

Insect resistance in rice : Strengthening the core of IPM

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Insect resistant rice varieties are the best bet for an ecologically accepted component of rice IPM. However, development and deployment of such varieties have the limitations of finding good sources of multiple resistance against the key pests, transferring acceptable levels of resistance into elite cultivars and durability of resistance across time and space. Research carried over the past five decades at the Directorate of Rice Research and else where in India have shown new approaches to overcome these limitations. Better understanding of genetics of resistance/virulence; tagging and mapping of several major R genes with closely linked and flanking markers; and understanding the molecular basis of resistance and virulence in rice-gall midge interaction suggested pyramiding of two functionally distinct undeployed genes like Gm4+Gm8 or gm3+Gm8 to be the right approach for durable resistance. However, virulence monitoring and resistance management need to be part of the IPM. Deployment of only the major resistance genes against planthopper pests like BPH and WBPH is not enough to provide acceptable level and durability of field resistance, studies revealed. Therefore identification, tagging and transfer of minor effect QTL with diversity in resistance mechanism are needed. Against stem borer complex, good resistance sources have not been reported from the primary gene pool. Hence, transgenic approach with cry and VIP genes from BT, protease inhibitor genes from plant sources is proving effective. Genetic resistance against other major and sporadic pests like leaf folders, hispa, grain bugs needs to be thoroughly exploited to strengthen this important component of IPM.

Biography

JSB has completed his Ph.D from the Karnataka University, Dharwad, India and has been working as Rice Entomologist with the Indian Council of Agricultural Research since 1977. He is currently the national Principal Investigator for the All-India Coordinated Rice Entomology Programme of DRR. He has published more than 60 papers in reputed journals.

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