

Category	: International Rice Research Conference
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Keyword 1	: Marker-assisted selection
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Title of Entry	: Pyramiding of Genes Conferring Resistance to Bacterial Leaf Blight, Blast and Brown Plant Hopper in to 'Krishna Hamsa', a Rice Elite Variety
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Select only one type of presentation	: 15 minute oral presentation
Abstract	: Krishna Hamsa is a long slender grain type popular variety suitable for the boro areas of India.. But, pest and pathogen susceptibility is the major bottleneck for its widespread cultivation. Therefore, development of improved Krishna Hamsa with resistance to different pests/pathogens is the most economical strategy. Multiple resistance genes confer durable broad spectrum resistance through synergistic and complementary gene action to a wide range of races. Introgression of major resistance genes for bacterial blight (Xa21+xa13), blast (Pi9+Pi54), BPH (Bph20+Bph21) into Krishna Hamsa through marker-assisted backcross breeding was initiated in 2013-14. IRBB60 (possessing Xa21+xa13), IR64 NIL (Pi54), Tetep (Pi2) and DSB2 (Bph20+Bph21) were used as donor parents. F1s of KH/IRBB60 (Xa21+xa13), KH/DSB2 (Bph20+Bph21), KH/Tetep (Pi2) and KH/IR64NIL (Pi2) were genotyped with gene specific markers to identify F1s heterozygous at these loci. Different F1s heterozygous for gene specific markers were inter-crossed to develop inter-crossed F1s (ICF1) with different gene combinations. Further, all possible inter-crosses were made among marker positive ICF1s during 2015-16 and 2016-17 to accumulate maximum number of genes in the background of Krishna Hamsa. 45 plants (IC6F1) derived after six intercrosses were genotyped for the presence of 7 genes. A maximum of 6 genes introgression was observed in 3 IC6F1 plants (one plant with Xa5+Xa21+Pi54+Pi9+Bph20+Bph 21, two plants with xa13+ Xa21+Pi9+Pi54+Bph20+Bph 21) 5 genes introgression in 5 IC6F1 plants (two plants with Xa5+xa13+ Xa21+Pi9+Pi54, two plants with xa13+Xa21+Pi9+Bph20+Bph21, one plant with xa13+Pi9+Pi54+Bph 20+Bph21) and 4 genes introgression in 5 IC6F1 plants (two plants with xa13+Xa5+Pi9+Pi54, two plants with Xa21+Pi9+Bph 20+Bph21, one plant with Pi9+Pi54+ Bph20+Bph21). These 13 IC6F1 plants

with multiple gene introgressions were further backcrossed to recurrent parent Krishna Hamsa and BC1F1 were generated during Kharif 2017. Further backcrossing and selfing of marker positive plants with maximum targeted traits aided by foreground and background selections is currently underway at ICAR-IIRR. BILs and NILs in the advanced generations with multiple genes pyramided would provide durable resistance in Krishna Hamsa.

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