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Constraints Perceived in Adoption of Groundnut Production Technology

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ABSTRACT

Groundnut is the principal oilseed crop of India and plays an important role in economy of the nation. Rajasthan is one of the major groundnut producing states of the country. The agro-climatic zone IVa (Sub-humid Southern Plain and Aravali Hills) is major groundnut producing zone of the state but productivity of this crop is very low in this agro-climatic zone. This has been basically due to non-adoption of improved package of practices of groundnut cultivation by majority of the farmers. The present study was conducted in this zone to find out the major constraints which prevented the farmers from adoption of groundnut production technology. It was found from the study that 45.83, 40.84 and 13.33 per cent farmers were in the low, medium and high constraints level respectively. It was further observed that inadequate skill for seed treatment, unavailability of technical advice for crop cultivation, poor knowledge of high yielding varieties, unavailability of improved tools in the local market, inadequate irrigation facilities, unavailability of credit at marginal interest rate, high cost of plant protection chemicals, high cost of seed of HYVs, scarcity of moisture in the soil, delay in occurrence of monsoon, were important constraints perceived by the groundnut growers in adoption of groundnut production technology. It was also found that there was a significant variation among large, small and marginal groundnut growers with respect to constraints perceived by them in adoption of groundnut production technology.

Key words: Groundnut, Agro-climatic zone, constraints, Adoption

INTRODUCTION

India occupies the first position in respect of area and second in production of groundnut in the world and it plays an important role in economy of the nation. Rajasthan is one of the major groundnut producing states of the country. Groundnut is the principal oilseed crop of the *kharif* season of the state. It is grown on 2, 41,494 hectares state wide with a total production of 1, 65,750 tonnes. The agro-climatic zone IVa (Sub-humid Southern Plain and Aravali Hills) is major groundnut producing zone of the state. The crop is grown in this zone in an area of 39,776 hectares with a production of 7578 tonnes per annum. However, the productivity of groundnut is very low in this agro-climatic zone as compared to the state average productivity.

This has been basically due to non-adoption of improved package of practices of groundnut cultivation by majority of the farmers. It is needless to mention that pace of adoption can be augmented by overcoming the perceived constraints. So it was felt necessary to find out the major constraints which prevented the farmers from adoption of groundnut production technology. Keeping these facts in view the present study was conducted with following specific objectives : to study the constraints being faced by the farmers in adoption of groundnut production technology and to see difference among large, small and marginal farmers in adoption of groundnut production technology

METHODOLOGY

The present study was conducted in agro-climatic zone IVa of Rajasthan. From this zone, Chittorgarh and Bhilwara districts were selected on the basis of maximum area under cultivation of groundnut. From these identified districts, Chittorgarh & Begun tehsils of Chittorgarh and Mandalgarh & Bijolia tehsils from Bhilwara district and four villages from each identified tehsil (Total 16 villages) were selected on the basis of maximum area under groundnut cultivation. To select the respondents, five marginal, five small and five large (Total 15) groundnut growers were selected randomly from each identified village. Thus, in all 240 farmers (80 marginal, 80 small and 80 large farmers) were included in the sample of study. A schedule consisting of all anticipated constraints was constructed to identify the constraints being faced by the farmers in adoption of improved groundnut cultivation practices. Thereafter, all the constraints were categorized under six major heads viz. technical, input-supply, financial, ecological, marketing and general constraints. The data were collected through face to face interview technique from the selected respondents and then data were analyzed and hypotheses were formulated to arrive at specific conclusion.

RESULTS AND DISCUSSION

To get an overview of the constraints encountered by the groundnut growers in adoption of recommended

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cultivation technology, the constraints were classified into three strata i.e. low, medium and high on the basis of calculated mean and standard deviation of the score given to the constraints item by the respondents.

The data in Table 1 reveal that 110 (45.83%) of total groundnut producers faced medium level of constraints in adoption of groundnut production technology. Whereas, 32 (13.33%) respondents were reported from the group of low constraints level and 98 (40.84%) respondents were in the high constraints level. While analysing the case of large, small and marginal respondents regarding constraints in adoption of improved groundnut production practices, it was reported that 26 (32.50%) large farmers were in the high constraints level and 16 (20%) large farmers in the low constraints group, while 47.50 per cent large farmers were found in the medium level constraints category. Likewise, 52.50, 35.00 and 12.50 per cent small farmers faced medium, high and low level of constraints respectively. In case of marginal farmers, it was observed that 55.00, 37.50 and 7.50 per cent respondents had high, medium and low level of constraints in adoption of recommended groundnut cultivation practices.

Table 1: Distribution of farmers according to level of constraints faced by them in groundnut cultivation

n=240

Level of constraints	Large farmers		Small farmers		Marginal farmers		Total	
	F	%	F	%	F	%	F	%
Low (< 59.25)	16	20.00	10	12.50	6	7.50	32	13.33
Medium (59.25-86.80)	38	47.50	42	52.50	30	37.50	110	45.83
High (> 86.80)	26	32.50	28	35.00	44	55.00	98	40.84
Total	80	100.00	80	100.00	80	100.00	240	100.00

F = Frequency, % = Per cent

It can be inferred from Table 1 that majority of small farmers fell under category of medium level of constraints regarding adoption of recommended groundnut production technology. Whereas, majority of marginal farmers were under high level of constraints as compared to large and small farmers. The constraint level of small and marginal farmers was high compared to large farmers. This may be due to that small and marginal farmers had low socio-economic status, less awareness of market trend, poor consmopolitan outlook and low literacy percentage.

Technical constraints perceived by groundnut growers

Data presented in Table 2 showed that "inadequate skill for seed treatment" was the most severe constraint perceived by the large, small and marginal groundnut growers with mean per cent score 90.62, 86.76 and 96.15 respectively and was ranked first by all the three categories of farmers. The realization of this constraint might be due to lack of training programmes on seed treatment.

The second most important problem perceived by the large, small and marginal farmers was "non-availability of technical advice for crop cultivation" with 81.50, 80.08 and 90.69 per cent respectively. This was followed by the problem "poor knowledge about high yielding varieties" which was placed on third rank by all the three categories of farmers viz. large, small and marginal farmers with 75.12, 71.32 and 84.11 MPS respectively. The constraint "use of weedicide is complex practice" was with the extent of 70.37, 59.55 and 75.57 MPS among large, small and marginal farmers respectively. Whereas, 'lack of knowledge about soil treatment" was placed on fifth rank by large and marginal farmers and on fourth rank by small farmers with extent of 60.25, 69.50 and 63.70 per cent respectively. Table further indicates that constraint related to "ignorant about rhizobium culture" was assigned sixth rank by large, small and marginal farmers with extent of 50.12, 47.79 and 54.40 MPS respectively. The constraint about "lack of skill for application of plant protection chemicals" was accorded seventh rank by large and small and eighth rank by marginal farmers with 42.52, 40.61 and 45.76 MPS respectively.

Table 2: Technical constraints perceived by the groundnut growers

n = 240

Technical Constraints	Large farmers		Small farmers		Marginal Farmers		Total	
	MPS	Rank	MPS	Rank	MPS	Rank	MPS	Rank
Poor knowledge about high yielding varieties	75.12	III	71.32	III	84.11	III	76.85	III
Inadequate skill for seed treatment	90.62	I	86.76	I	96.15	I	91.17	I
Lack of know how about the proper use of chemical fertilizers and micronutrients	35.00	VIII	37.25	IX	40.50	IX	37.58	IX
Poor knowledge about plant protection measures	30.62	X	37.50	VIII	48.73	VII	38.95	VIII
Use of weedicides is technically complex practice	70.37	IV	59.55	V	75.57	IV	68.49	IV
Non-availability of technical advice for crop cultivation	81.50	II	80.08	II	90.69	II	84.09	II
Lack of knowledge about soil treatment	60.25	V	63.70	IV	69.50	V	64.48	V
Ignorant about rhizobium culture	50.12	VI	47.79	VI	54.40	VI	50.80	VI
Lack of skill for application of plant protection chemicals	42.52	VII	40.61	VII	45.76	VIII	42.96	VII
Poor knowledge about insurance	31.25	IX	33.23	X	36.57	X	33.68	X

MPS = Mean Per cent Score

Further analysis of Table reveals that the constraint related to "poor knowledge about plant protection measures" was accorded eighth rank by small farmers, seventh rank by marginal farmers and tenth rank by large farmers. This was followed by "lack of know-how about the proper use of chemical fertilizers and micronutrients" which was placed on ninth rank by small and marginal farmers and on eighth ranks by large farmer with 37.25, 40.50 and 35.00 per cent respectively. The constraint about "poor knowledge about crop insurance" was put on last rank by small and marginal farmers and on ninth rank by large farmers. The findings are supported by those of Jat (1999).

Input-supply constraints perceived by the groundnut growers

Table 3 visualizes that "Non-availability of improved tools in the local market" was perceived most important constraint by the large, small and marginal groundnut growers with 76.00, 90.50 and 96.50 MPS respectively and ranked first by all the categories of farmers.

The next important constraint perceived by small, marginal and large farmers was "inadequate irrigation facility" which was with the extent of 90.00, 93.50 and 68.00 MPS respectively. This was followed by constraint "high requirement of manures and fertilizers for HYVs" which was expressed as third most important constraint by small and marginal farmers and second important constraint by large farmers with the extent of 85.60, 91.20 and 72.00 MPS respectively. The constraint about "non-availability of culture at the sowing time" was accorded fourth rank by large farmers and sixth rank by small and marginal farmers. "Non-availability of weedicides, insecticides and pesticides in the area" was expressed as 52.00, 72.00 and 82.40 per cent by large, small and marginal farmers respectively and it was fifth most important constraint among large farmers and fourth important constraint among small and marginal farmers. Further analysis of table shows that constraint about "non-availability of labour at the time of harvesting of crop" was assigned seventh rank by large farmers, (46.66%) and fifth rank by small (68.22%) and marginal farmers (80.66%).This was followed by "non-availability of improved seed at the time of sowing" which was perceived by large, small and marginal farmers with the extent of 48.40, 60.40 and 62.20 MPS respectively. Further, the constraint regarding "non-availability of suitable equipment for seed treatment" was assigned eleventh rank by all the three categories of farmers i.e. large, small and marginal farmers with 43.33, 54.33 and 60.00 MPS respectively. The constraint related to "irregular supply of electricity for irrigation" was ranked ninth by large and small groundnut growers and tenth rank by marginal farmers with 40.00, 50.88 and 56.88 MPS respectively. The constraint about "non-availability of improved thresher" was assigned eleventh rank by large farmers, tenth rank by small farmers and ninth rank by marginal farmers. This was followed by the constraint "non-availability of fertilizers at the peak season" faced by large, small and marginal farmers with extent of 28.00, 34.20 and 39.60 per cent, respectively. The constraint related to "non-availability of recommended chemicals for seed treatment" was put on the last rank by all the three categories of farmers i.e. large, small and marginal groundnut growers. The findings are in line with those of Kamble *et. al*. (1990) and Ingle *et. al*. (1995).

Table 3: Input supply constraints perceived by the groundnut growers

Input -supply Constraints	Large farmers		Small farmers		Marginal farmers		Total	
	MPS	Rank	MPS	Rank	MPS	Rank	MPS	Rank
Non-availability of improved seed at the time of sowing	48.40	6	60.40	7	62.20	7	58.00	7
High requirement of manures and fertilizers for HYVs	72.00	2	85.60	3	91.20	3	82.93	3
Non-availability of recommended chemicals for seed treatment	20.00	13	22.00	13	32.50	13	26.50	13
Non-availability of fertilizers at the peak season	28.00	10	34.20	12	39.60	12	33.93	11
Inadequate irrigation facility	68.00	3	90.00	2	93.50	2	83.78	2
Non-availability of improved tools in the local market	76.00	1	90.50	1	96.50	1	87.66	1
Non-availability of culture at the sowing time	62.00	4	68.00	6	76.66	6	68.88	4
Non availability of labour at the time of harvesting of crop	46.66	7	68.22	5	80.66	5	65.11	6
Non availability of weedicides, insecticides and pesticides in the area	52.00	5	72.00	4	82.40	4	68.80	5
Non-availability of suitable equipment for seed treatment	25.00	12	32.50	11	43.00	11	33.50	12
Irregular supply of electricity for irrigation	40.00	9	50.88	9	56.88	10	49.25	9
Non-availability of sprayers and duster in the locale	43.33	8	54.33	8	60.00	8	52.55	8
Non availability of improved thresher	25.20	11	37.20	10	57.20	9	39.86	10

MPS = Mean Per cent Score

Financial constraints perceived by the groundnut growers

A critical examination of the data presented in table 4 reveal that "non-availability of credit at marginal interest rate" was expressed as most important constraint by the large, small and marginal groundnut growers with 82.53, 90.50 and 96.11 MPS respectively and ranked first by all the categories of farmers. This was followed by the constraint of "high cost of plant protection chemicals". The MPS of these constraints was 82.00, 85.14 and 93.26 among large, small and marginal groundnut growers respectively. The third most important constraint was "high cost of seed of HYVs" among all the three categories of farmers' i.e. large, small and marginal farmers with the extent of 59.61, 70.62 and 90.35 MPS respectively.

Table 4: Financial constraints perceived by the groundnut growers

n = 240

Financial Constraints	Large farmers		Small farmers		Marginal farmers		Total	
	MPS	Rank	MPS	Rank	MPS	Rank	MPS	Rank
High cost of seed of HYVs	59.61	3	70.62	3	90.35	3	73.52	3
High cost of chemical fertilizers	53.12	5	70.02	4	79.80	4	67.64	4
High cost of plant protection chemicals	82.00	2	85.14	2	93.26	2	86.79	2
High wage rate of labour	7.69	8	10.62	8	18.82	8	12.37	8
Non-availability of credit at marginal interest rate	82.53	1	90.50	1	96.11	1	89.71	1
Minimum support price in not timely declared	25.96	7	25.96	7	49.76	7	33.76	7
High cost of machinery	38.46	6	38.75	6	60.47	6	45.89	6
High premium amount of crop insurance	45.07	4	58.50	5	78.02	5	60.53	5

MPS = Mean Per cent Score

Table 4 further showed that "high cost of chemical fertilizers" was perceived as fifth important constraint by large farmers and fourth important constraint by small and marginal farmers. Whereas, "high cost of machinery" was expressed as sixth important constraint by all the three categories of farmers viz. large, small and marginal farmers with the extent of 38.46, 38.75 and 60.47 MPS respectively. The constraint regarding "minimum support price is not timely declared" and "high wage rate of labour" was placed on seventh and eight rank by all the categories of farmers respectively.

Ecological constraints perceived by the groundnut growers

The data incorporated in Table 5 revealed that "scarcity of moisture in the soil" was one of the major ecological constraints with 93.75, 96.17 and 97.11 MPS among large, small and marginal groundnut growers and ranked first by all the three categories of farmers. The constraint "delay occurrence of mansoon" was given second rank by large, small and marginal farmers with 83.75, 86.53 and 86.88 MPS respectively. The ecological constraint namely "erratic rainfall" was perceived as third most important constraint by all the categories of farmers viz. large, small and marginal farmers with 40.38, 50.00 and 55.94 per cent respectively. Further analysis of Table showed that "higher susceptibility to insect-pest and disease" was put on fourth rank with the extent of 35.00, 37.32 and 39.23 MPS by large, small and marginal farmers respectively. The constraint related to "cloudy weather and heavy rainfall at flowering time" was considered as least important constraint and placed on last rank by all the three categories of farmers.

These findings are in line with the findings of sisodia (1993).

Table 5: Ecological constraints perceived by the groundnut growers

n = 240

Ecological Constraints	Large farmers		Small farmers		Marginal farmers		Total	
	MPS	Rank	MPS	Rank	MPS	Rank	MPS	Rank
Scarcity of moisture in the soil	93.75	1	96.17	1	97.11	1	95.67	1
Delay occurrence of monsoon	83.75	2	86.53	2	86.88	2	85.72	2
Erratic rainfall	40.38	3	50.00	3	55.94	3	48.77	3
Cloudy weather and heavy rainfall at flowering time	23.12	5	25.29	5	29.57	5	25.99	5
Higher susceptibility to insect pest and diseases	35.00	4	37.32	4	39.23	4	37.18	4

MPS = Mean Per cent Score

General constraints perceived by the groundnut growers

Data presented in Table 6 shows that "supply of inferior quality inputs by the input dealers" was the most severe constraint perceived by large, small and marginal groundnut growers with the extent of 90.00, 90.38 and 96.91 MPS respectively and was ranked first by all the three categories of farmers. The second important problem perceived by the large, small and marginal groundnut farmers was "lack of storage/ware housing facility" with extent of 63.12, 76.92 and 80.67 MPS respectively. This was followed by the constraint related to "lack of training institutions" which was accorded third rank by small and marginal farmers and fourth rank by large farmers.

Further analysis of Table shows that "problem of grazing animals" was perceived as fourth important constraint by small and marginal farmers and third rank by large farmers with the 50.79, 56.73 and 50.62 MPS respectively. However, "additional requirement of gypsum and zinc sulphate" was expressed as fifth most important constraint by large, small and marginal farmers with the extent of 33.07, 41.61 and 43.12 per cent respectively.

Table 6: General constraints perceived by the groundnut growers

n = 240

Constraints	Large farmers		Small farmers		Marginal farmers		Total	
	MPS	Rank	MPS	Rank	MPS	Rank	MPS	Rank
Lack of training institutions for training of the farmers	42.30	4	65.76	3	73.75	3	60.60	3
Supply of inferior quality inputs by the input dealers	90.00	1	90.38	1	96.91	1	92.43	1
Problem of grazing animals	50.62	3	50.79	4	56.73	4	52.71	4
Additional requirement of gypsum and zinc sulphate	33.07	5	41.61	5	43.12	5	39.26	5
Lack of storage/ware housing facilities	63.12	2	76.92	2	80.67	2	73.57	2
Poor risk bearing ability of farmers	27.50	6	29.61	6	31.76	6	29.62	6

MPS = Mean Per cent Score

The data in the Table 6 further indicates that constraint namely "poor risk bearing ability of farmers" was perceived at lowest by the large, small and marginal farmers. The constraint level of marginal and small farmers might be high as compared to large farmers due to the reason that they had poor education level, low social participation and low economic status.Similar findings were reported by Ingle *et. al*. (1995).

Overall constraints perceived by the groundnut growers

To get an overview about overall constraints perceived by the groundnut growers in adoption of groundnut production technology, the overall score for each category was pooled and results have been presented in Table 7.

It was found that constraints related to marketing were perceived as most important by small and marginal farmers and ranked first by them. However, it was placed on second rank by large farmers. The mean per cent score of these constraints was 55.42, 61.70 and 70.39 among large, small and marginal farmers respectively. The constraints related to 'finance' was placed on second rank by marginal farmers (70.28%), while fifth rank by large (54.30%) and small farmers (56.26%). Analysis of Table further reveals that "technical constraints" were placed on first rank by large farmers, while these were accorded sixth and fourth rank by small and marginal farmers. The mean per cent score of technical constraints was 56.73, 55.77 and 64.19 among large, small and marginal farmers. Ecological constraints were expressed as third most important constraint by large and small farmers and these were accorded sixth rank by marginal farmers.

Table 7: Overall constraints perceived by the groundnut growers in adoption of groundnut production technology

n = 240

Constraints category	Large farmers		Small farmers		Marginal farmers		Total	
	MPS	Rank	MPS	Rank	MPS	Rank	MPS	Rank
Technical	56.73	1	55.77	6	64.19	4	58.90	3
Input supply	46.66	6	58.91	4	67.10	3	57.55	6
Financial	54.30	5	56.26	5	70.28	2	60.46	2
Ecological	55.20	3	59.05	3	61.74	6	58.66	4
Marketing	55.42	2	61.70	1	70.39	1	62.52	1
General	51.10	4	59.17	2	63.82	5	58.03	5

MPS = Mean Per cent Score

The general constraints were placed on fifth rank by marginal farmers, fourth rank by large farmers and second rank by small farmers with the extent of 63.82, 51.10 and 59.17 MPS respectively. Input-supply constraints were placed on sixth rank by large farmers with 46.66 MPS, fourth rank by small farmers with 58.91 MPS and third rank by marginal farmers with 67.10 MPS.The findings are in accordance with those of Sisodia (1993) and Meena (2001).

Analysis of variance test was applied to see the significant difference in relation to constraints perceived by different categories of farmers i.e. large, small and marginal groundnut growers. The results are presented in Table 8.

Hypotheses:

NH_{01} : There is no significant difference between large, small and marginal groundnut growers with respect to constraints perceived by them in adoption of groundnut production technology.

RH_1 : There is significant difference between large, small and marginal groundnut growers with respect to constraints perceived by them in adoption of groundnut production technology.

Table 8: Comparison of constraints perceived by large, small and marginal groundnut growers in adoption of groundnut production technology

n=240

Source of variation	d.f.	S.S.	M.S.S.	'F' cal.
Between the category of farmers	2	206.87	103.43	4.47*
Within the categories of farmers (Error)	237	5480	23.12	
Total	239	5686.87		

* = Significant at 5 per cent level of significance

Data presented in Table 8 showed that calculated 'F' value (4.47) is higher than tabulated 'F' value at 5 per cent level of significance and 2 degree of freedom. So the result is statistically significant. Thus, null hypothesis (NH_{01}) was rejected and alternative hypothesis (RH_1) was accepted. It means that there was a significant variation among all the categories of groundnut growers with respect to constraints perceived by them in adoption of groundnut production technology. The variation among three categories of groundnut farmers may be due to the reason of higher socio-economic status, risk bearing capacity and innovativeness among large farmers in comparison with small and marginal farmers. These findings are in line of the findings of Meena (2001).

CONCLUSION

It was concluded from the study that 13.33, 45.83, 40.84 and farmers were in the low, medium and high constraints level respectively. It was also observed that inadequate skill for seed treatment, unavailability of technical advice for crop cultivation, poor knowledge of

high yielding varieties, unavailability of improved tools in the local market, inadequate irrigation facilities, unavailability of credit at marginal interest rate, high cost of plant protection chemicals, high cost of seed of HYVs, scarcity of moisture in the soil, delay occurrence of monsoon, malpractices by the merchants in the market, supply of inferior quality inputs by the input dealers and lack of storage/ware housing facilities were important constraints perceived by the groundnut growers in adoption of groundnut production technology. It was further observed that there was a significant variation among large, small and marginal groundnut growers with respect to constraints perceived by them in adoption of groundnut production technology.

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