Marker-assisted breeding to improve pearl millet hybrid HHB 67. (C01-hash005311-Poster)

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Abstract:

Pearl millet (Pennisetum glaucum) is grown for grain and stover in the hottest driest areas where agriculture is practiced. In India 70% of >9 m ha is sown to genetically uniform single-cross hybrids. These are vulnerable to downy mildew (DM) caused by oomycetic pseudo-fungus Sclerospora graminicola. With molecular genetic tools developed at the John Innes Centre, and with support from DFID's Plant Sciences Research Programme, we mapped QTLs for host plant resistance to DM, stover yield under optimum growing conditions, and grain and stover yield under terminal drought stress. RFLP-based marker-assisted BC then transferred several QTLs to parents of popular hybrid HHB 67. Hybrid performance of these 'improved parents' was compared with their recurrent parents 843B and H 77/833-2 in greenhouse and field disease screens, and multilocational yield trials in the 2001 rainy season and summer 2002 summer. ICMR 01004 and ICMR 01007, BC4 derivatives of elite pollinator H 77/833-2 into which two DM resistance QTLs from ICMP 451-P6 were independently transferred, were equal to or better than H 77/833-2 for grain yield combining ability and significantly and markedly improved for DM reaction.

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