

Mentha Cultivation in India: A Farm-to-Fork Value Chain Analysis for Sustainable Rural Livelihoods

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SUMMARY

Mentha (mint), particularly *Mentha arvensis*, has emerged as one of India's most successful high-value aromatic crops, positioning the country as the global leader in menthol and mint oil production with nearly 80 percent share in the international market. Concentrated largely in the Indo-Gangetic plains, mentha cultivation has evolved into a robust farm-to-fork value chain encompassing scientific cultivation, decentralized distillation, value-added processing, and global exports. The crop has demonstrated strong potential for enhancing farmer incomes, generating rural employment, and supporting MSME-led agro-processing enterprises. This article presents a holistic overview of the mentha ecosystem in India, highlighting production trends, post-harvest management practices, market movements, success stories, and ethical business considerations. It further explores the scope for sustainable expansion through value addition, farmer aggregation, and diversification into similar aromatic and medicinal crops, positioning mentha as a benchmark model for inclusive and resilient agribusiness development.

INTRODUCTION

India's agricultural transformation increasingly hinges on high-value, low-volume crops that deliver better income per hectare while aligning with sustainability and global market demand. Mentha stands out as a compelling example of such a crop. India currently cultivates mentha on approximately 3–3.5 lakh hectares, producing over 40,000–45,000 tonnes of mint oil annually, and supplying nearly three-fourths of the world's natural menthol requirement. Uttar Pradesh alone contributes close to 90 percent of national production, followed by Punjab, Haryana, Bihar, Madhya Pradesh, and parts of Uttarakhand.

The need for mentha cultivation arises from multiple converging factors: declining profitability of traditional cereals, increasing demand for natural flavouring and wellness products, and the necessity to create non-farm and off-farm rural employment. Mentha fits seamlessly into short-duration cropping systems, provides quick liquidity to farmers, and supports localized processing through village-level distillation units. The scope of mentha extends far beyond raw oil production. Its derivatives are essential inputs for pharmaceuticals, oral care products, cosmetics, food and beverages, aromatherapy, and nutraceuticals. This wide industrial applicability insulates the crop from single-market dependency and creates opportunities for downstream value addition, branding, and export diversification.

In terms of importance, mentha contributes significantly to foreign exchange earnings, MSME development, and technology-led agriculture. Research interventions particularly by CSIR-CIMAP have played a transformative role by developing high-yielding varieties, improving oil recovery, and transferring technologies directly to farmers and entrepreneurs. As a result, mentha has become not just a crop, but a rural enterprise ecosystem.

Equally critical is the dimension of business ethics in mentha cultivation and trade. Ethical practices include fair pricing for farmers, transparency in oil quality testing, prevention of adulteration, responsible water use, and environmentally sound waste management. With increasing global scrutiny on supply chains, ethical sourcing and traceability are becoming decisive factors for market access. Strengthening farmer collectives, promoting quality certification, and ensuring equitable value distribution are essential for sustaining trust across the value chain.

Mentha: India's Fragrant Green Gold from Farm to Global Markets

Across the fertile plains of northern India, a distinct fragrance rises every summer fresh, sharp, and unmistakably minty. This aroma signals the harvest of mentha, popularly known as pudina, a crop that has quietly transformed rural livelihoods and positioned India as the undisputed global leader in menthol and mint oil production. From smallholder farms in Uttar Pradesh to multinational food, pharmaceutical, and cosmetic

companies across the world, mentha represents one of India's most successful examples of a farm-to-fork aromatic value chain.

India today contributes nearly 80 percent of the world's mentha oil, with Uttar Pradesh alone accounting for close to 90 percent of national production. What makes mentha remarkable is not only its global dominance but also its ability to generate quick returns, high value per hectare, and strong rural employment, especially for small and marginal farmers.

The Crop That Changed Rural Economics

Mentha, particularly *Mentha arvensis*, thrives in the Indo-Gangetic plains due to favorable soil, climate, and irrigation availability. Farmers typically cultivate mentha as a short-duration cash crop, harvesting it within 100–120 days. The crop fits well into existing cropping systems, often replacing or rotating with cereals, thereby improving farm income diversification. One of mentha's biggest advantages is its relatively low land requirement and high output value. Even farmers with one or two acres can earn substantially more compared to traditional crops, provided market conditions are favorable. Over the years, improved varieties developed by research institutions—especially CSIR-CIMAP—have significantly enhanced oil recovery, disease resistance, and adaptability, making mentha cultivation more reliable and profitable.

From Field to Flask: The Farm-to-Fork Journey

The journey of mentha from farm to consumer is a fascinating blend of traditional practices and modern agribusiness. Once harvested, the fresh green biomass is quickly transported to distillation units, often located within villages or clusters. Here, steam distillation extracts the essential oil, which contains menthol as its principal component. This stage is critical. Oil quality depends on harvest timing, moisture content, distillation temperature, and storage practices. A well-managed distillation unit can significantly enhance oil yield and quality, directly impacting farmer income. The extracted oil is then stored in airtight containers and sold to traders, processors, or cooperatives. Further down the chain, mentha oil is fractionated into menthol crystals, dementholised oil, and other derivatives, which are used extensively in toothpaste, chewing gum, confectionery, pharmaceuticals, aromatherapy products, cosmetics, and even agro-inputs. Thus, a humble field crop becomes part of everyday consumer products across continents.

Post-Harvest Management: Where Value Is Won or Lost

Post-harvest management plays a decisive role in mentha economics. Improper handling can lead to oil degradation, loss of aroma, or adulteration issues. Progressive farmers now focus on scientific distillation, clean storage, and quality testing, recognizing that consistent quality attracts better prices and long-term buyers. There is also growing interest in utilizing distillation waste, which was earlier discarded. Today, spent biomass is increasingly used for composting, mulching, cattle feed supplements, and even bioenergy applications, aligning mentha cultivation with circular economy principles.

Success Stories from the Mint Belt Pan India

1. Barabanki, Uttar Pradesh Family Prosperity Through Mentha

In Barabanki district, mentha cultivation has transformed rural livelihoods. Farmers like Virendra Singh shifted from traditional cereal crops to mentha in the early 2000s, doubling their income and enabling his son to complete a master's degree a milestone his family had never achieved before. The crop's high value and quick cash turnover allowed him and neighbours to invest in education and better living conditions. Saroj Kumari Shukla, another Barabanki farmer, supported her six children as a single parent through income from mentha oil sales. She managed household expenses and education fees by selling small quantities of mentha oil when needed a financial safety net previously unavailable from traditional crops. Innovations are also emerging: farmers have begun adopting solar-powered distillation units through initiatives like the CIMAP-sponsored *MintUP* project in Bandhiya village, reducing costs, lowering emissions, and improving sustainability while raising incomes.

2. Bahraich, Uttar Pradesh — Doubling Income with Improved Practices

In Mihinpurwa block of Bahraich district, grassroots interventions by organisations such as TRIF (Transform Rural India Foundation) helped over 4,500 mentha farmers adopt better agronomic practices. By improving seeding techniques, soil and pest management, yields and essential oil extraction increased substantially. Farmers like Rahul Kumar Yadav reported doubling profits—from roughly ₹8,000 to ₹17,000 per bigha—through improved crop management and spacing practices. Women farmers such as Meera Kumari and

Sarita also reported higher oil extraction and income, with earnings as high as ₹20,000 from small plots, empowering rural women economically and socially.

3. Gujarat — Long-Term Cultivation and Rural Stability

In Valsad district, Gujarat, mentha has been cultivated for decades and remains a key livelihood crop. Farmers like Sheilaben Patel have grown mint successfully for over 40 years, finding it both profitable and low-maintenance. Sheilaben's experience shows mentha's adaptability beyond the traditional Terai belt, contributing to rural income in western India as well.

4. Across Uttar Pradesh — Improved Varieties & Scientific Support

The Central Institute of Medicinal and Aromatic Plants (CSIR-CIMAP) has played a pivotal role in elevating mentha cultivation nationwide. Through the development of high-oil yielding mentha varieties such as *CIM-Unnati*, *Sambhav*, *Ganga*, and *Neerkalka*, CIMAP has helped farmers enhance productivity and resilience, generating employment for millions across farms and MSME processing units. These superior varieties now make up over 90% of India's mentha cultivation area and underpin the crop's export competitiveness. Farmers like Uday Raj Chauhan capitalised on this by multiplying suckers from improved varieties on his plot. He earned ₹1.5 lakh by selling mint planting material alone and expanded his production footprint by renting additional land, illustrating how scientific technologies can spawn business opportunities beyond oil sales.

5. Non-Traditional Regions (Emerging Examples)

While Uttar Pradesh remains the heart of mentha cultivation, other regions like Punjab, Haryana, Bihar, and Uttarakhand are increasingly adopting the crop with success. Mentha cultivation now supports rural economies across these states by providing an additional cash crop that fits between traditional seasonal cycles, boosting farmer incomes and employment opportunities in agribusiness and allied activities.

Market Movements: Opportunity with Volatility

While mentha offers high rewards, it is not without risks. Prices are influenced by global demand, synthetic menthol competition, export trends, and domestic consumption patterns. Futures trading of mentha oil has introduced new dimensions of price discovery, but also volatility.

In recent years, climate variability, rising input costs, and fluctuating international demand have challenged farmers. However, India's strong reputation for natural menthol, coupled with growing global preference for plant-based and natural ingredients, continues to provide long-term optimism.

The Road Ahead: From Commodity to Brand

The future of mentha lies in moving beyond bulk commodity exports to branded, value-added products. There is immense scope for farmer-linked processing units, export-oriented clusters, organic mentha cultivation, and integration with wellness, nutraceutical, and aromatherapy markets. Policy support for quality certification, infrastructure modernization, climate-resilient varieties, and market stabilization mechanisms will be crucial. Equally important is strengthening farmer awareness, FPO-led aggregation, and digital market access.

CONCLUSION:

A Fragrance of Possibility: Mentha is more than a crop—it is a story of Indian agricultural innovation, farmer resilience, and global integration. As demand for natural, sustainable products grows worldwide, India's mentha ecosystem stands at a strategic crossroads. With the right mix of science, entrepreneurship, and policy support, this fragrant green gold can continue to enrich fields, families, and markets for decades to come.

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