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## Enhancing and Doubling Farmers' Income through the Cultivation of Vegetable Crops

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Variation of prices of vegetables and other horticultural prices affect the growers' income and also have impact on consumers' fund. The government has initiated way to enhance the income of the tillers. Operation Greens and Operation Blue are way to give sustainable prices and to stop the destruction of vegetables of the growers and also to address the nutritive demand of glutted population of the country. The doubling of planter income through cultivating vegetable crops is a transformative approach that holds immense eventuality for perfecting the livelihoods of small and marginal growers which India has the most. By means of fastening on request-driven and sustainable agrarian practices, this action aims to empower growers, reduce poverty, and foster pastoral development while icing food security and nutrition for both civic and pastoral consumers.

### Introduction

The difficult task of doubling farmers' incomes across the country has been announced by the government in an effort to boost India's agricultural sector and ensure sustained national growth. This ambitious project aims to improve the standard of living of millions of farmers, who make up India's agrarian economy. Back in 2016, India's Prime Minister expressed his vision to increase farmers' incomes by twofold by the time India reaches 75 years of Independence and enters the Amrit Kaal era. According to the Periodic Labour Force Survey, agriculture will employ 45.5% of the workforce in 2021–22. Therefore, even if it was only in a dream, concentrating on agriculture is the right strategy for ensuring that the economy as a whole will grow rapidly over the long term. In countries like India, where agriculture accounts for a significant portion of the economy and provides millions of people with a significant means of subsistence, doubling farmers' incomes is a crucial objective in agricultural production. To realize this ambitious goal, it is necessary to address a number of obstacles, implement efficient plans, and take advantage of opportunities to sustainably raise farmers' incomes. Additionally, agriculture must provide food and nutritional security to the world's largest population. However, in order for this objective to be achieved in the current setting, the government must develop policies that also safeguard the planet's essential resources, including biodiversity, water, soil, and air. Union Budget 2025-26 the Ministry of Agriculture and Farmers Welfare received about ₹1.37 lakh crore.

As India achieved tone-adequacy in food grains product and due to rising income position of civic consumers, make them to concentrate more on the health and nutrition. Vegetables are called as defensive food due to their enhanced vitamins and minerals happy therefore leading frontal in the crop civilization to bobby up with the nutritive requirements and also play a vital part in doubling the planter's income due to their short duration, advanced productivity and labor-ferocious nature. The defended civilization of high value vegetables like tomato, cucumber, capsicum etc. give import openings leading to stoked pastoral substance alongside India epitomizes a compelling stride towards elevated

socioeconomic development and agricultural advancement. Vegetables, due to their short crop duration, high value, and strong request demand, are seen as one of the important pathways to boost farmers income.

Doubling Farmers " Income by 2022 has been a content of discussion since last many times. In 2016, the Government of India constituted an expert commission headed by Ashok Dalwai to look into the entire husbandry sector of the country and suggest ways and means to ameliorate it so that growers " income can be doubled by 2022. Prime Minister 7- point plan i.e." per drop, further crop"; quality seed and soil health card; warehousing and cold chain; value addition and food processing, ranch request and e-NAM, new crop insurance scheme, and problems of small and marginal categories of farmer.

### Approaches to doubling farmer income via vegetable growing

**By increasing cropping intensity :** According to the land capability, irrigation and other facilities available, a farm plan should be prepared for Kharif and Rabi for a minimum of 3 years e.g.:

**Sequential cropping:** Okra-potato-chilli

**Triple cropping:** Cucumber (June-Sept) - Cauliflower/ Cabbage (October-January)- Watermelon (February-May).

**Quadruple cropping:** Okra (July-Sept) – Early Cauliflower (Sept-Dec) – French bean (Dec-March) – Round Melon (April – July).

**Relay cropping:** Planting of chilli in sweet corn field & Sowing of cucurbits in potato field.

**Protected Cultivation :** Protected Cultivation ( polyhouses, hothouse, shade nets) controls environmental conditions for crops like tomato, capsicum, cucumber etc., leading to advanced yields, time- round product, and better prices. subventions and subventions are available under government schemes, making it accessible for growers.

**Growing of high yielding varieties :** High yielding vegetable varieties have been released and recommended for civilization throughout India. These regionally suitable varieties can be grown successfully in different zones.

Crop	Suitable varieties for Protected Cultivation
Capsicum	Red coloured – Bharat, Mahabharath, Indria Yellow coloured – Orobelle, Tanvi, Golden summer Green coloured- Mekong and California Wonder
Tomato	Arka Vardan, Arka Vishal , Avtar, N.S. 646
Cucumber	Pusa Seedles Cucumber-6, Pant Parthenocarpic Cucumber-2

CROPS	Varieties and Yield
Brinjal	Kashi Utsav (Hybrid) 610–630 q/ha, Kashi Uttam 500–550 q/ha, Kashi Brinjal Green Round 550–600 q/ha, Kashi Taru 700–750 q/ha,
Tomato	Kashi Abhimaan (Hybrid) 800–900 q/ha, Kashi Amul 500–600 q/ha, Kashi Aman 500–600 q/ha, Kashi Chayan 500–600 q/ha
Chilli	Kashi Garima (Hybrid) 200–225 q/ha (green), Kashi Ratna (Hybrid) 200–230 q/ha (green)
Cucumber	Kashi Nutan (Hybrid) 175–180 q/ha,
Carrot	Kashi Arun 300–350 q/ha
Cauliflower	Kashi Gobhi-25 250–280 q/ha
Okra	Kashi-Shrishthi (Hybrid) 180–190 q/ha, Kashi Utkarsh 165-170 q/ha.

**Grafting Technique for Vegetables :** Grafted seedlings involve joining a high- yielding or disease- resistant rootstock with a desirable vegetable variety. This approach has bettered yields by about 40 – 50 for crops like tomato, brinjal, chilli and others compared to traditional bones, helping growers raise productivity and income.

**Precision farming :** Vegetable crops are getting more and more in demand. Maintaining this demand calls for the preface of technologies that enable the effective use of coffers to

produce affair that's advanced per unit of inputs used and of exceptional quality. Perfecting crop performance and setting quality is the thing of perfection vegetable growing. It helps growers by enabling them to carry out much more frequent tillage, modify sowing rates and toxin operation according to soil conditions, plan indeed more crop protection programs with lesser delicacy, and fete the area where yield variation occurs. These advantages might actually increase the crop product's cost- effectiveness, but the farmer still has to be ready to acclimate his operation strategies to make them more effective. ultramodern ways similar as pall computing, information technology( IoT), wireless detector networks( WSN), artificial intelligence( AI), and machine literacy( ML) are used in perfection vegetable husbandry to increase crop affair. Precision farming has been espoused snappily in the vegetable growing assiduity, where farmers are given high- quality results and are suitable to identify problems with food security and quality. robotization of goods record attributes related to product quality, including colour, size, shape, outside excrescencies, acidity, sugar content, and other internal features. likewise, covering field operations similar as artificial diseases and scattered chemicals can readily supply comprehensive vegetable and fruit processing ways.

**Integrated Pest and Nutrient Management :** Relinquishment of integrated pest management (IPM) and integrated nutrient management( INM) reduces reliance on chemical inputs, lowers costs, and improves sustainability. safe-deposit box and residue-free vegetables also attract decoration prices in civic and export markets.

**Forms of Value Addition-**Vegetables can be processed into products such as Dehydrated vegetables, Pickles, sauces,Frozen vegetables, Purees and pastes. Small-scale processing units at the village or cluster level can generate additional employment and income for farmers and rural youth.

#### **Fermented or processed products of different vegetables**

<b>Vegetables</b>	<b>Fermented or processed products</b>
White Cabbage	Sauerkraut
Black Carrot	Kanji
Ash Gourd	Petha
Potato	Wodka
Tomato	Puree, Paste, Ketchup, Sauce
Lima Bean	Wine

#### **The various schemes/ programmes of the Government of India helpful for double income farmer**

**National farm market:** The National Farm Market in the form of electronic National Agricultural Market (e-NAM) is being linked to 585 Agrarian Produce Marketing Committee( APMC) mandis. This online trading portal points to connect the growers directly to the dealers and exporters, so that they gain a fair fiscal sale. Small growers Agribusiness Consortium( SFAC) is the leading agency involved in the perpetration of e-NAM.

**Crop insuranc:** Insurance schemes, similar as Pradhan Mantri Fasal Bima Yojana( PMFBY) was enforced with the end of supporting sustainable product in agriculture sector. This scheme provides fiscal support to the growers suffering from loss/ damage arising out of unlooked-for events. It also encourages the growers to borrow innovative and ultramodern agrarian practices. This scheme ensures constant inflow of credit and stabilizes the income of the growers.

**Irrigation :** Large budget and integrated policies are being taken by Government, with the aim to achieve “per drop, more crop”. To this effect, the Pradhan Mantri Krishi Sinchai Yojana (PMKSY) was implemented to ensure access to some means of protective irrigation to all agricultural farms in the country, thus bringing much desired rural prosperity.

**warehouse:** It's estimated that around 40 per cent of the horticultural crop under post crop loss, due to attainability of proper post-harvest architectures. So, large investments is to be done by the government in agrarian architectures, similar as warehousing, cold chain storehouse, deep storehouse, refrigerated storehouse, in order to help post-harvest loss.

**Soil Health Card :** The flagship programme of Soil Health Card (SHC) of the Government of India was enforced with the ideal in order to issue soil card to the growers to carry out crop-wise recommendation of nutrients and fertilisers. SHC is a published report containing the status of soil with respect to 12 parameters. This scheme helps the growers to grow quality planting material, grounded on the nutrient vacuity in the field.

## Conclusion

Doubling farmers' income remains a grueling yet essential ideal for India's agrarian development and overall profitable progress. With agriculture supporting a large share of the pool, perfecting ranch inflows is pivotal for enhancing pastoral livelihoods and icing inclusive growth. Although India has achieved food grain adequacy, the growing focus on health and nutrition has increased the significance of vegetable product in the agrarian system. Vegetables play a binary part by meeting nutritive conditions and offering advanced profitable returns due to their short duration, high value, and strong consumer demand. The creation of high-value vegetable crops, along with advanced product practices, request access, and value addition, can significantly contribute to income improvement for growers. Government give various schemes/ programmes a strong frame for achieving this thing.

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