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A Study on Level of Satisfaction of Farmers on Marketing of Intercrops

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Abstract

Intercropping is a multiple cropping practices involving growing two or more crops in proximity. The most common goal of intercropping is to produce a greater yield on a given piece of land by making use of resources or ecological processes that would otherwise not be utilized by a single crop. The study on the level of satisfaction of farmers on marketing of intercrops is confined to Erode District only. The study was conducted from October 2017 to March 2018. This article has focused on analysing the level of satisfaction of farmers on marketing of intercropping in Erode district. Results revealed that 61 per cent of the farmers are not satisfied on marketing of intercropping. Results also revealed that 56 per cent of the farmers have chosen intercropping cultivation as there is a demand for the crop.

Keywords: Intercropping, Farmers Satisfaction, Dealers Marketing.

Introduction

Intercropping is growing two or more crops together at the same time in the same space in a beneficial manner. Intercropping is the cultivation of two or more crops simultaneously on the same field. It also means the growing of two or more crops on the same field with the planting of the second crop after the first one has completed its development. The rationale behind intercropping is that the different crops planted are unlikely to share the same insect pests and disease-causing pathogens and to conserve the soil. Intercropping is a multiple cropping practices involving growing two or more crops in proximity. The most common goal of intercropping is to produce a greater yield on a given piece of land by making use of resources or ecological processes that would otherwise not be utilized by a single crop.

Natural systems are diverse, including a variety of plants, animals, microbes and fungi. This diversity is considered a key to their resilience and stability. Intercrops are one way to bring this diversity to the agro ecosystem. In traditional tropical systems, intercrops are commonly used to intensify production where land is limited, and to reduce the risk of failure. They are less common in extensive field crops, where single crops are considered easier to manage. Intercrops can take many forms: annuals with annuals, annuals with perennials, perennial mixtures, mixtures of species, or mixtures of varieties. They can be used for forages, grain crops, cover crops, and green manures. Intercropping yields additional income sometimes becoming major source of revenue for the farmers. It can be done for own purpose or for marketing purpose. Farmers cultivating intercrops face cultivation and marketing problems just like other crops too. Selection of intercrops depends on agro climatic region, marketing facilities, levels of inputs and other local considerations. Intercropping pattern also depends on market demand.

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Statement of the Problem

Intercropping is a cropping system can be defined as a combination of crops in both time and space, and the basic biological requirement of a productive system is that it should provide a continuum of efficient crop growth for as much of the potential growing period as possible. This is a simple enough concept but actual practice can be complex where several crops are grown and interactions occur between them. This complexity is particularly great in the intercropping system where two or more crops are grown together on the same piece of land in competition with each other. The major issue in intercropping cultivation is its marketing. Farmers usually face numerous difficulties in processing, packing, transportation, assembling and grading, pricing and storage. If the farmers face issues their satisfaction on cultivating intercrops would be affected. Against this background, the present study makes an attempt to examine the level of satisfaction of farmers in marketing the intercrops cultivated by them.

Literature Review

Rural producers, and especially small farmers, have little information about the market demand and price, which is costly to obtain. They may gather information through contact with other actors in the commodity chain, but the accuracy of this information is not certified, since those actors might to be exhibiting "opportunistic behavior" (Bienabe *et al*.,2004). Smallholder farmers lack information about product price and times to sell their products, and about potential buyers. This in turn reduces their ability to trade their products efficiently and to derive the full benefit from the marketable part of their production.

Most small-scale farmers have no means of transport to carry their produce to markets. Transportation problems result in loose of quality and late delivery, which in turn lead to lower prices, and this regarded as the greatest problem faced by emerging farmers (Louw *et al*., 2004).

Being produced both by commercial and smallholder farmers' vegetable production and marketing is influenced by a number of factors that can be attributed to production, product, and market characteristics. Kohls and Uhl (1985) identified the major attributes that inhabit marketing.

Objective of the Study:

The objective of the study is as follows:

- To examine the level of satisfaction of farmers in marketing the intercrops.

Area and Period of the Study:

The study on the level of satisfaction of farmers in marketing of intercrops is confined to Erode District only. The study was conducted from October 2017 to March 2018.

Collection of Data:

The study used both primary and secondary data. The required primary data are collected through well structured questionnaire. Secondary data are gathered through books, journals, magazines, websites and other research works.

Sampling Design:

To achieve the objectives of the study, Erode district has been purposively selected as the study area. The population of the research consists of all the farmers who cultivate the intercrops in Erode district. The list of farmers cultivating intercropping could not be obtained. The method of sampling used for selecting sample respondents for the study is non-probability convenience sampling method. The sample size selected for the study is 500 farmers who cultivate intercrops.

Tools Used for Data Analysis:

The statistical tools used for analysis are Percentage analysis, Chi-square test, Z test and phi coefficient.

Overall distribution of farmers based on their level of satisfaction on marketing of intercrops

Table 1 displays the overall distribution of farmers based on their level of satisfaction on intercropping using simple percentage analysis.

Table 1

Overall Distribution of Farmers based on their Level of Satisfaction on Marketing of Intercrops

Level of Satisfaction of Farmers on Intercropping	Frequency	Per Cent	Cumulative Per Cent
Satisfied	305	61.0	61.0
Not Satisfied	195	39.0	100.0
Total	500	100.0	

Table 1 conveys that 61.0 per cent of the farmers are satisfied with online shopping and only 39.0 per cent of the buyers are not satisfied with online shopping.

Table 2
Level of Satisfaction of Farmers on Marketing of Intercrops

Problems in Marketing of Intercrops	HS	S	N	DS	HDS	Total
Processing	**235 (47.0)**	**195 (39.0)**	**60 (12.0)**	**04 (0.8)**	**06 (1.2)**	**500 (100.0)**
Packing	**94 (18.8)**	**195 (39.0)**	**182 (36.4)**	**21 (4.2)**	**08 (1.6)**	**500 (100.0)**
Transportation	**78 (15.6)**	**130 (26.0)**	**197 (39.4)**	**79 (15.8)**	**16 (3.2)**	**500 (100.0)**
Assembling & grading	**42 (8.4)**	**113 (22.6)**	**155 (31.0)**	**170 (34.0)**	**20 (4.0)**	**500 (100.0)**
Pricing	**54 (10.8)**	**112 (22.4)**	**147 (29.4)**	**123 (24.6)**	**64 (12.8)**	**500 (100.0)**
Storage	**47 (9.4)**	**112 (22.4)**	**121 (24.2)**	**130 (26.0)**	**90 (18.0)**	**500 (100.0)**

Table 2 explains that majority (47.0 per cent) of the farmers are highly satisfied with marketing of intercrops, majority (39.0 per cent) of the farmers are satisfied with marketing of intercrops, majority (39.4 per cent) of the farmers are neither satisfied nor dissatisfied with marketing of intercrops, majority (34.0 per cent) of the farmers are dissatisfied with marketing of intercrops, majority (29.4 per cent) of the farmers are neither satisfied nor dissatisfied with marketing of intercrops and majority (26.0 per cent) of the farmers are dissatisfied with marketing of intercrops.

Relationship between reasons for choosing intercropping farming and level of satisfaction of farmers on marketing of intercrops - results of chi-square test

Table 3 shows the relationship between reasons for choosing intercropping farming and level of satisfaction of farmers on marketing of intercrops using chi-square test.

Table 3
Relationship between Reasons for Choosing Intercropping Farming and Level of Satisfaction of Farmers on Marketing of Intercrops – Crosstab Results

Reasons for Choosing Intercropping Farming	Level of Satisfaction		Total
	Satisfied	Not Satisfied	
Price-margin	77	49	126
	25.2%	25.1%	25.2%
Demand for the crop	159	94	253
	52.1%	48.2%	50.6%
Efficient utilisation of area	60	47	107
	19.7%	24.1%	21.4%
Others	9	5	14
	3.0%	2.6%	2.8%
Total	305	195	500
	100.0%	100.0%	100.0%

Table 3 illustrates that among satisfied farmers' group majority (52.1 per cent) of them have chosen the intercropping as there is a demand for the crop and among not satisfied farmers' group majority (48.2 per cent) of them have chosen the intercropping as there is a demand for the crop.

Relationship between source of awareness for marketing of intercrops and level of satisfaction of farmers on marketing of intercrops - results of chi-square test

Table 4 shows the relationship between source of awareness for marketing of intercrops and level of satisfaction of farmers on marketing of intercrops using chi-square test.

Table 5
Relationship between Source of Awareness for Marketing of Intercrops and Level of Satisfaction of Farmers on Marketing of Intercrops – Crosstab Results

Source of Awareness for Marketing of Intercrops	Level of Satisfaction		Total
	Satisfied	Not Satisfied	
Friends/Relatives	106	51	157
	34.8%	26.2%	31.4%
Electronic sources / Internet	135	83	218
	44.3%	42.6%	43.6%
Government Awareness Programme	55	52	107
	18.0%	26.7%	21.4%
Others	9	9	18
	3.0%	4.6%	3.6%
Total	305	195	500
	100.0%	100.0%	100.0%

Table 4 illustrates that among satisfied farmers' group majority (44.3 per cent) of them have Electronic sources / Internet as their source of awareness for marketing of intercrops and among not satisfied farmers' group majority (42.6 per cent) of them have Electronic sources / Internet as their source of awareness for marketing of intercrops.

Table 5
Relationship between Source of Awareness for Marketing of Intercrops and Level of Satisfaction of Farmers on Marketing of Intercrops – Results of Chi-Square Test

Particulars	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.940	3	.047
Likelihood Ratio	7.891	3	.048
Linear-by-Linear Association	7.479	1	.006
N of Valid Cases	500		

Symmetric Measures		Value	Approx. Sig.
Nominal by Nominal	Phi	.126	.047
	Cramer's V	.126	.047
N of Valid Cases		500	

Table 5 discusses that, as per the chi-square results, 'p' value (.047) does not exceed 0.05 and it is proved there is a significant relationship between source of awareness for marketing of intercrops and level of satisfaction of farmers on marketing of intercrops at 5% level of significance. Hence the null hypothesis is rejected. Table 6 also discloses that Phi, Cramer's V value is 0.126 which is less than 0.2 and hence it is clear that there is a weak relationship between source of awareness for marketing of intercrops and level of satisfaction of farmers on marketing of intercrops.

Relationship between type of marketing in internal trade and level of satisfaction of farmers on marketing of intercrops - results of chi-square test

Table 6 shows the relationship between type of marketing in internal trade and level of satisfaction of farmers on marketing of intercrops using chi-square test.

Table 6
Relationship between Type of Marketing in Internal Trade and Level of Satisfaction of Farmers on Marketing of Intercrops – Crosstab Results

Type of Marketing in Internal Trade	Level of Satisfaction		Total
	Satisfied	Not Satisfied	
Direct Selling	86	44	130
	28.2%	22.6%	26.0%
Dealers	127	64	191
	41.6%	32.8%	38.2%
Retail Shop	70	54	124
	23.0%	27.7%	24.8%
Commodity Boards	22	33	55
	7.2%	16.9%	11.0%
Total	305	195	500
	100.0%	100.0%	100.0%

Table 6 portrays that among satisfied farmers' group majority (41.6 per cent) of them have Dealers as their type of marketing in internal trade and among not satisfied farmers' group majority (32.8 per cent) of them have Dealers as their type of marketing in internal trade.

Table 7
Relationship between Type of Marketing in Internal Trade and Level of Satisfaction of Farmers on Marketing of Intercrops – Results of Chi-Square Test

Particulars	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.147	3	.002
Likelihood Ratio	14.876	3	.002
Linear-by-Linear Association	11.647	1	.001
N of Valid Cases	500		

Symmetric Measures		Value	Approx. Sig.
Nominal by Nominal	Phi	.174	.002
	Cramer's V	.174	.002
N of Valid Cases		500	

Table 7 discusses that, as per the chi-square results, 'p' value (.002) does not exceed 0.05 and it is proved there is a significant relationship between type of marketing in internal trade and level of satisfaction of farmers on marketing of intercrops at 5% level of significance. Hence the null hypothesis is rejected. Table 11 also discloses that Phi, Cramer's V value is 0.174 which is less than 0.2 and hence it is clear that there is a weak relationship between type of marketing in internal trade and level of satisfaction of farmers on marketing of intercrops.

Relationship between method of selling and level of satisfaction of farmers on marketing of intercrops - results of chi-square test

Table 8 shows the relationship between method of selling and level of satisfaction of farmers on marketing of intercrops using chi-square test.

Table 14
Relationship between Method of Selling and Level of Satisfaction of Farmers on Marketing of Intercrops – Crosstab Results

Method of Selling	Level of Satisfaction		Total
	Satisfied	Not Satisfied	
Immediate Sale	136	80	216
	44.6%	41.0%	43.2%
Inventory Sale	169	115	284
	55.4%	59.0%	56.8%
Total	305	195	500
	100.0%	100.0%	100.0%

Table 8 illustrates that among satisfied farmers' group majority (55.4 per cent) of them have Inventory Sale as their method of selling and among not satisfied farmers' group majority (59.0 per cent) of them have Inventory Sale as their method of selling.

Table 9
Relationship between Method of Selling and Level of Satisfaction of Farmers on Marketing of Intercrops – Results of Z Test

Z Calculated Value	Z Table Value	p value
1.167	1.645	.244

From Table 9, it is found that calculated value of Z (1.167) is lesser than the table value of Z (1.645) at 5% level of significance and also p value (0.244) is higher than the value of 0.05 at 5% level of significance. Hence, the hypothesis is accepted and it is concluded that there is no significant relationship between method of selling and level of satisfaction of farmers on marketing of intercrops at 5% level of significance.

Relationship between storage facility in inventory sale and level of satisfaction of farmers on marketing of intercrops - results of chi-square test

Table 10 shows the relationship between storage facility in inventory sale and level of satisfaction of farmers on marketing of intercrops using chi-square test.

Table 10
Relationship between Storage Facility in Inventory Sale and Level of Satisfaction of Farmers on Marketing of Intercrops – Crosstab Results

Storage Facility in Inventory Sale	Level of Satisfaction		Total
	Satisfied	Not Satisfied	
Own storage	122	72	194
	40.0%	37.7%	39.1%
Government Warehouse	105	76	181
	34.4%	39.8%	36.5%
Private Warehouse	62	33	95
	20.3%	17.3%	19.2%
Others	16	10	26
	5.2%	5.2%	5.2%
Total	305	191	496
	100.0%	100.0%	100.0%

Table 10 portrays that among satisfied farmers' group majority (40.0 per cent) of them have Own storage as their storage facility in inventory sale and among not satisfied farmers' group majority (39.8 per cent) of them have Government Warehouse as their storage facility in inventory sale.

Table 11
Relationship between Storage Facility in Inventory Sale and Level of Satisfaction of Farmers on Marketing of Intercrops – Results of Chi-Square Test

Particulars	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	1.656	3	.647
Likelihood Ratio	1.655	3	.647
Linear-by-Linear Association	.009	1	.925
N of Valid Cases	496		

Symmetric Measures		Value	Approx. Sig.
Nominal by Nominal	Phi	.058	.647
	Cramer's V	.058	.647
N of Valid Cases		500	

Table 11 discusses that, as per the chi-square results, 'p' value (.647) exceeds 0.05 and it is proved there is no significant relationship between storage facility in inventory sale and level of satisfaction of farmers on marketing of intercrops at 5% level of significance. Hence the null hypothesis is accepted. Table 18 also discloses that Phi, Cramer's V value is 0.058 which is less than 0.2 and hence it is clear that

there is a weak relationship between storage facility in inventory sale and level of satisfaction of farmers on marketing of intercrops.

Relationship between access to government subsidies and level of satisfaction of farmers on marketing of intercrops - results of chi-square test

Table 12 shows the relationship between access to government subsidies and level of satisfaction of farmers on marketing of intercrops using chi-square test.

Table 12
Relationship between Access to Government Subsidies and Level of Satisfaction of Farmers on Marketing of Intercrops – Crosstab Results

Access to Government Subsidies	Level of Satisfaction		Total
	Satisfied	Not Satisfied	
Seeds	115	57	172
	37.7%	29.2%	34.4%
Equipments	110	91	201
	36.1%	46.7%	40.2%
Fertilizers	63	28	91
	20.7%	14.4%	18.2%
Others	17	19	36
	5.6%	9.7%	7.2%
Total	305	195	500
	100.0%	100.0%	100.0%

Table 12 portrays that among satisfied farmers' group majority (37.7 per cent) of them have Seeds as their access to government subsidies and among not satisfied farmers' group majority (46.7 per cent) of them have Equipments as their access to government subsidies.

Table 13
Relationship between Access to Government Subsidies and Level of Satisfaction of Farmers on Marketing of Intercrops – Results of Chi-Square Test

Particulars	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.272	3	.010
Likelihood Ratio	11.272	3	.010
Linear-by-Linear Association	1.614	1	.204
N of Valid Cases	500		

Symmetric Measures		Value	Approx. Sig.
Nominal by Nominal	Phi	.150	.010
	Cramer's V	.150	.010
N of Valid Cases		500	

Table 13 discusses that, as per the chi-square results, 'p' value (.010) does not exceed 0.05 and it is proved there is a significant relationship between access to government subsidies and level of satisfaction of farmers on marketing of intercrops at 5% level of significance. Hence the null hypothesis is rejected. Table 13 also discloses that Phi, Cramer's V value is 0.150 which is less than 0.2 and hence it is clear that there is a weak relationship between access to government subsidies and level of satisfaction of farmers on marketing of intercrops.

Relationship between satisfaction on government subsidies and level of satisfaction of farmers on marketing of intercrops - results of chi-square test

Table 14 shows the relationship between satisfaction on government subsidies and level of satisfaction of farmers on marketing of intercrops using chi-square test.

Table 14
Relationship between Satisfaction on Government Subsidies and Level of Satisfaction of Farmers on Marketing of Intercrops – Crosstab Results

Satisfaction on Government Subsidies	Level of Satisfaction		Total
	Satisfied	Not Satisfied	
Yes	256	163	419
	83.9%	84.5%	84.1%
No	49	30	79
	16.1%	15.5%	15.9%
Total	305	193	498
	100.0%	100.0%	100.0%

Table 14 illustrates that among satisfied farmers' group majority (83.9 per cent) of them said yes on satisfaction on government subsidies and among not satisfied farmers' group majority (84.5 per cent) of them said yes on satisfaction on government subsidies.

Table 15
Relationship between Satisfaction on Government Subsidies and Level of Satisfaction of Farmers on Marketing of Intercrops – Results of Z Test

Z Calculated Value	Z Table Value	p value
1.425	1.645	.155

From Table 15, it is found that calculated value of Z (1.425) is lesser than the table value of Z (1.645) at 5% level of significance and also p value (0.155) is higher than the value of 0.05 at 5% level of significance. Hence, the hypothesis is accepted and it is concluded that there is no significant relationship between satisfaction on government subsidies and level of satisfaction of farmers on marketing of intercrops at 5% level of significance.

RELATIONSHIP BETWEEN TYPE OF PRICE FOLLOWED AND LEVEL OF SATISFACTION OF FARMERS ON MARKETING OF INTERCROPS - RESULTS OF CHI-SQUARE TEST

Table 16 shows the relationship between type of price followed and level of satisfaction of farmers on marketing of intercrops using chi-square test.

Table 16
Relationship between Type of Price Followed and Level of Satisfaction of Farmers on Marketing of Intercrops – Crosstab Results

Type of Price Followed	Level of Satisfaction		Total
	Satisfied	Not Satisfied	
Fixed price	107	65	172
	35.1%	33.3%	34.4%
Ongoing price	198	130	328
	64.9%	66.7%	65.6%
Total	305	195	500
	100.0%	100.0%	100.0%

Table 16 illustrates that among satisfied farmers' group majority (64.9 per cent) of them have ongoing price as their type of price followed and among not satisfied farmers' group majority (66.7 per cent) of them have ongoing price as their type of price followed.

Table 17
Relationship between Type of Price Followed and Level of Satisfaction of Farmers on Marketing of Intercrops – Results of Z Test

Z Calculated Value	Z Table Value	p value
0.985	1.645	0.325

From Table 17, it is found that calculated value of Z (0.985) is lesser than the table value of Z (1.645) at 5% level of significance and also p value (0.325) is higher than the value of 0.05 at 5% level of significance. Hence, the hypothesis is accepted and it is concluded that there is no significant relationship between type of price followed and level of satisfaction of farmers on marketing of intercrops at 5% level of significance.

Table 18
Risk Estimate of Farmers' Satisfaction on Marketing of Intercrops based on Type of Product Produced

Particulars	Value	95% Confidence Interval	
		Lower	Upper
Odds Ratio for Type of product produced (Perishable goods / Storable goods)	0.865	.603	1.240
For cohort satscorerecoded = satisfied	.945	.820	1.088
For cohort satscorerecoded = not satisfied	1.093	.878	1.360
N of Valid Cases	500		

Table 18 displays the risk estimate of farmers' satisfaction on marketing of intercrops. From odds ratio it is clear that farmers who produce Perishable goods are at 0.865 times higher risk of not being satisfied than farmers who produce Storable goods.

Suggestions

- It is found that 39 per cent of the farmers are not satisfied on marketing of intercropping. Hence it is suggested that central and state governments should take all possible efforts to smoothen the flow of marketing of intercropping produces by increasing easy access to markets, providing marketing infrastructure facilities, providing government subsidies and incentives, providing market information and ensuring remunerative prices. This would undoubtedly improve the satisfaction of the farmers marketing intercrops and increase the standard of living of those farmers.
- It is found that majority of the farmers (34 per cent) are dissatisfied with the assembling and grading in intercrop marketing and majority of the farmers (26 per cent) are dissatisfied with the storage facilities in intercrop marketing. Hence it is suggested that central and state governments should concentrate on increasing the effectiveness of assembling and grading facilities and should allocate more funds to increase and improve the storage facilities in the study area which in turn would be highly useful to the farmers cultivating intercrops.

Conclusion

The Indian agriculture is diversifying towards production of horticultural crops along with the increasing role of small and marginal farmers. Intercropping provides opportunity for diversification through judicious resource conservation and intensification for food and nutritional security with cultivation of high value short duration crops like vegetables in wide interspaces of the orchards. This improves resource use efficiency and farm profitability.

This article has focused on analysing the level of satisfaction of farmers on marketing of intercropping in Erode district. Results revealed that 61 per cent of the farmers are not satisfied on marketing of intercropping. Results also revealed that 56 per cent of the farmers have chosen intercropping cultivation as there is a demand for the crop.

Based on the findings of the study, few fruitful suggestions have been offered. If these are considered properly by the policy makers the marketing system of intercropping in the study region would be surely strengthened and the life of the farmers will prosper.

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