

ECONOMIC ANALYSIS OF POTENTIAL BENEFITS OF SELECTED GENETICALLY MODIFIED CROPS TO SOLVE SPECIFIC PROBLEMS IN BANGLADESH

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Abstract

This study was undertaken to determine the comparative profitability of brinjal, potato, chickpea and rice (Aus) production and to measure economic potentiality of using genetically modified (GM) variety to solve fruit and shoot borer problem in brinjal, late blight diseases problem in potato, pod borer problem in chickpea and salinity problem in rice production. This study was based on a sample survey of 255 farmers among them 90 were potato growers and it was go for 45 for brinjal, 60 for chickpea and 60 for rice growers. Tabular techniques as well as functional input-output analysis were done. More than half of the respondents were under the age group of 36-50 years. Average farming experience of the sample farmers in the study areas were 22 years. In case of variety use, 47.80% potato farmers used Diamont variety and 18.90% farmers used Cardinal Variety. Among the brinjal farmers 62.20% used Singnath variety and 40.80% farmers used Bottle variety. In case of chickpea 60%, 26.70% and 13.30% farmers used BARI-5, Local and Nabin variety respectively. In case of rice 35%, 33%, 11.70% and 3.3% farmers were use BIRRI-30, BR-27, BIRRI-41 and BIRRI-10, respectively. The average per ha costs for brinjal, potato, chickpea and rice seeds were Tk. 2796.25, Tk. 27623, Tk. 1689.83 and Tk. 1352.05 respectively which constituted 1.94 %, 32.88 %, 24.75 % and 8.29 % of the total material cost. Per hectare cost of pesticide for Brinjal, Chickpea, Potato and Rice were Tk. 17662.7, Tk. 308.75, Tk. 3330 and Tk. 549.336 which were 12.26, 4.51, 3.96 and 3.40 percent of the total material input cost respectively. Average variable cost per hectare for brinjal, potato, chickpea and rice were Tk. 143983.7, Tk. 84018, Tk. 6827.94 and Tk. 16304.09 respectively. Production function analysis showed that among the entire grower the potato growers (3916.5 kg) followed by brinjal (32621.83 kg), rice (2562.93 kg) and chickpea growers (1010.45 kg) obtained highest yield per hectare. Per hectare gross margin of brinjal, chickpea, potato and rice cultivation were Tk.259693.3, Tk. 20362.02, Tk. 59052 and 14346.49 respectively. Benefit cost ratio were 1.70, 2.80, 3.98 and 2.1 for potato, brinjal, chickpea and rice respectively. The yield of potato was positively related with human labour, power tiller, seed, fertilizer, pesticide and irrigation. The yield of brinjal was positively related

with human labour, power tiller, fertilizer, pesticide and irrigation and negatively related with seed. The yield of chickpea was positively related with power tiller and pesticide and negatively related with human labour, seed and fertilizer. The yield of rice was human labour, power tiller, seed, fertilizer and pesticide and negatively related with irrigation. On an average, yield losses of potato due to late blight diseases was 19.50%, yield losses of brinjal due to fruit and shoot borer was 29.56%, yield losses of chickpea due to pod borer to pod borer was 15.67%, yield losses of rice due to salinity was 15.67%. In case of potato adopting GM variety would increase the yield at least 15% which would increase the gross margin by the amount of Tk. 21493.44 which is 36% higher than Non-GMO variety. In case of brinjal adopting GM variety would increase the yield at least 25% which increase the gross margin by the amount of Tk. 118641.3 which is 40% higher than Non-GMO variety. If pod borer resistant GM variety introduced for chickpea it would ensure a more or less consistent production as well as increase of gross margin of Tk. 7065.019 per ha which is 34.60% higher than Non-GMO crop.. In case of rice adopting GM variety would increase the yield at least 30% which would increase the gross margin by the amount of Tk. 6144.29 which is 85.05% higher than Non-GMO variety.