Constraints Faced by the Farmers of Different Integrated Farming System Models under Kalong-Kapili NGO of Assam

Jharna Choudhury, Dipanjan Kashyap, Julfiqur Rahman

ABSTRACT

Integrated farming system is a resource management strategy to achieve economic and sustained agricultural production to meet diverse requirement of farm household while preserving the resource base and maintaining high environmental quality. A total of 120 farmers of Kalong-Kapili NGO from Kamrup (Metro) district of Assam were randomly selected for the study, comprising of 24, 20, 13, 20, 24 and 18 farmers from fish cum pig, fish cum poultry, fish cum duck, fish cum dairy, fishj cum rice and fish cum horticulture integrated farming systems, respectively. The farming system fish cum pig has accounted highest fifteen problems as compared to other systems. Among the several problems identified high cost of fish and animal feed, non-availability of good quality fish seed,fluctuating market conditions and financial problem were common among the farmers of all the systems.

Keywords Integrated farming system, NGO, Constraints.

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INTRODUCTION

Indian economy is mainly agriculture oriented. India with 2.2% of global geographical area supports more than 15% of the total world population, 60% of whom depend on agriculture. The growth rate of agriculture in the recent past is very slow in-spite of the rapid economic growth in India. Though there has been increase in food production from 51 million tons in 1950 and at present it is 281 million tons (2018-19), but nearly 40% of the Indian rural population still lives below the poverty line who cannot afford two square meals a day. Small and marginal farmers are the core of the Indian rural economy constituting 85% of the total farming community but possessing only 44% of the total operational land. The average size of operational holdings has reduced from 2.28 ha in 1970-71 to 1.08 ha in 2015-16. The declining trend of per capita land availability poses a serious challenge to the sustainability and profitability of farming (Siddeswaran et al. 2012). Due to ever increasing population and shrinking land resources in the country, practically there is hardly any scope for horizontal expansion of land for food production. Only vertical expansion is possible by integrating

appropriate farming components that require lesser space and time to ensure reasonable periodic income to farm families (Gill et al. 2009). Integrated farming system (IFS) is a commonly and broadly used term to explain a more integrated approach to farming as compared to existing monoculture approach. It refers to agricultural systems that integrated livestock and crop production. IFS is judicious mix of one or more enterprises along with cropping having complimentary effect through effective recycling of wastes and crop residues and encompasses additional source of income of the farmer. A farming system is the result of complex interactions among a number of inter-dependent components, where an individual farmer allocates certain quantities and qualities of four factors of production, namely land, labor, capital and management to which he has access (Mahapatra 1994). The approach aims at increasing income and employment from small-holdings by integrating various farm enterprises and recycling crop residues and by-products within the farm itself (Behera and Mahapatra 1999, Singh et al. 2006). It could be crop-fish integration, livestock-fish integration, crop-fish-livestock integration or combinations of crop, livestock, fish and other enterprises. Itnal et al. (1999) stated that integrated farming system is a resource management strategy to achieve economic and sustained agricultural production to meet diverse requirement of the farm household while preserving the resource base and maintaining high environmental quality. IFS gives greater importance for sound management of farm resources to enhance the farm productivity and reduce the environmental degradation, improve the living standard of resource poor farmers and maintain sustainability (Kumar et al. 2013).

Assam is one of the important states of India where agriculture is the mainstay of the state economy. Agriculture is the main source of income for over 80% of the rural population of the state. The primary sector alone contributes about 41% of the state domestic product. The average operational holding in the state is 1.31 ha and over 83% holdings in the state are marginal and small. Farmers in plains of Assam follow intensive integrated farming system to meet their demand for food and earn livelihood. It is common situation that almost every household have a pond in their homestead garden. Around the

ponds, crops like banana, areca nut, kitchen garden are maintained in the embankments and nearby uplands, and along with the household would have at least one animal component like cow/buffalo/pig/goat or their combinations. Local poultry/duck is also integrated to use resource effectively. Compost pit is maintained in the corner of the field and also in backyard. Pond water is used for life saving irrigation of vegetables and for fish culture. The vegetable wastes are added to pond as feed for fishes like grass carps. Rice is cultivated lowland and wastes of farming systems are recycled in rice/vegetable field. Some farmers maintain small pond in the corner of the rice fields for fish rearing as well as for irrigation.

Integrated farming system is giving the solution to the problems facing by small and marginal farmers of Assam. But due to lack of knowledge, farmers are always confronted with the problem of selecting proper enterprise mix which can provide maximum possible return. There is a need to identify and study the constraints faced by the farmers in integrated farming system to find their pertinent solutions. Therefore, the present study was conducted with the objective of identify the constraints faced by the farmers in various integrated farming systems in the study area.

MATERIALS AND METHODS

The study was conducted in Kalong-Kapili NGO of Kamrup (Metro) district of Assam. A total of 120 farmers were divided into six (6) groups based on their association with different integrated farming systems. Out of the total respondents, fish cum pig group consisted of 24 respondents, fish cum poultry had 21 respondents, 13 respondents were under fish cum duck group, fish cum dairy consisted of 20 respondents, paddy cum fish had 24 respondents while fish cum horticulture had 21 respondents. The respondents were interviewed face-to-face with the help of a pre-tested semi-structured schedule.

The problems faced by the respondents were based upon marketing, production and socio- economic backgrounds. After identification of the problems statistical technique was used to analyze and interpret the results. Respondents were asked to

Table 1. Distribution of respondents based on their socio-economic characteristics (N=120).

Variables	Categories	Integrated Farming System						Total
		Fish cum pig (n = 24)	Fish cum poultry (n=21)	Fish cum duck (n=13)	Fish cum dairy (n= 20)	Paddy cum fish (n = 24)	Fish cum horticulture (n = 18)	
Age (in years)	Below 30	-	1 (4.76)	1 (7.69)	-	3 (12.50)	-	5 (4.17)
	30-45	13 (54.17)	11 (52.38)	5 (38.46)	8 (40.00)	14 (58.33)	12 (66.67)	63 (52.50)
	46-60	8 (33.33)	7 (33.33)	2 (15.39)	7 (35.00)	4 (16.67)	3 (16.67)	21 (25.83)
	Above 60	3 (12.50)	2 (9.53)	5 (38.46)	5 (25.00)	3 (12.50)	3 (16.66)	31 (17.50)
Education	Illiterate	4 (16.67)	1 (4.76)	3 (23.08)	2 (10.00)	-	2 (11.11)	12 (10.00)
	Up to class IV	4 (16.67)	6 (28.57)	4 (30.77)	6 (30.00)	1 (4.17)	-	21 (17.50)
	Up to class VII	9 (37.50)	7 (33.33)	1 (7.69)	5 (25.00)	9 (37.50)	5 (27.78)	36 (30.00)
	HSLC	4 (16.66)	2 (9.53)	2 (15.39)	5 (25.00)	7 (29.17)	3 (16.67)	23 (19.17)
	HS	3 (12.50)	4 (19.05)	1 (7.69)	-	6 (25.00)	4 (22.22)	18 (15.00)
	Graduate	-	1 (4.76)	2 (15.38)	2 (10.00)	1 (4.16)	4 (22.22)	10 (8.33)
Gender	Male	21 (87.50)	21 (100.00)	10 (76.92)	20 (100.00)	24 (100.00)	17 (94.44)	113 (94.17)
	Female	3 (12.50)	-	1 (23.08)	-	-	1 (5.56)	7 (5.83)
Family type	Nuclear	19 (79.17)	15 (71.43)	9 (69.23)	15 (75.00)	22 (91.67)	15 (83.33)	95 (79.17)
	Joint	5 (20.83)	6 (28.57)	4 (30.77)	5 (25.00)	2 (8.33)	3 (16.67)	25 (20.83)
Experience (in years)	Up to 5	4 (16.67)	11 (52.38)	4 (30.77)	-	11 (45.83)	4 (22.22)	34 (28.33)
	6-10	11 (45.83)	6 (28.57)	6 (46.16)	8 (40.00)	9 (37.50)	9 (50.00)	49 (40.84)
	11-15	7 (29.16)	3 (14.29)	2 (15.38)	5 (25.00)	3 (12.50)	5 (27.78)	25 (20.83)
	16-20	1 (4.17)	1 (4.76)	-	3 (15.00)	1 (4.17)	-	6 (5.00)
	Above 20	1 (4.17)	-	1 (7.69)	4 (20.00)	-	-	6 (5.00)

rank the given problems according to their magnitude. Ranking of the constraints were then calculated with the help of Garrett Ranking method. The orders of merit given by the respondents were converted into ranks by using the following formula (Garrett and Woodsworth 1969) :

$$\text{Percentage position} = \frac{100\,(R_{ij} - 0.5)}{N_j}$$

Where, R_{ij} = Rank given for i^{th} item j^{th} individual. N_j = Number of items ranked by j^{th} individual.

RESULTS AND DISCUSSION

Profile of the respondents

Distribution of respondents based on socio-economic characteristics across different farming systems is depicted in the Table 1. The sample respondents for each of the farming systems has classified based on the age group of below 30 years, 30-45 years, 46-60 years and above 60 years. For all the groups, the highest respondents were observed in age group 30-45

years (52.50%), followed by age group 46-60 years (25.983%) and above 60 years (17.50%); while the least respondents were found in age group below 30 years (4.17%).

It was observed for all the groups that 30% of the respondents had education up to class VII, followed by 19.17% of the respondents who had completed their high school level education, 17.50% had primary education and only 8.33% had college level education. The study also shows that overall literacy level of the respondents representing all the farming systems was as high as 90%, with only 10% of them were illiterate. The data presented in the table highlights that more than four fifth of the respondents (94.17%) was male, only 5.83% were the female. Out of all the respondents, 79.17% belonged to nuclear families while the remaining 20.83% had stayed in the joint families.

Pooled data shows that among all the groups 40.84% respondents had experience of 6-10 years, followed by 28.33 and 20.83% who had experience in agriculture and allied activities of less than 5 years and 11-15 years, respectively.

Constraints faced by the farmers in various integrated farming systems

Various problems faced by the farmers in integrated farming systems are presented in the Table 2. It was observed that the farming system fish cum pig had accounted highest fifteen problems as compared to other systems. Among various constraints opined by the farmers of fish cum pig farmers, high cost of pig feeds was the constraints of greater concern, followed by fluctuating market conditions and non- availability of good quality fish seed, respectively. Though the feed conversion ratio was found highest for pig, the feed cost constituted a higher percentage of total costs which was difficult to handle for many poor farmers. Fish price fluctuates with a higher intensity than any other agricultural commodity mainly because of its perishable nature. Lack of government support was identified as the fourth important constraint for the farmers. Paucity of capital for rearing of pig and difficulties in getting bank loan for construction of

Table 2. Constraints faced by the farmers in different integrated farming systems (N = 120).

Sl. No.	Particulars	Garrett value Mean score	Rank
Fish cum pig			
1	High cost of pig feeds	69.29	I
2	Fluctuating market conditions and prices	62.79	II
3	Non-availability of good quality fish seed	61.75	III
4	Lack of government support	61.33	IV
5	Financial problem	60.75	V
6	Difficulties in getting bank loan	57.17	VI
7	Disease outbreak	51.21	VII
8	Unorganized markets	48.04	VIII
9	Inadequate technical support	47.21	IX
10	Higher marketing costs	43.79	X
11	Lesser selling price of produce	41.04	XI
12	Dominance of middlemen	38.63	XII
13	Higher cost of pig rearing	37.08	XIII
14	Irregular payments by middlemen	36.17	XIV
15	Non-availability of good quality piglet for rearing	33.75	XV
Fish cum poultry			
1	Non-availability of good quality fish seed	65.33	I
2	High cost of poultry feed	64.71	II
3	Financial problem	62.76	III
4	Difficulties in getting bank loan	54.43	IV
5	Lack of government support	53.05	V
6	Fluctuating market conditions and prices	51.43	VI
7	Disease outbreak	49.95	VII
8	Higher marketing costs	36.00	VIII
9	Inadequate technical support	32.19	IX
10	Lesser selling price of produce	28.14	X
Fish cum duck			
1	Non-availability of good quality fish seed	74.23	I
2	Financial problem	66.00	II
3	Non-availability of good quality duckling for rearing	64.62	III
4	High cost of duck feeds	64.00	IV
5	Fluctuating market conditions and prices	52.46	V
6	Difficulties in getting bank loan	51.00	VI
7	Unorganized markets	47.23	VII
8	Lack of government support	46.92	VIII
9	Inadequate technical support	29.85	IX
10	Disease outbreak	27.62	X
11	Higher marketing costs	26.08	XI
Fish cum dairy			
1	High cost of fish and dairy feeds	64.35	I
2	Non-availability of good quality fish seed	63.65	II
3	Financial problem	61.70	III
4	Lesser selling price of produce	58.30	IV
5	Difficulties in getting bank loan	55.60	V

Table 2. Continued.

Sl. No.	Particulars	Garrett value	
		Mean score	Rank
6	Non-availability of good quality heifer for rearing	53.35	VI
7	Fluctuating market conditions and prices	46.30	VII
8	Lack of government support	45.30	VIII
9	Higher cost of cattle rearing	40.30	IX
10	Inadequate technical support	32.05	X
11	Higher marketing costs	29.10	XI
Paddy cum fish			
1	Fluctuating market conditions and prices	68.00	I
2	Financial problem	65.96	II
3	Non-availability of good quality fish seed	60.58	III
4	High cost of fish feeds	54.79	IV
5	Dominance of middlemen	47.88	V
6	Lack of government support	45.50	VI
7	Disease outbreak	42.83	VII
8	Lesser selling price of produce	33.79	VIII
9	Inadequate technical support	31.67	IX
Fish cum horticulture			
1	Fluctuating market conditions and prices	67.00	I
2	Financial problem	63.00	II
3	High cost of fish feeds	61.28	III
4	Non-availability of good quality fish seed	58.89	IV
5	Lesser selling price of produce	53.06	V
6	Post-harvest handling	42.17	VI
7	Disease outbreak	40.72	VII
8	Lack of government support	38.72	VIII
9	Inadequate technical support	26.17	IX

pond as well as pig stay were identified as fifth and sixth severe problems of the farmers, respectively. Some other problems such as disease outbreak, unorganized markets, inadequate technical support, higher marketing cost, lesser selling price, dominance of middlemen, higher cost of pig rearing, irregular payments by middlemen, non-availability of good quality piglet for rearing were also identified during the study.

Out of the several problems faced by the fish cum poultry farming, non-availability of good quality fish seed was ranked first by the respondents. Non-availability of good quality fish seed was a major problem in the study area as fish breeding unit of Kalong-Kapili NGO was not in a position to supply required quantity of fish seeds to all its farmers. Farmers had to purchase fish seeds from distant markets situated in Guwahati as well as in Rangia, which resulted in higher mortality of fishes due to transportation difficulties. High cost of poultry feed and non-availability of credit were reported as second and third severe problems by the fish cum poultry farmers. For faster growth of poultry, use of 70 readymade feed is must; but farmers were unable to feed the birds with required quantities due to its higher price. The fourth and fifth severe problems of the farmers were difficulties in getting bank loan and lack of government support. Farmers had to follow long procedures to apply for bank loans and most of their applications were found to be rejected. Poultry market fluctuates most of the time in a year and hence the farmers were unable to get a steady price for their produce. They had to sale their produce at a lower price to the wholesalers and it was identified as the fifth severe problem faced by them. Disease outbreak, higher marketing cost and inadequate technical support were some other identified problems of fish cum poultry farmers.

There were 11 constraints reported by the fish cum duck farmers, out of which non-availability of good quality fish seed was ranked as the main constraint. Second most important constraint ranked by the farmers was the financial problem. Financial conditions of majority of the farmers were not good and they were unable to receive financial assistance from banks due to their small operational holding. Non-availability of good quality duckling was identified as the third important constraint of the farmers. High cost of duck feeds and fluctuating market conditions and prices were ranked as fourth and fifth problems by the farmers. Customer behavior for duck meat varies occasionally and hence the farmers were unable to get a steady price throughout the year. Difficulty in getting bank loan was reported as the sixth problem by the farmers. Lack of government support, inadequate technical support, disease outbreak and higher marketing costs were other constraints identified for fish cum duck farmers.

Among various constraints identified in fish cum dairy farming, high cost of fish and cattle feeds was the severe most constraint for the farmers. Cattles, especially the milch cows of exotic origin requires high-

er percentage of readymade feeds and the farmers were unable to feed them properly, resulting decrease in milk production from the animals. Non-availability of good quality fish seed was ranked as second severe constraint by the farmers while financial problem was ranked as the third most important problem. Fourth important constraint ranked by the farmers was lesser selling price of milk. Dairy farmers of the study area had to sale a part of their produced milk to Purabi dairy at around Rs 30—35 per liter, resulting huge loss of the farmers. Difficulties in getting bank loan, non-availability of good quality heifers, fluctuating market conditions and price, lack of government support, higher cost of cattle rearing, inadequate technical support and higher marketing cost were the other identified constraints faced by the fish cum dairy farmers.

Out of the nine identified constraints, fluctuating market conditions and prices was identified as the major problem for paddy cum fish farmers. As we all know paddy market is very uncertain and price goes up and down all the time. So the farmers reported it as their main problem as they had to sale their produce at lesser price most of the times. Second most important constraint ranked by the farmers was their poor financial condition. Non-availability of good quality fish seed was their third severe constraint. In the absence of good certified fish seeds, they had to depend on the vendors and quality of the fish seeds sold by those vendors was not up to the mark. Dominance of middlemen was another severe constraint faced by the farmers, due to which their share in consumer's rupee was meager. Lack of government support, disease outbreak and lack of technical support were some other constraints identified during the study.

There were nine major problems identified during the study. Fluctuating market conditions and prices, financial problem and high cost of fish feeds were the three major constraints identified by the fish cum horticulture farmers. Like the farmers of other integrated farming systems, fish cum horticulture farmers also faced the problem of non-availability of good quality fish seeds. So, the farmers had to bear higher marketing costs to carry fish seeds from distant places like Kamrup (Metro) and Rangia.Lesser selling price of the commodities, post-harvest handling of vegetables, disease outbreak, lack of government support and less technical support were other constraints identified with the fish cum horticulture farmers.

CONCLUSION

Due to the declining trend of per capita land availability along with the production, farmers have become more aware about integrated farming systems and the combination of enterprises, though they have been facing several problems. A considerable percentage of the respondents among all the groups were reported high cost of fish and animal feed, non-availability of good quality fish seed, financial problem and fluctuating market condition as some of the major problems. To overcome the problem of feeds, feeds can be prepared at the farms by incorporating all the important ingredients instead of purchasing them at high prices from the market. The NGO can enhance fish seed production capacity at their own hatchery to meet the demands of their farmers and also link up their farmers with government certified fish seed producers for getting quality seeds as and when necessary. Government should provide short and long term financial supports at low interest rates which can overcome the financial problems of the farmers. Moreover, the NGO can play a strong role in getting reasonable price of the produce by the farmers by strategically assembling and selling fish and other farm produce to selected market intermediaries and customers.

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