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Herbicides Can Close Yield Gap in Bangladesh Rice

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Rice is the staple food of Bangladesh. In rice production, Bangladesh now ranks fourth in the world. Forty-seven million tons of rice are produced on 12 million hectares. Bangladesh is essentially self-sufficient in rice [1]. However, given the continuously increasing population (Figure 1), coupled with the unavailability of additional land for conversion to farming, Bangladesh is under tremendous pressure to increase rice production by increasing yields. In Bangladesh, the growth in rice demand is estimated at 30-50% over the next 30 years.

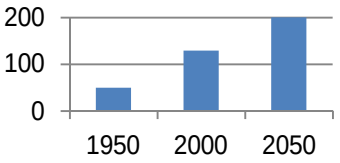

Figure 1: Population of Bangladesh (millions)

Weeds are recognized as major biological constraints that hinder the attainment of optimal rice productivity in Bangladesh [1]. The humid climate of Bangladesh favors weed growth [2].

Bangladesh rice

In Bangladesh, the traditional methods of weed control by smallholders include hand weeding by hoe and hand pulling. Usually, two or three hand weedings are done for growing a rice crop. However, especially at the time of peak period of labor demand, weeding often is done late, causing drastic losses in rice yield [1]. Farm families typically are unable to do all their own weeding and need to hire labor [3]. Farmers indicate that finding available labor on time and financing labor is a problem [3][4]. On average, the gap in rice yields in farmers' fields due to poor weed control in Bangladesh was determined to be 43-51% [1]. The yield gap was as high as 1 t/ha with 30% of farmers losing in excess of 500 kg/ha [3].

Hand weeding rice

Research in Bangladesh demonstrated that herbicide applications would produce similar rice yields to three carefully timed hand weedings with a significant reduction in labor requirements and total costs [3]. Pre-emergence herbicides are 38-46% cheaper than one hand weeding [4]. Economic analysis of rice production in Bangladesh revealed that the net income from herbicide application was 116% higher than hand weeding three times [1]. Herbicide use reduced weed control time to a mean of 84 hours/ha compared to 590 hours/ha in rice for which at least two hand weedings were needed[5].

Spraying herbicides in Bangladesh rice

Herbicide use provides a pro-poor technology for rice in Bangladesh, where growers are striving to cut production costs and increase output to escape a cost-price squeeze resulting from increasing labor costs [1]. Herbicides can improve the timeliness of weed control early in the season when labor may be in short supply [3].

References

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