Original Research Article

Market Potential of Selected Agricultural Products and Problems Identification of Groundnut Cultivation in Bhankhokhari Market of Devbhoomi Dwarka District

ABSTRACT

This study was conducted from the 1st of June to the 31st of July 2022. sample of 125 farmers selected on convenience from 5 villages of Khambhaliya taluka of Devbhoomi Dwarka districts of Gujarat. Primary data were collected with the help of semi-structured schedules, and appropriate tools were used to analyse data. The market potential of IMIVAX, BATTALION FS, DELMA, and WUXAL products are around 25.25 lakh, 19.64 lakh, 74.82 lakh, and 94.70 lakh respectively. The major problems faced by farmers in groundnut crop are high cost of inputs, insect attacks, wilting, and rust & tikka disease. In the study, it is observed that farmer that does not use seed treatment in their field faces a problem of wilting and uneven/less germination and farmers that do not use micronutrient products in the crop faces a problem of yellowing. The most effective tools responsible for the purchase decision of a product were retailers' suggestions, farmers' meetings, and demonstrations of the product.

Keywords: Groundnut, Fungicide, Insecticide, Market Potential

1. INTRODUCTION

India is the fourth largest producer of agrochemicals globally, after the United States, Japan, and China. The agrochemicals industry is a significant industry for the Indian economy. The global agrochemicals market size reached US$ 266.7 Billion in 2021. And projected to reach US$ 339.4 Billion by 2027 with a growth rate (CAGR) of 4.01 percent during 2022-2027. India's agrochemical consumption is one of the lowest in the world with per hectare consumption of just 0.58 Kg compared to the US (4.5 Kg/ha) and Japan (11 Kg/ha). In India, paddy accounts for the maximum share of pesticide consumption, around 28 percent, followed by cotton (20 percent). The Indian pesticides market reached a value of around INR 212 Billion in 2021. And projected to reach INR 320 Billion by 2027 with a CAGR of 7.07 percent during 2022-2027. (Agrochemicals Market Report by IMARC, 2021)

Comment [FB1]: Where do the agro-industrial products for peanut production come from?

Groundnut is popularly known as the peanut and it is a leguminous crop. The oil content in the seed is estimated to be around 44-50 percent. The mainly cultivated variety of groundnut in Gujarat is GG20, GG22, GG32, TG39, TG37, and GG34. The seeds are sown at a depth of 5-6 cm in the soil at the rate of 50 Kg seed per acre. The major diseases found in groundnut crops are rust, early and late leaf spots, collar rot, aflatoxins, and peanut bud and stem necrosis. The major insect pests that infest the groundnut crops are white grub, tobacco caterpillar, gram pod borer, red hairy caterpillar, etc. The average yield of Groundnut is 1500-2000 Kg/ha.

Patel and Lad (2019) find the total market potential of Narkis product for paddy crop in Anand. Jalu et al. (2022) identify different constraints like high price of improved seeds, Pest and disease infestation, high wages of labour and lack of knowledge about critical stages. Chaudhary (2018) find different promotional tools like Distributor, Pesticide company officials, mass media, fellow farmers, Government extension agencies, farmer meetings, demonstrations, jeep campaigns, posters and leaflets, and TV advertisements.

Objectives of the study

Comment [FB2]: Aeach of your goals is an article. Try to focus your article on a specific object

- To study socio-economic profile of farmers
- To study the market potential of selected agricultural products in groundnut
- To identify problems faced by farmers during the cultivation of groundnut
- To study effective promotional tools for scaling up the use of company products

2. MATERIAL AND METHODS

Comment [FB3]: Structure your data collection method. You go from one thing to another (in the introduction of this part)

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The Present study was carried out from 1st of June to 31st of July 2022. Primary data were collected from the respondents with the help of semi-structured schedule. Secondary data were collected from the Department of Agriculture Devbhoomi Dwarka District and Private and Government publications and websites. The study was study is descriptive in nature. Tabular analysis, weighted average mean, cross tabulation, and Garrett ranking method are used for analysis. This study was carried out in selected villages of Khambhaliya taluka with a sample size of 125 respondents. All the respondents were groundnut-growing farmers. For the selection of the samples, the Non-probability sampling method is used and samples were drowned by Convenience and Purposive sampling. The data was collected with the help of a semi-structured schedule.

Analytical Tools

The market potential of selected agricultural products was calculated by the following formula.

Market Potential = Total area covered under groundnut crop* Doses Required* Price of the product

Mp = A(acre) × D(per acre) × P(Rs.)

Where,

A = Total area under groundnut

P = Price of Product (Rs/kg)

D = Dose/acre (kg/acre)

To find out the most serious problem in groundnut cultivation Garrett's ranking technique was used. As per this method, the farmers were asked to assign the rank for all factors and the outcome of such ranking was converted into score value with the help of the following formula:

Percent position = 100 (Rij – 0.5)/ Nj

Where, Rij = Rank given for the ith variable by jth respondents

Nj = Number of variables ranked by jth respondents

With the help of Garrett's Table, the percent position estimated was converted into scores. Then for each factor, the scores of each individual were added and then the total value of scores and mean values of the score was calculated. The problem having the highest mean value was considered to be the most serious problem.

LIMITATIONS OF THE STUDY

The scope of study is limited to the respondents from selected villages of Khambhaliya taluka. The research is carried out for the period of 60 days only. The sample unit was only 125 respondents. The analysis was purely based on the responses of the farmers, and therefore a bias may exist. Information is collected for only selected agricultural products used in groundnut.

3. RESULTS AND DISCUSSION

Table 1 Profile of Respondents

Sr. No.	Particulars	Respondents	Percent
1	**Age**		
	Below 2	11	8.80
	25-40	75	60.00
	40-55	39	31.20
	Total	125	100.00
2	**Educational Status**		
	Illiterate	14	11.20
	Primary (up to VIII)	68	54.40
	Secondary (IV to XII)	35	28.00
	Graduate	8	6.40
	Total	125	100.00
3	**Land holding**		
	< 1 ha.	7	5.60
	1 to 4 ha.	42	33.60
	4 to 8 ha.	58	46.40
	> 8 ha.	18	14.40
	Total	125	100.00
4	**Source of Irrigation**		
	Well	70	56.00
	Tube well	53	42.40
	Pond/ Check dam	2	1.60
	Total	125	100.00
5	**Cropping Pattern**		
	Groundnut - Chickpea	25	20.00
	Groundnut - Chickpea - Fodder crop	15	12.00
	Groundnut - Cumin	30	24.00
	Groundnut - Cumin - Fodder crop	18	14.40
	Groundnut - Coriander	18	14.40
	Groundnut - Coriander - Fodder crop	4	3.20
	Groundnut - Wheat	15	12.00
	Total	125	100.00

In the study area, the majority of the farmers (60 percent) belonged to the 25-40 age group, followed by the 40-55 age group (31.20 percent). More than 50 percent of farmers attained a primary level of education so the chances to adopt new things regarding agriculture are more because the young respondents are early adopters to adopt new technology.

The total land holding capacity of the farmers is a crucial factor on which the consumption of agriculture inputs and the risk-taking ability will depend. The majority of farmers (46 percent) were having land between 4 to 8 hectares, followed by 1 to 4 hectares of land holding (33.60 percent).

The source of irrigation is a crucial factor on which the production of crops is dependent. In the study it is found that in the Kharif crop most of the farmers are depended on rain for irrigation some farmers have water facilities that were gone for early sowing. Around 56 percent of farmers have wells as a source of irrigation.

The different location has their different cropping pattern as per the availability of water and soil type. The main crops grown in the study area were Groundnut, Wheat, Chickpea, Cumin, Coriander, and Fodder crops like Maize and Sorghum. In the kharif season, all respondents grow groundnut. In rabi season 38.40 percent of farmers grow cumin, 32 percent of farmers grow chickpea,

Comment [FB5]: This table of frequencies tells us nothing. It would be better to use cross-tabulations such as Age crossed with education level, Age crossed with land ownership, etc... this would provide more analysis.

17.60 percent of farmers grow coriander and 12 percent of farmers grow wheat. In the summer season 29.60 percent of farmers grow fodder crops and the remaining farmers do not sow anything in their fields.

Table 2 Market Potential of Selected Agricultural Products

Product	Dose	Area (in Acre)	Price	Market Potential	Market Potential (Rs.)
IMIVAX	3 gm/kg	9353	1800/Kg	1403 Kg	25.25 lakh
BATTALION FS	3 ml/kg	9353	1400/L	1403 L	19.64 lakh
DELMA	0.6 kg/acre	9353	800/0.6 Kg	5612 Kg	74.82 lakh
WUXAL	750 ml/acre	9353	1350/L	7015 L	94.70 lakh

The market potential of selected agricultural products was calculated for the groundnut crop. Table 2 presented the estimated market potential of selected agricultural products. The total potential area for the products was around 9353 acres (District Agriculture Officer, Devbhoomi Dwarka). For IMIVAX product dose is 3 grams per kg. of seed, seed rate is 50 kgs per acre so market potential is around 25.25 Lakhs. For the BATTALION FS product dose of application is 3 ml per kg of seed and seed rate is 50 kgs per acre so market potential is around 19.64 Lakhs. For DELMA product dose is 800 gm per acre so the market potential is around 74.82 Lakhs. For WUXAL product dose is 750 ml gm per acre so the market potential is around 94.70 Lakhs.

Table 3 Problems Faced by Farmers in Groundnut Crop

Factors no.	Factors	Garrett total score	Mean Score	Rank
F1	High Cost of inputs	9014	72.11	1
F2	Insect Attack	8051	64.41	2
F3	Wilting	7204	57.63	3
F4	Rust & Tikka Disease	7093	56.74	4
F5	Uneven/Less germination	6403	51.22	5
F6	Seed rot	6036	48.29	6
F7	Labour Availability	5558	44.46	7
F8	Yellowing	4619	36.95	8
F9	Low quality seed	4523	36.18	9
F10	Mechanization	3689	29.51	10

Comment [FB6]: What percentage of peanut growers experience each of these problems? Yes, the scores, but they need to be cross-referenced with the grower characteristics presented at the beginning for a complete analysis.

Comment [FB7]: Present data in tables as percentages Absolute figures do not show the depth of the problem studied

By analysing common problems faced by farmers in groundnut crop, it is found that cost of input (Seed, Fertilizer, Pesticides, Growth regulators) was reported to be the most serious problem faced by farmers at an overall level with a Garrett score of **9014 (**Table 3), Second is Insects attacks that cause damage to the groundnut crop.

The study used cross-tabulation to find the relation between different variables and it is found that farmer that does not use seed treatment in their field faces a problem of wilting and uneven/less germination (Table 4 & 5) and farmers that do not use micronutrient products in the crop faces a problem of yellowing (Table 6). Cross-tabulation of landholding pattern with uses of seed treatment and micronutrient products shows that farmers having more landholding uses seed treatment and micronutrient-based solutions (Table 7 & 8).

❖ **Table 4. Do you use seed treatment? * Give the Rank to the Problems Faced during crop establishment in groundnut [Wilting] Crosstabulation**

Count

		Give the Rank to the Problems Faced during crop establishment in Groundnut [Wilting]										Total
		1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	
Do you use seed treatment?	Yes	2	7	11	21	44	9	3	2	2	3	104
	No	8	4	3	2	1	1	0	2	0	0	21
Total		10	11	14	23	45	10	3	4	2	3	125

❖ **Table 5 Do you use seed treatment? * Give the Rank to the Problems Faced during crop establishment in groundnut [uneven/less germination] Crosstabulation**

Count

		Give the Rank to the Problems Faced during crop establishment in groundnut [uneven/less germination]										Total
		1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	
Do you use seed treatment?	Yes	0	4	10	15	41	13	10	4	3	5	104
	No	9	3	3	2	1	1	1	1	0	0	21
Total		7	9	7	13	17	42	14	11	5	3	125

You haven't carried out any analysis of the problems faced by peanut growers. Who are the categories of growers who encounter these problems? the literate, the landowners? the elderly growers? who? can you answer them? what policy should you propose to the extension service?

Present data in tables as percentages Absolute figures do not show the depth of the problem studied

❖ **Table 6 Do you use any Micronutrient based solution? * Give the Rank to the Problems Faced during crop establishment in groundnut [Yellowing] Crosstabulation**

Count

		Give the Rank to the Problems Faced during crop establishment in Groundnut [Yellowing]										Total
		1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0	10.0	
Do you use any Micronutrient-based solutions?	Yes	2	3	1	2	4	2	2	27	21	5	69
	No	16	22	1	5	2	1	1	1	0	7	56
Total		4	18	25	2	7	6	3	3	28	21	125

❖ **Table 7 Land Holding * Do you use seed treatment? Crosstabulation**

Comment [FB9]: the titles of your tables are not self-explanatory. We don't draw up the tables in relation to the questions answered. We draw up the tables in relation to the answers and according to the objectives of the survey.
You can have: Table; distribution of peanut growers according to whether they process their seed according to landowner or age etc...

Count

		Do you use seed treatment?		Total
		Yes	No	
Land Holding	<1 ha	3	8	7
	1-4 ha	33	9	42
	4-8 ha	50	4	58
	>8 ha	18	0	18
Total		104	21	125

❖ **Table 8 Land Holding * Do you use any Micronutrient-based solutions? Crosstabulation**

Count

		Do you use any Micronutrient-based solutions?		Total
		Yes	No	
Land Holding	<1ha	1	6	7
	1-4 ha	16	26	42
	4-8 ha	38	20	58
	>8 ha	13	5	18
Total		69	56	125

To increase the selling of any products, company will do promotional activities or marketing activities, so that people will know about the products and thus ultimately the selling of products is

increase because of promotional activities or marketing activity will create or increase awareness among people about products. Above table show that the Farmers' meeting, Retailers' suggestion, Demonstration, and Farmers'/friends' suggestion these four activities extremely influenced the respondents at the time of purchasing the pesticide product. And Jeep's campaign, TV advertisement, and Exhibition have very influenced the respondents at the time of purchasing the product. And Leaflets, Posters, wall paintings these three activities moderately influenced the respondents at the time of purchasing the pesticide product (Table 9).

❖ **Table 9 Promotional Tools/Activities responsible for Purchase decision**

Tools/Activities	Mean Score	Result	Rank
Farmer meeting	4.84	Extremely	1
Retailers' suggestion	4.82	Extremely	2
Demonstration	4.79	Extremely	3
Farmers/friends' suggestion	4.67	Extremely	4
Jeep campaign	3.83	Very	5
TV Advertisement	3.71	Very	6
Exhibition	3.45	Very	7
Posters	3.39	Moderately	8
Leaflets	3.34	Moderately	9
Wall painting	3.18	Moderately	10

4. Conclusion

Around sixty percent of respondents were aged between twenty-five to forty years, fifty-four percent of respondents were having Primary Education, forty-six percent of farmers had four to eight hectares of landholding, and forty-four percent of farmers have an annual income between five to ten lakhs. In the study area market potential of IMIVAX, BATTALION FS, DELMA, and WUXAL product is around 25.25 lakh, 19.64 lakh, 74.82 lakh, and 94.70 lakh respectively. The major problems faced by farmers in groundnut crops were the High cost of inputs, insect attacks, wilting, and rust & tikka disease. The most effective tools responsible for the Purchase decision of a product are retailers' suggestions, farmers' meetings, and demonstrations of the product.

5. REFERENCES

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General appreciation

The objectives are too broad and not concise. The methodology needs fine-tuning in that it is the producers who are selected, not the responses. Does the sample exceed 125 growers? And is it representative of the region's peanut growers? How many growers are selected to process the 125 respondents? As the choice of growers is not random, can we trust the results to generalize to the region's peanut production? The tables should be cross-tabulated with grower characteristics. And these characteristics need to be cross-referenced at the outset. Table titles do not express cell contents.

The article must be completely revised before publication.