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KNOWLEDGE LEVEL OF FARMERS ABOUT IMPROVED PRODUCTION TECHNOLOGY OF ONION CROP

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ABSTRACT

The study was conducted in Alwar districts of Rajasthan state during 2016-17 Descriptive research design was followed for the conduct of the study. With an objective to analyze the adoption Behaviour of onion regarding improved technologies and their socio- economic relationship with the adoption Behaviour for enhancement of production and productivity at farmer's level. Onion production has been practiced traditionally and a large portion of rural people earn their livelihood from onion production in this region. The present findings revealed that adoption of improved onion production technologies was the total sample for the present study was 120 respondents. The study was conducted with the objectives of Adoption behavior of onion growers. The findings with regard to all the respondents (100%) the major findings were as under noticed. Fifty percent of the respondents (50.00%) had middle age group followed by old age (33.33%) and young age group (16.67) fourty six percent of the respondents, (45.83%) were illiterate followed by primary and above (18.33%) middle school (15.00%) and secondary (10.83%) senior secondary (5%) and graduate & above (5%) most of the respondents (45.00%) had small land holding followed by marginal (31.67) and medium (20.00%), large (3.33%) land holding. Most of the respondents (52.5%) had medium level of knowledge followed by low (25%) and high level of knowledge (33.33%) respectively. However, Unavailability timely loan, Lack in information seeking for cultivation, Lack of information processing, Lack of contact by Government agents, were constraints faced by respondents. Factors like Age, Caste, Annual income, Family size, Farm implements, mass media exposure, were favor to be influential in an knowledge practices. Regular Training Programs Should be Organized about various Practices (i.e. Selection Of seed, Use Seed Treatment) Of onion Production, Input Like Improved Seed, fertilizer etc. Respondents suggested timely subsidized human inputs at the village level, nearby vegetable markets, low-interest institutional loans, and suitable resistant varieties to overcome agricultural constraints.

Keywords: *onion, technologies, adoption, behaviour, knowledge*

INTRODUCTION

Vegetables are grown in almost all the states in the country under varied agro-climatic, soil condition and various adoption levels of improved production technology. Onion is one of the important horticultural crop enhance the farmers economy with agricultural development played vitally role in Indian economy. It is well known fact that the improved farming strategy calls for adoption of balanced and efficient use of modern inputs and techniques for profitable and increase in production. The use of modern technology needs a careful management of resources before allocating the area under this commercial crop. Farmers are now well aware in respect of improved production technology of onion, for minimizing the risk factor and adoption of modern technology on their farm. India is the second largest producer of onion in the World next to China with production of 20931.21 thousand MT from an area of 1320.04 thousand hectares (Anonymous, 2017). The major onion producing states are Maharashtra, Madhya Pradesh, Karnataka, Gujarat, Rajasthan and Bihar. In Rajasthan, it is grown extensively in the districts of Jodhpur, Sikar, Alwar, Nagaur, Jhunjhunu, etc. The total production in the state during the year 2016-17 was 1350 thousand MT from an area of 85.0 thousand hectares (Anonymous, 2017). The farmers could increase their benefit through adoption of new technologies. The adoption of improved technologies requires high level of technical knowledge in areas package of practices and synchronized with needs and requirement of farmers like proper post-harvest handling, selection of suitable variety, proper nutrient management, insect-pest and diseases management, etc. Due to technological advancement in onion cultivation, there is a strong need to train the growers to keep them abreast about improved technologies for improving their knowledge and increasing income. Thus, the present study was designed to know the extent of Knowledge level of farmers about

improved production technology of onion crops in Sikar District of Rajasthan. **Choudhary et al. (2019).**

OBJECTIVES

(1) To determine the level of knowledge of respondents about improved practices of onion production technology

(2) To assess the relationship between the personal profile of respondents and their level of knowledge regarding onion production technology

METHODOLOGY

The study was conducted in Alwar districts of Rajasthan state with Descriptive research design was followed for the conduct of the study. And Multi-stage sampling technique was followed in this investigation. 33 Districts in Rajasthan state out of these Alwar District of Rajasthan was selected purposively, Alwar district have 17 Blocks viz. Tijara, Kotkasim, Kishangarh bas, Mundawar, Neemrana, Behror, Bansur, Govindgarh, Thanagazi, Rajgarh, Raini, Laxmangarh, Malakhera, Khathumar, Narayanpur, Ramgarh, Umren, out of these Tijara block was selected purposively, There are 189 villages in Tijara Block. Out of these 6 villages Namely Sareta, Murad bas, Rehmat Nagar, Lapala, Rup bas and Kultajpur will be selected purposively for the present study was selected based on depending upon more onion growers. From each selected village 20 farmers were selected randomly, who had more than 4 years of farming experience. Thus the total sample size was 120 farmers were considered as respondents for the present study. A well-structured and pre-tested schedule was used to collect the information from the onion growers. In this study, an interview schedule. These selections were done by using simple random sampling method for the purpose of the study of adoption behavior of onion growers. The collected data were analyzed with suitable statistical tools

RESULTS AND DISCUSSION

Personal profile

The data presented in Table: 1 show that fifty per cent of the Respondents (50.00 per cent) belonged to middle age group followed by 33.33 per cent with old age group and 16.67 per cent were from young age group. The similar findings have been reported by Chaudhary (2024)

Thus, it can be concluded that majority of the Respondents belongs to middle age group. The probable reason that could be contributed to this finding may be that this is the major group engaged in farming and being responsible for maintaining their families. This finding supports the view expressed by Dongardive (2002), Chaudhary (2024) and Toppo (2005).

Table 1: Distribution of the respondents according to personal and socio-economic characteristics

(n-120)

Sr. No.	Personal profile	Frequency	Per cent
Age			
1	Young age group (21 to 35 years)	20	16.67
2	Middle age group (between 36 to 50 years)	60	50.00
3	Old age group (above 50 years)	40	33.33
Education			
1	Illiterate	55	45.83
2	Primary school	22	18.33
3	Middle school	18	15.00
4	Secondary school	13	10.83
5	Sr. secondary school	06	05.00
6	Graduate and above	06	05.00
Land holding			
1	Marginal farmers (Up to 1.0 ha)	38	31.67
2	Small farmers (1.1 to 2.0 ha)	54	45.00
3	Medium farmers (2. 1 to 4 ha)	24	20.00
4	Large farmers (More than 4 ha)	04	03.33
Annual income			
1	Low up to (₹ 50,000/-)	45	37.50
2	Medium (₹50,000 to 1,00,000/-)	50	41.67
3	High (Above ₹ 1,00,000/-)	25	20.83
Extension contact			
1	Low contact	40	33.33
2	Medium contact	60	50.00
3	High contact	20	16.67
Mass media exposure			
1	Low (2 to 4 Score)	44	36.67
2	Medium (5 to 7 Score)	55	45.83
3	High (8 to 10 Score)	21	17.50

The data presented in Table 1 reveal that most of the respondents 45.83 per cent of Respondents were found to illiterate followed by primary education level 18.33, 15.00 were middle school 10.83 per cent educated up to secondary level and 6.followed by 5.00 per cent of them who were educated up to senior secondary level, 5.00 per cent educated up to graduation. The results are in conformity of the findings of Meena *et al.* (2024); Meena *et al.* (2024); Jangir *et al.* (2023); Vegad *et al.* (2021); Mallappa *et al.* (2023).

A look into Table:1 shows that majority of the Respondents 45 per cent were found to have small size of farm followed by 31.67 per cent of the respondents had less than 1.0 ha. of land holding(marginal farmers) and 20 per cent of the Respondents belongs to medium and 3.33 per cent of the respondents had more than 4 ha. of land holding (Large size of farm), respectively. It could be concluded that majority of the Respondents were small farmers.

The data presented in table indicate that 41.67 per cent of the Respondents belonged to medium annual income group and followed by 20.83 percent and 37.50 per cent belonged to high and low annual income group. The similar findings have been reported by Chaudhary at al. (2024)

The result of the study reported in Table: 1 reveals that more than three-fifth (50.00 per cent) of the Respondents had medium extension contact, whereas 33.33 per cent and 16.67 per cent of the Respondents had low and high extension contact, respectively. The present data indicate the distribution of mass media sources of respondents was determined and given in Table Almost respondents were having medium level (45.83 %) of use of mass media sources, whereas, (36.67 %) had low level and high level (17.50 %) use of mass media.

Table 2 : Distribution of the onion growers according to their knowledge level. (n-120)

Sr. No.	Practices	Level of Knowledge			Total
		Low (16-27)	Medium (28-39)	High (above 39)	
1	**Land preparation**	25 (20.84)	65 (54.16)	30 (25.00)	120
2	**Preparation of improved nursery**	16 (13.33)	62 (51.67)	42 (35.00)	120
3	**FYM application**	38 (31.67)	62 (51.67)	20 (16.66)	120
4	**Improved variety**	28 (23.33)	65 (54.17)	27 (22.50)	120
5	**Seed treatment**	20 (16.67)	70 (58.33)	30 (25.00)	120
6	**Time of sowing**	30 (25.00)	65 (54.16)	25 (20.84)	120
7	**Nursery management practices**	51 (42.50)	47 (39.17)	22 (18.33)	120
8	**Trans planting time**	22 (18.33)	70 (58.33)	28 (23.33)	120
9	**Method of transplanting**	28 (23.33)	77 (64.17)	15 (12.50)	120
10	**Spacing**	37 (30.83)	60 (69.17)	23 (19.17)	120
11	**Recommended dose of fertilizer**	28 (23.33)	54 (45.00)	38 (31.67)	120
12	**Irrigation management**	34 (28.33)	66 (55.00)	20 (16.67)	120
13	**Control of weeds**	30 (25.00)	76 (63.33)	14 (11.67)	120
14	**Control measure of insect and pest**	27 (22.50)	57 (47.50)	36 (30.00)	120
15	**Harvesting time**	20 (16.67)	56 (46.66)	44 (36.67)	120
16	**Yield**	33 (27.50)	62 (51.67)	25 (20.83)	120

f-Frequency , % -per cent

Table 3 : Overall level of Knowledge wise distribution of the respondents (n=120)

Sr. No.	Level of Knowledge	Frequency	Percent
1	**Low** (between 16-27)	30	25.00
2	**Medium** (between 28-39)	63	52.50
3	**High** (Above 39)	27	22.50

The data compiled in table 2 shows that the knowledge level of respondents of Onion cultivation practices and use of yield attributing inputs. There were 16 recommended practices identified for Onion cultivation and these are categorized into low, medium and high knowledge categories.

It is evident from the table that out of total respondents the most of the respondents 54.16 per cent had medium knowledge about land preparation followed by 25.00 per cent level of knowledge and 20.84 per cent respondents had low level of knowledge of this practices.

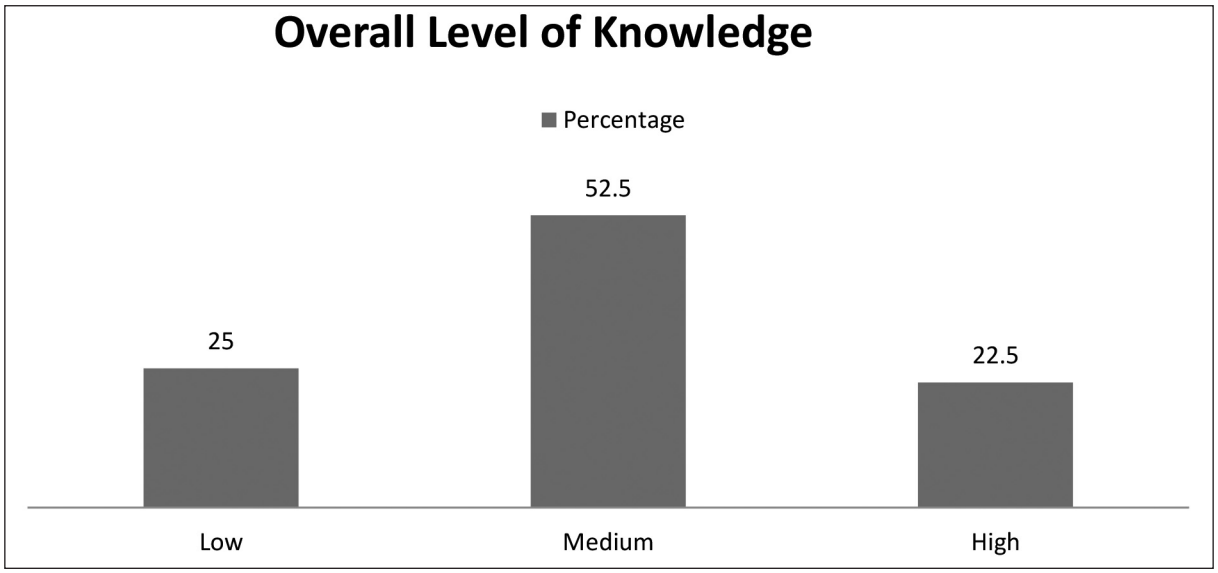

Fig. 1 : Distribution of respondents according to their overall level of Knowledge

The data also depicted that the knowledge of improved nursery of Onion, the most of the respondents 51.67 per cent had medium level of knowledge about improved nursery of Onion followed by 35.00 per cent respondents in high level and 13.33 per cent respondents in low level of knowledge. The similar findings have been reported by Kumar et al. (2012).

Regarding FYM application, most of the respondents 51.67 per cent had medium knowledge followed by 31.67 per cent had low level of knowledge and 16.66 per cent had high knowledge level of this practice.

Regarding improved verity, most of the respondents 54.17 per cent had medium knowledge followed by 23.33 per cent had low of knowledge and 22.50 per cent had high level knowledge of improved verity.

Regarding seed treatment, most of the respondents 58.33 per cent had medium knowledge followed by 25.00 per cent had high and 16.67 per cent had low knowledge.

Regarding time of sowing, most of the respondents 54.16 per cent had medium knowledge followed by 25.00 per cent low and 20.84 per cent had high knowledge level of this practice.

Regarding nursery management, most of the respondents 42.50 per cent had low knowledge followed by 39.17 per cent had medium and 18.33 per cent had high knowledge of this practices.

Regarding Trans planting time, most of the respondents 58.33 per cent had medium level knowledge followed by 23.33 per cent had high level of knowledge and 18.33 per cent had low level of knowledge about Trans planting time.

Regarding method of transplanting, most of the respondents 64.17 per cent had medium level of knowledge followed by 23.33 per cent had low and 12.50 per cent had medium level of knowledge about method of transplanting.

Regarding spacing, most of the respondents 69.17

per cent had medium knowledge followed by 30.83 per cent had low level and 19.17 per cent low level of knowledge about spacing.

Regarding recommended dose of fertilizer, most of the respondents 45.00 per cent had medium knowledge followed by 31.67 per cent had high level of knowledge and 23.33 per cent had medium level knowledge.

Regarding irrigation management, most of the respondents 55.00 per cent had medium level knowledge followed by 28.33 per cent low and 16.67 per cent had high knowledge about irrigation management.

Regarding control of weeds, most of the respondents 63.33 per cent had low knowledge followed by 25.00 per cent had medium and 11.67 per cent had high knowledge about control of weed.

Regarding control measure of insect and pest, most of the respondents 47.50 per cent had medium knowledge followed by 30.00 per cent had high level knowledge and 22.50 per cent had low knowledge about control measure of insect and pest.

Regarding harvesting time, most of the respondents 46.60 per cent had medium knowledge followed by 36.67 per cent had high and 16.67 per cent had low knowledge about harvesting time.

Regarding yield of Onion, most of the respondents 51.67 per cent had medium level knowledge followed by 27.50 per cent had low level knowledge and 20.83 per cent had high level knowledge. The similar findings have been reported by Chaudhary (2024)

It observed that table No-3 that majority of the It is clear from the above table that most of the respondents (52.50%) come under the medium category (between 28-39), whereas 25.00 per cent and 22.50 per cent respondents come under high and low category of knowledge as onion cultivation technology. The findings of this study support the findings of Choudhary at al. (2019). Raval et al. (2023). Malik et al. (2024)

The data mentioned in table-4 reveals that independent variables like, Age, annual income and size of landholding were positively significant correlated with knowledge level of onion production technology at 1 per cent level of significance. Variables like education, size of family, experience in onion cultivation, training received, extension contact, social participation, mass exposure and scientific orientation were positively significant correlated with leve of knowledge of onion production technology at 5 per cent

Table 4 : Relationships between the personal profile and onion production technology (n=120)

Sr. No.	Independent variables	Knowledge
X_1	**Age**	0.005594**
X_2	**Education**	0.723279*
X_3	**Occupation**	-0.66162 NS
X_4	**Annual income**	0.350206**
X_5	**Size of family**	0.688153*
X_6	**Size of Land holding**	0.428003**
X_7	**Experience in Onion cultivation**	0.691898*
X_8	**Training Received**	0.745673*
X_9	**Extension contact**	0.850237*
X_{10}	**Social participation**	0.706166*
X_{11}	**Mass Media exposure**	0.30927*
X_{12}	**Scientific orientation**	0.685895*
X_{13}	**Risk orientation**	-0.77752 NS

level of significance. While variables like occupation, risk orientations were non-significant correlated with level of knowledge of onion production technology. The similar findings have been reported by Mazumder et al. (2011). The above result reflected that, onion production technology was influenced by their characteristics.

Table 5 : Knowledge levels of respondents about improved production technology of onion (n=120)

Sr. No.	Practices	MPS	Rank
1	**Nursery management practices**	74.72	I
2	**FYM application**	71.67	II
3	**Control of weeds**	71.11	III
4	**Spacing**	70.56	IV
5	**Irrigation management,**	70.56	V
6	**Method of transplanting**	70.28	VI
7	**Yield**	68.89	VII
8	**Time of sowing**	68.06	VIII
9	**Improved variety**	66.94	IX
10	**Land preparation**	65.28	X
11	**Trans planting time**	65.00	XI
12	**Control measure of insect and pest**	64.17	XII
13	**Seed treatment**	63.89	XIII
14	**Recommended dose of fertilizer**	63.89	XIV
15	**Harvesting time**	60.00	XV
16	**Preparation of improved nursery**	59.44	XVI

The data (Table 5) revealed that 74.12 per cent respondents had good knowledge about Nursery management practices and hence this practice was ranked first. The second highest per cent of respondents 71.67 per cent were having

knowledge about FYM application in main field which was given second rank followed by 71.11 per cent respondents had knowledge about Control of weeds and given third rank 70.56 per cent respondents had knowledge about the Spacing and this practice was placed at rank fourth, followed by Irrigation management, Method of transplanting, Yield, and Time of sowing with 70.56 MPS, 70.28 MPS, 68.89 MPS, 68.06 MPS and as such these were ranked at 5th, 6th, 7th and 8th, respectively. Only 59.44 per cent respondents had knowledge about Preparation of improved nursery which was ranked last because most of the respondents had minimum knowledge about this practice. The findings of this study support the findings of Choudhary et al. **(2019)**.

CONCLUSION

Based on the major findings, it can be concluded that the majority of onion growers were middle-aged, primarily engaged in farming, had large family sizes, and owned marginal landholdings. Most had a medium level of farming experience, extension contact, social participation, scientific and risk orientation, as well as knowledge and adoption of onion cultivation technology. Out of thirteen independent variables studied, eleven showed a significant positive correlation with the adoption of recommended onion cultivation technology. Specifically, variables such as education, training, extension contact, social participation, mass media exposure, source of information, economic motivation, scientific orientation, risk orientation, and knowledge were strongly associated with higher levels of adoption. The similar findings have been reported by Raval et al. (2023) The remaining six variables did not show any significant correlation. The major constraints faced by the farmers included poor market facilities, lack of fair pricing, high input costs, shortage of labor, and irregular electricity supply. To overcome these challenges, farmers suggested ensuring proper market infrastructure, fair and remunerative prices, reduced input costs, timely and sufficient power supply, and easy access to credit at reasonable interest rates. Improved education, better extension support, accessible information, and economic incentives significantly boost the adoption of onion cultivation technology. Addressing key constraints-like market access, pricing, input costs, and electricity-can further enhance productivity and profitability for onion growers. The similar findings have been reported by Agbanu et al. (2024)

CONFLICT OF INTEREST

All authors declare that they have no conflict of interest.

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