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ECONOMICS OF INTEGRATED FARMING IN ASSAM

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ABSTRACT

A study was carried out under NAIP component-3 sub-project in Gosaigaon area of Kokrajhar district which involved integration of 2(two) indigenous sows and 1(one) Hampshire male pig to 450 m^2 water surface area. Two months old piglets were reared for six months. Thus two batches of pigs were reared in integration with one crop of fish in a year. Fertilized pond water enriched with blue-green algae was used for irrigating horticultural crops i.e. okra in *Kharif* season and cabbage in the *Rabi* season cultivated at marginal area measuring 1000 m^2 on the bank of the pond. Fish species like catla, rohu, mrigal, grass carp and silver carp were released in the ponds @8,888 per ha. The field trial revealed a 5000 kg fish per ha per year. The average yield of fish was 2.11 quintal after one year in a 450 m^2 pond area. An average of 2.4 and 2.87 quintal of cabbage and okra respectively was harvested in an area of 1000 m^2 each. Income from 2 batches of 3 pigs each was raised from 19,000.00 to Rs. 65,750.00 at the end of the year. The benefit cost ratio (BCR) of integrated farming over traditional system was calculated to be 3.29:1 vs 1.4:1. Further the system helped complete recycling of pig sludge and there is a continuous horizontal extension of pig breed improvement activity among the pig farmers.

Keywords : Benefit cost ratio, integrated farming system, pig-fish-vegetable

Pig is one of the major components of livestock farming system in Assam where a large section of farming community earns their livelihood by rearing few pigs under backyard system. Almost every household in the villages possess small ponds ranging from 0.03 to 0.1 ha area. Farm pond is used for irrigating the crops occasionally and for other household purposes. Pig slurry produced in the households is neglected and dumped as waste material thus vitiating surrounding environment. Considering the local traditions of food habits and culture, pig-fish-vegetable module was introduced in the area for immediate attraction of the farmers in the target villages. This integrated farming system modifies monoculture into multiculture farming system where one component integrates[3]. Integrated farming system manages all these resources to augment

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production in a controlled environment. Integrated pig-fish-vegetable farming system is compatible with the states agro-climatic condition and envisaged to ensure rural livelihood security.

MATERIALS AND METHODS

The study was carried out under National Innovation Project Component – 3 in Gosaigaon area of Kokrajhar district. A total of 40 farmers were selected in the area for introduction of pig-fish-vegetable integrated farming system. The package of technology involved integration of 2 pigs of local breed along with one exotic Hampshire breed to 450 m^2 water surface area. Two months old piglets were reared for six months. Thus two batches of pigs were reared in integration with one crop of fish in a year. Fertilized pond water enriched with blue-green algae was used for irrigating horticultural crops such as okra in ***Kharif*** season and cabbage in the ***Rabi*** season cultivated at marginal area measuring 1000 m^2 on the bank of the pond. Fish species like catla, rohu, mrigal, grass carp and silver carp were released in the ponds @8,888 per ha. Semi permanent pig-sty was constructed on the pond embankment. The floor of the pig-sty was designed especially so that sludge of the sty flows to the fish pond when flushed during bathing of the pigs. A control mechanism was devised in the drain for controlling the flow of pig sludge to prevent deterioration of water quality in the fish pond. While intensive care in terms of feed and health was taken for pigs, the fishes did not receive any feed and fish pond did not receive any extraneous fertilizers except lime. Pig sludge was recycled to produce table fish.

RESULTS AND DISCUSSION

The study revealed that introduction of integrated farming, pig-fish-vegetables was much more profitable than that of single component farming system under socio-economic condition of Assam. Under traditional practice of pig rearing in the study area it was found that the number of piglets born from 2 gilts was only 16 at the end of one year (Table 1). However, with the introduction of improved managemental practices and integration with fish and vegetables, the number of piglets was increased to an average of 32.86 from 2 gilts after the end of one year. The integrated pig-fish farming was also reported to be extensively used farming system and was the most profitable enterprise followed by horti-pig-fish, poultry-fish and horti-fish farming[1].

The non-beneficiary farmers nearer to the study area (NAIP project site) also used the male pig with exotic germplasm (Hampshire) with a condition that they will return one piglet in from each litter in lieu of service provided by the male pig. Thus the participatory farmers fetched two way benefits from the farming system[4].

The average yield of fish was found to be 2.11 quintal after one year in a 450 m^2 pond area which was not utilized for fish production under traditional system of farming. The pig slurry was the only source of feeds made available to fish and as such input for rearing of fish was zero. The integrated pond system was also reported to be useful for pig manure recycling[3].

An average of 2.4 and 2.87 quintal of cabbage and okra respectively was harvested in an area of 1000 m^2 each with a handsome profit margin contributing a lot in reducing the cost benefit ratio (Table 1) while no practice of pig-fish-vegetable was recorded under traditional system, the profit margin was found to be very negligible compared to the integrated farming system where the return was remarkable.

Table 1: Economics of pig-fish-vegetable farming

Sl. No.	Items	Traditional Practice			IFS with Improved practice		
		Production	Cost (Rs.)	Income (Rs.)	Production	Cost (Rs.)	Income (Rs.)
1.	Piglets (sow/2 cycle/ 2 female piglets)	16	6,000.00	19,800.00	32.58	22,098.00	65,758.00
2.	Piglets as charge for servicing	-	-	-	1.45	-	2,988.00
3.	*FFEW (g)		-	-	2.5	-	4,125.00
4.	Fish (pond area 450 m²)(kg)	-	-	-	2.11	1,613.80	31,658.00
5.	Vegetable						
	Cabbage, q (1800 m²)	-	-	-	2.4	1,536.00	3,600.00
	Okra, q (1800 m²)	-	-	-	2.87	1,040.00	5,740.00
6.	Total	16	6,000.00	19,800.00		29,363.00	1,33,825.00
7.	Labour employed (man-days)	45			159		
8.	Benefit cost ratio	1.4:1			3.29:1		

*FFEW: Fish Feed Equivalent Waste

CONCLUSION

From the investigation, it can be concluded that pig-fish-vegetable integrated farming system was much more profitable and ensures rural livelihood security. The system also protects environment through efficient utilization of pig slurry and better utilization of rural resources.

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