

Major Challenges in Vegetable Farming

**Dr. Deepak Kumar¹, Anjali Kashyap², Adarsh Pandey³, Brajrajshran Tiwari^{4*}
and Shailendra Kumar Mishra⁴**

¹Assistant Professor, Mohammed Ali Johar University, Rampur

²P.G. Student, Department of Botany, Hindu College Moradabad

³P.G. Student, Department of Horticulture,

Dr. Ram Manohar Lohia Awadh University Ayodhya (U.P.).

⁴Research Scholar, Department of Entomology,

Banda University of Agriculture & Technology, Banda (U.P.).

Corresponding Author

Brajrajshran Tiwari

Email: entobrajraj@gmail.com



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ABSTRACT

Vegetable production is crucial for sustainable agriculture in India, the second-largest producer after China. Despite a surplus, nutritional deficiencies persist due to a gap between actual and potential yields. Key constraints include limited knowledge of advanced farming techniques, stray animals, fragmented farms, market accessibility issues, inadequate storage, low prices, high transportation costs, and insufficient irrigation. High chemical costs and climate sensitivity also affect yields. Empowering farmers with knowledge and market information can enhance productivity and income at the household level.

INTRODUCTION

India's agriculture is a key driver of economic growth, with 66% of the population contributing 20-25% of GDP (Choudhary *et al.*, 2022). The Green Revolution improved cereal production, ensuring food security, but nutrition security remains an issue. As a result, the focus has shifted from food grains to horticultural crops.

Over the past decade, horticulture, especially vegetable cultivation, has become essential for sustainable agriculture. Agricultural extension has boosted vegetable production, diversified agriculture and increasing farmers' income, thereby improving their standard of living. Out of 341.63 million tons of horticultural produce, vegetable production accounts for 200.45

million tons (APEDA, 2023). Vegetables significantly enhance food, income, and nutritional security at both household and national levels (Panwar *et al.*, 2019). The nutrients in vegetables are essential chemical components that nourish humans (Chakroborty *et al.*, 2022). Vegetable production increased to 200.45 million tons in 2022.

In the past decade, vegetable productivity has significantly increased more than fruit productivity, leading to a marked rise in per capita vegetable availability (Table 1). The country can now provide more than the recommended quantity of vegetables to its population. Despite this, 35.7% of the population is underweight, 38.4% is stunted, and 58.4% is anemic, with 53% of women (ages 15-49) also underweight and anemic. This underscores the need for continuous vegetable availability at the household level through year-round vegetable kitchen gardening (Noopur *et al.*, 2019). Gogoi *et al.* (2018) reported that 33.33% of surveyed respondents in Assam had deficits in vegetable availability.

Table 1: India's vegetable production and availability

	Population in India during 2020-21, 1408 million
Vegetable production and availability	Production of vegetables in 2020-21, 200.54 million tones
	Per capita availability of vegetables 390 g vegetable/day/ person
	Recommended level of vegetables 306 g vegetable/day/ person

Constraints in vegetable production:

Social constraints

Vegetable production faces location-specific challenges, including lack of awareness, poor farmer coordination, adverse socio-political conditions, and wildlife interference. In Himachal Pradesh, 71% of panchayats suffer from monkey issues. Male youth participation

in small-scale farming is low, while women's roles in commercial farming decisions are increasing. Addressing these issues requires enhancing social and economic security for vulnerable populations.

Resource constraints

The farm is the essential unit for managing and decision-making in agricultural activities, highlighting the need for resource management (Raj and Shivaramu, 2023). Land consolidation remains incomplete across India, leading to scattered small landholdings and crop management issues (Sahu *et al.*, 2013). Farmers face high costs for seeds and input chemicals in vegetable production (Ram *et al.*, 2009). Vegetables require substantial water, which is often unavailable at critical times, particularly during the summer, affecting cultivation.

Climate change constraints

Climate change refers to the long-term alteration of weather patterns, affecting specific locations, regions, or the entire planet. It makes weather unpredictable, complicating vegetable cultivation. Rural areas, dependent on natural resources, are especially vulnerable. India's diverse geography, including mountains, valleys, coastal regions, and deltas, means that even slight temperature changes can disrupt the entire ecology and vegetable growing patterns (Bhardwaj, 2012).

Vegetables, particularly those with shallow roots, are highly sensitive to flooding. The roots struggle for oxygen when soil air is replaced by inundating water.

Technological constraints

The wide gap between yield potential and actual yield results in low productivity. Many farmers lack awareness of improved vegetable varieties and production technologies, likely due to insufficient data. Chikkeri *et al.* (2023)

noted that the potential of tomatoes is underexploited because of inadequate data on varieties suited to specific agro-climatic conditions.

Marketing constraints

Non availability of proper marketing facilities followed by storage facilities especially for women was important constraints impeding the vegetable farming.

CONCLUSION

Vegetables are crucial for food and nutritional security, especially at the household level, with growers consuming part of their produce. Challenges such as lack of knowledge, issues with stray animals and wildlife, socio-economic factors, counterfeit market inputs, low vegetable prices, inadequate marketing facilities, and high labour and marketing costs reduce farmers' net returns. Direct linkage between growers and consumers could increase profits, encouraging growers to cultivate healthier crops that benefit consumers and the environment alike.

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