

Research Article**Host Plant Resistance and Reaction of Maize Germplasm Entries Against Post Flowering Stalk Rot in Maize****MK Khokhar¹, SS Sharma², Manoj Choudhary¹ Vinita Dahima² and BL Roat³**

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Abstract

The aim of this study was to investigate host plant resistance against *Fusarium verticillioides* via assessing the changes in defence compounds of maize germplasm with different levels of resistance. A set of 189 elite maize lines were evaluated in 2011, 2012 and 2013 to identify resistant germplasm lines against post flowering stalk rot (PFSR) of maize incited by *F. verticillioides*. Out of them, only 12 germplasm lines were highly resistant, 73 were resistant and 29 were moderately resistant. The promising resistant germplasm lines have been validated as PFSR resistant lines and can be used as parent in breeding programme. Pathogenesis related biochemical studies revealed a maximum increase in total phenol content in early germplasm lines with 288 units. However, on the contrary, the maximum relative increase in total water soluble sugar content was observed in early maturing entries showing 106 units over control. The activity of peroxidase and total phenols were maximum in hybrids, compared to the respective control. The activity of polyphenol oxidase was maximum in inbred PFSR - 21 groups with the lowest activity in late maturity. A negative correlation could be deduced for these parameters in the highly resistant (HR) and resistant (R) germplasm lines in this study. These results suggest that a combination of these defence responses in maize may contribute to plant resistance might have potential use in the selection of maize germplasm.

Key words: Defence enzymes, *Fusarium verticillioides*, maize, PFSR and resistant inbred

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