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Constraints faced by the small and marginal farmers in integrated farming system in Amritsar district of Punjab

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Abstract
Integrated Farming System is an integrative whole farm approach that is successful in addressing the issues faced by small and marginal farmers. The aim of Integrated Farming System is to increase employment and income from small-holdings by combining multiple farm enterprises and recycling crop by-products and leftovers on the farm itself. Keeping in view the importance of Integrated Farming System the present study was conducted in the Amritsar district of Punjab. Amritsar district comprises of nine numbers of blocks namely Ajnala, Attari, Chogawan, Harsha China, Jandiala Guru, Majitha, Rayya, Tarsika and Verka. Out of nine blocks, two blocks were selected randomly. From each selected block, two villages were selected randomly and from each selected village 25 respondents were selected randomly to make a sample size of 100 respondents. The results of the study showed that the majority of respondents in the Verka block belong to the middle age group, while in the Attari block, the majority of respondents belong to young age group. The majority of the respondents in the Verka block were matriculated and 12th level qualified while in the Attari block, the majority of farmers were middle-level qualified. Farming and business were the major occupation of farmers in both blocks. Constraints were analysed by using Henry Garrett's ranking technique the respondents ranked 1st to Lack of Banking facilities, Ranked 2nd to Non availability of bank loans. Lack of awareness was ranked 3rd, Unavailability of Farming system modules ranked 4th and so on upto the 10th rank by the respondents.

Keywords: Integrated farming system, constraints, enterprises, Garrett, occupation

Introduction
Integrated farming systems (IFS) is an environmentally beneficial method that makes better use of farm resources by turning waste from one sector into input for another. IFS is a mixed farming system made up of at least two independents but logically connected sections of a crop and livestock enterprise. IFS aids in maintaining water quality, enhancing weed and pest control, and enhancing soil health. The use of toxic chemical pesticides, weed killers, and fertilisers should be minimised in integrated farming systems in order to protect the environment from unfavourable consequences. The economic situation of small and marginal farmers is improved through integrated farming systems, which also enhances social obligations such as those related to health, education, and welfare (Gupta *et al*., 2020) [4].

IFS maximises the effective use of nutrients in each system while minimising the negative effects on the environment of these businesses. The "system of systems" known as IFS (Soni *et al*., 2014) [10]. It combines a number of diverse systems in an effort to sustainably use natural resources in order to boost farmers' revenue. It is an agricultural technique that combines the production of fish and cattle or of crops and animals. IFS is designed to allow the primary and secondary output of one system to be utilised as a fundamental input for another system. Each enterprise in an

IFS coexists in a mutually beneficial symbiotic relationship, complementing one another's resource requirements. IFS demands the parallel operation of two or more production systems. IFS emphasises the notions that "waste is just a misplaced resource" and "there is no waste. The final compost created by utilising the trash from the two businesses will be applied to the field and used as fertiliser for the crops. In order to enhance revenue and create jobs from small properties, the concept entails merging diverse agricultural firms using farming waste and by-products on the farm itself. Utilising wastes as resources ensure that all agricultural systems will produce more overall while also reducing waste (Cardi, 2010) [2]. The IFS also serves as a means of ensuring the family of a farmer has access to a variety of IFS components, such as vegetables, fruits, eggs, milk, fish, etc., while also generating revenue from the surplus of these components. The better returns with the farming system were not just attributable to the system's higher productivity, but also to lower production costs and the recycling of crop by-products. Due to the integration of more components into the farm, the value of labour absorption has increased in IFS farms. In terms of socioeconomic requirements, the IFS is viable, but actual adoption rates of integrated farming are modest and unevenly distributed among farmers (Walia *et al*., 2019) [12]. In India, according to the National Sample Survey

Organisation's (NSSO's) quinquennial survey (2009-10) on employment shows a 4 per cent decline in the share of agriculture compared to the previous round. Such a structural transformation is expected in the economy, but the rate of transformation has been much slower than desired. It is because the decline in the share of agricultural workers in total workers has been slower in declining as compared to the decline in the share of agriculture in gross domestic product (GDP). Moreover, in rural India, the growth rate of employment in the non-agricultural sector has been far short of the increase in the rural workforce. As a result, rural unemployment is growing. To make things worse, disguised unemployment in agriculture is another dominant factor (Behera, 2016) [1]. So, it becomes essential to adopt such a farming system which supports employment and income supplement. Integrated farming system caters to this need by integrating allied activities with cropping. To examine the most lucrative integrated agricultural system and the farming system that produces the most jobs in Punjab. The farmers of Punjab use a variety of farming systems approaches to meet their requirements while preserving the ecological balance. They oversee various agricultural businesses, such as farming of crops, dairying, poultry, fisheries, piggeries, sericulture, and tree crops, in order to maximise their profits. Two villages from each of Punjab's five agro-ecological zones were chosen for the study, which was conducted there. For the study, a total of 200 respondents were chosen, of whom 100 were involved in integrated farming and 100 in non-integrated farming. It was discovered that the majority of farmers who adopted integrated agricultural systems belonged to nuclear families in their middle years. The largest category concerned has matriculate level education with minimal social engagement. The two main integrated systems that the majority of the respondents practised were (Crop + Dairy) and (Crop + Dairy + Fruits). The findings showed that direct export is less common than plans for direct marketing and agreements with private businesses. Their own interests and large earnings were the main sources of interest. The integrated farming method, according to all of the farmers, meets the many needs of agriculture (Singh et al., 2021) [9].

A constraint is a situation or set of circumstances that restricts or limits an activity or performance of specific farming methods. In other words, it is acknowledged as a source of challenges for marginal and small-scale tribal farmers. The adoption of IFS practises is significantly influenced by constraints. The limitations must be kept to a minimum in order to improve the outcomes of different agricultural companies. An open-ended question was used to gather data regarding the difficulties faced by the small and marginal tribal farmers. Integrated Farming System (IFS) is a biological integrated system that incorporates natural resources into farming activities in a controlled manner to achieve maximum input replacement, secures sustainable production of high-quality food and other products through ecologically preferred technologies, sustains farm income, and removes sources of environmental pollution caused by agriculture. The many restrictions include those related to production, circumstance, finances, marketing, and extension. The farmers have been requested to list any issues they have actually encountered while working. Farmers currently raise cows, buffalos, goats, and a limited number of chickens to suit their domestic requirements and to increase their income. As a result, livestock is now an essential component of farming. Over the past few decades, several authors have researched the limitations faced by small, marginal, and numerous farmers in diverse locations. (Kumar et al., 2017; Meshram et al., 2020) [5, 7].

Materials and Methods
Multistage purposively cum random sampling technique were followed for the selection of the respondents. The present study was conducted in Amritsar district of Punjab. Amritsar district comprises of nine numbers of blocks namely Ajnala, Attari, Chogawan, Harsha China, Jandiala Guru, Majitha, Rayya, Tarsika and Verka. Out of nine blocks, two blocks were selected randomly. From each selected block, two villages were selected randomly and from each selected village 25 respondents were selected randomly to make a sample size of 100 respondents. A pre-structured interview schedule was used for the collection of primary data. Henry Garret ranking technique was used to analyse the constraints faced by small and marginal farmers in Integrated Farming System.

Results and Discussion
The results presented in Table 1 revealed that the majority of respondents had an average age of 48.64 years and 41.90 years in Verka and Attari blocks, respectively. Furthermore, age was categorized and the majority of respondents in the Verka block belong to the middle age category, while in the Attari block, the majority of respondents are young age category. Significant difference was also observed between both the blocks in the young and old age category. The similar results were reported by Mangala (2008) [6]. The average education of farmers was secondary level in Verka and Attari blocks, respectively. The majority of the respondents in the Verka block were secondary and senior secondary level qualified while in the Attari block, the majority of farmers were middle-level qualified. Significant differences were observed between both blocks at the middle education level, where $z = 4.800$ and $p = 0.0001$. The similar results were reported by Chitra (2010) [3] who revealed that more than 30% farmers have completed atleast a high school degree followed by those who have only completed elementary school (23.4%), illiterates (26.60%) and farmers who have completed middle school (20.00%). The majority of the farmers in Verka block 96% were male and only 4% were female, while in Attari Block, the majority of farmers were male. The average family size was 3.86 and 3.74 members in Verka and Attari blocks, respectively. Significant differences were also observed in average family size where, $t = 0.722$ and $p = 0.055$. The majority of farmers in both blocks had 3-5 members in their family. The majority of the farmers reside in nuclear families in both the blocks.

Table 1: Descriptive statistics regarding-socio economic status of the respondents

Parameters	Blocks		Statistical (p value)	Overall n= 100
	Verka n=50	Attari n=50		
Average age (in years)	48.64 ± 16.98	41.90 ± 13.53	t=2.195(0.098)	45.27 ±15.64
Categorization of age (% respondents)				
18-40(young)	19(38)	24(48)	|z|=2.882**(0.003)	43(43)
41-63(Middle)	21(42)	23(46)	|z|=1.2309(0.218)	44(44)
Above 64(Old)	10(20)	3(6)	z=3.1917**(0.001)	13(13)
Average education	10.68± 2.60	9.40± 2.54	t=2.487(0.670)	10.04 ± 2.64
Categorization of Education level (% respondents)				
Primary	2(4)	4(8)	|z|=1.230(0.218)	6(6)
Middle	12(24)	23(46)	|z|=4.800**(0.0001)	35(35)
Secondary	14 (28)	11 (22)	z=1.20(0.230)	25(25)
Senior Secondary	14 (28)	8 (16)	z=2.417(0.155)	22(22)
Graduate & above	8 (16)	4 (8)	z=1.873(0.614)	12(12)
Gender				
Categorization of gender (% Respondents)				
Male	48 (96)	50 (100)	|z|=1.428**(0.0001)	98(98)
Female	2 (4)	0	-	2(2)
Average family size(members)	3.86 ± 0.67	3.74 ± 0.96	t=0.722*(0.055)	3.80 ± 0.83
Categorization of Family Size (% respondents)				
Upto 3 (members)	0	2(4)	-	2(2)
3-5 (members)	44(88)	42(84)	z=0.576**(0.0001)	86(86)
Above 5 (members)	6(12)	6(12)	-	12(12)
Family Type				
Nuclear	50 (100)	48 (96)	z=1.428**(0.0001)	98(98)
Joint	0	2 (4)	-	2(2)

With regard to the occupation of farmers, the result presented in Table 2 shows that Farming + Business was the main occupation of the respondents in both the blocks. Furthermore, it reveals that 10 percent respondents in both the blocks had occupation of Farming + Govt. Service 16% respectively in Verka block and 10% in Attari blocks had occupation of farming + private job 8% respondents in Attari block had occupation of Farming + Labour. None of the respondents in Verka block had occupation of Farming + labour. Farming+ business was the main source of livelihood of the farmers in both the blocks it might be the fact that operational land holding of the farmer is less in the study area and farmers prefer to at business with their farming because farming itself could not support their livelihood singly thus they had business with the farming. These results are correspond with those presented by Vekariya *et al.,* (2016) [11].

Table 2: Distribution of respondents on the basis of their occupation (% respondents)

Occupation	Blocks		Statistical (p value)	Overall n= 100
	Verka n=50	Attari n=50		
Farming + Govt. Service	5 (10)	5 (10)	-	10(10)
Farming + Private Job	3 (16)	5 (10)	|z|=0.737|(0.459)	8(8)
Farming + Labour	0	4 (8)	-	4(4)
Farming + Business	42 (84)	36 (72)	z=1.448(0.147)	78(78)

The major constraints faced by the Farmers in Integrated Farming system in Amritsar district of Punjab presented in Table 3. Henry Garret ranking technique was used to analyse the constraints faced by small and marginal farmers in Integrated Farming System. On the basis of results it was revealed that respondents ranked 1st to lack of banking facilities, ranked 2nd to non availability of bank loans. lack

of awareness was ranked 3rd, unavailability of farming system modules ranked 4th, ranked 5th to non availability of certified seed, ranked 6th to lack of extension services, ranked 7th to less availability of fertilizers, ranked 8th to high charges of measurements, ranked 9th to lack of financial support, ranked 10th lack of timely availability of inputs. Financial resources and better management of the resources are very much important factors for successfully implementation of an enterprise. These factors are also important for integrated farming system to minimize these problems financial agencies such as banks should be available at local places in nearby places and provide timely loan to the needy farmers with minimum interest rate. The similar results were reported by Sharma *et al.* (2008) [8] and Chitra (2010) [3].

Table 3: Constraints reported by the respondents in Integrated farming system

Constraints	Garret value	Ranks
Less availability of fertilizers	68.97	VII
High charges of measurements	68.72	VIII
Non availability of certified seed	73.72	V
Lack of awareness	76.01	III
Non availability of bank loans	76.69	II
Lack of financial support	66.61	IX
Lack of timely availability of inputs	65.70	X
Lack of extension services	69.03	VI
Unavailability of farming system modules	73.76	IV
Lack of banking facilities	78.34	I

Conclusion

It is concluded on the basis of findings of current study that major constraints faced by the farmers in integrated farming system were lack of banking facilities, non-availability of bank loans. lack of awareness, unavailability of farming

system modules, non-availability of certified seed, lack of extension services, less availability of fertilizers, high charges of measurements, lack of financial support, to overcome from these constraints it is suggested that new technologies should be provided at village level through co-operative societies and also the providence of loans to the farmers should be on less interest rate as well as on less conditions by the banks.

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