

Turmeric Cultivation in India: An Overview

Deshvena S S¹, Omkar Gupta²

Introduction:

Turmeric (*Curcuma longa*), a perennial herb from the Zingiberaceae family, is a key spice and medicinal crop in India. It is primarily known for its rhizome, which contains curcumin, the active compound responsible for its vibrant yellow color and medicinal properties. India is the largest producer, consumer, and exporter of turmeric, contributing about 80% of global production. In the year 2022-23, an area of 3.24 lakh ha was under turmeric cultivation in India with a production of 11.61 lakh tonnes (over 75% of global turmeric production). More than 30 varieties of Turmeric are grown in India and it is grown in over 20 states in the country. The largest producing states of Turmeric are Maharashtra, Telangana, Karnataka and Tamil Nadu.

India has more than 62% share of world trade in turmeric. During 2022-23, 1.534 lakh tonnes of turmeric and turmeric products valued at 207.45 million USD was exported by more than 380 exporters. The leading export markets for Indian Turmeric are Bangladesh, UAE, USA and Malaysia. With the focused

activities of the Board, it is expected that turmeric exports will reach USD 1 Billion by 2030.

Major Growing Regions

Turmeric is cultivated extensively in southern and eastern states of India, with the following states being the major producers:

- **Maharashtra:** Maharashtra is India's top producer of turmeric, with over 278,000 metric tons produced in the 2023 fiscal year. The state's fertile land and expertise in growing high-quality turmeric make it a leader in both domestic and international markets. Turmeric varieties: The "Lakhadi" variety is the most widely grown in Maharashtra. Sangli also known as the "Turmeric Capital of India", Nanded, Amravati, and Buldhana are prominent turmeric producing districts in Maharashtra.
- **Telangana:** Known for its high-quality turmeric, Telangana is one of the largest producers, especially from the regions of Nizamabad and Warangal. Its contributed around 250,000 metric

Deshvena S S¹, Omkar Gupta²

^{1,2} Assistant Professor (Ad-hoc), College of Agricultural Engineering and Technology, VNMKV Parbhani (Maharashtra)

tons in the 2023 fiscal year.

- **Tamil Nadu:** Another significant producer, where turmeric is cultivated in Erode, which is sometimes called the "Turmeric City" of India.
- **Karnataka:** Particularly in the districts of Belgaum, Chikkamagaluru, and Mysore.
- **Andhra Pradesh and Odisha:** Both states have seen significant growth in turmeric production in recent years.

Climatic and Soil Requirements

Turmeric thrives best in a tropical climate with moderate rainfall and temperatures ranging from 20°C to 30°C. It requires well-drained, loamy, or sandy loam soils rich in organic content. The crop grows well in regions receiving 1000-2000 mm of rainfall annually, and it is typically planted in areas with well-distributed monsoon rainfall.

Propagation and Planting

Turmeric is propagated vegetatively using rhizomes. The rhizomes are planted in well-prepared fields during the onset of the monsoon season, typically from May to June, depending on the region. Planting is done in ridges and furrows at a spacing of 45-60 cm between rows and 20 cm between plants. Intercropping with crops like ginger, maize, or chili is a common practice, improving land-use efficiency and reducing pest and disease risks.

Crop Management

➤ **Irrigation:** Though turmeric is a rain-fed crop, supplemental irrigation is essential in regions with erratic rainfall. Drip irrigation is recommended to ensure uniform water distribution and reduce water wastage.

➤ **Fertilization:** Organic manure, such as farmyard manure (FYM) or compost, is applied during land preparation. Chemical fertilizers, including nitrogen (N), phosphorus (P), and potassium (K), are applied in appropriate doses during the crop growth period. Integrated nutrient management (INM) practices, which include using biofertilizers, are gaining popularity to ensure soil health and sustainability.

➤ **Pest and Disease Management:** Common pests in turmeric cultivation include rhizome flies, shoot borers, and aphids. Diseases such as leaf blotch, rhizome rot, and leaf spot are also prevalent. Integrated pest management (IPM) practices, such as the use of biological controls, crop rotation, and the application of neem-based pesticides, are effective strategies for managing these challenges.

Harvesting and Post-Harvest Processing

Turmeric is typically harvested 7-9 months after planting when the lower leaves start yellowing and the rhizomes mature. After

harvesting, the rhizomes are cleaned, boiled, and sun-dried. Boiling is essential to remove raw odor, enhance color, and facilitate drying. The dried rhizomes are then polished mechanically or manually to remove the rough outer surface.

Yield and Economic Importance

On average, turmeric yields range from 20-25 tonnes per hectare under optimal conditions. High-yielding varieties like 'Pratibha', 'Suguna', and 'IISR Prabha' are widely adopted by farmers to increase productivity.

Turmeric has significant economic importance in India. Domestically, it is a key ingredient in various culinary and medicinal applications. Additionally, India is a major exporter of turmeric, with key markets in the United States, Europe, the Middle East, and Southeast Asia. Turmeric's value in international markets is driven not only by its culinary use but also by its growing demand as a natural colorant and in the pharmaceutical and cosmetic industries.

Challenges in Turmeric Cultivation

Despite India's dominance in turmeric production, the industry faces several challenges:

- **Price Fluctuations:** The volatility in turmeric prices, driven by domestic and international demand and supply, poses significant risks for farmers.

- **Pest and Disease Outbreaks:** Incidences of rhizome rot and other fungal diseases (Leaf spot, Leaf blotch) can lead to significant crop losses.

- **Post-Harvest Losses:** Inadequate drying, poor storage facilities, and lack of efficient processing technologies often result in quality deterioration and post-harvest losses.

Innovations and Future Prospects

- **Organic Turmeric:** With growing global demand for organic products, Indian farmers are increasingly adopting organic turmeric cultivation. Organic turmeric fetches premium prices in both domestic and international markets.

- **Mechanization:** Mechanization in turmeric cultivation, especially in planting, harvesting, and post-harvest processing, is gradually increasing to reduce labor costs and improve efficiency.

- **Value Addition:** Processing turmeric into value-added products such as turmeric powder, curcumin extracts, and turmeric oil can enhance farmer incomes. Government initiatives like agri-clusters and food processing zones aim to promote turmeric-based industries.

Government Support and Policies

The Indian government has implemented several schemes and policies to support turmeric farmers, including:

- **Minimum Support Price (MSP):** Ensuring that farmers receive fair prices for their produce.
- **Subsidies and Schemes:** The National Horticulture Mission (NHM) provides subsidies for turmeric cultivation, including support for organic farming, drip irrigation systems, and mechanization.
- **Export Promotion:** The Agricultural and Processed Food Products Export Development Authority (APEDA) works to promote turmeric exports by ensuring quality standards and providing market linkages.

Conclusion

Turmeric cultivation in India is an integral part of the agricultural economy, with the country being a global leader in production and export. However, to sustain this leadership, efforts are needed to address the challenges related to crop management, post-harvest losses, and market fluctuations. Emphasizing organic farming, value addition, and mechanization can further enhance the sustainability and profitability of turmeric cultivation in India.

References

1. Indian Council of Agricultural Research (ICAR) reports on turmeric cultivation.
2. National Horticulture Board data on turmeric production.
3. Government schemes and policies on horticultural crop cultivation and export.