



MARKETING PERFORMANCE OF HORTICULTURAL CROPS IN MAHARASHTRA STATE

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Abstract

The objective of this paper is to examine the production and marketing performance of horticultural crop production in Maharashtra state. Efficiency estimation and identification of their determinants in mixed-crop and market horticultural crop production systems was performed in Maharashtra state. A significant economic inefficiency was observed for both systems, with lower efficiency scores for the market driven farm production. The improvement in efficiency calls for institutional capacity building that enhances asset and capital formation, extension and credit services, consumption and family planning and crop specialization. Results based on the comparison of the two production systems show that lower economic efficiency scores for the market driven production is attributable to limited access to capital markets, high consumer spending, and large family size. Furthermore, an assessment of the marketing performance of horticultural crops is conducted. Since most produce sales are based on relational contracting with traders, the study of market performance encompasses an analysis of grower-trader marketing contract enforcement and factors influencing it. Results show that despite its poor performance, contract enforcement is mainly due to mutual trust and brokers' mediation. Information access, trader-specific investments, farmer's age, whether the buyer is a trader, dependency on the trader, relationship duration, transaction frequency, and distance to the trader were found to be the significant factors affecting contract enforceability through brokers. Risks related to perish ability and seasonality of supply, illiteracy, and client-buyer's type were found to be the significant factors causing contract breaches by the traders.

In addition, traders' produce pricing behavior in the procurement of horticultural crops from growers is analyzed. Results show that traders capture a significant proportion of the marketing surplus due to market power and audacity to absorb risk with this share varying along the degree of perishability and across cities. In general, the results of this study reveal the existence of considerable economic inefficiency in production, poor contract enforcement, and imperfect competition in the marketing of horticultural crops. The findings of this study indicate the need for governmental or private institutions interventions to improve the production and marketing performance of horticultural crops by providing the necessary institutional support to the smallholder farmers in the study areas.

Key words; Production, Horticulture, Vegetable, Crops, Farmers, Market, Technology.

INTRODUCTION

Maharashtra is the third largest state in respect of area and second in terms of population. The rural population of the state is 61.3 per cent of the total population and the literacy rate is 64.9 per cent. The geographical area of the state is 308 lakh hectares. The total gross cropped area is 224 lakh hectares, of which 176 lakh hectares is under net crop. Maharashtra is basically rain-fed state with 84 per cent area leaving only 16 per cent under irrigation. Out of this around 17 per cent is through well irrigation. Maharashtra has always taken an initiative in adopting new technologies. During the recent past the state has emerged as one of the horticulture, states. The export of grapes, mango, flowers and vegetables have shown increasing trend. This shows the impressive achievements of state in the horticultural development. Many 100 per cent Export Oriented Units have been established in the state mainly in the field of floriculture, tissue culture, mushrooms etc. The well organized co-operative infrastructure of Grape Growers Association has not only promoted the Viticulture in the state but also brought our state on the world map. With such achievements the thrust of farmers for newer technology and crops is ever increasing. Maharashtra ranks foremost on the horticulture map of the country and a forerunner in increasing area under horticulture by more than 600 per cent within a span of a decade. As a result, access to nutritious diet has increased for the society, particularly for the poor.

But though the customer is enjoying ample availability of various fruits in the market, he is not getting it at competitive prices. On the other hand, farmer is also not satisfied with the remuneration he is getting, as the prices are behaving erratically. This happens mainly because of the perishability of the horticultural produce. Various interventions such as processing, cold chain, market tie-ups etc. were tried in the State. Though these efforts were limited and scattered, the results shown are encouraging. It is also realized that area expansion efforts should invariably be backed by suitable facilities for post harvest handling and processing including forward linkages.

Maharashtra Agriculture:

Total Geographical Area : 308,000 sq Km

Area under Agriculture : 22198000 Ha

Area under Irrigation : 3636000 Ha (16%)
Area under Fruit Crops : 15.90 L Ha
Total Fruit Production : 103.24 L Mt.

1. OBJECTIVES OF THE STUDY

The general objective of this study is to examine the farm level efficiency of horticultural production and the performance of markets for these products.

The specific objectives of the study are:

1. To study of the Growth Trends of Horticultural Crops in Maharashtra States.
2. To study of the district-wise break up of physical and financial programme of Community Tanks for the year 2011-12.
3. To offer a few suggestions for the efficient and effective marketing of Horticultural Crops.

2. PRODUCTION OF HORTICULTURAL CROPS IN MAHARASHTRA STATES.

2.1 Fruits

Maharashtra is a leading state in the production of fruits producing 11047.6 Thousand tones of fruits from an area of 1432.3 thousand hectare, contributing 17.39 per cent to the total fruit production in India, Productivity at 16 MT/Ha. is also fairly good as compared to the country's average of 12MT/Ha. Major fruits grown in the state are mango, coconut, sapota and cashew. Maximum area is under mango cultivation i. e. 455.8 thousand hectares. There is large scale expansion of area under Alphonso variety of mango. Maharashtra has a competitive advantage over other states in the production of onion, grapes, oranges and Alphonso mango. Maharashtra has emerged as a leading producer and exporter of Alphonso mango which is one of the most popular varieties of mango. Alphonso mango occupies the maximum area in Konkan region. Maximum exports of mango from our country are of this variety. Aurangabad, Jalna, Beed, Latur, Osmanabad, Nanded, Parbhani and Hingoli are the other districts of Maharashtra that produce sizeable quantities mango. Nasik, Pune and other adjoining areas are the prominent production belts of grapes. In the recent past, these belts have exported a significant quantity of grapes. The quality of these grapes is considered to be very good in international markets. Grape growers are coming up as progressive farmers and are adopting new technologies in the areas of post harvest management, packaging etc. Citrus is another important crop of Maharashtra including Nagpur and other adjoining districts. A lot of research work has taken place in Nagpur on citrus. The area and the production of major fruit crops in the State as on 2011 – 12 is given in the table 1 below:

(Area in '000 ha; Production '000 tones).

Table 1. Area and Production of Major Fruit Crops in Maharashtra State

Fruit Crop	Area	Production
Banana	80	4962.9
Citrus	261.3	1627.7
Grape	45.6	1290.0
Guava	32	250.5
Mango	455.8	710.9
Pomegranate	96.5	596.2
Sapota	65.3	294.1
Others	395.8	1315.3
Total	1432.3	11047.6

Source: NHB Database 2012

2.2 Vegetables

Maharashtra ranks 5th in vegetable production contributing 5.8 percent of the total vegetable production in India, The total production of vegetables in Maharashtra is 6454.9 thousand tones covering a total area of 455.3 thousand hectares. Productivity is low as compared to the nation's average. Tomato, brinjal, onion, bitter-gourd, cabbage and ridge-gourd are the major vegetables grown in the state. Area and production figures as on 2011 –12 are shown in the table 2 given below. The trend in most of the important crops like tomato, gourds, cabbages, onion etc. is positive, both in terms of area and productivity. However, in case of minor vegetables (having relatively small area e.g. exotic vegetables, winter vegetables etc. presented as 'others' category in the table); there is an increase in the area but decline in productivity. This is due to the fact that new crops, having excellent demand and high prices in Mumbai market, are being experimented by the farmers.

(Area in '000 ha; Production '000 tones)

Table 2. Area and Production of Major Vegetable Crops in Maharashtra State

Vegetable Crop	Area	Production
Brinjal	29.4	479.2
Cabbage	15.1	383.0
Cauliflower	13.1	330.7
Okra	26.3	165.4
Peas	6.0	27.7
Tomato	32.2	715.3
Onion	254.5	4003.1
Potato	19.1	198.2
Others	59.6	152.3
Total	455.3	6454.9

Source: NHB Database 2012

2.3 Floriculture

Maharashtra is a major producer of floriculture products with more than 9000 hectares of area under various flowers. The major traditional flowers grown in Maharashtra are rose, chrysanthemum, marigold, jasmine and tuberose, whereas, gladioluses, aster, Stacie, lilies, gerberas and carnations are grown among the non-traditional flowers. Maharashtra has emerged as a leading State for production, export and consumption of flowers in the country. The most important features of floriculture development in the State include setting up of large number of Export Oriented Units with foreign collaboration and investment. The climate of Pune and Nashik region facilitate the setting up of such units without heavy investment on environment control. Maharashtra is offering state of the art infrastructure for floriculture industry to grow. Also, peaceful and non-hazardous environment is responsible for successful operation of these units. Besides, the State Government is promoting a Floriculture Park at Talegaon near Pune. The production of loose and cut flowers as on 2007 – 08 is 69.45 thousand MT and 5728 lakh respectively. The area and production of various flowers as on 2011 – 12 in the State has been given in table 3 below:

(Area in ha; Production in tones)

Table 3. Area and Production of Major Flowers in Maharashtra State

Flowers	Area	Production
Rose	3100	6975
Marigold	2800	31500
Gladiolus	350	3903
Jasmine	800	1680
Tuberose	400	2840
Others	1800	9180
Total	9250	56078

Source: NHM Database, Maharashtra 2012.

2.4 Plantation Crops

The area and production of principal plantation crops in the state as on 2011– 12 has been given in table 4 below, Maharashtra ranks 1st in the cashew-nut production in the country producing 210 thousand tones from an area of 167 thousand hectares. (Area in '000 ha; Production '000 tones).

Table 4. Area and Production of Major Plantation Crops in Maharashtra

Plantation Crop	Area	Production
Cashew-nut	167.0	210
Areca-nut	2.2	3.6
Coconut	21.0	120.5
Total	190.2	334.1

Source: NHB Database 2012.

2.5 Spices

The area and production of principal plantation crops in the state as on 2011 – 12 has been given in table 5 below. As indicated from the table, Chili and Garlic are the two major spices grown in the State accounting for 47.28 per cent and 42.93 per cent of total production of spices in the State respectively. (Area in ha; Production in tones)

Table 5. Area and Production of Major Spices in Maharashtra State

Spice Crop	Area	Production
Chili	98030	47080
Ginger	1280	1230
Turmeric	6798	8508
Garlic	6364	42750
Total	112472	99568

Source: Spices Board, India Database 2012

3. GROWTH TRENDS OF HORTICULTURAL CROPS IN MAHARASHTRA STATE

Focused attention in the planning process resulted in increase in area and productivity and resultantly, in production of horticulture crops. Due to the effort made for horticulture development, the concept of hi-tech and commercial horticulture reached small and marginal farmers. It is a fact that horticulture & plantation sector has provided opportunity of crop diversification, resulting into increased income from the land and also the nutrition security.

a. Area expansion: Area under fruits, vegetables, spices, and plantation crops for the period ranging from year 2001-02 to year 2011-12 has been tabulated in Table 6. The trend indicates that there has been remarkable increase in area under fruits and vegetable crops compared to growth of area under plantation crops and spices.

Table 6. Area of Horticultural Crops in '000 ha

Year	Fruits	Vegetables	Floriculture	Spices	Plantation crops
2001-02	1216.0	890.0	8643.0	15600.0	185.2
2002-03	1227.0	918.0	8678.7	15645.0	186.9
2003-04	1247.2	928.6	8695.2	15650.7	189.8
2004-05	1263.4	929.4	8698.8	15655.5	190.0
2005-06	1277.5	929.8	9010.5	15661.8	190.1
2006-07	1285.6	931.6	9012.0	15664.5	190.2
2007-08	1365.2	932.0	9014.2	15665.1	192.7
2008-09	1389.6	975.9	9016.7	15667.3	193.4
2009-10	1402.0	994.2	9017.1	15669.4	193.9
2010-11	1418.3	998.6	9018.3	15672.9	194.4
2011-12	1432.3	1012.3	9025.0	15673.4	195.2

Source: NHB database 2012.

b. Production expansion: Estimated production figures for above mentioned crops have been for years from 2001-02 to 2011-12 as shown in Table 7. It can be inferred that increased production of vegetables is resultant of both the area increase as well as increase in productivity. However, there is a need for focus on capital formation in terms of irrigation, crop protection measures, farm mechanization, post harvest management, transport infrastructure, market linkages, etc.

Table 7. Production of Horticultural Crops in '000 MT

Year	Fruits	Vegetables	Floriculture	Spices	Plantation
2001-02	10029.5	6440.9	56070.8	99558.9	330.6
2002-03	10030.6	6442.6	56072.9	99560.8	330.8
2003-04	10031.5	6443.6	56073.2	99562.2	331.7
2004-05	10040.9	6446.7	56074.2	99563.9	332.5
2005-06	10093.4	6448.7	56076.2	99566.7	333.2
2006_07	11047.6	6454.6	56078.0	99568.0	334.3
2007-08	11050.7	7952.1	56079.8	99569.6	335.5
2008-09	11061.3	8454.1	56080.9	99570.1	336.4
2009-10	11075.1	8961.8	56082.2	99571.5	337.5
2010-11	11077.6	9027.7	56083.7	99576.8	337.8
2011-12	11084.6	9031.8	56084.7	99578.9	338.9

Source: NHB Database 2012.

c. Productivity improvement: Productivity trend for fruits, vegetables, spices, is shown in Table 8. Trend lines for productivity indicate that there has been a sustained increase in productivity of vegetables, though with frequent fluctuations. On the other hand, the productivity of fruits and spices has not recorded remarkable increase. As only the factor of long gestation period of new plantations of fruit and plantation crops may not fully explain this therefore; productivity of fruit crops continues to be a matter of serious concern.

Table 8. Productivity of Horticultural Crops in MT/ha

Year	Fruits	Vegetables	Spices
2001-02	5.82	12.39	2.5
2002-03	6.83	12.40	2.5
2003-04	7.82	12.49	2.5
2004-05	7.83	12.89	2.5
2005-06	7.76	12.40	2.5
2006-07	7.69	12.50	2.6
2007-08	7.68	12.60	2.6
2008-09	7.24	12.50	1.3
2009-10	7.57	12.90	2.8
2010-11	7.98	12.90	2.9
2011-12	7.99	12.90	3.0

Source: NHB Database 2012.

This pattern of growth of productivity of fruits and plantation crops may be attributed to lack of linkage between area expansion programmed and availability of quality planting materials, low productivity of old and senile plantations.

4. CREATION OF WATER RESOURCES

Maharashtra being drought prone and the large area of horticulture being under rain-fed plantation, the creation of water source as a component is to be taken up in a big way. State is already having a scheme under EGS for individual farm ponds. The guidelines for the community water tanks do not indicate a definition of the community and the number of farmers who will have to come together for such a community tank. It is presumed that a group of more than one farmer qualifies for such an assistance on a pro-rata basis if the area of 10 ha. And assistance of Rs.10 lakhs per unit is proportionately reduced to the smaller area, Lesser Assistance at a rate of Rs.1 lakh per ha. of plantation would be provided for the water source. The farmers in Maharashtra are already taking up water reservoirs with plastic lining and it is suggested that the assistance could also be extended to the individual farmer having water tank with plastic line. The water stored in community tanks will be effectively used for horticultural crops through micro irrigation technologies. The district-wise break up of physical and financial programme for the year 2011-12 is given.

Table 9. Physical and financial programme of Community Tanks for 2011-12 Community Tanks with Sr. No. use of plastic

District	Phy. No.	Fin. (Rs. In Lakh)
1. Thane	1.00	10.00
2. Raigad	1.00	10.00
3. Ratnagiri	1.00	10.00
4. Sindhudurga	1.00	10.00
Division Total	4.00	10.00
5. Nasik	3.00	30.00
6. Dhule	2.00	20.00
7. Nandurbar	1.00	10.00
8. Jalgaon	2.00	20.00
Division Total	8.00	80.00
9. Ahmednagar	2.00	20.00
10. Pune	2.00	20.00
11. Solapur	3.00	30.00
Division Total	7.00	70.00
12. Satara	2.00	20.00

13.Sangli	3.00	30.00
14.Kolhapur	2.00	20.00
Division Total	7.00	70.00
15.Aurangabad	1.00	10.00
16.Jalna	1.00	10.00
17.Beed	1.00	10.00
Division Total	3.00	30.00
18.Latur	2.00	20.00
19.Usmanabad	2.00	20.00
20.Nanded	2.00	20.00
21.Hingoli	1.00	10.00
22.Parbhani	1.00	10.00
Division Total	8.00	80.00
23.Buldhana	1.00	10.00
24.Akola	1.00	10.00
25.Washim	1.00	10.00
26.Amravati	2.00	20.00
27.Yeotmal	1.00	10.00
Division Total	6.00	60.00
28.Wardha	2.00	20.00
29.Nagpur	1.00	10.00
30.Bhandara	2.00	20.00
31.Gondiya	1.00	10.00
32.Chandrapur	1.00	10.00
33.Gadchiroli	0.00	0.00
Division Total	8.00	80.00
State Total	51.00	510.00

Source: NHB Database 2012.

5.CONCLUSIONS

In recent years, the government of Maharashtra has embarked upon new development strategies that put emphasis on moving farmers from a semi subsistence to market-oriented farming systems. This policy intends to enhance farm productivity and marketing efficiency of high value crops as one of its main objectives. Consequently, quantifying farm productivity and surplus share of market participants, and identifying their determinants are of importance for providing sound policy advice. This study adds information to the existing empirical literature on performance evaluations by analyzing farm productivity and marketing performance of horticultural crops in a semi subsistence economy given output price risk and uncertainty. The study reveals poor production, contract and marketing performances for these crops. Improvements in farm-level efficiency rely on institutional capacity building that enhances asset ownership, extension and credit services, consumption and family planning know-how, and crop as well as income diversification. This implies that policy makers need to focus on providing institutional support to farmers rather than focusing on introducing new technologies, which if the necessary technical and managerial skills are not in place may result in continued inefficiencies in production. The impact of contract performance upon economic growth seems unrecognized by the policy makers in many developing state. Formal institutions involvement in enforcing contracts is minimal. Societal and cultural norms that support trust building have been fading. However, as argued by many studies on contracts trust among parties has a significant impact in facilitating exchange, providing higher quality of goods, and lower the costs of governance by reducing the need for expensive contracting, enforcement, or litigation. Contract performance improvement demands contract innovations and adequate information systems. It also requires the development of institutions that may facilitate the enforcement of contracts, and provide financial and managerial support to the contracting parties. The study results indicate that even though contracts perform poorly, its enforcement is mainly due to mutual trust and brokers' mediation. The significant share of the marketing surplus that traders receive from the sales of horticultural crops might be related to the absence of strong public and private institutions that facilitate the enforcement of contracts. This fact tends to decrease farmers' incentive to produce the market-driven goods thereby reducing the overall output level as well as the export earnings from this sector. The brokerage institutions need to be strengthened since this would reduce the cost of enforcing contracts and the problems associated with asymmetric information. The results of the analysis of produce pricing efficiency of horticultural crops actually show that traders capture a major proportion of the marketing surplus due to market power and the audacity to absorb output price risk. It is also shown that traders' share is



higher for the most perishable vegetables than others. Marketing margins widen as supply increases, supporting the argument that large volume of shipment of perishable commodity reduces farm prices. The substantial share of marketing surplus allocated to traders due to the absorption of risk might be related to the less severe punishments traders receive for breaching contracts. The building of societal norms, cooperatives, strong public and/or private institutions, adequate marketing and information networks are consequently needed to improve the marketing performance of horticultural crop production in Maharashtra state

6. SUGGESTIONS

Based on the results from this study, some suggestions for future research can be inferred.

First:- Due to lack of separate data for measuring the performance of producers who market their products on contractual basis and those who do not, we have not been able to compare the production performances of the two groups. Hence, further research is required to supplement the general hypothesis that contract farming improves efficiency in production by mitigating the adversities that arise due to market failure conditions.

Second:- Whether farmers' risk preferences affect production, contract, and marketing performances are issues subject to debate in economics. By collecting relevant data on risk preferences of farmers, the analysis of production, contract, and marketing performance improvements associated with different risk preference scenarios may be important. The issue is relevant since in Article IV traders are found to capture a substantial share of the marketing surplus for bearing output price risk in the trade. Hence, an analysis of the extent to which farmers' share of the marketing surplus depends on their risk preferences might help to provide knowledge to improve the performance of markets. This is important since the significant share of the marketing surplus that traders receive might not only be explained by traders being risk seekers, but may be because farmers are extremely risk averse.

Third:- The issue of whether improvements in production and marketing performances may be attained by introducing small scale processing/procurement industries that add value to horticultural crops is of importance given the perishable nature of the produce and the long distance trade in a situation with less developed infrastructure.

Fourth:- The analysis of spatial efficiency of horticultural crops is of importance to examine whether there are resource misallocations in shipping horticultural crops from surplus producing regions to horticultural crops-deficit regions.

Finally:- A partial equilibrium analysis of the effects of recent market policies on the spatial efficiency of high value crops with export potentials might be useful to evaluate the prospective social gains attributable to policies geared towards improving market performances.

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