

## MARKETING AND PRODUCTION OF VEGETABLES IN INDIA

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**Abstract:** India is the second biggest maker of products of the soil on the planet next just to China. Vegetables cultivation development is as of now constrained by helpless marketing of an action. The hole between costs got by the exporters and those paid by metropolitan shoppers is enormous, reflecting wasteful advertising marketing of action. The huge creation base offers India massive open doors for export. This study gauges creation patterns, market proficiency and fare intensity of vegetables in India and propose measures to improve creation, advertising and fares of Indian vegetables. The investigation was directed in India as entire for creation and fare intensity and for marketing skill in the 28 states of India covering 22 crops.

**Keywords:** Production of vegetables, Production for processing, marketing strategy.

### 1. INTRODUCTION

Vegetables are a fantastic wellspring of different nutrients and minerals that can do wonders for health. It is of most extreme significance to have an eating routine wealthy in vegetables as it can give health basic supplements, yet in addition helps in keeping your skin solid and fed. Vegetable farming, growing of vegetable crops, primarily for use as human food.

#### **Production of Vegetables**

Vegetable production operations range from small patches of crops, producing a few vegetables for family use or marketing, to the great, highly organized and mechanized farms common in the most technologically advanced countries. In technologically developed countries the three main types of vegetable farming are based on production of vegetables for the fresh market, for canning, freezing, dehydration, and pickling, and to obtain seeds for planting.

#### **Production for the fresh market**

This type of vegetable farming is normally divided into home gardening, market gardening, truck farming, and vegetable forcing.

**Home gardening** provides vegetables exclusively for family use. About one-fourth of an acre (one-tenth of a hectare) of land is required to supply a family of six. The most suitable vegetables are those producing a large yield per unit of area. Bean, cabbage, carrot, leek, lettuce, onion, parsley, pea, pepper, radish, spinach, and tomato are desirable home garden crops.

**Market gardening** produces assorted vegetables for a local market. The development of good roads and of motor trucks has rapidly extended available markets; the market gardener, no longer forced to confine his operations to his local market, often is able to specialize in the production of a few, rather than an assortment, of vegetables; a transformation that provides the basis for a distinction between market and truck gardening in the mid 20<sup>th</sup> century. Truck gardens produce specific vegetables in relatively large quantities for distant markets.

**Vegetable forcing** are produced out of their normal season of outdoor production under forcing structures that admit light and induce favourable environmental conditions for plant growth. Greenhouses, cold frames, and hotbeds are common structures used. Hydroponics, sometimes called soilless culture, allows the grower to practice automatic watering and fertilizing, thus reducing the cost of labour. To successfully compete with other fresh market producers, greenhouse vegetable growers must either produce crops when the outdoor supply is limited or produce quality products commanding premium prices.

#### **Production for processing**

Processed vegetables include canned, frozen, dehydrated, and pickled products. The cost of production per unit area of land and per ton is usually less for processing crops than for the same

crops grown for market because raw material appearance is not a major quality factor in processing. This difference allows lower land value, less hand labour, and lower handling cost. Although many kinds of vegetables can be processed, there are marked varietal differences within each species in adaptability to a given method.

Specifications for vegetables for canning and freezing usually include small size, high quality, and uniformity. For many kinds of vegetables, a series of varieties having different dates of maturity is required to ensure a constant supply of raw material, thus enabling the factory to operate with an even flow of input over a long period. Acceptable processed vegetables should have a taste, odour, and appearance comparable with the fresh product, retain nutritive values, and have good storage stability.

### **Vegetables raised for seed production**

This type of vegetable farming requires special skills and techniques. The crop is not ready for harvest when the edible portion of the plant reaches the stage of maturity; it must be carried through further stages of growth. Production under isolated conditions ensures the purity of seed yield. Special techniques are applied during the stage of flowering and seed development and also in harvesting and threshing the seeds.

### **Production Factors and Techniques**

Profitable vegetable farming requires attention to all production operations, including insect, disease, and weed control and efficient marketing. The kind of vegetable grown is mainly determined by consumer demands, which can be defined in terms of variety, size, tenderness, flavour, freshness, and type of pack. Effective management involves the adoption of techniques resulting in a steady flow of the desired amount of produce over the whole of the natural growing season of the crop. Many vegetables can be grown throughout the year in some climates, although yield per acre for a given kind of vegetable varies according to the growing season and region where the crop is produced.

### **Climate**

Climate involves the temperature, moisture, daylight, and wind conditions of a specific region. Climatic factors strongly affect all stages and processes of plant growth.

### **Temperature**

Temperature requirements are based on the minimum, optimum, and maximum temperatures during both day and night throughout the period of plant growth. Requirements vary according to the type and variety of the specific crop. Based on their optimum temperature ranges, vegetables may be classed as cool-season or warm-season types.

### **Moisture**

The amount and annual distribution of rainfall in a region, especially during certain periods of development, affects local crops. Irrigation may be required to compensate for insufficient rainfall.

### **Daylight**

Light is the source of energy for plants. The response of plants to light is dependent upon light intensity, quality, and daily duration, or photoperiod.

### **Site**

The choice of a site involves such factors as soil and climatic region. The soil stores mineral nutrients and water used by plants, as well as housing their roots. There are two general kinds of soils—mineral and the organic type called muck or peat. The inherent fertility of soils affects production quantity, and a sound fertility program is required to maintain productivity.

### **Soil preparation and management**

Soil preparation for vegetable growing involves many of the usual operations required for other crops. Good drainage is especially important for early vegetables because wet soil retards development.

### **Planting**

Most vegetable crops are planted in the field where they are to grow to maturity. A few kinds are commonly started in a seedbed, established in the greenhouse or in the open, and transplanted as seedlings. Asparagus seeds are planted in a seedbed to produce crowns used for field setting.

### **Care of crops during growth**

Practices required for a vegetable crop growing in the field include cultivation; irrigation; application of fertilizers; control of weeds, diseases, and insects; protection against frost; and the application of growth regulators if necessary.

#### **Cultivation**

Cultivation refers to stirring the soil between rows of vegetable plants. Because weed control is the most important function of cultivation, this work should be performed at the most favourable time for weed killing, when the weeds are breaking through the soil surface.

#### **Irrigation**

Vegetable production requires irrigation in arid and semi-arid regions, and irrigation is frequently used as insurance against drought in more humid regions. In areas having intermittent rain for five or six months, with little or none during the remainder of the year, irrigation is essential throughout the dry season and may also be needed between rainfalls in the rainy season.

#### **Fertilizer application**

Soil fertility is the capacity of the soil to supply the nutrients necessary for good crop production, and fertilizing is the addition of nutrients to the soil. Chemical fertilizers may be used to supply the needed nitrogen, phosphorus, and potassium. Chemical tests of soil, plant, or both are used to determine fertilizer needs, and the rate of application is usually based on the fertility of the soil, the cropping system employed, the kind of vegetable to be grown, and the financial return that might be expected from the crop.

#### **Weed control**

Weeds reduce crop yield, increase production cost, and may harbor insects and diseases that attack crop plants. Methods employed to control weeds include hand weeding, mechanical cultivation, application of chemicals acting as herbicides and a combination of mechanical and chemical means. Herbicides, selective chemical weed killers, are absorbed by the plant and induce a toxic reaction.

#### **Disease and insect control**

The production of satisfactory crops requires rigorous disease and insect-control measures. Crop yield may be lowered by disease or insect attack, and when plants are attacked at an early stage of growth the entire crop may be lost. Reduction in the quality of vegetable crops may also be caused by diseases and insects. Grades and standards for market vegetables usually specify strict limits on the amount of disease and insect injury that may be present on vegetables in a designated grade. Vegetables remain vulnerable to insect and disease damage after harvesting, during the marketing and handling processes

#### **Growth regulators**

It is sometimes desirable to retard or accelerate maturity in vegetable crops. A chemical compound may be applied to prevent sprouting in onion crops. It is applied in the field sufficiently early for absorption by the still-green foliage but late enough to avoid suppressing the bulb yield.

#### **Harvesting**

The stage of development of vegetables when harvested affects the quality of the product reaching the consumer. In some vegetables, such as the bean and pea, optimum quality is reached well in advance of full maturity and then deteriorates, although yield continues to increase.

### **Marketing strategies**

#### **Storage**

Fresh vegetables are living organisms, and there is a continuation of life processes in the vegetable after harvest. Changes that occur in the harvested, nonprocessed vegetable include water loss, conversion of starches to sugars, conversion of sugars to starches, flavour changes, colour changes, toughening, vitamin gain or loss, sprouting, rooting, softening, and decay.

#### **Premarketing Operations and Selling**

Premarketing operations include washing, trimming, waxing, precooling, grading, prepackaging, and packaging. Vegetables often require washing after harvest to remove any adhering soil particles.

#### **Pre-cooling**

Pre-cooling, the rapid removal of heat from freshly harvested vegetables, allows the grower to harvest produce at optimum maturity with greater assurance that it will reach the consumer at maximum quality.

### **Grading**

Uniformity in size, shape, colour, and ripeness is of great importance in marketing any vegetable product, and can be secured through grading.

### **Packaging**

Prepackaging, or consumer packaging, has become a highly organized practice, often employing elaborate equipment. The product is placed in bags made of transparent film, trays or cartons overwrapped with transparent film, or mesh or paper bags. The packaging of produce in consumer packages lends itself to self-service in retail stores.

### **Selling**

Producers sell vegetables through various retail and wholesale practices. Retail sales are made directly to the consumer, often through roadside stands. Many growers sell most of their produce at wholesale to retail stores, to various types of buyers on local markets in nearby cities, or in regional markets. Growers located long distances from markets sell largely to wholesale dealers or jobbers.

## **2. Review of literature**

M. B. Dastagiri , Ramesh Chand , (2013), “Indian Vegetables: Production Trends, Marketing Efficiency and Export Competitiveness”, In Indian vegetables production depicted glorious past and expected promising future. The study suggested that, a typical marketing channel of horticultural crop in the area of study have involved a number of intermediaries like the pre harvest contractor, commission agent and brokers, wholesaler, retailer are operating between the producer and the consumer. Major states like Punjab and Tamil Nadu are practicing the direct marketing of vegetables from Producer to Consumer.

2016 “A Report on The Study of Vegetable Markets in context of Kathmandu Metropolitan City” , the paper observed the knowledge about the condition vegetable markets in metropolitan cities. Vegetable markets are an integral part of modern city, it designed about vegetable market in each neighborhood in areas, from the mapping survey conducted by researcher, it have planned to start new town lacked vegetable markets. It is important to include vegetable markets in urban level planning and designs as it ensures easy accessibility to healthy food choices.

Krishna P. Timsina and Ganesh P. Shivakoti, (2018), “Vegetables production and marketing: Practice and perception of vegetable seed producers and fresh growers in Nepal”, this paper has been seems that the vegetable production promotion of new harvest technologies used to maintain dry chain throughout the vegetable seeds system. It can provide higher return to the farmers would be easily accepted by the customers. It concluded that, the advantage of microclimatic diversity in hilly areas of Nepal and the seed grower’s willingness to maintain good quality seeds can be utilized to produce huge amount of vegetable seeds for the fulfillment of national demand in the plain areas as well as export, especially in SAARC countries.

Proscovia Renzaho Ntakyio and Marrit van den Berg, (2019), “Effect of market production on rural household food consumption: evidence from Uganda”, the paper suggested in the mixed approaches are used for combine policy, it targeted at vegetable market production as well as consumption and nutrition. This paper examined the effect of vegetable market production on rural household food consumption used in the case of commercial rice production in western Uganda and also the result of approach are consistent and indicate that households engaged in vegetable market oriented rice production are more liked to experience low caloric consumption.

Daniel Mason-D’Croz and Jessica R Bogard, “Gaps between fruit and vegetable production, demand, and recommended consumption at global and national levels: an integrated modelling study”, (2019), the study find out the progress with substantial regional variation of failing to achieve adequate vegetable production and markets are availability of the global consumption.

### 3. Importance of the study

Vegetables are become worldwide in right around 200 nations and make up a significant bit of the eating regimen of people in numerous pieces of the world. Vegetables play a huge part in human nourishment, particularly as wellsprings of nutrients , minerals, dietary fiber and phytochemicals . Vegetables in the day by day diet have been firmly connected with progress of gastrointestinal wellbeing, great vision, and diminished danger of coronary illness, stroke, constant sicknesses, for example, diabetes, what's more, a few types of disease .

### 4. Objectives of the study

- Keep up force in momentum base projects in vegetable research in India.
- Recognize significant requirements of the vegetable Production and Marketing in India.

### 5. Methodology of the study

In the ongoing years, territory under Vegetables Production and development has expanded in India. Thus, it is important to know productivity of this yield and marketing strategies.

### 6. Sources of the Data

The previously mentioned goals have basically assessed by utilizing both essential and optional information used in secondary data.

### 7. Analysis and Interpretation

**Table 1. Area and Production of Horticulture crops state wise**

Area in '000 Ha, Production '000' MT

Vegetables	2018-19		Estimated 2018-19	
	Area	Production	Area	Production
Beans	236	2356	217	2116
Bitter gourd	99	1205	100	1244
Bottle gourd	187	3011	185	3187
Brinjal	727	12680	741	13000
Cabbage	400	9127	403	9369
Capsicum	34	497	34	515
Carrot	109	1893	112	2042
Cauliflower	465	9083	472	9370
Cucumber	105	1588	105	1673
Chillies (Green)	377	3783	422	4097
Elephant Foot Yam	33	817	32	816
Mushroom *	0	182	0	205
Okra/Ladyfinger	513	6176	526	6460
Onion	1220	22819	1293	24454
Parwal/Pointedgourd	55	757	55	741
Peas	552	5562	564	5694
Potato	2173	50190	2149	51947
Radish	200	3143	212	3316
Pumpkin	94	2043	94	2037
Sweet Potato	110	1156	116	1194
Tapioca	163	4976	139	4046
Tomato	781	19007	800	19328
Others	1441	21118	1519	21156
<b>Total Vegetable</b>	<b>10073</b>	<b>183170</b>	<b>10292</b>	<b>188009</b>

Sources: Horticulture Statistics Division, DAC and FW

**Area and Production of Horticulture crops**

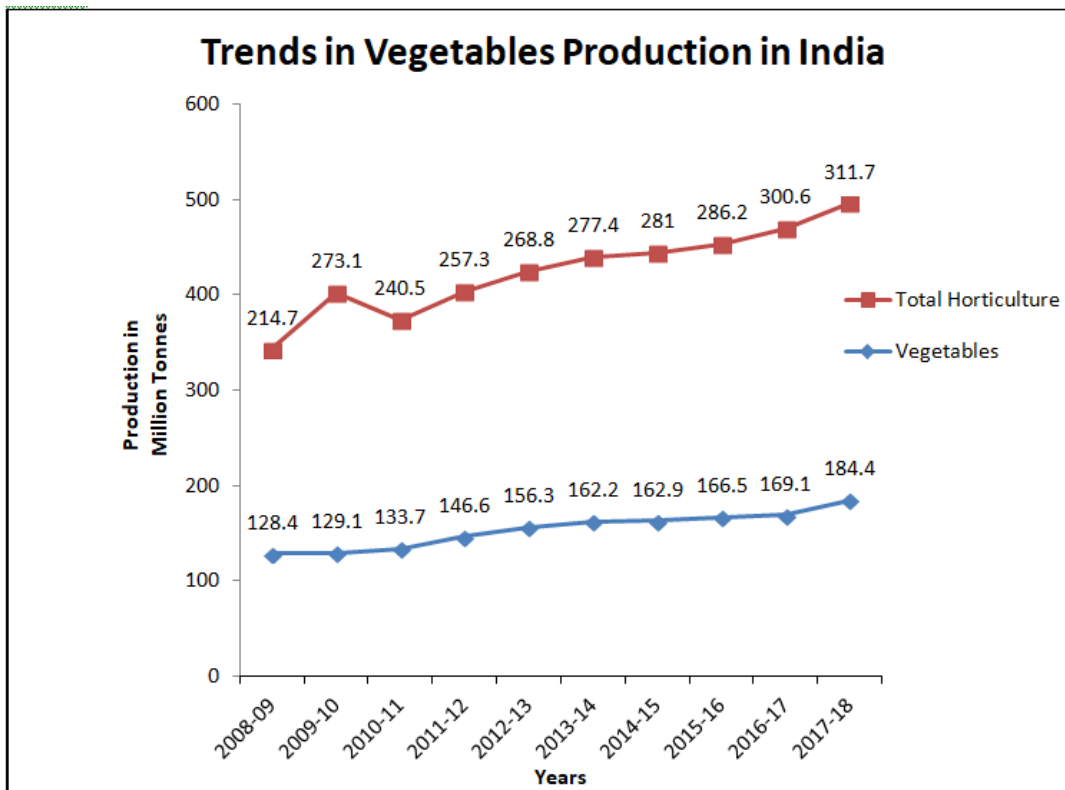
Area in '000 Ha, Production '000' MT

STATES/UTs	2018-2019		2019-20 (Advance Estimate)	
	Area	Production	Area	Production
Andhra Pradesh	1543.77	27049.94	1528.18	28372.5
Arunachal Pradesh	63.16	173.17	66.52	191.13
Assam	656.84	6241.96	710.82	7215.01
Bihar	1213.51	21028.05	1237.75	21110.2
Chhattisgarh	801.44	9809.22	828.28	10233.8
Gujarat	1606.16	22898.17	1644.65	23122.8
Haryana	528.16	8650.88	461.04	6803.54
Himachal Pradesh	328.15	2286.38	329.36	2639.74
Jammu & Kashmir	400.68	3786.11	398.66	3883.31
Jharkhand	414.52	4642.55	418	4761.51
Karnataka	2156.73	19184.06	2000.08	18479.9
Kerala	1584.96	10226.8	1582.3	10163.8
Madhya Pradesh	1973.49	28983.75	2052.56	30377.2
Maharashtra	1685.74	22755.9	1830.35	25345.5
Manipur	105.11	840.47	96.84	947.52
Meghalaya	129.72	1023.03	129.38	1014.82
Mizoram	138.36	660.82	138.81	660.52
Nagaland	88.77	849.51	87.73	840.09
Odisha	1376.89	11662.81	1386.62	11727.5
Punjab	385.73	7360.46	416.93	7784.77
Rajasthan	1543.96	4017.1	1519.16	4786.9
Sikkim	101.2	410.1	94.28	383.57
Tamil Nadu	1293.31	15996.21	1423.85	18261.3
Telangana	463.64	5366.38	420.81	4642.03
Tripura	122.92	1430.47	124.19	1466.49
Uttar Pradesh	2311.02	38892.62	2304.29	38486.3
Uttarakhand	292.83	1771.28	294.41	1748.92
West Bengal	1943.02	31875.84	1968.32	34180.8
Others	197.47	905.72	169.51	851.62
<b>Total</b>	<b>25433.2</b>	<b>310738.2</b>	<b>25660.7</b>	<b>320479</b>

Sources: Horticulture Statistics Division, DAC and FW

**Trends in Vegetables Production in India**

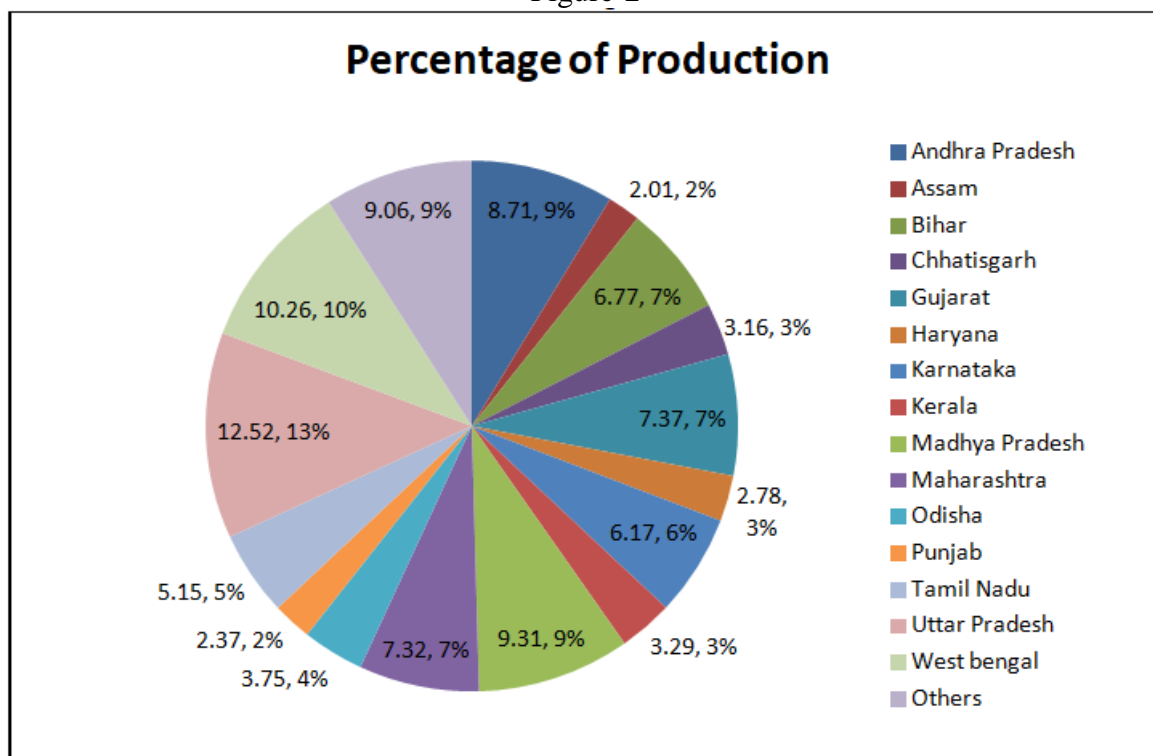
India has witnessed increase in horticulture production over the last few years. Significant progress has been made in area expansion resulting in higher production. Over the last decade, the area under horticulture grew by 2.6% per annum and annual production increased by 4.8%. During 2017-18, the 2 Horticultural Statistics at a Glance 2018 production of horticulture crops was 311.71 Million Tonnes from an area of 25.43 Million Hectares. The production of vegetables has increased from 128.4 Million Tonnes to 184.4 Million Tonnes since 2008-09 to 2017-18 and total horticulture has increased from 214.7 Million Tonnes to 311.7 Million Tonnes since 2008-09 to 2017-18 as depicted in Figure-1.



Source: D/o Agriculture & Cooperation, GOI

During 2017-18 the area under vegetables was 10.26 Million Hectares with a production of 184.40 Million Tonnes in India (**Table 1**). For this period the total vegetable production was highest in case of Uttar Pradesh (283.16 Million Tonnes) followed by West Bengal (276.95 Million Tonnes). The graphical representation of production share of leading vegetables producing states in 2017-18 is shown in Figure-2.

Figure-2



Source: D/o Agriculture & Cooperation, GOI

### **8. Conclusion**

This study has concluded that, the structural changes in Indian agricultural vegetable producing and marketing have transformed the way food is being consumed and produced. Demand and supply of high value of vegetables have produced procurement system of agricultural technology changes. The study clearly showed that majority of the vegetables producing states are operating efficiently. The highest marketing efficiency channel was found to be Producer to Consumer. Hence, government policies should promote direct marketing models for horticultural marketing.

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