



## Research Article

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# Adoption of Improved Cultivation Practices of Cumin Production Technology by Cumin Growers of Jalore District of Rajasthan

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## Abstract

Cumin is one of the important and ancient spices. India is the world's largest producer and consumer of the cumin. It is almost exclusively cultivated in Rajasthan and Gujarat. In year 2007, 167200 tonnes cumin seed was produced in India. It is used as powder, medicinal, beverages, cumin sips, organic cumin, oil and oleoresin, besides manifold medicinal uses. The present investigation was undertaken in Sanchore Panchayat Samiti of Jalore district of Rajasthan with the specific objectives to study the adoption level of improved cultivation practices of cumin production technology among respondents and find out the adoption gap. The farmers were found medium to low adoption level of improved cultivation practices of cumin production technology. The highest adoption gap was found in practice of seed treatment (97.67%) followed by plant protection measures and use of high yielding varieties. There was highly significant difference found between extent of knowledge and level of adoption about the improved cultivation practices of cumin production technology among respondents. It is summarized on the basis of occupation, education, land holding, social participation, type of house and farm powers, the respondents of present study were having middle socio-economic status.

**Keywords** Adoption, Socio-economic factors, Production technology, Cumin

## Introduction

India has been known from time immemorial as the "Home of Spices" producing almost all spices and condiments known to the world. Cumin is the dried fruit of a small herbaceous plant and was quite popular even during biblical times as an efficient digestive and a food flavor for

a ceremonial feast. In the developing spice growing countries like India, the spices are being almost exclusively used in house hold sector as natural food flavorings but in industrially advanced countries of the west where processed foods are consumed in large quantities, the spices are used in industrial sector. This sector prefers to use the spices

extractives essential oils and oleoresins because of certain advantages.

The area under cumin in the year 2005-06 was 403,033 ha and production was 199854 tones. In India, it is mostly (90%) produced in Rajasthan and Gujarat states. Rajasthan is the largest producer of cumin seeds contributing about 50 to 55 % of the country's total production. During the year 2005-06, in Rajasthan, area under cumin crop was 135113 ha. and production was 152239 tonnes. Export during 2007-08 was 28000 tonnes with the value of Rs. 29150 Lakh.

Generally there is a time lag between origin of a new ideas and its adoption. Improved agricultural cultivation practices of cumin production technology are not recognized by the farmers as an essential element. They mainly practice its traditional subsistence farming. There is a great need for the adoption of improved agricultural practices of cumin crop by the farmers so that production and income can be raised. Several programme to transfer of the new technologies in the agriculture are in operation through out the country but the new technology has not yet reached the grass root level, where it can be put into practice.

## Experimental

This study was conducted in Jalore district of Rajasthan as Jalore district having large area under cumin crop production and also leading in its production. A multistage sampling design was adopted to select sample for data collection. For this purpose, 25 farmers were selected randomly from each of four villages namely Arnay, Sarnau, Jhontra and Sinwara of Sanchore panchayat samiti of Jalore district of Rajasthan state. Thus the sample size consisted of 100 respondents. Data of the study were collected from the selected respondents with the help of a structured schedule. In case of measurement of adoption, nine practices of cumin production technology viz., use of high yielding varieties, field preparation, seed treatment, fertilizer application, irrigation, weed

control, plant protection measures and harvesting and storage of cumin seed were included in the adoption test. Each selected practice was further divided into several questions for studying the existing level of adoption about cumin production technology. One score was assigned to each of correct answer and zero score was assigned to incorrect answer. Thus the possible maximum score obtainable was 58.

## Results and Discussion

### Extent of adoption by the respondents

The adoption level of respondents about the cumin production technology was measured. The majority of the farmers (60%) had medium level of adoption while 24 % respondents had low level of adoption and 16 % farmers had high level of adoption (Table 1).

**Table 1 :** Distribution of respondents according to their level of adoption

S. No.	Category	No. of respondents
1.	Low	24
2.	Medium	60
3.	High	16

### Adoption and adoption gap among the respondents

The level of adoption regarding improved cultivation practices of cumin production technology were measured under nine improved practices which given in Table 2.

In individual practices wise level of adoption of farmers pertaining to improved cultivation practices of cumin production technology was worked out. For this, mean score and mean per cent scores were calculated and gap in adoption of each practices was calculated. It is evident from the data presented in Table 2 that overall mean per cent score of respondents were 48.80 per cent and adoption gap was 51.20 per cent.

**Table 2 .** Adoption and adoption gap among the respondents

S. No	Improved practices	Mean score	Adoption (In MPS)	Adoption gap ( In MPS)	Rank
1.	Use of high yielding varieties	1.00(3)	33.33	66.67	VII
2.	Field preparation	3.17(4)	79.25	20.75	II
3.	Seed Treatment	0.07(3)	2.33	97.67	IX
4.	Sowing practices	6.27(15)	40.18	59.82	V
5.	Fertilizer application	7.31(15)	48.73	51.27	IV
6.	Irrigation	3.25(4)	81.25	18.75	I
7.	Weed control	3.31(9)	36.78	63.22	VI
8.	Plant protection measures	1.00(3)	33.33	66.67	VII
9.	Harvesting and storage	4.65(6)	77.50	22.50	III
	<b>Total</b>	<b>(58)</b>	<b>48.80</b>	<b>51.20</b>	

Figures in parenthesis indicate maximum possible score in respective practices.

The data in Table 2 reveals that the farmers possessed highest level of adoption about irrigation practices with mean per cent score of 81.25. It is so because maximum farmers know the requirement of the irrigation to the cumin crop and were also aware about the time of the irrigation. This was followed by field preparation practices with mean per cent score (MPS) 79.25, the level of adoption about harvesting and storage practices of cumin crop was kept on third with the mean per cent score of 77.50 and adoption gap 22.50 per cent. Adoption regarding use of high yielding varieties, sowing practices, fertilizer application, weed management and plant protection measures, the mean per cent score were 33.33, 40.48, 48.73, 36.78 and 33.33 per cent respectively and adoption gap were 66.67, 59.82, 51.27, 63.22 and 66.67 respectively.

The farmers had minimum adoption level about seed treatment which was 2.33 per cent and adoption gap was 97.67 %. It was because, knowledge of seed treatment was low and also it is technical job hence requires skill to perform so the majority of farmers were not adopted the seed treatment practices.

**Table 3.** Significance of difference in adoption possessed by farmers of different village

Source of variance	df	SS	MSS	'F' value
Between the villages	3	16.04	5.34	0.71
Within the villages (Error)	96	718.72	7.48	

### Significance of difference in knowledge possessed by farmers of different village

The data in the Table 3 depicts that the calculated value of 'F' is not significant at 1 % level of significance thus null hypothesis was accepted and research hypothesis was rejected. This indicates that there was no significant difference in the level of adoption possessed by the farmers of different villages regarding improved cultivation practices of cumin production technology.

### Comparison between extent of knowledge and level of adoption about improved cultivation practices of cumin production technology among respondents

Table - 4 shows that calculated 'Z' value is greater than its tabulated value at 1 % level of significance in case of over all adoption about improved cultivation practices of cumin production technology. This cause for rejection of null hypothesis and acceptance of alternative hypothesis leading to conclusion that there is a significant difference between knowledge and adoption of improved cultivation practices of cumin production technology among the respondents.

In all the practices, except sowing practices, the calculated value of 'Z' is greater than its tabulated value at 1 % level of significance so null hypothesis was rejected and alternative hypothesis

was accepted. It means that there was highly significant difference between the knowledge and adoption of improved cultivation practices of cumin production technology among the respondents.

In case of sowing practices, the calculated value of 'Z' is less than its tabulated value at 1 % level of significance so null hypothesis was accepted and alternative hypothesis was rejected. It means that there was no significant difference between knowledge and adoption of sowing practices of cumin production technology.

#### **Socio-economic status of the cumin-growing respondents**

Based on the data presented in the Table 5, it is concluded that most of the respondents (47%) were in the middle age group. There was higher proportion of higher caste respondents (59%). Most of them were found agriculture as a family occupation with higher percentage of illiteracy and small land holding. Majority of the respondents were belonged to joint family. As far as social participation is concerned a few number of the respondents were found having active social participation. Majority of the respondents had semi pacca house followed by pacca house and kachcha house respectively. The majority of respondents were having one pair of bullock as animal power, a large number of respondents were having partially mechanized farming and they were partially equipped regarding farm implements.

**Table 4 .** Comparison between extent of knowledge and level of adoption among respondents

<b>Improved practices</b>	<b>Knowledge (MPS)</b>	<b>Adoption (MPS)</b>	<b>'Z' value</b>
Use of high yielding varieties	87.40	33.33	50.006**
Field preparation	82.71	79.25	24.538**
Seed treatment	56.50	2.33	17.434**
Sowing practices	69.33	40.18	1.419 NS
Fertilizer application	70.25	48.73	5.862**
Irrigation	85.00	81.25	10.102**
Weed control	73.83	36.78	10.35**
Plant protection measures	91.25	33.33	51.186**
Harvesting and storage	92.67	77.50	17.288**
Total	78.80	48.80	29.784**

\*\* Significant at 1 % level of significance, NS: Not significant, Table value of 'Z' at 1 % level of significance is 2.58.

## **Conclusion**

The majority of the farmers had medium level of adoption while 24 % respondents had low level of adoption and 16 % farmers had high level of adoption. Overall mean per cent score of respondents were 48.80 per cent and adoption gap was 51.20 per cent. Farmers possessed highest level of adoption about irrigation practices followed by field preparation practices. The level of adoption about harvesting and storage practices of cumin crop was kept on third.

Seed treatment practice was least adopted by the cumin growing respondents, which was only 2.33 per cent and adoption gap was highest (97.67 %). It was because, knowledge about seed treatment was low among the respondents and also it is technical job hence requires skill to perform. So the majority of farmers were not adopted the seed treatment practices. There was no significant difference in the level of adoption possessed by the farmers of different villages regarding improved cultivation practices of cumin production technology. There is a significant difference between knowledge and adoption of improved cultivation practices of cumin production technology among the respondents. But in case of sowing practices of cumin production technology, there was no significant difference found between knowledge and adoption.

**Table 5.** Distribution of respondents on the basis of different criteria of socio-economic status

S. No.		Characteristics	Frequency and per cent
1	Age	Young (18-35)	34
		Middle (36-55)	47
		Old age (56 & above)	19
2	Caste	Schedule caste	14
		Schedule tribe caste	12
		Back ward caste	15
		Higher (Prestigious caste)	59
3	Occupation	Farm labour	4
		Cast occupation	4
		Agriculture	90
		Business	2
4	Education	Illiterate	49
		Primary	31
		Middle	13
		Secondary and above	7
5	Family type	Nuclear	32
		Joint	68
6	Social participation	Passive participation	83
		Active participation	17
7	House	Kachcha house	31
		Semi pace house	36
		Pacca house	33
8	Land holding	Big	44
		Small	52
		Marginal	4
9	Farm power	Small animal power holder	57
		Large animal power holder	37
		Non-animal power holder	6
10	Mechanical power	Fully mechanical	7
		Partially mechanical	74
		Un mechanical	19
11	Farm implements	Fully equipped	5
		Partially equipped	84
		Un equipped	11

In case of socio-economic status of the respondents, majority (47%) of the respondents were of middle age group of 36-55 years. There was higher proportion of higher caste of respondents (59%), most of the respondents had agriculture as an occupation and had small land holding. The

respondents were having higher percentage of literacy. Majority of respondents were having one pair of bullock as animal power, some of the respondents were partially mechanized farming. Regarding farm implements, they were partially equipped.

It is summarized on the basis of occupation, education, land holding, type of house and farm powers, the respondents of the present study were having middle socio-economic status.

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