



An Appraisal on Horticulture Activities in Maharashtra State

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Abstract

Production of fruits and vegetables has become increasingly important. The state produces around 90% of its horticultural output from fruits. The availability of trustworthy data regarding these crops' area and production at different levels is one of the fundamental needs for careful planning aimed at boosting national production. Currently, only eleven states are receiving estimates of the acreage and production of essential fruits and vegetables program.

An alternate methodology for estimating the acreage and productivity of various horticulture crops was developed. The estimations of the area, and production of significant fruits have been included in this research.

Keyword: Horticulture, Horticulture crops and production, Challenges Faced by Horticulturists

Introduction:

The horticulture industry has emerged as the most promising sector with the potential to diversify agricultural employment in rural areas. This is because a variety of crops can be grown under various agroclimatic conditions, enhancing good return on land, creating jobs, and supplying wholesome food (Singh 2008; Bhattacharjee 2013). The terms "hortus," which means "garden," and "cultura," which means "culture," are the roots of the word horticulture. Consequently, it encompasses the science and methods of growing, preparing, and selling fruits, vegetables, flowers, spices, plantations, and aromatic and medicinal plants.

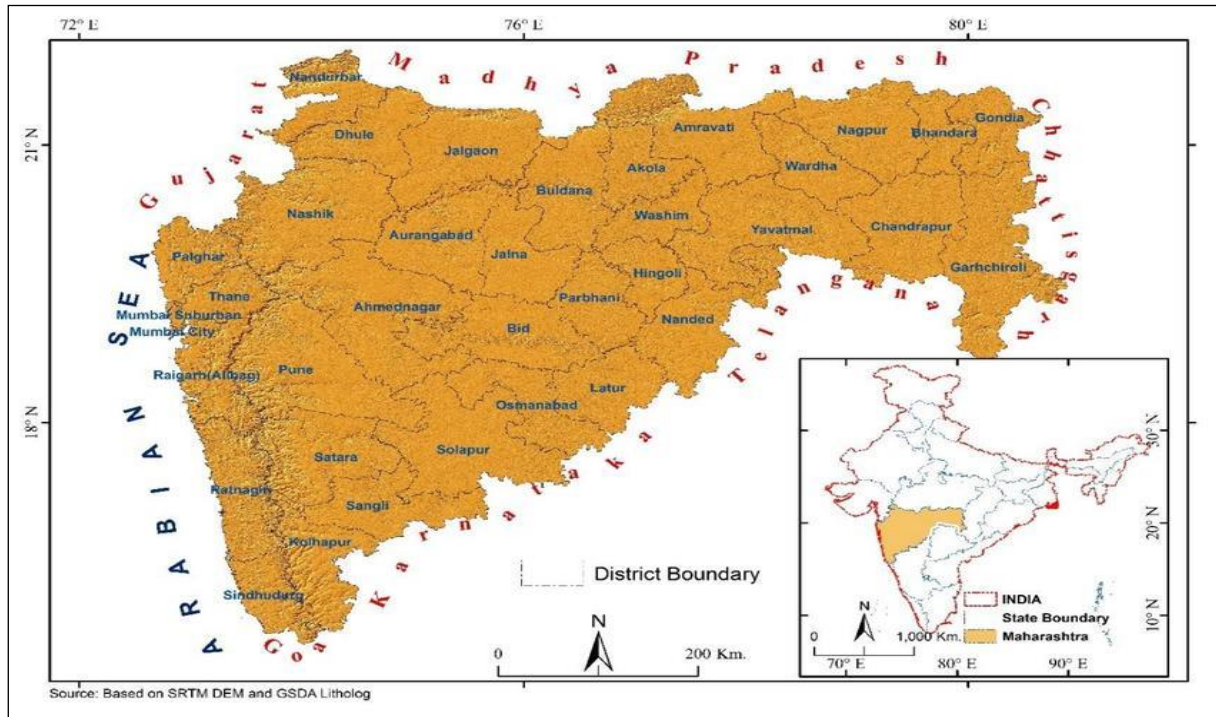
Study Area:

The entire state of Maharashtra has been chosen for the current study. This area is located between latitudes 15° 44' and 22° 06' N and longitudes 72° 56' and 80° 54' E (Fig. 1). Total Area: 3, 07,713 square kilometers In Maharashtra, the yearly average temperature ranges from 28.25°C to 20.53°C. Maharashtra receives roughly 1350 mm of

rain on average (Gadgil, 2002). There is a lot of variances in the research area with regard to temperature, humidity, rainfall, slope, geology, soil type, and vegetation. As of January 1, 2016, the State had 36 Districts: Ahmednagar, Dhule, Jalgaon, Kolhapur, Nandurbar, Nashik, Pune, Sangli, Satara, and Solapur from Madhya Maharashtra; Aurangabad, Beed, Hingoli, Jalna, Latur, Nanded, Osmanabad, and Parbhani from Marathwada; Akola, Amravati, Bhandara, Buldhana, Chandrapur, Akola, Gondia, Nagpur, Wardha, Washim, and Yavatmal from Vidarbha. The 36 districts of the state are separated into six revenue divisions, known as "Konkan," Pune, Nashik, Aurangabad, Amravati, and Nagpur. These districts have efficient planning tools at the district level.

There are 34 "Zilla Parishads," 351 "Panchayat Samitis," and 27,873 "Gram Panchayats" for local self-governance in rural areas. 26 Municipal Corporations, 226 Municipal Councils, and 13 Municipal Councils oversee the metropolitan areas.³

Map No.1



Overview of Horticulture in Maharashtra

Horticulture in Maharashtra is a dynamic and multi-faceted sector encompassing the cultivation of fruits, vegetables, flowers, and spices. The state is divided into several agroclimatic zones, each suitable for different types of horticultural crops. The western ghats, the Deccan plateau, and the coastal regions all contribute uniquely to the state's horticultural diversity.

Objective-

To analysis of an Appraisal on Horticulture Activities in Maharashtra State

Methodology:

The majority of the data included in this research comes from Surveys, field observation, and other scientific methods used in both the field and labs. Secondary sources include documents from government agencies, non-governmental organisations, village records, and census reports that include data and tables. Involvement of locals in addition to professional judgement, recommendations, and counsel from suitable and competent individuals affiliated with different agencies are also incorporated.

Key Initiatives and Programs:-

The Maharashtra state government, along with central agricultural bodies, has initiated several programs to boost horticulture:

1. **National Horticulture Mission (NHM):** Aimed at increasing the area under cultivation, improving productivity, and enhancing the marketing of horticultural produce.
2. **Maharashtra State Horticulture Corporation Ltd (MSHC):** Provides support for production,

processing, and marketing of horticultural crops.

3. **Promotion of Organic Farming:** Several schemes encourage the adoption of organic farming practices, which are gaining popularity among farmers.
4. **Cold Storage and Processing Infrastructure:** Investments in cold storage facilities and processing units aim to reduce post-harvest losses and add value to horticultural produce.

Horticulture crops and production in Maharashtra:

Maharashtra stands sixth in respect of area under floriculture in the country with approximately 7000 ha. under cultivation. The major flower crops grown are roses, chrysanthemum, aster, tuberose, jasmine, gaillardia, marigold etc. These flowers are mainly grown in Pune, Nasik, Ahmednagar and Sangli Districts. Recently many private companies and progressive farmers in the State have started export oriented cultivation of flower crops. The crops grown are roses, carnations, gerbera, gladiolus, lillium, etc. These companies have contributed much more in floriculture development through green houses and tissue culture technology. There are 14 big corporate green houses and 902 small green houses are erected on farmer's field. Under the Government of India's scheme "Commercial Floriculture", Horticulture Department of Maharashtra State has established a model floriculture center at Rajgurunagar, District Pune. One hi-tech floriculture unit with an investment of Rs. 3.00 crores are established in College of Agriculture, Pune to demonstrate hi-tech technology to the farmers. The state Government has taken lead

to establish auction market on the lines of Dutch auction center (AlSameer) at Goregaon, Mumbai. Besides this, the Maharashtra State Agricultural Produce Marketing Board has established one hi-tech floriculture center at Talegaon, Pune. An organization "Western Maharashtra

Floriculturists Association" is working in the state. The average share of Horticulture in Gross State Value Added (GSVA) of Crop sector is 28.4 per cent. Horticulture area increased from 18.94 lakh ha in 2019-20 to 21.09 lakh ha in 2020-21, showing an increase of 11.4 per cent. As per first advance estimates, total area under fruit crops during 2021-22 was 8.41 lakh ha, of which area under mango was highest (1.68 lakh ha) followed by pomegranate (1.66 lakh ha), grapes (1.19 lakh ha), orange/mandarin (1.18 lakh ha), banana (0.84 lakh ha) and sweet orange (0.64 lakh ha) in the State.

Fruit Crops: A variety of citrus fruits, pineapple, banana and other temperate fruits grown in the sub-mountainous, and foothills area of the state of Maharashtra.

Mango:

Mango is one of the most important fruit crops in the State. In the year 2011-12, Mango area is 229700 hectares and the production of that year is 15,188 thousand meters, on the year 2023-24 this area has increased to 240000 hectares and the production has increased to 21789 thousand meters. There is a huge demand for the fruit and also the increase in this production is found through modern agriculture. This increase is on an average i.e. during the period 2011-12 to 2023 24 the area increased by 10300 hectares and the production increased by an average of 6601000 metric tons.

Table 1: State level crop statistic report (2011-12 to 2023-24 estimate)

Area in '000 Ha
Production in '000 MT

Crops	2011-12		2023-24 (First Advance Estimate)		Change 2011-12 to 2023-24	
	Area	Production	Area	Production	Area	Production
Fruits						
Apple	289	2891	319	2714	30	-177
Banana	830	29780	993	37378	163	7598
Citrus						
(i) Lime/Lemon	219	2108	309	3771	90	1663
(ii) Sweet Orange (Mosambi)	157	1316	234	3875	77	2559
(iv) Other Citrus	147	784	106	789	-41	5
Citrus Total (i to iv)	846	7464	1114	14782	268	7318
Grapes	111	1235	171	3781	60	2546
Guava	205	2462	352	5429	147	2967
Jackfruit	36	540	185	3199	149	2659
Mango	2297	15188	2400	21789	103	6601
Papaya	106	4196	141	5202	35	1006
Pineapple	89	1415	109	1848	20	433
Pomegranate	107	743	257	3059	150	2316
Other Fruits	913	5447	301	2780	-612	-2667
Total Fruits	6382	74878	7148	112077	766	37199

(Source: Directorate of Agriculture and Horticulture, Government of Maharashtra, 2023-24)

lakh hectares area in Konkan division under the export quality cultivar "alphonso". So also, trial export consignment of "Kesar" mango was sent from Marathwada region. The share of the state in total export of mangoes from the country is 60-65%. Besides export, there is a good demand for Alphonso, Keshar, Dashahari, etc. varieties in other parts of the country also. Considering the demand for processed products like pickles, juice, etc., there is a scope for establishment of processing units in the State. A decreasing trend is being noticed in the yield of mango. This is mainly due to monoculture, which reduces the chances of availability of pollens of different varieties and thereby reducing fruit set. Secondly, excessive use of Cultar (Paclobutrazol) is also responsible for over exploitation of the fruit

bearing capacity of the orchards. Rejuvenation of old orchards for higher production is essential. The Konkan has potential for increasing area under Alphonso mangoes. The areas adjacent to Arabian Sea or creeks are suitable for cultivation of Alphonso variety. This variety has potential for domestic markets and export. Western Maharashtra, Marathwada and Vidarbha are suitable for 'Keshar' variety. Other varieties suitable for cultivation in the state are Ratna, Sindhu, Langra, Totapuri, Begumpalli, Dashari and Konkan Ruchi.

Apple:

The production and area of Apple fruit is less in Maharashtra but in 2011 12 the area was 289 hectares and the production was 2891 metric tons. It 23 24 shows a decrease in average area by 40

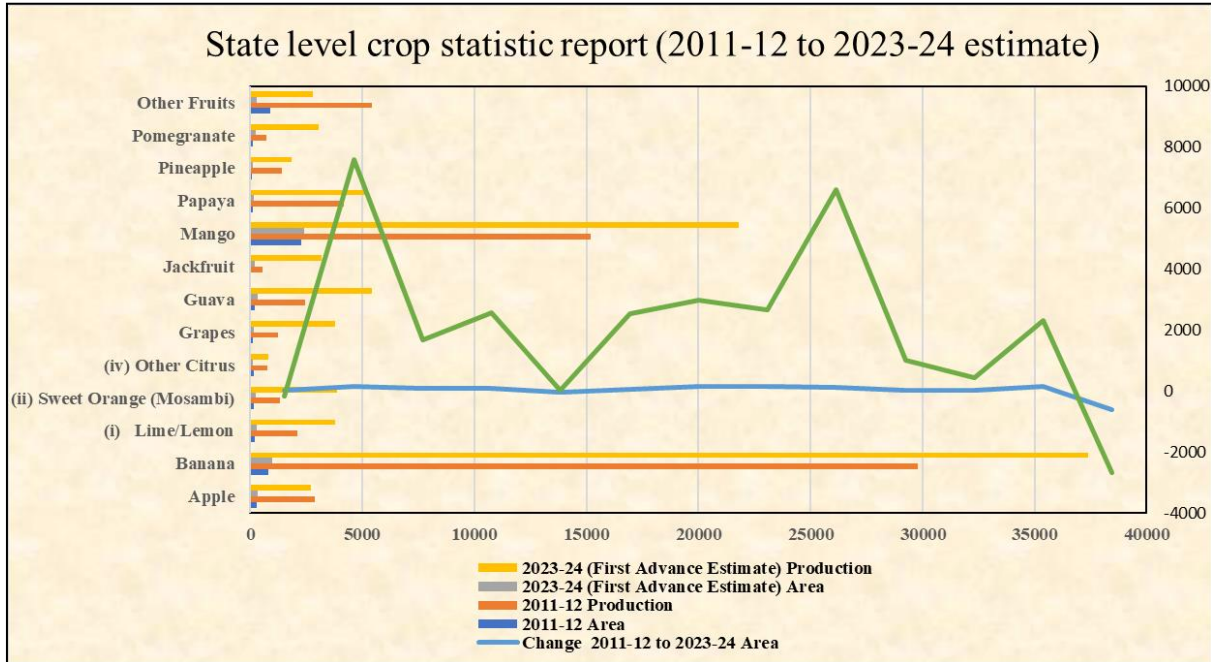
hectares and production by 177 metric tons.

Banana:

The average production of Banana is the second highest in Maharashtra. In the year 2011-12, the area of the banana fruit was 830 hectares and 29 thousand 780 m of banana was produced on this

same production increased to 37 thousand 378 m on 2023-24 and the area increased to 993. The average during the period of 2011-12 to 23-24 is 163. By increasing the area by hectare, the production is increased by 7598 metric tons.

Graph No.1



Grapes

Maharashtra stands first in area and production of grapes in the country. In the table, the area under grapevine in the year 2011-12 was 111 00 hectares and the production was 1235 000 metric tonnes. In the year 2023-24 the area increased to 3781 00 and the production increased to 60000 MT which means that modern agriculture is in high demand internationally and also the produce suitable for wineries is grown in the state and all this is exported to the international market.

However, this industry needs to be supported with imported technology. The major cultivars grown in the state are Thompson seedless and its derivatives Sharad seedless, sonaka, tas-e-ganesh. Also flame seedless and some other cultivars are also cultivated in the state. Grape wine industry is coming up on a large scale because of huge demand in domestic and international markets. The area under wine purpose varieties should go up quickly to sustain the demand pressure from the wineries. The state has National Research Centre on Grapes in Pune district. The Maha grapes, Association of grape exporters and Grape Growers Association are actively involved in the development of grape industry and promotion of export. They import Gibberellic acid and dipping oil in bulk quantity and provide it to the member farmers at moderate rates.

Guava:

In 2011-12, the production of Bua fruit was 205 hectares and 2462 metric tons were produced in this area, the same production in 2023-24 is 352 hectares and 5429 metric tons were produced. On an average, during the period 2011-12 to 23-24, the area increased by 147 hectares and the production on this area increased by 2967 metric tons.

Jack fruit:

The production of jack fruit in Maharashtra is less but in 2011-12 the total area was only 36 hectares and the production was 540 m, the production in the period 2023-24 was 3199 metric tons and the area increased by 185 hectares. On an average, during the period 2011-12 to 23-24, the area increased by 149 hectares and the production increased by 2659 m.

Papaya:

The production of papaya fruit is 106 hectares in 2011-12 and 4196 metric ton is produced, the same area has increased by 141 hectare and 52002 metric ton has been produced during 2011-12 to 23-24 with an average area of 35 hectare. It can be seen that the production of this fruit has increased by 16 meters.

Pineapple:

The area of Pineapple in 2011-12 was 89 hectares, while the production of 1415 metric tons in the period 2023-24 increased to 100848 meters and

the area was 1009 hectares. Productivity is seen to increase

Pomegranate:

Maharashtra stands first in the country in respect of area and production of pomegranate.

Production of Pomegranate as shown in the above table, in the year 2011-12, an area of 107 00 hectares was available and an average production of 743000 metric tons was produced. On the year 2023 24 this area increased to 3,059 00 and its production was 150000 metric tons.

The varieties like Ganesh and Mrudula are suitable for table purpose. The pomegranate has very good potential for export. However, processing techniques need to be evolved. Considering the growing importance of this crop, the National Research Centre for Pomegranate should be established immediately.

Sweet Orange (Mosambi):

Oranges are mainly grown in Vidarbha region of the State. The production of sweet orange in Maharashtra in 2011-12 was 157 00 hectares and 1316 000 metric tonnes were produced in this area. By 2023 24 this area has increased to 234 00 and the production has increased to 3875 000 metric tonnes. On average, 2559 000 MT production increased by 7700 MT during the period 2011-12 to 2023 24. The Orange orchards in Vidarbha are facing the problem of decline on large scale. Therefore, varieties resistant to phytophthora and also varieties suitable for exports and processing needs to be developed. Extension efforts for better bahar management, prevention of fruit drop of Mandarin Orange is essential. Organized markets for domestic marketing of Mandarin Orange to provide better remuneration to the farmers, needs to be established.

Sweet Orange:

Sweet Orange is a major fruit crop in Marathwada region of the State. 0.77 lakh hectares area is under this crop and 0.34 lakh hectares is under production. The total production is about 5.18 lakh M.T. Since 1998-99, control market is started at Jalna for sweet orange growers in their production area.

Land Lemon:

In 2011-12, the production area of line lemon was 219 00 hectares and its production was 2108 000 metric tons, this area increased to 309 00 hectares and production 3771000 metric tons in 2023-24 and from 2011 12 to 23 24 During this period the area increased by 9000 hectares and the production increased by 1663 000 metric tons.

Banana:

Maharashtra stands second in respect of area and first in respect of productivity of banana in the country. The productivity is more than 60 M.T. per hectare. At present 72,000 ha. area is under banana crop. Maharashtra is pioneer in cultivation of Dwarf Cavendish variety useful for table purpose.

Even though the productivity is highest in the country efforts needs to be made to evolve pest and disease resistant varieties for export and processing needs to be evolved. Similarly, establishment of processing industries in the area of production is essential for value addition.

Papaya:

Papaya is another potential fruit crop of the state. Apart from great potential as a table fruit, it is suitable for papain Extraction and other value-added products. Suitable varieties for higher papain yield and resistant to pest and diseases needs to be developed.

Other fruit Crops:

In the state of Maharashtra, the average area of other fruits was 913 hectares and it has increased and decreased by 301 hectares during the period of 2023-24. The same production was 5447 metric tons during the period of 2011-12 and it came down to 2780 metric tons during the period of 2023-24, i.e. the average area decreased by 612 hectares. 2667 The decline in production is seen to affect international trade as well as supply.

Considering the soil and climatic conditions, the area under fruit crops like Sapota, Guava, Custard apple, Tamarind, Amla, Strawberry, Pine apple, Fig, Ber etc. is increasing. Some of these crops have very good export and / or processing potential, however, suitable varieties need to be evolved. Under exploited fruit crops Fruit crops like karonda, jamun, kokum, jack fruit, charoli, wood apple, beal, bhokar etc. have good potential especially for export and processing. These crops have good medicinal properties. Most of these crops are very hardy and can grow under adverse climatic conditions. Identification and evolution of suitable varieties and standardization of package of practices is necessary. The efforts to introduce new fruits like Litchi, etc. need to be supported and scientifically tested by the SAUs.

- E.G.S. linked horticulture development programme must be continued and approximately an area of 200000 ha should be brought under cultivation of various fruit crops every year. The quality of planting material needs to be ensured for genuineness of variety, disease free material, vigour and vitality of planting material. For this purpose, testing facilities must be developed. Facilities like Eliza test & other tests, certification mechanism for planting material needs to be established.
- Use of micro nutrients, plant growth regulators, micro irrigation, micro propagation, training and pruning techniques etc. needs to be standardized.
- There is need to introduce new varieties, conserve them in germplasm, thereafter mass clonal multiplication. Varieties such as Tommy Atkins, Kent, Ratol, Sindri and varieties suitable for processing in mango, figs with high TSS, better alternative to mandarin oranges must be introduced

in Maharashtra. After introduction, efforts must be concentrated on their acclimatization, demonstrations, standardizing cultivation practices, pre- and post-harvest management, mechanization to reduce cost of cultivation, IPM, INM etc. Is essential promote commercial horticulture. Use of salt tolerant rootstocks such as salt crick, dogridge in grapes, khirni in sapota, aonla is essential to bring problematic soils under cultivation

- Cropping pattern, crop geometry needs to be studied. Maharashtra horticulture is predominantly dry land horticulture. However, there are no crop models as they are available for agricultural crops. Hence Argo -horticulture crop-based models need to be defined on the basis of - IPM, - Dry land intercropping concept to minimize risk & optimizing returns based on traditional models Ex. Marigold in cotton, Jawar with cucurbitaceous crop like "waluk-Gudmakailu"

Challenges Faced by Horticulturists: -

Despite its success, the horticultural sector in Maharashtra faces several challenges:

1. **Water Scarcity:** Irrigation is critical for horticulture, but water scarcity in many regions affects crop yields and quality.
2. **Pest and Disease Management:** Horticultural crops are vulnerable to pests and diseases, which can lead to significant losses.
3. **Market Fluctuations:** Price volatility and inadequate market infrastructure can impact farmers' incomes.
4. **Climate Change:** Shifts in weather patterns and extreme climatic events pose risks to horticultural production.
5. **Lack of Modern Technology:** The adoption of advanced agricultural technologies and practices remains limited among small and medium-sized farmers.

Future Prospects and Recommendations: -

Looking ahead, several strategies could enhance the sustainability and growth of horticulture in Maharashtra:

1. **Enhanced Research and Development:** Investment in R&D to develop disease-resistant varieties and efficient farming practices.
2. **Water Management:** Implementing advanced irrigation techniques and rainwater harvesting to tackle water scarcity.
3. **Value Addition:** Encouraging the development of processing units to create value-added products and reduce post-harvest losses.
4. **Farmer Education and Training:** Providing training programs to educate farmers about best practices, pest management, and technology use.
5. **Infrastructure Development:** Expanding cold storage facilities and improving transportation networks to ensure better market access.

Conclusion:

Horticulture in Maharashtra is a cornerstone of the state's agricultural economy, contributing significantly to both livelihoods and the state's GDP. While the sector has made impressive strides, addressing the challenges it faces is crucial for sustaining its growth and development. With continued support, innovation, and investment, Maharashtra's horticultural sector is well-positioned to flourish and contribute even more to the state's prosperity. Therefore, is an important component of agriculture that has played a very significant role in the economy of the country.

Horticulture in Maharashtra is heading for a drastic transformation as most of the horticultural crops have the advantage over the traditional crops in generating rural employment, enhancing rural income and have high potentiality to tap national and international markets. Thus, the state government has a vision of transforming Maharashtra into a fruits and flowers state of the country by setting "Horti-hubs" in different districts of the state so as to harness horticultural crops and take them to a larger scale hence, making them more viable and productive.

Future horticultural policies in India should take into account issues with data management, agribusiness, dead reckoning systems, land fragmentation, and the lack of highly urbane horticultural technological centers. For horticultural variables like yield, biotic and abiotic indicators of crops, and assessments of various sites and farms, spatial data offers useful information. Farmers and producers can reduce expenses and increase yields by reducing the use of pesticides such as fungicides, insecticides, and fertilizers. This can also improve plant health and agricultural output overall. In general, growers now have a robust and reliable method for making decisions regarding the spatial management of their fields thanks to space technology.

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