

Preferences of the Farmers towards Peri-Urban Agricultural Practices

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ABSTRACT

Crop production decisions reflect preferences of farmers which are based on the structure of incentives and constraints that characterize agricultural systems. Therefore, an assessment of the intensities of farmer preferences can provide useful guidance for the choice of appropriate strategies to improve productivity and incomes. The study was undertaken in Hapur district of Uttar Pradesh and Faridabad district of Haryana in order to understand the preferences of farmers towards various practices related to peri-urban agriculture and the reasons for taking up the same. A sample of 120 farmers, 30 each from four randomly selected villages from the above two districts was selected for the study. Data were collected using personal interview method utilizing semi-structured interview schedule and focused group discussion. The study revealed that 44.6 per cent farmers preferred private sector vegetable hybrid seeds as compared to recommended vegetable varieties of public sector institution and tube well was the most preferred source of irrigation. In case of financial decisions, short-term loan was preferred over other loans and farmers were willing to enter in contract farming. Assured market was the foremost reason for the farmers to practice peri-urban agriculture.

Keywords: Focused Group Discussion, hybrids, Peri-urban Agriculture, Preferences

INTRODUCTION

Global urban populations are rapidly increasing on an annual basis. Droughts, floods, and market opportunities have led to huge shifts in population from rural to urban areas, especially in developing countries. Around one-fifth of the urban growth is accounted by rural to urban net migration. Urbanization will continue at an accelerated pace, and about 70 per cent of the world's population will be urban (compared to 49 percent today) by 2050 (FAO, vision 2050). Out of India's total population of more than one thousand million people, 35-40 per cent currently lives in cities. This proportion is expected to increase to about 60 per cent by 2025 (Brockhoff, 2000). The situation in India is no different. Indian cities are home to an estimated 340 million people, almost equivalent to 30 per cent of the total population. As evident in majority of the industrialized countries, India is experiencing a shift over time from a largely rural and agrarian population residing in villages to urban, non-agriculture centres (Kapoor, 2012). Urban and peri-urban agriculture (UPA) occurs within and surrounding the boundaries of cities throughout the world and includes products from crop and

livestock agriculture, fisheries and forestry in the urban and peri-urban area. It also includes on-wood forest products, as well as ecological services provided by agriculture, fisheries and forestry. Often multiple farming and gardening systems exist in and near a single city (FAO, 1999).

In economics and other social sciences, preference refers to the set of assumptions related to ordering some alternatives, based on the degree of happiness, satisfaction, gratification, enjoyment, or utility they provide, a process which results in an optimal "choice". The farmers are key persons for promoting economic growth and technological change in any developing country like India in which more than 50 per cent of the population depends on agriculture for meeting their day to day needs. Their preferences in various peri-urban agricultural practices are important in understanding their overall situation and needs. Farmers make decisions regarding new technology adoption, for equipment, for seeds, and possibly for transport. Understanding how farmers make decisions would help in understanding why they do or do not adopt new technology. The difficulty is

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that many factors affecting the decision process are not observable to outsiders. For example, individual preferences toward risk and ambiguity are typically not known.

A study conducted in Nigeria indicated that farmers may prefer to pay higher prices for seeds that are accessible at planting time. Similarly, lower income farmers may be willing to pay higher prices, particularly for cowpea that is accessible at planting time (Takeshimame *et al*, 2010). Multinomial logit analysis of the factors influencing preferences revealed that farmer's specific socio-economic circumstances and subjective ranking of agricultural problems play a major role. It is also shown that preferences for some interventions are complementary and need to be addressed simultaneously (Bekele, 2006). Against the above background, this study was conducted to ascertain the farmer's preferences relating to peri-urban agricultural practices in vegetable production.

METHODOLOGY

The study was conducted in Hapur district of Uttar Pradesh and Faridabad district of Haryana with an objective of understanding the preference behavior of farmer in peri-urban agriculture. In the study, the concept of preference is operationalised as the farmers' decision for selection of one alternative over the other available alternatives. These districts were purposively selected, as vegetable cultivation covers a large area in these districts. The districts also enjoyed the infrastructure facilities of a nearby Delhi International Airport and Indian Agricultural Research Institute for the technical support.

From Hapur block, two villages namely Soodna and Shyampur while from Faridabad block, Badarpursaid and Badshahpur were selected randomly. Thirty vegetable growing farmers were randomly selected from each of these villages as vegetable is cultivated on large scale in these regions. Thus, 120 respondents constituted the sample of the study. Primary data were collected using a pre-tested interview schedule, key informants and focused group discussions.

A four-point continuum rating scale consisting from "most preferred" to "least preferred" was used to measure the farmers' preferences towards various peri-urban agricultural practices. The reliability coefficient of the questionnaire was 0.83. For identification of the reasons for peri-urban agriculture, statements were framed for which responses were taken from the farmers. The respondents were asked to rate their preferences and rank the six identified practices based on farmers' viewpoint as well as from their experience of peri-urban agriculture.

RESULTS AND DISCUSSION

Demographic characteristics of respondents

The socio-economic characteristics of the respondents are shown in Table 1. The majority (65.1 %) of the respondents were in middle age category while only around fifteen per cent of the respondents were in old category. In education, forty four per cent were having high school level of education while in case of occupation, seventy two per cent of the respondents were full time farmers. Around 80 per cent of the respondents were having less than five acres of land and forty six percent were having more than fifteen years of farming experiences. Majority of the respondents (60%) were members of one organization whereas 16 per cent did not possess any membership.

**Table 1: Socio-economic characteristics of the respondents
n=120**

Category	Subcategory	Total	Percent
Age	Young (18- <35 yrs)	26	21.6
	Middle (35-59 yrs)	77	64.1
	Old (above 59)	17	14.6
Education	Illiterate	10	8.33
	Primary school	10	8.33
	Secondary school	42	36.8
	High school	53	44.1
Occupation	Graduate	5	4.16
	Fulltime farmers	87	72.5
	Farming+service	23	19.1
Family type	Farming + business	10	8.33
	Nuclear	54	45.0
Family size	Joint	66	55.0
	Small	16	13.3
Landholding	Medium	66	55.0
	Large	38	31.6
	Less than 2.5 acre	47	39.1
	2.5acre to 5 acre	50	41.6
Farming experience	5acre to 10 acre	19	15.8
	more than 10 acre	4	3.33
	Less than 5 years	4	3.33
	5-10 years	30	25.0
Social participation	10 - 15 years	31	24.1
	More than 15 years	55	45.8
	No member ship	19	15.8
	Member of one organization	72	60.0
Extension contact	Member of more than one organization	21	17.5
	Office bearer	8	6.66
	Low	25	20.8
Mass media contact	Medium	56	46.6
	High	39	32.5
Risk orientation	Low	26	21.6
	Medium	56	46.6
	High	38	31.6
	Low	39	32.5
	Medium	52	43.3
	High	29	24.1

Preferences of the farmers

Sampled farmers in the study were asked to indicate their preferences for various peri-urban related practices. The data collected from the farmers were analyzed using the Friedman test to ascertain the preferences of seed by the vegetable growing farmers. The chi-square value of

17.99 was significant showing there was statistically significant difference between the mean preference scores of related groups. From table 2, it is inferred that for 44.6 per cent of the farmers private sector hybrids were preferred compared to recommended varieties which were preferred by only 38.3 per cent of the farmers. The mean rank of each, from Friedman's two ways ANOVA, indicates the relative order of the respondents' ratings in descending order. For the category of sources of inputs, responses of the peri-urban farmers were taken. Chi-square value of 103.73 was highly significant ascertaining the overall difference in the mean ranks. The result of the analysis indicated that IARI was most preferred (43.8 %) for obtaining the inputs like good quality seed and other production technologies while input dealers were most preferred (36.4%) for fertilizers, insecticides and pesticides. KVK had the least preference among them (50.4 %). Mean rank of IARI was 3.24 making it the most preferred among other alternatives. In peri-urban agriculture, different enterprises can be taken up. Here, three enterprises namely cultivation of vegetable, fruits, and flowers were selected for knowing the sampled farmers' preferences towards them. The chi-square (26.847) was highly significant and vegetable cultivation with the mean rank score of 2.34 was the first choice of the farmers. Among the enterprises, for the peri-urban farmers, it was vegetable cultivation which was most preferred may be because of more remunerative return in lesser crop period. Half of the farmers took vegetable cultivation as the most preferred enterprise. Other fruits cultivation was second in their preferences but 5.82 per cent of the farmers did not prefer fruits cultivation. It was also reported by Komirenko and Hoermann (2008) that most important crops for the interviewees in terms of money were potatoes (61 %) followed by fruit (16 %), tomatoes (12 %), and cucumbers (8 %) in Ukraine. Danso et al. (2002) reported that profit-oriented open-space production of vegetables with irrigation gives farmers in Kumasi 2-3 times the income they could earn in traditional rainfed agriculture even on larger fields. High and quick returns along with profitability were the reason due to which farmers preferred vegetable enterprise

Selected agronomic practices were taken, which may be helpful in restoring soil fertility and enhancing productivity. The result depicts that chi-square value of 26.84 was highly significant indicating that there was significant difference between the mean ranks of the related items. Crop rotation was the practice which was mostly preferred by the farmers (52.9 %). Farmers knew the advantages of crop rotation and had developed favourable attitude towards it. 51.6 per cent of the farmers were found to have least preference for mulching. Hence,

effort should be made to educate farmers about different ways to restore fertility of the soil. Crop rotation with the mean rank of 2.34 was most preferred practice followed by border cropping (1.99) and mulching (1.67).

Organic manures like farmyard manures and vermicompost were most preferred by 49.6 per cent of the farmers in the nutrient management category. They were willing to apply these organic fertilizers, but lack of adequate availability was the hindrance in their adoption. Second to organic manures, was inorganic fertilizer which was most preferred by the farmers (45.5 %). None of the farmers were in the category for not preferring inorganic fertilizers. The result also indicated that 11.6 per cent farmers were preferring bio-fertilizers in the peri-urban area. Hence, effort can be made to popularize the use of bio fertilizers. Chi-square value 214.029 was significant showing statistically that there was difference in the ranks of the related practices. Organic fertilizers got the highest mean rank score and therefore, the highest preference rating as nutrient management regime.

Use of tubewell with the highest mean rank of 2.41 was ahead in preference rating. Open well had the lowest mean rank of 1.61. Tubewell was most preferred with 49.16 per cent of respondents preferring it. Next to tubewell, canal irrigation was preferred (38.33 %) by the farmers. Open well was the least (5 %) preferred irrigation source. Due to subsidy is given on electricity and ample underground water, there is an indiscriminate use of tube well in these areas. It was inferred from the table 2 that flooding method of irrigation was most preferred (41.66 %). Significant value of chi-square (197.362) showed that statistically, there was difference between the mean ranks of the related practices. Flooding method had highest rank of 3.76 therefore, was the highest on preference rating. 40 per cent of the farmers considered check basin as the most preferred method for irrigating the crops. Though sprinkler and drip methods of irrigation have advantages over other, it was not very much preferred by the farmers. Only for 4.16 per cent and 15 per cent farmers the most preferred choice was sprinkler and drip. The reason which the farmers gave for not selecting these was that they had plenty of water and these methods were used where there is water shortage. Another reason for not using drip and sprinkler was that it needed labor to keep a watch on it and there was unavailability of labor during peak season. Jensen et al. (1996) also reported that major use of labour was for irrigation. Hence, Steps need be taken to make people aware of the benefits of sprinkler and drip irrigation method and also keeping them informed about the depleting water table due to indiscriminate use of underground water. For the category of harvesting, Chi-square value 0.457 was not significant as there was no

statistically significant difference between the mean ranks. Both of them were almost equally preferred by the farmers.

Table 2: Preferences of the farmers towards selected practices n=120

Practices	Category	Mean rank	Most preferred	Preferred	Least preferred	Not preferred	Chi-square
Vegetable Seeds	Private sector hybrids	1.69	54(44.6)	42(34.2)	22(18.3)	2(1.66)	17.93**
	Recommended varieties	1.31	46(38.3)	43(35.3)	24(20.0)	5(4.16)	
Sources of Inputs And Technologies	Input dealer	2.92	44(36.4)	35(28.9)	30(24.8)	11(9.1)	103.73**
	State department	2.08	16(13.2)	26(21.5)	29(24.0)	49(40.5)	
	KVK	1.71	7(5.80)	18(14.9)	34(28.1)	61(50.4)	
Peri Urban Enterprise	IARI	3.24	53(43.8)	42(34.7)	25(20.7)	0(0)	26.847**
	Vegetables	2.34	62(51.2)	36(29.8)	22(18.2)	0(0)	
	Fruits	1.99	32(26.67)	50(41.67)	31(25.83)	7(5.82)	
	Flowers	1.67	22(18.2)	36(29.8)	62(51.2)	0(0)	
Agronomic Practices	Crop rotation	2.34	64(52.9)	37(30.6)	19(15.7)	0(0)	26.843**
	Mulching	1.67	20(16.66)	24(20.0)	62(51.6)	14(11.66)	
	Border cropping	1.99	29(24.2)	54(44.6)	37(30.6)	0(0)	
Nutrient Management	Inorganic fertilizers	3.14	55(45.5)	56(46.3)	9(7.4)	0(0)	214.029**
	Organic manures	3.57	59(49.6)	44(36.4)	15(12.4)	2(1.7)	
	Bio fertilizer	1.67	7(5.8)	14(11.6)	55(45.5)	44(36.4)	
	Green manures	1.62	0(0)	7(5.83)	41(33.9)	72(59.5)	
Water Management	Well	1.61	14(11.6)	41(34.1)	60(50.0)	5(4.16)	38.450**
	Tube well	2.41	59(49.1)	50(41.1)	10(8.3)	0(0)	
	Canal	1.98	41(38.3)	36(30.0)	32(26.6)	0(0)	
Irrigation Method	Flooding	3.76	50(41.66)	45(37.5)	20(16.66)	5(4.16)	197.362**
	Check basin	2.69	48(40.0)	55(45.5)	15(12.5)	2(1.66)	
	Sprinkler	1.58	5(4.16)	1(0.83)	28(23.33)	92(75.63)	
	Drip	1.97	18(15.0)	24(20.0)	58(48.33)	20(16.66)	
Harvesting	Manual	1.53	52(43.5)	54(44.6)	10(8.33)	4(3.33)	0.457
	Mechanical	1.47	55(45.83)	54(45)	5(4.16)	6(5)	

Figure in the parenthesis indicates percentages.

The result in table 3 for marketing of the produce reveals that chi-square value of 46.24 was significant showing that there was difference in the mean ranks of the related practices. Farmers practicing peri-urban agriculture were in the favour of group or cooperative marketing. Group or cooperative marketing was the most preferred choice (43.3%) of the farmers. Marketing through commission agent was the least preferred choice (60%). Next to group or cooperative farming, farmers preferred contract farming and marketing (41.66%) making it their most preferred choice.

Loans are usually taken by the farmers to carry out agricultural activities. The results in table 3 reveal that chi-square value of 38.739 was significant which shows that the mean rank of the related items differs statistically. Short term loans were most preferred by 45 per cent of the farmers and with mean rank of 2.15 were highest in preference rating. According to the farmers, short term

loans were easy to obtain and to repay. This can be effectively utilized by the government to bring new and attractive schemes on short term loans to integrate the farmers in the formal banking system of the country.

Table 3 depicts that chi-square value 38.075 was highly significant proving that difference in the mean rank of the practice was significant. With the mean rank of 1.60, banks were highest on the preference rating while with the mean rank of 2.44 money lenders were lowest on preferences rating. Though bank was preferred by the farmers, most of them availed loans from the money lenders due to the cumbersome process involved in getting the loan from the bank. The result indicates that there is a great scope for formal lending to become dominant in rural areas with proper interventions.

The result reveals that chi-square value 70.595 was highly significant which ascertains that the difference in the mean rank was statistically significant. In terms of technical assistance, IARI with mean rank of 3.14 was highest on preference rating. Forty four per cent of the farmers preferred IARI for getting technical assistance. The popularization of the techniques by IARI with demonstrations in the villages and organizing Kisan Mela every year has led the farmers of the nearby villages to be in contact with IARI and its technologies.

Table 3: Preferences of the farmers towards financial decision n=120

Practices	Category	Mean rank	Most preferred	Preferred	Least preferred	Not preferred	Chi-square
Marketing	Wholesale	1.61	44(36.6)	42(35.0)	25(20.8)	9(7.50)	46.24**
	Contract	1.92	50(41.6)	41(43.1)	12(10.0)	17(14.1)	
	Commission agent	2.47	10(8.3)	29(32.5)	72(60.0)	9(7.50)	
	Group/cooperative	1.53	52(43.3)	39(32.5)	15(12.5)	14(11.6)	
Types Of Loan	Short term	2.15	54(45.00)	49(40.83)	17(14.16)	0(0)	38.739**
	Medium term	1.85	47(39.16)	43(35.83)	30(25.00)	0(0)	
	Long term	1.69	12(10.00)	25(20.83)	70(58.33)	13(10.83)	
Lending Institution	Money lender	2.44	18(15)	39(32.5)	60(50)	3(2.5)	38.075**
	Cooperatives	1.90	43(35.83)	47(39.16)	30(25)	0(0)	
	Bank	1.60	60(50)	42(35)	18(15)	0(0)	
	SDA	2.60	27(25.6)	29(24)	29(24)	35(28.9)	
Technical Assistance	KVK	1.75	7(5.8)	20(16.5)	43(35.5)	50(41.3)	70.596**
	NGO'S+PVT	2.52	3(2.5)	29(24)	26(21.5)	34(28.1)	
	IARI	3.13	54(44.6)	43(35.5)	22(18.2)	1(0.3)	

Figure in the parenthesis indicates percentages.

Friedman's non-parametric test was used to identify the significance of differences among the various reasons for practicing peri-urban agriculture. The result is depicted in table 4.30 which revealed that availability of assured market was the prime reasons for which farmers practice peri-urban agriculture.

**Table 4: Major reasons for practicing peri-urban agriculture
n=120**

Reasons for practicing peri-urban agriculture	N	Mean Rank	Chi-square
Availability of Infrastructure	120	4.19	268.574**
Input availability	120	4.68	
Availability of assured market	120	1.75	
Profitable nature of the product	120	2.34	
Government incentives	120	4.72	
Financial support	120	3.32	

The chi-square value was 268.574 which was significant showing that there were differences in rank of related units. According to farmers' opinion, the preferred reason for practicing peri-urban agriculture was assured market. The profitable nature of the crop was next important reason for them. Assured market gives them the confidence that their products will be at reasonable price. Government incentives were the last on the reason list. Market is playing an important factor in farming which becomes more crucial in case of peri-urban agriculture due to perishable nature of the produce.

CONCLUSION

Urban and peri-urban agriculture includes activities within or on the fringe of a town or city that use natural, physical, and human resources to grow, process, and distribute food and non-food agricultural products for both local urban markets and for export. As the urban and peri-urban production system is close to urban consumers, it can be well connected in terms of input and output markets. Preferences of the farmers varied with different practices related to peri-urban agriculture. It was found that farmers preferred to take short term loan for their agricultural activities so that they can return it on time and banks were the most preferred institution for obtaining the loans. Findings may be useful to form the basis for formulation of farmer-oriented extension and research programme. Farmers' perceptions of the technology specific attributes of crop varieties are the major factors in determining adoption and use intensity (Adesina and Zinnah 1993). Government can make policies in accordance with the preferences of the farmers for better livelihood.

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