

Input-output relationship and economics of pangas monoculture and carp-pangas polyculture in two districts of Bangladesh

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Abstract

An attempt was made to study the input-output relationships and economics of pangas monoculture and carp-pangas polyculture in Bangladesh. By analyzing the data collected from 50 pangas farms and 55 carp-pangas farms, the study has investigated the production systems of two technologies and the effects of fingerling stocking and applications of feed and fertilizer on fisheries income. The data were collected from the fishermen of Trishal and Bhaluka of Mymensingh district, and Kahaloo and Adamdigha of Bogra district during 2001-02. For pangas monoculture, the stocking density was 31,561 per ha while it was 55,017 per ha in carp-pangas polyculture. Most of the farmers used urea, TSP and lime before stocking. Rice and wheat bran happened to be the most common feed ingredients for both types of culture in general. Other important ingredients used were mustard oil-cakes, rice polish, wheat flour, fish meal, bone meal, soybean meal and poultry litter. In terms of quantities, rice bran and wheat bran dominated the farmers list. Rice and wheat bran together constituted about 60% of all studied feeds. Feed cost constituted 59.13% of total costs for pangas monoculture and 67.44% for carp-pangas polyculture. Per ha productions of pangas and carp-pangas in a single culture cycle were 15,508 kg and 19,745 kg, respectively. Per ha gross profits were estimated to be Tk 310,311 and Tk 464,418 for pangas monoculture and carp-pangas polyculture, respectively. Net profit appeared to be Tk 264,216 per ha for pangas monoculture and Tk 416,509 per ha for carp-pangas polyculture. The BCRs calculated were 1.46 and 1.68 for monoculture and polyculture, respectively. The break-even costs per kg of fish were estimated at Tk 36.93 for pangas and Tk 30.93 for mixed species which was much lower than the prices the producers received. Break-even productions were estimated at 10,702 kg per ha for pangas monoculture and 11,784 kg per ha for carp-pangas polyculture. Fingerling and feed cost, and pond size significantly explained the variation of income from pangas monoculture. These factors have significantly influenced the income from the crop. Functional analysis shows that 1% increase in the feed cost might increase 0.51% of pangas income and 0.41 % in carp-pangas income. No other inputs had shown this much of responses to increasing income from a fish.

Key words: Pangas monoculture, Carp-pangas polyculture, Economic analyses

Research findings

- The stocking density per ha for pangas monoculture and carp-pangas polyculture were 31,561 and 55,017, respectively. The density appeared to be consistent with the given level of intensity.
- Urea, TSP and lime were most frequent fertilizers applied in fish culture. About two-third of the farmers did not use cow dung
- Rice bran and wheat bran were the most frequently used feed ingredients. In addition, there were a variety of feeds in use, however, very few were common across farmers.
- Feed cost constituted about 60% of total production cost in both type of cultures. Both the culture practices were found to be profitable and viable both in short and long run. However, in terms of undiscounted BCR, carp-pangas technology was more profitable than pangas monoculture.
- The break-even cost and production were much lower than the actual price received and yield obtained
- Fingerling and feed cost were significant at 1% level and influence the variation of fisheries income positively.

Policy implications

- This study established the importance of feed in aquaculture once again. Thus proper feed ingredients and their quantity is very important for the culturists.
- The use of some feed and non-use of others is not consistent with the production technology.
- Relevant GOs and NGOs should come forward with extension effort and training emphasizing the proper feed mix and quantity.

Livelihood implications

Both the technologies evaluated were profitable and the adopters derived benefit out of the practices. As production proceeds, all stakeholders in the production-distribution chain including consumers would be benefited. The greater availability of fish would provide animal nutrition at a cheaper cost to the people of Bangladesh. Moreover, exporting higher amount of fish might provide more foreign currency. Farmers with small ponds and ditches could make use of the technology and reap the benefit of increased income and improved livelihood.