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Four Decades of Breeding for Varietal Improvement of Irrigated Lowland Rice in the International Rice Research Institute

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Abstract: Since the establishment of the International Rice Research Institute (IRRI) in 1960, IRRI's breeding effort in varietal improvement for irrigated lowland has passed four decades. Breeding of semi-dwarf rice varieties such as IR8 at IRRI during first decade from 1960 to 1969 resulted in quantum leaps in yield potential, which marked the green revolution in Asia. During the second decade from 1970 to 1979, the primary emphasis of rice improvement has been directed towards incorporation of multiple disease and insect resistance and shortening of growth duration. Grain quality was the main target of crop improvement at IRRI during the third decade from 1980 to 1989. The fourth decade from 1990 to 1999 and beyond was focused again on the improvement of yield potential by developing hybrid rice and new plant type. Up to 1999, 46 indica inbred varieties and 2 indica/indica hybrid rice varieties were developed by IRRI and released in the Philippines for the irrigated lowland rice systems. Large-scale adoption of these improved varieties under modern crop management practices has resulted in a dramatic increase in rice production in major rice-growing countries. The hybrid varieties between indicas increased yield potential by 9% under the tropical conditions. New plant type (NPT) breeding has not yet resulted in an increase in yield potential. The second generation NPT developed by crossing tropical japonica with indica has demonstrated some promising results in terms of improvements in yield potential, disease and insect resistance, and grain quality.

Keywords: [Breeding](#), [Disease resistance](#), [Grain quality](#), [Insect resistance](#), [Irrigated rice](#), [Yield potential](#)



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