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Study on socio-economic aspects and constraints faced in integrated farming system (Crop + Dairy) in Sultanpur district of Uttar Pradesh

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Abstract
To study the socio-economic characteristics and constraints faced in Integrated Farming System. Primary data was collected from 150 farmers from the Kurebhar and Dhanpatganj blocks of Sultanpur district in the year 2021-22. Five villages from both blocks were selected, so from every village, farmers were selected on the basis of the percentage of the working population. Quantitative statistical techniques Arithmetic Mean, Weighted Mean, and Constraints were used to estimate the socioeconomic aspects and constraints faced in Integrated Farming System. The Study finds that the socioeconomic condition was better in the study area and the constraints faced in IFS have to resolve to improve the income of farmers in the study area.

Introduction
The integrated farming system is a strategy for resource management that attempts to generate agricultural goods in an inexpensive and sustainable way to meet a range of farm household demands while protecting the resource base and maintaining excellent environmental quality. IFS promotes resource management and makes use of readily available resources in the local area to address sustainable use of land, water, and biota on the farm. It also covers nutritional security, food security, economic security, and security of livelihood. Contrary to monoculture farming techniques, integrated farming systems (IFS) make use of the synergies between crop, livestock, poultry, fodder grass, and agroforestry components to boost the viability of small-scale agricultural operations. Integrated Biosystems is created by IFS by fusing the aforementioned components. This strategy decreases costs while raising output and income by leveraging the "output" from one organization as an input for another through the use of a network of connected organizations.

Research Methodology
Sampling Design
Multi-stage sampling technique was utilized to choose the district, block, villages, and farmers.

Selection of District
There are 75 districts in the state of Uttar Pradesh, most of the rural population is engaged in agriculture and dairy farming is their main occupation after crop production. Sultanpur is one of the districts where dairy farming is mainly practiced as a supplement to cropping system, hence this district was purposively selected for the research.

Selection of Block
A list of all the 14 blocks in Sultanpur district was arranged in ascending order according to the area under cultivation in the region and two blocks namely Kurebhar and Dhanpatganj were selected purposively on the basis of the maximum area under this farming system.

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Selection of Villages
A list of all the villages of the selected blocks was prepared with the help of the Block development office and 5 villages from each block were selected randomly which was 6 percent of the total villages (121) of Dhanpatganj block and 8 percent of the total villages (168) of Kurebhar block.

Selection of Farmers
A list of every farmer active in the chosen villages was created with the help of the head of the Village Panchayat. Further, 10 percent respondents of the total population from all villages were taken as the sample for the study with the help of the random number table selection method. After the selection of sample farmers with the help of the random number selection method the farmers were categorized in the categories according to their landholding and it was found that there was 66 marginal farmers, 56 are small farmers and 28 are medium farmers out of 150.

Data Collection
The farmers' major information was gathered through the personal interview method with the help of a pre-tested interview schedule. A variety of sources, including books, diaries, reports, and the records of the district and block headquarters, such as research papers, articles, and district statistical reports were used to gather the pertinent secondary data.

Analytical Tools
1. Arithmetic Mean

$$AM = \frac{\sum X_i}{N}$$

Where,
AM = Arithmetic Mean
$\sum X_i$ = Sum of Variables
N = Total Number of Variables

2. Weighted Mean

$$WM = \frac{\sum W_i \ X_i}{\sum W_i}$$

Where,
WM = Weighted Mean
W_i = Weight of X_i
X_i = Variable

3. Garrett Ranking Technique
Farmers were asked to rank the restrictions. In light of this, we used Garrett's table to translate these ranks into scores. The following is Garrett's algorithm for turning ranks into percentages.

$$Percent \ position = \frac{100 * (R_{ij} - 0.50)}{N_j}$$

Where,
R_{ij} = Rank given for i^{th} item in j^{th} system
N_j = Number of items ranked in jth system

Results and Discussion
Socio-economic structure considerably impacts various economic activities like decision making, size of business,

pattern and utilization of resources, efficiency, production pattern, playing a crucial role. Heterogeneity is quite evident in socio-economic characteristics and a typical village of Uttar Pradesh is no exception. An effort has been made to analyse the important socio-economic characteristics of the respondent farmers.

Size and Composition
Size of family is of great importance in the context of agricultural occupation. Large family size indicates more working force of the family and may be utilized as labour force at the time of various operations of the farms. The average family size of sample farm is given in table 1. In which indicates that average family size of medium farmers was 5.80 followed by marginal and small farmers having average family size of 5.10 and 4.32, respectively. The overall average family size of farms was found to be 5.07.

Table 1: Average Size and Composition of Family of different households under IFS:

Particulars	Marginal	Small	Medium (Semi Medium + Medium)	All Farm Average
Average Number	5.10	4.32	5.80	5.07
Male	2.37	2.34	2.97	2.56
Female	2.73	1.98	2.83	2.51

Age
Table 2 shows the distribution of sample population on the basis of age. Out of total ten villages sample population viz. 150, most of the respondents comes under the age group of 31 to 50 years which was 55.34% of the sample population followed by the age group of below 30 years which was 30.00% and above 50 years of age group which was 14.66%. It was noticed that major composition of family member belongs to age group of 30 to 50 years.

Table 2: Age wise family composition of sample farm under IFS:

Category	Respondent	
	Number	Percent (%)
Below 30 years	45	30.00
Between 31 to 50 years	83	55.34
Above 50 years	22	14.66
Total	150	100

Landholding
The size of the holding is supposed to positively correlate with the volume of food grains production. The farmers having a larger size of holding are economically better off and they are able to adopt easily the improved farm practices. On the other hand, the farmer having smaller farm units desired to produce as much as can with a view to marketing both their ends meet and improving their economic condition as depicted in Table 3. This table indicates that the overall average size of farms was found to be 1.75 ha, which varied from 0.82 ha. on marginal, 1.81 ha. on small, and 2.62 ha. on medium farms.

Table 3: Average landholding of different households (hectare) under IFS:

Farm Group	Land Holding (ha)
Marginal	0.82
Small	1.81
Medium (Semi Medium + Medium)	2.62
All Farm Average	1.75

Income

Income is directly associated with our daily economic activities it helps us get some of life's intangibles, freedom or independence' the opportunity to make the most of our skills and talents the ability to choose our life course', and financial security. With money' much good can be done and much unnecessary suffering avoided or eliminated. Table 4 shows the marginal household had an annual income of Rs.

195413.00 on average while small and medium households had Rs. 196024.00 and 208140.00, respectively from the farm activities. The all-farm average annual income in the study sample was found to be Rs. 309297.66. The non-farm income was found highest in the medium farms followed by small and medium that were Rs. 131830.00, Rs. 108020.00, and Rs. 88466.00, respectively.

Table 4: Average Annual Income of different household (Rs.) under IFS:

Particulars	Farm Group			All Farm Average
	Marginal	Small	Medium (Semi Medium + Medium)	
Non-Farm Income	88466.00	108020.00	131830.00	109438.66
Farm Income	195413.00	196024.00	208140.00	199859.00
Total	283879.00	304044.00	339970.00	309297.66

Expenditure

Monthly expenditure includes recurring living expenses, such as your rent or mortgage, car payment, and utilities it also includes the more variable amounts you spend on haircuts' groceries, and clothes each month. With expenditure, we can regulate our living activities which are most necessary for our living. Table 5 shows the marginal household had a monthly expenditure of Rs. 8280.00 on average while small and medium households had monthly expenditures of Rs. 12950.00 and Rs. 18370.00, respectively. The all-farm average of monthly expenditure in the study sample was found to be Rs. 12918.66.

Table 5: Average Monthly Expenditure on food consumption of different households (Rs.) under IFS:

Particulars	Farm Group			All Farm Average
	Marginal	Small	Medium (Semi Medium + Medium)	
Average Monthly Expenditure	8280.00	12950.00	18370.00	12918.66

Literacy

The level of literacy directly affects the level of adoption of scientific approaches and technology resource use efficiency and farm management. Table 6 shows that 100.00 percent of the study sample was literate. Primary school holders were found in marginal households which were 15 (18.98 percent) and in small 8 (18.60 percent). Middle school holder was 18 (22.79 percent) and in small 10 (23.26 percent). High school holders were found in marginal households which were 16 (20.27 percent), 5 (11.63 percent) in small, and 6 (21.43 percent) in medium. 15 (18.98 percent) marginal, 12 (27.90 percent) small, and 10 (35.71 percent) medium farmers had Intermediate education. Graduation and above was done by 15 (18.98 percent) marginal, 8 (18.61 percent) small, and 12 (42.86 percent) medium farmers. Most of the respondents were found educated at the intermediate level which was 24.67 percent of the total population followed by graduate and above 23.34 percent of the population.

Table 6: Distribution of respondents of households according to literacy status (Numbers) under IFS:

Literacy Status	Farm Groups			Total
	Marginal	Small	Medium (Semi Medium + Medium)	
Illiterate	9 (11.39)	6 (13.96)	3 (10.72)	18 (12.00)
Primary School	11 (13.93)	5 (11.63)	0	16 (10.66)
Middle School	15 (18.99)	7 (16.29)	0	22 (14.66)
High School	12 (15.19)	5 (11.62)	6 (21.43)	23 (15.34)
Intermediate	15 (18.98)	12 (27.90)	10 (35.71)	37 (24.67)
Graduate & above	17 (21.52)	8 (18.60)	9 (32.14)	34 (22.67)
Total	79 (100)	43 (100)	28 (100)	150 (100)

Constraints

In the research area, the Integrated Farming System faces a variety of restrictions. Table 7, which has a Garett score of 88, reveals that the lack of infrastructure facilities was the main obstacle most integrated agricultural systems had to overcome (rank I). Scattered landholding was the II most significant limitation facing the integrated agricultural system (overall Garrett score 78). The other major obstacles cited by the integrated farming system were the high cost in the rearing of animals (Garrett score of 73, rank III), unavailability of fertilizers and pesticides (Garrett score of 69, position IV), and scarcity of labor (Garrett score 65, rank V). In addition to the aforementioned issues, minor issues in the study area include a lack of limited funds (Garrett score 63, rank VI), higher care and management in maintenance of different enterprises at the same time (Garrett score 59, rank VII), lack of Irrigation facilities (Garrett score 57, rank VIII), lack of technical guidance (Garrett score 54, rank IX), lack of knowledge in effective utilization of farm produce (Garrett score 51, rank X), natural calamities (irregular rainfall,

drought, etc.) (Garrett score 49, rank XI), high price fluctuations (Garrett score 46, rank XII), non-availability of quality seeds (Garrett score 44, rank XIII), poor transport facility (Garrett score 41, rank XIV), management of subsidiary enterprises (Garrett score 39, rank XV).

Constraints related to dairy were found lack of knowledge of balance feeding, lack of knowledge of good feeding practices for milch animals, lack of knowledge about quality silage preparation technique, high cost of concentrate feed, and last but not least i.e. limited crop for fodder production.

Table 7: Constraints Faced by Farmers in Integrated Farming System:

Sl. No.	Problems	Garrett Score	Rank
1.	Lack of infrastructure facilities	88	I
2.	Scattered Landholdings	78	II
3.	High cost in the rearing of the animals	73	III
4.	Unavailability of fertilizers and pesticide	69	IV
5.	Scarcity of Labour	65	V
6.	Limited fund	63	VI
7.	Higher care and management in the maintenance of different enterprises at the same time	59	VII
8.	Lack of Irrigation facilities	57	VIII
9.	Lack of Technical Guidance	54	IX
10.	Lack of knowledge in effective utilization of farm produce	51	X
11.	Natural calamities (irregular rainfall, drought, etc.)	49	XI
12.	High price fluctuations	46	XII
13.	Non-availability of quality seeds	44	XIII
14.	Poor transport facility	41	XIV
15.	Management of subsidiary enterprises	39	XV
16.	Lack of Knowledge of Balance Feeding	36	XVI
17.	Lack of Knowledge of good feeding practices for Milch Animal	32	XVII
18.	Lack of knowledge about quality silage preparation technique	28	XVIII
19.	High cost of concentrate feed	22	XIX
20.	Limited crop for fodder production	13	XX

Conclusion
It was revealed from the study that the educational status of the sample respondents was good on average in the study area. It was concluded from the study that per farm investment in building, livestock, and farm types of machinery had a direct relationship with farm size. The study revealed that the households under the Integrated Farming System was having a moderate level of socioeconomic profile status and their livelihood status was also in good condition with better utilization of available farm resources.

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