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Research Article

EXTENT OF ADOPTION OF *KHARIF* GROUNDNUT PRODUCTION TECHNOLOGY

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Abstract- Oilseeds crops have major role in Indian economy next to cereals. Among the oilseed crops, groundnut is an important edible oilseed crop of India. Groundnut seed contains 45 to 47 per cent edible oil, which is used as feeding (edible oil) purpose. Groundnut is most favourable oilseed crop in Banaskantha district. The average productivity of *kharif* groundnut was 1319 kg/ha. The cultivating area under *kharif* groundnut in this district was 39,425 ha during 2012-13 (Anon. 2013). But the potential yield of groundnut crop recorded on the research station was recorded as 2400 kg/ha. This means that the groundnut crop has still potentiality to increase the productivity. The area under *kharif* groundnut is increasing year by year, but the production is not increasing. The average yield of farm level is always lower than yield obtained in FLDs. This is wide gap between the farmer and FLD yield. This means that the groundnut crop has still potentiality to increase the productivity. This comparatively low productivity of *kharif* groundnut crop may be governed by many factors including adoption as well as many hindrances in the farmer's field situation. The present study was undertaken in Banaskantha district as having large area and more production under *kharif* groundnut in North Gujarat. Three talukas *viz.*, Deesa, Dhanera and Dantiwada were selected purposively having higher area under *kharif* groundnut cultivation in the district. Five villages from each selected talukas were selected randomly. Majority of the groundnut growers (71.34%) were possessing medium level of adoption regarding recommended *kharif* groundnut production practices. From the above discussion, it can be concluded that considering the no-cost and low cost inputs in the package of practices had obtained more mean score, means those practices were adopted by more number of the groundnut growers. While in case the cost effective practices *viz.,* irrigation, improved varieties, harvesting, sowing were adopted by majority of the farmers. In case of the complex practices which were got less adoption mean score index had adopted by less number of farmers.The correlation coefficient indicated that among 11 independent variables under study, education, land holding, annual income, extension participation, sources of information, yield gap index and farm mechanization were found associated positively and significantly associated with extent of adoption of recommended *kharif* groundnut production technology by the groundnut growers. The major constraints faced by the groundnut growers in adoption of recommended *kharif* groundnut production technology were; high cost of input (96.67%), high wages of labour (92.00%), high cost of seed (85.33) and lack of pure and good quality seed (80.00).

Keywords- Extent of adoption, Groundnut cultivation, Technology.

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Introduction

Agriculture forms the backbone of Indian economy. Since last three decades, visible changes have been brought in agriculture in form of green and white revolution. This become possible mainly through coordinated research efforts, extension activities and irrigation facilities created. As a result, the country has got self-sufficiency in food grain production (green revolution) and milk production (white revolution) while, we are about to attain self-sufficiency in oil seeds production (yellow revolution).

Being agriculture based economy of the country, different crops like, cereal crops, fibre crops, oil seed crops, legume crops, fruits and vegetables crops *etc.,* are grown in our country. Among all these crops, oil seed crops have a specific place in Indian agriculture. Oilseed crops comprising groundnut, sunflower, rapeseed and mustard, safflower, sesamum, niger, linseed, soybean, castor *etc.,* are important on global basis which play a pivotal role in agriculture, industry and export trade of India. Oilseeds crops have major role in Indian economy next to cereals. India occupies a premier position in the world oilseed scenario accounting 19.00 per cent of oilseeds areas with 9.00 per cent of production. Among the oilseed crops, groundnut is an important edible oilseed crop of India. Groundnut seed contains 45 to 47 per cent edible oil, which is used as feeding (edible oil) purpose. India hold first position in the world in respect of area, production and productivity of groundnut and Gujarat is one of the leading groundnut growing states of the country.

Groundnut is most favorable oilseed crop in Banaskantha district. The average productivity of *khrrif* groundnut was 1319 kg/ha. The cultivating area under *kharif* groundnut in this district was 39,425 ha during 2012-13 [1]. But the potential yield of groundnut crop recorded on the research station was recorded as 2400 kg/ha. This means that the groundnut crop has still potentiality to increase the productivity. This comparatively low productivity of *kharif* groundnut crop may be governed by many factors including adoption as well as many hindrances in the farmer's field situation.

Objectives

[1] To find out the extent of adoption of recommended *kharif* groundnut production technology among the groundnut growers.

[2] To ascertain the association between selected personal, socio-economic, communication and situational attributes of the groundnut growers and their extent of adoption of recommended *kharif* groundnut production technology.

[3] To identify the constraints faced by the groundnut growers in adoption of recommended *kharif* groundnut production technology.

Materials and Methods

Research design selected for the study was ex-post facto research design. Banaskantha district of Gujarat state was selected purposively as groundnut crop has covered large cultivation area in the district and is increasing year by year. Three talukas *viz.,* Deesa (19,725 ha.), Dhanera (10,000 ha.) and Dantiwada (4,000 ha.) were selected purposively from district as these talukas were having higher area under *kharif* groundnut cultivation. Five villages were selected randomly from the list of groundnut growing villages from each taluka under *kharif* groundnut cultivation. Thus, total fifteen villages were selected. From each selected villages, ten groundnut growers were selected randomly. Hence, the final sample size was 150 groundnut growers from 15 villages.

Based on an extensive review of literature, consultation with extension personnel and experts of the subject, some important variables *viz.,* age, education, family size, social participation, land holding, annual income, extension participation, sources of information, cropping pattern, yield index and farm mechanization were selected as independent variables. They were measured with the help of the scales and indices developed by past researchers as well as structured schedules/tests, which were framed for the purpose. Adoption was considered as dependent variable in the present study. For the measurement of adoption, a list of the recommended package of practices of the *kharif* groundnut crop was prepared with the help of extension personnel and experts of the subject. The items in the schedule were framed in objective manner so that farmers can reply very easily. The farmers were asked to reply each of the questions about their adoption of practices on their field. Farmers were grouped into three categories *viz.,* low, medium and high adoption based on their adoption score using mean and standard deviation. Constraints were measured by asking to the groundnut growers to state the constraints faced in adoption of recommended *kharif* groundnut production technology. The frequency and percentage for all the constraints were calculated and then ranked accordingly.

Tabulated and analyzed in light of objectives and in order to make the findings realistic for drawing meaningful interpretation. The statistical tools used were frequency, percentage, mean, standard deviation, correlation co-efficient.

Result and Discussion

The results in [Table-1] indicate that majority (71.34 %) of the groundnut growers were having medium extent of adoption followed by 17.33 per cent and 11.33 per cent groundnut growers were recorded in low and high extent of adoption category, respectively.

Table-1 *Distribution of the groundnut growers according to their extent of adoption*

Sr. No.	Extent of adoption	Frequency	Per cent
1	Low adoption quotient (Up to 47.00%)	17	11.33
2	Medium adoption quotient (47.01% to 61.00%)	107	71.34
3	High adoption quotient (Above 61.00%)	26	17.33
Total		**150**	**100.00**

Mean = 54.62 S.D. = 7.15

Thus, it can be inferred that majority of the groundnut growers (71.34 %) had medium extent of adoption. The probable reason for this might be that they had medium level of knowledge, extension participation, and utilization of information sources; as well several problems might be constraining them to adopt groundnut production technologies.

This finding is supported by the findings of Patel (2005) [10], Patel *et. al* (2009) [9], Prajapati *et. al* (2010) [12], Ram *et. al* (2012) [13] and Chauhan *et. al* (2013) [4].

Practice Wise Extent of Adoption of Groundnut Growers About Recommended *Kharif* Groundnut Production Technology

Assessment of practice wise knowledge was also done. To assess the adoption mean score index was calculated for each practice and the data regarding practice wise adoption of the groundnut growers is depicted in [Table-2]

[Table-2] states that among the different recommended *kharif* groundnut production technologies, 96.22 per cent and 85.55 per cent mean score was recorded for tillage and inter culturing and ranked first and second respectively in adoption of groundnut production technology. The practices *viz.,* irrigation (73.33%), harvesting (66.00%), fertilizers (64.11%), sowing (61.00%), improved varieties (54.66%) and weed control (52.61%) were obtained mean score and ranked third, fourth, fifth, sixth and seventh, respectively adopted by majority of the farmers. Whereas the practices *viz.,* plant protection (49.00%), marketing (46.53%), seed treatment (43.03%), gap filling (37.66%) and intercropping (3.44%) got the mean score less than fifty per cent.

From the above discussion, it can be concluded that considering the no-cost and low cost inputs in the package of practices had obtained more mean score, means those practices were adopted by more number of the groundnut growers. While in case the cost effective practices *viz.,* irrigation, improved varieties, harvesting, sowing were adopted by majority of the farmers. In case of the complex practices which were got less adoption mean score index had adopted by less number of farmers.

This findings indicates that majority farmers adopted such practices *viz.,* tillage, inter culturing, irrigation, harvesting, fertilizers and sowing more that did not involve any dependency in adoption it means farmers himself take decision to adopt it. On the on the hand farmers had not adopted such practices *viz.,* improved varieties, weed control, plant protection, marketing, seed treatment, gap filling and intercropping which involve depending to take decisions.

The finding is somewhat agreement with the finding of Kikon (2010) [8] and Chanu *et.al* (2014) [3].

Table-2 *Practice wise mean score adoption index of recommended kharif groundnut production technology among the groundnut growers and their rank order (n=150)*

Sr. No.	Recommended practices	Total maximum score	Total obtained score	Obtained mean score index	Rank
1	Tillage	450	433	96.22	I
2	Improved varieties	600	328	54.66	VII
3	Seed treatment	1650	710	43.03	XI
4	Sowing	600	366	61.00	VI
5	Gap filling	300	113	37.66	XII
6	Intercropping	900	031	03.44	XIII
7	Fertilizers	2550	1635	64.11	V
8	Irrigation	450	330	73.33	III
9	Inter-culturing	450	385	85.55	II
10	Weed control	1800	947	52.61	VIII
11	Plant protection	2100	1029	49.00	IX
12	Harvesting	2400	1584	66.00	IV
13	Marketing	750	349	46.53	X

The Association between Selected Personal, Socio-Economic, Communicational and Situational Attributes of Groundnut Growers and Their Extent of Adoption

Some farmers adopt new agricultural technology more quickly than others because of the difference in various factors the process of action is changed, there by changing takes place in the pattern of adoption process. Thus, in nutshell, it can be stated that the adoption of recommended *kharif* groundnut production technology differs when groundnut growers are differ in their personal, socio-economic, communication and situational attributes. Therefore, an attempt has been made in this investigation to ascertain the association if any between personal, socio-economic, communication and situational attributes of the groundnut growers and their extent of adoption of recommended *kharif* groundnut

production technology.
This was ascertained and tested by calculating Pearson's correlation coefficient ('r'). The results in this respect are presented in [Table-3].

Table-3 *Association between selected attributes of the groundnut growers and their extent of adoption*

Sr. No.	Characteristics		Correlation coefficient ('r' value)
[I]	**PERSONAL ATTRIBUTES:**		
	1.	Age (X_1)	-0.1510^{NS}
	2.	Education (X_2)	0.4320**
[II]	**sociO-ECONOMIC ATTRIBUTES:**		
	1.	Family size (X_3)	-0.0764^{NS}
	2.	Social participation (X_4)	0.0250^{NS}
	3.	Land holding (X_5)	0.2226**
	4.	Annual income (X_6)	0.2227**
[III]	**communication ATTRIBUTES:**		
	1.	Extension participation (X_7)	0.3368**
	2.	Sources of information (X_8)	0.2674**
[IV]	**situational ATTRIBUTES:**		
	1.	Cropping pattern (X_9)	0.0592^{NS}
	2.	Yield gap index (X_{10})	0.1847*
	3.	Farm mechanization (X_{11})	0.1926*

** = Significant at 0.01 per cent level
* = Significant at 0.05 per cent level
NS = Not Significant

The data in [Table-3] indicated that among the all independent variables, seven variables *viz.,* education, land holding, annual income, extension participation, sources of information, yield gap index and farm mechanization were positively and significantly associated with extent of adoption of recommended *kharif* groundnut production technology by the groundnut growers. Remaining four variables *viz.,* age, family size, social participation and cropping pattern were failed to establish any significant association with extent of adoption of recommended *kharif* groundnut production technology.
This finding is in contradiction with the findings of Patel (2005) [10], Prajapati *et. al* (2010) [12], Patel *et. al* (2010[a]) [11] and Chand & Meena (2011) [2].

The Constraints Faced by Groundnut Growers in Adoption of Recommended *Kharif* Groundnut Production Technology:
The groundnut growers might be facing certain problems in adoption of recommended *kharif* groundnut production technology. Due to such constraints, they cannot be adopt all the technology and hence could not make the groundnut crop profitable. The constraints in adoption of new technology never end. Hence, it was felt imperative to identify the constraints faced by the groundnut growers in adoption of recommended *kharif* groundnut production technology.
The respondents asked to give the constraints faced by them in adoption of recommended *kharif* groundnut production technology. The information collected was tabulated and frequency and percentage for each constraint was calculated. Then, the ranks were assigned to the constraints and the data are presented in [Table-4].

Table-4 *Constraints faced by groundnut growers in adoption of recommended groundnut production technology (n=150)*

Sr. No.	Constraints	Frequency	Per cent	Rank
1.	High cost of inputs (fertilizer, insecticides, pesticides, herbicide etc.)	145	96.67	I
2.	High wages of labour	138	92.00	II
3.	High cost of seed	128	85.33	III
4.	Lack of pure and good quality seed/certified seed	120	80.00	IV
5.	Non-availability of sufficient labour in time	108	72.00	V
6.	Lack of improved implements	105	70.00	VI
7.	Non-remunerative price	97	64.67	VII
8.	Inadequate credit	85	56.67	VIII
9.	Lack of storage facility	67	44.66	IX
10.	Lack of timely and appropriate extension services	62	41.33	X
11.	Lack of knowledge about recommended groundnut production technology	50	33.33	XI
12.	Lack of knowledge about storage	15	10.00	XII
13.	Lack of knowledge about selling	8	5.33	XIII

As seen from [Table-4] that the major constraints faced by the groundnut growers in adoption of recommended *kharif* groundnut production technology were; high cost of inputs (96.67%), high wages of labour (92.00%), high cost of seed (85.33%), lack of pure and good quality seed/certified seed (80.00%), non-availability of sufficient labour in time (72.00%) and lack of improved implements (70.00%) and which were ranked one to six, respectively. Whereas non-remunerative price (64.67%), inadequate credit (56.67%), lack of storage facility (44.67%) and lack of timely and appropriate extension services (41.33%) were ranked seven to ten, respectively. While, lack of knowledge about recommended groundnut production technology (33.33%), lack of knowledge about storage (10.00%) and lack of knowledge about selling (5.33%) which were ranked eleven to thirteen, respectively.
It can be inferred from the above results that high cost of inputs, high wages of labour, irregularity in crop production price, high cost of seed, lack of pure and good quality seed/certified seed, were the main constraints.
These findings are in partial agreement with those findings of Patel (2005) [10], Gadhavi (2008) [6], Suthar *et. al* (2010) [14] and Desai (2013) [5].

Conclusion

Majority (71.34%) of the groundnut growers were having medium extent of adoption of recommended *kharif* groundnut production technology. Where, 17.33 and 11.33 per cent of the groundnut growers had low and high levels of adoption, respectively. The no cost and low cost inputs in package of practices *viz.,* tillage, inter-culturing, irrigation, harvesting, gap filling, sowing were adopted by more number of famers. The results of correlation coefficient analysis indicated that among the all independent variables, seven variables *viz.,* education, land holding, annual income, extension participation, sources of information, yield gap index and farm mechanization were positively and significantly associated with extent of adoption of recommended *kharif* groundnut production technology by the groundnut growers. Remaining four variables *viz.,* age, family size, social participation and cropping pattern were failed to establish any significant association with extent of adoption of recommended *kharif* groundnut production technology. The major constraints faced by the groundnut growers in adoption of recommended *kharif* groundnut production technology were; high cost of input (96.67%), high wages of labour (92.00 %), high cost of seed (85.33 %), lack of pure and good quality seed/certified seed (80.00%), non-availability of sufficient labour in time (72.00%), lack of improved implements (70.00%) according to the order of importance.

Conflict of Interest: None declared

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