
Good Agricultural Practices in Sesame - An Approach for Achieving Higher Production

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ABSTRACT

In the Indian Agricultural economy, oilseeds are the second largest sector next to cereals. India places the top rank in the production in the world. Sesame (*Sesamum indicum* L.) is the oldest oilseed crop in India with holds the longest history of cultivation. Sesame oil is traditionally valued oil due to the high amount of polyunsaturated fatty acids, oleic acid, and linoleic acid present in oil. The productivity of sesame in India is 431 kg/ha. This was due to the non-adoption of improved cultivation practices. The primary reasons for lower productivity in sesame are mainly cultivated under the rainfed situation with poor crop management practices. Lack of availability of location-specific varieties, varieties resistant to pests and diseases also the reason for low yield. The weather abnormalities lead to increases in the incidence of pests and diseases which leads to yield reduction. In this aspect to manage all the issues in sesame cultivation we must implement good agricultural practices to achieve a higher yield and economics.

INTRODUCTION

In the Indian agricultural economy, oilseeds are the second largest sector next only to cereals. India places the top rank in the production in the world. After china, Brazil, and United States America Placed the fourth rank in the oilseeds economy in the world. In terms of acreage and production, oilseed crops are second only to food grains in importance to India's agricultural economy. A large variety of oilseeds are grown in India since the country's environment is favourable for their cultivation. A significant group of commercial crops in India is oilseeds. The outcome of the Yellow Revolution after the 1990s India attained self-sufficiency in oil seed production. Oilseeds are an essential part of our nutrition, and the oil collected from them is used to make a variety of products and is a crucial component of both manure and animal feed. Their function in the human diet and industrial application cannot be estimated.

Sesame (*Sesamum indicum L.*) is the traditional crop in India. Sesame crop holds the longest history of production and usage in India. The other names of the sesame in India are til (Hindi, Punjabi, Bengali, Marathi), Tal (Gujarathi), Manchinuvvulu (Telugu), and Ellu (Tamil, Malayalam). In India, the total cultivation area under sesame is 19.47 Lakh ha with a production of 8.66 Lakh t. Productivity of sesame in India is 431 kg/ha. This was low as compared to the world average production (535 kg/ha). This was due to the non-adoption of improved cultivation practices. Rajasthan, Gujarat, West Bengal, Maharashtra, Tamil Nadu, Madhya Pradesh and Andhra Pradesh are the major sesame cultivating states in India. Due to the short duration nature, the sesame fits into the all-cropping system. This crop is well in all the seasons of the year. October- November and December January are the main seasons for sesame cultivation. Sesame oil is traditionally valued oil due to the high amount of polyunsaturated fatty acids, oleic acid, and linoleic acid present in oil. Sesamin, Sarmolin, and sesamol is the natural antioxidants present in the oil and give a long shelf life of sesame oil and food fried in the Sesame oil. Soaps, paints and perfumes can be prepared from sesame oil. The high amount of quality protein present in the sesame oil (40%), is highly suitable for poultry and livestock feed. Vitamins A, B, and E complexes and minerals like Calcium, Phosphorus, Iron, Copper, and Zinc are present in sesame oil.

MAJOR CONSTRAINTS ON SESAME PRODUCTION

In the aspect of production, India holds the first place in the world with the production of 8.66 lakh t with the average production of 431 kg/ha. The average production of sesame in India was very low as compared to other sesame Production nations. The main reason for lower productivity of Sesame is mainly cultivated under rainfed condition with poor crop management practices in marginal lands. Lack of availability of location-specific varieties, varieties resistant to pests and diseases. The sesame growers have adopted locally available technologies and poor infrastructure facilities for pre and post-harvest management. Sesame was more sensitive to water stagnation. Improper drainage facilities in the field cause poor crop growth and yield reduction. Higher variation in the weather parameters faced by the farmers. Abnormalities of weather phenomena and irregular and uneven distribution of rainfall had an adverse effect on sesame growth and yield. These weather abnormalities lead to increases in the incidence of pests and diseases that are difficult to manage. In these aspects to tackle all the issues in the

sesame cultivation, we must implement the good agricultural practices to achieve the higher yield and economics.

SUITABLE VARIETIES AND THEIR CHARACTERISTICS

TMV 7

Duration: 80- 85 days

Average yield: 920 kg/ha

Oil content: 50%

Seeds colour: Brown

VRI 5

Duration: 75-80 days

Average yield: 795kg/ha

Oil content: 52 %

Seed colour: Brown

FIELD PREPARATION

3-4 times plough the field with country plough or tractor. The soil should be in fine tilth condition to facilitate quick germination. During the last ploughing apply 12.5 t FYM/ha and spread evenly over the field. (agritech.tnau.ac.in, 2023). Application of micronutrient mixture at the rate of 12.5 kg/ha was advisable to get a higher yield.

SEED RATE AND SEED TREATMENT

The recommended seed rate is 5 kg per ha. The seeds should be treated with 4 g of Trichoderma per kg of seeds before sowing. This activity helps us to prevent the soil and seed-borne pathogens incidence.

SPACING

Spacing is important for the utilization of natural resources by crop and results in better yield. The recommended spacing for sesame is 30 cm between rows and 30 cm between plants. But, based on soil type, variety, and field condition many spacing methods adopted. Among different spacing, Sanjay N et al. (2020) reported that sesame was sowing at 45 cm row spacing given the highest number of capsules per plant. This was due to favourable crop environments like availability of moisture, minerals and solar radiation without competition. The highest number of capsules (50.2) and more number of seeds per capsule (57.10) recorded when sesame was planted in a 45 cm X 10 cm spacing method. This wide inter-row help the crop to gain the more grain and stover yield due to the ease available of solar radiation, minerals and moisture. This result was reported by Koneti Sai Kumar and Shikha Singh (2021).

WEED MANAGEMENT

Sesame was very sensitive to weed competition under irrigated condition during the first 20-25 days after sowing. Researches find that the crop weed competition period for Sesame is 40 days after sowing. Two weeding after, one at 15-20 DAS other at 30- 35 DAS. This will help to obtain more nutrients and moisture by crop. If hand weeding is not possible application of herbicides is recommended. Among herbicide combinations, more number of branches per plant and less

stunting were noticed the pre emergence application of pendimethalin alone. This result was reported by Raghwendra Singh et al. (2018). The weed density was significantly reduced by the application of pre and post emergence herbicide as sequential. Sathish Babu K et al (2016) reported that the lowest weed density and weed dry weight of grasses was recorded in the pre-emergence application of pendimethalin 750g/ha+quizalofop 50g/ha combination. Ambika M and A. Sundari (2019) also reported that application of alachloar 1.5 kg/ha on 3 DAS followed by post-emergence application of quizalofop 0.5 kg/ha on 21 DAS was recorded higher growth parameters and seed yield.

NUTRIENT MANAGEMENT PRACTICES

For the improvement of the soil physical condition and to obtain a higher yield, the application of well-decomposed farm yard manure at the rate of 5 t/ha during the field preparation and incorporate thoroughly in the field. The application of amount of fertilizer varied with variety, soil type, and previous crop. The recommended dose of fertilizer is 35:23:23 NPK /ha. The crop growth and yield were higher with the application of 100 % recommended dose of NPK through 75 % of recommended dose of nutrient by fertilizer and 25 % recommended dose of Nutrient by vermicompost and neem cake. This was reported by Kapil Ahirwar et al (2017). The higher seed yield and oil yield was recorded under the combined application of vermicompost, neem oil cake along with chemical fertilizer. Chakraborty P et al. (2021) reported that among different nutrient management, the application of 100 % recommended dose of fertilizer + FYM 2 t/ha + jeevamrut at 250 l/ recorded the more number of capsule (41.4)/plant and more number of seeds (53)/capsule.

WATER MANAGEMENT

Irrigation immediately after irrigation improves germination and early growth. The sub-sequential irrigation scheduled at 10-13 days interval depending on soil moisture and rainfall. One pre flowering irrigation and two irrigation at pod formation and seed setting stage was very essential for getting higher yield and income.

HARVESTING

DECIDE WHEN TO HARVEST

The best time for harvesting the crop is the bottom leaves are turn into yellow colour and the stem colour also turn to yellow colour at maturity stage, the capsules colour also turn yellow colour.

HARVEST

Harvest the crop with a sickle from the bottom leave 2 inches height and harvest or pull out the entire crop with hand. Harvested stalks are stacked in open place one over one in a circle. The root portion at outside and the top portion are inside direction. The top portion of the stack is covered with straw for better humidity and temperature. After 3 to 5 days the stalks and leaves are turn brown colour. More than 50 percentage of seeds are fall down. Spread the stalks at drying yard and stir with stick once in a 3 hour. Before evening collect the seeds and stored in gunny bags.

CONCLUSION

Increasing production through good agricultural practices in sesame was achieved through the adoption of selection of improved variety, field preparation, seed treatment and sowing in appropriate spacing, and adoption of weed and nutrient management practices. Diagnostic and site-specific management practices also help to improve the crop growth and yield in sesame.

REFERENCES

agritech.tnau.ac.in, 2023.

Ambika M and A. Sundari (2019). Weed management in irrigated sesame (*Sesamum indicum* L.). *World Scientific News* 131:272-278.

Chakraborty P, M. Das Bairagya, S. Sarkar, J. M. L. Gulati, G. H. Santra, N. Nayak and B. K. Sahoo (2021). Effects of Irrigation and Nutrient Management on Summer Sesame (*Sesamum indicum* L.). *International Journal of Current Microbiology and Applied Sciences* 10(10):212-220.

Kapil Ahirwar, Susmita Panda and Alok Jyotishi (2017). Optimisation of Sesame (*Sesamum indicum* L.) Production through Integrated Nutrient Management. *International Journal of Current Microbiology and Applied Sciences*. 11 (2017) : 1701-1707.

Koneti Sai Kumar and Shikha Singh(2021).Effect of different levels of sulphur and spacing on growth and yield of zaid sesame (*Sesame indicum* L.). *The Pharma Innovation Journal* 10(10): 96-100.

Raghwendra Singh, Dibakar Ghosh, R.P. Dubey and V.P. Singh(2018). Weed control in sesame with pre-emergence herbicides. *Indian Journal of Weed Science* 50(1): 91–93.

Sanjay N. Shah, Hiren K. Patel and Amit P. Patel (2021). Effect of Spacing and Topping on Yield of Summer Sesame (*Sesamum indicum* L.). *International Journal of Current Microbiology and Applied Sciences*. 9(5):2312-2319.

Sathish Babu K, D. Subramanyam, V. Sumathi and V. Umamahesh (2016). Weed management in sesame with sequential application of herbicides. *Indian Journal of Weed Science* 48(4): 455–457.