



Attitude of Farmers Toward Intercropping in Haryana

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ABSTRACT

Intercropping is a type of multiple cropping practices that involves the cultivation of two or more crops in definite proximity. The present study was conducted in dry and wet agro-climatic zones of Haryana in March, 2022. Bhiwani and Hisar districts were selected randomly from dry zone and Karnal and Kaithal districts were selected randomly from wet zone with an objective to assess the attitude of farmers toward intercropping. The data were collected personally from 120 respondents comprising 30 from each district through a structured interview schedule. Findings revealed that more than three-fifths of the respondents (50.83%) had a more favourable attitude towards intercropping system whereas 36.67 per cent had a favourable attitude and 12.50 per cent had a less favourable attitude towards the intercropping system. Further, Analysis of the relationship between level of attitude & profile of farmers revealed that education and mass media exposure were found highly significantly associated with the level of attitude of farmers toward intercropping whereas a significant association was found between age, family type, social expectations, inheritance with level of attitude of farmers toward intercropping system. The paper recommends training of farmers on better utilization of mass media and the training will help farmers in increase in their knowledge level by using mass media and with improved knowledge farmers will have more positive attitude towards intercropping.

INTRODUCTION

The term “cropping system” represents a method of maximum crop production in available land in a cropping cycle with minimum natural resource degradation and the adoption of high-intensity cropping systems may be a viable option to increase agricultural sustainability, productivity and production as a whole (Singh, 2015). Intercropping is a type of multiple cropping practices that involves the cultivation of two or more crops in definite proximity. Intercropping can also be referred to as mixed cropping or Polyculture i.e., cultivating two or more crops in the same space at the same time (Meena et al., 2012). By cultivating more than one crop at a time in the same field, farmers maximise water use

efficiency, maintain soil fertility and minimise soil erosion in their fields, which are the serious drawbacks of solo-cropping (Kumar et al., 2022).

The concept of the cropping system is as old as agriculture in India. The multiplicity of cropping systems has been one of the important features of Indian farming and it is mainly attributed to the prevailing socio-economic conditions of the farming community (Progressive Haryana, 2019). However, it has been estimated that more than 250 double-cropping systems are followed throughout the country (Singh et al., 2018). India accounts for about 28.00 per cent of the area and 25.00 per cent of global production by intercropping over a dozen pulse crops depending on the resource availability and local needs (Sharma et al., 2017). The greatest

challenge for agriculture in front of a populous country like India is to produce more farm products, namely food, fodder, fuel and fibre to meet the increasing human and animal needs from the limited availability of cultivable land (Sancley & Mazhar, 2019) Under this situation, one of the important strategies to increase agricultural output is the development of high-intensity sequential cropping and intercropping systems (Maitra et al., 2019).

Agriculture has been the top priority of Haryana for decades. Presently, the main focus of the government is to diversify the cropping pattern of the state and for this diversification, the intercropping will play a major role in utilising the empty space in fields and by cropping different crops in fields. In Haryana intercropping is proving to be beneficial for the farmers as it gives farmers additional income, the fertilizer dose given to one crop is also received by the other crop and this reduces the cost of cultivation and the vacant space in the fields is also utilized. In view of the decreasing land holding and increasing cost, more and more farmers are increasing towards intercropping (Kamboj, 2022).

METHODOLOGY

The study was conducted in two agro-climatic zones i.e., dry and wet zone of Haryana state. Bhiwani and Hisar districts were selected randomly from the dry zone further two blocks Bhiwani and siwani were selected randomly from Bhiwani district while Hisar I and Hansi I blocks were selected from Hisar district. Karnal and Kaithal districts were selected randomly from the wet zone further two block Gharuanda and Indri were selected randomly from Karnal and Kalayat and Kaithal blocks were selected from Kaithal district. Further, from each block a cluster of villages were selected purposely i.e., villages in which farmers were adopting intercropping (Chang and Bamla villages from Bhiwani block, Chanana village from siwani block, kaimri and shadwa villages from Hisar I, Dhani pirwala and Sainipura villages from Hansi I block, Kailram and Batta villages from Kalayat block, Titram and keorak villages from Kaithal block, Mubarkabad and Bastara villages from Gharaunda block, Dhanora jagir and Bibipur jattan village from Indri block). Thus, 15 respondents were selected from each block and a whole 120 respondents were selected from the 8 blocks of 4 districts. The data were collected with a well-structured interview schedule and were analysed using MS Excel, OP STAT and Statistical Package for Social Sciences (SPSS) for computing frequency, percentage, Chi-Square and coefficient of contingency. For measuring the profiles of the respondents fourteen variables were selected viz, Age, education, caste, subsidiary occupation, income, type and size of family, land-holding, social participation, extension contact, mass-media exposure, social expectations, food preferences, inheritance. Scores were given for all these independent variables to assess their relationship with attitude (dependent variable). Also, in order to measure the farmers' attitude towards intercropping, various pre developed scales to measure the attitude (Kumar et al., 2015; Yadav et al., 2017; Shitu et al., 2018; Kumar et al., 2020; Gupta et al., 2022) were carefully studied they were given seventeen statements and the responses were obtained on a five-point continuum Likert-type (Thurston,1928) scale representing strongly disagree, disagree, neutral, agree, strongly agree. Further, all positive statements were given scores in order

of 1, 2, 3, 4 & 5 with 5 being strongly agree while 1 being strongly disagree whereas all negative statements were given score in the reverse order i.e., 1, 2, 3, 4 & 5 with 1 being strongly agree and 5 being strongly disagree. The scores for all of the statements were added and the respondents were categorized more favourable, favourable and unfavourable based on the total score by dividing the range into three equal parts.

RESULTS AND DISCUSSION

Level of attitude towards intercropping

The result given in Table 1 revealed that more than half of the respondents (50.83%) had more favourable attitude towards intercropping whereas 36.67 per cent had favourable attitude and 12.50 per cent had less favourable attitude towards intercropping.

Table 1. Distribution of the respondents on the basis on their level of attitude towards intercropping

S.No.	Level of attitude	Percentage
1.	Less favourable (48-54)	12.50
2.	Favourable (55-61)	36.67
3.	More favourable (62-68)	50.83

Further the statement wise analysis of attitude of farmers toward intercropping revealed that while farmers generally perceive intercropping as more profitable than conventional farming, gives a positive image to a farm, helps in prevention of soil erosion and increase in efficiency of fertilizers, they were skeptical about intercropping protects the cash crops and were concerned about obtaining information regarding intercropping and training required for intercropping. As from the results it can be said that intercropping is proving to be beneficial for the farmers who were adopting it, in terms of increase in standard of living, increase in income, efficient utilization of natural resources etc. and when something becomes fruitful to human beings, we have a natural tendency to have a more favourable towards that thing and this might explain why majority of farmers had more favourable attitude towards intercropping. The findings were partially supported by Kumawat et al., (2015) stated that the majority –of the farmers (64.61%) were found to have —favourable —attitude –towards recommended production –technology –of –rapeseed –and –mustard crop –whereas 18.47 and 16.92 per cent of farmers were having most favourable and least favourable attitude, respectively towards recommended production technology of rapeseed and mustard crop. Similarly, Brar & Dangi (2011) revealed that more than three-fifth of the respondents (66.67%) had favourable attitude towards kinnow cultivation followed by 16.00 per cent had most favourable attitude and only 17.33 per cent of farmers had least favourable attitude towards kinnow cultivation. Also, Kumar et al., (2021) reported that 69.38 per cent of the respondents were moderately favourable while 19.38 per cent had highly favourable attitude towards groundnut cultivation.

Relationship between profile of the farmers with their attitude towards intercropping

The results of the study showed that independent variables viz education level and mass media exposure were found highly

Table 2. Statement wise attitude of the respondents

S.No. Attitude statements	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1. Intercropping gives a positive image to a farm	4(3.33)	2(1.67)	26(21.67)	55(45.83)	33(27.50)
2. Intercropping is more profitable than conventional farming	5(4.17)	1(0.83)	7(5.83)	62(51.67)	45(37.50)
3. Obtaining information regarding Intercropping is difficult	13(10.83)	35(29.17)	20(16.67)	37(30.83)	15(12.50)
4. Intercropping is too labour-intensive	2(1.67)	2(1.67)	17(14.17)	84(70.00)	15(12.50)
5. Governmental support to Intercropping is important	2(1.67)	4(3.33)	9(7.50)	46(38.33)	59(49.17)
6. There is a lack of subsidies for Intercropping	7(5.83)	6(5.00)	21(17.50)	47(39.17)	39(32.50)
7. Recommended intercropping practices preparation increase production and reduce the cost of cultivation	5(4.17)	6(5.00)	25(20.83)	44(36.67)	40(33.33)
8. The risk of cultivation is minimized with the adoption of improved production technology	1(0.83)	6(5.00)	46(38.33)	55(45.84)	12(10.00)
9. Even though Intercropping needs more investment, it is a profitable business	2(1.67)	5(4.17)	35(29.17)	47(39.17)	31(25.83)
10. Intercropping is the best option to earn money for small farmers	3(2.50)	7(5.83)	23(19.17)	50(41.67)	37(30.83)
11. Intercropping is also possible to implement by untrained farmers	14(11.67)	40(33.33)	26(21.67)	30(25.00)	10(8.33)
12. Intercropping protects the cash crops	1(0.83)	10(8.33)	42(35.00)	53(44.17)	14(11.67)
13. Intercropping helps in the prevention of soil erosion and crust	3(2.50)	12(10.00)	25(20.83)	49(40.84)	31(25.83)
14. Intercropping helps in increasing the efficiency of fertilizer application	5(4.17)	22(18.33)	18(15.00)	49(40.83)	26(21.67)
15. Intercropping enhances the biodiversity	2(1.67)	9(7.50)	22(18.33)	58(48.33)	29(24.17)
16. Intercropping improves weed management	7(5.83)	20(16.67)	20(16.67)	43(35.83)	30(25.00)
17. Efficient utilization of natural resources in Intercropping	4(3.33)	6(5.00)	18(15.00)	35(29.17)	57(47.50)

*Values in parenthesis denote percentage

Table 3. Association between profile of respondents with their attitude towards intercropping

Socio-economic Variables	Level of attitude of respondents toward intercropping			
	Less Favourable	Favourable	More Favourable	Total (N=120)
Age				
Up to 35 Years	1(2.70)	19(51.35)	17(45.95)	37(30.83)
Between 36 to 50 Years	9(20.45)	16(36.37)	19(43.18)	44(36.67)
Above 50 Years	5(12.82)	9(23.07)	25(64.11)	39(32.50)
Total	15(12.50)	44(36.67)	61(50.83)	120(100)
$\chi^2 = 11.245^*$; C=0.29				
Education				
Illiterate	2(10.60)	10(52.60)	7(36.80)	19(15.80)
Up to middle	9(31.00)	8(27.60)	12(41.40)	29(24.20)
Secondary and Sr. Secondary	2(4.80)	20(47.60)	20(47.60)	42(35.00)
Graduation and above	2(6.67)	6(20.00)	22(73.33)	30(25.00)
$\chi^2 = 20.792^{**}$; C=0.38				
Caste				
Scheduled caste	1(5.00)	5(25.00)	14(70.00)	20(16.66)
Backward Class	2(5.73)	15(42.85)	18(51.42)	35(29.17)
General caste	12(18.46)	24(36.92)	29(44.62)	65(54.17)
$\chi^2 = 7.089$; C=0.23				
Subsidiary occupation				
Nil	9(12.67)	30(42.25)	32(45.08)	71(59.17)
Dairy	5(14.28)	10(28.57)	20(57.15)	35(29.17)
Business	1(12.50)	2(25.00)	5(62.50)	8(6.66)
Service	-	2(33.33)	4(66.67)	6(5.00)
$\chi^2 = 2.884$; C=0.15				
Annual income (Rs)				
Up to 1,50,000	4(13.33)	10(33.33)	16(53.34)	30(25.00)
Between 1,50,000 – 3,00,000	5(10.42)	19(39.58)	24(50.00)	48(40.00)
Above 3,00,000	6(14.28)	15(35.72)	21(50.00)	42(35.00)
$\chi^2 = 0.552$; C=0.06				
Family Type				
Nuclear	3(5.45)	17(30.91)	35(63.64)	55(45.83)
Joint	12(18.47)	27(41.53)	26(40.00)	65(54.17)
$\chi^2 = 8.224^*$; C=0.25				
Family Size				
Small (up to 4 members)	4(7.69)	20(38.46)	28(53.85)	52(43.33)
Medium (4 to 8 members)	7(16.28)	14(32.56)	22(51.16)	43(35.83)
Large (above 8 members)	4(16.00)	10(40.00)	11(44.00)	25(20.84)
$\chi^2 = 2.341$; C=0.13				

Table 3 contd...

Socio-economic Variables	Level of attitude of respondents toward intercropping			
	Less Favourable	Favourable	More Favourable	Total (N=120)
Land holding				
Marginal (1-2.5 acres)	5(21.74)	10(43.48)	8(34.78)	23(19.17)
Small (>2.5-5 acres)	4(9.76)	16(39.02)	21(51.22)	41(34.16)
Medium (>5.1-10 acres)	4(11.43)	11(31.43)	20(57.14)	35(29.17)
Large (above10 acres)	2(9.53)	7(33.33)	12(57.14)	21(17.50)
$\chi^2 = 4.283$; C=0.18				
Social participation				
Not a member of any organization	7(15.56)	12(26.67)	26(57.77)	45(37.50)
Member of one organization	5(10.20)	24(49.00)	20(40.80)	49(40.80)
Member of More than one organization	3(11.50)	8(30.80)	15(57.70)	26(21.70)
$\chi^2 = 5.697$; C=0.21				
Extension contacts				
Low (1-3)	4(12.90)	11(35.50)	16(51.60)	31(25.80)
Medium (4-7)	7(14.00)	18(36.00)	25(50.00)	50(41.70)
High (8-10)	4(10.25)	15(38.46)	20(51.29)	39(32.50)
$\chi^2 = 0.315$; C=0.05				
Mass media exposure				
Low (1-2)	10(34.50)	10(34.50)	9(31.00)	29(24.17)
Medium (3-5)	3(5.90)	20(39.2)	28(54.9)	51(42.50)
High (6-8)	2(5.00)	14(35.00)	24(60.00)	40(33.33)
$\chi^2 = 18.020^{**}$; C=0.36				
Social expectations (0-6)				
Low (0-2)	6(21.40)	7(25.00)	15(53.60)	28(23.30)
Medium (3-4)	5(8.30)	30(50.00)	25(41.70)	60(50.00)
High (5-6)	4(12.50)	7(21.90)	21(65.60)	32(26.70)
$\chi^2 = 10.887^{*}$; C=0.28				
Food preference (10-28)				
Low consumption (10-15)	5(18.50)	9(33.30)	13(48.20)	27(22.50)
Medium consumption (16-22)	10(12.20)	31(37.80)	41(50.00)	82(68.30)
High consumption (23-28)	-	4(36.40)	7(63.60)	11(9.20)
$\chi^2 = 2.679$; C=0.14				
Inheritance				
Grandfather	7(24.10)	8(27.60)	14(48.30)	29(24.20)
Father	6(11.30)	26(49.10)	21(39.60)	53(44.10)
Started by self	2(5.30)	10(26.30)	26(68.40)	38(31.70)
$\chi^2 = 12.435^{*}$; C=0.30				

Figures in the parenthesis denote percentage; *Significant at 5 per cent level of significance; **Highly significant at 1 per cent level of significance

significant with the level of attitude towards intercropping, this could be inferred from the reason that education and access to technology helped the respondents to increase their level of knowledge and with increased level of knowledge they have more favourable attitude towards intercropping. While age, family type, social expectations and inheritance were found significantly associated with the level of attitude and caste, subsidiary occupation, annual income, land holding, family size, social participation, extension contacts and food preference were found insignificant with the level of attitude of the respondents towards intercropping.

The findings were partially supported by Kumawat (2015) revealed that the attitude of the farmers was positively and significantly associated with their age, family income, caste, occupation, education level, and social participation, size of land holding, mechanical power, farm implements, material possession, irrigation potentiality and source of information utilization. Chijkwa (2013) in his study reported that gender and literacy level of a farmer had a significant influence on the attitude of a farmer

towards intercropping. Maurya et al., (2021) reported that farm skill, comfort expectancy, stimulation expectancy, farm size, economic motivation and affiliation expectancy positively favour their attitude towards agriculture.

CONCLUSION

The results revealed that more than half of the respondents (50.83%) had more favourable attitude towards intercropping and education level and mass media exposure were found highly significant with the level of attitude towards intercropping while age, family type, social expectations and inheritance were found significantly associated with the level of attitude towards intercropping. The study recommends training of more and more farmers on better utilization of mass media for getting reliable information as from the results mass media was found highly significant with the level of attitude. This will help farmers to increase in their knowledge level and they can also realize the true potential of mass media.

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