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# RISING TRENDS IN PRODUCTION AND PRODUCTIVITY OF VEGETABLES IN INDIA: A STUDY FROM 2001-02 TO 2012-13

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## ABSTRACT

*The current study explores a good variety of statistical data based upon the performance of the vegetable growing sector in particular and horticulture sector in general in the Indian economy. Such a statistics has been of great importance when it comes to set new targets to be achieved in this sector by any economy of the world. Besides, it also provides a deeper insight into the current status of this sector. This paper tries to seek the rising trends in the Indian horticulture sector in terms of production and productivity of vegetables on a whole. Area under vegetables cultivation of vegetables in India is also an important aspect of this study.*

## KEYWORDS

horticulture, vegetables, production, productivity, area.

## INTRODUCTION AND BACKGROUND

The term Horticulture is composed of two different Latin words- 'Hortus' means garden and 'Cultura' here means knowledge of growing crops. Therefore the term 'Horticulture' means the study of garden plants or crops. Horticulture has four important branches. These are: Olericulture (vegetable culture), Pomology (fruit culture), Floriculture and Post Harvest Technology and Preservation. The importance of horticulture cannot be denied. The crops under this sector provide the cultivator with more returns per unit area as compared to other field crops. Hence, the yield is high in terms of weight and money. The nutritional status of horticulture crops is very high. Vegetables and fruits are a rich source of minerals and vitamins. Even small and marginal farmers can be benefitted from the cultivation of horticulture crops.

The vegetable growing sector in particular and horticulture sector in general are vital for any economy. India produces around 280 million tonnes of total horticulture crops every year. India is the second largest producer of vegetables in the world. Commercialisation of vegetable growing sector strengthens the economy of a country. It is through commercialisation of vegetable growing sector that the domestic producers of vegetables can become globally competitive and can raise the standards of their productivity. Only then the untapped potentials of our local vegetable growers can be given directions. And this may help in improving the production and productivity of vegetables up to a larger extent.

Advanced technologies can be of a great help in flourishing the vegetable market of India beyond domestic boundaries. India's varied agro-climatic conditions are useful in growing different varieties of vegetables across nation. It also adds to the commercial importance of the vegetable growing sector of the Indian economy. Commercialisation of vegetable growing sector is also vital for the reason that it provides employment to a larger portion of population. A manifold increase in public investments over vegetables throughout the planning process has helped this sector to grow and flourish more than other sub-sectors of horticulture sector.

Technical efficiency in the production methods of growing vegetables (Murthy, et al., 2009) holds much importance for the growth of vegetables production and productivity. They say that there is a wide scope of increasing the production of vegetables by applying different inputs. Doing this can enhance the productivity also. The production then will grow manifold and this will be beneficial for the vegetable growers. Therefore technical efficiency in producing vegetables holds much importance.

Area under Horticulture crops (Handbook on Horticulture Statistics, 2014) in the year 1991-92 was 12.77 million hectares whereas it is now 23.69 million hectares in 2012-12. Total horticulture production has nearly increased by 2.8 times and total horticulture productivity has increased by 1.5 times. As compared to 257.1 million tonnes of food grains production in 2012-13, total horticulture production was 268.9 million tonnes.

Indian vegetable growing sector (Indian Horticulture Database, 2013) has witnessed an upward rising trend in the production and productivity of vegetables from 2001-02 to 2012-13. For instance, the production of vegetables in 2001-02 was 88622 (in '000 tonnes) and in 2012-13, it was 162187 (in '000 tonnes). The productivity of vegetables in 2001-02 was 14.4 mt/ha where as it has grown up to 17.6 mt/ha in 2012-13. The area under vegetable crops have grown from 6156 (in '000 hectares) in 2001-02 to 9205 (in '000 hectares) in 2012-13.

Dastagiri, et al. (2013) has talked about the production trends of vegetables in India. They have also talked about the marketing efficiencies and export competitiveness in terms of vegetable production in India. According to their study, the total vegetables cultivation in India has grown at the rate of 4.12 % and the rate of production growth of vegetables is 6.48 %.

There are no doubts that there has been a rising trend in production and productivity of vegetables in India in the recent years has been witnessed. The chief importance of this trend is that it will provide security to the domestic producers of vegetables and thus it may also enhance more investments in this sector for further growth and development of the vegetable growing sector in India.

## SURVEY OF EXISTING LITERATURE

Kumar, et al. (2004) has talked about the growing trends in the vegetable production. Growth of vegetables is a provision of security in terms of food and nutrition. According to the study, the total vegetable production was 43 million tonnes in the year 1962-63. It had grown to around 91 million tonnes in the year 1999-2000. This growth in the vegetable production in India during this period has been tremendous

A farm-level data from 70 cabbage producers (Bithal, et al., 2004) has been collected in the study to enquire about the relationship between IPM technology and production of vegetables in India. With the use of fertilizers and pesticides, there has been an increase in vegetable growing farmers' income by Rs. 2009. It has also been witnessed that with the IPM technology, Unit cost of producing vegetables has been reduced by 5 %. 80 % of the benefits out of this technology have been accrued to the producers of vegetables.



Kamei (2013) talks about the growth of horticulture in Tamenglong district of Manipur. Tamenglong district is amongst 500 backward districts in India. The main sources of occupation and income in this district have not providing much help to the people living there. There is a need to turn towards horticulture and mainly towards growing vegetables in this district to earn a better and sufficient livelihood.

The area, production and productivity of brinjal (Indian Horticulture Database, 2013) have considerably increased since 2001-02. In the same year, the area under brinjal crop was 502.4 (in '000 hectares), production was 8347.1 (in '000 tonnes) and productivity was 16.6 mt/ha respectively. All these variables grew tremendously to 722.1 (in '000 hectares), 13557.8 (in '000 tonnes) and 19.1 mt/ha respectively in the year 2012-13.

The area, production and productivity of peas (Indian Horticulture Database, 2013) have considerably increased since 2001-02. In the same year, the area under peas crop was 303.3 (in '000 hectares), production was 2038.2 (in '000 tonnes) and productivity was 6.7 mt/ha respectively. All these variables grew tremendously to 420.9 (in '000 hectares), 4006.2 (in '000 tonnes) and 9.5 mt/ha respectively in the year 2012-13.

Mittal (2007) talks about the shift in cropping patterns in the production of vegetables in India from the year 1995 to 2004. During the period 1995-2000, the area under vegetable crop was 915 (in '000 hectares). Whereas the cropping area under vegetable crop has been raised to 1163 (in '000 hectares) during the period 2001-04. This has led to the increase in production of vegetables in India. It has also raised the productivity of vegetables in India.

## PRIME OBJECTIVE OF THE STUDY

To study the trends in production and productivity of vegetables in India.

## HYPOTHESES

**H0 A:** There has been an upward trend in production and productivity of vegetables in India.

**H1 A:** There has been a downward trend in production and productivity of vegetables in India.

**Note:** H0- Null hypothesis and H1- Alternative hypothesis.

## METHODOLOGY

The current study has availed its data from various secondary sources. Data has been collected from authentic and valid sources such as government website (Ministry of Agriculture, Government of India), research papers and journals, books like Indian Horticulture Database 2013, Handbook on Horticulture Statistics 2013, Schemes of National Horticulture Board and Diversifications Booklet No. 11, FAO, besides various other secondary outlets for data on Indian horticulture. It has tried to carry out exploratory as well as descriptive study on vegetables in India. The use of simple form of statistical tools has been brought into use to analyse data. Horticulture sector of India is the universe size and its sub sector i.e. vegetable growing sector in India is the sample size of the current study. Area under vegetables, production and productivity of vegetables are the prime parameters of the study. The time period incorporated in the study is from 2001-02 to 2012-13.

## ANALYSIS AND INTERPRETATION OF DATA

Since 2001-02, the horticulture sector of the Indian economy has shown considerable growth. The area under horticulture crops, and the production and productivity of horticulture crops have gone up tremendously from about last thirteen years. Similarly, vegetables growing sector (sub-sector of horticulture) has also shown similar trends with respect to area under vegetable crops, production of vegetable crops and productivity of vegetable crops. Such a case of vegetables in India during 2001-02 to 2012-13 has been reflected in table 1. The first column of table 1 shows the time period of the current study which ranges from 2001-02 to 2012-13. The second column of the same table deals with the area under vegetables which is given in '000 hectares during this whole period in India. In the year 2001-02, the total area under vegetables in India was 6156. In the years 2002-03, 2003-04 and 2004-05, the areas under vegetables were 6092, 6082 and 6744 respectively. Then in the following three years i.e. 2005-06, 2006-07 and 2007-08, the areas under vegetables in India were 7213, 7581 and 7848 respectively. In the next four years from 2008-09 to 2011-12, the areas under vegetables in India were 7981, 7985, 8495 and 8989 respectively. In the year 2012-13, the area under vegetables in India was 9205.

**TABLE 1: ALL INDIA AREA, PRODUCTION AND PRODUCTIVITY OF VEGETABLES**

Year	Area (In '000 Ha)	Production (In '000 Mt)	Productivity (In Mt/Ha)
2001-02	6156	88622	14.4
2002-02	6092	84815	13.9
2003-04	6082	88334	14.5
2004-05	6744	101246	15.0
2005-06	7213	111399	15.4
2006-07	7581	114993	15.2
2007-08	7848	128449	16.4
2008-09	7981	129077	16.2
2009-10	7985	133738	16.7
2010-11	8495	146555	17.3
2011-12	8989	156325	17.4
2012-13	9205	162187	17.6

Data Source: Indian Horticulture Database 2013, Ministry of Agriculture, Government of India.

Note: Ha-Hectares, Mt-Metric Tonnes.

The third column of table 1 talks about the production of vegetables in India from the year 2001-02 to 2012-13 in '000 metric tonnes. In the year 2001-02, the production of vegetables in India was 88622. In the years 2002-03, 2003-04 and 2004-05, the production of vegetables in India was 84815, 88334 and 101246 respectively. In the following three years i.e. 2005-06, 2006-07 and 2007-08, the production of vegetable in India was 111399, 114993 and 128449 respectively. In the next four years from 2008-09 to 2011-12, the production of vegetables in India was 129077, 133738, 146555 and 156325 respectively. In the year 2012-13, the production of vegetables in India was 162187.

In the fourth column of the same table, the productivity of vegetables in India has been shown in metric tonnes per hectares (mt/ha) during the years 2001-02 to 2012-13. In the year 2001-02, the productivity of vegetables in India was 14.4. In the years 2002-03, 2003-04 and 2004-05, the productivity of vegetables in India was 13.9, 14.5 and 15.0 respectively. In the following three years i.e. 2005-06, 2006-07 and 2007-08, the productivity of vegetables in India was 15.4, 15.2 and 16.4 respectively. In the next four years from 2008-09 to 2011-12, the productivity of vegetables in India was 16.2, 16.7, 17.3 and 17.4 respectively. In the year 2012-13, the productivity of vegetables in India was 17.6.

## FINDINGS AND RECOMMENDATIONS

The current study has worked within the boundaries set by the prime objective of the study. The study has been successful in finding out the rising and upward trends in production and productivity of vegetables in India since 2001-02. It has found out that the area under vegetables in India has grown considerably from 6156 to 9205 (in '000 hectares) during 2001-02 to 2012-13. Similar trends have also been traced in terms of production of vegetables in India during the time period of the study. Vegetable production has grown from 88622 to 162187 (in metric tonnes) from the year 2001-02 to 2012-13. The study has also measured that the vegetable productivity in India during the same period has also shown an upward rising trend. The productivity of vegetables in India has gone up from

14.4 to 17.6 mt/ha during the time period of the study. Therefore, we can say that the vegetable growing sector in India has been witnessing a rising trend in terms of vegetable production and productivity in the recent years.

The study recommends that the public investment on vegetables in particular and horticulture in general must be raised multiplier times so as to further raise the production and productivity of vegetables in particular and other horticultural crops in general. It also suggests formulating and implementing certain governmental schemes and programmes such as National Horticulture Mission (NHM) and Mission for Integrated Development of Horticulture (MIDH) et cetera to widen the scope of this sector so as to grow and flourish beyond domestic boundaries. Only then the vegetable growing sector, specifically, will grow and dominate the international competition.

### LIMITATIONS OF STUDY

1. The present study doesn't explain the specific reasons for upward trends in production and productivity of vegetables in India.
2. It also doesn't reveal if the present rate of growing production and productivity of vegetables is sufficient for domestic and international consumption.
3. It doesn't deal with specific vegetables but total vegetables in India.
4. The study has also not highlighted any other sub-sector under horticulture sector of India.

### CONCLUDING REMARKS

The current study has made effort in finding out the rising trends in production and productivity of vegetables in India during the years 2001-2013. It has been found that the upward rise in production and productivity of vegetables in India during this time period is considerable. There has been a good deal of shift in the cropping pattern of vegetables in India. Area under cultivation of vegetables in India has been growing tremendously. The null hypothesis in the study has not been rejected whereas the alternative hypothesis in the study has been rejected.

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