



Borlaug Global Rust Initiative

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Proceedings Poster Abstracts

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Poster Abstracts

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Theme 4:

Plant Protection and Seed Delivery

60. Initiatives and Progress Through Participatory Varietal Selection in Promoting Race Ug99 Resistant Wheat Lines on the Eastern Gangetic Plains

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The threat of stem rust epidemics caused by *Puccinia graminis* f. sp. *tritici* race Ug99 to the wheat crop on the northeastern Gangetic Plains is real. The warm and humid conditions experienced in the region are conducive to rapid disease development. Identification and breeding Ug99-resistant varieties are therefore major priorities for the region. Because of the underdeveloped seed industry and small farm sizes, various strategies are needed to disseminate resistant cultivars in a relatively short time before Ug99 reaches South Asia. Although the Indian wheat program, in collaboration with CIMMYT and KARI, has identified some existing resistant wheat varieties. The areas

they occupy must increase to about 5% of the total wheat area to ensure replacement of current popular varieties if necessary. In addition to national evaluation trials including advanced selections from all breeding programs, there are also farmers' participatory selection approaches in several districts in the eastern Gangetic Plains, whereby new superior lines and newly released varieties are disseminated to farmers. The objective is to enhance genetic diversity and to provide more options to farmers. The inclusion of Ug99-resistant high yielding lines distributed during last three years (2006-2009) is enabling farmers and the region to prepare for future challenges. Some of the new lines included in this fast-track participatory approach have shown significant yield superiority over the highly popular variety HUW234, and better resistance or tolerance to other biotic and abiotic stresses that occur in the region. Moreover, the incomes of farmers, who choose to sell grain of their preferred varieties as seed, have also increased. Our results show that participatory variety selection of diverse promising lines and released varieties enables them to be disseminated to farmers in a way that enhances productivity and income simultaneously.

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