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CONTENTS

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Advanced Cultivation of Mustard by Scientific Methods

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Abstract: -

Mustard is one of India's most important oilseed crops, contributing significantly to national oilseed production and farmer livelihoods. India is the world's fourth-largest producer of oilseeds, with rapeseed-mustard accounting for about 28.6% of total oilseed production. Mustard cultivation includes several species and ecotypes adapted to diverse agro-climatic zones across India. This article provides a comprehensive overview of scientific cultivation practices for mustard, covering general information, climate and soil requirements, popular varieties, land preparation, sowing methods, seed treatment, fertilization, weed control, irrigation, plant protection, harvesting, and post-harvest handling. Adopting advanced scientific methods can improve yields, oil quality, and farmer income, supporting sustainable agriculture and national food security.

Keywords: Mustard cultivation, Oilseed crops, Scientific farming, Varieties, Agronomic practices

Introduction:

India is the fourth-largest producer of oilseeds globally, and rapeseed-mustard crops contribute around 28.6% of the total oilseed production in the country. Mustard is the third most important oilseed in the world after soybean and palm oil. The mustard–rapeseed group includes Indian mustard, brown and yellow sarson, raya, and toria crops. Indian mustard is widely cultivated in states like Rajasthan, Madhya Pradesh, Uttar Pradesh, Haryana, and Gujarat, as well as parts of southern India including Andhra Pradesh, Karnataka, and Tamil Nadu. Yellow sarson is mainly grown as a rabi crop in eastern states

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such as Assam, Bihar, Odisha, and West Bengal, while in Punjab, Haryana, Uttar Pradesh, and Himachal Pradesh it is used as a catch crop. Brown sarson, once common, is now less cultivated and largely replaced by Indian mustard, with ecotypes such as lotni and toria the latter being a short-duration crop suited to irrigated conditions.

Uses

Mustard seeds and their oil are widely used for culinary purposes, providing a staple cooking medium in many Indian households. The young green leaves of mustard plants are consumed as a nutritious vegetable. Additionally, the oilcake left after oil extraction serves as an excellent cattle feed, supporting livestock nutrition.

Climate Requirements

Mustard thrives best in subtropical climates. It requires temperatures between 10°C and 25°C for vegetative growth and around 28°C for germination. Annual rainfall between 625 and 1000 mm is considered ideal, although high humidity can be harmful to the crop, increasing disease risks. Mustard is a long-day plant that is sensitive to waterlogging, making good drainage essential.

Soil Requirements

Mustard and rapeseed can be cultivated in a range of soil types, from light to heavy soils. Raya is adaptable to all soil types, while loam to heavy soils are particularly suitable for toria cultivation. Taramira, another mustard type, grows well in sandy and loamy sand soils. Good soil structure and fertility are essential for achieving optimal yields.

Popular Varieties and Their Yield Potential

Several improved mustard varieties have been developed for different regions and purposes. Among toria varieties, PBT 37 matures in 91 days with an average yield of 5.4 quintals per acre and oil content of 41.7%, while TL 15 matures in 88 days with an average yield of 4.5 quintals per acre. For raya cultivation, varieties such as RLM 61G (yielding about 8 quintals per acre with 43% oil content and disease resistance) and RLC 3 (yielding 7.3 quintals per acre) are recommended. Gobhi sarson varieties include GSL 1, which matures in 160 days with a yield of 6.7 quintals per acre and 44.5% oil content, and Hyola PAC 401, which matures in 150 days with yields around 6.74 quintals per acre. Canola-type gobhi sarson offers healthier oil for human consumption. Among Indian mustard varieties, RH 074G is well-suited for Haryana, Punjab, Delhi, Jammu, and northern Rajasthan, yielding 10.5–11 quintals per acre with 40% oil content. T 5G (Varuna) is adaptable to various climates, yielding 6–8 quintals per acre. Pioneer 45S35 is an early-maturing, high-yielding variety averaging 12.5 quintals per acre.

Land Preparation

A well-prepared seedbed is essential for good germination. Farmers should conduct two to three ploughings followed by harrowing and planking to achieve a firm, moist, and uniform seedbed. This preparation ensures even germination and strong early growth.

Sowing Practices

The optimum sowing time for mustard is from September to October. Toria should be sown from the first fortnight of September to October. When rapeseed-mustard is intercropped, sowing time depends on the main crop. Recommended spacing is 30 cm between rows and 10–15 cm between plants, with seeds sown at a depth of 4–5 cm. Sowing can be done by sprinkling or with a seed drill. A seed rate of 1.5 kg per acre is generally used, with thinning three weeks after sowing to maintain healthy seedlings.

Seed Treatment

To protect seeds from soil-borne pests and diseases, seed treatment with Thiram at 3 grams per kilogram of seed is recommended before sowing.

Fertilizer Management

Field preparation should include the application of 70–120 quintals of well-decomposed farmyard manure per acre. Chemical fertilizer recommendations depend on soil testing. For toria under irrigated conditions, apply nitrogen and phosphorus in a ratio of 25:8 kg per acre using 55 kg of urea and 50 kg of superphosphate per acre. Potassium should be applied only if soil testing indicates deficiency. For raya and gobhi sarson, the recommended N:P:K ratio is 40:12:6 kg per acre.

Weed Management

Weed control is critical for mustard production. Farmers should conduct two to three weedings and two hoeings at two-week intervals to manage weed growth. For toria, pre-plant incorporation of trifluralin at 400 ml per 200 liters of water per acre is effective. For raya, pre-emergence spraying of isoproturon at 400 g per 200 liters within two days of sowing or post-emergence spraying 25–30 days after sowing is recommended.

Irrigation Practices

Pre-sowing irrigation ensures proper seedbed moisture for germination. Generally, mustard requires three irrigations applied at three-week intervals after sowing. The use of organic manures helps conserve soil moisture and maintain soil health.

Plant Protection

Pests: Aphids are a major pest that suck plant sap, weakening the crop and reducing pod formation. Control measures include spraying thiamethoxam at 80 g or chlorpyrifos at 200 ml in 100–125 liters of water per acre. Painted bugs damage crops at both germination and maturity stages by sucking sap, leading to plant drying. Timely

irrigation 3–4 weeks after sowing can reduce pest populations.

Diseases: Blight causes dark brown spots on stems, branches, leaves, and pods, leading to withering in severe cases. Farmers should use resistant varieties and apply sprays of Indofil M-45 or Captan at 260 g per 100 liters of water per acre, repeating every 15 days if needed. White rust appears as white pustules on leaves, stems, and flowers, causing sterility. Control measures include spraying Metalaxyl 8% + Mancozeb 64% at 2 g per liter or copper oxychloride at 25 g per liter of water, repeating at 10–15 day intervals if necessary.

Harvesting

Mustard crops mature in 110 to 140 days, depending on the variety. Harvesting should begin when pods turn yellow and seeds harden. To minimize shattering losses, harvesting is best done in the morning. After harvesting, crops should be stacked for 7–10 days to dry before threshing.

Post-Harvest Management

Cleaned seeds should be sun-dried for 4–5 days until their moisture content drops to around 8%. Properly dried seeds can then be stored safely in gunny bags or bins to maintain quality and reduce losses.

Conclusion

Advanced scientific cultivation practices can significantly improve mustard yields, oil quality, and farmer profitability. By selecting suitable varieties, following proper land preparation, sowing, fertilization, irrigation, weed control, and pest and disease management, farmers can sustainably increase production. Adoption of these methods supports India's food security, oilseed self-sufficiency, and the livelihoods of millions of farmers.

References

1. Department of Agriculture. Mustard production guidelines.
2. Indian Agricultural Research Institute. Mustard crop management.
3. Indian Institute of Wheat and Barley Research. Rapeseed-mustard production recommendations.
4. Ministry of Agriculture & Farmers Welfare, Government of India. Oilseed crop production practices.
5. Punjab Agricultural University, Ludhiana. Mustard cultivation practices.