

## Growing Exotic Vegetables in Hilly Areas: Status, Benefits and Struggles

Parul Pathania<sup>1</sup>, Viveka Katoch<sup>2</sup>, Shipra Thakur<sup>3</sup>

Department of Vegetable Science and Floriculture, CSKHPKV Palampur (H.P.)- 176062

ARTICLE ID: 036

### Introduction

Exotic vegetables are the vegetables that have been introduced into the country from outside, something that is not native to the country. These vegetables are low in calories and rich in nutrients, making them very popular with people. Demand-driven exotic vegetables production is suitable for the farmers as they have assured market through contract with consumers. Exotic vegetables market is growing at the rate of 15 to 20 per cent per annum. India is importing more than 85 percent exotic vegetables. However, despite a naturally enabling environment for cultivating these high value veggies, the area unfortunately lacks proper export facilities and local marketing infrastructure. Due to huge supply chain, more demand and less supply these vegetables come very costly in the Indian market (Rao and Mrunalinisanka, 2015).

In the Indian scenario, North Western Himalayas and Nilgiri hills provides excellent climatic conditions for the growing of exotic vegetables particularly during the hotter months, while in plains they can be cultivated during winter months (Kohli *et al.*, 2010). Some of the important exotic vegetables are Broccoli, European carrots, baby corn, lettuce, cherry tomato, red cabbage, Ramanesco cauliflower and coloured capsicums .

Broccoli is a rich source of sulphoraphane which is associated with reducing the risk of cancer (Guo *et al.*, 2001). In India, it is being used as a fresh vegetable, where as in USA and European countries it is used as fresh as well as frozen form. Broccoli is a crop which is grown as cool season vegetable which further offer great opportunity of income and employment generation to the community mainly involved in its cultivation. Cherry tomatoes are small variety of tomatoes that are preferred for their strong aroma and flavors. Lettuce is widely used as salad. Snowpea is a legume more specifically a variety of pea eaten whole

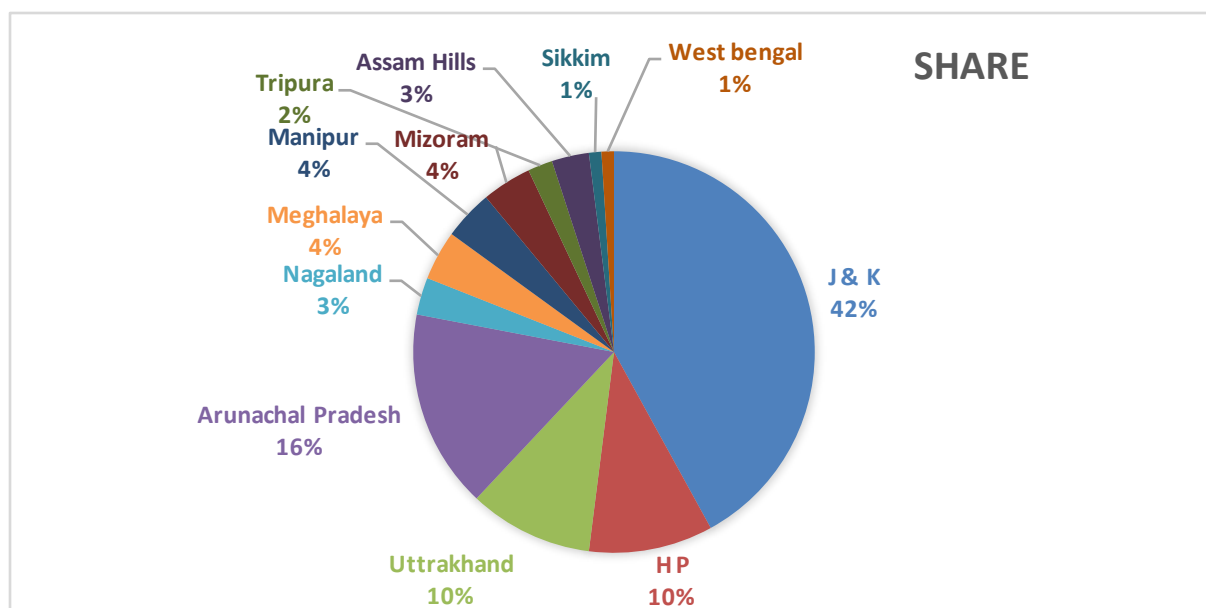
while still unripe. Nilgiri hills and Himachal Pradesh are the leading suppliers of these vegetables to country.

Exotic vegetables lend themselves very well for the home gardens as well as for commercial space. Cultivation of exotic vegetables can be done in the summers in the hills and these can be supplied to markets in the plains as off season vegetable.



### Status of Exotic vegetables

The agro climatic conditions prevailing in several parts of north-western Himalayas of J & K, Himachal Pradesh and Kumaon and Garhwal division of Uttarakhand are very favorable for growing these exotic vegetables. The cultivation of exotic vegetables has started picking up fast in Himachal Pradesh with farmers opting for diversification in agriculture. Having the most of climatic and soil conditions of the region conducive for exotic vegetables, farmers in Theog, Matyana, Narkanda, Sainj valley, Saproon valley in Solan, Nauradhar in Sirmaur, Katrain and Manali towns have taken to growing of exotic vegetables like asparagus, broccoli, lettuce, colored capsicum, celery, Chinese cabbage, Brussels sprouts, European carrots, parsley, leek and snowpeas (Janakiram and Reddy, 2016).



**Fig: Share of geographical area of different states in Himalayan region**

**Health Benefits:**

Vegetable	Benefits
<b>Cherry tomato</b>	Rich source of lycopene, vitamin C and antioxidants
<b>Zucchini</b>	Source of iron, calcium, zinc, and several vitamins like Vit-A,
<b>Baby corn</b>	Low in carbs and high in fibers
<b>Celery</b>	Prevents inflammation and cancer, regulates blood pressure, and controls liver diseases, gout, asthma, psoriasis, and fever
<b>Lettuce</b>	Packed with Vitamin A, Vitamin K, and folate
<b>Asparagus</b>	Is low in calories, neutralized stomach acids and packed with essential vitamins, minerals, and antioxidants
<b>Broccoli</b>	Good source of fibre and protein, and contains iron, potassium, calcium, selenium and magnesium as well as the vitamins A, C, E, K and a good array of B vitamins including folic acid.
<b>Parsley</b>	Helps prevent diabetes, prevent and treat kidney stones and is a proven all-natural anti-cancer remedy

<b>Chinese Cabbage</b>	Contains several vitamins such as vitamin B, C, and K, folic acid, antioxidants, and dietary fibers
<b>Red Cabbage</b>	Lowers inflammation and protects against various kinds of cancers
<b>Pak choy</b>	Rich in vitamin C, Magnesium, beta carotene, folic acid, calcium, and many essential minerals
<b>Coloured Capsicum</b>	Rich in vitamins, help in the formation of collagen, and improves skin health

### Major struggles of exotic vegetable cultivation:

The cultivation in the undulated hilly areas is fraught with lots of constraints.

- The hilly soils are marginal in fertility in most cases. Though rich in organic matters, they are poor sources of major nutrients like N, P and K.
- Also, they are shallow in depth with presence of hardpans in the upper horizons and mostly acidic.
- Owing to their undulating topography, the soils in these hilly areas were highly susceptible to erosion, especially due to wrong cultivation practices such as Jhuming.
- The operational holdings in these areas are very small and thus the mechanization of horticulture has become a distant reality. This creates the need for high human energy inputs and drudgery.
- Low crop yields due to non-availability of the seed material of the high yielding varieties (HYV), along with other inputs such as fertilizers and pesticides.
- Due to higher dependence on the monsoon rainfall, only limited number of crops can be cultivated here and the crop diversification is of great need.
- Major bottleneck in the development of horticulture and its processing sector in this area is the lack of proper transport and communication facilities.

### Conclusion:

Exotic vegetable cultivation is becoming quite popular among the Indian population owing to their appealing taste and high nutrient quotient. It may become a source of higher income and off season cultivation for farmers from the hilly regions, provided they are thoroughly made aware of their health benefits and profitability. A complete package of supply coupled with marketing and processing facilities should be made available at



subsidized prices to the farmers in the hilly areas. Peri-urban agriculture with exotic vegetables may be popularised by designing courses at school, college and university level so that available technologies are widely disseminated. Such efforts to develop skilled manpower would be able to take up the challenge of safer food production in future.

### References

- Guo JH, Lee S, Chiang F and Chang C. (2001). Antioxidant properties of the extracts from different parts of broccoli in Taiwan. *Journal of food and Dry Analysis*. **9**: 96-101.
- Janakiram T and Reddy VR. (2016). Hill horticulture – status, problems and strategies. *Journal of Hill Agriculture* **7**: 1 – 11.
- Kohli UK, Vikram A, Kumar M and Dohroo NP. (2010). Exotic Vegetables. 120p. Westville Publishing House, New Delhi.
- Rao CC and Mrunalinisasanka V. (2015). Exotic Veggies: A Practical Utility of Innovation-Lured by the Easy Returns. *International Journal of Applied Research* **1**: 1038-1041.