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Study on Adoption of Eco-Friendly Management Practices by Vegetable Growers at Ladpura Block of Kota District in Rajasthan

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ABSTRACT

The importance of agriculture in the economy of India is profound. Despite the growth of industries and commerce it continues to be the principal economic activity of the people of India. Thus approx 70 percent of the people are engaged in agriculture but more than 70 percent of these farms at subsistence level. The Food and Agriculture Organization, FAO (1993) suggested that in order to enhance sustainable agricultural development, new commodities and new methods of production must be adopted by farmers in Eco-friendly way. The present rate of agriculture production could be increased if the available technology is appropriately transferred to the farmers for its adoption. It is however reported that not more than 30 to 40 per cent of the technologies have gone to the farming communities so far, even though there is strong network of extension mechanism operating for accelerating agriculture production. The study was conducted in Ladpura Block of Kota District with 120 vegetable growers of 10 villages which were selected randomly and considered for study on the basis of larger area coverage. Maximum vegetable growers had low extent of adoption of the eco-friendly management practices followed by medium and high extent of adoption of the eco-friendly management practices respectively.

Key words: *Eco-friendly farming, Ecological balance, Agrochemical, Sustainable farming.*

INTRODUCTION

Eco-friendly agriculture originated as a response to a growing awareness that the health of the land is linked to the health and future of the people. It is a holistic and philosophical approach to agriculture, which has as its goals the protection and conservation of the land for future generations, the production of high-quality food, the return to many traditional agricultural methods, and the harmonious balance with a complex series of ecosystems. Land, water, plants, animals, and people are all seen as interlinked and interdependent. The final rule of the United States Department of Agriculture (USDA), which implements the Eco-friendly Foods Production Act of 1990, describes organic production as one which will "respond to site-specific conditions by integrating cultural, biological and mechanical practices that foster cycling of resources, promote ecological balance and conserve biodiversity.

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"Eco-friendly farming is an alternative agricultural system which originated early in the 20th century in reaction to rapidly changing farming practices. Eco-friendly agriculture continues to be developed by various eco-friendly agriculture organizations today. It relies on fertilizers of eco-friendly origin such as compost, manure, green manure, and bone meal and places emphasis on techniques such as crop rotation and companion planting. Biological pest control, mixed cropping and the fostering of insect predators are encouraged. In general, eco-friendly standards are designed to allow the use of naturally occurring substances while prohibiting or strictly limiting synthetic substances. For instance, naturally occurring pesticides such as pyrethrin and rotenone are permitted, while synthetic fertilizers and pesticides are generally prohibited. Synthetic substances that are allowed include, for example, copper sulfate, elemental sulfur and Ivermectin. Genetically modified organisms, nanomaterials, human sewage sludge, plant growth regulators, hormones, and antibiotic use in livestock husbandry are prohibited. Reasons for advocation of eco-friendly farming include real or perceived advantages in sustainability, openness, self-sufficiency, autonomy/independence, health, food security, and food safety, although the match between perception and reality is continually challenged. Eco-friendly agricultural methods are internationally regulated and legally enforced by many nations, based in large part on the standards set by the International Federation of Organic Agriculture Movements (IFOAM), an international umbrella organization for eco-friendly farming organizations established in 1972. Since 1990 the market for organic food and other products has grown rapidly, reaching $63 billion worldwide in 2012. This demand has driven a similar increase in organically managed farmland that grew from 2001 to 2011 at a compounding rate of 8.9% per annum. As of 2011, approximately 37,000,000 hectares (91,000,000 acres) worldwide were farmed organically, representing approximately 0.9 percent of total world farmland.

The modern agriculture has been successful in meeting the increased food needs of alarmingly growing population. But, the problem associated with modern agriculture like, the high cost of inorganic or chemical fertilizers and plant protection chemicals, stagnated yield level. Over the years and the mounting health and environmental hazards have forced many farmers and scientists to focus attention on ecologically sound, viable and sustainable alternative non-chemical farming. In order to mitigate these health hazards and bring out natural balance and protection of ecosystem, organic movement has started in several parts of the world, in which no chemical fertilizers and plant protection chemicals are used in the cultivation of field crops, vegetables and fruits. It is ascertained that the indiscriminate use of agro-chemicals and pesticides cause adverse changes in the ecological balance. Keeping the above facts in view, the present study has been designed to analyze the entrepreneurial behavior of vegetable growers. The following specific objectives have been formulated for the study.

1. To study the attributes of vegetable growers.
2. To determine the adoption behaviour of vegetable growers towards eco-friendly techniques.
3. To analyze the relationship between attributes of vegetable growers and their adoption behaviour of vegetable growers towards eco-friendly techniques.
4. To enlist the problems of vegetable growers towards eco-friendly techniques.

MATERIAL AND METHODS

The study was conducted at Ladpura Block of Kota District in Rajasthan. In the study the sample were drawn through application of multi stage sampling method. Kota district comprises of five blocks out of which only block, namely Ladpura was selected purposively because, the block has maximum area under vegetable cultivation. The total number of vegetable grower's villages in block was 145(approx). Out of which 10 villages were selected randomly. A list of vegetable growers from 10 selected villages was prepared with the help of

RHEO/RAEO. Out of which an equal number of growers were selected through random sampling method to make the total sample size of 120 for investigation. The data were collected personally with the help of a pre-tested interview schedule. The interview schedule was designed for collecting the relevant information of selected variables. All the respondents had answered the questions fully, which was indicative of the fact that good rapport could be established between the investigator and respondents. After establishing rapport with the respondents they were interviewed and their responses recorded in interview schedule, for analysis of data. Secondary data were collected from records & statistical office. Statistical tools like- mean, SD, percentage and Chi-square test were used for analysis of data

RESULTS AND DISCUSSION

Profile and entrepreneurial behaviour of vegetable growers-

The data in Table-1 shows that most of the respondents (65.83%) belonged to middle age group and higher percentage (33.33%) of vegetable growers educated up to primary and middle school level followed by 15.00 percent of the respondents had education up to high school level. Majority of vegetable growers (52.50%) had a medium level of farming experience. The data in Table -1 indicates that maximum (40.83%) vegetable growers possessed up to 2.1 to 5 ha. of land. Majority (41.67%) of the vegetable growers had medium level of annual income. The perusal of data indicates that majority (51.67%) of the respondents had medium level of mass media participation and the 48.33 percent of respondents was from medium category of extension contact. The majority of vegetable growers (68.33%) had medium level of information seeking behaviour. The perusal of data indicates that majority (65.00%) of the respondents had medium level of market orientation, and 64.17 percent of respondents were from medium category of economic motivation. Majority 64.17 per cent of the vegetable growers had medium attitude towards use of Eco-friendly management practices while 20.83 per cent had high attitude. Almost similar findings were reported by Chaudhari Ratan Ranuji[3], Badodiya *et al*[2].

Table 1: Profile of the vegetable growers

S. N.	Traits	Category	Frequency	Percentage	Mean	SD
1	Age	Young (below 35 yrs)	22	18.33	2.69	0.74
		Middle(35-55 yrs)	79	65.83		
		Old(above 55 yrs)	19	15.83		
2	Education	Illiterate	10	8.33	1.78	2.6
		Up to primary	40	33.33		
		Up to middle	40	33.33		
		High school	18	15.00		
		Higher sec. &above	12	10.00		
3	Farming experience	Low(below 5 yrs)	20	16.67	2.39	0.83
		Medium(5-10 yrs)	63	52.50		
		High(above 10 yrs)	37	30.83		
4	Annual income	Low(<2.35)	23	19.17	2.35	1.19
		Medium(2.35-3.54)	50	41.67		
		High(>3.54)	47	39.17		
5	Land holding	Marginal (up to 1 ha.)	13	10.83	2.13	1.12
		Small (1.1 to 2 ha.)	14	11.67		
		Medium (2.1 to 5 ha.)	49	40.83		
		Large (above 5.1 ha.)	44	36.67		
6	Extension contact	Low(<2.35)	34	28.33	2.35	1.16
		Medium(2.35-3.51)	58	48.33		
		High(>3.51)	28	23.33		
7	Mass media participation	Low(<1.76)	38	31.67	1.76	0.26
		Medium(1.76-2.02)	62	51.67		
		High(>2.02)	20	16.67		
8	Market orientation	Low(<2.12)	16	13.33	2.12	0.68
		Medium(2.12-2.80)	78	65.00		
		High(>2.80)	26	21.67		
9	Economic motivation	Low(<2.92)	24	20.00	2.92	0.22
		Medium(2.92-3.14)	77	64.17		
		High(>3.14)	19	15.83		
10	Information seeking behaviour	Low(<5.54)	24	20.00	5.54	3.12
		Medium(5.54-8.66)	82	68.33		
		High(>8.66)	14	11.67		
11	Attitude towards use of Eco-friendly management practices	Low(<3.28)	18	15.00	3.28	1.23
		Medium(3.28-4.51)	77	64.17		
		High(>4.51)	25	20.83		

Extent of adoption of eco-friendly management practices by vegetable growers:

The finding of the study clearly shows that there was less percentage of respondents who had complete adoption practices of eco-friendly management. Higher percentage of farmers partially adopted the simple practices like field preparation, seed rate, sowing time and method, manures and fertilizers management and irrigation management, while as regard to complex practices, majority of the farmers had low adoption towards integrated disease management, weed management, integrated insect and pest management. Thus it concludes that maximum vegetable growers had low extent of adoption of the eco-friendly management practices followed by medium and high extent of adoption of the eco-friendly management practices respectively. The data clearly indicates that the high gap may be due to nature of the particular technology and less penetration of extension services in this area. The practices which contributed major part of the gap were precaution in using chemicals, insect- disease management and seed treatment practices which require careful attention of extension workers through making appropriate extension strategies for grass root level. The finding is similar to the work of Bhople *et al*[1]. Darling and Vashanthakumara[4], Patel[6].

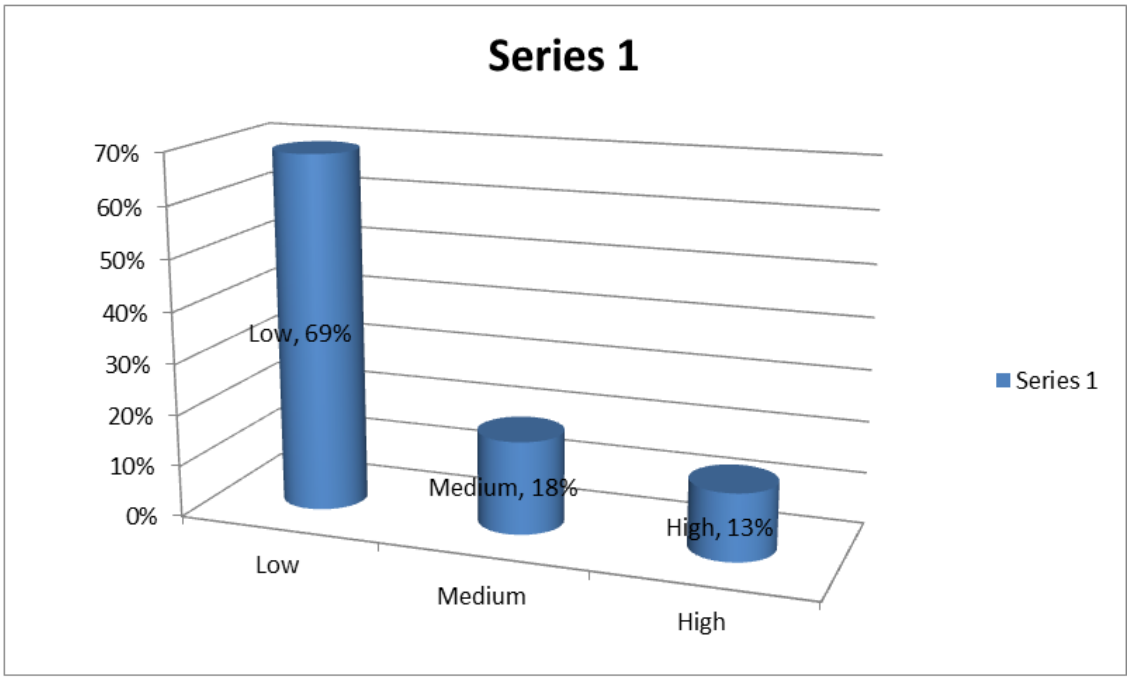

Fig. 1: Distribution of respondents according to their adoption of the eco-friendly management practices

Association between attributes of vegetable growers with their adoption of eco-friendly management practices

The data in Table-2 shows the significant association was found between education, annual income, farming experience, land holding, attitude towards use of eco-friendly management practices, mass media exposure, extension participation, economic motivation, information seeking behaviour with adoption of the eco-friendly management practices of the vegetable growers and non significant association was found between age and marketing orientation with adoption of the eco-friendly management practices of the vegetable growers.

To identify the constraints perceived by vegetable growers: The results in Table 3 showed that the respondents faced several constraints in adopting the eco friendly management practices. High yielding resistant varieties were costly and thus the respondents

were unable to purchase those at ranked I (81.66% of respondents). Low marketing orientation due to less awareness about new marketing trends and strategies prevented them from adopting the practices at ranked III (70.83% of respondents). Moreover less training on eco-friendly management practices was received by the farmers at ranked II (76.66% of respondents) along with less subsidies and technical support by the government at ranked IV (62.50% of respondents). Low knowledge about the environmental issues at ranked V (50.00% of respondents), less participation of the farmers to the extension programmes at ranked VI (41.66% of respondents) and inadequate environmental education at the secondary level at ranked VII (29.16% of respondents) also hindered the adoption of eco friendly management practices by the vegetable growers.

Table 2: Association between attributes of vegetable growers with their adoption of eco-friendly management practices

S. No	Variables	$\chi 2$ Value	Association with adoption	Degree of freedom	Level of probability
1.	Age	$\chi 2$= 6.783	Non-significant	4 d.f	0.05
2.	Education	$\chi 2$ = 13.34	Significant	4 d.f	0.01
3.	Annual income	$\chi 2$ = 10.93	Significant	4 d.f	0.05
4.	Farming experience	$\chi 2$ =14.29	Significant	4 d.f	0.01
5.	Land holding	$\chi 2$ = 12.28	Significant	4 d.f	0.05
6.	Attitude towards use of eco-friendly management practices	$\chi 2$ = 14.83	Significant	4 d.f	0.05
7.	Market orientation	$\chi 2$ = 7.268	Non-significant	4 d.f	0.05
8.	Economic motivation	$\chi 2$ = 16.28	Significant	4 d.f	0.01
9.	Mass media exposure	$\chi 2$ = 13.39	Significant	4 d.f	0.01
10.	Extension participation	$\chi 2$ = 10.42	Significant	4 d.f	0.05
11.	Information seeking behaviour	$\chi 2$ = 13.78	Significant	4 d.f	0.01

Table 3: Constraints faced by vegetable growers

S. N.	Constraints faced by vegetable growers	Frequency	Percentage	Rank
1.	Costly high yielding resistant varieties	98	81.66	I
22.	Low marketing orientation due to less awareness about new marketing trends and strategies	85	70.83	III
33.	Less training on eco-friendly management practices received by the farmers	92	76.66	II
44.	Less subsidies and technical support provided by the government	75	62.50	IV
55.	Low knowledge about the environmental issues	60	50.00	V
66.	Less participation of the farmers to the extension programmes	50	41.66	VI
77.	Inadequate environmental education at the secondary level	35	29.16	VII

CONCLUSIONS

The study revealed that maximum vegetable growers had low extent of adoption of the eco-friendly management practices followed by medium and high extent of adoption of the eco-friendly management practices respectively. It shows the significant association was found between education, annual income, farming experience, land holding, attitude towards use of eco-friendly management practices, mass media exposure, extension participation, economic motivation, information seeking behaviour with adoption of the eco-friendly management practices of the vegetable growers and non significant association was found between age and marketing orientation with adoption of the eco-friendly management practices of the vegetable growers. The major constraints expressed by vegetable growers were high

yielding resistant varieties were costly and thus the respondents were unable to purchase. Low marketing orientation due to less awareness about new marketing trends and strategies prevented them from adopting the practices at ranked III. Moreover less training on eco-friendly management practices was received by the farmers at ranked II. These factors can be taken care of by the implementing agencies in the state while selecting the beneficiaries for Eco-friendly farming management programmes.

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