

Category	: International Rice Research Conference
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Keyword 1	: Impact of agricultural research
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Title of Entry	: The contribution of IRRI's germplasm to rice improvement and yield growth in India
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Select only one type of presentation	: 15 minute oral presentation

Abstract : The objective of the study is to compute and analyze the contribution of IRRI germplasm to India's rice improvement and its effect on yield growth over the past 50 years (1966–2016). The term “rice improvement” in this study is confined to varietal development programs with respect to (a) the number of high-yielding varieties released for the farmers, and (b) improvement of varietal traits (maturity period, grain quality, and resistance to insect pests and diseases). Time-series data (1966- 2016) on variety-wise genealogy and their respective sources, and variety-wise features for all released HYVs were compiled from various reports of the All-India Coordinated Rice Improvement Project (AICRIP) from and from various sources of the Ministry of Agriculture of the government of India. A genetic improvement index is constructed for each HYV with digressive proportionate scores for each parent at each generation (up to F5). The share of germplasm of IRRI and NARES is computed based on the source of germplasm at each stage. Results indicate that about 50% of the total 1,066 HYVs released in India over the past 50 years have IRRI germplasm. Among them, 155 HYVs were developed based on IR8 alone. Nearly two-thirds of IRRI-germplasm HYVs have resistance to insect pests and diseases. Three-fourths of the total IRRI-germplasm based HYVs are either short- or medium-duration HYVs. The overall contribution of IRRI's germplasm to the varietal development program in India over the past years is estimated at 25.4%, including about 3.2% by IR8. Average rice area planted to IRRI germplasm-based HYVs over the past 50 years is 8.2 million ha per year, which is about 20% of India's total rice area. Net share of IRRI's germplasm in total rice area is estimated at about 10% of the total rice area every year during this period. Additional average annual rice production due to widespread adoption of IRRI germplasm-based HYVs is about 18 million tons, of which 50% is accounted for by IRRI germplasm over the past 50 years. Nearly 18% of overall yield growth of rice in India over the past 50 years was contributed by IRRI germplasm-based HYVs.

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