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Doubling farmer's income: A case study constraints faced by the farmers in adoption of farming system approach in Terai zone of Uttar Pradesh

Rishi Kumar Singh, RK Dohaery, NR Meena and Chandra Shekhar

Abstract
The present study was carried out in Tarai region of Uttar Pradesh. The interview schedule was used to obtain data from 400 respondents. It was reported that the respondent adopted the integrated system of Farming systems such as Crop and Livestock, Crop and Dairy, Crop and Goat, Crop, Goat and Dairy, Crop, Livestock and Vegetable, Crop, Vegetable and Dairy. The constraints faced by majority of the respondents in Tari Zone of Utter Pradesh were "heavy capital investment, lack of inputs availability, lack of infrastructure facility and fragmented landholdings, lack of knowledge about value addition, unskilled family labour, non-availability of improved varieties of seed /breeds at farm site and lack of technical knowledge".

Keywords: Doubling farmer's income, constraints faced, farmers, adoption, farming system approach

Introduction
Agriculture has traditionally been considered as the basis of our economy. In India, 70 percent of the rural population is involved in agriculture, and 80 percent of the population depends on agricultural incomes, either directly or indirectly. In India, agriculture sector is vast and diversified which contributes on an average 16 percent to GDP and 10 percent to export earnings. As an inevitable part of agriculture, animal husbandry has been an integral part of farming from the time of its evolution 10,000 years ago. Animals provide nutrient rich food products, draught power, dung as organic manure and domestic fuel, hides and skin, and are regular source of cash income for rural households.

It was noticed that in the year 1961, nearly 34 percent of the world's population lived in urban areas whereas projection for 2030 show that the figure will rise to over 60 percent, as cities and towns become home to more than 1.4 billion population. Most of this growth will take place in the developing world. Rapid urbanization is one of the most important demographic trends of this century. (Veenita Kumari and Junuthula Shirisha 2021) [6].

Farmers are heavily reliant on the usage of growth regulators, chemical pesticides, and fertilisers, which causes resource depletion, environmental degradation, and crop diversity loss. It is critical to guarantee that agricultural leftovers are recycled efficiently because 80-90 percent of the micronutrients remain in the biomass. There is a need to encourage businesses such as agriculture and livestock production for additional income generation in order to minimize country's dependence on crops. French bean cultivation and Forest-based livelihood activities, and 95.83, 71.67 and 21.67 percent were continuing livestock based, other crop-based and off-farm livelihood activities, respectively (Benjongtoshi *et al.* 2021) [2].

The government of India launched and followed a growth and development strategy plan aimed specifically at supporting agripreneurship and self-employment in order to encourage and enhance economic growth and sustainable development. The scheme is jointly implemented by ICAR, MANAGE, KVK, NABARD, ATMA, State Department of Agriculture, and NGOs in the different type of organized Skill Development Programme to increase knowledge and suggests the different Agricultural Technology in improving the farming systems. Therefore, the aim of study is to identify the socio-personal characteristics and constraint faced for doubling farmer Income.

Materials and Methods
The present study was carried out in Tarai region of Uttar Pradesh. The districts with more than 50 percent of the Tarai area were selected for the study.

Thus Pilibhit, Shravasti, Bijnor and Saharanpur districts constituted the area for the study. Eight Blocks were randomly selected from these districts. Sixteen villages were selected from each block through Random Sampling. From each village 25 farmers were selected randomly. Thus making a total sample size of 400 respondents. The data was collected through interview schedule. The data were coded, tabulated, analysed and interpreted with appropriate statistical tools and techniques in the light of objectives of the study. Frequency, percentage, arithmetic mean, standard deviation was used to analyse the data.

Result and Discussion

Socio-Economic, Psychological and Communication Characteristics are presented below in Table 1. About 23.5, 55, 21.5 percent respondents belonged to age group of, up to 35, 36-59, above 60 years, respectively. It is clear that majority of the respondents i.e. 97.5 percent were males and 2.5 percent respondents were females. It is clearly shown that 20 percent of farmers were illiterate and 3.25 percent literate. 19.5 percent of farmers had completed basic school, 19.25 percent had completed middle school, 19 percent had completed high school, 15.75 percent had done intermediate, and 3.25 percent had completed graduate and post graduate studies at the college or university level.

As it can be seen from the data in the table 1, the vast majority of respondents (78.25 percent) lived in nuclear households while only 21.75 percent of surveyed farmers said that they lived in a joint family. The findings revealed that nuclear families were the most common in the studied area.

Study showed that a vast majority of the respondents (47.5%) belonged to the 'General classes (GEN)'. Only 21.25 percent were belonged to 'OBC caste,' while 31.25 percent were the members of the 'Schedule caste.' There were no members of the 'Schedule tribe' among the respondents.

About 64.25 percent of the farmers in engaged of the farming. Around 60.75 percent engaged in both Agriculture and Dairying. 18.75, 11, 5.57, and 0.25 percent engaged in Agriculture and PVT, Agriculture and Labour, Agriculture and government Service, and Agriculture and Business, respectively.

Around 30.5 percent of farmers had less than ten years of farming experience. Approximately 22 percent of the farmers had 31 to 40 years of farming experience whereas about 19.25 percent of farmers have 21 to 30 years of farming experience. However, 11.25 percent of farmers had 11 to 20 years of farming experience. 17 percent of farmers have been farming for more than 41 years.

Annual income of farmers was Rs. 492948, and the standard deviation was Rs. 306083.84, indicating that there were significant variances in farmers' income. The majority of farmers (82.5%) had a medium income ranging from Rs. 192000 to Rs 797050 a year. 6.25 percent of farmers have low incomes ranging from Rs 54000 to Rs 178000 per year. Around 11.25 percent of farmers had a high income ranging from Rs 804250 to Rs 2885875 per year. Only one farmer out of 400 had a very high income.

Around 36 percent of the respondents were members of two organizations/office bearers, while 48 percent were members of one organisation. Approximately 16 percent of the farmers were not members of any organisation.

All the farmers were having Indigenous cow. Milch Indigenous cow was 38.35 percent, Heifer's 12.32 percent, Calves 36.99 percent, Adult 12.33 percent, Crossbred cow, Milch Crossbred cow 55.71 percent, Heifer's 5.71 percent, Calves 35.35 percent and Adult 3.21 percent and Buffalo, Milch buffalo 52.96 percent, Heifer's 9.75 percent, Calves 28.27 percent and Adult 9.00 percent.

Table 1: Distribution of respondents according to their socio-personal characteristics N=400

Characteristics	Categories	F	%
Age	Young age < 35	94	23.5
	Middle age 36-59	220	55
	Old age >60	86	21.5
Gender	Male	390	97.5
	Female	10	2.5
Education	Illiterate	80	20
	Literate	13	3.25
	Primary school	78	19.5
	Middle school	77	19.25
	High school	76	19
	Intermediate	63	15.75
	Graduate & Post graduate	13	3.25
Family Type	Nuclear/Single family	313	78.25
	Joint family	87	21.75
Categories	General caste	190	47.5
	Other Backward caste	85	21.25
	Scheduled caste	125	31.25
	Scheduled tribe	0	0
Occupation	Agriculture + Labour	44	11
	Agriculture + Gov Service	23	5.75
	Agriculture + PVT	75	18.75
	Agriculture	257	64.25
	Agriculture + Business	1	0.25
	Agriculture + Dairying	243	60.75
	Agriculture + Gardening	0	0
Farming Experience	>10 year	122	30.5
	11 – 20 Year	45	11.25
	21 – 30 Year	77	19.25
	31 – 40 Year	88	22
	< 41 Year	68	17
Annual Income	Low (up to 178000)	25	6.25
	Medium (1920000 -797050)	330	82.5
	High (804250 and above)	45	11.25
Social Participation	No participation in any organization	64	16
	As a member in one organization	192	48
	As a member of two organizations/office bearer	144	36
Livestock Holding	**IND**		
	Milch Indigenous cow	28	38.35
	Heifers	9	12.32
	Calves	27	36.98
	Adult	9	12.32
	CB		
	Milch Crossbred cow	156	55.71
	Heifers	16	5.71
	Calves	99	35.35
	Adult	9	3.21
	Buffalo		
	Milch buffalo	1064	52.96
	Heifers	196	9.75
	Calves	568	28.27
	Adult	181	9.00
	Goat		
	Adult	247	51.89
	Young	147	30.88
	Kids	82	17.22

The information seeking behaviour of the farmers was studied under four categories included in Bhairamkar (2009) [3] scale which was adopted for the present investigation.

Newspaper, news bulletins, internet, farmers' fair, circular letters, radio, farm magazines, demonstration, folders, agril. Books and posters were ranked as 1st, 2nd, 3rd, 4th, 5th, 6th, 7th, 8th, 9th, 10th, 11th, and 12th, respectively (Table 2).

Many initiatives have been taken in this regard to utilize mobile phones by private sector (Indian Farmers Fertilizer Cooperative Limited, Nokia, Airtel, Tata Consultancy Services, etc.), public sector (Ministry of Agriculture and Farmers Welfare, Agricultural Universities, Research Institutions like Indian Council of Agricultural Research, State Governments). The Indian government and other development agencies promote farmers and their income generating projects as a way of encouraging growth through increased agricultural production. (Rishi Kumar Singh *et al.* 2021) [5].

Table 2. ranked Facebook, Other Information source, WhatsApp, Gmail and Twitter as 1st, 2nd, 3rd, 4th, and 5th, respectively. The results of the study are in congruence with the findings of Singh *et al.* (2018).

Table 2: Distribution of respondents on the basis of Their Mass Media Exposure

S. No.	Source of information	Respondents		
		MPS	Ranks	SD
Mass Media Exposure				
1	Radio	1.74	VII	2.725
2	T.V.	5.01	I	1.213
3	News Paper	4.51	II	1.737
4	Agril. Books	0.94	XI	1.619
5	News Bulletins	4.22	III	1.468
6	Farm magazines	1.33	VIII	1.645
7	Circular letters	1.77	VI	1.625
8	Posters	0.72	XII	1.021
9	Farmers Fair	2.03	V	1.641
10	Demonstration	1.27	IX	1.265
11	Folders	1.13	X	1.164
12	Internet	2.7575	IV	2.543
Social media				
1	Facebook	0.5125	I	0.5004
2	WhatsApp	0.2975	III	0.457
3	Twitter	0.055	V	0.228
4	Gmail	0.1	IV	0.3003
5	Others	0.38	II	0.485

Constraints refer to the problems which are faced by farmers in successful operation and management of dairy activity. Dairy production in area had numerous problems hindering the smooth progress of dairy sector (Babita Adhikari *et al.* 2021) [1]. As per the farmers opinion overall (54.44%) farmers were faced problems in integrated farming system. (P.R. Pandey *et al.* 2019) [4].

It is obvious from the Table 3 that an overwhelming majority of the respondents i.e 82.25 percent agreed that 'Heavy capital investment' was the most common problem and ranked at Ist position, followed by lack of inputs availability rank at IInd, Reduced pasture land increases the cost of rearing rank at IIIrd, labour unavailability and its high cost rank at IV^{th,} lack of knowledge about value addition rank at V^{th,} lack of infrastructure facility and fragmented landholdings rank at VIth, unskilled family labour rank at VIIth, non-availability of improved varieties of seed /breeds at farm site rank at VIIIth, lack of marketing channels rank at XIth, electricity supply problem for irrigation and farm purpose at Xth, lack of information about government schemes rank at XIth, multitasking required for maintenance of different enterprises at same time at XIIth, water logging rank at XIIIth, and lack of technical knowledge rank at XIVth, respectively.

Table 3: Constraints faced by the farmers in the farming system approach for doubling the income.

S. No	Statement	F	%	Rank
1	Lack of marketing channels	238	59.5	IX
2	Heavy capital investment	341	85.25	I
3	Labour unavailability and its high cost	303	75.75	IV
4	Lack of infrastructure facility and fragmented landholdings	290	72.5	VI
5	Non-availability of improved varieties of seed /breeds at farm site	285	71.25	VIII
6	Electricity supply problem for irrigation and farm purpose	269	67.25	X
7	Lack of inputs availability	316	79	II
8	Unskilled family labour	288	72	VII
9	Lack of knowledge about value addition	298	74.5	V
10	Water logging	259	64.75	XIII
11	Lack of information about government schemes	262	65.5	XI
12	Multitasking required for maintenance of different enterprises at same time	260	65	XII
13	Reduced pasture land increases the cost of rearing	306	76.5	III
14	Lack of technical knowledge	255	63.75	XIV

Conclusions

It can be concluded that the farmers in the study area faced various constraints in doubling farmers' income through farming system approach. These impediments can be removed by the coordinated efforts of all the stakeholders working for augmenting farmers' income through various farming systems approach. The essence of farming system approach i.e. farmer centred approach and use of by-product of one system into the other thus producing zero waste and completing the cycle must be implemented in letter and spirit. The farmers must be made aware about the methods through which they can, take full advantage of the farming system approach and enhance their income by reducing input cost and increasing productivity.

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