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## **Government Intervention in Horticulture Development – The Case of Maharashtra**

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### **I**

#### **BACKDROP**

Maharashtra's agriculture has been traditionally dominated by low value cereal production. This is because agriculture in the state is mainly rainfed and barely 16 per cent of the area cultivated is under irrigation. Since the last two decades however, the Government of Maharashtra has been making concerted efforts to improve the productivity of land through diversification to high value agriculture. In other words the government is promoting horticulture because a variety of fruits and vegetables can be grown in different agro-climatic zones of the state.

This paper attempts to understand the various aspects of horticultural development of Maharashtra that has taken place due to the initiative of the state government since 1990. The paper is divided into five sections. Section II discusses the current status of the horticultural sector in Maharashtra. Section III discusses the various provisions under the horticulture development programme linked to the Employment Guarantee Scheme. Section IV deals with the constraints and challenges faced by the horticultural sector and finally, Section V discusses the policy suggestions.

### **II**

#### **STATUS OF HORTICULTURAL SECTOR IN MAHARASHTRA**

As horticultural development had strength and potential in the state, a Department of Horticulture was established in 1982. At this time the area under fruit crops was only 0.14 million hectares. The government further implemented a number of schemes, gave technical guidance to the farmers and established 140 government nurseries in the state. This led to increase in area under horticultural crops by 0.1 million hectares and thus by 1989-90, 0.24 million hectares were covered by these crops. However, this increase in area was negligible as farmers faced several constraints such as high initial investment, poor quality planting material, long gestation period, low credit availability and marketing bottlenecks. Thus the potential in horticulture could not be realised.

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The state is the home of the renowned Alphonso mango, ranks first in grape, orange, cashewnut and pomegranate production and has the highest productivity in banana in the country. The state also has four state agricultural universities, four colleges of horticulture and two colleges of forestry. It has three National Research Centers (grapes, citrus and onions). Further, it also has infrastructure for floriculture industry in the form of greenhouses, pre-cooling units, cold storage units and reefer vans. The state also has crop-based farmer organisations such as Grape Growers' Associations which provides technical consultancy to farmers and Western India Floriculturist Association, which again provides service and support to farmers and promotes exports. Again the state has Pomegranate Growers' Association, Banana Growers' Association, Mango Growers' Association, Medicinal and Aromatic Plants Growers' Association and Association for Organic Spices Cultivation. All these associations promote cultivation and export of produce. There are also 1600 registered fruit nurseries in the state. Marketing, both domestically and internationally, is further facilitated by the easy accessibility of major ports and established domestic and international airports. With this encouraging infrastructure, the Government of Maharashtra was motivated into promoting horticulture in a big way.

### III

#### HORTICULTURE DEVELOPMENT PROGRAMME LINKED WITH EMPLOYMENT GUARANTEE SCHEME

In Maharashtra out of 9.47 million operational holdings, 40 per cent are marginal while 30 per cent are small (Government of Maharashtra, 1996). Diversification of agriculture to horticulture provides one of the few and most attractive alternative land-use systems to improve the financial status of cultivators operating in these small and marginal holdings. Moreover, horticultural activities are more labour intensive and could provide employment throughout the year as compared to seasonal crops. It provides scope for value addition and promotes activities like tissue culture, cold storage, processing, export etc. It also promotes secondary industries like grading, packaging, transport, etc. This can help to generate demand for labour in Maharashtra where 28 per cent of the workforce that is engaged in agriculture as agricultural labourers. It can also generate rural non-farm employment. Further while the conventional grain crops yield only Rs. 4,000 to Rs. 12,000 per hectare, the yield of fruit crops per hectare range from Rs. 0.12 million to Rs. 0.23 million (Government of Maharashtra, 2005-06). Thus the per hectare yield of horticultural crops can be 20 times or more than that of conventional crops. Further, the commodity composition of State Domestic Product (SDP) in Maharashtra also indicates that while the share of foodgrains in gross cropped area was 60 per cent, its contribution to agricultural state domestic product was only 25.5 per cent. In contrast, fruits and vegetables which account for only 5.6 per cent of gross cropped area,

accounted for as much as 24 per cent of agricultural state domestic product. Thus high value horticulture enables the farmers to secure better returns and also brings wasteland under cultivation. This can increase rural income, which can generate consumer demand from rural areas which in turn can stimulate growth in other sectors of the economy.

### *Objectives and Features of Horticulture Development Programme*

Keeping in mind the potential of promotion of horticulture, the Government of Maharashtra introduced the Horticulture Development Programme Linked with Employment Guarantee Scheme (EGS) in 1990-91. The following were the broad objectives: (i) To utilise 2.9 million hectares of cultivable waste area. (ii) To convert land from low value agriculture to high value agriculture. (iii) To generate employment opportunities in rural areas. (iv) To control soil erosion and (v) To improve the socio-economic condition of the farmers.

The salient features of the scheme were: (a) Horticulture programme can be taken up on the land of any farmer irrespective of his caste and size of holdings. (b) Plantation can be taken up on the minimum land of 0.2 hectares and maximum of 4.00 hectares of a beneficiary. (c) The programme can be executed at 100 per cent government cost in the lands of farmers belonging to Scheduled Caste/Scheduled tribe/Nomadic Tribes and of small farmers. In case of other beneficiaries, the government would provide 100 per cent assistance on wages and 75 per cent assistance on inputs. The subsidy is given in cash for wages and in kind for inputs such as planting material, fertiliser, plant protection chemicals, etc., for a period of three years.

The government invites applications from farmers for subsidy. Normally all farmers who apply receive the subsidy. Overall 30 fruit crops have been covered under this scheme. In addition, spices, medicinal and aromatic plants are covered under this scheme.

### *Achievements of the Scheme*

The main objective of the scheme is to bring more land under fruits and vegetables.

The area under horticultural crops which was 2.4 lakh hectares in 1989-90 increased over the years and in 2006-07, the area cultivated under this scheme was 12.54 lakh hectares out of which 22 per cent was fallow land. Table 1 indicates the progress of area under horticultural crops in Maharashtra since 1990 in various administrative divisions of Maharashtra.

TABLE 1. AREA UNDER EGS HORTICULTURE PROGRAMME IN VARIOUS DIVISIONS OF THE STATE

<i>(ha)</i>							
Sr. No (1)	Admin divisions (2)	Area before EGS (3)	1990-91 to 1999-2000 (4)	2000-01 (5)	2006-07 (6)	Total EGS area (7)	Total area (8)
1.	Konkan	56600	217622	26116	8453	310094	366694
2.	Nashik	61600	83388	3758	7412	122936	184536
3.	Pune	24000	155056	5850	9001	201276	225276
4.	Kolhapur	10600	80042	2603	5136	98972	109572
5.	Aurangabad	11700	88355	3937	11660	130929	142629
6.	Latur	15300	102144	4726	15498	149992	165292
7.	Amravati	37500	108201	5221	8745	141042	178542
8.	Nagpur	24700	80092	3509	3876	99581	124281
	Maharashtra	242000	914900	55720	69781	1254822	1496822

Source: Department of Horticulture, Government of Maharashtra, Pune.

From Table 1, it can be observed that almost the entire area under horticulture in Maharashtra is covered under the horticulture linked EGS scheme. This shows the concerted efforts made by the government in promoting horticulture. Further, in Table 2 we have shown the share of various divisions in the state under horticulture linked EGS. As in case of Table 1, Table 2 also shows that primarily it is the Konkan division which dominates as far as the share of area under the programme is concerned. However, it is interesting to note that there has been a marked increase in the share of area under the in other divisions also. This means that efforts have been made at the government level to spread the scheme throughout the state.

TABLE 2. SHARE OF VARIOUS DIVISIONS OF THE STATE IN AREA UNDER EGS HORTICULTURE PROGRAMME DURING 1990-91 TO 2006-07

<i>(per cent)</i>							
Sr. No. (1)	Division (2)	Area under horticulture before EGS (3)	1990-91 to 1999-2000 (4)	2000-01 (5)	2006-07 (6)	Total EGS area (7)	Total area (8)
1.	Konkan	23.39	23.79	46.87	12.11	24.71	24.50
2.	Nashik	25.45	9.11	6.74	10.62	9.80	12.33
3.	Pune	9.92	16.95	10.50	12.90	16.04	15.05
4.	Kolhapur	4.38	8.75	4.67	7.36	7.89	7.32
5.	Aurangabad	4.83	9.66	7.07	16.71	10.43	9.53
6.	Latur	6.32	11.16	8.48	22.21	11.95	11.04
7.	Amravati	15.50	11.83	9.37	12.53	11.24	11.93
8.	Nagpur	10.21	8.75	6.30	5.55	7.94	8.30
	Maharashtra	100.00	100.00	100.00	100.00	100.00	100.00

Source: Same as in Table 1.

From Table 3, it can be observed that maximum area under horticulture linked EGS was under mangoes and cashew nuts till 2000-01 followed by citrus fruits. However, that the area under citrus fruits has picked up and therefore their share in the total area is currently around 20 per cent. Pomegranate and custard apple, also present a similar case.

TABLE 3. SHARE OF CROPS IN AREA UNDER EGS HORTICULTURE PROGRAMME  
1990-91 TO 2006-07

(per cent)						
Sr. No. (1)	Crops/Fruit (2)	Area before 1990-91 (3)	1990-91 (4)	2000-01 (5)	2005-06 (6)	Total area (7)
1.	Mango	11.78	12.69	36.37	25.13	24.41
2.	Mango graft	0.00	45.53	0.00	0.00	7.09
3.	Cashew nut	8.88	4.02	24.07	5.14	9.70
4.	Cashew nut graft	0.00	0.00	0.00	0.55	2.16
5.	Coconut	3.43	1.30	2.13	0.52	2.21
6.	Sapota	0.87	0.89	7.29	6.10	4.71
7.	Sweet Orange	19.46	3.85	5.86	8.41	11.04
8.	Mandarin	2.64	2.88	5.08	15.67	7.34
9.	Guava	2.27	1.58	2.19	1.34	2.22
10.	Pomegranate	2.64	5.43	3.62	12.52	7.59
11.	Custard apple	0.54	4.36	1.77	4.84	2.52
12.	Others	47.48	17.59	11.66	19.89	19.05
	Total	100.00	100.00	100.00	100.00	100.00

Source: Same as in Table 1.

Table 4 shows the number of beneficiaries under the scheme. It can be seen that total a of 18 lakh beneficiaries have been covered under the scheme so far since 1990-91, the highest number of beneficiaries being covered under Konkan division followed by Pune division. It can be seen that in the post-2000 period, the total number of beneficiaries has increased by more than 6 lakhs at the state level.

TABLE 4. DISTRICT WISE AND YEAR-WISE NUMBER OF BENEFICIARIES UNDER EGS  
HORTICULTURE PROGRAMME 1990-91 TO 2007-08

Sr. No. (1)	Divisions (2)	1990-91 to 1999-2000 (3)	2000-01 (4)	2007-08 (5)	Total of all years (6)
1.	Konkan	291399	31682	15075	429368
2.	Nashik	105264	5634	11089	170001
3.	Pune	245790	9414	13534	333330
4.	Kolhapur	137304	4993	8714	179927
5.	Aurangabad	106808	5894	22118	193824
6.	Latur	117233	6082	19270	201520
7.	Amravati	114355	5613	15428	168408
8.	Nagpur	96194	5171	6113	129034
	Maharashtra	1214347	74483	111341	1805412

Source: Same as in Table 1.

Table 5 presents the values of expenditure on the EGS horticulture programme by the state government. It is observed that since 1990, the expenditure is continuously increasing for all the divisions. The highest amount of expenditure is spent in the Konkan region.

TABLE 5. TOTAL EXPENDITURE UNDER E.G.S HORTICULTURE PROGRAMME IN VARIOUS DIVISIONS OF THE STATE 1990-91 TO 2006-07

<i>(Rs. lakhs)</i>					
Sr. No. (1)	Divisions (2)	1990-91 (3)	2000-01 (4)	2006-07 (5)	Total of all years (6)
1.	Konkan	425.89	2070.30	1293.74	29284.41
2.	Nashik	186.38	424.18	1345.08	10184.76
3.	Pune	463.53	1042.34	1596.85	17668.21
4.	Kolhapur	167.28	503.77	763.72	9419.30
5.	Aurangabad	441.51	443.29	1229.57	10317.88
6.	Latur	519.05	722.81	1537.84	11541.82
7.	Amravati	320.89	695.42	730.71	12058.55
8.	Nagpur	206.06	688.11	477.67	7886.78
	Maharashtra	2730.59	6590.22	8975.18	108361.71

Source: Same as in Table 1.

#### *Infrastructure and Government Initiatives for Promotion of Horticulture*

To promote the horticulture linked EGS, the Government of Maharashtra has provided supplementary and complementary infrastructure besides adopting programmes to ensure supply of key inputs and services.

The state has set up 823 small farmers green houses and encouraged 14 corporate green houses. A center for excellence in tissue culture and 21 tissue culture laboratories have been set up. The infrastructure created by the state agricultural universities included 4 herbal gardens and nurseries, 4 analytical labs for medicinal and aromatic plants, 12 plant health clinics for testing genetic purity, 8 disease forecasting units and 2 leaf and tissue analysis laboratories (Directorate of Horticulture, Pune).

In order to face the challenges of WTO, an executive committee was appointed under the chairmanship of the state Minister for Agriculture. A website "agri.mah.nic.in" on agriculture was launched by the agriculture department which disseminates information about the scheme. As the state suffers from acute water shortage, the state took advantage of centrally sponsored sprinkler – drip irrigation scheme. The state has also participated in a 100 per cent centrally sponsored scheme for commercial floriculture. The scheme also provides a subsidy to marginal and small farmers to enter into floriculture production (upto 0.10 hectare). It covers 50 per cent of the cost of the project upto a maximum of Rs. 6,000.

Twenty agri-export zones have been identified for encouraging the export of specific horticultural products from the regions where they are produced, including

four in the state of Maharashtra, namely grapes and grape wine, mangoes, kesar mangoes and flowers. Agri-export zones strengthen the backward linkages with a market oriented approach. They promote value addition to basic agricultural produce, improve the quality of one produce and promote trade related R and D. The purpose of setting up agri-export zones is also to create and upgrade essential infrastructure to facilitate exports. Both farmers and exporters are likely to benefit from these zones.

The state has also set up a Horticultural Training Centre with financial and technical support from the Netherlands. This center imparts hi-tech training of international standards in polyhouse farming and promotes production of international quality produce for export. The beneficiaries of this center are polyhouse workers, farmers, entrepreneurs, government officials and students. To further encourage exports, the state has set up a Vapour Heat Treatment Facility. This facility is an effective post-harvest treatment for fruits and vegetables where horticulture produce is exposed to hot water and vapour to effectively destroy pests. It is used especially to control the spread of "Fruit fly" a major problem in exports. Countries like Japan insist on subjecting all fresh horticultural produce to Vapour Heat Treatment before exporting the produce. This facility has helped to export fruits and vegetables to quality conscious markets. Exports are also done by sea in Controlled Atmosphere containers to U. K., Singapore and Hongkong and reach their destination in good condition.

Overall it appears that the state of Maharashtra has made an all-round effort in diversification of agriculture. Besides promoting the cultivation of horticultural crops, the government is also concentrating on backward linkages such as providing high quality planting material, extension services and technical guidance. Forward linkage in the form of post harvest infra-structure support has also been given due attention.

#### IV

##### EMERGING CHALLENGES IN THE HORTICULTURAL SECTOR

The Government of Maharashtra has been promoting the horticultural sector with a view that it could play a major role in improving the overall output from land resources and at the same time help in building the rural as well as the national economy. The growth in this sector has high potential being driven by rising incomes, high-income elasticity and increasing demand from the current low values of per capita consumption. The main growth will be in the form of demand for fresh fruits. There also exists opportunities for the processed food sector to grow. Thus while the horticulture sector has immense untapped potential and is also set to grow, there are several emerging challenges that this sector has to face.

(A) *Marketing of the Produce:* As area under horticulture is showing an increasing trend over years, the production of fruits will naturally increase. Therefore, development of a well co-ordinated market system, value addition and agro-



processing will have to play a major role. In India however fruits are consumed mainly as table fruits and processed fruits and vegetables play only a marginal role. Moreover, only specific varieties of the fruits can be processed and hence farmers must be encouraged to grow these varieties.

(B) *Very High Levels of Wastage and Value Loss*: The fruit and vegetable sector is marked by a very high degree of wastage and value loss. The storage and handling techniques at the farm are inadequate. By and large, all crops are harvested simultaneously and the harvesting of the produce is done without considering the distance over which the produce has to be transported. As a result, the natural processes of ripening can greatly add to value loss during transportation, before the produce leaves the farm.

Marketing of the produce is also characterised by high traders' margins and several intermediaries, each of whom adds to the costs. The McKinsey Report (1997) highlighted that while farmers in the more developed markets receive 40 per cent to 70 per cent of the final retail price, in India they receive as little as 25 per cent of the end consumer price. A further problem is that although the intermediaries are cumulatively high cost, they add little value to the produce, their primary role being to bring the buyer and seller together.

(C) *Water Constraints*: Although the area under horticultural crops has increased under the government programme, the state of Maharashtra is regularly faced with severe drought conditions and untimely rains which lead to high mortality rates of plants. The programme is more successful in areas where water is available, mainly in western Maharashtra where mango and cashew are grown. Water constraints are therefore likely to pose a major threat to the successful implementation of the scheme.

(D) *Inadequate Infrastructure in Airports*: Horticultural crops have high export potential. However, several exporters face major constraints due to inadequate cold storage facilities in the international airports. The horticultural produce after reaching the airport is often kept at high temperature before loading in the aircraft. Horticultural produce is highly perishable and sensitive to temperatures and sudden exposure to high temperatures from refrigerated vans leads to deterioration in the quality of produce. There have been several instances when consignments after reaching their destination have been rejected.

(E) *Quality Control to Meet Export Standards*: Exports are required to comply by the stringent export quality standards failing which would lead to barriers in trade. Although, the state has high export potential, farmers often lack awareness on export quality requirements and do not follow the recommended practices leading to low

quality produce with high pesticide residue. This again leads to rejection of the produce.

V

#### POLICY SUGGESTIONS

Promotion of horticultural crops did not receive any attention in India in terms of investment prior to the Eighth Five-Year Plan as major emphasis was laid on attaining self-sufficiency in food grains. However in light of the fact that such crops have potential in the diversification towards high value agriculture, generate employment, encourage agro-industrial base, provide nutritional security and enhance export earnings, there has been a major policy shift in favour of horticulture.

The government of Maharashtra made special attempts to promote horticulture by providing subsidy to farmers through horticulture linked EGS programme. While progress has been made in this direction and the government has undertaken several complementary and supplementary initiatives, this sector has yet to face a number of constraints and challenges as outlined in the earlier section. Some policy measures to further capitalise on this sector are:

(i) The number of intermediaries involved in marketing the produce is very large and this adds to the final cost of the produce. Since each intermediary carries a risk, they have substantial mark-up resulting in low share of the farmers in terminal price. It is therefore necessary to consolidate the markets in the form of co-operatives of growers who can sell their produce directly to large buyers such as processors and retailers. In developed countries such organisations exist and they help to increase the share of the farmer in the terminal price and also reduce wastage.

In India also fragmentation of the market must be discouraged and retailers should try and purchase directly from the farmers. Organised retailing in India forms a small fraction of the entire retail trade in the country. However, it is important to note that in the recent past the retail revolution has gathered momentum and big corporate units like Reliance, Godrej, ITC, Bharati group, etc. have entered the market to capitalise on the opportunities such as processing, marketing and export of horticultural products. These companies have informal linkages with small and large farmers to source the produce, besides procuring through contract farming. ITC is linking farmers across the country on the online platform through e-choupal. As a part of its e-choupal, it plans to cover 10 million farmers in 1 lakh villages in 15 states, and plans to set up 20,000 e-choupals shortly ([www.supplychain.in](http://www.supplychain.in)). Reliance Retail has an ambitious “field to fork” retail plan whereby it will directly source produce from fields, route it through its natural distribution centers and supply it to consumers. However, the agro-retail chains face problems in collecting produce from the villages in the interiors due to poor transport facilities and purchase mainly from villages that are close to towns. Hence transport bottlenecks are a major problem that need priority in policy formulation.

Besides the role played by the corporate sector, the Government of India has also set up the National Horticulture Board for the development of horticulture in the country with post-harvest management and marketing being the thrust areas. A number of schemes have been introduced to disburse soft loans for exploitation of commercial horticulture.

Further, government initiatives such as amendment of Agricultural Produce Market Committee Act to pave the way for direct marketing and contract farming are also a step to promote horticulture. While there are a few success stories with respect to contract farming, the laws are still restrictive which prevent it from being an adaptable and transparent solution.

(ii) Most of the fruits and vegetables cultivated are not suitable for processing, being mostly household varieties. It is therefore necessary to provide quality seeds and planting material to farmers along with extension services so as to improve productivity and quality of the produce. Post-harvest technology must be developed and strengthened so as to increase the shelf-life of the horticultural produce.

(iii) As stringent food standards are gradually being introduced, it is necessary to promote awareness among farmers in this direction. As horticultural products are being exported to various countries and have great export potential, the Sanitary and Phyto-Sanitary standards imposed by the developed countries must be applied. In order to remain competitive in the global markets, it is necessary to impose such measures, so that they do not serve as an impediment to trade. While the country is making modest efforts in this direction, there is still a long road ahead.

Overall, it can be concluded that while horticulture in the country and Maharashtra in particular has tremendous potential, infrastructure bottlenecks, absence of post-harvest management and other logistics act as major constraints. It is only when policy can address these issues that the potential will be realised. While efforts are being made in this directly both by public and private sector, there is still a long way ahead.

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