

IMPORTANCE OF VEGETABLE CROPS IN THE INDIAN ECONOMY AND HUMAN HEALTH

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Introduction

Vegetables are the cornerstone of nutrition, health and rural prosperity. Rich in vitamins, minerals, dietary fibre and antioxidants, they play a vital role in ensuring food and nutritional security while contributing significantly to employment generation, farm income diversification and export earnings. The vegetable sector also supports the achievement of several Sustainable Development Goals (SDGs), including poverty reduction, zero hunger, good health and well-being, economic growth and sustainable consumption. Recognizing the growing importance of high-value agriculture, the Government of India constituted an Inter-Ministerial Committee on Doubling Farmers' Income in 2016, which identified horticultural diversification as a key strategy for enhancing farmers' income. Consequently, vegetables have emerged as an important component of India's agricultural transformation, contributing substantially to agricultural growth, value addition and livelihood enhancement (MoA&FW, 2025).

India's Nutritional Scenario

Despite significant progress in food production, India continues to face nutritional challenges such as micronutrient deficiencies, anaemia among women and children, and the rising incidence of lifestyle-related diseases. Vegetables are essential for addressing these concerns as they are rich in vitamins A, C and K, minerals such as iron, calcium and potassium, dietary fibre and numerous antioxidants. Regular consumption of vegetables helps improve immunity, reduce malnutrition, prevent obesity, lower the risk of diabetes and cardiovascular diseases and improve digestive health (WHO, 2023). Although the World Health Organization (WHO) recommends a

minimum intake of 400 grams of fruits and vegetables per person per day, India's per capita availability currently stands at 154.68 grams of fruits and 283.70 grams of vegetables per day. Nevertheless, vegetable consumption has increased remarkably from 103.83 grams per person per day in 1961 to 254.55 grams in 2023, registering a growth of nearly 151 per cent, which reflects increasing health consciousness, urbanization and improved dietary diversity among consumers (FAOSTAT, 2025). This growth reflects increasing health awareness, urbanization, rising incomes and improved access to diverse vegetable crops. The continued rise in vegetable consumption highlights their growing importance in improving dietary diversity, nutritional security and public health outcomes in India.

India has also witnessed gradual improvements in child nutrition indicators. The prevalence of stunting among children declined from 52.2 per cent in the first National Family Health Survey (NFHS-1, 1992–93) to 35.5 per cent in NFHS-5 (2019–21), while the proportion of underweight children decreased from 53.4 per cent to 32.1 per cent during the same period. However, wasting continues to remain around 19-20 per cent, indicating the need for greater dietary diversity and improved access to nutrient-rich foods such as vegetables and fruits (MoHFW, 2021).

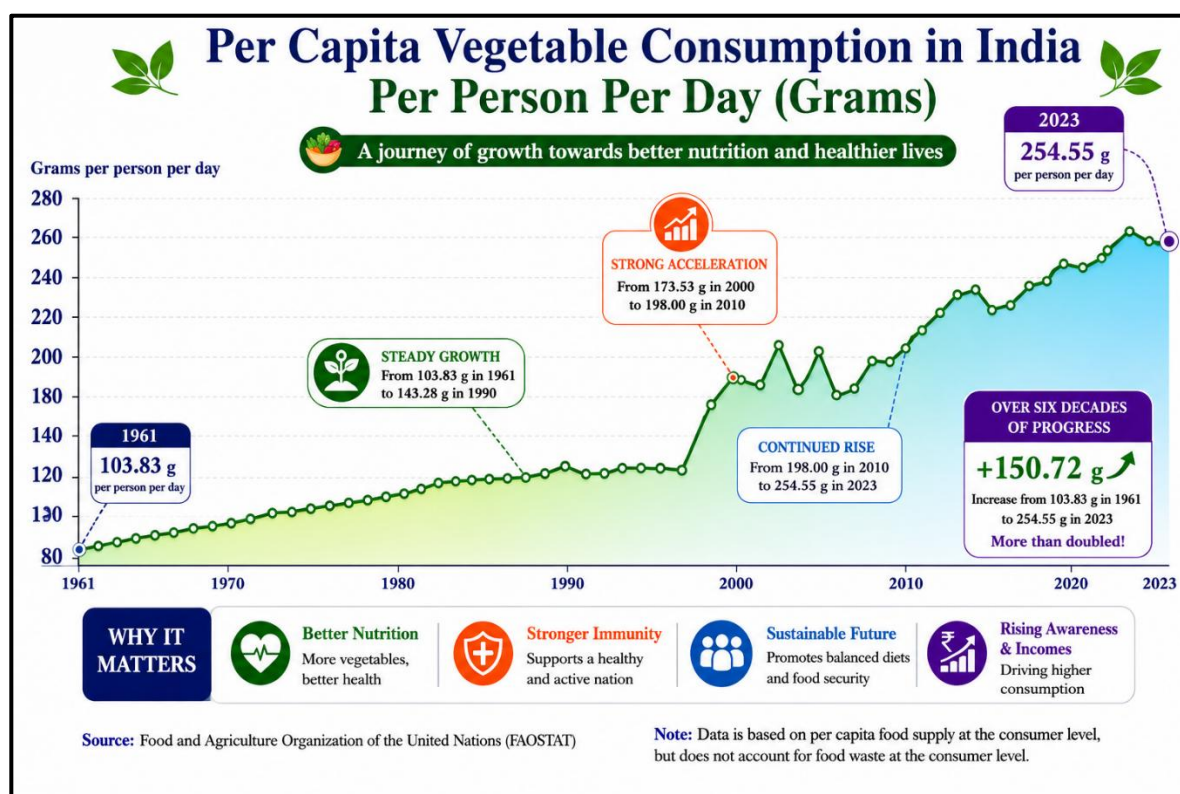


Fig. 1: Per capita vegetable consumption in India (per person per day in grams) from the year 1961-62 to 2023-24.

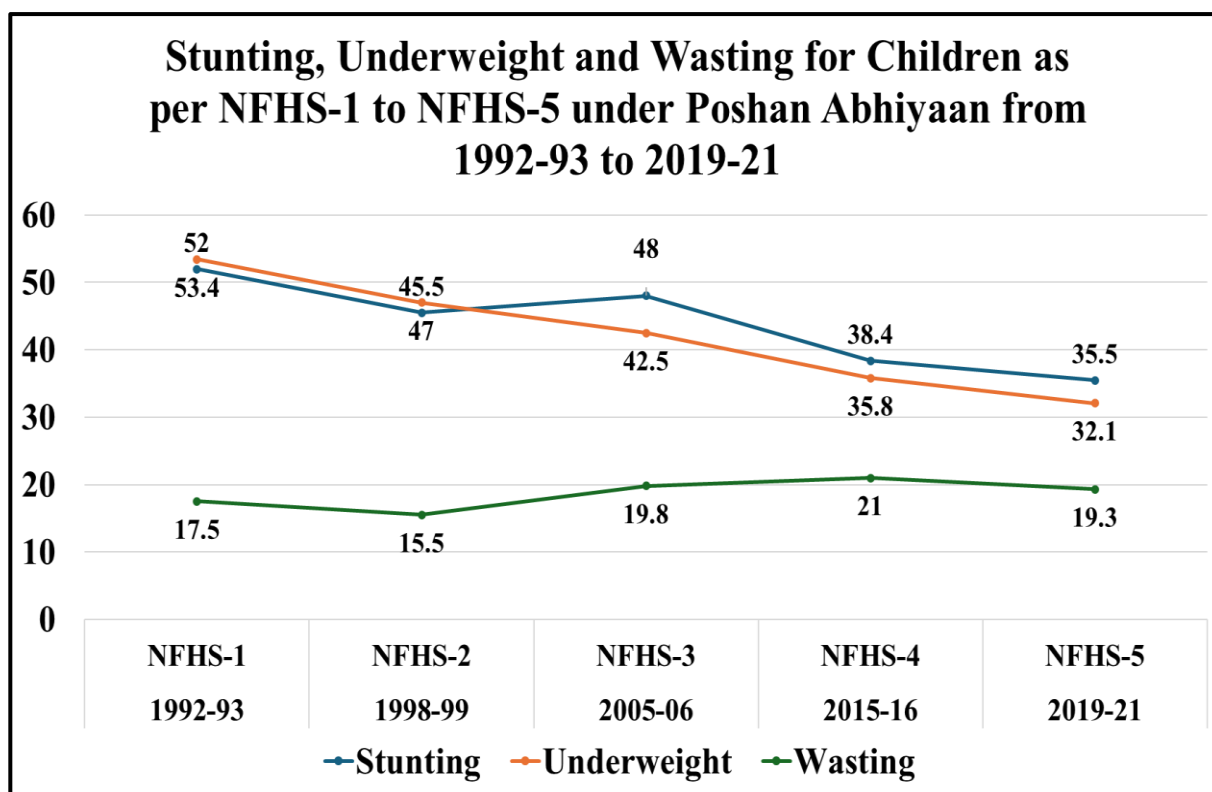


Fig. 2: Stunting, Underweight and Wasting for Children as per NFHS-1 to NFHS-5 under Poshan Abhiyaan from 1992-93 to 2019-21

Status of Vegetable Production in India

India is the second-largest producer of vegetables in the world after China (FAOSTAT, 2025). The country's horticulture sector has experienced impressive growth over the last decade. According to the Second Advance Estimates for 2024-25, total horticulture production increased from 280.70 million tonnes in 2013–14 to 367.72 million tonnes in 2024-25. Vegetable production alone grew from 169.47 million tonnes to 219.67 million tonnes during the period, an increase of nearly 30 per cent. Concurrently, productivity improved from 17.76 to 18.40 tonnes per hectare, reflecting advancements in cultivation practices and technology adoption. In 2023-24, India cultivated vegetables on 112.32 lakh hectares, producing 207.21 million tonnes and reinforcing its position as one of the world's leading vegetable producers (MoA&FW, 2025). The vegetable sector has evolved from a subsistence activity to a commercial enterprise driven by growing domestic demand, expanding urban markets and improved technologies. Vegetables are now among the most important high-value agricultural commodities due to their short crop duration, high productivity and superior returns compared to many traditional field crops.

Regional Distribution of Vegetable Production

Vegetable production in India exhibits a strong regional concentration. In 2023–24, Uttar Pradesh emerged as the largest producer with 34.43 million tonnes, followed by West Bengal (29.20 million tonnes) and Madhya Pradesh (24.35 million tonnes). Together, these three states accounted for nearly 42 per cent of the country's total vegetable production. Other major vegetable-producing states included Bihar (17.15 million tonnes), Gujarat (15.26 million tonnes), Maharashtra (12.33 million tonnes) and Odisha (10.62 million tonnes). The dominance of these states can be attributed to favourable agro-climatic conditions, irrigation infrastructure, extensive cultivation area and strong market linkages. On the other hand, states such as Arunachal Pradesh and Sikkim recorded comparatively lower production levels. This regional disparity highlights the need for targeted interventions in infrastructure development, cold chain facilities, technology dissemination and market integration to unlock the horticultural potential of less-developed regions (MoA&FW, 2025).

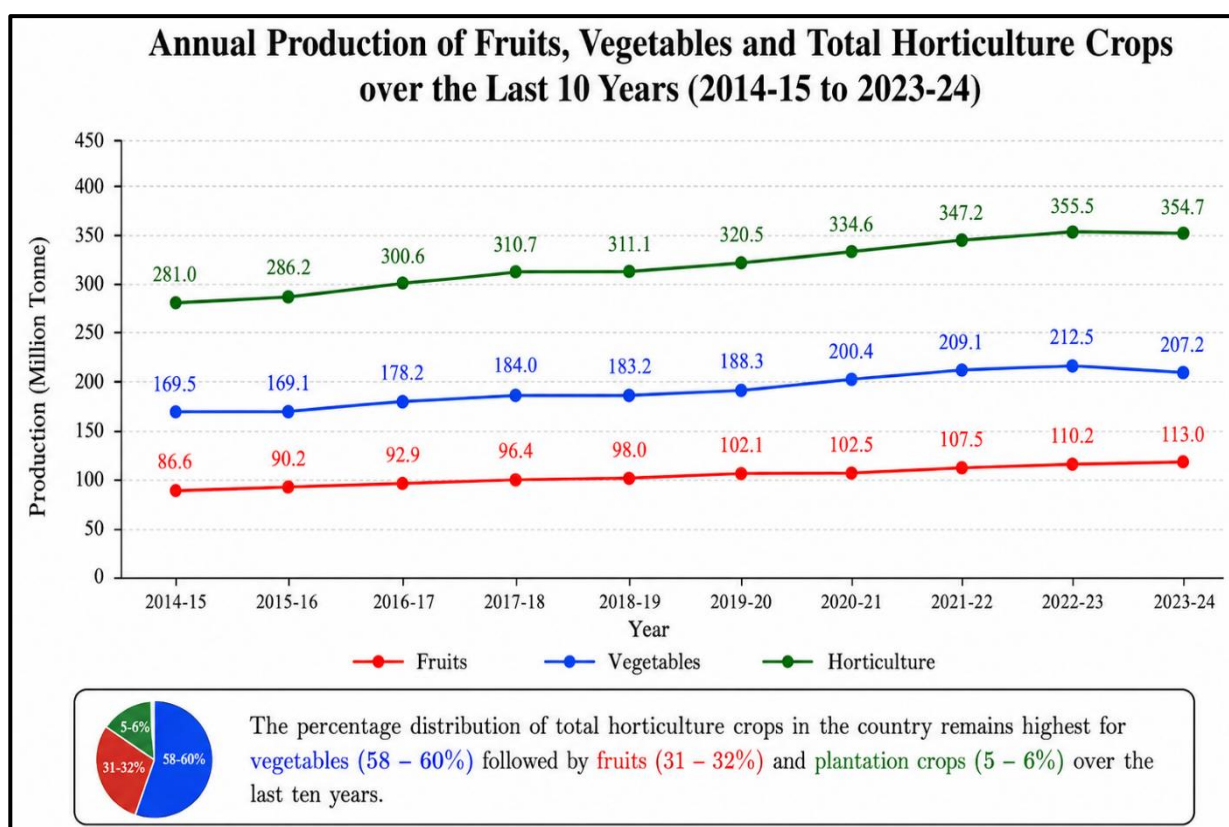


Fig. 3: Annual production of fruits, vegetables and total horticultural crops over the last 10 years (2024-15 to 2023-24)

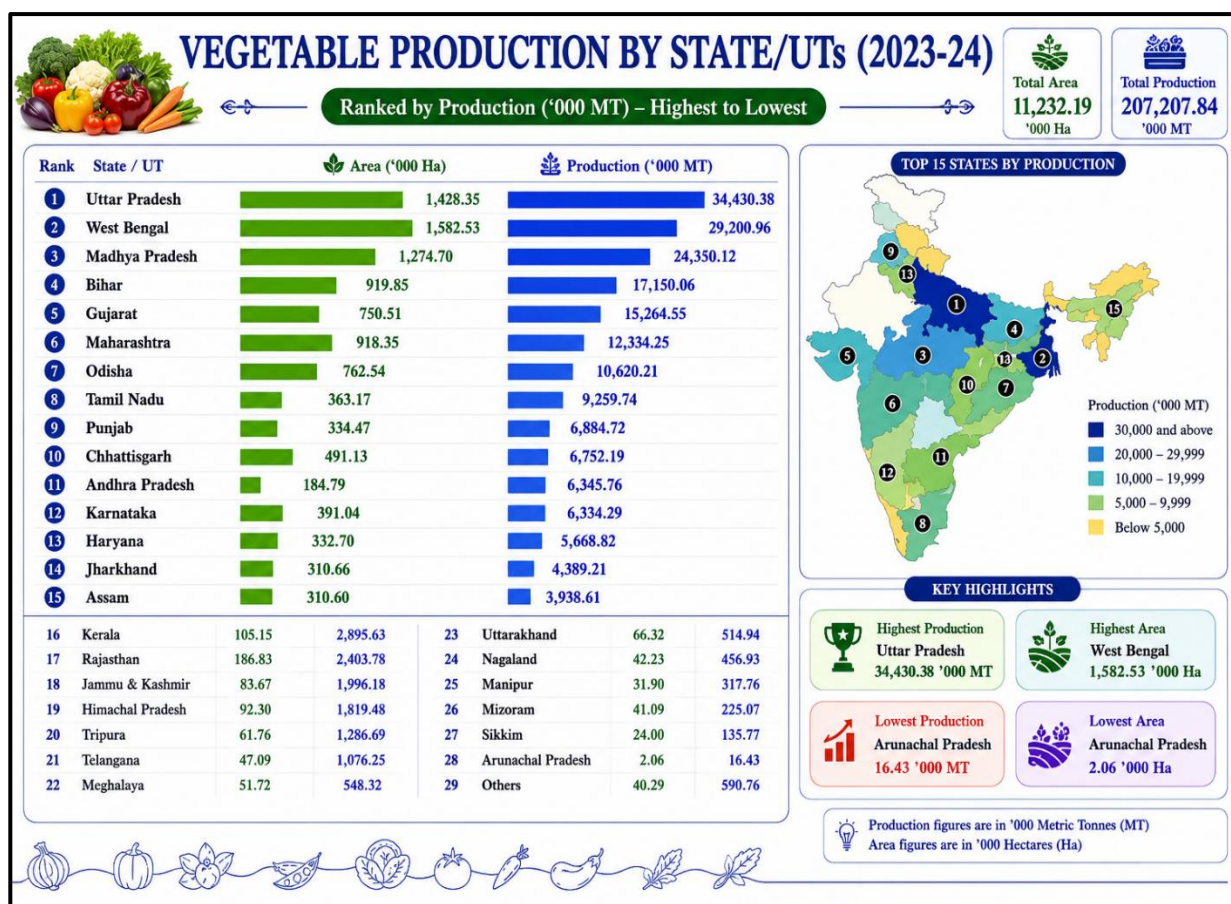


Fig. 4: Vegetable Production by state/ union territories (2023-24)

Economic importance of vegetables

The economic significance of vegetables extends far beyond their nutritional contribution. Vegetables have become a major component of India's agricultural economy and contribute significantly to the value of agricultural output. The value of output from all agricultural crops increased from ₹11,915 crore in 2011-12 to ₹15,955 crore in 2023-24. During the same period, the value of output from fruits and vegetables increased substantially from ₹2,874 crore to ₹4,381 crore. Consequently, the share of fruits and vegetables in the crop sub-sector increased from 24.1 per cent to 27.5 per cent, reflecting the growing importance of horticulture in Indian agriculture. The horticulture sector now contributes nearly one-third of the gross value of agricultural output despite occupying a relatively smaller share of cultivated land. This highlights the sector's potential for enhancing resource-use efficiency and farm profitability (MoA&FW, 2025).

Employment Generation and Rural Livelihoods

Vegetable cultivation is one of the most labour-intensive segments of Indian agriculture. Employment opportunities are generated throughout the value chain, including seed production,

nursery management, cultivation, harvesting, grading, sorting, packaging, transportation, processing and retail marketing. The sector is particularly important for small and marginal farmers, who constitute the majority of India's farming population. Due to higher returns per unit area and shorter production cycles, vegetables provide regular cash flow and contribute significantly to rural livelihood security.

Export Potential of Vegetables

India's diverse agro-climatic conditions provide a comparative advantage in vegetable production and exports. According to FAO (2025), India is the largest producer of onions and okra and ranks second in the production of potatoes, tomatoes, cauliflowers, cabbages and brinjal. During FY 2025, India exported fresh vegetables worth USD 819 million. Major exported vegetables included onions, mixed vegetables, potatoes, tomatoes and green chillies. Processed vegetables and pulses recorded an even higher export value of USD 1,752.03 million, indicating growing global demand for value-added products. Major destinations for fresh vegetable exports include Bangladesh, UAE, Iraq, Netherlands, Nepal, Malaysia, United Kingdom, Sri Lanka, Oman and Uzbekistan. Processed vegetable products are exported primarily to the United States, UAE, Bangladesh, China, Saudi Arabia and the United Kingdom (DGCIS, 2025). Although India's share in the global horticultural trade is approximately one per cent, acceptance of Indian horticultural products is steadily increasing. Investments in cold-chain infrastructure, quality assurance systems, traceability mechanisms and post-harvest management have improved India's competitiveness in international markets.

Challenges and Future Prospects

Despite impressive growth, several challenges continue to constrain the vegetable sector. These include post-harvest losses, inadequate cold storage facilities, fragmented supply chains, price volatility, climate change impacts, pest and disease outbreaks and limited processing infrastructure. Strengthening Farmer Producer Organizations (FPOs), expanding cold-chain networks, promoting protected cultivation, encouraging precision farming and improving market intelligence systems can significantly enhance sectoral efficiency. Greater investments in value addition, processing and export-oriented production will be critical for sustaining future growth. Digital agriculture, climate-smart technologies and precision nutrient management offer promising opportunities for improving productivity while ensuring environmental sustainability.

Conclusion

Vegetables are much more than food crops, and they are drivers of nutrition, employment, income generation and agricultural transformation. Their contribution to food and nutritional security, rural livelihoods and economic development makes them indispensable to India's growth story. The steady increase in production, consumption and exports demonstrates the growing importance of the sector in the national economy. Continuous research, improved varieties, better post-harvest management and supportive government policies are helping farmers enhance productivity and profitability. With sustained investments in infrastructure, technology and value chains, the vegetable sector has immense potential to boost rural prosperity, strengthen nutritional security, expand exports and contribute significantly to India's vision of sustainable and inclusive agricultural development.

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