Perception of Regarding Water Conservation and Identification of Problem Faced by Groundnut Farmers in Dhanera Taluka of Banaskantha District, Gujarat, India

ABSTRACT

Insecticides, fungicides, and herbicides are among the crop protection chemicals that are expected to drive the worldwide agrochemicals market, which is expected to reach USD 308.92 billion by 2025. Recent decades have seen a rise in agricultural activity in India as a result of the country's growing population and the need for more food supply. The Indian agrochemicals market was valued at around USD 6 billion in 2022. The study was conducted in Dhanera Taluka of Banas kantha district, Gujarat, examined five villages with 150 farmers, focusing on the groundnut crop, which has a significant need for insecticides and pesticides. The study aimed to achieve objectivesknow farmer perception regarding water conservation product and identify problems faced by Groundnut farmers. The majority of respondents practiced both agriculture and livestock farming, with annual earnings between 5 and 10 lakhs. They primarily farmed during both Kharif and Rabi seasons. Key problems faced by groundnut farmers included high input costs, pest and weed infestations, labor shortages, water scarcity, and Sclerotium wilt.

Key words: Water conservation, Farmer perception, Agrochemicals.

INTRODUCTION

Agriculture is basic activityto India's economy, with more than half of its population depending on it for their livelihood. India is the top producer of spices, pulses, milk, tea, cashews, and jute, while also being the second-largest producer of wheat, rice, fruits and vegetables, sugarcane, cotton, and oilseeds.With India's population on the rise and the average land area per person decreasing, it's crucial to optimize pesticide use and increase domestic consumption(Muyesaier*et* al).Currently India is the fourth-largest producer of agrochemicals globally, following the United States, Japan, and China. Additionally, India is the 13th largest pesticide exporter worldwide). Jalu *et al*. (2022) studied about the relationship between groundnut cultivators' profiles and their knowledge of production techniques, study revealed that among demonstrator farmers, various factors, including age, education, landholding size, annual income, social involvement, mass media exposure, extension engagement, extension contact, innovativeness, scientific orientation, risk-taking attitude, economic drive, and yield rates, played a crucial role in shaping their knowledge of groundnut production.

Water conservation products fall into the category of soil conditioners. Soil conditioner is a product which is added to soil to improve the soil's physical qualities, usually its fertility (ability to provide nutrition for plants) and sometimes its mechanics. In general

usage, the term "soil conditioner" is often thought of as a subset of the category soil amendments. The global market for soil conditioners is driven by the increased use of organic soil conditioners in agriculture and gardening. Organic soil conditioners are carbon-based materials that contain various plant nutrients and supply these nutrients to the soil. The global soil conditioner market was valued at $2.3 billion in 2021 and is projected to reach $3.7 billion by 2031, with an expected CAGR of 4.7% from 2022 to 2031
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OBJECTIVES

1. To study the socio-economic profile of farmers
2. To know farmer perception regarding Water conservation product
3. To identify problems faced by Groundnut farmers

MATERIALS AND METHODS

The research involved, interviewing of respondents by means of Structured Schedule based on above mentioned objectives, then analyzing their responses with statistical tools. The study was conducted in select villages within Dhanera Taluka in Banaskantha district. Primary data were gathered from farmer respondents, while secondary data came from literature, private and government publications, and websites. The research used a descriptive approach to explore and describe different factors related to groundnut farming. A non-probability sampling method, specifically convenience sampling, was applied to select 150 groundnut farmers in the Dhanera taluka of the Banaskantha district. The survey, which used a structured schedule as its tool, was carried out over 45 days. Data analysis included tabular analysis and the calculation of the Weighted Average Mean to derive meaningful insights from the data.
Weighted Average calculated by,

$$\bar{x} = \frac{\sum_{i=1}^{n} W_i x_i}{\sum_{i=1}^{n} w_i}$$

Where, X = Weighted Average
Wi= Weight applied to value
Xi = Data values to be averaged
n = number of terms to be averaged

RESULTS AND DISCUSSION

1.To study the socio-economic profile of farmers

Table .1To study the socio-economic profile of farmers

Sr. No.	Particulars	Respondents	Percentage
1	**Age**		
	21-40 Years	63	42
	41-60 Years	69	46
	61< Years	18	12

	Total	150	100
2	**Land Holding**		
	<1	6	4
	1 To 2	58	39
	2 To 4	52	35
	4 To 10	26	17
	10 & above	8	5
	Total	150	100
3	**Education status**		
	Illiterate	27	18
	Up to Primary	69	46
	≤ SSC	21	14
	≤ HSC	18	12
	Graduate & above	15	10
	Total	150	100
4	**Annual income**		
	1 - 5 Lakhs	45	30
	5 - 10 Lakhs	72	48
	> 10 Lakhs	33	22
	Total	150	100
5	**Family size**		
	2 Members	6	4
	3-5 Members	78	52
	Above 5 members	66	44
	Total	150	100

1.1 Age of the farmers

In the agricultural landscape of Dhanera, Among the surveyed 150 farmers, a noteworthy observation is the absence of individuals below the age of 20 in the farming profession. The majority of farmers, constituting 41-60 years age group, with this segment accounting for 46% of the total farmer population. This suggests that nearly half of the farming workforce falls within this mid-life age range, indicating a mature but still active demographic in agricultural activities. Following closely is the 21-40 years age group, representing 42% of the farmers. However, the smallest group is aged above 61 years, comprising only 12% of the farmer population.

1.2 Land Holding of Farmers

The distribution of landholdings among farmers indicates that the largest group, comprising 39%, are small-scale farmers with land sizes ranging from 1 to 2 hectares. Following closely are the semi-medium farmers, with 35% owning between 2 and 4 hectares. Medium-scale farmers, those with landholdings from 4 to 10 hectares, represent 17% of the total.Marginal farmers, owning less than 1 hectare, account for 4% of the farming population, indicating a smaller segment with limited land resources. Large-scale farmers, who have over 10 hectares of land, make up 5% of the total. This spread in landholding sizes reflects the

diversity in farming operations and potential agricultural productivity.

1.3 Education qualifications of farmers

The educational landscape among farmers in the Dhanera area demonstrates a variety of formal qualifications, illustrating the different levels of education within the agricultural community. Out of the 150 farmers surveyed, 18% are illiterate, underscoring the obstacles some farmers face in accessing formal education. A larger segment, comprising 46%, has received education up to the primary level, indicating a foundational grasp of literacy and knowledge. Another 14% have education below secondary school completion, suggesting they likely possess basic literacy and numeracy skills. Those with higher secondary education (HSC) make up 12% of the total, reflecting a group with more advanced educational attainment. A smaller but noteworthy segment, representing 10% of the surveyed farmers, has pursued education beyond graduation.

1.4 Annual income of farmers

Exploring the economic aspects of farmers in the Dhanera area reveals a range of annual incomes, offering a glimpse into the financial diversity within the agricultural community.Out of 150 farmers surveyed, the majority48%earn between 5 and 10 lakh rupees annually, indicating a moderateincome level among this group. The second largest segment, representing 30%, earns between 1 and 5 lakh rupees per year, highlighting a lower income bracket that may face more financial constraints.Meanwhile, 22% of farmers have an annual income exceeding 10 lakh rupees, indicating a smaller group with a higher earning capacity.

1.5 Family size of farmers

The family structure of farmers in the Dhanera area is characterized by varying household sizes, illustrating the demographic composition of the farming community. Only 4% farmers reported having only 2 family members, indicating that larger family units are more prevalent in the region. The majority of farmers, comprising 52% of the total, have family sizes ranging from 3 to 5 members. This indicates a relatively moderate-sized family structure, which is common in many agricultural communities where family members often contribute to farm activities. Furthermore, a significant portion of farmers, accounting for 44%, have family sizes exceeding 5 members. This suggests the prevalence of extended families in the agricultural households of Dhanera, where multiple generations or additional relatives contribute to and share responsibilities related to agricultural activities.

2.Farmer Perception Regarding Water Conservation

2.1 Usage of Water conservation products among farmers

Table No. 2.Usage of Water conservation Products among Farmers

Water conservation Use	Frequency (n)	Percentage (%)
Yes	20	13.33
No	130	86.67
Total	150	100

From the total respondents 13.33% of farmers have used Water conservation products in their agricultural practices, while 86.67% have not. Out of a total of 150 farmers surveyed, 20 reported using Water conservation products, and 130 didn't. This suggests a significant low level of adoption among the surveyed individuals.

2.2. Awareness regarding Water conservation product

Out of 150 respondents, 20 were aware about the Water conservation product about its effect on the soil, which is 13.33% of the respondents.

2.3Perception regarding Water conservation product

Table 3 Perception regarding Water conservation product

Statement	SDA (1)	DA (2)	N (3)	A (4)	SA (5)	No response	Total	WAM	Rank
Water conservation product is environmentallyfriendly and sustainable	0	0	1	4	15	130	150	4.7	1
Water conservation product is effective in improving water retention in the soil	0	0	1	5	14	130	150	4.65	2
Overall, I have a positive perception of Water conservation product	0	1	4	8	7	130	150	4.05	3
Water conservation product is easy to apply and integrate into farming practices	0	0	6	8	6	130	150	4	4
Water conservation product enhances plant growth and yields	1	1	8	5	5	130	150	3.6	5
Water conservation product is cost-effective and provides a good return on investment	6	3	6	4	1	130	150	2.55	6
Water conservation product price is affordable for farmers	8	5	6	1	0	130	150	2	7

1- Strongly disagree, 2- Disagree, 3- Neutral, 4- Agree, 5- Strongly Agree

This table shows the level of agreement regarding the Water conservation product based on the given statements. Water conservation product is environmentallyfriendly and sustainable, receiving the top rank with a mean score of 4.7. It is also considered Water conservation product is effective in improving water retention in the soil, securing the second rank with a mean score of 4.65.Overall, I have a positive perception of Water conservation product

ranking third with a mean score of 4.05.

3. Problem Faced by Groundnut Farmers

Table 4 Problem Faced by Groundnut Farmers

Problems	(1)	(2)	(3)	(4)	(5)	Total	WAM	Rank
High input cost	2	7	15	52	74	150	4.26	1
Pest infestation	9	12	16	31	82	150	4.1	2
Weed infestation	4	7	23	55	61	150	4.08	3
Labour shortage	4	16	27	39	64	150	3.95	4
Water scarcity	7	16	22	49	56	150	3.87	5
Sclerotium wilt	5	13	24	76	32	150	3.78	6
Rust & Tikka Disease	31	73	24	14	8	150	2.3	7
collar rot	23	80	33	9	5	150	2.28	8
Seed availability	34	72	28	10	6	150	2.21	9

1- Not at all intense, 2- Slightly intense, 3- Moderately intense, 4-very intense,

5- Extremely intense

The intensity of these problems is evaluated on a scale from "Not at all intense" (1) to "Extremely intense" (5), High input cost emerges as the most severe problem, with the highest intensity rating (4.26) and the top rank. It is followed closely by Pest infestation (4.1), which are also a significant concern. Weed infestation ranks third in terms of intensity (4.08), followed byLabour shortage (3.95),Water scarcity (3.87), Sclerotium wilt (3.78), rust and tikka disease (2.3). collar rot (2.28), while Seed availability is rated as the least intense issue.

CONCLUSION:

According to study 46% respondents age between 41 to 60 years. Education qualification for majority of the farmers were up to primary, which occupy 46% of the respondents. 52% respondent have family size of 3 to 5 members. The distribution of landholding among respondents, with a significant proportion (39%) owning land in the range of 1 to 2 hectares. the majority of respondents, at 48%, earn an income in the range of 5 to 10 lakhs. Awareness of Water conservation product was 13.33% among farmers.

According to study respondents have a generally positive perception of Water conservation product, with the highest average rating (WAM) for environmentallyfriendly and sustainable. However, it's noted that the product price is affordable for farmers received a

relatively lower rating, indicating some concerns about affordability. The most intense problem faced by farmer reported was "High input cost" ranking first with a WAM of 4.26, followed closely by "Pest infestation " at second place (WAM 4.1), and "Weed infestation " at third place (WAM 4.08).

REFERENCE:

Abbas, M., Muhammad, S., Nabi, I., & Kashif, M. (2003). Farmers' information sources, their awareness and adoption of recommended sugarcane production technologies in the central Punjab. *Pakistan Journal of Agricultural Sciences, 40,* 202-206.

Bhikadiya U & Lad Y A(2023) Market Potential of Selected Agricultural Products and ProblemsIdentification of Groundnut Cultivation in Bhankhokhari Market of Devbhoomi Dwarka District, Gujarat, India, Asian Journal of Agricultural Extension, Economics &Sociology , 41(9), 96-102

Faridi, M. Z., Ahmad, R., Bashir, F., & Khan, M. S. (2021). Socio-Economic Status of Farming Community: A Case of District Rajanpur. *Review of Applied Management and Social Sciences*, *4*(2), 485-494.

Issa, F. O. (2016). Farmers perception of the quality and accessibility of agrochemicals in kaduna and ondo states of nigeria: implications for policy. *Journal of Agricultural Extension*, *20*(1), 81-95.

Jalu, S. N., Bariya, M. K., &Chandravadia, K. U. Relationship between the profile of groundnut cultivators and their knowledge level on the recommended crop production technology in Saurashtra region of Gujarat.

Karthick, S., Saminathan, R., & Gopinath, R. (2020). A Study on the Problems faced by Farmers in Paddy Marketing of Cauvery Delta Region, Tamilnadu. *International Journal of Management*, *11*(10), 2155-2164.

Mango, N., Makate, C., Tamene, L., Mponela, P., &Ndengu, G. (2017). Awareness and adoption of land, soil and water conservation practices in the Chinyanja Triangle, Southern Africa. *International Soil and Water Conservation Research*, *5*(2), 122-129.

Pradhan, S., Naberia, S., Harikrishna, Y. V., &Jallaraph, V. (2021). Socio-economic correlates of livelihood security of small farmers in Jabalpur District of Madhya Pradesh. *Indian Journal of Extension Education*, *57*(3), 57-59.

RADADIYA A. & Lad Y A(2023) Market Potential of selected Agricultural Products and Problem Identification Of Groundnut Cultivation In Khambhaliya East Market Of Devbhoomi Dwarka District, International Journal of Agriculture Sciences, 15(5),12331-12334

Riding, M. J., Herbert, B. M., Ricketts, L., Dodd, I., Ostle, N., & Semple, K. T. (2015). Harmonising conflicts between science, regulation, perception and environmental impact: The case of soil conditioners from bioenergy. *Environment International*, *75*, 52-67.

Sarjono, H., & Jadi, B. N. (2019). Perception of farmers toward organic pesticide. *JurnalRisetManajemen dan Bisnis (JRMB) FakultasEkonomi UNIAT*, *4*(2), 235-244.

Thomas, A., Regi, A., & Alex, D. M. (2023). A STUDY ON PROBLEMS FACED BY PADDY FARMERS IN KAINAKARY, ALAPPUZHA. *EPRA International Journal of Agriculture and Rural Economic Research (ARER)*, *11*(2), 1-5.

Tudi M, Daniel Ruan H, Wang L, Lyu J, Sadler R, Connell D, Chu C, Phung DT. Agriculture Development, Pesticide Application and Its Impact on the Environment. Int J Environ Res Public Health. 2021 Jan 27;18(3):1112. doi: 10.3390/ijerph18031112. PMID: 33513796; PMCID: PMC7908628.

Indian Agriculture. Retrieved from https://www.fao.org/

Soil conditioner Market Analysis and Forecast. Retrieved from https://www.alliedmarketresearch.com/

India's stand in agrochemical. Retrieved fromhttps://www.agribusinessglobal.com/