



Government Of Maharashtra
Department Of Agriculture

World Bank assisted

Maharashtra Agricultural
Competitiveness Project
(MACP)

Marketing Strategy Supplement
(MSS)

District - Thane

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(Agriculture),

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Abbreviations

ABPF	-Agri Business Promotion Facility
AES	-Agri Ecological Situation
AGMARK	-Agri Marketing Information Network
APMC	-Agriculture Produce Market Committee
ATMA	-Agricultural Technology Management Agency
BTT	-Block level technology Team
CIGs	-Common Interest Groups
DMI	-Director of Marketing and Inspection
FAC	-Farmers Advisory Committee
FCSC	-Farmers Common Service Centers
FIAC	-Farmers Information and Advisory Center
FIG's	-Farmer Interest Groups
HPTI	-Horticulture Processing and Training Institute
MACP	-Maharashtra Agriculture Competitiveness Project
MANAGE	-National Institute of Agricultural Extension Management
MSS	-Marketing Strategy Supplement
NFSM	-National Food Security Mission
NHM	-National Horticultural Mission
PA	-Producer Associations
PC	-Producer Company
PCN	-Project Concept Note
PG	-Producer Groups
PHM	-Post Harvest Management
PPP	-Public Private Partnership
RKVY	-Rashtriy Krishi Vikas Yojana

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Executive Summary

The overall goal of this document is to analyze relevant information that will enable the creation of sustainable and replicable businesses for farmers groups in the district of Thane. This report aims to contribute to the already existing 'Market Strategy Supplement' document developed by Vanamati and outlines the existing marketing systems and channels in the district along with analyzing the emerging crops of the district. This information will be critical in helping us understand the current activities and developments in Thane and enabling us to identify potential business opportunities that farmer groups can establish in the district. Furthermore, this document will also serve as a base document for ATMA and other organizations to plan their activities centered on developing specific capabilities of farmers, improving infrastructure in the district as well as providing required services to farmers and other stakeholders.

The primary crops as identified by our analysis for the district are found to be Paddy, Sapota, Ragi, Vari and Coconut. TechnoServe has primarily focused on these five crops to further detail out the report and has identified three specific business opportunities: Sapota collective marketing unit, Vari processing unit and Fresh-cut packaged fruits and vegetables unit. In addition to these businesses Ragi flour processing unit, Mini rice mill and Puffed rice processing unit are also suitable for Thane. These businesses have been proposed after a thorough analysis of the district keeping in mind the district profile.

In order to encourage business enterprises for farmer groups, basic facilities and services will need to be offered and improved. For instance, farmers will need to be encouraged and trained on ensuring continuous and good quality raw material for the processing units. Further, marketing infrastructure will need improvement so as to reduce post harvest losses leading to better quality raw material for the businesses. The section on 'Recommendations' exhaustively discusses the factors that need to be taken into consideration for encouraging business activity amongst farmer groups and specifically helps identify a road map for relevant institutions.

By using a detailed analytical approach, this report has identified important information on marketing systems and emerging crops that will help in the development of the district and increase the economic and income opportunities for farmers. Specific topics discussed in this report are as follows:

1. Emerging major crops of the district
2. Price variation for emerging crops of the district
3. Farmer Assessment

4. Existing Marketing scenario
5. Constraints in the marketing system
6. Recommendations

While section 1 introduces the main crops of the districts, section 2 provides detailed information on these crops in terms of price variations and arrivals data. Section 1 and section 2 help us to explore and understand the current agricultural practices of farmers centered on the five emerging crops identified and recommend package of practices that will enable further development and income generation for farmers. This farmer assessment is discussed extensively in Section 3. Section 4 and 5 of this report then move on to evaluate the different marketing channels in the district and explore the constraints of this marketing system. These sections examine regulated markets of the district and compare these regulated markets with private markets. The main output from these sections is to understand the key trends in the marketing scenario and recommend improvements in infrastructure and services that will enable a more efficient marketing system in the district. Finally, the last section highlights the main opportunities feasible in the district centered on the emerging crops identified. This section also discusses qualitative results from the data obtained and recommends activities and services that ATMA and other similar organization can undertake to improve the agricultural and marketing facilities of the district along with building the capabilities of farmers.

Introduction

The World Bank assisted Maharashtra Agriculture Competitiveness Project (MACP) is an initiative of the Government of Maharashtra (GoM) to overcome deficiencies in the present agriculture marketing system of the State. The present marketing system is weighed down by shortcomings. Although there is a good amount of marketable surplus in the district, the producers do not get a reasonable price for their produce because of serious deficiencies in the present agricultural marketing system. Some of the main shortcomings in the system are:

- i. The value chain, especially for perishables, is too long and fragmented as a result of which the share of the producer in the consumer's rupee is very low (it is at times as low as 20%);
- ii. There is a lack of standardization and enforcement of quality and grades;
- iii. Farmers receive insufficient and ineffective information and services related to inputs; and

- iv. There is an absence of facilities for grading, packing, cold storage and processing;
- v. There is inadequate transparency in marketing; and
- vi. There is a lack of private sector investment.

This problem could be better addressed through different interventions resting on two primary pillars: i) improving extension support to farmers, and, ii) improving the agricultural marketing system. Productivity improvement and production of improved quality of agricultural produce is necessary to make agriculture viable. The thrust so far has been on increasing agricultural productivity. As a result, the extension machinery of concerned departments has been heavily focused on increasing production. Market led extension has been lacking and this has resulted in a poor understanding of agricultural marketing by the concerned departmental agencies and the producers.

Various national programs like Rashtriya Krishi Vikas Yojana (RKVY), National Horticulture Mission (NHM), and National Food Security Mission (NFSM) have been implemented in the district. The proposed MACP, with the assistance of the World Bank, is one out of the many steps taken by the GoM to address various issues and constraints so as to encourage the development of agriculture in the state. The components and subcomponents under MACP are based on the overall strategy of the State. MACP aims to enhance the productivity of agriculture and improve the quality of production by helping build the capacity of farmer producers through the Agricultural Technology Management Agency (ATMA) programs. In order to enable farmers to be competitive in the market and fetch higher prices for their agriculture produce, alternative channels of marketing are being proposed and developed amongst which strengthening the present marketing structure, by way of modernization is of key importance.

The Project Development Objective (PDO) and overall objectives of MACP are outlined below. The Project proposes to improve the productivity and quality of produce in agriculture and allied sector by various interventions proposed under Component A. Farmers will get better and reasonable returns for their produce if their access to markets is improved. This can be achieved by developing infrastructure and creating alternative marketing channels as outlined in Component B. The components and sub components of MACP and their component-level objective are enumerated below:

Component A: Intensification and Diversification of Market led Production

- i. A1: Market-led Agriculture Technology Transfer
Objective: To increase the productivity of agriculture by adopting modern technology

- ii. A2: Agri Business Promotion Facility
Objective: To create trained manpower to operate and manage infrastructure facilities
- iii. A3: Market Information Services
Objective: To improve market access for enhancing marketing opportunities for farmers
- iv. A4: Livestock Support Services
Objective: To strengthen sources of alternative income for farmers

Component B: Improving Farmer Access to Markets

- i. B1: Promoting Alternative Markets
 - B1.1: Product Aggregation and Sale through Producers Association
Objective: To provide improved post-harvest handling facilities at village level
 - B1.2: Warehouse Receipts Development
Objective: To improve the capacity of farmers on price risk mitigation
 - B1.3: Rural Haat Markets
Objective: To strengthen alternative marketing channel of traditional rural haats
 - B1.4: Introducing e-Marketing Platform
Objective: To establish e-trading as one of the alternative marketing channels
- ii. B2: Modernizing Existing Markets
 - B2.1: Modernizing Wholesale Markets
Objective: To improve transparency in all APMCs and to provide basic and productive infrastructure
 - B2.2: Upgrading Livestock Yards
Objective: To improve transparency in all livestock markets and to provide modern infrastructure

The State Government is putting in a lot of efforts to increase production by encouraging up-gradation in technology. However, there are critical gaps in the present system, because of which producers don't get reasonable value for their produce.

Project Component A seeks to focus on strengthening the ATMA programme so as to facilitate market-led extension. This will require reorienting the extension functionaries to focus on improved productivity, quality, market information and improved methods of marketing based on updated market information and intelligence. This new approach to extension work in ATMA will help strengthen the institution and operation of ATMA by

making them efficient and able to face emerging challenges in agricultural production, marketing and the agri-business.

The focus will be not only on developing and strengthening interdepartmental linkages to support not only Farmers Common Service Centers (FCSC), but also on providing support to farmers in all the districts to achieve increased income from their land based occupations involving crops, horticulture and livestock. The effort will be to implement the ATMA programme as an integrated, demand-led and farmer-centered programme for all line departments with special focus on marketing extension in all the districts of the state. The SREPs for all the districts in Maharashtra have recently been prepared and cover the production aspects of field crops, vegetables, fruits, spices, medicinal plants and livestock. In this Project the Marketing Strategy Supplement (MSS) to the SREP will be prepared for each district focusing on what needs to be done to improve market-led production, marketing related training of line department staff and farmers and linkages with the investments proposed for improving marketing infrastructure under component B of the project.

The MSS report has been prepared to strengthen the SREP and further help ATMA and other related institutions to identify gaps and issues to enable them to focus their efforts in further improving the productivity and production of agriculture in the state. Some of the key objectives of the MSS report are outlined below:

- i. To identify gaps/issues in market led production.
- ii. To study the existing marketing system of the district and to identify constraints in the marketing system.
- iii. To suggest strategies and activities to overcome gaps in market led production.
- iv. To suggest interventions to mitigate constraints in the marketing system of the district.

Methodology

The Market Strategy Supplement (MSS) for each district is aimed to identify gaps in market led production and to suggest strategies to overcome these gaps. In this process, data specific to product grade, marketing channels, infrastructure facilities as well as trade licenses is quintessential for the genesis of these strategies. After an in-depth study of the district MSS, some data gaps have been identified primarily related to marketing channels and marketing bodies as well as facilities and infrastructure at APMC's and Rural Haats.

TechnoServe has addressed these gaps by making field visits as well as by using secondary level data from new sources, and a comprehensive use of the already available data. The

refined Market Strategy Supplement Document (MSS) is a culmination of our secondary research and our primary insights from the field. The team also focused on validating the data in the existing MSS document wherever possible. While primary insights have been collected from Government stakeholders and farmers amongst other stakeholders, the secondary information has been derived from data received from the MACP and MSAMB offices in Pune and the Department of Agriculture, Government of Maharashtra. Through this process, we have addressed the gaps that exist in the current MSS document. The three-step approach mentioned above is detailed below:

- i. Primary insights: Key components of the MSS including market development, farmer level issues and the SWOT analysis amongst others are supported by primary insights from the field. This includes interactions with APMCs to synthesize the market channels for crop categories, and interactions with traders, commission agents and warehouse operators to understand the storage periods of crops across APMCs in the district. Based on primary interactions with key stakeholders including MSAMB, APMC and Department of Agriculture, a snapshot of marketing bodies and their respective roles has also been synthesized.
- ii. Secondary research: Using crop arrivals data and crop areas, as collected from MACP and Department of Agriculture, pivot tables have been created to analyze the trend in prices as well as area and productivity of emerging crops in the district. This has been analyzed against a selected criteria used to choose district crops in Parts II and I. The analysis has further been strengthened using insights from secondary research on crop trends in the recent years. Official secondary resources such as agmarknet.nic.in have been referred to, to strengthen the analysis.
- iii. Validation of existing data: The information in the existing MSS has been validated in two ways:
 - a. Field visits: Through field visits and detailed discussions with various stakeholders across the value chain, data has been authenticated and validated. Some of the key discussions have been pertaining to:
 - i. APMC and Rural Haat infrastructure
 - ii. Agro processing industries and ginning factories
 - iii. Producer companies
 - iv. Grain storage facilities
 - v. Private markets and trade licenses
 - vi. Grade wise price variation and arrivals data

- vii. Marketable and marketed surplus
- viii. Constraints, strategies & proposed interventions for promoting market-led agriculture

The above methodology has enabled us to address some of the key gaps in the MSS and build a refined MSS report aimed at helping institutions understand the agriculture and market scenario in Thane. Data and information related to the agriculture scenario in Thane including detailed information on markets and marketing channels, APMC and Rural Haat infrastructure along with crop specific data has been collected. While the section on District profile has been further detailed out to include information on irrigation facilities, other sections have been added to the report to bring more clarity and understanding to the marketing scenario of the district. Sections that have been included in this report are: Emerging major crops; Crop wise price variation for emerging crops; Farmer assessment focusing on availability of the services and post harvest practices followed; and a detailed section on Recommendations. However, data regarding dairy, livestock and other markets has not been looked into in this refined MSS document.

District Profile

Thane¹, the northern-most district of the Konkan region, lies adjoining the Arabian Sea in the north-west of Maharashtra State. Its northern limits adjoin the state of Gujarat while the districts of Nasik and Ahmednagar are to its east, Pune to the South-East, Raigad to the south and Mumbai Metropolitan to the South-West.

The total geographical area of the district is 9,558 Sq. Kms which is 3.11% of the total area of Maharashtra state. The district has 13 tehsils out of which Shahapur tehsil is the largest area of 1555 Sq. Kms and Talasari tehsil is the smallest area of 268 Sq. Kms.

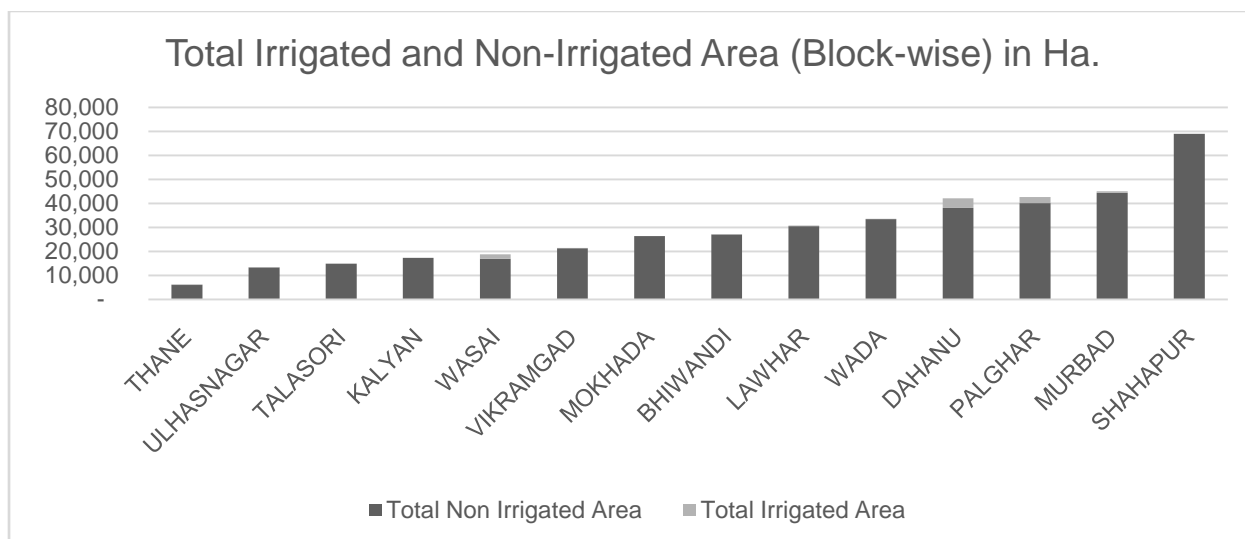
It is also home to over 110.6 lakh² people that are spread over 9,558 square kilometers. It is relatively a more of an urban area with 77% of its population classified as living in urban area. Out of this about 52% of population is engaged in Agriculture and allied activities, followed by around 6% population in manufacturing. Also, Sheep / goat rearing is main occupation of individuals without land holding and is also undertaken on traditional basis by small & marginal farmers.

The district is predominantly rainfed – with 2293.4 mm rainfall on average a year. The district has always received a high rainfall, while the variation in annual rainfall is not very large. The

¹ Thane district for the purpose of this study considers both Thane and Palghar Districts

² Data taken from census 2011

irrigated area in Thane is about 2.51% of the total net cultivated area. In Vasai block the irrigated area goes up to about 10.16%.



Source: Superintendent of Land Record Office / Commissionrate of Agriculture

The Thane district has been divided into 3 zones according to the agro-climatic situations prevailing in its different parts. These situations are based on factors like rainfall, soil depth topography and irrigation facilities. The situation wise survey helped in understanding the situation specific research and extension priorities and needs for strategic planning of the district. Brief descriptions of identified agro-ecological situations including their characteristics and coverage are given in table below:

Agro Ecological Situation	Soil Depth	Irrigation source available	Special Features	Areas	Crops
I (Coastal one)	Medium black soil	Medium irrigated conditions	Coastal zone resulting in soil affected by salt. High rainfall	Dahanu , Palghar, Vasai	Mango, Sapota, Coconut, Paddy
II (Ghat zone)	Shallow soil with rain fed conditions	Rain-fed	Hilly track	Javahar, Mokhada, Vikramgad, Shahapur, Tasa	Paddy, Mango, Sapota
III (Plateau zone)	Medium black soil and red soil	Rain-fed	Rain fed condition.	Vada, Kalyan , Ambarnath , Bhivandi, Murbad	Paddy, Mango

Source: Original MSS

The SREP of the district depicts AES wise gaps in adoption of improved technology of important crops. However, the analysis doesn't cover post-harvest technologies, value addition and marketing practices which has been covered in this revised MSS.

Major Crops

In Thane, the largest crop in the whole district is Paddy with 69.48% of the total Gross Cropped Area followed by Ragi (Nachani) with 6.17% of total Gross Cropped Area. While, Proso Millet (Vari - a traditional minor millet), the third largest (5.20% of total gross cropped area) crop of the district has shown growth in its area.

Sr. No	Crop	Gross Average Cropped Area (2009-2013) (Ha)
1	Paddy	137242
2	Ragi	15509
3	Red gram	3198
4	Black gram	4591
5	Vari	9997
6	Bengal gram	3858
7	Sapota	9118

Source: Department of Agriculture and Department of Horticulture, Government of Maharashtra

Paddy being the largest crop, has been a very stable crop in the district, with its area being reduced by -0.08% CAGR from 2009 to 2013. Its consistent popularity is owed to a combination of (i) suitability with the climate of the district with the average rainfall of the district being about 2300 mm, helping to maintain flooded fields, (ii) stable demand, particularly due to the food eating habits especially in the konkan region where rice is consumed more than any other crop compared to the rest of Maharashtra and (iii) better profit margins as compared to crops such as Ragi, Vari (Proso Millet) and other popular horticulture crops in the district.

Ragi, being the second largest crop has shown less stability with reduction in its gross cropped area by -2.36% CAGR in the last 5 years (2009 to 2013). It is used as fodder and also has a growing market because of the increased awareness among people about the health benefits of Ragi.

Meanwhile, area under Proso Millet (Vari) cultivation is growing owing to increased popularity of it as a traditional crop. It has grown by 2.93% CAGR between 2009 and 2013, accounting for the reduction in cropped area of Ragi in the same period.

Amongst rabi crops the areas under Bengal gram and Wal has fallen in the district by - 13.58% CAGR and -2.93% CAGR respectively from 2010 to 2013. The lack of popularity of Rabi crops is owed to the heavy and late rainfalls the district receives that can sometimes continue till end of October, hence conserving wet fields which are not suitable for growing of Rabi crops. Some of the other Rabi crops in the district are Wheat, Maize and Sesame.

Fruits

Sr. No	Crop	Gross Average Cropped Area (2009-2013) (Ha)
1.	Sapota	9118
2.	Coconut	3041
3.	Mango	3906

Source: Department of Agriculture and Department of Horticulture, Government of Maharashtra

Horticulture crops seem to be popular in the district with Sapota (Chikoo) being the largest crop with 4.65% of the total gross cropped area, followed by Mango (2.52% of total gross cropped area) and Coconut (2.02% of total gross cropped area). This popularity is owed to two major reasons (i) availability of suitable soil and required climatic conditions and (ii) demand being generated with markets available in Thane city and Mumbai.

Vegetables

Sr. No	Crop	Gross Average Cropped Area (2009-2013) (Ha)
1	Okra	1185
2	Brinjal	709
3	Tomato	613

Source: Department of Agriculture and Department of Horticulture, Government of Maharashtra

The area under vegetable production is highest for Okra followed by Brinjal. Farmers find a good demand generated for these horticulture crops from the markets in Mumbai and Thane city.

Emerging major crops in the district

Based on the detailed analysis of the production area in Thane Paddy, Ragi, Vari, Sapota and Coconut have been identified as the main crops cultivated in the district.

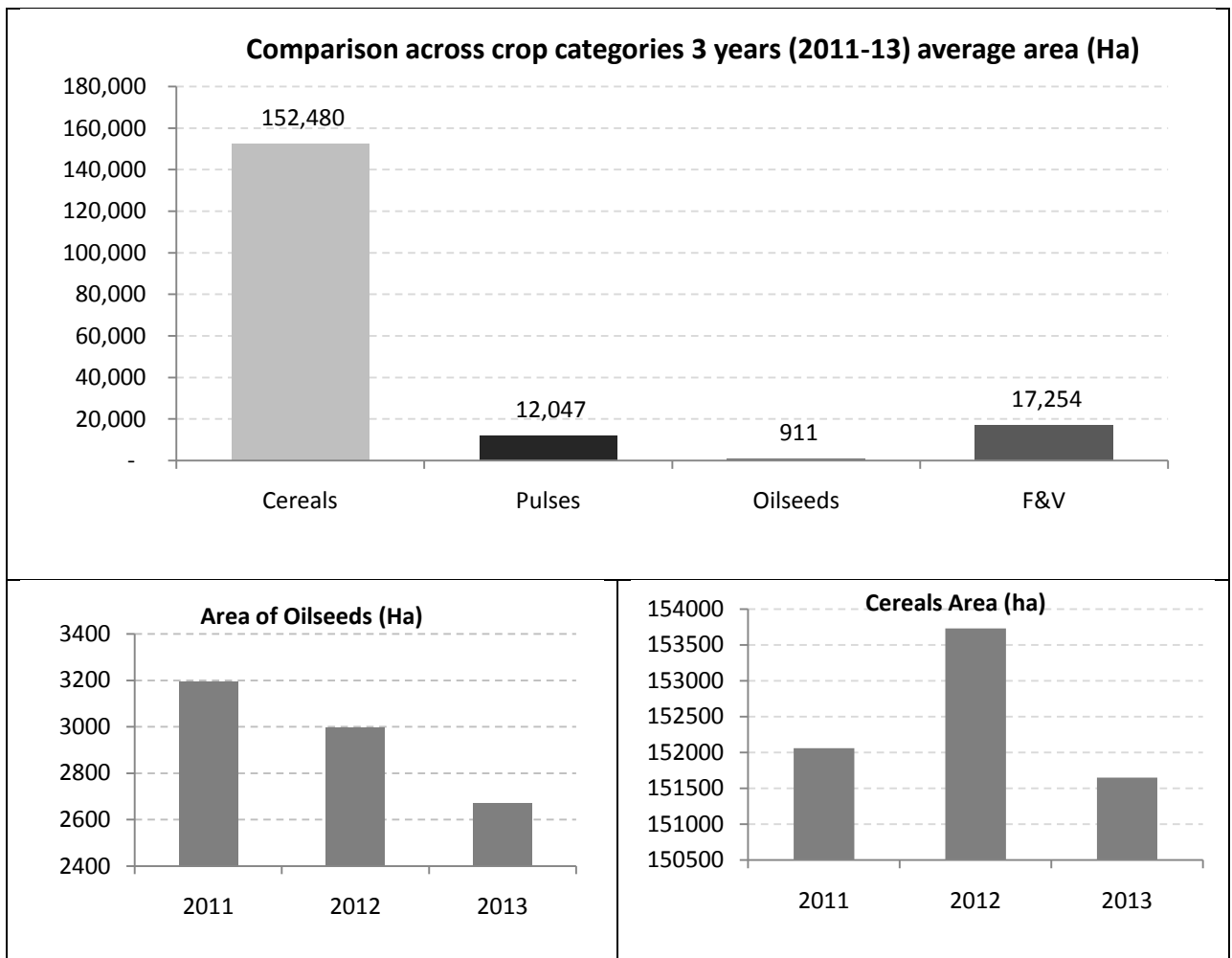
Area under cultivation (Ha)					
	Paddy	Ragi	Vari	Sapota	Coconut
2009	138035	16000	8905	NA	NA

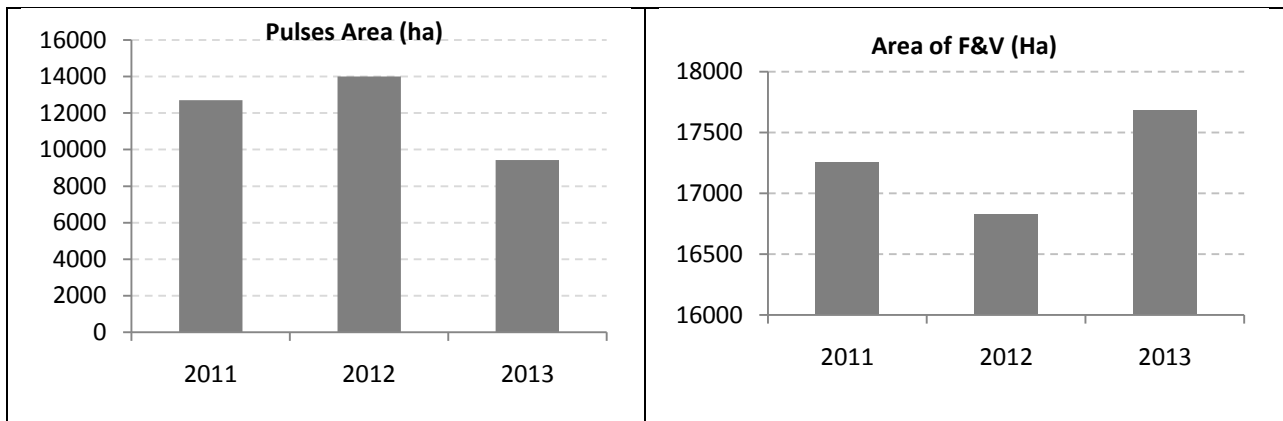
2010	NA	NA	NA	NA	2083
2011	136025	15799	10343	9000	4000
2012	137455	16041	10452	9160	NA
2013	137453	14198	10289	9193	NA

Source: Department of Horticulture and Department of Agriculture, Government of Maharashtra

In Thane district area under Paddy, the major crop has been fairly consistent over the years. The area under Ragi has decreased from 0.80 Lakh hectares in 2009-10 to 0.28 Lakh hectares. Vari has shown consistent growth in the period of 2009 to 2013 and Sapota has been growing over the last three years. Coconut is an emerging crop in the district. With established markets in the neighboring region, its demand has been steadily increasing.

The following charts depict the pattern of shift in the specific crop categories.





Source: Dept of Agriculture and Dept of Horticulture, Government of Maharashtra.

Cereals trend: Amongst cereals, Paddy is the most extensively grown cereal crop in the district and occupies 69 percent of the gross cropped area. Its consistent popularity is owed to a combination of (i) suitability with the climate of the district with the average rainfall of the district being about 2300 mm, helping to maintain flooded fields, (ii) stable demand, particularly due to the food eating habits especially in the konkan region where rice is consumed more than any other crop compared to the rest of Maharashtra and (iii) better profit margins as compared to crops such as Ragi, Vari (Proso Millet) and other popular horticulture crops in the district. Ragi has shown slight fluctuations over the last five years, but has a growing market due to its use as fodder as well as its popularity because of its nutritious benefits. Vari (Proso millet) has also been growing in popularity. It is primarily grown for domestic consumption as well as for fodder.

Pulses trend: The area under production for pulses has been consistently falling over the last five years. Major pulses grown are Red gram, Bengal gram and Black gram. Black gram has fallen by an area of 1952 hectares in 2013 from the earlier levels in 2009.

Oilseeds trend: Thane is not a major oilseeds producing district. Sesame is one of the few minor oilseeds crop grown.

Fruits and vegetables trend: Thane is a major hub for horticulture crops due to high demand from Thane city as well as the neighboring Mumbai market. Sapota, Mango and Coconut are the popular fruits from the district. Amongst vegetables, Okra, Tomato and Brinjal are the major crops.

Area-Trends:

Crop Selection	Key Trends	Area Trend												
Paddy	<ul style="list-style-type: none"> Area under Paddy has been consistent with the yearly average of 137242 over the last 5 years. High rainfall in the region helps maintain the area under production. 	<p style="text-align: center;">Area(Ha)</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Area (Ha)</th> </tr> </thead> <tbody> <tr> <td>2009</td> <td>138035</td> </tr> <tr> <td>2010</td> <td>(not available)</td> </tr> <tr> <td>2011</td> <td>136025</td> </tr> <tr> <td>2012</td> <td>137455</td> </tr> <tr> <td>2013</td> <td>137453</td> </tr> </tbody> </table> <p><i>Note: Area data for 2010 was not available.</i></p>	Year	Area (Ha)	2009	138035	2010	(not available)	2011	136025	2012	137455	2013	137453
Year	Area (Ha)													
2009	138035													
2010	(not available)													
2011	136025													
2012	137455													
2013	137453													
Ragi	<ul style="list-style-type: none"> Area under Ragi production has seen slight fluctuations over the last five years. The area under production fell by 1843 Ha in 2013 from 2012. 	<p style="text-align: center;">Area(Ha)</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Area (Ha)</th> </tr> </thead> <tbody> <tr> <td>2009</td> <td>16000</td> </tr> <tr> <td>2010</td> <td>(not available)</td> </tr> <tr> <td>2011</td> <td>15799</td> </tr> <tr> <td>2012</td> <td>16041</td> </tr> <tr> <td>2013</td> <td>14198</td> </tr> </tbody> </table> <p><i>Note: Area data for 2010 was not available.</i></p>	Year	Area (Ha)	2009	16000	2010	(not available)	2011	15799	2012	16041	2013	14198
Year	Area (Ha)													
2009	16000													
2010	(not available)													
2011	15799													
2012	16041													
2013	14198													
Vari	<ul style="list-style-type: none"> Area under Vari has been consistently increasing over the 2009-2013 period. Vari production in 2012 saw a 17 percent growth from its earlier level in 2009. 	<p style="text-align: center;">Area(Ha)</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Area (Ha)</th> </tr> </thead> <tbody> <tr> <td>2009</td> <td>8905</td> </tr> <tr> <td>2010</td> <td>(not available)</td> </tr> <tr> <td>2011</td> <td>10343</td> </tr> <tr> <td>2012</td> <td>10452</td> </tr> <tr> <td>2013</td> <td>10289</td> </tr> </tbody> </table> <p><i>Note: Area data for 2010 was not available.</i></p>	Year	Area (Ha)	2009	8905	2010	(not available)	2011	10343	2012	10452	2013	10289
Year	Area (Ha)													
2009	8905													
2010	(not available)													
2011	10343													
2012	10452													
2013	10289													
Sapota	<ul style="list-style-type: none"> Sapota is an extremely popular horticulture crop, with high demand from nearby markets. Area under production grew by 193 hectares in 2013 from earlier level in 2011. 	<p style="text-align: center;">Area(Ha)</p> <table border="1"> <thead> <tr> <th>Year</th> <th>Area (Ha)</th> </tr> </thead> <tbody> <tr> <td>2009</td> <td>(not available)</td> </tr> <tr> <td>2010</td> <td>(not available)</td> </tr> <tr> <td>2011</td> <td>9000</td> </tr> <tr> <td>2012</td> <td>9160</td> </tr> <tr> <td>2013</td> <td>9193</td> </tr> </tbody> </table> <p><i>Note: Area data for 2009 and 2010 was not available.</i></p>	Year	Area (Ha)	2009	(not available)	2010	(not available)	2011	9000	2012	9160	2013	9193
Year	Area (Ha)													
2009	(not available)													
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2011	9000													
2012	9160													
2013	9193													

Crop Selection	Key Trends	Area Trend
Coconut	<ul style="list-style-type: none"> Coconut is considered an emerging crop in the district with a steadily increasing demand. Area under production almost doubled in 2012 from earlier level in 2011. 	<p>Note: Area data for 2009, 2010 and 2013 was not available.</p>

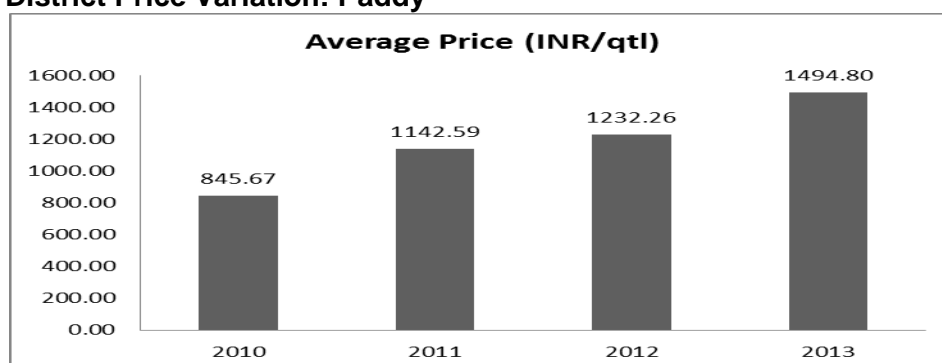
Source: Dept. of Agriculture and Dept. of Horticulture, Government of Maharashtra

The above analysis helps us understand ‘market led production’ in the district. Market led production is a way of backward planning of production. The main reasons that have led to the popularity of these crops amongst farmers, primarily market driven, are high demand from processing units and consumers as well as high prices for commodities in the market. The next section helps us further understand these five emerging crops by analyzing their arrivals data and their price variation.

Crop-wise price variation for emerging crops

The tables below layout the analysis of market arrival data for emerging crops:

District Price Variation: Paddy



Source: MSAMB

- The district average price has increased consistently since 2010.
- In 2013, The average price increased by 75 percent from its earlier levels in 2010.

Price Variation among local APMCs: Paddy*

APMC	2013	
	Sum of Arrivals (qtl.)	Avg. Price (INR/qtl.)
BHIVANDI	18	2847.28

KALYAN	146	2662.55
PALGHAR(BEVUR)	47928	2622.88
SHAHAPUR	730	1494.80
ULHASNAGAR	516670	4866.29
VASAI	NA	NA

Source: MSAMB

*Husked as well as unhusked

- Paddy arrivals in Thane are dominated by Ulhasnagar APMC followed by Palghar.
- The average price for Paddy in Ulhasnagar APMC was the highest, followed by the Bhivandi APMC.

Note - Price and arrival details for Vari, Ragi, Sapota and Coconut were not available.

The next section of this report discusses the production practices of farmers in the district.

Farmer assessment: Post-harvest management practices

Based on our interactions with farmers, we have identified post-harvest practices for the five crops we are focusing on in Thane district and assessed the current levels of adoption for these practices. Our results are enumerated in the tables below:

Best Postharvest Management Practices

The following table lists out the general practices for all emerging crops.

Practice	Paddy	Ragi	Vari	Sapota	Coconut
Sun drying					
Grading					
Packaging					
Terminal and Wholesale market					
CA/MA Storage Packaging					
Cold Chain					

Source: Primary Survey

Apni mandi or cold chain facilities are not available in the district. Overall, through our discussions with farmers, it was noticed that about 65 percent of the farmers perform some form of post-harvest processing. Majority of them give importance to cleaning their produce before sending it to the market. None of the farmers perform sorting or grading in spite of recognizing these post-harvest practices with better price realization.

Usability of available PHM equipment and machinery

PHM Equipment / Machinery	Degree of Utilization	Barriers to usability
Warehouses & Godowns	60%	Mostly used by traders and processors Less than 1 percent farmers use these storage facilities.
Space for Sorting & Grading	80%	Farmers usually practice sorting and grading only for fruits and vegetables.
Refrigerated Vans	0%	Not present

Source: Primary Survey

The total storage capacity in Thane is around 1,22,383 MT with close to 84% of this capacity coming from private storage. These private warehouses are largely a mix of cold storages and small private warehouses constructed under the Grameen Bhandaram scheme of NABARD. None of the farmers interviewed used the warehouse facilities, they are mostly used by processors. Farmer's reluctance to store in warehouses comes from the belief that the associated transport and storage cost (including rent, loading charges and any interest charge) would be greater than any gains accrued from storing and selling at a later date. The documentation procedure required for storage is another inhibiting factor. However, considering that traders regularly seem to be using warehouses and profiting from it, and while none of the farmers interviewed had ever used the warehouse, what is missing is an awareness of how the mechanism can help the farmers gain higher prices for their produce along with a working example. There clearly needs to be more focus on promoting the concept further.

Grading

Grading in the district is mainly manual. Even though grading and sorting facilities are not very well developed, APMCs across the district have installed some facilities for grading & sorting but those are limited to sieves. Grading of the produce is mostly done by visual inspection. While manual grading is not based on a new set of grades, the method of grade assessment is based on a set of established thumb rules and estimates developed by the traders and commission agents over long years of experience. Some examples of manual grade assessment are as follows:-

- In cereals and pulses, the size of the grain, uniformity of the grain size across the sample as well as boldness of the colour is also an important factor. For instance, in Red Gram large and bold red coloured grains are rated above smaller and lighter coloured grains.
- Damage to grains is another factor that is important. Often crops which are harvested using machine harvesting have scratches on the grain and hence command a relatively lower price than those harvested by hand.

- Last, amount of thrash, foreign matter and other edible grain (for instance soya grains in a red gram sample) is another determinant of grade of the produce. While certain foreign matter such as twigs, leaves etc. – to a manageable extent – is tolerable, edible grains and large amount of rocks, soil etc. is graded low.

While traders and agents often prefer to assess grades as per their set practices, they are also prone to make mistakes, since entire grading is based on judgment. Noted below are the standard grade specifications as stipulated by AGMARK and other grading authorities.

Paddy³: Grading of paddy is usually done through mechanical devices, i.e. rotating grader, tiers, circular purifier, colour grader/sorter etc. Paddy grains having the same length but different thickness are graded by rotating graders; whereas, grains with the same thickness but different lengths, are separated by tiers. Sometimes both the rotating graders and the tiers are used. In the market, the sale of paddy is generally done on the basis of visual inspection of available sample and with local commercial name.

Ragi: Ragi is graded as per the following table according to AGMARK

Maximum limits of tolerance (per cent by weight)

	Moisture	Foreign matter		Other edible grains	Damaged grains	Immature and Shrivelled grains	Weevilled grains
		Organic	Inorganic				
1	2	3	4	5	6	7	8
Grade-I	12	0.1	Nil	1.0	1	2	0.1
Grade-II	12	0.25	0.1	1.5	2	3	0.2
Grade-III	14	0.5	0.25	2.0	3	4	0.3
Grade-IV	14	0.75	0.25	3.0	5	4	0.5

Sapota: AGMARK defines the following grade definitions for Sapota.

Grade designations	Grade requirements	Grade tolerances
1	2	3
Extra class	Sapota must be of superior quality. They must be well developed and have all the characteristics and colouring typical of the variety. They must be free of defects.	5 % by number or weight of Sapota not satisfying the requirements of the grade, but meeting those of Class I grade or,exceptionally, coming within the tolerances of that grade.

³ Commodity profile submitted by Global Agri

Class I	Sapota must be of good quality. They must be characteristics of the variety. Following defects may be there, provided they do not affect the general appearance of the produce, the quality, the keeping quality and presentation in the package. - slight defects in shape and colour; - slight skin defects (i.e. scratches, scars, scrapes and blemishes) not exceeding 2% of the total surface area. The defects should not affect the pulp of fruit	10 % by number or weight of Sapota not satisfying the requirements of the grade, but meeting those of Class II or, exceptionally, coming within the tolerances of that grade.
Class II	This grade includes Sapota which do not qualify for inclusion in the higher grades, but satisfy the minimum requirements. Following defects may be there, provided the Sapota retain their essential characteristics as regards the general appearance, quality, the keeping quality and presentation. - defects in shape and colour - skin defects (i.e. scratches, scars, scrapes bruises and blemishes) not exceeding 5% of the total surface area. The defects should not affect the pulp of fruit.	10 % by number or weight of Sapota not meeting the requirements of the grade but meeting the minimum requirements.

Coconut:⁴ The following table lists out the grade designations for different in shell coconuts:-

Grade Designation	Colour	Diameter (in mm)	Description
Extra Special	Brown	110 and above	The coconuts shall be well developed, matured and husked with or without water. These shall be free from bad smell, damage and blemish due to fungus and insect infestation. It shall be dark brown color at the top and when struck on the shell with finger or metal it shall give the characteristic metallic sound without any dull note.
Special	I Brown white or II Brown & white	100 and above	
Standard	I Brown white or II Brown & white	90 and above	
General	Mixed	Below 90	
Non specified	NA	NA	

Note: Grading information for Vari was not available.

Majority of the agents interviewed felt that the infrastructure for grade assessment was sufficient at the APMC. However manual grading was more a preference issue rather than an infrastructure issue. Many farmers are skeptical of electronic forms of grading citing fears of manipulation by agents as well as comfort level due to familiarity with the manual grading process. There is an equally large gap in awareness amongst agents who also prefer manual forms of grading.

⁴ Commodity profile submitted by Global-Agri

Farmer Assessment – Package of Practices and Post-Harvest Management

	Package of Practices (PoP)	Degree/ Comments	Post-Harvest Management (PHM)	Degree/ Comments
Awareness	Awareness of recommended PoP	Medium	Awareness of recommended PHM	Low
	Farmers following PoP	Farmers usually practice traditional POP methods	Farmers following PHM practices	Low
Affordability	Degree of affordability	Medium	Degree of affordability	Low
Availability	Ease of availability of information	Low	Usability of available facilities	Low
			Reasons for non-usability:	
			1. Dilapidated structure	Low
			2. High Cost	High
			3. Lack of willingness	High
Accessibility	Ease of accessibility of information	Low	Accessibility to PHM facilities	Medium
			Reasons for inaccessibility:	
			1. Lack of awareness	Medium
			2. Distance	High
			3. Paperwork/Cost	High

Source: Primary Survey

Most farmers we spoke with were not aware of the PoPs and few incorporated at least some traditional practices. Adoption of PHM practices was found to be even lower, prohibitive costs and the distances involved were major reasons for farmers not using PHM facilities.

Post-Harvest Losses

As detailed in the table below one of the most common reasons for post-harvest loss across crops is the lack of proper storage facilities and infestation by pests and rodents post-harvest.

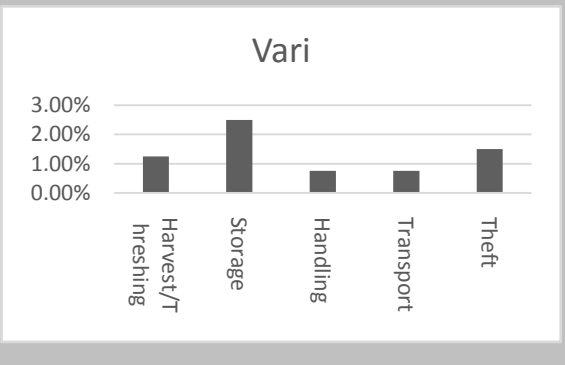
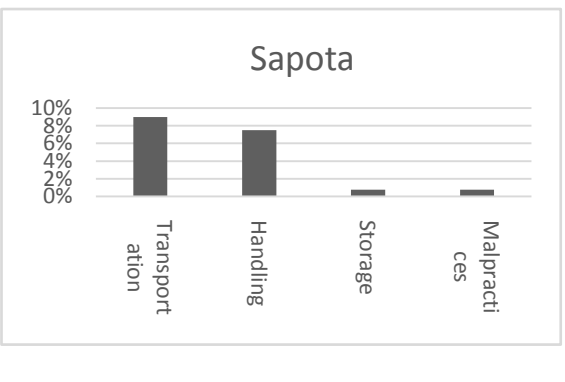
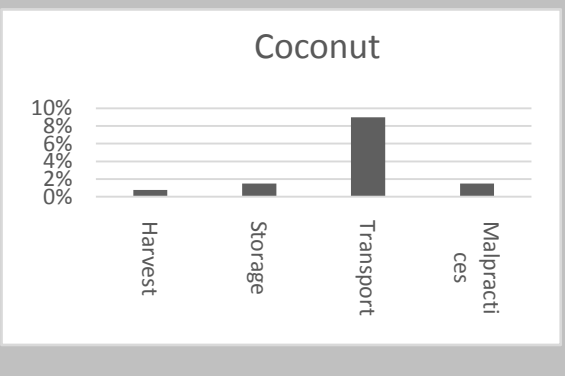
Crop	Major reasons for Loss (Production & PHM)
Paddy	<ul style="list-style-type: none"> • Fungal growth due to heavy rains • Moisture loss during storage. • Rodents attack during storage. • Harvesting/threshing loss
Ragi	<ul style="list-style-type: none"> • Threshing and harvesting loss • Rodents attack during storage

Vari	<ul style="list-style-type: none"> • Moisture loss during storage • Rodents attack during storage. • Harvesting/threshing loss.
Sapota	<ul style="list-style-type: none"> • Mechanical injury, injuries due to thermal shock • Diseases and pest attack • Damage due to handling and during transport • Microbial attack and physio-biochemical reasons.
Coconut	<ul style="list-style-type: none"> • Moisture loss • Heap storage • Damage during transportation

Source: Primary Survey

Specific quantification of post-harvest loss (based on farmer interactions) is provided below for the major crops:

Crop	Reasons for major loss															
Paddy	<ol style="list-style-type: none"> 1. Harvesting/Threshing – 5-10% 2. Storage – 2-3% 3. Handling – 0.5-1% 4. Transport – 0.5-1% 5. Malpractices/Theft – 1-2% 	<table border="1"> <caption>Paddy Post-Harvest Loss Data</caption> <thead> <tr> <th>Stage</th> <th>Loss Percentage</th> </tr> </thead> <tbody> <tr> <td>Harvesting/Threshing</td> <td>7.00%</td> </tr> <tr> <td>Storage</td> <td>2.00%</td> </tr> <tr> <td>Handling</td> <td>0.50%</td> </tr> <tr> <td>Transport</td> <td>0.50%</td> </tr> <tr> <td>Theft</td> <td>1.00%</td> </tr> </tbody> </table>	Stage	Loss Percentage	Harvesting/Threshing	7.00%	Storage	2.00%	Handling	0.50%	Transport	0.50%	Theft	1.00%		
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Theft	1.00%															
Ragi	<ol style="list-style-type: none"> 1. Harvest – 1-1.5% 2. Threshing – 0.5-1% 3. Storage – 0.5-1% 4. Handling/Packaging – 1-1.5% 5. Transport – 0.5-1% 6. Malpractices/Theft – 0.5- 1% 	<table border="1"> <caption>Ragi Post-Harvest Loss Data</caption> <thead> <tr> <th>Stage</th> <th>Loss Percentage</th> </tr> </thead> <tbody> <tr> <td>Harvest</td> <td>1.25%</td> </tr> <tr> <td>Threshing</td> <td>0.75%</td> </tr> <tr> <td>Storage</td> <td>0.75%</td> </tr> <tr> <td>Handling</td> <td>1.25%</td> </tr> <tr> <td>Transport</td> <td>0.75%</td> </tr> <tr> <td>Theft</td> <td>0.75%</td> </tr> </tbody> </table>	Stage	Loss Percentage	Harvest	1.25%	Threshing	0.75%	Storage	0.75%	Handling	1.25%	Transport	0.75%	Theft	0.75%
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Sapota	<ol style="list-style-type: none"> 1. Transportation – 8-10% 2. Handling – 5-10% 3. Storage – 0.5-1% 4. Malpractices/theft – 0.5-1% 	 <table border="1"> <caption>Sapota Post-Harvest Loss Data</caption> <thead> <tr> <th>Category</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Transportation</td> <td>8.00%</td> </tr> <tr> <td>Handling</td> <td>7.00%</td> </tr> <tr> <td>Storage</td> <td>0.50%</td> </tr> <tr> <td>Malpractices</td> <td>0.50%</td> </tr> </tbody> </table>	Category	Percentage	Transportation	8.00%	Handling	7.00%	Storage	0.50%	Malpractices	0.50%		
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Source: Primary Survey

Based on our interactions with various farmers and stakeholders, it is observed that some of the major causes of post-harvest losses are traditional techniques of storage, handling and transportation. While the reasons and practices are fairly well recognized, the adoption rate of practices by farmers is very poor.

Existing Marketing Scenario in the District

Agriculture in the Thane district is diversified, wide range of crops are grown in the district. The major food grains are Paddy, Vari and Ragi. Among horticulture crops, mango, coconut and sapota are major crops.

Agriculture Produce Market Committees (APMCs)

There are 8 APMCs in the district. Details of the APMCs and their average annual arrivals are given in the table below:

Sr. No.	Name Of APMC	Average Annual Arrivals (2010-2013) in qtl.	Average Annual Value of Produce (2010-2013) in INR Lac	Major commodities sold
1.	Kalyan	2494	55.32	Rice, Wheat, Jowar, Bajra, Onion, Potato, Tomato, Brinjal, Chili, Apple
2.	Ulhasnagar	5518949	1699853.17	Rice, Wheat, Jowar, Bajra, Pulses, Vegetable, Onion, Potato, Others
3.	Shahapur	27368	420.6	Rice, Finger millet, Vegetables
4.	Murbad	NA	NA	Rice
5.	Vasai	174811	3377.52	Rice, Wheat, Jowar, Bajra
6.	Bhiwandi	341	6.55	Paddy, Wheat, Jowar, Rice, Chili, Tomato, Vegetable, Others
7.	Palghar(Bevur)	154951	2642.43	NA
8.	Dahanu	NA	NA	NA

Source: MSAMB

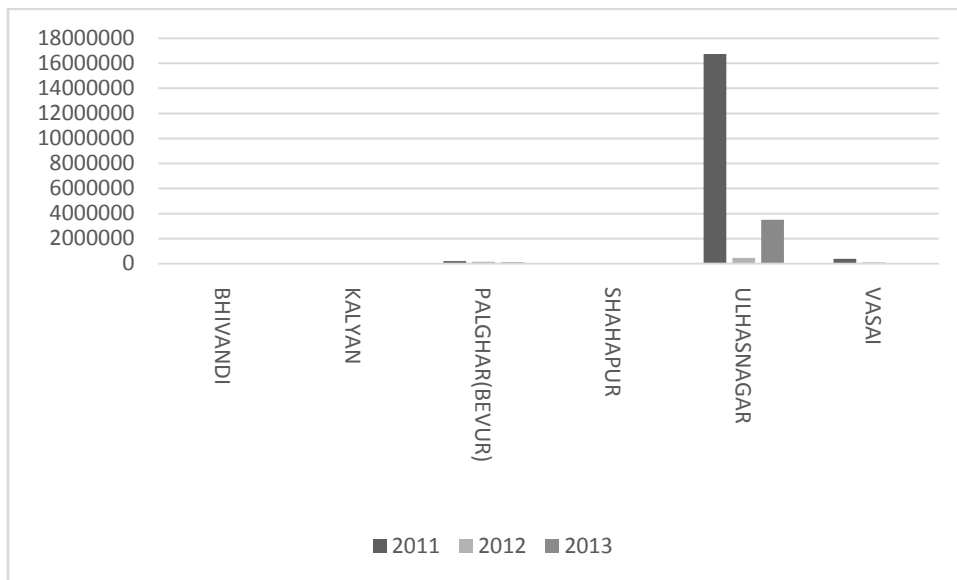
Among the APMCs in the district Ulhasnagar has highest arrivals followed by Palghar and Shahpur. Almost 40 percent of the produce is directly sold to traders or processors. The actual produce sold through the APMCs is majorly sold through the Ulhasnagar (96 percent) APMC , where the largest commodities traded are Paddy, Banana, Wheat and Bajra. A major portion of these commodities actually comes from outside the district for trade.

Year wise market arrivals in APMCs (in qtl)

APMC	2013		2012		2011		2010	
	Total Arrivals	% of total	Total Arrivals	% of total	Total Arrivals	% of total	Total Arrivals	% of total
ULHASNAGAR	3506010	96.71%	449206	62.51%	16745362	96.35%	1375219	85.05%
PALGHAR(BEVUR)	89854	2.48%	160283	22.30%	202636	1.17%	167034	10.33%
VASAI	NA	NA	92570	12.88%	394918	2.27%	36947	2.28%
SHAHAPUR	24768	0.68%	14420	2.01%	34568	0.20%	35719	2.21%
KALYAN	4575	0.13%	1774	0.25%	2029	0.01%	1599	0.10%
BHIWANDI	109	0.00%	351	0.05%	429	0.00%	475	0.03%
DAHANU	NA	NA	NA	NA	NA	NA	NA	NA
MURBAD	NA	NA	NA	NA	NA	NA	NA	NA

Source: MSAMB

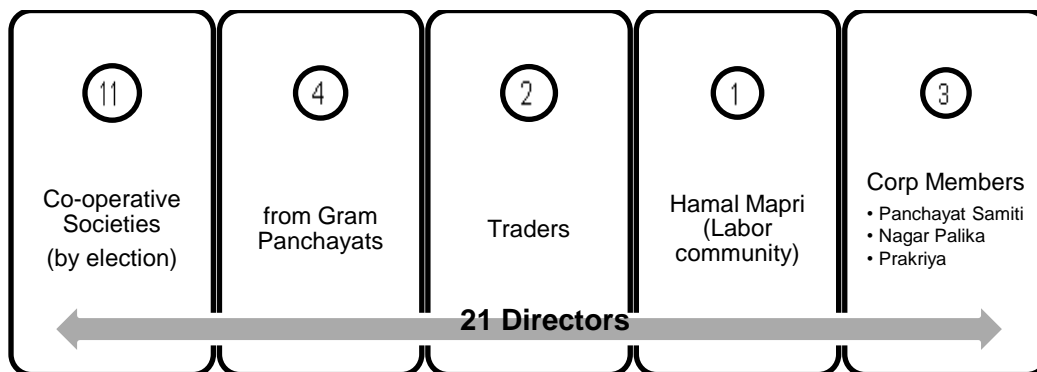
Market-wise Trend Analysis of Market Arrivals



Source: MSAMB

Note: Market arrival details for Lohara and Paranda APMCs were not available.

In terms of structure, an APMC typically has Directors supervising the day-to-day activities of the APMC. Given below is the organizational structure for Thane APMC:



Source: MSAMB

Rural haats (RH)

Apart from the regulated markets (APMCs), there are 7 rural hats in Thane district which are unregulated markets and managed by gram panchayats and some rural haats by APMC's. The table below gives the comprehensive list of rural haats in the district.

Sr .No.	Name of taluka	Name of Rural Haat	Week Day of Rural Haat	Major Commodities Marketed	No. of Villages Connected
1	Murbad	Saralgaon	Tuesday	Okra, Brinjal, Chili, Gourd, Bitter gourd,	50
2	Palghar	Boisar	Friday	Vegetables, Others	8
3	Javar	Javar	Friday	Okra, Chili, Bitter gourd, Guar	3
		Vadoli	Sunday	Tomato, pumpkin, Ridge gourd	4
		Chalatwad	Friday	Okra, Chili, Bitter gourd, Guar, Pumpkin	3
		Pimpalshet	Saturday	Okra, Chili, Bitter gourd	3
		Vinval	Monday	Okra, Chili, Bitter gourd	5

Source: Original MSS Report

There is huge scope for improvement in these markets which are neglected at all levels.

Milk collection centers

The Dairy Development is emerging as an important activity in the district due to its proximity to Mumbai which is a very big market. It is supplementary activity to small farmers and providing employment and income to the rural people.

The table below provides details on the milk collection centers in Thane:-

Sr. No.	Milk Collection Center	PVT. Or Co-op.	Taluka	Average Daily Collection of the last 5 years	
				Flush Season	Lean Season
1	Murbad	Pvt	Murbad	5,000	4110
2	Saralgaon	Pvt	Murbad	4000	3250
3	Dhasai	Pvt	Murbad	3500	2940
4	Mhasa	Pvt	Murbad	3000	2150
5	Tokawade	Pvt	Murbad	2000	1870
6	Momai Dairy	Pvt	Palghar	350	350
7	New Momai dairy	Pvt	Palghar	400	400
8	Radha Krishna	Pvt	Palghar	300	300

9	Jay shree shakti	Pvt	Palghar	90	90
10	Vijay Dairy	Pvt	Palghar	200	200
11	Ganesh Dairy	Pvt	Palghar	60	50
12	Bhairavnath	Pvt	Javhar	40	40

Source: Original MSS Report

Livestock Markets

In Thane district, the major livestock market is located in Murbad taluka. The table below provides details of the market :-

Name of Livestock Market	Taluka	Major Types of Animals Marketed	Week Day of Market	Annual Market Fees collected (Average of last 5 years)	Manage by
Saralgaon	Murbad	Cow, Buffalo, Goat, Bull,	Tuesday	1177637	APMC Murbad

Other Markets

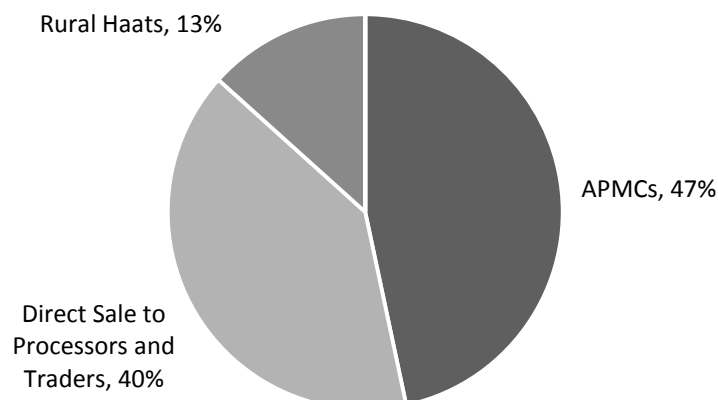
Thane lacks any private markets which can act as alternative for farmers for selling their produce. About 50 percent of the farmers sold their produce directly to traders or processors. This is majorly because of the high demand for horticulture crops which has a ready market in nearby Mumbai and Thane cities as well as the presence of rice mills.

Market Channels

Thane has a total of 8 APMCs out of which the major APMCs are Ulhasnagar and Palghar. While Vashi APMC falls in the Thane district, it caters to the Mumbai and export markets. Also, most of the arrivals in the Vashi APMCs are from all over India and is predominantly a traders market.

As can be seen clearly, 47% of the produce of the district is channeled through APMCs and the remainder is shared by direct sales to traders and processors as well as rural haats. This was the opinion of the APMC secretaries because most of the traders / DMIs go at the village level to procure the produce of the farmers or the farmers go directly to the processors to sell it. While the largest marketing channel for the produce seems to be the APMCs, it was mostly a trader to trader trade happening at the APMCs rather than farmer to trader trade.

Marketing Channels in Thane District



Source: Survey of APMC secretaries (Bhiwandi, Dahanu & Murbad), Average taken.

Thane district is one of the most urban districts in the state of Maharashtra. This should be an encouragement for the farmers to get their produce here for selling as they expect to receive a better price. However, as per our analysis and discussions with the APMC secretaries of Bhiwandi and Dahanu, both were of the opinion that only 50% of the total production in their taluka is traded through the APMC. The major reason for high volume of direct sales to traders and processors is attributed to the high number of rice mills and horticultural production in the district. Rice mills purchase paddy directly from farmers or through traders who act as their representatives. Fruits and vegetables also follow the direct sale to traders and wholesalers route as well which further contributes to the high percentage of direct sales from farms. Ulhasnagar APMC in the district with 96.71% of the arrivals (considering all the commodities) is the largest followed by Palghar APMC (2.48%) and Shahpur APMC (0.68%). The largest commodities traded in the Ulhasnagar APMC are Banana (26%), Rice (15%), Wheat (14%) and Bajra (11%). With Banana having a negligible area and Wheat and Bajra showing no cultivated area in the district, it can be said that the arrivals in the APMCs for these commodities are from outside the district. On the other hand, Paddy being the dominant crop in the district, goes directly either to traders or rice processors and arrives in the APMCs as Rice. So it is difficult to have a comparison of arrivals of any of the traded commodities across APMCs in the district.

Agriculture commodities marketed vis-a-vis production

Details of commodity wise average annual production and average annual sales in the district and outside the district are given below.

Sr. No	Commodity	Av. Annual Production ('000 MT)	Quantity Retained by producer* ('000 MT)	Marketable Surplus ('000 MT)	Av. Annual Sell in APMCs within District ('000 MT)	Av. Annual Sell in APMCs out of District ('000MT)
1	Kharif Rice	307160	116721	190439	93	190346
2	Summer Rice	5040	252	4788	1454	3334
3	Red gram	2100	777	1323	513	810
4	Green gram	360	155	205	268	-63
5	Black gram	3440	129	3311	868	2443
6	Black gram	3420	1300	2120	214	1906

Source: Original MSS Report

* Retention by producer for consumption as per the report on National survey for estimation of marketable surplus & post harvest losses GOI 2007

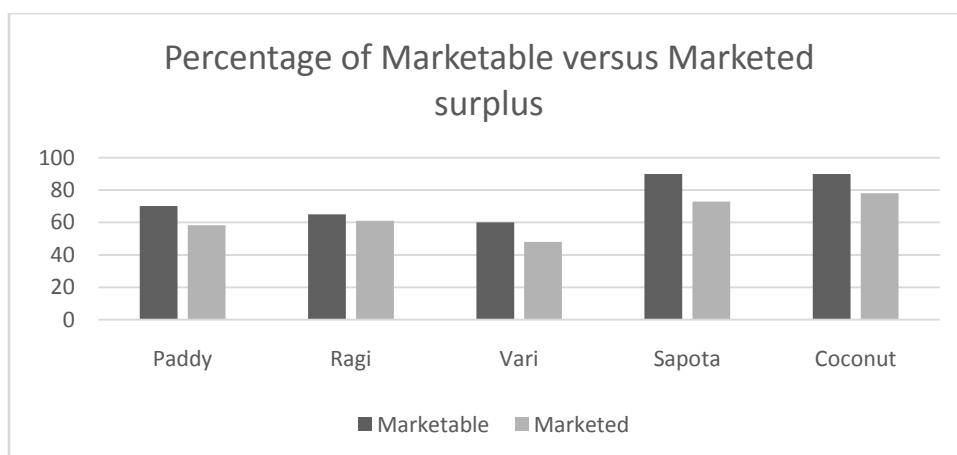
** Though quantity of sell is more than production it is due to arrivals from other adjoining districts.

The table above reveals that out of total marketable surplus of grains in the district majority is marketed out of the APMCs. In case of Green Gram average annual arrivals is more than production, which means that Green Gram from adjacent district is brought in the district for marketing. The highest commodity produced and marketed in the district is Rice which indicates that it dominates the economics of marketing system in the district.

There is significant variation in prices between grades which underlines the importance of grading of commodities. This would be the major issues in market led extension which subsequently will come in the form of strategies and activities in this exercise of MSS.

Marketable and Marketed surplus

Through our interaction with farmers the following key observations were made regarding marketable surplus:



Source: Primary Survey

The actual marketable surplus exhibits a strong variation at the farmer's level to the extent of +-30% depending on various factors, which have a positive or negative effect on the marketable surplus.

Factor	Effect on marketable surplus
The consumption of the product by the farmer and his family	-Ve
Market fluctuations/change in policies lead to higher surplus as farmers tend to offload the product quickly, but then the price realized is lesser	+Ve
Market price: higher the price more the marketable surplus	+Ve
Natural Calamities (Hailstorms, drought etc)	-Ve
PHM losses in the product	-Ve
Malpractices by trader and theft	-Ve

Moreover it was also found that the method of market surplus estimation at the village level is very weak. Farmers do not keep a record of various losses and usage. Also it was said that they have never been asked to estimate their marketable surplus by any of the government departments.

Key reasons for difference in marketable surplus and marketed surplus were found as:

Crop	Handling/ Packaging	Storage	Transportation	Malpractices*/theft
Paddy	√	√√	√	√
Ragi	√	√	√	√
Vari	√	√√	√	√
Sapota	√√	√	√√	√
Coconut	√	√	√√	√

√ Low level of losses, √√ Medium level of losses √√√ High level of losses

Source: Primary Farmer Survey

* *Malpractices by commission agents include random deduction in weight as well as deduction of extra charges apart from unloading, weighing and commission.*

While the major cause for difference in marketable and marketed surplus is the PHM loss, the following observations were also made:

- Some farmers reported that product is lost in transportation.
- Malpractices by trader in terms of how much reduction he will assume are also common and the farmer has little control over such practices.
- Village aggregators sometimes use unfair weighing balances.

Constraints in existing marketing system

An analysis of the strengths, weaknesses, opportunities and threats for all APMCs in the district has been done. This analysis gives us a clear picture of the infrastructure and facilities available in each APMC so as to identify areas that require attention and development.

Sr. No	Name of APMC	Strength	Weakness	Opportunity	Threat
1	Bhiwandi	Facilities like godown, interior roads, selling hall.	No presence of traders, commission agents, labor, no arrivals in sub market	Increase arrivals to infrastructure facilities to attract more traders	Near Mumbai Market, Private markets and direct license holders
2	Kalyan	Separate market for fruits and vegetables, Well-structured APMC, facilities like general shed, interior roads, fencing are available. Sizeable number of traders.	No Facility for Cold storage, storage and Mechanized cleaning & grading	Opportunity to set of storage facility, Packaging and Electronic weighing Machine	Near Mumbai Market, Private markets and direct license holders
3	Murbad	Facilities like weighing machine, vegetables market, godown, selling hall.	No presence of labor, commission agents, No proper infrastructure, No space for trading.	Opportunity to set of storage facility in and near the APMC and other infrastructure	Near Mumbai Market, Private markets and direct license holders
4	Palghar	All major facilities are available.	No commissions agents registered, No arrival of agriculture produce	Encourage more activity in the APMC by providing more facility and services	Near Mumbai Market, Private markets and direct license holders
5	Shahapur	Facilities like farmer residences, office space, godowns , selling hall.	No commissions agents registered,, Seasonal arrival of Vegetables, Low arrival	Encourage more activity in the APMC by providing more facility and services-Vegetable cold storage	Near Mumbai Market, Private markets and direct license holders
6	Vasai	Very big market. Separate markets for fruits, vegetables, potato, onion and garlic.	Unavailability of land for main market, lack of submarket infrastructure Absence of cold storage	Opportunity to set up cold storage facility for fruits and vegetables	Near Mumbai Market, Private markets and direct license holders
7	Ulhasnagar	Highest arrivals in the district. All major facilities are available.	No storage facility available, No land for infrastructure development	Opportunity to set up storage facility, traders shops and other infrastructure	Near Mumbai Market, Private markets and direct license holders
8	Dahanu	The APMC has increasing arrivals of Sapota which is an emerging crop	Unavailability of land for main market, Lack of basic infrastructure	Opportunity to set up cold storages for the increased arrivals of Sapota and other fruits and vegetables	Near Mumbai Market, Private markets and direct license holders

Agro processing industry in the district

Thane and its talukas are categorized under the different categories in the latest Industrial Policy of Maharashtra . Under Group A and Group D+ categories, there are 5 talukas each, while in Group B and Group C categories, there are 2 each. This shows that some talukas have a significant number of industries, while the other don't. Overall, the district quite has a few industries, with industrial production being inclined towards agro-processing.

Currently, amongst the food processing industries, rice mills seem to be a popular option as Paddy is a large crop and is easily available in the market. Whereas the others include processing facilities of Pulses, Ragi, Vari, Spices, Fruits, Vegetables, etc.

Facility	No of Units	Capacity (MT)	Approved for Warehouse Finance Facility
Government	4	1,085	No
APMCs	8	730	Yes
MSWC	5	6,480	Yes
Marketing federations / cooperatives (Including cold storage)	6	10,799	No
Private	3	2,895	No
Private Cold storage	71	1,00,394	Yes
Total	97	1,22,383	

Source: NABARD PLP, Thane MSS, dcmsme.gov.in; Sanity check on number of units has been done with the DMM-MSAMB and market participants for corroboration purposes.

Note: The industries are not categorized under separate groups as there is no clear data available about food processing industries in Thane district with any of the concerned parties / authorities / sources. While there are quite a few cotton looms in Bhivandi taluka, there is no mention of the same as the produce from the district is not used in producing the same.

There is clear prominence of Paddy production in the district, leading to a high number of rice processing units. However, no major industrial brand is present in the district. Also, the processing facilities for other major and traditional products like Ragi and Vari are also lacking in processing facilities.

Nevertheless, Thane has a number of small industries involved in processing of spices, oilseeds, vegetables and fruits. An opportunity lies in the district to supply packed and cut vegetables as an established market is nearby. Another opportunity also lies with developing Vari processing on a

larger scale. While, Vari is currently used for self-consumption, if Vari processing is developed, it can be marketed in the nearby established markets. A list of cold storages, processing mills and agro based industries are provided in Annexure 1, 2 and 3.

Farmer Producer Organizations in the district

Noted below are the Farmer Producer Companies in the district

Shri Sai Mauli Shetimal Producer Compy Ltd.	At-Nichole, Po : Khanivali, Tal : Wada, Dist : Thane, Maharashtra
Murbad Taluka Farmers Producer Company Ltd.	H.No-222 Vaisakhare, Tal: Murbad, Dist: Thane, Maharashtra

Direct Purchase

There were no active Direct Market Intermediary (DMI) in Thane district.

Average Storage period

Crop	# of days
Paddy	4 – 6 weeks
Ragi	1-1.5 months
Vari	1-1.5 months
Sapota	NA (Highly perishable, hence sold immediately)
Coconut	Copra – 6 months Dry Copra – 1-1.5 year

Paddy:

- Paddy is a highly perishable agri-commodity, therefore maximum storage period for Paddy is only 4 to 6 weeks.
- Paddy grains are stored in Kanga, bags, and bin.
- Paddy straw is stored in heaps.

Sapota:

- Sapota is highly perishable and sensitive to cold storage and heat. Consequently, the bulk of sapota is used for regular consumption.
- Farmers can store the fruit at local cold storages by paying a fee. However given the highly perishable nature of the fruit, it is unlikely.

Ragi:

- Ragi can be stored over a long period for domestic consumption
- It is a hardy crop so can be stored with low susceptibility to moisture loss.

Vari:

- It is stored in plastic bags post processing.
- It is usually stored for domestic consumption and can typically be stored until the next harvest season.

Coconut:

- Copra has to be dried to 6% moisture by sun drying or by using copra driers.
- The storage period of copra can be increased up to 6 months by storing the copra in polythene tar coated gunny bags.
- For household storage the nuts may be kept in vertical position

Peak Arrival period for key crops

Crops	June	July	Aug	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May
Paddy		P										
Rice						P						

Source: Primary Survey

	Peak Prices
P	Peak Arrival Period

Note: Arrivals and price details for Sapota, Coconut, Vari and Ragi.

Transport

Farm transportation activities include the use of motorized equipment to deliver the final produce to the local Mandi or the APMC market. This needs proper transportation facility to maintain the quality of the produce as well as the time lines, so that the produce can reach its final destination within time and the farmers can get the benefit of good rates. Majority of stakeholders interviewed deemed the transport infrastructure to be adequate in Thane.

Normally there are two types of transports. 1) Primary transport and 2) Secondary transport. In primary transport, farmers use their own sources such as tractors, small trucks, bullock cart, and private trucks to deliver the product to the local mandi or APMC market. In secondary transport, the traders who are dealing in bulk quantities, prefer to take a bigger vehicle to deliver the stock to the final buyers or companies. Transportation activities should be timed to occur as much as possible during regular working hours.

It is observed that after drying and cleaning of the produce it is packed in gunny bags, plastic bags, and crates. For pulses and cereals, they are usually packed in gunny bags. Vehicle is used as per the volume of the produce and the place where it is to be delivered.

In some of the produce such as horticultural crops they are not sent to the local APMC markets, instead they have been delivered to the local market in small or required quantities or to other bigger potential markets in the same district or may be in another state. This requires proper logistic facility to deliver stocks. In these crops, harvesting takes place in the evening time to maintain the freshness and quality of the produce and after packing, it is immediately loaded in the vehicle for the delivery.

Farmers / Traders using public roadways must comply with existing legislation, regulation the required documents such as bill or invoice copy, direct marketing licenses if they have, or the proper information of the delivery.

Some small scale farmers who do not get space to sell their produce in APMCs, need small light weight vehicles to transfer their produce to sell at roadside markets.

In some cases farmers / traders face certain issues while delivering stock within district or to other state. Some of these issues faced by them are:

- Proper transport facility is not available.
- Road infrastructure is not proper, rough and damaged roads, traffic problems leads to delay in reaching the final destination.
- State wise different taxation policy on one crop.
- Higher transit damage during the transportation.
- Heat Accumulation or very poor ventilation within the transport vehicle.

Constraints in Market led Production

The SREP for the district gives us an overview of the gaps in technology adoption in production practices of major crops and allied agricultural enterprises. However, this does not include post-harvest practices to improve quality of produce so as to add value to products for better price realization. Market led production is a way of backward planning of production and includes such pre and postharvest practices that improve the quality of produce for higher returns in the market. From this perspective of analyzing constraints in market led production, the following major crops are considered.

Crops

- i. Paddy
- ii. Sapota

iii. Ragi

Some of the key insights gathered from the constraint analysis are noted below for the emerging crops of the district.

Key insights from the constraints analysis for **Paddy** are:

- Farmers need to organize in producer groups to increase their bargaining power.
- Produce should be packaged in jute gunny bags starting from 50 Kg bags and for retail where possible for better handling and to avoid post-harvest loss.
- Storage should be done at room temperature with 12-14% moisture level in gunny bags.
- Access to information for farmers through the AGMARK and MSAMB websites and electronic media on grades and pricing, contract farming, certification, training and opportunities to export can be strengthened.
- There is scope to increase contract farming in the form of public-private partnerships.

Key insights from the constraints analysis for **Ragi** are:

- Farmers need to organize themselves in groups like producer groups and common interest groups to increase their bargaining power and also use commodity exchanges more.
- Produce should be packaged in jute gunny bags, polythene impregnated jute bags and cloth bags starting from 50 Kg bags and for retail where possible.
- Better storage facilities are recommended with appropriate moisture level along with the practice of fumigation.
- Access to information for farmers through the AGMARK and MSAMB websites and electronic media on grades and pricing, contract farming, certification, training and opportunities to export can be strengthened.
- Pledge loan facilities and access to accredited warehouses need to be made available to farmers to reduce the number of distress sales.
- There is scope to increase contract farming in the form of public-private partnerships.
- Ragi has now been recognized as extremely nutritious and Ragi products can

Key insights from the constraints analysis for **Sapota** are:

- Farmers need to organize in producer groups to increase their bargaining power.
- As far as they can farmers should plant varieties like haripatti, pilli patti and cricket ball.
- Access to information for farmers through the AGMARK and MSAMB websites and electronic media on grades and pricing, contract farming, certification, training and opportunities to export can be strengthened.
- Better transport facilities to reduce handling and transport loss.
- There is scope to increase contract farming in the form of public-private partnerships

There was insufficient data to do a constraint analysis for Vari and Coconut.

Recommendations

The MSS report outlines the existing marketing systems and channels in Thane district along with detailed information on the main crops of the district. This information helps us understand the current activities and developments in Thane and enables us to identify potential business opportunities that farmer groups can establish in the district. This MSS report also helps us to propose specific activities that ATMA may undertake to promote production and productivity of crops as well as encourage business activity amongst farmer groups.

Major gaps

For production in the district to be market led, improvement in productivity along with improvement in quality for better value produce is needed. Strategies have to be framed which will be supported by interventions/ activities to achieve set targets. Interventions proposed will act as cafeteria for preparation of extension projects for addressing the identified issues of particular crops. Some key issues that need to be immediately addressed are as follows.

Dependency on one crop: In Thane, the largest crop in the whole district is Paddy with 69.48% of the total Gross Cropped Area. This increases the dependence on one single crop for production i.e. paddy, this mono-cropping pattern has increased the risk for farmers. If this crop fails, there would be no other major crop that they could depend upon.

Poor extension structure and outreach: Most of the farmers interviewed are not able to receive any kind of training. Only one fifth of the farmers have received training by KVK, Agriculture department or ATMA. Informal sources of information – such as pesticide dealers, peers etc – tend to be key sources of information for farmers, while formal sources of information (such as KVK, ATMA, Kissan Call Centre etc) need to improve their outreach, especially to interior villages. Poor extension and outreach inhibits any systematic attempts to involve farmers in agri-business activities such as contract farming, co-operatives etc.

Road Map

The strategy for development of agri-business in Thane is three pronged – (i) Transparent & Fair Grade Assessment Mechanism, (ii) Augment Warehouse Facilities and Utilization by Farmers and (iii) Develop Agri Extension based on future market potential.

Focus Area	Specific Action Points	Activities	Responsibility	Time frame & Cost
URGENT GAPS				
Transparent & Fair Grade Assessment Mechanism	<p>Equip APMCs and Keep Stock</p> <p>Take stock of grade assessment equipment at APMCs including grading tables, moisture meters, etc.</p> <p>Equip all APMCs with proper grade assessment equipment as per stock taking.</p> <p>Ensure stock of all equipment is monthly submitted by APMC Secretaries to the DMM-MSAMB to ensure APMCs are ensuring they are updated</p> <p>Create Awareness</p> <p>Adopt a systematic campaign program to promote equipment based grade assessment including multiple media such as (i) wall paintings, (ii) local cable ads, (iii) news-papers, (iv) radio spots etc.</p> <p>Each APMC to submit proposal with specific targets for adopting promotion activity and target to reach out to farmers.</p> <p>Make it mandatory for all trades within the APMC to be done using equipment based grade assessment and provide farmer with a grade slip that gives complete details of produce graded. Conduct monthly farmer surveys during the peak marketing season – using a private agency – to gauge level of awareness of farmers about transparent grading systems.</p>	<p>Improve basic & productive infrastructure in APMC's and Rural Haats</p> <p>PHT Demonstration</p> <p>Pledge Loan</p> <p>Farmer Trainings</p>	<p>PD ATMA, in collaboration with</p> <p>1) MSAMB for augmenting APMC infrastructure and conducting trader level survey.</p> <p>2) With Agri-department to promote concept amongst farmers.</p>	<p>Annexure 4 & 5: Constraint Analysis for Existing Marketing Arrangement</p>

<p>Augment Warehouse Facilities and Utilization by Farmers</p>	<p>Augment existing shortages in the near term</p> <p>Take stock of warehouse gap between production and capacity at APMC level.</p> <p>In the short term invest in augmenting storage facility within the APMC premises through use of hermetic storage structures.</p> <p>Promote warehouse concept amongst farmers.</p> <p>APMCs can adopt a commission based model to promote warehouse concept. Agri-entrepreneurs can work on a commission basis to reach out to farmers and motivate them to store in warehouses. Such youth would be trained to correctly guide a farmer and be paid against amount of produce brought to warehouses.</p> <p>These entrepreneurs will also help address the documentation related inhibitions of farmers and reach out more effectively to farmers.</p> <p>Commission model to be backed by large scale promotion on warehouses through multiple media as well as through prominent wall paintings at key locations.</p>	<p>Demonstrations</p> <p>Farmer Trainings</p> <p>Exposure visits</p> <p>Within state</p> <p>Outside state</p>	<p>DMM- MSAMB</p>	<p>Annexure 4 & 5: Constraint Analysis for Existing Marketing Arrangement</p>
<p>Develop Agri Extension based on future market potential</p>	<p>Promote Market Potential Crops</p> <p>Identify market potential for crops such as Ragi, Vari, Coconut and sapota and develop training (including demos) and promotion programs around it.</p> <p>Develop a sapling nursery management training module for agri-entrepreneurs under the ACABC scheme and promote setting up of sapling nursery with following two support – (i) part of initial seed capital as long term interest free loan and (ii) buy back guarantee on saplings for first three years.</p> <p>Develop a target based sapling distribution program at Taluka level under the Taluka Agriculture Officer for plantation on bunds and/or as special orchards.</p> <p>Keep database of targeted farmers.</p> <p>Provide training and extension to database farmers as per existing methods.</p> <p>Hire an independent agency/call center to maintain track of outreach to farmers by calling up the database farmers on a periodic basis.</p>	<p>Crop Demonstration</p> <p>Farmer Training</p> <p>Farmer Collective</p> <p>Service Centres</p> <p>Group Formation</p> <p>Exposure visits</p> <p>Within state</p> <p>Outside state</p>	<p>PD ATMA in collaboration with DSAO</p>	<p>Budget & Time Frame to be made by ATMA: Leverage on MACP Scheme and/or Agri Entrepreneurs scheme under ACABC</p>

	<p>Support Development of Market</p> <p>Proactively develop market options by organizing fruit festivals with a specific focus on inviting exporters, food processing industry representatives and state and national level traders.</p> <p>Maintain database of best farmers and display information and contact details of such farmers on the local district website to enable traders to directly contact such farmers.</p> <p>Promote a marketing group of volunteering farmers who are willing to aggregate produce and sell in an established market such as Mumbai or Pune. Support initial logistics cost through a subsidy to promote the concept of aggregating and trading in markets outside the district.</p>			
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A comprehensive action plan for the time period of 2012-2017 was developed by the team in VANAMATI detailing the specific approaches required to be taken for each crop category- Cereals, pulses, oilseeds and fruits & vegetables. The team has classified the action plan in terms of activities to be undertaken specific to: Crop demonstration; PHT demonstration; Group formation; FCSC (grains); Pledge loans; Farmers training; Farm school and Exposure visits (within state/ outside state). All these activities have been proposed to solve for issues related to non adoption of package of practices and post harvest practices along with the lack of market awareness. Additionally, the total costs of implementing the action plan has been laid out after considering the availability of funds from major institutions such as MACP, ATMA, MSWHC, NABARD, ISOPAM, NHM and MWSIP. While most of the prescribed activities in the action plan may already be under implementation, a reference to this action plan will further help in creating a strategic approach to the development of the district. Please refer to Annexure 4 and 5 for the existing marketing arrangements.

Potential Businesses

Furthermore, there is significant potential for additional value capture by the Sapota, Vari and fruits and vegetable farmers. The above analysis and recommendations will help strengthen the infrastructure for cultivation of these crops in turn encouraging the growth and establishment of processing units in the district. We found it useful to further understand the business environment in Thane and identify potential business opportunities in the district. Based on the data produced in the report and our assessment of the needs and gaps of the district, we suggest potential areas for intervention across key crops identified. The potential for value addition through processing at different levels to increase efficiency, preserve quality and/or reduce wastage/spoilage was also taken into account and assessed. A detailed analysis of all the business opportunities possible across the main crops was conducted and three of the most beneficial business opportunities for the district were shortlisted. The assessment evaluated each of the above economic opportunities for the crops on the basis of the following scoring matrix (on a scale of 1 to 3) to arrive at a shortlist of three promising business opportunities.

Parameter	Score
Raw material availability	1 – Less than 5% of gross cropped area under cultivation
	2 – 5 to 15% of gross cropped area under cultivation
	3 – >15% of gross cropped area under cultivation

Market potential	1 – Low growth, small market size dependent on nature of business 2 – Medium growth, medium market size dependent on nature of business 3 – High growth, large market size dependent on nature of business
Complexity of operations	1 – Very complex technology/processes 2 – Moderately complex technology/ processes 3 – Simple technology/processes
Investment required	1 – More than Rs.50 lacs 2 – Between Rs. 20 to 50 lacs 3- Less than Rs. 20 lacs
Potential for impact	1 – 0% to 5% of the total number of farmers growing the crop 2 – 5 to 20% of the total number of farmers growing the crop 3 – >20% of the total number of farmers growing the crop

On the basis of the scoring exercise undertaken the following emerged as the most promising business opportunities which can potentially be promoted among the farmer groups in Thane:

Sr. No.	Business model/opportunity	Focus crop(s)	Value chain impact	Key considerations
1.	Sapota collective marketing unit	Sapota	Marketing	<ul style="list-style-type: none"> • Leading district for Sapota production with more than 45,000 MT annual production • Collective marketing reduces costs and increases price received by farmers. • Encourages farmers to grow Sapota in an organized manner and reduces post-harvest losses.
2.	Vari processing unit	Vari	Processing	<ul style="list-style-type: none"> • Thane is one of the few districts in the state with any Vari production. • Increases income for a crop that is typically only consumed at household level • Easy to adopt crop – can encourage greater production
3.	Fresh-cut packaged fruits and vegetables unit	Fruits and vegetables	Processing	<ul style="list-style-type: none"> • Significant fruits and vegetables production in the district • Neighbouring Mumbai is a major market for cut fruits and vegetables; high margin product • Encourages greater production of fruits and vegetables

Encouraging the establishment of the above businesses will encourage production and cultivation of crops and help farmers realize a better price for their produce

Review of ATMA

In order to ensure adoption of best practices in crop cultivation and encourage the establishment of businesses in Thane, ATMA will need to create specific and structured extension programmes and interventions using the above information and recommendations. A scoring assessment of ATMA conducted by the TechnoServe team on key parameters reveals that ATMA Thane seems to be making progress in convergence yet, there is a need to build a synergistic convergence with all relevant departments. The progress on overall adoption of practices by farmers is gradual, the lowest score is reflected on ATMA Thane's less impetus on introduction of promoting innovation and new practices in the district.

ATMA in the district is evolving as an organisation in promoting extension services in the district. ATMA is engaged in various initiatives such as promoting the rice variety- Wada Kolam and promoting vegetable farming as a crop. Further improvement and promotion of market led extension needs to be undertaken. Specialised personnel with sound technical knowledge on marketing at the block level as well as additional SMS with marketing knowledge at the block level require to be recruited. Additionally, regular training of the Block Technology Managers and Deputy Director (Marketing) on concept of market led extension needs to be undertaken.

With the initiation of MACP and overall emphasis on Market led extension in general, ATMA, Thane has been proactively gearing towards the same. However, ATMA Thane will need to play a critical role in helping establish infrastructure and policy. Amongst other important undertakings, capacity building of ATMA staff through modular structured training programs particularly on specific skills such as monitoring and evaluation, market led extension, value addition and processing, and formation and strengthening of FPOs will further improve the impact and execution of activities. Recruitment of key staff members in ATMA along with creating an annual plan on detailed tasks and key result areas for staff members will be helpful in streamlining processes and implementing activities. Finally, regularly monitoring work at ATMA and documenting the processes and progress in quarterly and annual reports will help ATMA create impact through its activities and course correct their implementation strategies required so as to create the most impact.

A broad action plan for ATMA is noted below:

Action Areas	Description	When
A. Strategy		

i) Articulation of key focus areas based on gap assessment	<ul style="list-style-type: none"> • Identify key gaps through following: <ul style="list-style-type: none"> ○ Review of SREP, MSS and this study ○ Sample need assessment exercise through PRA and other tools • Articulate focus areas based on the above 	Yearly once before Annual Action Plan preparation (January-February)
ii) Strategic cum planning workshop with AMC on key focus areas	<ul style="list-style-type: none"> • Discuss focus areas with AMC members • Build consensus and develop broad initiatives that can be promoted • Communicate the focus areas and broad initiatives to BTTs 	Yearly once before Annual Action Plan preparation (January-February)
iii) Focus on market led extension on the identified priority and emerging crops	<ul style="list-style-type: none"> • Key crops identified are: Paddy, Finger Millet and in vegetable crop Capsicum, Green Chilli, Okhra and fruit crop Chikoo (Sapota), floriculture mainly mogra and sonchampa • <u>Paddy</u>—some of the initiatives that can be taken up by ATMA Thane are: <ul style="list-style-type: none"> ○ Provide farmers training on post-harvest management for improving the rice quality ○ Encourage and make mobile rice mill units to FIG's to product enhancement ○ Develop a brand especially for the wada kolam rice variety that has gained good response in exhibitions. Develop linkages with private companies and large retail chains in Mumbai and Pune ○ Strengthen the seed production initiative under the Public Private Partnership ○ Establishing market intelligence systems and price forecasting at <i>taluka</i> level ○ Farmers to be linked with warehouses and avail the facility of warehouse. The farmers need to be guided by ATMA staff to avail the facility and develop linkage with warehouses in their close proximity. • <u>Finger Millet</u>- The initiatives that can be promoted are: <ul style="list-style-type: none"> ○ ATMA Thane, to promote new cultivation technique like <i>Dibbling method</i> for optimizing the yield in production ○ Exposure and awareness amongst farmers to understand the market potential of finger millet ○ ATMA to facilitate post-harvest management and processing techniques to enable FIG's to carry out to a basic level as per the trader/private company requirements ○ ATMA to explore a contract farming arrangement with baby food manufacturing companies 	
iv) Focus on strengthening of Farmer Interest Groups and Producer Companies	<ul style="list-style-type: none"> • Identifying the better functional FIG's for handhold and support in specific area of intervention • Allocate man power to handhold FIGs on a regular basis • Initiate activities (preferably economic) to encourage FIGs to actively involve 	Immediate; Planning and activities to be reviewed every month

B. Structure		
v) Develop selection criteria for non-official members through pre-set criteria	<ul style="list-style-type: none"> • The farmers need to be selected through a set of criteria • AMC to develop a set of criteria and the same can be approved by GB • Following are the suggestive criteria: <ul style="list-style-type: none"> ○ Farmer having diversified farming system ○ Farmer currently engaged in agriculture and is located in the village/place of farming ○ Demonstrated use of new technology having good relationship with research institutions or agencies in the business of promoting agriculture ○ No current or past engagement/relationship with political parties; or have hold any positions at district or Taluka level ○ Literate and have ability to read and write (Higher education is preferable but not essential) 	Immediate
vi) Functioning of GB and AMC through orientation and regular meetings	<ul style="list-style-type: none"> • Orientation of members on their roles and responsibilities • Quarterly meetings for GB • Monthly meetings for AMC • Ensure attendance and participation of members through involving members in the regular work of ATMA 	Immediate
vii) Involve BFAC, DFAC and AMC members in regular monitoring of ATMA work	<ul style="list-style-type: none"> • Orient the BFAC, DFAC and AMC members on their roles and responsibilities • Create plan for the members to undertake monitoring function on monthly basis • Include specific agenda to discuss the feedback from the BFAC, DFAC and AMC members post their visits in their monthly meetings 	
C. Staff		
viii) Building skills of ATMA staff through modular structured training programs	<p>Following are the suggested trainings for</p> <ul style="list-style-type: none"> ○ <u>Project Director</u> – Project Formulation and Management, Market led Extension, Monitoring and Evaluation, Networking, Negotiations ○ <u>Deputy Project Director (Marketing)</u> – Market Led Extension, PHM, Value Addition and processing ○ <u>Deputy Project Director (Research)</u>: Research methodology, farm schools, demonstrations, trainings, crop based trainings on new technology ○ <u>BTM</u> – Concepts of Market led Extension, Post-Harvest Management in the key crops, Value addition and Processing ○ <u>SMS</u> – Formation, strengthening of FIGs, CIGs, FPOs ○ <u>Farmer Friend</u> – Group Dynamics, Formation and strengthening of FPOs 	Yearly, spread evenly across the year
ix) Recruitment of key staff	<p>Following vacancies need to be filled up:</p> <ul style="list-style-type: none"> • Deputy Project Director (Marketing) – 1 • SMS – 16; preference for candidates having skills and experience on marketing of agro-produce 	Immediate

x) Annual Planning for key staff and articulation of Key Result Areas (KRAs)	<ul style="list-style-type: none"> • Each ATMA staff to outline and articulate their Key Result Areas (KRAs) • Goals to be based tightly on the key identified priority areas and annual action plan • BTMs and SMS to spend minimum of 50% of their time in field working with farmers and FIGs • A fortnightly work plan to be made at the outset of the month and verified/approved by TAO and DPD 	<ul style="list-style-type: none"> • Annual (post finalisation of Annual Work plan) • Every month
D. System		
xi) Improve Annual Action Planning process by detailing the key activities at the block and District level and getting advisory support from Farmers Advisory Committee and BTT members	<ul style="list-style-type: none"> • The BTT/BTM needs to get clear directives and communication for the planned to be implemented in their operational area • Use detailed template to support the BAP/DAP template • Develop a roster of activities and advertise the Block and District level activities through websites, text message services, print media and putting the same at common places • To develop a set of criteria for selection of beneficiaries for an inclusive implementation of the plan • Review of the plans versus achievement to be undertaken monthly at the Block level at BTT/BFAC meetings 	<ul style="list-style-type: none"> • Annual while preparation of Annual Action Plan • Monthly
xii) Documentation of ATMA's work through a quarterly and annual report.	<ul style="list-style-type: none"> • ATMA to produce a two to three page report (both physical and financial) on the activities undertaken in the blocks • These quarterly reports to be translated in as Annual report 	Quarterly and compilation to be done by the end of every year
xiii) Annual evaluation by involving experts	<ul style="list-style-type: none"> • ATMA to undertake annual evaluation of its work through hiring professional consultants at the District level 	Annual

In addition to ATMA, the Agriculture Marketing Experts ('AME') of the districts along with other officials will play a critical role in identifying and implementing the district plan so as to encourage business activity. The district AMEs will need to develop a plan to encourage contract farming, direct selling and processing industries. It would be of utmost importance for the AMEs to identify the key buyers/ consumers in the district in terms of large institutions and organizations. These organizations will be important buyers of locally processed commodities and locally cultivated fruits and vegetables. Furthermore, the AMEs must identify the potential industries for the main crops of the district and the market requirement and demand from companies and processors. This will enable a detailed approach to encouraging business activity in the district and thus ensuring farmers receive a better price for their crops.

ANNEXURES

Annexure 1. List of cold storages in Thane

Sr No	Name of Cold storage	Capacity (MT.)	Type	Type of Comodoty stored
1	BOMBAY COLD STORAGE B-36 Wagle Industrial Estate Thana	3191	Private	Multipurpose
2	CASTLEROCK FISHERIES Road No. 27, Plot No. 32, Wagle Industrial Estate, Thana.	1038	Private	Marine Products
3	DIPTI AGENCIES TULSI VIHAR Building Near Ganesh Cold Drinks Ram Nagar, Dombiwali East, Distt. Thane.	17	Private	Dairy Product
4	INCHARGE Govt. Milk Distribution Depot Gove Bhivandi MIDC Saravali Distt. Thane.	85	Public	Dairy Products
5	KHANDELWAL BROS. / MAWAVALACS No. 312-A Parayape Udog Bhawan, Ghokale Road, Thane.	14	Private	Dairy Products
6	KHANELWAL BORS. MAVAWALAKhandelwal Bhavan CTS No. 3349, Oak Bank Near Sai Park, Shivaji Chowk Kalyan.	13	Private	Dairy Products
7	CASTLE ROCK FISHERIES PVT. LTD. Warden House 5th Floor Siir Puim Road New Bombay Cs At Satpade Distt. Thane.	313	Private	Marine Products
8	LOKSONS PVT. LTD., Unit Chanderlatta Ice & Cold Storage A-83 Wagle Indl. Estate MIDC.	1391	Private	Multipurpose
9	MEHTA ICE AND COLD STORAGE, D-36 / 4, M.I.D.C., Turbe, New Bombay, Thane.	3369	Private	Multipurpose
10	NANAK FOOD INDUSTRIES A-113, Road 21 Wadle Industria Estate, Thane.	1735	Private	Multipurpose
11	RICHIE RICH DISTT. PVT. LTD., Ajmera Estate Western Express Highway, Thane – 401 104.	131	Private	Dairy Products
12	SIEMEN INDIA LTD. MIDC Industrial Estate, Thane Bombay.	12	Private	Fruits & Veg.
13	SIX STEEL (P) LTD., 4/25 Tardeo Aircondition Mkt. Tardeo Bombay Loca Thane (Wagle Estate).	193	Private	Marine Products
14	THE NAV BHARAT REGF. & INDL. LTD. Plot No. B-62, Road No. 21-Y, Wagle Estate.	2559	Private	Multipurpose
15	AMRATLAL ASHOKKUMAR COLD STORAGE & ICE FACTORY D-398, TTC Indl. Area, MIDC Vill. Kukshet, Thane.	2110	Private	Multipurpose
16	VICEROY FOODS PVT. LTD. (International Creative Foods) Plot No. R-26, TTC Indl. Area, Rahale, Dist. Thane – 400071.	199	Private	Marine Products
17	GOOD VALUE MARKETING CO. LTD. Vill Ambiste, Tal Wada, Distt. Thane.	32	Private	Dairy Products
19	PREMRAJ COLD STORAGE, TTC Area, Thane Dist.	214	Private	Meat

Annexure 2. List of rice processing mills in Thane

Sr. No	Name of rice Mill	Taluka	Contact No
1	Kanhoba Rice mill	Bhiwandi	9270235085
2	Annapurna Rice mill	Bhiwandi	
3	Deepak Rice mill	Bhiwandi	9730400021
4	Burdi Rice mill	Bhiwandi	7498359966
5	Sainath Rice mill	Bhiwandi	9220859822
6	Bharat Rice mill	Kalyan	998747131
7	Balaji Rice mill	Kalyan	9821278699
8	Janta Rice mill	Kalyan	9422478327
9	Yashwant Rice mill	Kalyan	
10	Vitthal Rice mill	Ulhasnagar	9011795252
11	Samarth krupa rice mill	Ulhasnagar	8390949226
12	New bharat rice mill	Ambarnath	9322705658
13	Ashok rice mill	Ambarnath	9029173417
14	Hanuman Rice mill	Shahapur	9270760901
15	Sushila Rice mill	Shahapur	9422688639
16	Kisan sahakari Rice mill	Shahapur	
17	Palghar Taluka Krishi vikas sahakari sangh	Palghar	9209520375
18	Mahim vivdh karyakari sanstha maryadit	Palghar	02525220103
19	Astha Rice mill	Palghar	9823655896

Annexure 3. List of agro based industries in Thane district

SR.N O.	NAME OF ENTERPRISE	ADDRESS OF ENTERPRISE	TELEPHONE	CELL NO.	ACTIVITY	CAP_VAL UE	CAP_UNIT
1	NGL FINECHEM LTD.	PLOT NO. W-42C, MIDC, TARAPUR, TAL.-PALGHAR, DIST.-THANE	2240539911	98200378 98	ACTIVE PHARMACEUTICAL INGREDIENTS & DRUG, INTERMEDIATES SUCH AS - CLOPIDOGREL BISUPHATE UPS, INTAZOXANIDE, CITALOPRAM	80	MT
2	BLUE CIRCLE ORGANICS PVT LTD	B-12,C-4 & E-2, MIDC, ADDL. AMBERNATH, TAL. AMBERNATH, DIST. THANE	2075307	98216560 00	ACTIVE PHARMACEUTICAL INGREDIENTS, VATERINARY PRODUCTS ISOPHTHALIC & DERIVATIVES, SULFONYL AMIDES & CHLORIDES,		
3	LUBRION INDUSTRIES	SHED NO. W-80, MIDC, AMBERNATH, TAL. AMBERNATH	25476094	93243672 10	AGO CHEMICALS - RUNNER 90, FRUITON, ROOTON PLUS, NITRON	2000	KGS
4	LEELAS FOOD IMPEX (P) LTD	PLOT NO. 8, AMALGAMATED INL ESTATE, S.NO. 166-A, H.NO.1(P), ASANGAON, TAL. SHAHAPUR	2527212027	98200684 83	AGRICULTURE & VEGETABLE PULSES PRODUCTS FOOD CEREAL PRODUCTS REPACKING OF TEA, COFFEE, COCOA SEED, GRAINS & DRY FRUITS	52000	MT

5	MODTECH ENGINEERS & FABRICATORS	GALA NO. 20, GROUND FLOOR, MADHU VRINDA INDUSTRIAL ESTATE, BLDG NO. 1, WALIV, TAL. VASAI,	2503295830	98201501 02	AGRICULTURE COMPONENTS, PHARMACEUTICAL EQUIPMENTS AGRICULTURE COMPONENTS, PHARMACEUTICAL EQUIPMENTS	3000	PCS
6	SEWA POLYMERS	PLOT NO. 80 & 85, ACHHAD INDL ESTATE, VIL. ACHHAD, TAL. TALASARI	230088	98200161 97	AGRICULTURE PRODUCT- RICE ROLLER PVC SUCTION HOSE PIPE	10	NOS
7	PALM INTERNATIONAL	G-11, SIDDHARTH INDUSTRIAL EST.NO.2, SHAILESH UDYOG NAGAR, SATIVALI, TAL. VASAI, DIST. THANE.	2224121739	97734939 36	AGRO BIO PRODUCTS INTERMEDIATES, ORGANIC MANURE. AGRO BIO PRODUCTS INTERMEDIATES, ORGANIC MANURE.	67600	LTRS
8	PALM CROP SCIENCE PVT LTD	GALA NO. 6, SRIPAL INDUSTRIAL ESTATE, BEHIND VARU INDL ESTATE, WALIV, TAL. VASAI	2226121739	98198939 36	AGRO BIO PRODUCTS, SEAWEED EXTRACT & AMINO ACID GRANULES METHIONINE AMINO ACID BASED BIO DERIVITIVES	6500	LTRS
9	UNITED AGRO BIOTECH PVT. LTD.,	F2/F4, ACTUAL INDL. COMPLEX, KUNDLA ROAD, PO- UCHAT, VADAVALI, THANE	25402757	98335366 44	AGRO CHEMICAL FORMULATION HUMIC ACID	1000	TON
10	SANJYOT BIOTECH	W-198 (A), MIDC, PHASE II, SONARPADA, DOMBIVLI (EAST), TAL.- KALYAN, DIST.-THANE	24306039	98213472 67	AGRO CHEMICALS & BIO CHEMICALS AGRO CHEMICALS & BIO CHEMICALS	40	MT

11	BARKUR SURFACTANTS PVT. LIMITED	C-51, TTC INDL. AERA, NAVI MUMBAI, TAL & DIST-THANE	27633992	93232572 38	AGRO EMULSIFIERS CABS SURFACTANTS AGRO ADDITIVE	3000	MT
12	DELVE CORPORATION	SHOP NO. 9, SHUBLAXMI CHOPPING CENTRE, VASANT NAGARI, VASAI, DIST.-THANE	6451239	98234459 99	AGRO FOOD PRODUCTS, AGRO FOOD PRODUCTS		
13	VICHI AGRO PRODUCTS PVT. LTD.	PLOT NO. A-299/355, MIDC, TTC INDL. AREA, MAHAPE, NAVI MUMBAI, TAL. & DIST.-THANE	22414646	90408806 0	AGRO GOODS, RICE PROCESSING, WHET FLOUR JOWAR FLOUR	15000	MT
14	KARAN INDUSTRIES (INDIA)	SR.NO. 31,6B PART, SHAHAD-KALYAN MOHANE ROAD, TLA.-KALYAN, DIST.-THANE			ALL TYPE OF PULSES ALL TYPE OF PULSES	7200	TON
15	NEW HINDUSTAN MASALA MILLS	PLOT NO. C-210, MIDC, TTC INDL. AREA, INDIRA NAGAR, TURBHE NAVI MUMBAI, TAL. & DIST.-THANE	2265166317	98201628 01	ALL KINDS OF SPICES AND FLOOR AND OTHER FOOD PRODUCTS ALL KINDS OF SPICES AND FLOOR AND OTHER FOOD PRODUCTS	302	TON
16	KHAVAYYA FOOD PRODUCTS	SHOP NO. 2, SHIVAM COMPLEX, MILIND NAGAR, BEHIND BIRLA COLLAGE, KALYAN(W), TAL. KALYAN	2506415098	90288828 35	ALL TYP OF SPICES, INSTANT FOODS		
17	BHISE AGRO FOODS & BEVERAGES PVT. LTD.	THE COMMODITY EXCHANGE BLDG., 7TH FLOOR, OFFICE NO. 722, SECTOR 19, VASHI, TURBHE	9930859326		ALL TYPES OF AGRO FOOD & BEVERAGES ALL TYPES OF AGRO FOOD & BEVERAGES		
18	JOSTARS ORGOTECH PVT LTD	PLOT NO. A-97, MIDC, PHASE I, DOMBIVALI, TAL. KALYAN,	2240257777	98203120 19	ALL TYPES OF FOOD ADDITIVES ALL TYPES OF FOOD ADDITIVES	60000	KGS

19	HABHIT WELLNESS PVT. LTD.	PLOT NO. 149, PHASE-I, MIDC, GOLAVALI NAKA, DOMBIVLI (EAST), TAL.-KALYAN, DIST.-THANE		99873417 29	ALL TYPES OF FOOD, BEVERAGE,HERBAL AYURVEDIK & AGRICULTURAL PRODUCTS	50	TONS
20	SAI ELASTO TECHNOLOGIE S	PLOT NO. 6, FATHERWADI, PATEL INDUSTRIAL ESTATE, GOKHIVARE, TAL. VASAI		92220855 79	ALL TYPES OF RUBBER GOODS FOR PHARMA MEDICAL FOOD INDUSTRY PROCESSING ENGINEERING, AUTOMOBILE RUBBER ITEMS SPARES	25	TONS

Annexure 4. Constraint analysis of existing marketing arrangement

Sr.No	Basic Infrastructure /process	Full/Partial/No Gap referred as F/P/N							
		Bhiwandi	Kalyan	Murbad	Shahapur	Vasai	Palghar	Dahanu	Ulhasnagar
1	<u>Storage to farmers produce</u>	F	P	P	P	F	P	F	F
2	<u>Adequate certified electronic weighing</u>	P	P	P	P	F	P	F	F
3	<u>Auction hall</u>	F	P	P	P	F	P	F	F
4	<u>Roads in Premises</u>	F	P	P	P	F	P	F	F
5	<u>Banking service for the farmers</u>	F	F	F	F	F	F	F	F
6	<u>Platform Shaded</u>	F	P	P	P	F	F	F	F
7	<u>Toilet, Guest house to Farmer/Traders</u>	F	P	P	P	F	N	F	P
8	<u>Street Light</u>	F	P	P	P	F	P	F	P
9	<u>Roads with Watchman cabin</u>	F	P	F	F	F	F	F	F
10	<u>Drinking Water Facility</u>	P	P	P	P	P	P	P	P
11	<u>Solid waste management unit</u>	F	F	F	F	F	F	F	F
12	<u>Fencing/Wall Compound</u>	F	P	P	N	F	P	F	F

-	<u>Process/Trading/Marketing Practicess</u>	-	-	-	-	-	-	-	-
13	<u>Open auction</u>	<u>F</u>	<u>P</u>	<u>P</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>
14	<u>Pack House for F&V</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>
15	<u>Marketing charges</u>	<u>P</u>	<u>P</u>	<u>P</u>	<u>P</u>	<u>P</u>	<u>P</u>	<u>P</u>	<u>P</u>
16	<u>Use of electronic display boards</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>N</u>	<u>F</u>	<u>F</u>
17	<u>Cold Storage</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>P</u>	<u>F</u>	<u>F</u>
18	<u>Cleaning Unit of Food Grains/Vegetabels</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>	<u>F</u>

Annexure 5. Constraint analysis of existing marketing arrangement

-	-	-	Source of Fund				Source of Fund		
			Own Contribution Basic Infrastructure (Lakhs)	MACPIRK VY\Other Schemes (Lakhs)			Own Contribution Productive Infrastructure (Lakhs)	MACPIRK VY\Other Schemes	
Name of APMC	Proposed Basic Infrastructure Development	Total Cost Basic Infrastructure (Lakhs)	Own Contribution Basic Infrastructure (Lakhs)	MACPIRK VY\Other Schemes (Lakhs)	Proposed Productive Infrastructure	Total Cost Productive Infrastructure (Lakhs)	Own Contribution Productive Infrastructure (Lakhs)	MACPIRK VY\Other Schemes	Total Cost of the Project (Basic + Productive)
Bhiwandi	Entry gate, Office construction & renovation, 1ha. Land purchasing, Parking	210	76.25	0	Ripening Chamber, Grading center, Grain grading machine, Godown, Vermicompost project	170	40.5	48.5	380
Kalyan	Road Construction, Drinking water, Electricity, Entry gate, concrete road, Buildings, Toilet, Lamps,	1791	1621.7	169.3	Cattle shed, auction hall, cold storage,	1771.7	1681.7	90	3562.7

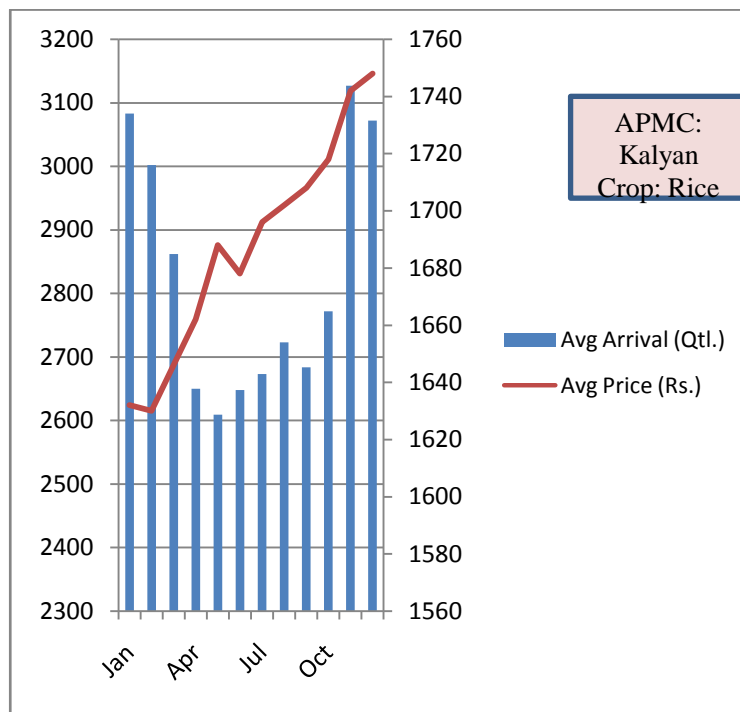
Murbad	Internal road, drinking water, Electricity, compound wall, concrete road, office Building,	157			Godown, Shops for traders, Cold storages, Gradind facility, cattel shed, Vermicompost project, Electronic weighing machine	4827	850	200	4984
Shahapur	Internal road, drinking water, Electricity, Concrete road, fencing	67	53.25	6.25	Godown, Auction hall, electronic weighing machine, grading unit,	198	161	24.5	265
Vasai	Land purchasing, Concrete road, fencing, Internal road, Office building, Electricity, Drinking water, Toilet	824	686.5	42.3	Electronic weighing machine, Cold storage, Auction hall, Cattel shed, Godown, Shops	1081	9	332	1905

Palghar	Fencing, Toilet, Office building, Entry gate, Farmers guest house	51.5	0	12.87	Godown,	40	0	13.2	91.5
Dahanu	Land purchasing, Concrete road, fencing, Internal road, Office building, Electricity, Drinking water, Toilet, Farmers guest house	321.45	66.45	81	Godown, Shops for traders, Electronic weighing machine, Cold storage, Auction hall	176	20	9	497.45

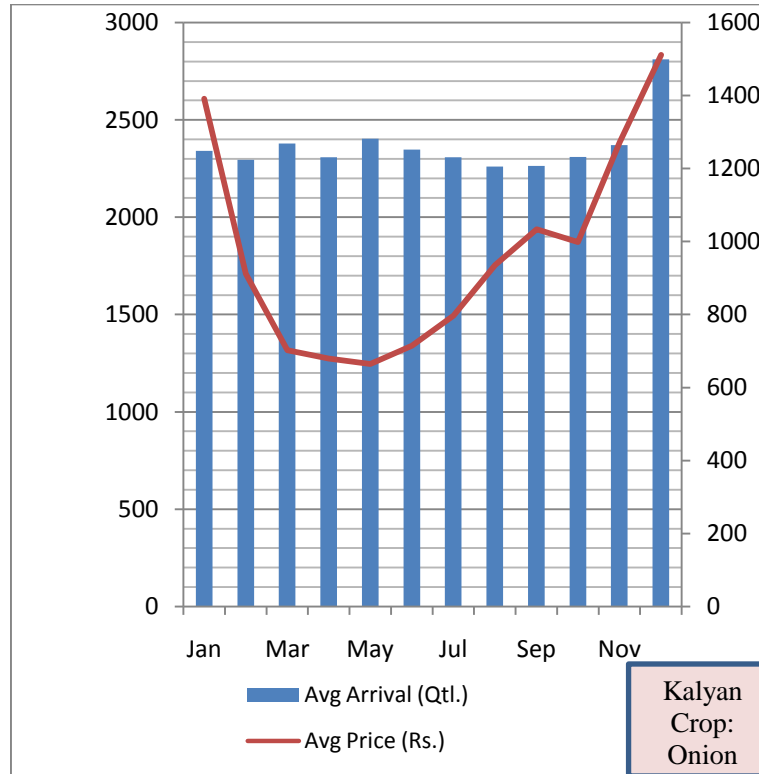
Ulhasnagar	Land purchasing, Concrete road, fencing, Internal road, Office building, Electricity, Drinking water, Toilet, Farmers guest house	2185	90		Cold storage, Shops, weighing bidge, vermi compost unit	145	65	40	2330
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Annexure 6 : Monthwise commodity wise prices and arrivals

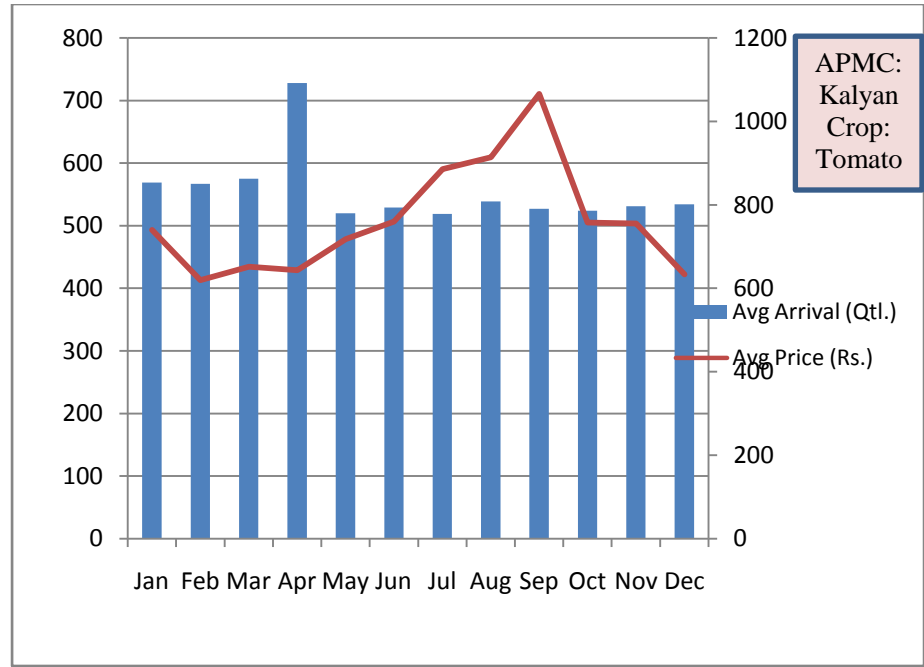
APMC: Kalyan		
Crop : Rice		
Month	Avg Arrival (Qtl.)	Avg Price (Rs.)
Jan	3083	1632
Feb	3002	1630
Mar	2862	1646
Apr	2650	1662
May	2609	1688
Jun	2648	1678
Jul	2673	1696
Aug	2723	1702
Sep	2684	1708
Oct	2772	1718
Nov	3127	1742
Dec	3072	1748
	Max Price:	1748
	Month :	Dec



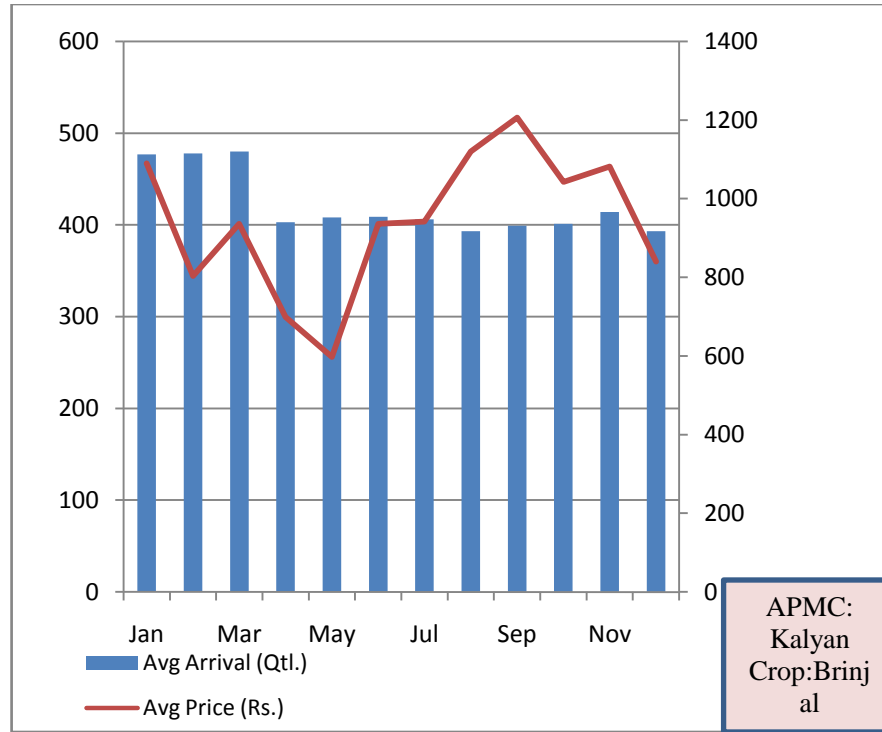
APMC: Kalyan		
Crop : Onion		
Month	Avg Arrival (Qtl.)	Avg Price (Rs.)
Jan	2340	1392
Feb	2294	912
Mar	2378	703
Apr	2308	680
May	2403	665
Jun	2348	715
Jul	2308	797
Aug	2261	936
Sep	2263	1034
Oct	2310	999
Nov	2371	1272
Dec	2811	1512
	Max Price:	1512
	Month :	Dec



APMC: Kalyan		
Crop : Tomato		
Month	Avg Arrival (Qtl.)	Avg Price (Rs.)
Jan	569	740
Feb	567	620
Mar	575	652
Apr	728	644
May	520	718
Jun	529	760
Jul	519	886
Aug	539	914
Sep	527	1066
Oct	524	758
Nov	531	756
Dec	534	634
	Max Price:	1066
	Month :	Sep

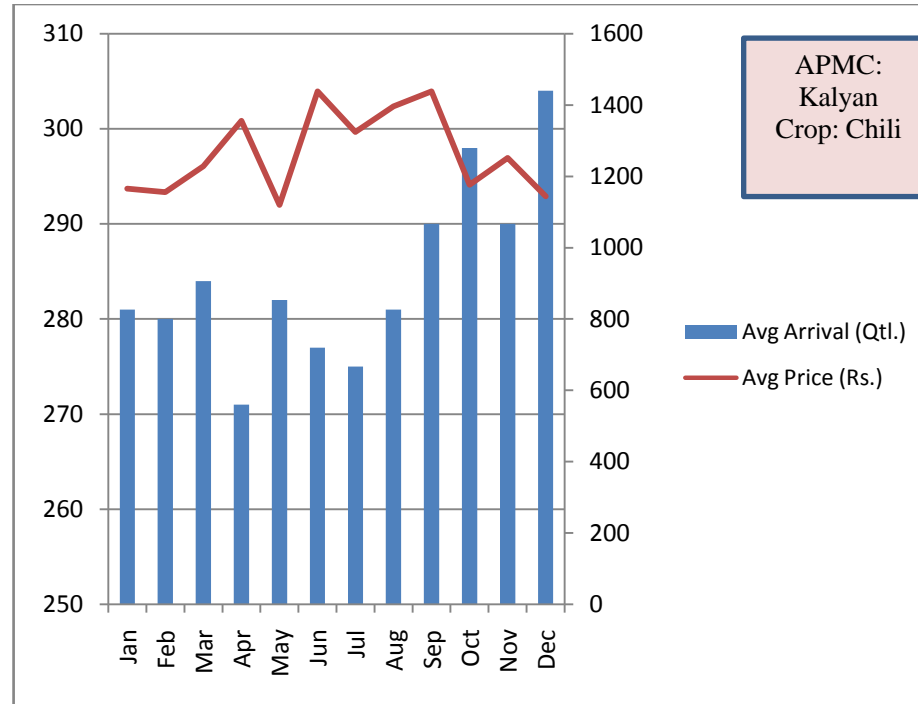


APMC: Kalyan		
Crop : Brinjal		
Month	Avg Arrival (Qtl.)	Avg Price (Rs.)
Jan	477	1090
Feb	478	804
Mar	480	936
Apr	403	700
May	408	598
Jun	409	936
Jul	406	942
Aug	393	1120
Sep	399	1206
Oct	401	1043
Nov	414	1082
Dec	393	840
Max Price:		1206
Month :		Sep

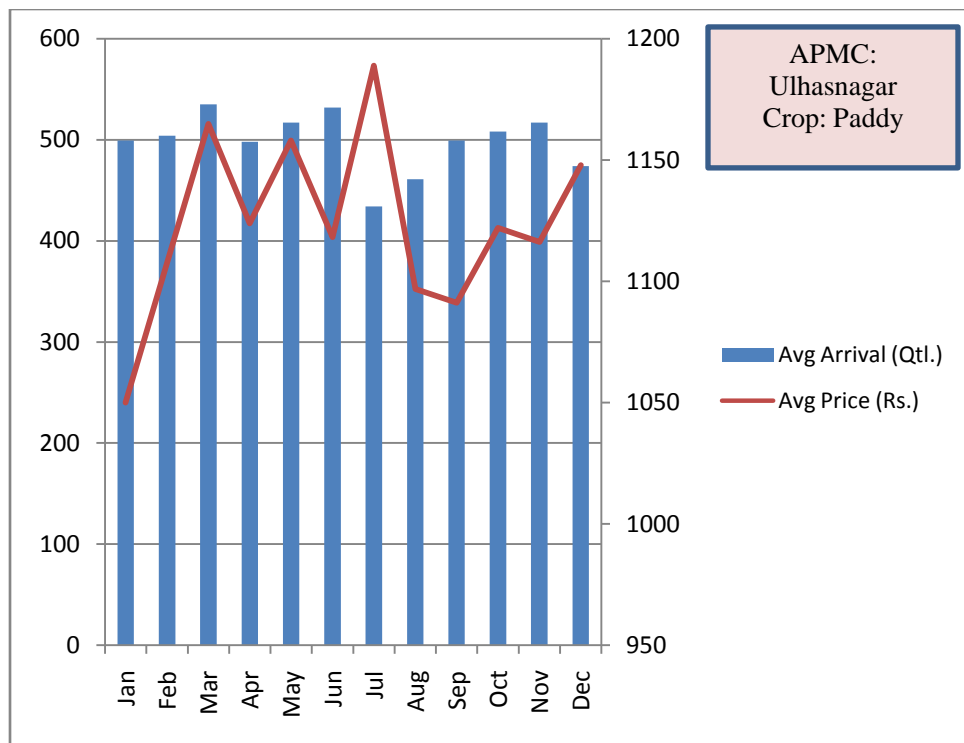


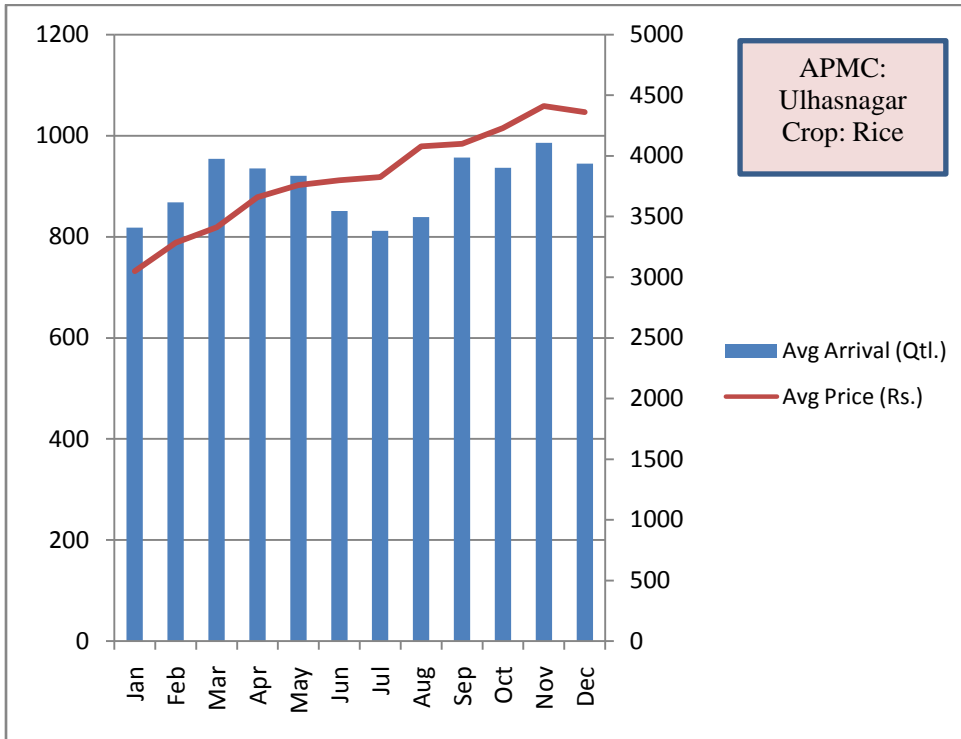
APMC:
Kalyan
Crop:Brinjal

APMC: Kalyan		
Crop : Chili		
Month	Avg Arrival (Qtl.)	Avg Price (Rs.)
Jan	281	1166
Feb	280	1156
Mar	284	1228
Apr	271	1356
May	282	1120
Jun	277	1438
Jul	275	1324
Aug	281	1396
Sep	290	1438
Oct	298	1176
Nov	290	1252
Dec	304	1144
	Max Price:	1438
	Month :	Jun



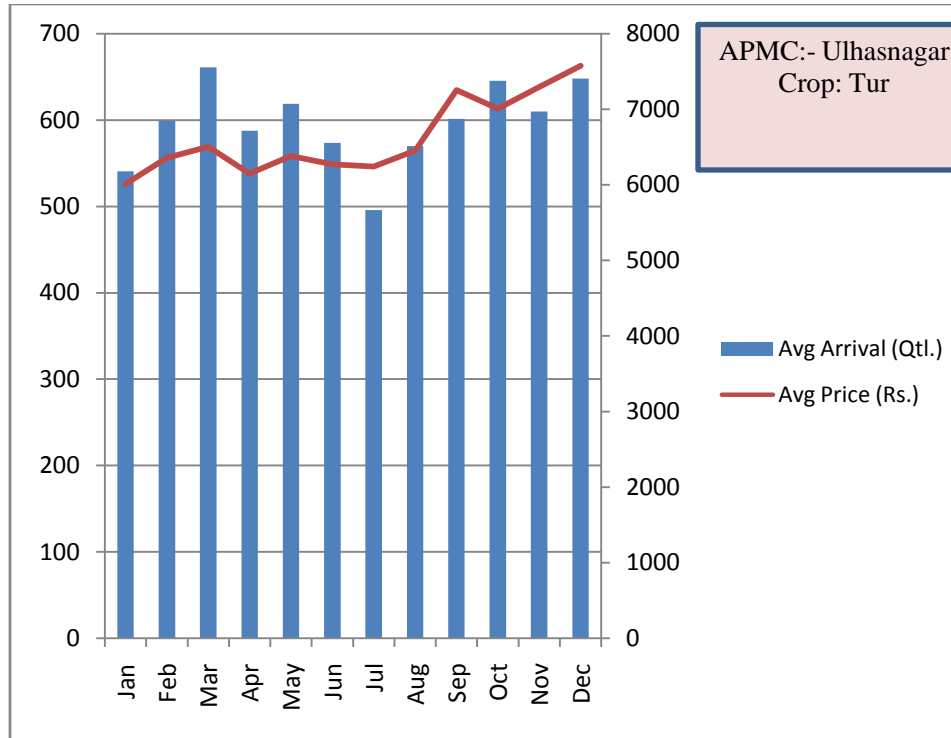
APMC: Ulhasnagar		
Crop : Paddy		
Month	Avg Arrival (Qtl.)	Avg Price (Rs.)
Jan	499	1050
Feb	504	1107
Mar	535	1165
Apr	498	1124
May	517	1158
Jun	532	1118
Jul	434	1189
Aug	461	1097
Sep	499	1091
Oct	508	1122
Nov	517	1116
Dec	474	1148
Max Price:		1189
Month :		Jul



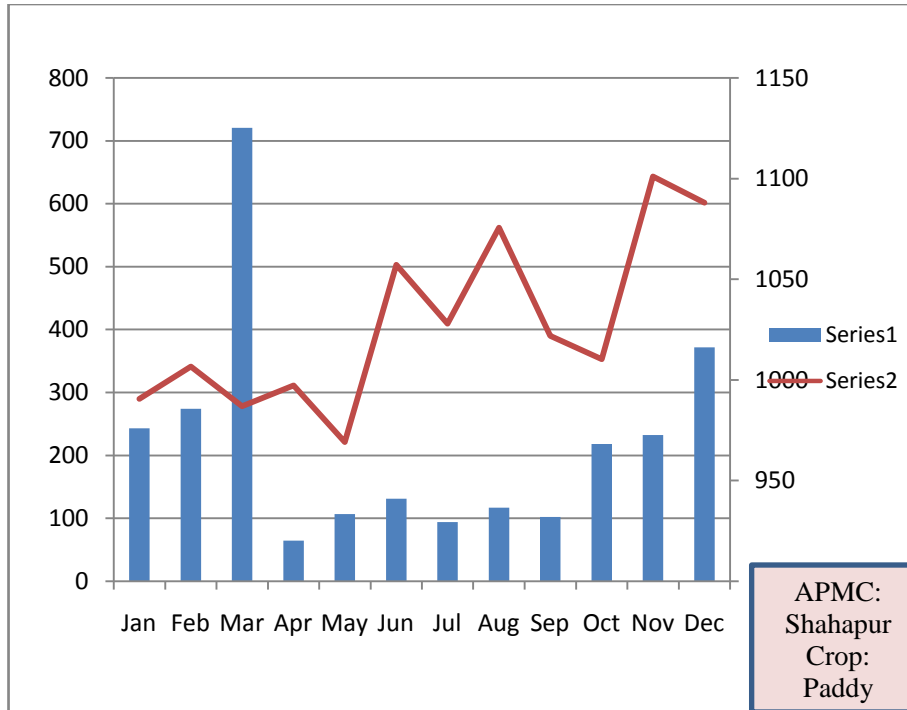


Crop : Rice		
Month	Avg Arrival (Qtl.)	Avg Price (Rs.)
Jan	818	3049
Feb	868	3284
Mar	955	3411
Apr	935	3660
May	921	3759
Jun	851	3799
Jul	812	3826
Aug	839	4079
Sep	957	4100
Oct	937	4229
Nov	986	4412
Dec	945	4362
Max Price:	4412	
Month :	Nov	

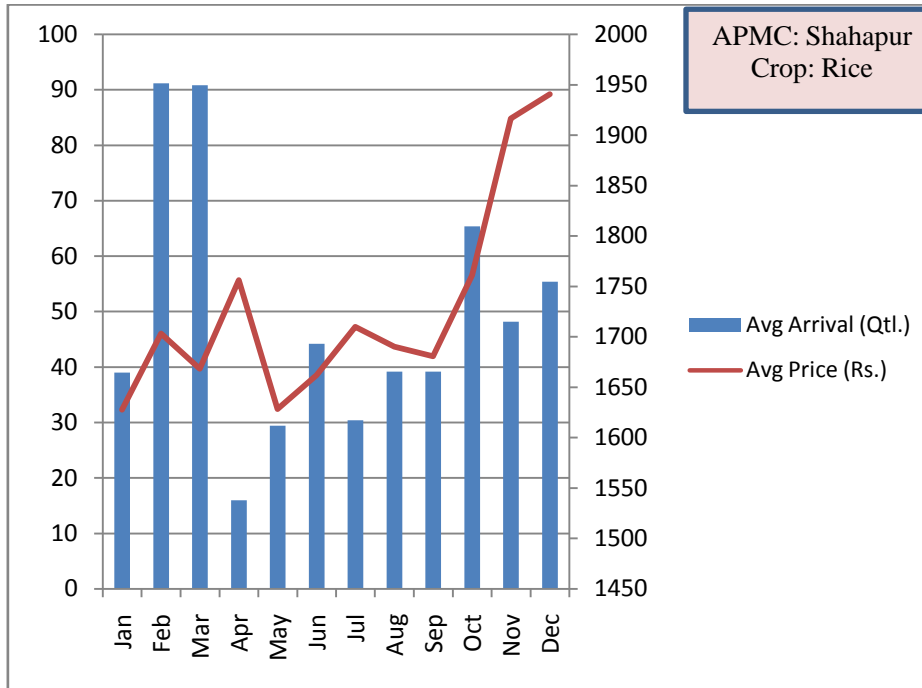
APMC: Ulhasnagar		
Crop : Tur		
Month	Avg Arrival (Qtl.)	Avg Price (Rs.)
Jan	541	6010
Feb	599	6357
Mar	661	6504
Apr	588	6151
May	619	6380
Jun	574	6272
Jul	496	6243
Aug	570	6456
Sep	601	7252
Oct	646	7009
Nov	610	7295
Dec	648	7574
Max Price:		7574
Month :		Dec



APMC: Shahapur		
Crop : Paddy		
Month	Avg Arrival (Qtl.)	Avg Price (Rs.)
Jan	243	990
Feb	274	1007
Mar	721	987
Apr	64	997
May	107	969
Jun	131	1057
Jul	94	1028
Aug	117	1076
Sep	102	1022
Oct	218	1010
Nov	232	1101
Dec	372	1088
	Max Price:	1101
	Month :	Nov



APMC: Shahapur		
Crop : Rice		
Month	Avg Arrival (Qtl.)	Avg Price (Rs.)
Jan	39	1628
Feb	91	1703
Mar	91	1668
Apr	16	1756
May	29	1628
Jun	44	1662
Jul	30	1710
Aug	39	1690
Sep	39	1681
Oct	65	1761
Nov	48	1916
Dec	55	1940
	Max Price:	1940
	Month :	Dec



Month	Avg Arrival (Qtl.)	Avg Price (Rs.)
Jan	545	1033
Feb	632	1202
Mar	1089	1141
Apr	605	1117
May	232	1243
Jun	262	1347
Jul	64	1357
Aug	142	1475
Sep	125	1349
Oct	66	1425
Nov	248	1604
Dec	261	1577
	Max Price:	1604
	Month :	Nov

