accessions of Indian mustard were evaluated under multiple environments (3 seasons) at hot spots (4 locations) and under artificial epiphytophic conditions against insect pests and diseases (aphids, white rust, powdery mildew and *Alternaria* blight). Accessions IC265495, IC313380, EC766091, EC766133, EC766134, EC766192, EC766230, EC766272 were identified as highly resistant to white rust (*A. candida)* with disease severity reaction (Percent disease severity Index, PDI = 0) under artificial inoculation. Accession RDV 29 showed the inheritance of resistant source for powdery mildew in Indian mustard. Screening of brassica wild relatives (about 25 species) for white rust found that *Brassica fruticulosa*, *Brassica tournefortii*, *Camelina sativa*, *Diplotaxis assurgens*, *D. catholica*, *D. cretacia, D. Erucoides*, *D. Muralis*, *Lepidium sativum* had highly resistance (PDI = 0) to Delhi isolates of white rust. Several traits identified from cultivated and related species will be useful for genetic improvement of rapeseed and mustard.

Keywords: Indian mustard germplasm; disease resistance; white rust; powdery mildew

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Author Contributions: The experiment provided the germplasm and laid out field screening and validation of white rust resistant germplasm in field and JA, AKG, MR and JN evaluated the germplasm under artificial condition; JR analysed the data and RY wrote the manuscript. KS and AK provided the technical guidance and support for proper functioning of experiment. All authors have read and approved the final manuscript.

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