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RESEARCH PAPER

Problems Faced by Farmers in Sesamum Cultivation in Sirohi District of Rajasthan

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ABSTRACT

This study was conducted in Sirohi district of Rajasthan state. The major sesamumn growing districts in the state are Pali, Sirohi, Jodhpur, Sawai Madhopur and Jalore. Among these district, Sirohi district has first rank in terms of during 2021-22. In this study, 120 farmers from 06 villages of two tehsils namely Sirohi and Sheoganj were selected randomly for detailed study. Primary data were collected for *kharif* 2024-25 and analyzed through Garrett's ranking for drawing relevant conclusions. Results revealed that among technological problems, major problems faced by sesamum farmers were shortage of labour ranked first followed by unavailability of short duration varieties, problem of seed shattering and least was high incidence of insects. Among educational problems, lack of knowledge about improved recommended dose of fertilizer, lack of knowledge about market value of produce and lack of knowledge about improved calibration of chemical and their recommended doses ranked first, second and third, respectively. The least problem was lack of knowledge about crop insurance. Among economic problems, high cost of labour was the severe problem followed by high cost of pesticide, high cost of fertilizer and the least but yet important problem was high rate of interest on loan. Among infrastructural problems, lack of market facility in locality was the main problem. Poor transport facility of crop produce and unavailability of information on improved technology through government agencies ranked second and third, respectively. The cultivators should provide sufficient training for technologies, providing inputs on time, providing training to farmers for efficient utilization of inputs.

HIGHLIGHTS

- Severe technological problems faced by farmers were shortage of labour, unavailability of short duration varieties and problem of seed shattering in the study area.
- Major educational problems were lack of knowledge about improved recommended dose of fertilizer and lack of knowledge about market value of produce ranked first and second.
- Economic problems faced by farmers were high cost of labour, high cost of pesticides and high cost of fertilizer in the study area which were most severe.
- Infrastructural problems were lack of market facility in locality and poor transport facilities for crop produce ranked first and second.

Keywords: Sesamum, Constraints, Technological, Educational, Economic, Infrastructural

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Agriculture is one of the most important sectors of the Indian economy. The share of the agriculture sector in Gross Value Added (GVA) was 18.4 per cent during the year 2024–25 (Economic Survey, 2025–26) and Rajasthan's Gross Value Added (GVA) at current prices was 27.13 per cent during the year 2024–25 (Rajasthan Aarthik Samiksha, 2025–26). In India, Oilseeds are the principal commercial crops and serve as the primary raw material for edible oils. The Integrated Scheme of Oilseeds, Pulses, Oil Palm and Maize (ISOPOM) scheme was launched in 2004-05 and implemented in 14 potential states including Rajasthan. Globally, about 70 per cent of sesamum seed is utilized for oil extraction and meal production, while, the remaining portion is used for direct food consumption. World's sesamum production was 6.68 million tonnes from an area of 11.72 million hectares with productivity of 1130 kg/ha during 2024. The top sesamum producing countries are India, Myanmar, Sudan, Nigeria, Pakistan and Ethiopia. India's per capita domestic consumption of edible oils increased substantially, from 5.76 kg/year and 7.92 kg/year in 2004-05 to 10.58 kg/year and 11.78 kg/year in rural and urban areas, respectively in 2022-23.

Sesamum can be grown both in *Kharif* and *Rabi* season. But, in Rajasthan, it is primarily grown in *Kharif* season. Sesamum plant needs temperature between 25-35 ^{o}C. It can be cultivated using common farming practices, including no-till practices, and standard farming and handling equipment. Sesamum seeds are widely used in raw or roasted form in various food products such as bakery items, confectionery, sweets, and traditional dishes. Sesamum oil is extensively used for cooking, cosmetics, and pharmaceutical applications. It is also used in the preparation of soaps, lubricants, perfumes, and other industrial products. The seeds are also rich in essential minerals such as calcium, iron, magnesium, phosphorus, and zinc, along with vitamins B and E. The presence of lignans such as sesamin and sesamolin contributes to its antioxidant properties, enhancing its nutritional and medicinal value (Langyan *et al.* 2022; Dossou *et al.* 2023). Sesamum is nutritionally important due to its high content of oil, protein, calcium, iron, and methionine. Sesamum cake is also a valuable and nutritious feed for cattle, especially milch animals, and is an important ingredient in poultry feed. Parts of plant are also useful in treatment of cancer, alopecia, and constipation, antifungal activity and in infant cholera, diarrhea, dysentery, and for urinry infections. Owing to the presence of potent natural antioxidants such as sesamin and sesamolin, sesamum seeds are also known as the "seeds of immortality".

During 2024, India produced 8.93 lakh tonnes of sesamum from an area of 15.76 lakh hectares, with an average productivity of 567 kg/ha (Directorate of Economics & Statistics, DAC&FW, Ministry of Agriculture & Farmers Welfare, GOI, 2024). The top sesamum producing states in India were West Bengal, Madhya Pradesh, Gujarat, Uttar Pradesh, Rajasthan and others. Rajasthan stands fifth with production of 0.67 lakh tonnes from an area of 1.84 lakh hectares with productivity of 363 kg/ha during 2024. Minimum Support Price of Sesamum has been increased from ₹ 9267 for marketing season 2024-25 to ₹ 9846 for marketing season 2025-26 with a growth of 6.247 percent from 2024-25 to 2025-26 (Directorate of Economics & Statistics, DAC&FW, Ministry of Agriculture & Farmers' Welfare, 2024). As such, there is a need to analyze the problems faced by farmers in sesamum cultivation.

METHODOLOGY

Sirohi district of Rajasthan was selected purposively due to its second position in terms of sesamum area in the state during 2021-22. Out of five tehsils of Sirohi District, two tehsils namely Sirohi and Sheoganj were selected purposively based on maximum area under sesamum. Separate lists of all the sesamum growing villages from each selected tehsil were obtained from respective tehsil head quarter. Six villages namely Tanwri, Padeev and Kalindri from Sirohi Tehsil and Posaliya, Bargaon and Rukhada from Sheoganj tehsil were selected randomly for the study. Next, 20 sesamum growing farmers from each village were selected randomly based on population proportion method from each group. Thus, a sample of 120 farmers was selected for detailed study. Primary data were used for the study as these were collected from the selected sesamum cultivators using personal interview method with the help of pre-structured interview schedule. Information regarding problems in cultivation of sesamum was collected for Kharif 2024-25.

Garrett's ranking technique was used to analyze the problems faced by sesamum farmers. All sample farmers were asked about their problems and ranking was given to those problems and then ranks were converted into scores by referring Garrett's table. The order of merit given by the respondents was changed into ranks by using following formula:

$$Per\ cent\ Position = [100\ (R_{ij} - 0.5)] \div N_j$$

Where,

R_{ij} = Rank given for the i^{th} variable by j^{th} respondent

N_j = Number of variable ranked by j^{th} respondent

The per cent position of each rank thus obtained was converted into scores by referring to the tables given by Garrett's and Woodworth in their book Statistics in Psychology and Education (1969). Then for each problem, the scores of individual farmer was added together and divided by the total number of farmers for whom scores was added. The mean scores for all problems were ranked by arranging them in descending order.

RESULTS AND DISCUSSION

The various problems like technological, educational, economic and infrastructural were faced by the sample farmers.

Technological problems faced by farmers in Sirohi district of Rajasthan

Technological problem refer to the barriers, gaps and limitations that prevent farmers from adopting modern agricultural techniques, improved seeds, machinery etc., ultimately leading to lower yields, high production costs, and a significant technological gap between potential and actual output.

Results from table 1 indicates that shortage of labour in cultivation of sesamum was the most critical problem with mean score of 70.72 faced by farmers which ranked first, reflecting increasing rural-urban migration and rising wage rates, which delay timely operations such as sowing and harvesting in sesamum, a crop that requires careful and timely management. The second ranked most severe problem was the unavailability of short-duration varieties of sesamum with mean score of 67.57, which was particularly important for sesamum cultivation under rainfed conditions, where farmers need varieties that can escape moisture stress and fit into short cropping windows.

Results further revealed that the problem of seed shattering was ranked third with mean score of 61.74 and it was significant in sesamum, as traditional varieties were highly prone to capsule shattering, leading to considerable yield losses at the time of harvesting. Irregular supply of fertilizer with mean score of 57.23 ranked fourth, irregular supply of pesticide with mean score of 49.64 ranked fifth, and irregular supply of seed with mean score of 39.18 ranked sixth indicates inefficiencies in the input delivery system, which adversely affect crop growth, pest management, and timely sowing of sesamum.

On the other hand, high incidence of diseases with mean score of 31.57 ranked seventh and the least problem faced by sesamum farmers was incidence of insect-pests with mean score of 24.36 and ranked eighth. Though problem of incidence of insect-pest relatively less severe, still play an important role in reducing sesamum productivity, as the crop was susceptible to diseases like phyllody and pests such as leaf rollers and gall flies. Overall, the results indicate that technological problems

Table 1: Technological problems faced by farmers in Sirohi district

Sl. No.	Technological Problems	Total Score	Mean Score	Rank
1	Shortage of labour	8486	70.72	I
2	Unavailability of short duration varieties	8108	67.57	II
3	Problem of seed shattering	7409	61.74	III
4	Irregular supply of fertilizer	6868	57.23	IV
5	Irregular supply of pesticide	5957	49.64	V
6	Irregular supply of seed	4701	39.18	VI
7	High Incidence of disease	3788	31.57	VII
8	High Incidence of Insect	2923	24.36	VIII

in sesamum cultivation were mainly associated with labour scarcity, lack of improved and non-shattering short-duration varieties, and inefficient input supply systems. These findings were in line with recent studies conducted by Kerketta *et al.* (2015), Chandrika *et al*. (2016), Medat *et al.* (2016), Raghuvanshi and Sahu (2017), Kumar *et al.* (2018), Sinha *et al.* (2019), Teja *et al.* (2022), Pachpute *et al.* (2023), Aechara *et al.* (2024), Ajaykumar *et al.* (2024), Patel and Lad (2024), Rani *et al.* (2024), Seevagasinthamani *et al.* (2025), Barman *et al.* (2026), Lavale *et al.* (2026) and Sreepriya and Girija (2020).

Educational problems faced by farmers in Sirohi district of Rajasthan

Educational problems refers to the knowledge gaps, lack of training, and limited access to information that hinder farmers from adopting improved agricultural technologies, optimizing yields, or engaging in effective cultivation practices. These problems directly impact the efficiency of crop management and reduce the overall productivity of agricultural systems.

Observations made from table 2 reveals that lack of knowledge about the recommended dose of fertilizer was the most serious problem faced by study farmers with mean score of 71.28 ranked first which indicated that farmers were not adequately aware of scientific nutrient management practices, which directly affects sesamum yield and soil health. The second most important problem was lack of knowledge about the market value of produce with mean score of 68.72 ranked second which suggests that farmers have limited access to market information, leading to poor price realization and weak bargaining power. Results further reveal that lack of knowledge about improved calibration of chemicals and their recommended doses with mean score of 51.00 ranked third, which shows inadequate technical awareness regarding proper application of pesticides and fertilizers, which ultimately result in either under-use or over-use of inputs. Another important problem was lack of knowledge about improved varieties with mean score of 47.88 ranked fourth which also has a significant issue, particularly in sesamum cultivation where adoption of high-yielding and non-shattering varieties was crucial for enhancing productivity. In addition to above problems, lack of knowledge about improved seed treatment ranked fifth with mean score of 32.64, which indicates poor awareness regarding preventive measures against seed and soil-borne diseases. The least severe, though still important, problem was lack of knowledge about crop insurance with mean score of 28.48 ranked sixth and suggests limited awareness about risk management tools available to study farmers.

The above findings suggest that educational problems in sesamum cultivation were largely related to inadequate awareness of recommended agricultural practices, input use efficiency, and market-related information. These results were consistent with recent studies made by Kumar *et al.* (2023) which emphasize that lack of extension services, poor dissemination of scientific knowledge and limited access to market intelligence continue to hinder adoption of improved technologies in Indian agriculture. Particularly in oilseed crops like sesamum, low productivity is often attributed to gaps in farmers' knowledge regarding improved varieties, nutrient management, and plant protection measures. The similar results were observed by Kumar *et al*. (2010), Shashikant *et al.* (2011), Deshmukh *et al.* (2013), Chandrika *et al.* (2016),

Table 2: Educational problems faced by farmers in Sirohi district

Sl. No.	Educational Problems	Total Score	Mean Score	Rank
1	Lack of knowledge about improved recommended dose of fertilizer	8554	71.28	I
2	Lack of knowledge about market value of produce	8246	68.72	II
3	Lack of knowledge about improved calibration of chemical and their recommended doses	6120	51.00	III
4	Lack of knowledge about improved varieties	5745	47.88	IV
5	Lack of knowledge about improved seed treatment	3917	32.64	V
6	Lack of knowledge about crop insurance	3418	28.48	VI

Teja *et al.* (2022), Kamble *et al.* (2023), Aechara *et al.* (2024), Ajaykumar *et al.* (2024), Patel and Lad (2024), Rani *et al.* (2024), Seevagasinthamani *et al.* (2025).

Economic problems faced by farmers in Sirohi district of Rajasthan

Economic problems refer to financial limitations and external market factors that restrict a farmer's ability to maximize yield, adopt modern technologies, or diversify crops which ultimately causing low productivity.

Results from table 3 clearly show that high cost of labour was the most severe problem with mean score of 76.18 ranked first, which reflects the increasing wage rates and scarcity of agricultural labour. This was particularly critical in sesamum cultivation, as timely operations such as sowing, weeding, and harvesting were labour-intensive, and higher labour costs significantly increase the cost of cultivation. The second most important problem faced by sesamum farmers was high cost of pesticides ranked second with mean score of 52.36, which indicates that study farmers were burdened with rising expenses for plant protection measures, which were essential for controlling pests in sesamum. The similar results were found by Patel and Lad, 2024. Similarly, high cost of fertilizer with mean score of 49.47 ranked third and high cost of seed or hybrids ranked fourth with mean score of 47.86 which further increases the production costs and reduces profit margins for farmers. The similar results were faced by Pachpute *et al.* (2023) who stated that high cost of fertilizers and plant protections, and high labour wages were the major problems in production of soybean.

Results further reveal that complex procedure of obtaining loans with mean score of 43.23 ranked fifth which suggests that farmers were facing difficulties in accessing formal credit due to lengthy documentation and procedural barriers. The least severe, yet still important problem faced by sesamum farmers was the high rate of interest on loans with mean score of 30.91 ranked sixth, which discourages farmers from borrowing and spending in improved agricultural practices. Overall, the findings indicate that economic problems in sesamum cultivation were primarily driven by rising input costs and labour expenses, along with limited access to affordable and timely credit. These results were consistent with recent studies conducted by Barman *et al*. 2026 which highlighted that increasing cost of cultivation, especially labour and inputs, and limited access to institutional credit were major challenges affecting farm profitability in India. In oilseed crops like sesamum, high input costs combined with price fluctuations further reduce farmers' income and discourage adoption of improved technologies. The similar results were found by Chandrika *et al.* (2016), Teja *et al.* (2022), Rani *et al.* (2024), Seevagasinthamani *et al.* (2025), Sreepriya and Girija (2020).

Infrastructural problems faced by farmers in Sirohi district of Rajasthan

Infrastructural problems refer to the lack, inadequacy, or poor maintenance of essential physical facilities and systems needed to grow, harvest, store, transport, and sell agricultural products. These problems prevent farmers from reaching maximum yields, cause high post-harvest losses, and limited market access, ultimately reducing profitability and inhibiting agricultural growth.

Observations from table 4 represents that lack of market facility in the locality was the most severe problem with mean score of 75.06 ranked first which indicates that study farmers faced significant difficulties in accessing nearby markets to sell

Table 3: Economic problems faced by farmers in Sirohi district

Sl. No.	Economics problems	Total Score	Mean Score	Rank
1	High cost of labour	9142	76.18	I
2	High cost of pesticides	6283	52.36	II
3	High cost of fertilizer	5936	49.47	III
4	High cost of seed/Hybrids	5743	47.86	IV
5	Complex procedure of loan	5187	43.23	V
6	High rate of interest on loan	3709	30.91	VI

Table 4: Infrastructural problems faced by farmers in Sirohi district

Sl. No.	Infrastructural problems	Total Score	Mean Score	Rank
1	Lack of market facility in locality	9007	75.06	I
2	Poor transport facilities for crop produce	8395	69.96	II
3	Unavailability of information on improved technology through government agencies	7906	65.88	III
4	Lack of trainings on improved sesamum production technology	6714	55.95	IV
5	Unavailability of inputs at proper time through government agencies	6138	51.15	V
6	Insufficient soil testing facility	6109	50.91	VI
7	Lack of Banks/RRB	4841	40.34	VII
8	Insufficient irrigation facility	3962	33.02	VIII
9	Lack of cooperative societies	2981	24.84	IX

their sesamum produce, which ultimately leads to distress sales and lower price realization. The second most important problem was poor transport facilities for crop produce with mean score of 69.96 ranked second, which further aggravates marketing problems by increasing transportation costs and post-harvest losses. Another major issue was the unavailability of information on improved technology through government agencies with mean score of 65.88 ranked third, caused by weak extension services and limited dissemination of modern agricultural practices related to sesamum cultivation.

Results further revealed that the lack of training on improved sesamum production technology ranked fourth with mean score of 55.95 which indicates that farmers were not adequately equipped with the necessary skills and knowledge to adopt advanced practices, which ultimately hampers crop productivity. The unavailability of inputs at the proper time through government agencies with mean score of 51.15 ranked fifth. The similar results were found by Aechara *et al.* 2024 and Patel and Lad, 2024. Insufficient soil testing facilities with mean score of 50.91 ranked sixth also reflect gaps in institutional support and scientific resource management. Further, lack of banks and regional rural banks with mean score of 40.34 ranked seventh, limits farmers' access to formal credit, while, insufficient irrigation facilities with mean score of 33.02 ranked eighth highlight the dependence on rainfall, which was a critical factor in sesamum cultivation. The least severe problem, though still important, was lack of cooperative societies with mean score of 24.84 ranked ninth, which indicates limited collective action and weaker institutional support for farmers.

The findings suggest that infrastructural problems in sesamum cultivation were primarily related to inadequate market access, poor transportation, weak extension services, and insufficient institutional support systems. The similar studies were conducted by Chandrika *et al.* (2016), Rani *et al.* (2024), Seevagasinthamani *et al.* (2025), Barman *et al.* (2026), Sreepriya and Girija (2020).

GENERATIVE AI DECLARATION

The author(s) confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript, and no images were manipulated using AI. The authors developed and verified all scientific content, data analysis, interpretation of results, and conclusions. The authors take full responsibility for the accuracy, integrity, and originality of the work presented, and no AI tool was listed as an author.

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