Extent of Adoption of Recommended Interventions of Groundnut Crop among the Growers in Bikaner District of Rajasthan

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ABSTRACT

The present study was conducted in Sri Dungargarh and Bikaner panchayat samities of Bikaner district of Rajasthan. Two villages were selected from each selected panchayat samiti and 20 beneficiary and the equal number of non-beneficiary respondents were selected randomly from each selected village for the study. Data were collected through the pre-structured interview schedule. The findings revealed that the majority of the total groundnut growers, 66.88 per cent of respondents belonged to middle age group, 71.88 per cent of respondents belonged to other backward castes, 33.75 per cent were in the category of senior secondary education level and 65.62 per cent of respondents had a large size of land holding (more than 4 ha), 54.38 per cent of the respondents belonged to joint families, 58.75 per cent of respondents were from large families having more than five members, 49.38 per cent of groundnut respondents were member of any organization. The majority of the beneficiary and non-beneficiary respondents belonged to a medium level of adoption category. It was found that there was a significant difference in the level of adoption between the beneficiary and non-beneficiary respondents about recommended groundnut interventions.

Key words: *Adoption; Groundnut; Interventions; NMOOP;*

The Indian agriculture is the back bone of Indian economy. About 75 per cent of its population and 66.67 per cent of labor force directly or indirectly is dependent on agriculture for livelihood. Large number of important industries like jute, textiles, edible oils, tobacco, sugar etc. receives the raw materials produced by agriculture sectors. India is one of the major oil seeds grower and importer of edible oils. India's vegetable oil economy is world's fourth largest after USA, China and Brazil. National Mission on Oilseeds and Oil Palm (NMOOP) launched during 2014-15 envisages increasing production and productivity of oilseeds crops and oil palm through bringing in fallow areas under oilseed crops and diversification of area from low yielding cereals. It aims to achieve the required target by addressing major constraints to crop productivity through promotion of relevant technological interventions.

METHODOLOGY

The present study was conducted in Bikaner district Rajasthan. Bikaner district has been selected purposely. Bikaner district comprises of six panchayat samities. Out of six panchayat samities, two panchayat samities were selected for present study on the basis of higher area and production of groundnut and NMOOP scheme was also operated in these panchayat samities. Presently, two villages from each selected panchayat samiti were selected randomly for the study purpose. Thus, there were four villages from two panchayat samities. For selection of beneficiary respondents, a comprehensive list of groundnut growers who were benefitted under National Mission on Oilseeds and Oil Palm. As mentioned earlier, from each villages 20 beneficiary and equal number of non-beneficiary farmers were selected randomly separately. Thus, total 80 beneficiary and 80 non-beneficiary farmers were selected for the study.

To measure the extent of adoption of respondents, an adoption scale was developed for this study. The adoption scale of groundnut crop had 44 items. Weightage was given to each item. The possible maximum score

one could obtain was 100. The mean and standard deviation of the entire respondent's adoption score was computed for classifying the adoption in low, medium and high categories. To determine the extent of adoption of respondents about each major aspect mean per cent score was worked out and ranked accordingly. Besides, to find out the significance of the difference in adoption between different categories of respondents, Z-test was applied and conclusions were drawn accordingly.

RESULTS AND DISCUSSION

Personal profile of the respondents: Data presented in Table 1 depict that out of total groundnut growing respondents, 66.88 per cent respondents belonged to middle age group, while 19.37 per cent respondents belonged to old age group and 13.75 per cent respondents were found, young age group. Further 77.50 per cent beneficiary and 56.25 per cent non-beneficiary farmers to be were from the middle age group. Whereas, 8.75 per cent beneficiary and 18.75 per cent non-beneficiary farmers belonged to young age group. The representation of the old age group the beneficiary and non-beneficiary farmers were found to be 13.75 and 25.00 per cent respectively. 71.88 per cent of respondents belonged to other backward castes, while 16.88 per cent of respondents belonged to the general caste and 11.25 per cent were scheduled caste/scheduled tribe. Table 1 further shows that 77.50 per cent beneficiary and 66.25 per cent non-beneficiary belonged to other backward castes, while 10.00 per cent beneficiary and 23.75 per cent non-beneficiary belonged to the general caste and 12.50 beneficiary and 10.00 per cent non-beneficiary were scheduled caste/scheduled tribe. Further, Table 1 shows that 6.25 per cent respondents were illiterate, 11.88 per cent were educated from up to the primary level. Similarly, 15.62, 19.37 and 33.75 per cent respondents were in the category of middle, Secondary, Sr. secondary. Whereas, the remaining 13.13 per cent groundnut growers were educated up to graduate and above level in the study area. Further Table 1 shows that 5.00 per cent beneficiary and 7.50 per cent non-beneficiary were illiterate, 10.00 per cent beneficiary and 13.75 per cent non-beneficiary were educated from up to primary level. Similarly, 15.00, 18.75 and 36.25 per cent groundnut beneficiary and 16.25, 20.00 and 31.25 per cent of non-beneficiary were in the category of middle, secondary and Sr. secondary. Whereas, remaining 15.00 per cent beneficiary and 11.25 per cent non-beneficiary were educated up to graduate and above the level.

Table 1. Distribution of respondents according to their personal attributes

Attributes	Beneficiary (n=80)	Non-beneficiary (n=80)	Total (N=160)
Age Group			
Young(<32 yrs)	7 (8.75)	15 (18.75)	22 (13.75)
Middle (33-52 yrs)	62 (77.50)	45 (56.25)	107 (66.88)
Old (>52 yrs)	11 (13.75)	20 (25.00)	31 (19.37)
Caste			
General	8 (10.00)	19 (23.75)	27 (16.88)
OBC	62 (77.50)	53 (66.25)	115 (71.88)
SC/ST	10 (12.50)	8 (10.00)	18 (11.25)
Education Level			
Illiterate	4 (5.00)	6 (7.50)	10 (6.25)
Primary	8 (10.00)	11(13.75)	19 (11.88)
Middle	12 (15.00)	13 (16.25)	25 (15.62)
Secondary	15 (18.75)	16 (20.00)	31 (19.37)
Sr. secondary	29 (36.25)	25 (31.25)	54 (33.75)
Graduate and above	12 (15.00)	9 (11.25)	21 (13.13)
Land holding			
Small farmer (<2 ha)	0 (0.00)	0 (0.00)	0 (0.00)
Medium (2 to 4 ha)	26 (32.50)	29 (36.25)	55 (34.38)
Large (<4 ha)	54 (67.50)	51 (63.75)	105 (65.62)
Family Type			
Nuclear	39 (48.75)	34 (42.50)	73 (45.62)
Joint	41 (51.25)	46 (57.50)	87 (54.38)
Family Size			
Small (<5)	28 (35.00)	38 (47.50)	66 (41.25)
Large (>5)	52 (65.00)	42 (52.50)	94 (58.75)
Social Participation			
No member	29 (36.25)	32 (40.00)	61 (38.13)
Any 1 organization	40 (50.00)	39 (48.75)	79 (49.38)
Office bearer	11 (13.75)	9 (11.25)	20 (12.50)

Further analysis of Table 1 reveals that in the case of beneficiary farmers, 67.50 per cent had large land holding, followed by 32.50 per cent of them having medium land holding. Whereas, 63.75 per cent of non-beneficiary had large land holding followed by 36.25 per cent of them having a medium land holding. Further out of total groundnut respondents 65.62 per cent had large size of land holding (more than 4 ha), followed by 34.38 per cent of them having medium land holding (2-4 ha), It was interesting to note that none of the beneficiary as well as non-beneficiary farmers fell in the category of small land holding.

From the results, it can be concluded that above

60.00 per cent of respondents possessed more than 4 hectares land holding in the study area. Further analysis of data reveals that 54.38 per cent of the total groundnut respondents belonged to joint families and the remaining 45.62 per cent of respondents belonged to the families which are nuclear in composition. It was further noted that 51.25 per cent beneficiary and 57.50 per cent non-beneficiary farmers were from the joint family group, whereas, 48.75 per cent beneficiary and 42.50 per cent non-beneficiary respondents were found in nuclear family group. It is interesting to note that still above 50.00 per cent of farmers from both categories were maintaining the joint family concept in the villages.

Also indicate that 58.75 per cent of respondents were from large families having more than five members. While remaining 41.25 per cent of respondents were from small families having up to 5 members. Further, 65.00 per cent of beneficiary and 52.50 per cent non-beneficiary farmers have belonged to large size family groups. While 35.00 per cent beneficiary and 47.50 per cent non-beneficiary was categorized in small size of the family group. The data recorded that 49.38 per cent respondents were a member of any organization, whereas 38.13 per cent respondents had no member of any organization and remaining 12.50 per cent were reported office bearer of some organizations. It was also found that 50.00 per cent beneficiary and 48.75 per cent non-beneficiary farmers had a member of any organization. Whereas, the beneficiary and non-beneficiary farmers who possessed no member of any organization to be 36.25 and 40.00 per cent, respectively. It was further noted that 13.75 and 11.25 per cent beneficiary and non-beneficiary farmers were reported office bearer of some organizations, respectively. These findings are in line with the findings of *Asiwal (2004)* found that majority of (83.33%) the respondents were young to middle age group, it was further found that majority of (58.34%) belonged to high caste and more than half of the respondents 60.67 per cent were literate, medium size of land holding 55.41 per cent, 54.17 per cent respondent belonged to nuclear family type, more than half 56.25 per cent of the respondents were having large family size and more than two third of the respondents 76.25 per cent were taking part in social activities. Similar findings are also reported by *Salunkhe, et al. (2012), Kumar, A. (2013)* and *Raghuwanshi (2018).*

Table 2. Distribution of respondents according to their level of adoption regarding groundnut Interventions

Adoption Level	Beneficiary (n=80)	Non-beneficiary (n=80)	Total (n=160)
Low (<26)	14 **(**17.50**)**	19 **(**23.75**)**	33 **(**20.62**)**
Medium (26 to 47)	46 **(**57.50**)**	50 **(**62.50**)**	96 **(**60.00**)**
High (>47)	20 **(**25.00**)**	11 **(**13.75**)**	31 **(**19.38**)**

Figures shown in the parentheses are percentages;
Mean= 36.82, SD=10.45

Distribution of respondents according to their level of adoption : Data reported in Table 2 reveals that 57.50 per cent beneficiary and 62.50 per cent non-beneficiary farmers were in a medium level of adoption category. Whereas, 17.50 per cent beneficiary and 23.75 per cent non-beneficiary respondents were found in the low level of adoption category. Likewise, 25.00 per cent and 13.75 per cent beneficiary and non-beneficiary farmers possessed a high level of adoption respectively about recommended interventions of groundnut. Further, among the categories of groundnut growers, it was observed that 60.00 per cent of the total respondents were in the medium level of adoption category, whereas, 20.62 per cent respondents were in the low level of adoption category and remaining 19.38 per cent groundnut growers to be observed in the high level of adoption about recommended interventions of groundnut. Similar findings are reported by *Hadiya et al. (2014)* observed that majority of 65.83 per cent respondents had medium adoption about the recommended practices of groundnut cultivation. Whereas, 19.17 per cent had low and 15.00 per cent had high extent of adoption of recommended practices of groundnut cultivation.

Extent of Adoption: The interventions related to soil and field preparation, soil treatment, high yielding varieties, seed treatment, sowing time, seed rate & spacing, fertilizer application, irrigation management, weed management, plant protection measures and harvesting, threshing & storage were introduced under National Mission on Oilseed and Oil Palm in the study area. Therefore, an effort was made to assess the intervention wise extent of adoption among groundnut growers. The results have been given in the Table 3.

Data depicted in Table 3 indicate that the extent of adoption of groundnut beneficiary respondents, the interventions like 'high yielding verities', 'Harvesting, threshing and storage', 'Time of sowing, seed rate and

Table 3. Extent of adoption of the beneficiary and non-beneficiary respondents regarding groundnut interventions

Package of practices	Beneficiary (n=80)		Non-beneficiary (n=80)	
	MPS	Rank	MPS	Rank
Field preparation	80.31	IV	76.25	IV
Soil treatment	48.75	X	35.15	X
High yielding varieties	100.00	I	100.00	I
Seed treatment	77.19	V	65.94	VI
Time of sowing, seed rate & spacing	82.08	III	78.33	II
Manure & fertilizer appl.	74.84	VI	67.03	V
Irrigation management	69.38	VII	53.13	VIII
Weed management	58.33	IX	49.58	IX
Plant protection	60.21	VIII	54.38	VII
Harvesting, threshing & storage	84.06	II	78.13	III
Overall	73.52		65.79	

MPS=Mean per cent score; $r_{s=}$ 0.96; t= 10.20**

spacing', 'Field preparation', 'Seed treatment' and 'Manure and fertilizer application' were adopted with 100, 84.06, 82.08, 80.31, 77.19 and 74.84 MPS and given rank 1st, 2nd, 3rd, 4th, 5th and 6th respectively. They possessed the medium level of adoption in the interventions like 'Irrigation management' (69.38 MPS), 'Plant protection measure' (60.21 MPS) and 'Weed management' (58.33 MPS) and assigned rank 7th, 8th, and 9th respectively. The intervention which was least adopted by them was 'Soil treatment' (48.75 MPS).

In case of non- beneficiary respondents, the interventions like 'high yielding verities', 'Time of sowing, seed rate and spacing', 'Harvesting, threshing and storage' and 'field preparation' were adopted with 100, 78.33, 78.13 and 76.25 MPS and given rank 1st, 2nd, 3rd and 4th respectively. Similarly they had medium adoption level in the interventions like 'Manure and fertilizer application' (67.03 MPS), 'Seed treatment' (65.94 MPS) and 'Plant protection measure' (54.38 MPS), 'Irrigation management' (53.13 MPS) and 'Weed management' (49.58 MPS) and ranked at 5th, 6th, 7th, 8th and 9th places respectively. The least adopted intervention by them was 'Soil treatment' (35.15 MPS). The overall extent of adoption of the groundnut beneficiary respondents (73.52 MPS) was higher than the non-beneficiary respondents (65.79 MPS). The value of calculated rank correlation (r_s) was 0.96 which shows positive and significant at 1 per cent level of significance, leading to conclusion that there was a similarity in the rank assigned pattern of adoption level of beneficiary and non-beneficiary groundnut respondents about groundnut production technology, though there was a difference in magnitude of Mean Per cent Score of beneficiary and non-beneficiary respondents. These findings are in line with the findings of *Pokar et al., (2014)* found that majority of (92.86 per cent) beneficiary farmers and 81.42 per cent non-beneficiary farmers had medium to high level of adoption of demonstrated groundnut production technology among the respondents. Significant difference was found between beneficiary and non-beneficiary farmers with respect to their extent of adoption of demonstrated groundnut

Table 4. Practices wise comparison between the beneficiary and non-beneficiary respondents about the adoption of groundnut interventions

Package of practices	Beneficiary (n=80)		Non-beneficiary (n=80)		'Z' Value
	Mean	SD	Mean	SD	
Field preparation	3.21	0.77	3.05	0.73	1.53^{NS}
Soil treatment	8.29	8.55	5.98	8.14	1.96^{NS}
High yielding varieties	12.00	0.00	12.00	0.00	∞^{NS}
Seed treatment	9.26	2.71	7.91	4.11	2.74**
Time of sowing, seed rate, and spacing	4.93	0.79	4.70	0.75	2.06 *
Manure and fertilizer application	8.98	0.17	8.04	1.51	6.15**
Irrigation management	4.16	1.82	3.23	1.64	3.83**
Weed management	5.25	2.11	4.50	1.72	2.76**
Plant protection measures	10.84	4.39	7.79	4.72	4.73**
Harvesting, threshing & storage	3.36	0.80	3.13	0.85	2.04 *
Overall	7.03	2.21	6.03	2.42	3.04**

NS = Non-significant, ** = Significant at 1% level of significance

production technology. Similar findings are also reported by *Subhash chand and Meena (2011)* and *Hadiya et al. (2014).*

Practices wise comparison about the adoption of groundnut interventions: Table 4 indicates that calculated 'Z' value was greater than its tabulated value at a 1 per cent level of significance in all practices of groundnut. Hence, the research hypothesis was accepted and the null hypothesis was rejected, which leads to the conclusion that there had been a significant difference in the level of adoption between the beneficiary and non-beneficiary respondents regarding recommended groundnut interventions. Further analysis of the Table shows that the mean score of beneficiary farmers is more than non-beneficiary farmers, which indicates that beneficiary farmers had more adoption level than non-beneficiary farmers about recommended groundnut interventions. This significant difference between the beneficiary and non-beneficiary respondents indicates that National Mission on Oilseed and Oil Palm played a significant and positive role in the adoption of various technologies of groundnut in the study area. Similar findings are reported by *Pokar et al. (2014)* and *Patel et al. (2016).*

CONCLUSION

Thus, from the above results, it may be concluded that majority of the respondents, belonged to middle age group, other backward castes, majority of the respondents in the category of senior secondary education level and respondents had a large size of land holding (more than 4 ha), belonged to joint families, and were from large families having more than five members, maximum number of respondents were member of any organization. It may also be concluded that beneficiary respondents had medium to high level of adoption while non-beneficiary respondents had medium to low level of adoption regarding recommended groundnut interventions. It was also found that there was a significant difference between the beneficiary and non-beneficiary respondents about the adoption of recommended groundnut interventions. This difference in the level of adoption of groundnut respondents might be because beneficiary respondents being in continuous touch with the field functionaries of National Mission on Oilseed & Oil Palm. Thus, they are more likely to practice the latest technical know-how.

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