Breaking Yield Barrier in Rice: Exploiting Tropical Japonica and Indica Germplasm. (C01-virk012705-Oral)

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Abstract:

Major increases in rice production have occurred since the late 1960's, thanks to the large scale adoption of high-yielding semidwarf varieties. The yield potential of the modern varieties is 10 t/ha in the tropical conditions. To meet the demand of ever growing human population, rice varieties with higher yield potential are needed. To break the yield barrier, ideotype breeding was undertaken at IRRI. Salient features of the proposed ideotype commonly referred as new plant type (NPT) were - low tillering capacity; few unproductive tillers; around 250 grains per panicle; plant height of 90-100 cm; thick and sturdy stems; leaves that were thick, dark green, and erect; a vigorous root system; 100-130 days growth duration; and increased harvest index. NPTs in the japonica background with short and bold grains, and low amylose content have already been released in China. Improved NPTs for wider acceptability have been developed from crosses between indica germplasm and NPTs. Improved NPTs possess higher yield, sturdy stems, the desired grain quality and shape, resistance to bacterial blight, and blast. A number of elite lines are currently being evaluated in replicated yield trials.

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