

## **“Production and Marketing of Orange in Assam –A Study on Doomdooma Region of Tinsukia District”**

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### ***Introduction***

Agriculture is the backbone of the rural economy in Assam as well as India. Rural economy is regulated by the rural masses and its development often relies on various economic activities they perform and they are mostly dependent on agricultural activities. Horticultural farming is yet one of the major source of generating adequate income. There are various kinds of horticultural crops like fruits, vegetables, spices, nuts, tuber crops and medicinal & aromatic plants etc.

Orange cultivation predominantly plays a very important role in the socio-economic condition of rural areas in Assam. Orange is a seasonal horticultural fruit crop. Oranges are available throughout the year (peak time-winter) and grow on evergreen trees which are about 30 feet high and 20 feet wide. The flowers of the orange are white and blossom in spring, however the fruits appear only by winter. Once the trees are matured it gives fruits for 15-20 years. Assam is traditionally a horticultural state due to its unique agro-climatic condition, which permits growing wide range of horticultural crops like various fruits, vegetables, flowers, spices, nuts, tuber crops, medicinal and aromatic plants. Assam falls under the world citrus belt.

In Assam, Tinsukia, NC Hills, Karbi-Anglong, Goulpara, Dhemaji and Jorhat are the growing and potential belts of orange (Khasi-Mandarin). The area under this crop is 6.0(Ha) and the productions is 71.0M.T with a productivity of 11.9 (M.T/Ha). Most of the small tea growers used to practice intercropping tea with orange (Khasi-Mandarin) which has resulted in increased production of orange thereby benefited the farmers economically. As the harvesting season is November to January, the rest of the 9 months of a year, the farmer can pluck tea leaves from their small tea garden at least for 7 months from April to October. So from economic point of view this, “Orange cum Tea” cultivation seems to be very popular and profitable venture amongst the farmers of the orange growing belts of the Tinsukia district of Assam.

The Tinsukia district is in fact the largest producer of orange both in terms of area and production in Assam. The area under this crop in the district is 1455 hectares including new plantations and the production is 23,300 M.T with a productivity of 16,013 kg per hectares. Major areas of orange orchards in Tinsukia district are Ketekong, Margherita, Talap, Kakopathar, Hapjan, Doomdooma, Philobari etc.

### ***Objectives of the Study***

- To study the growth of production and marketing level of orange growers of the study area.
- To examine the problems related to production, marketing of orange.
- To suggest measures to overcome the problems in orange production and marketing.

### ***Production and Cost of Orange Cultivation***

Orange cultivation is now occupying a prominent status in comparison with other horticultural products being cultivated in a state. It has become the main commercial crop in the region as it generates high income level for the farmers with low investment. Till a few years back, orange cultivation was being done more than 1200 hectares of land in the Tinsukia district, but it has been reduced to the change of crop from orange to tea but some of the small tea growers have used the same land for both the crops using some modern concepts and technology. The agriculture department has taken some scheme and provides subsidies including storage, processing and marketing for the benefits of farmers.

The following table shows the trend of area, production and productivity of oranges in Tinsukia District from 2001-2009.

**Table 1: Distribution of Area, Production and Productivity of Oranges in Tinsukia District**

<b>Years</b>	<b>Area (Ha)</b>	<b>Production (MT)</b>	<b>Productivity (Kg per Ha)</b>
<b>2001-02</b>	1080	17,280	16,000
<b>2002-03</b>	1085	17,431	16,065
<b>2003-04</b>	1335	21,343	15,987
<b>2004-05</b>	1320	21,142	16,017
<b>2005-06</b>	1320	21,150	16,023
<b>2006-07</b>	1320	21,132	16,009
<b>2007-08</b>	1325	21,197	15,998
<b>2008-09</b>	1455	23,300	16,013

Directorate of Horticulture, Govt. of Assam,

It has been found that the area and production under orange is increasing in the district. However the productivity is up and down in the last few years. It is observed that the production is highest in 2009-10 (i.e. 22,782MT) but it slowly decreased in 2010-11 (i.e. 22,101MT) and again increased in the following year i.e. in 2011-12 (23,200MT), in 2012-13 increased by (27,342MT).

#### **Cost of Production**

Cost of production includes various types of expenses incurred in the production of oranges like

Cultivation expenses which includes Cost of planting material, manures & fertilizers, cost of Insecticides & pesticides, labour etc.; irrigation and drip irrigation expenses; infrastructure facilities and cost of land development.

An analysis has been made to estimate the cost of production. The amount estimated is Rs 30,000/- in a year as per the expenses which are mentioned above. However, the expense depends upon the size, area and number of trees in the garden.

**Table 2: Cost of Production (Unit: 1 Bigha)**

SI no	Component	Proposed Expenditure (in Rs.)
<b>1.</b>	<b>Cultivation expenses:</b>	
	i) Cost of planting material	2,000
	ii) Manures & Fertilizers	3,200
	iii) Insecticides & Pesticides	3,800
	iv) Cost of labour	2,500
	v) Others if any(Power)	900
<b>2.</b>	<b>Irrigation &amp; Drip Irrigation:</b>	
	i) Tube well/Submersible pump	3,500
	ii) Cost of pipeline	1,000
<b>3.</b>	<b>Infrastructure:</b>	
	i) Store & pump house	2,100
	ii) Labourshed	1,000
	iii) Agriculture equipments	2,200
<b>4.</b>	<b>Land development:</b>	
	i) Land leveling	4,800
	ii) Fencing	3,000
	<b>Grand total</b>	<b>30,000</b>

(Note: 1 Bigha = 14,400 sq. ft.)

**Channels of Orange Marketing**

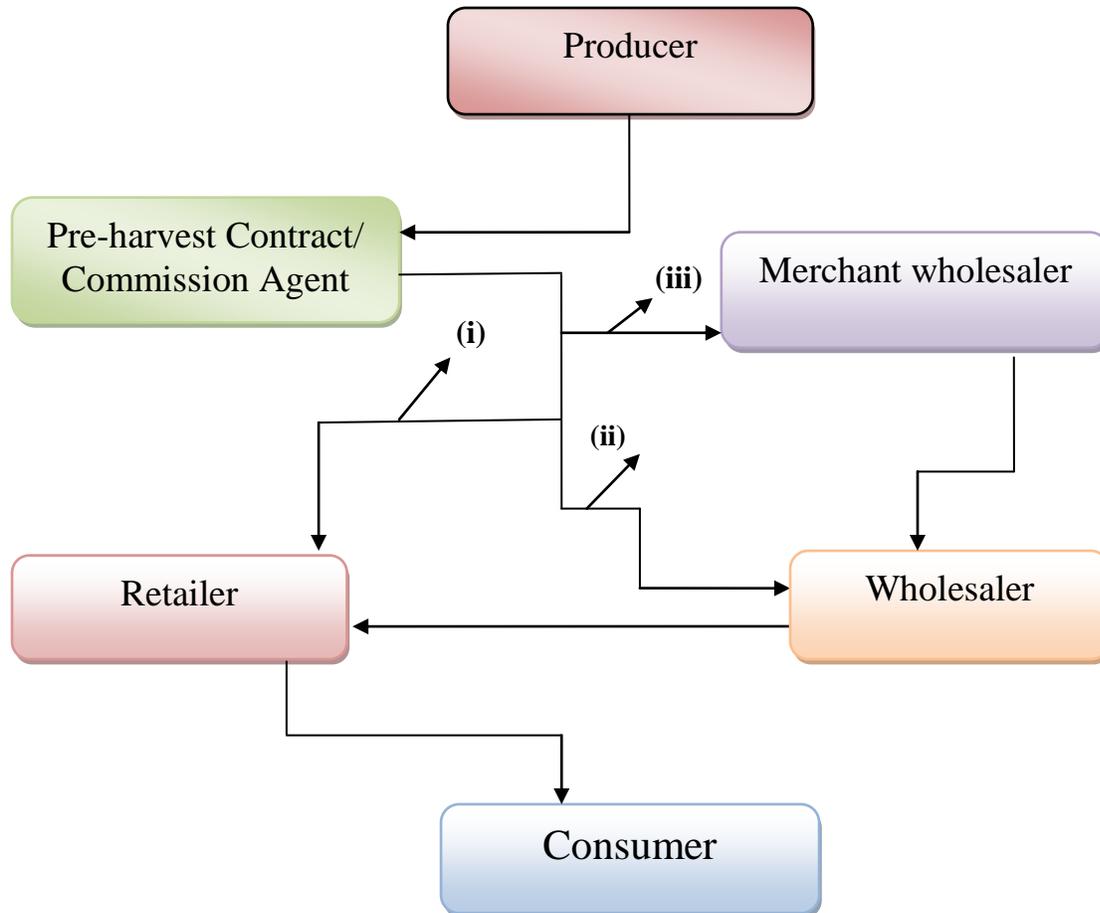
In an economy, production and marketing must go hand in hand. Marketing plays an important role to stimulate production and consumption and accelerates the pace of economic development of a country. The horticultural marketing in India is highly decentralized. The marketing of horticultural crops is very complex because of perishable nature, seasonality and bulkiness. Cultivation of horticultural crops is more profitable than any other seasonal crops. Marketing of horticultural crops in Assam is largely unorganized and is in the hands of intermediaries such as wholesalers, retail traders, pre-harvester contractors and others.

The major channels for orange in Tinsukia district of Assam are identified as follows:

**Channel- I:** Producer → Pre-harvest contractor/ Commission Agent → Retailer → Consumer

**Channel-II:** Producer → Pre-harvest contractor/Commission Agent → Wholesaler → Retailer → Consumer

**Channel- III:** Producer → Pre-harvest Contractor/Commission Agent → Merchant wholesaler  
→ Wholesaler → Retailer → Consumer



One of the most common and often worst systems in the marketing of fruit orange is the emergence of pre-harvest contractors who take place of the owners of the orchard in maintenance and for making harvesting and marketing arrangements. In most cases the contractors agree to pay a fixed sum for the entire crop in which they only theoretically assume the risk of damage to the crop by adverse climatic condition. In general, marketing is a process of movement of goods and services from the initial point of production to ultimate consumers. Orange marketing also involved all these functions in the marketing process. Being perishable in nature, the orange marketing has a special feature like that of other fruit crops which is not alike field crops in the entire marketing process. The entire marketing process is virtually controlled by a few merchant wholesalers who usually make a lot of money to take their product to market yards. The supply of oranges in Tinsukia market is controlled by the merchant wholesalers who purchased the oranges at lower price from the growers at the time of fruit setting and they bring the oranges to the market and dispose off to different markets. Due to lack of transportation and cold storage facilities, the producers have to sell it on contract basis to pre-harvest contractors. In some cases the contractor takes the responsibility not on marketing and watching the orchard to protect the crops from pests and predators but also for the maintenance of the orchard till harvesting of the crops. When the contract is for many years, the contractor look after the maintenance of the garden till the contract period expires. The contractors usually perform all the operation like picking, grading, packing and transportation etc in the process of forwarding the product to the consumers. The mode of payment differs in each case but generally one-fourth of the agreed amount is paid in advance and rest in installments. In addition to cash, the contractors also provide some provision like salt, mustard oil, kerosene oil, clothing etc to meet the domestic needs. In that way the garden is taken on lease for quite a good number of years which actually impedes the improvement of orchards. The producers usually give out gardens to contractors for the following reasons-

- Lack of finances, transportation facilities, cold storage facilities etc.
- Lack of time during the marketing season for the reason of preoccupation in other agricultural operation.

- Smallness of orchard and hence production is also small to be handled economically by individual growers.
- Ignorant about market information, market news and regarding prices and demand
- Unwillingness of the orange growers to bear the risk of changes in prices.
- The growers do not like to face the hazards of marketing of their produce to get a fair return. In fact the growers like to be fined to their own localities and are least interested to expose to the outside world.

### Analysis of data Related to Production

The orange produced in Tinsukia district is famous in India for its superior quality in respect of its flavour, juice content, soluble sugar and acidity ratio. The soil climatic conditions of Tinsukia district are most suitable for orange production & it has the potentiality to generate livelihood in the rural areas substantially. The productivity of orange in Tinsukia district is highest in the country which is above 16 tonnes/ha as against 7 tonnes/ha of national average.

The responses of the respondents have been interpreted and a finding has been made based on the responses.

**Table 3: Distribution of Area under Cultivation**

Area	Percentage of Respondents
>5 bigha	10
5-10 bigha	30
10-15 bigha	35
< 15 bigha	25
<b>Total</b>	<b>100</b>

Source: Field survey

It has also been observed from the survey that the area under orange cultivation is decreasing day by day which may be due to unfavourable weather, low profit, other multi-cultivation etc.(Note: 1 Bigha=14400Sq.ft.).

**Table 4: Cost of Production of Orange**

Production	Percentage of Respondents
>Rs10,000	15
Rs 10,000-Rs 20,000	20
Rs 20,000-Rs 30,000	30
< Rs30,000	35
<b>Total</b>	<b>100</b>

Source: Field survey

From the above table it is seen that 35% of the respondents incurred expenses more than Rs. 30,000/-, 30% respondents incur expenses between Rs 20,000/- to Rs 30,000/-, 20% respondents incurred between Rs 10,000/- to Rs 20,000/- and the remaining 15% incurred less than Rs 10,000/- as maintenance expenditure which is also depicted in Table 4.

**Table 5: Scope of Multi-Cultivation with Orange Production**

Scope	Percentage of Respondents
Tea	65
Bettlenut	25
Others	10

Source: Field survey

From the above table, it is found that 65% respondents cultivates tea as multi-crop in the orange garden, 25% respondents grows bettlenut along with the orange cultivation and 10% respondents cultivates other fruits and vegetables along with the orchard.

The study also covers the problem faced in production of orange. The following table represents the data.

**Table 6: Problems faced in Production of Oranges**

Problems	Percentage of respondents
Labour problems	10
Climatic problems	70
Insect and pest problems	15
Lack of chemical fertilizers	5

Source: Field survey

From the above table, it is found that 10% respondents faced labour problems, 70% faced climatic problems, 15% faced insect and pest problems and 5% faced problems due to lack of chemical fertilizers.

Labour problems are faced by orange growers may be due to higher charge of wages by labourers or there is lack of manpower in the region. Maximum respondents faced climatic problems such as wind & storms, less rainfall etc which is a main problems due to increase in pollution, global warming. Some growers faced the problems of insect and pest due to non-providing of insecticides and pesticides to the orange plants in time. Some of them faced also faced the problems of chemical fertilizers due to insufficiency of money or due to lack of awareness.

**Analysis of Data Relating to Marketing**

Marketing is an important link in the chain of production activities of agricultural sector. The producer of oranges cannot go to wholesale market or long distance market, so he has to depend on some intermediaries to sell his produce. Thus in the marketing of oranges various cost are to be incurred for grading, packing, transporting, loading fees etc. Due to get rid of this charges, the orange growers sell off their produce before harvesting to the contract based sellers and this practices of cultivation provides the growers very low amount of profit. So, the contract farming is not prevalent in the marketing of mandarin orange. Farmers, pre-harvest contractors, commission agents, wholesalers and retailers are the channels involved in marketing of oranges.

Following table shows the various channels of orange marketing followed by orange growers.

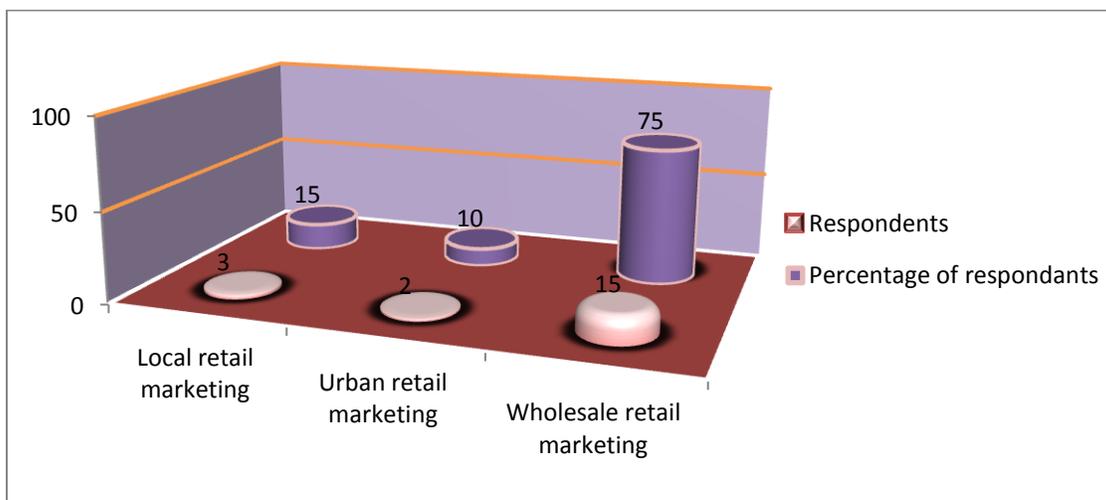
**Table 7: Distribution of Channels of Orange Marketing**

Channels	Percentage of Respondents
Local retail marketing	15
Urban retail marketing	10
Wholesale marketing	75
Total	100

Source: Field survey

From the above table, it is found that 15% respondents prefer local retail marketing, 10% respondents prefer urban retail marketing and 75% respondents sell their produce in the wholesale market.

**Figure1: Distribution of Channels of Orange Marketing**



It is clear from the above chart that maximum respondents sell their oranges in the wholesale market to reduce the risk of relying on a single market channel. Moreover, because of poor condition most of the orange growers couldn't afford to carry their produce in bulk quantities to the markets. So, they preferred to lease out the orchards to wholesale traders or commission agents. Some growers sell their produce in the hands of local retailers in the rural area itself and some sell it to the retailers of the urban market.

**Table 8: Problems faced in Marketing of Orange**

Problems	Percentage of Respondents
Transportation problems	10
Low prices	80
Packaging problems	10
Total	100

Source: Field survey

From the above table, it is found that 10% respondents face problems in transportation, 80% respondents face problems in marketing due to low prices and 10% face problems relating to packing.

It is clear from the above chart that maximum respondents face problems in marketing due to low prices of their products. The reason of these problems is due to leasing out the orchards to the wholesaler traders in advance i.e. before harvesting. Transport problems are faced by some growers due to higher charges of transport and moreover the roads in the rural areas are not well developed. Some are also facing problems of packaging which is due to its higher charges and as there is a lack of cold storage facilities it cannot be stored for long time.

The study also covered the willingness and the factors responsible for set up of orange based industry. It is clear from the study that 25% respondents do not have sufficient capital to set up an orange industry, 8.33% fears to set up industry due to insolvency, 16.67% respondents are not available to gather information as because of illiteracy and 50% respondents suffers from all the above factors which discourage them to set up an orange industry.

### Major Findings

The major findings of the study are as follows:

- The maximum respondents of orange growers held 10-15 bigha of area for cultivation. It has been found from the analysis that the area under orange cultivation is decreasing due to various reasons such as unfavourable weather, low profit etc. They are mostly interested in tea cultivation as it is profitable for them as compared to orange cultivation. So they are replacing their orchard into tea garden.
- The production of orange level is between 1 lakh to 5 lakh of maximum growers. However the production depends on the size, area and age of trees. Most of the orchards are held by the people in rural areas and they do not have enough knowledge to increase production in a scientific way.
- The cultivators are engaged in other cultivation such as fruits and vegetables along with orange cultivation. Most of them grow tea and bettlenut in the same garden.
- From the analysis, it is found that the production of orange is decreasing day by day besides having large area and number of orange trees. The procurement of orange sapling is brought up through self-grown saplings by maximum respondents. They do not get any facilities from the government in this regard.
- There are various problems in production of orange faced by growers such as labour problems, insect & pest problems etc. Maximum growers faced climatic problems such as wind & storms, drought etc.
- It is found that maximum respondents used synthetic fertilizers which are easily available in the market.
- Most of the respondents use traditional process for cultivation as a result the production cannot be increased. As the illiteracy rate is more in rural areas, till now they are not concerned about the scientific methods and practices.
- The orange growers do not have any cold storage facilities for which the oranges cannot be kept for a long time after harvesting.
- Lack of government facilities is one of the main reason for decreasing production. The government is not aware to provide benefits or other important facilities to the cultivators of orange.

- There are various channels of orange marketing such as local retail marketing, urban retail marketing and wholesale marketing. Maximum respondents prefer wholesale marketing as they cannot go to distant market to sell off their produces directly in the hands of consumer. So, they lease out their orchards to the wholesale contractor before harvesting of the fruit.
- Certain problems faced by producers in terms of orange marketing are transportation problems as because of higher charges or unimprovement of roads, packaging problems and low prices for their producers. They are not able to get even normal profit.
- There is a lack of orange industry in Assam. From the analysis, it is found that many respondents want to set up orange industry, but they do not have afford to do it. There are many factors responsible for which they are not able to set up orange industry such as lack of capital, fear of insolvency, lack of information etc.

### **Suggestions**

After collecting all the data from the sources, analysis and findings, we would like to make following suggestions regarding “Production and Marketing of oranges”.

- The government should provide facilities regarding production such as supply of inputs i.e. to provide seedlings, fertilizers, pest and disease control chemicals.
- Bringing awareness amongst the rural people about the new developments in agricultural engineering technology in the fields of production and marketing.
- Providing integrated approach to fruit cultivation and modern storage facilities by the government. There is a urgent need to establish cold storage facilities in the study area as they had to sale the produce immediately after harvesting at a lower price.
- The packaging system should be developed, it should be capable of protecting the product from the transport hazards, preventing from insect damage etc. The package must stand up to long distance transportation, multiple handling and the climate changes of different storage places, transport methods and marketing conditions.
- There is a need to develop the road communication system to facilitate the transportation of marketable goods at the marketing centers. Improvement of rural roads/communication facilities would encourage the producers and reduce the cost of production as well as the transit losses.
- Contract based farming should be stopped; as the orange growers lease their orchards in the hands of pre-harvest contractors to avoid risk they received a very low amount of profit. So, the growers should try to establish their orchard independently.
- Direct marketing should be encouraged among the orange growers which involve marketing of produce by the farmer directly to the consumers without any intermediaries. Direct marketing helps to generate the idea of market oriented production and increases profit of the producer. It promotes employment to the producer and enhances the consumers’ satisfaction. It provides better marketing techniques to producers and encourages direct contact between producers and consumers. It encourages the farmers for retail sale of their produce also.
- The provision of institutional credit and loans would encourage the growers to increase the productivity. Institutional credit in the form of crop loans should be provided in easy terms, so that the farmers are not compelled to take loans from the private traders on pre-condition of selling the produce at a low price. The state government may negotiate with the banking system in this regard.
- The growers of orange should be encouraged to adopt some measures for value addition, including grading and standardization of the produces according to size, shape and degree of ripeness & maturity. Presently, grading of oranges is done manually which is time consuming. Thus, mechanical grading devices need to be developed for this purpose.
- The state government should be concerned to enact pricing policy to fix minimum support prices for oranges in the state.
- Organizing training programmes for the farmers agricultural labour, entrepreneurs about the use of new technology should be initiated
- Government should encourage the youth to get involved agriculture specifically, production of fruits by organizing them into co-operatives that enable them to access credit facilities.

- The Horticulture Board of Assam, should try to set up orange processing industry in the study area. It will encourage the orange growers and moreover there is sufficient scope for steady export of processed value-added fruit products of orange to the neighbouring countries. Owing to inadequate processing units, exports of processed items are also not taking place.
- There is need to strengthen the marketing systems which can eliminate unhealthy practices and also ensure fair price to the producer. The State Government should conduct regular inspection of markets and market surveys to study the various problems and situations. It will facilitate regular supply of agricultural product at reasonable price, which may be remunerative to the growers as well.

### **Conclusions**

The forgoing discussion and analysis of data clearly indicates that production and marketing of oranges has enormous potential in the study area despite a number of constraints being faced by the farmers. The study highlighted that major thrust should be given on development of production, dissemination of new technology, assured input supply and strong marketing support. The growers are experiencing number of problems both at the production and marketing level as they do not have pre-requisite resources and finance for expansion and strengthening of orange orchards. Moreover they had to face problems of certain diseases and insect and pest problems which damage the plants. The marketing of oranges in the study area has mostly been under monopoly traders and the whole market is controlled by some intermediaries who exploit the orange producers by purchasing the produces at a very lower price and sale it to the consumers at higher price.

The Assam Horticulture Board has undertaken a planning programme known as “MISSION ORANGE” with a vision: (i) To increase the area under orange in Tinsukia district by 100% within the 12<sup>th</sup> plan period (2012-17) @ 20% p.a.(ii) To make Tinsukia district as the highest orange producing district in the country.(iii) To convert Tinsukia as a major hub for orange export in the country.(iv) Large scale generation of income & livelihood in the rural areas. Their mission is to increase area under orange from 1470Ha to 2940Ha, by 2017-18 and to increase the productivity of orange from 18.7 MT/Ha to 20 MT/Ha there by raising production to 58,800MT.

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