Rooting out the Weeds

Enhancing lowland rice productivity in Bangladesh

Widespread adoption of fertilizer-responsive modern rice varieties and the expansion of the area under irrigation have driven up rice production in Bangladesh over the last 30 years, more than doubling to 34 million tonnes. To keep pace with internal demand, rice production will need to increase to 50 million tonnes by 2020 requiring per hectare yields in the two growing seasons – the rainfed *aman* and irrigated *boro* – to increase by 29% and 17% respectively. In considering how these increases can be achieved, scientists have reviewed rice cropping systems. Although plant breeding will continue to play a key role, increases in rice production will depend heavily on improvements in farmers' management practices and on the efficiency with which inputs are used.

The project explored the reasons for these weed management deficiencies. Although labour costs for weeding have risen sharply as a result of competition for labour from the rural non-farm sector, the prices farmers receive for rice have not increased significantly. The need to reduce production costs, to make rice a profitable crop for farmers, has triggered a growing demand for herbicides, used in combination with hand-pushed mechanical weeders. It has been shown that effective use of herbicides can halve labour costs in addition to benefits in terms of crop production. Poorer sharecroppers (farmers who rent land for a share of the harvest) have also been willing to adopt herbicides if these increase their take-home yield.

Hand-weeding rice in Bangladesh

Collaboration between the Bangladesh Rice Research Institute, the Natural Resources Institute and the International Rice Research Institute (Philippines) has been focusing on how to work with farmers to close the gap between average yields and those achieved by the best farmers. Initially project R7471 identified the areas in which farm management changes could increase productivity. On-farm studies, in multiple, intensive rice cropping systems in Comilla District, demonstrated that a significant component (0.5–1.5 t/ha of rice grain) of the yield gap (the difference between current on-farm yields and best practice attainable yields) can be explained by suboptimal weed control.

Timely weed control and use of herbicides, particularly the timing in relation to water management, are knowledge intensive. If improved weed control is to provide sustained increases in yield and productivity, farmers will need more and better information about weed management. In project R8234, the collaborating institutes are now working with the extension service, NGOs, the private sector and farmers' groups, in Comilla, to improve the range of information on weed control options for the two rice growing seasons and make this more readily available to farmers.

R7471: Developing weed management strategies for rice-based cropping systems in Bangladesh
R8234: Promotion of cost-effective weed management practices for low land rice in Bangladesh
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