

Research Article

## Constraints perceived by farmers in adoption of spices production technology in Rajasthan

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**SUMMARY :** Rajasthan occupies major area under spices in the country. This study was conducted in Jodhpur, Rajasthan in the year 2010 to know the distribution of respondents on the basis of constraints perceived and to identify the constraints related with inputs in the adoption of technological interventions related to spice crops production. A sample of 160 respondents was randomly selected for the study purpose. A schedule was used to investigate input and financial constraints being faced by respondents in adoption of cumin, chilli and onion production technology. Regarding input constraints 'supply of inferior quality seed' was on first rank for the beneficiary farmers and 'untimely availability of chemicals and fertilizers' was on first rank for non-beneficiary farmers. Regarding financial constraints 'respondents were not convinced about profit' was on first rank and 'high cost of perforated bags' was on second rank for both the beneficiary and non-beneficiary farmers. Later, association was determined. There was similarity in the realization of input and financial constraints between beneficiary and non-beneficiary respondents.

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**KEY WORDS :**

Constraints, Adoption, Transfer of technology (TOT), Spice crops, Respondents, Association

### BACKGROUND AND OBJECTIVES

Indian spices are famous world over and are an integral part of Indian agriculture. To our credit India is the leader in spices production, consumption and export. The estimated growth rate for spices in the world is around 3.19 per cent which is just above the population growth rate (Selvan and Cherian, 2013). The flavour of Indian spices is spreading day by day across the globe. When India is known as the 'land of spices', one should continuously improve the productivity and quality of our spices to maintain that legacy. As per ISO list of 109 spices, 63 are under cultivation in India. Among different states, Rajasthan occupies major area under spices in the country followed by Andhra Pradesh, Kerala and Karnataka. The area of spices in Rajasthan is 6.97 lakh ha. and production is 6.68 lakh tones and productivity is 958 kg/ha (Anonymous, 2011).

The productivity of spices is low in India as well as in the state of Rajasthan. There are many

reasons of low productivity viz., unavailability of disease resistant varieties against biotic and abiotic stress, lack of location specific proper production technology, poor TOT, an awareness of farmers and marketing problems. In order to strengthen spice sector it is needed to pay attention to upcoming problems at multiple levels starting from farmer's field, processing and finally selling of the produce to gain more of foreign currency by enhancing export quantum of quality produce besides meeting own need. Looking to the above facts in mind, the present study was undertaken to know the distribution of beneficiary and non-beneficiary respondents on the basis of constraints perceived and to identify the constraints related with inputs and finance faced by the respondents in adoption of technological interventions related to spice crops production.

### RESOURCES AND METHODS

This study was conducted in Jodhpur,

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Rajasthan in the year 2010. Out of nine Panchayat Samities only Mandore was selected purposively because of operation of villages in which Institutional Village Linkage Programme (IVLP) 80 farmers were selected randomly from three villages in which IVLP was operated and the farmers were called beneficiary farmers and 80 farmers from another three villages in which the programme was not operated were selected randomly and these farmers were called non-beneficiary farmers. Thus, the total sample was consisted of 160 farmers. A schedule was used to investigate constraints being faced by the respondents in adoption of cumin, chilli and onion crops production technology. A complete list of all possible constraints was prepared and categorized in two categories *viz.*, constraints related to inputs and finance.

To assess the constraints faced by respondents in adoption of chilli, cumin and onion crops responses were recorded on a 3 point continuum *viz.*, 'very important', 'important' and 'least important' constraints and were assigned scores of 3, 2 and 1, respectively. Later the data were analyzed by using appropriate statistical measures and correlation was also determined to see the relationship between the responses of beneficiary and non-beneficiary respondents.

## OBSERVATIONS AND ANALYSIS

The results of the present study as well as relevant discussions have been presented under following sub heads:

### Distribution of respondents according to constraints perceived by them in adoption of spice crops production technology :

#### Cumin crop :

Table 1 shows that majority of beneficiary respondents perceived medium constraints followed by 19.23 per cent low constraints. Only 9.62 per cent of beneficiary respondents fell in high level of constraints. In case of non-beneficiary respondents 53.85 per cent of them perceived medium constraints followed by high and low level of constraints with 42.30 and 3.85 per cent, respectively.

#### Chilli crop :

Majority of chilli growing beneficiary respondents perceived low constraints followed by 38.46 per cent medium constraints. Only 7.70 per cent of beneficiary respondents fell in high level of constraints. In case of non-beneficiary respondents 5.85 per cent perceived high constraints followed by 46.15 per cent medium level of constraints. None of the non-beneficiary respondent fell in low level of constraints.

#### Onion crop :

In case of onion crop, majority of beneficiary respondents *i.e.* 60.00 per cent perceived low constraints followed by 40.00 per cent medium constraints and none of the beneficiary respondents fell in high level of constraints. The majority of non-beneficiary respondents perceived medium constraints followed by high level of constraints in adoption of onion production technology. None of the non-beneficiary respondent fall in low level of constraints.

#### Overall of spice crops :

Irrespective of individual crop, majority of beneficiary respondents perceived medium constraints followed by low and high level of constraints in adoption of spice crops production technology (Table 1). Further, 56.25 per cent non-beneficiary respondents perceived medium followed by high level of constraints. Only two non-beneficiary respondents perceived low level of constraints in adoption of spice crops production technology. These findings are in line with the findings obtained by Jangid (2001), Meena and Meena (2003), Jaitawat *et al.* (2007) and Prakash (2009).

### Constraints related to inputs as perceived by the spice crops growers :

#### Cumin crop :

With regards to input constraints (Table 2) beneficiary respondents perceived less constraints in adoption of cumin production technology. Only two constraints perceived relatively more by them were 'small land holding' and 'untimely availability of chemicals and fertilizers' with 32.69

**Table 1 : Distribution of beneficiary and non-beneficiary respondents on the basis of constraints perceived**

Sr. No.	Extent of constraints (Mean score)	Cumin crop				Chilli crop				Onion crop				Overall of spice crops			
		Beneficiary respondents (n=52)		Non-beneficiary respondents (n=52)		Beneficiary respondents (n=13)		Non-beneficiary respondents (n=13)		Beneficiary respondents (n=15)		Non-beneficiary respondents (n=15)		Beneficiary respondents (n=80)		Non-beneficiary respondents (n=80)	
		f	%	f	%	f	%	f	%	f	%	f	%	f	%	f	%
1.	Low (<26.81)	10	19.23	02	3.85	07	53.84	0	0.00	09	60.00	00	0.00	26	32.50	02	2.50
2.	Medium(26.81-55.99)	37	71.15	28	53.85	05	38.46	06	46.15	06	40.00	11	73.33	48	60.00	45	56.25
3.	High (>55.99)	05	9.62	22	42.30	01	07.70	07	53.85	0	0.00	04	26.67	06	7.50	33	41.25
	Pooled	52	100.00	52	100.00	13	100.00	13	100.00	15	100.00	15	100.00	80	100.00	80	100.00

f= frequency, %= percentage

and 26.28 MPS, respectively. In remaining aspects of input, they perceived around 20.00 MPS constraints. The non-beneficiary respondents of cumin crop relatively perceived more input constraints compared to beneficiary respondents. Further, non-beneficiary respondents perceived the various aspects of input constraints in the range of 32.00 to 46.00 MPS. The beneficiary respondents of cumin, chilli, onion and overall spice crops perceived relatively lesser input related constraints as compared to non-beneficiary respondents of cumin, chilli, onion and overall of spice crops.

**Chilli crop :**

With regards to input constraints beneficiary respondents perceived lesser constraints in adoption of chilli production technology. They perceived relatively more constraints regarding ‘supply of inferior quality seed’ and ‘seed do not available in required quantity’ with 28.21 and 23.08 MPS, respectively. Further, beneficiary respondents perceived various aspects of input constraints in the range of 7.00 to 21.00 MPS. The non-beneficiary respondents of chilli crop, relatively perceived more input constraints compared to beneficiary respondents. They perceived ‘seed is not available in required quantity’, ‘small land holding’ and ‘untimely availability of chemicals and fertilizers’ with more than 40.00 MPS. Further, non-beneficiary respondents perceived various aspects of input constraints in the range of 28.00 to 38.00 MPS.

**Onion crop :**

The beneficiary respondents perceived less constraints in adoption of onion production technology. Only three constraints perceived relatively more by them were ‘supply of inferior quality seed’, ‘untimely availability of seed in/ around village’ and ‘untimely availability of chemicals and fertilizers’ with 26.67, 24.44 and 22.22 MPS, respectively. Further, beneficiary respondents perceived various aspects of input constraints in the range of 9.00 to 20.00 MPS. The non-beneficiary respondents of onion crop, relatively perceived more input constraints compared to beneficiary respondents. They perceived ‘supply of inferior quality seed’, ‘untimely availability of seed in/around village’ and ‘inadequate irrigation facility’ with more than 50.00 MPS. Further, non-beneficiary respondents perceived various aspects of input constraints in the range of 36.00 to 47.00 MPS.

**Overall of spice crops :**

The beneficiary respondents perceived less constraints in adoption of spice crops production technology. Only one constraint perceived relatively more by them was ‘supply of inferior quality seed’ 25.13 MPS. Further, beneficiary respondents perceived the various aspects of input constraints

**Table 2 : onstraints related to inputs as perceived by spices growers**

Sr. No.	Constraints related to inputs	Cumin crop						Chilli crop						Onion crop						Overall of spice crops					
		Beneficiary respondents (n=52)			Non-beneficiary respondents (n=52)			Beneficiary respondents (n=13)			Non-beneficiary respondents (n=13)			Beneficiary respondents (n=15)			Non-beneficiary respondents (n=15)			Beneficiary respondents (n=80)			Non-beneficiary respondents (n=80)		
		MPS	Rank	Rank	MPS	Rank	Rank	MPS	Rank	Rank	MPS	Rank	Rank	MPS	Rank	Rank	MPS	Rank	Rank	MPS	Rank	Rank	MPS	Rank	Rank
1.	Untimely availability of need in/around village	21.79	4	43.59	2	17.95	4	33.33	6	24.44	2	53.33	3	21.39	3	43.41	4	21.39	3	43.41	4	21.39	3	43.41	4
2.	Untimely availability of chemicals and fertilizers	26.28	2	45.51	1	15.38	5	43.59	3	22.22	3	54.46	2	21.29	4	47.85	1	21.29	4	47.85	1	21.29	4	47.85	1
3.	Seed is not available in required quantity	21.15	5	42.95	3	23.08	2	48.72	1	20.00	4	46.67	6	21.41	2	46.11	2	21.41	2	46.11	2	21.41	2	46.11	2
4.	Supply of inferior quality seed	20.51	6	33.97	7	28.21	1	38.46	4	26.67	1	56.67	1	25.13	1	43.03	5	25.13	1	43.03	5	25.13	1	43.03	5
5.	Inadequate irrigation facility	19.87	7	38.46	5	10.26	7	30.77	7	15.56	5	51.11	4	15.23	6	40.11	6	15.23	6	40.11	6	15.23	6	40.11	6
6.	Small land holding	32.69	1	42.31	4	20.51	3	46.15	2	8.89	8	44.44	7	20.70	5	44.30	3	20.70	5	44.30	3	20.70	5	44.30	3
7.	Require more organic manure and fertilizer	17.31	8	32.69	8	12.82	6	35.90	5	11.11	7	46.69	5	13.75	8	38.43	7	13.75	8	38.43	7	13.75	8	38.43	7
8.	Uncertainty of good production	22.36	3	37.82	6	7.69	8	28.21	8	13.33	6	36.08	8	14.46	7	34.04	8	14.46	7	34.04	8	14.46	7	34.04	8
	Pooled	22.75		39.66		16.99		34.14		17.78		48.68		19.17		40.82		19.17		40.82		19.17		40.82	

$r_s = 0.62^*$   
 $t = 1.94$   
 $r_s = 0.81^*$   
 $t = 3.36$   
 $r_s = 0.76^*$   
 $t = 2.90$   
 $r_s = 0.62^*$   
 $t = 1.94$   
 $r_s = 0.81^*$   
 $t = 3.36$   
 $r_s = 0.62^*$   
 $t = 1.94$

$r_s$  = Rank correlation, \* Indicate significance of value at P=0.05, MPS= Mean per cent score

in the range of 14.00 to 22.00 MPS. The beneficiary respondents of cumin, chilli, onion and overall of spice crops perceived relatively lesser input constraints as compared to non-beneficiary respondents. To see the relationship between the ranks assigned by the beneficiary and non-beneficiary respondents for realization of inputs constraints in cumin, chilli, onion and overall of spice crops, the rank order correlation was calculated and tested by applying 't' test. The value of 't' for both the beneficiary and non-beneficiary respondents was found significant which leads to the conclusion that there is similarity in realization of 'input' constraints between beneficiary and non-beneficiary of cumin, chilli, onion and overall of spice crops growers. The findings are in accordance with the findings of Patel(1995), Sharma and Sharma (2003) and Jaitawat *et al.* (2007).

**Constraints related to finance as perceived by the spices growers :**

*Cumin crop :*

With regards to financial constraints (Table 3), the beneficiary respondents perceived less constraint in adoption of cumin production technology. Only one constraint perceived relatively high by them was 'high cost of perforated bags' with 4038 MPS. In remaining aspects of financial constraints, they perceived constraints below 40.00 MPS. The non-beneficiary respondents perceived more constraints in adoption of cumin production technology. All the constraints perceived with more than 50.00 MPS except one *i.e.* 'products have low market value' with 46.79 MPS.

*Chilli crop :*

The beneficiary respondents perceived relatively more constraints regarding 'not convinced about profit' with 30.77 MPS. Further, beneficiary respondents perceived various aspects of financial constraints in the range of 15.00 to 26.00 MPS. The non-beneficiary respondents of chili crop (Table 3) relatively perceived more financial constraints compared to beneficiary respondents. Only one constraints perceived relatively high by them was 'not convinced about profit' with 51.28 MPS. Further, they perceived various aspects of financial constraints in the range of 38.00 to 49.00 MPS.

*Onion crop :*

The beneficiary respondents perceived relatively high constraints regarding 'high cost of perforated bags' with 31.11 MPS. Further, beneficiary respondents perceived various aspects of financial constraints in the range of 18.00 to 29.00 MPS. The non-beneficiary respondents of onion crop, relatively perceived more financial constraints compared to beneficiary respondents. Only one constraint perceived relatively more by them was 'high cost of perforated bags' with 64.44 MPS. In remaining aspect of

**Table 3 : Constraints related to finance as perceived by the spices growers**

Sr. No.	Financial constraints	Cumin crop						Chilli crop						Onion crop						Overall of spice crops					
		Beneficiary respondents (n=52)			Non-beneficiary respondents (n=52)			Beneficiary respondents (n=13)			Non-beneficiary respondents (n=13)			Beneficiary respondents (n=15)			Non-beneficiary respondents (n=15)			Beneficiary respondents (n=80)			Non-beneficiary respondents (n=80)		
		MPS	Rank	Rank	MPS	Rank	Rank	MPS	Rank	Rank	MPS	Rank	Rank	MPS	Rank	Rank	MPS	Rank	Rank	MPS	Rank	Rank	MPS	Rank	Rank
1.	Seed, fertilizer and chemicals are costly	39.70	2	53.21	3	20.50	4	48.72	2	28.90	2	53.33	4	29.70	3	51.73	3								
2.	Lack of finance for inputs	30.77	6	50.64	5	25.64	2	46.15	3	20.00	5	55.56	3	25.47	5	50.78	4								
3.	Products have low market value	32.69	5	46.79	6	23.08	3	43.59	4	22.22	4	51.11	5	25.99	4	47.16	5								
4.	Not convinced about profit	38.46	3	58.33	2	30.77	1	51.28	1	26.67	3	57.78	2	31.96	1	55.79	1								
5.	More labour is required	37.82	4	51.28	4	15.38	6	38.46	6	17.78	6	48.89	6	23.66	6	46.21	6								
6.	High cost of perforated bags	40.38	1	59.62	1	17.95	5	41.03	5	31.11	1	64.44	1	29.81	2	55.03	2								
	Pooled	36.64		53.31		22.22		44.87		24.45		55.19		27.77		51.12									
		$r_s = 0.89^{**}$ $t = 3.95$						$r_s = 0.83^{**}$ $t = 2.96$						$r_s = 0.71^*$ $t = 2.02$						$r_s = 0.94^{**}$ $t = 5.52$					

finance, they perceived around 50.00 MPS constraints.

#### Overall of spice crops :

The beneficiary perceived less constraints (Table 3) in adoption of spice crops production technology. Only one constraints perceived relatively more by them was 'not convinced about profit' with 31.96 MPS. In remaining aspects of financial, they perceived below 30.00 MPS constraints. The non-beneficiary respondents perceived high constraints regarding 'not convinced about profit' and 'high cost of perforated bags' with 55.79 and 55.03 MPS. Further, in remaining aspects of finance, they perceived constraints below 52.00 MPS. The beneficiary respondents of cumin, chilli, onion and overall of spice crops perceived relatively lesser financial constraints as compared to non-beneficiary respondents.

To see the relationship between the ranks assigned by the beneficiary and non-beneficiary respondents for realization of financial constraints in cumin, chilli, onion and overall of spice crops, the 'rank order correlation' was calculated and tested by applying 't' test. The value of 't' for both the beneficiary and non-beneficiary respondents was found significant which leads to the conclusion that there is similarly in realization of 'financial' constraints between beneficiary and non-beneficiary of cumin, chilli, onion and overall of spice crops growers. Similar findings were obtained by Jangid (2001), Meena and Meena (2003), Sharma and Sharma (2003) and Prakash (2009).

#### Conclusion :

From the findings it can be concluded that for overall spice crops *i.e.* cumin, chilli and onion the most important input related constraint was 'supply of inferior quality seed' (1<sup>st</sup> rank) and 'seed is not available in required quantity' was at 2<sup>nd</sup> rank for the beneficiary respondents. Similarly for non-beneficiary respondents the constraint 'Untimely availability of chemicals and fertilizers' was on 1<sup>st</sup> rank and 'seed is not available in required quantity' was on 2<sup>nd</sup> rank. There was similarly in realization of 'input constraints' between beneficiary and non-beneficiary respondents.

Regarding financial constraints 'respondents were

not convinced about profit' was on first rank and 'high cost of perforated bags' was on 2<sup>nd</sup> rank for both beneficiary and non-beneficiary farmers. There was similarly in realization of 'financial' constraints between beneficiary and non-beneficiary respondents of cumin, chilli and onion growers.

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