

Development Pattern and Baseline Data on Horticulture Crops in Haridwar (A Comparative Study: Haridwar V/S Uttarakhand)



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Abstract

Horticulture may be broadly defined as the Science and Art of growing fruits vegetables and flowers and crops like spices condiments and others plantations crops. The term 'Horticulture's refers to "A science of cultivation of Garden plants using by various traditional and new technologies". Horticulture crops play an important role in human nutrition, preventing diseases and contributing to the Nation's development and prosperity. Fruits and vegetables are rich source of vitamins, minerals, proteins and carbohydrates that are essentials and basic needs in human diet. The man can't not be survive without using these nutrients producing by Horticulture crops.

Keywords: Horticulture, Vegetables, Human Nutrition and Plantation etc.

Introduction

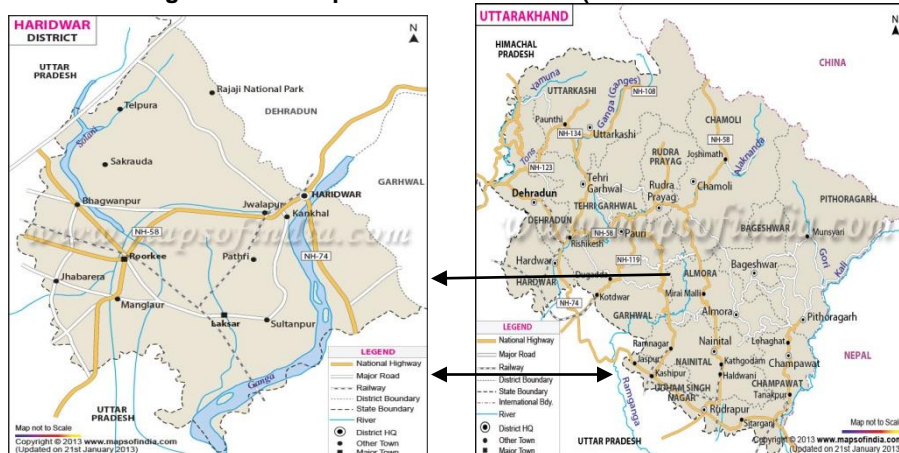
Horticulture is one such branch of agriculture in which the flowering and fruit production of flowers and fruits is done by technology from a commercial point of view so that it can produce for a long time. Not only this, medicinal plants, vegetables, grass, cosmetic and other food cereals are planted.

The word 'Horticulture' is derived from the Latin word '**Hortus**' meaning enclosure (garden) and 'Culture' meaning cultivation. This Horticulture means "Culture or cultivation of garden crops". In English language the word 'Horticulture' used for the first time in 1678 in a book entitled "New World of Words" by Phillips.

According to Liberty Hyde Bailey (1858-1954) an American scholar who can be considered as one of the Father of Horticulture Science along with Thomas Andrew Knight (1759-1838) and John Lindley (1799-1865) (Janick 2002)- "Horticulture is the growing of flowers, fruits and vegetables and of plants for ornament and fancy (Ohio State University)

According to Janick (1972) - "The branch of Agriculture concerned with intensively cultured plants directly used by men for food for medicinal purpose or for esthetical gratification".

Horticulture sector including fruits, vegetables, spices and flower with a share of about 6 per cent in total cropped area contributed maximum (32 per cent) to the total value of crop production in TE 2004-05. Moreover, Gross value of fruits and vegetables grew at an annual rate of 5.6 per cent that was highest than growth of any other crops between 1995-96 and 2004-05. This achievement is commendable since growth in their contribution was one of the lowest (2.9 per cent) between 1981-82 and 1994-96. It would be useful to point out that production of Horticulture crops in India has increased from 97 million tonnes in 1991-92 to 250 million tonnes in 2011-12. Area expansion and growth in yield are responsible for the success.

Fig. Location Map of District Haridwar (Haridwar versus Uttarakhand)**Horticulture Crops Pattern In Haridwar**

Haridwar is an important pilgrimage sites in Uttarakhand. The Ganga is a sacred, revered and divine power as well as the best means of natural irrigation in Haridwar. Through this, farmers here make maximum use of the water of this river in their crop production. The biggest example of this is the Ganga Canal. If seen, the farmers here are using it vigorously for horticulture crops.

According to 2011 census, total population of district Haridwar was 19.27 lakh persons (19.05% of State). The district is primarily rural in Nature and Agriculture in the main stay of people. The rural population of the district was about 62 per cent. Total main workers in Haridwar comprised of 24.95 per cent cultivation, 15.04 per cent Agricultural labours and remaining 59.65 per cent were Non-agricultural workers.

The crop pattern of the district was found diversified. The cereals and pulses covered 26.76 and 0.27 per cent of GCA (Gross Cropped Area). Oil seeds were grown on 11.40 per cent of GCA. Sugarcane is one of the important crops grown in the

district and occupied more than 10 per cent of GCA. Food grains followed by sugarcane are the main crops grown in the district Haridwar. The yield rates of cereals were higher than the State level. The major for the success could be availability of irrigation and higher consumption of fertilizers. The productivity of pulses and oilseeds was found lower than the State level.

Objectives of the Study

The study seeks to examine the following objectives:

1. We get flowers to worship with gardening. Other than, we get fresh fruits such as mango, lemon, litchi, guava, fresh vegetables like okra, brinjal, radish, carrot, potato, tomato, which eat and keep us healthy.
2. To take advantage of this as an income from common man to national level by adopting horticulture as a career.
3. To contribute to the 'Gross Domestic Product' of the country by strengthening the economy of the people by doing horticulture agriculture in the study area.

Table 1:
Year to Year Percentage to Change in Area, Production and Yield of Horticultural Crops in Haridwar during 2002-03 to 2010-11

Year	Fruits			Vegetables			Spices			Flowers		
	Area (ha)	Production (MT)	Yield (MT/ha)	Area(ha)	Production (MT)	Yield (MT/ha)	Area(ha)	Production (MT)	Yield (MT/ha)	Area(ha)	Production (MT)	Yield (MT/ha)
2002-03	10757	49239	4.58	1546	29674	19.19	563	8016	14.25	NA	NA	NA
2003-04	10757 (0.00)	49239 (0.00)	4.58 (0.00)	1277 (-17.40)	29673 (-0.001)	23.24 (21.04)	563 (0.00)	8016 (0.00)	14.25 (0.00)	NA	NA	NA
2004-05	10779 (0.20)	103583 (110.37)	9.61 (109.83)	2177 (70.48)	32655 (10.05)	15.00 (-35.45)	359 (-36.19)	3355 (-58.41)	9.33 (-34.39)	205.30	183.78	0.89
2005-06	12515 (16.10)	116154 (12.14)	9.28 (-3.43)	2429 (11.58)	36489 (11.74)	15.02 ((0.13)	190 (-47.07)	1806 (-46.17)	9.50 (1.60)	196.40 (-4.33)	206.64 (12.44)	1.05 (17.98)
2006-07	12725 (1.68)	103287 (-11.08)	8.12 (-12.50)	2530 (4.15)	37981 (4.09)	15.01 (-0.06)	211 (11.05)	2007 (11.13)	9.51 (0.11)	218.40 (11.20)	308.91 (49.49)	1.41 (34.28)
2007-08	13415 (5.42)	96463 (-6.06)	7.19 (-11.45)	3244 (28.22)	49696 (30.84)	15.32 (2.06)	415 (96.86)	3913 (94.96)	9.43 (-0.84)	245.00 (12.18)	369.50 (19.61)	1.51 (7.09)
2008-09	13706 (2.17)	98386 (1.99)	7.18 (-0.13)	3461 (6.69)	51790 (4.21)	14.96 (-2.34)	651 (56.86)	5666 (44.80)	8.70 (-7.74)	278.10 (13.51)	416.21 (12.64)	1.50 (-0.66)

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2009-10	14038 (2.42)	98300 (-0.08)	7 (-2.50)	3516 (1.59)	52603 (1.57)	14.96 (0.00)	686 (5.38)	5943 (4.89)	8.66 (-0.46)	596.80 (114.60)	832.47 (100.01)	1.39 (-7.33)
2010-11	14368 (2.35)	103623 (5.42)	7.21 (3.00)	3677 (4.58)	55319 (5.16)	15.04 (0.53)	835 (21.72)	6528 (9.84)	7.82 (-9.69)	623.20 (4.42)	843.20 (1.30)	1.44 (3.40)

Source: Horticulture Production Data (From 2002-03 to 2010-11), Department of Horticulture & Food Processing, Uttarakhand

NA: Not Available, Figure in parentheses depict year to year percentage change.

Table 1 depicts year wise percentage change in area, production and yield of fruits, vegetables, spices, flowers and all horticultural crops in Haridwar district from 2002-03 to 2010-11. It may be noticed that acreage under fruits has increased from 10757 in 2002-03 to 14368 in 2010-11 (33.56 per cent). The year to year percentage change in area was recorded the maximum during 2005-06 over 2004-05. It is pertinent to mention that production of fruits has almost doubled in the district over this period. The yield scenario was found commendable in 2004-05 by indicating a percentage change of 109.83 per cent. The year to year percentage change in yield was found negative in five years out of 8 years.

Like fruits, acreage under vegetables in Haridwar district increased significantly between 2002-03 and 2010-11. The year to year percentage change was positive all through except in the year 20003-04. The yield scenario was found depressing since productivity of vegetables has declined from 19.19 MT/ha in 2002-03 to 15.04 MT/ha in 2010-11 in view of limited expansion in area and increase in productivity of vegetables in Haridwar during the referred period, year to year percentage change in production was also found low except the year 2007-08.

Spices were cultivated on 563 ha in Haridwar during 2002-03. The acreage has shown an increase of 48.31 per cent between 2002-03 and 2010-11. The year to year percentage change was found mixed. The maximum positive change in area under spices was observed around 97 percentage points in 2007-08 over 2006-07. It is Depressing to note that productivity of spices has declined significantly during this period. It came down from 14.25 MT/ha in 2002-03 to 7.82 MT/ha in 2010-11 by showing a decline of 45.12 percentage points. The affected production of spices which also declined from 8016 to 6528 over this period. The year to year percentage change in production of spices was observed negative as well as positive in the district.

The cultivation of flowers in Haridwar district received impetus being a place of pilgrimage where flowers are used as offerings. Therefore, area under

flowers increased from around 205 ha in 2004-05 to 623 ha in 2010-11. The productivity of flowers in Haridwar has almost doubled during the referred period. The area expansion and increased in productivity has positively affected the production which has increased by almost 384.24 percentage points between 2002-03 and 2010-11.

The overall scenario of Horticultural crops in Haridwar district during the new millennium was found encouraging since acreage and productivity of these crops increased significantly. The area expanded by 51.59 per cent whereas yield increased by 26.18 per cent during the referred period. As a result, production, registered an increase of 91.38 per cent. The year to year percentage change in area, production and yield of Horticultural crops in Haridwar district were observed negative as well as positive. It could be attributed to climatic factors in the State.

Comparatively Study of Horticulture Crops Pattern: Haridwar V/S Uttarakhand

Having analyzed area, production and yield of vegetables and fruits crops at the State level, it would be prudent to analyze the scenario of Horticulture crops at the district level. Table 2 indicate the Dehradun, Nainital, Almora, Pauri Garhwal and Tehri Garhwal were the major district where fruits are cultivated. These districts together accounted for 58 per cent of total cultivated area. Pithoragarh, Haridwar, Uttarakashi, Chamoli and Champawat showed more than 5 per cent share in over all area under fruits crops in Uttarakhand during 2010-11. As far as, share of these leading districts in production of fruits is concerned, a significant gap could be noticed. The results for Almora are commendable since this district contributed around 22 per cent in production against 12 per cent in total area under fruits in the State. Haridwar Chamoli also fall under the same category. Tehri Garhwal has contributed one third in production in comparison to its share in area. The yield of fruits crops, in Uttarakhand was 3.60 MT/ha which is much below the all India level. However, four districts, namely Haridwar, Chamoli, Almora and Udham Singh Nagar achieved a yield rate above the State level during 2010-11.

Table 2:

District-wise Area, Production and Yield of Horticultural Crops in Uttarakhand during 2010-11

Sl. No.	Districts	Area (ha)	(%) Share	Production (MT)	(%) Share	Yield (MT/ha)
1	Nainital	34,719	12.81	190,606	12.90	5.49
2	Udham Singh Nagar	13,867	05.12	113,327	07.67	8.17
3	Almora	29,315	10.82	226,993	15.36	7.74
4	Bageshwar	5,507	02.03	29,705	02.01	5.39
5	Poithoragarh	21,704	08.01	112,428	08.29	5.64
6	Champawat	15,486	05.71	37,115	02.51	2.40
7	Dehradun	35,765	13.19	182,746	12.37	5.11
8	Pauri Garhwal	26,207	09.67	58,621	03.97	2.24
9	Tehri Garhwal	29,108	10.74	97,192	06.58	3.34

10	Chamoli	18,614	06.86	130,115	08.81	6.99
11	Rudraprayag	4,252	01.57	12,121	0.82	2.85
12	Uttarkashi	16,957	06.27	109,042	7.37	6.43
13	Haridwar	19,503	07.20	167,545	11.34	8.59
Total		271,005	100.00	1,477,555	100.00	5.45

Source: Ibid

After discussing the district wise scenario of fruits crops in terms of area, production and yield, we will examine the same for vegetable crops. Vegetables form an important segment of Horticulture in Uttarakhand. The cultivation of vegetables is found concentrated in Dehradun, Nainital and Tehri Garhwal districts. These districts together constituted around 40 per cent of total area under vegetables in the State during 2010-11. In addition, six districts i.e. Udham Singh Nagar, Pithoragarh, Champawat, Almora, Haridwar and Pauri Garhwal recorded more than 5 per cent share in total area under vegetables crops in the State. A positive and negative gap could be observed under the share in area and production. Haridwar, Dehradun and Pithoragarh registered a positive gap between 2 to 3 per cent due to higher level of productivity. The yield of vegetable crops in Uttarakhand was 9.88 MT/ha during 2010-11. Haridwar followed by Pithoragarh registered higher productivity of vegetables in comparison to other districts.

Like fruits and vegetables, spices are also grown in almost all districts in Uttarakhand. Tehri Garhwal, Almora, Dehradun and Udham Singh Nagar emerged as the leading districts and together constituted around 39 per cent of total area cultivated in the State during 2010-11. In addition, Haridwar, Pauri Garhwal and Champawat contributed around 14 per cent area. The positive and negative gap in contribution of individual district in area and production could be noticed. The leading district of Tehri Garhwal has contributed relatively lower share in production in comparison to area. The yield of spices in Uttarakhand was 7.23 MT/ha during 2010-11. Haridwar and Nainital were the front runners in the productivity of spices in comparison to the remaining districts of Uttarakhand. An examination of area under flowers indicates that Haridwar, Udham Singh Nagar and Dehradun together constituted around 76 per cent of total area under flowers in the State. In particular, Haridwar constituted around 46 per cent of total area and thus, showed concentration of floriculture due to being a popular place of pilgrimage in the State. A large gap could be noticed in contribution of individual district in area and production. The leading district of Haridwar contributed around 15 per cent in production against 46 per cent in area. This is largely due to poor productivity which was found much below the state. Nainital with the yield of 12.58 MT/ha emerged as a model that should be replicated in other flowers growing districts of the State.

Research Methodology and Sources Data

1. Study including sampling and self-observation of horticultural crops in the study area.
2. Comparative study of study area by obtaining second data related to horticulture as source from Uttarakhand state.

Conclusion

This research paper aims to present main finding of this study and to draw policy implications in order to harness potential of horticulture sector in District Haridwar. The study of this paper is a departure from earlier studies in terms of its focus on issues related to data on this research is to compare the field survey data on horticultural crops with baseline data available from secondary sources in Uttarakhand and to point out problems encountered by grass root officials in collection of primary data. Horticulture is emerging as one of the important sub-sectors of Agriculture in India. The area, productivity and exports of horticultural crops increased many folds during the past two decades. The area, production and yield of horticultural crops grew at the rate of 3.11, 4.41 and 1.27 per cent annum between 1991-92 and 2011-12. As a result, India has emerged as the second largest producer of fruits by contributing 11.2 per cent share in world fruit production. Among fruits, mango, banana and citrus contributed 67 per cent in production during 2011-12.

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