

# Productivity, Yield Gap and Resource Use Efficiency in Hybrid Rice Production in Bangladesh

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## Abstract

Bangladesh has made remarkable progress in rice production in the past three decades with production growing at 3% per year, leading to self-sufficiency in rice for the first time in 2000 for its 150 million people. But now it faces challenges of feeding an additional 1.8 million mouth each year with declining land, water, labor, and other production resources. The challenge is to produce more rice with fewer resources in a sustainable manner. This can be achieved by enhancing productivity through options like narrowing yield gaps and improving efficiency of resources use. Better understanding of these options is needed to design effective technological, policy, and institutional interventions, but the existing knowledge on these issues is limited for Bangladesh. This paper investigates technology adoption, productivity, yield gaps, and production efficiency of different farm size category of rice farmers in Bangladesh. We used the 2011-12 dry-season hybrid rice production data collected from more than 500 randomly selected rice farmers representing the whole country. We analyzed the data using descriptive statistics and stochastic frontier regression model. Results showed, 28% yield gaps between potential and actual farm-level rice yields as well as 15% mean level of input use inefficiencies in hybrid rice production. The productivity, yield gap and resources use efficiency differed significantly between small and large farmers. Farm size, labor use, fertilizer use, irrigation, rice varieties, and age of decision maker significantly affected the yield gaps and production inefficiencies. Adoption of location-specific improved technologies, right site-specific farm management practices, and effective and efficient extension approaches can overcome the yield gaps and resource use inefficiencies. This will not only increase rice production and ensure food security, but also enhance economic viability of smallholder farmers. The power of the modern sciences makes these interventions easier. But, this requires enabling strategies and policies and, an effective institutional set-up, and adequate investment on rice research and development.

*Key words: hybrid rice, farm size, productivity, efficiency, Bangladesh.*

*Proposed sub-theme for presentation: Farm size and productivity Revisited*