

## Some Noteworthy Features of Fruit Industry in Rajampet Taluk.\*

By T. K. VISWANATHAN, B. Sc. (Ag.)

(The Kodur Fruit Growers' Co-operative Society, Rajampet.)

**Introduction.** *Suitability of the tract for fruit industry.* Rajampet Taluk in Cuddapah District is one of the most important fruit growing areas of the Presidency. This valley is bounded by Velikonda hills on the east and south and Seshachalam hills on the north and west. This tract is favoured by a fertile soil of considerable depth, good texture, plentiful supply of sub-soil water suitable for irrigation, freedom from cyclonic winds and proximity to the Madras market—factors eminently suited for making this orange belt famous in South India. This valley is also famous for the number of varieties of mangoes, limes and Sapotas, which it grows. But the commercial importance of mangoes and limes is shared by Chittoor and North Arcot districts. The success of the fruit industry depends not only upon the quality of the fruit produced, and additional wealth it brings to the individual fruit-grower but also on the cheapness with which it is marketed so that it is made available to the poorest citizen of the province. The importance of fruit production and consumption of fruits in an essentially vegetarian country like India cannot be over-emphasised.

*Extent of cultivation area.* Out of nearly 13,000 acres under "Tight jacket oranges" in our presidency nearly 4,000 acres are spread out in this valley. The total area under mangoes in this taluk is estimated to be 10,000 acres. Fortunately for the fruit industry the plantation of oranges in Rajampet Taluk in Rajampet area lies in a compact region and this contributes to the success of Co-operative operating methods. The acreage under this commercial planting of oranges has been steadily increasing as is shown below:—

1937-38	2,412 acres
1938-39	2,751 »
1939-40	3,740 »

It is believed that about three-fourths of the orange trees are still young and in a non-bearing stage, and year after year the production of oranges will be increasing and the problem of marketing such saleable produce is bound to assume increasing importance.

*Varieties.* The Citrus varieties in Rajampet Taluk are:— 1. *Chinee* or Sathgudi or Sweet orange—*Citrus sinensis* (L) Osbeck, 2. Acid lime—*Citrus aurantifolia* Swingle, 3. *Kamala*—*Citrus chrysocarpa* Hort. Ex-Tanaka, 4. *Kichili*—*Citrus maderaspatana*, Tanaka, 5. *Gajanimma*—*Citrus pennivesiculata*, Tanaka, 6. *Pomelo*—*Citrus grandis*, Osbeck, 7. *Billi*

\* Paper read at the thirtieth College Day and Conference of the M. A. S. Union, July 1941.

*kichili*—*Citrus reshni*, Tanaka, 6. *Jamberi*—*Citrus jambhiri*, Lush, 9. *Gabuchinee*—*Citrus species*.

The most common mango varieties are, *Neelum*, *Bangalora*, *Rumani*, *Mulgoa*, *Pether*, *Khudds*, and *Kalipad*.

*Cultivation methods.* (a) Opening of new orchards:— The orchards are raised throughout the taluk as the soils are fertile with sub-soil moisture and at the same time providing easy drainage facilities. The plants are obtained both from the private nurserymen as also from the Government nursery. Most of the present bearing orchards are from seedlings. But now there is more demand for budded and graft plants than for seedlings. The planting distance for orange trees is 25 to 30 feet. The budded and graft plants are not so spreading in habit and so are given less spacing. Limes are planted 12 to 15 feet apart. Intercrops are raised till the orange plants reach their fifth year. The usual crops grown are turmeric, *ragi*, green manure, groundnut, etc.

(b) Maintenance of existing orchards:— The quality of fruit produced can be improved by regular cultural practices. Regular and timely irrigations, manuring in proper seasons, regular cultural operations and keeping the orchards free from diseases are all factors which decide to a great extent the quality of the fruit. The well kept orchards not only give a regular and high yield but also produce uniformly good quality fruits.

(c) Manuring, irrigation, yield, diseases and pests:—

*Manuring.* One of the most popular manurial practices in Rajampet taluk consists of application of groundnut cake— $\frac{1}{2}$  maund; bone meal—8 lb.; farm yard manure— $\frac{1}{4}$  to  $\frac{1}{2}$  cart load to the bearing trees. In many orchards the application is done twice a year. There is a strong belief that the application in July stimulates the production of "gairangam crop" (second crop) which fetches a very high price in the fresh fruit markets. This special feature deserves to be exploited and popularised if it is found to be as efficacious as it is claimed to be. Investigation by research is required in this matter.

*Irrigation.* Irrigation of orange trees forms one of the most important practices on which however the growers in Rajampet usually possess no exact knowledge. The frequencies of irrigation, time at which it should be applied and the manner of application are all matters which vary from orchard to orchard. The influence of each of these on tree growth, fruit-shedding, tree yield and fruit quality requires to be investigated by research, so that the growers may have correct scientific information for their guidance in this important matter.

*Yield.* The yield of *chinee* trees varies widely. Some of the prolific bearers yield more than 3,000 fruits in the main season while poor yielders give not more than 100 fruits per tree. The performance of a tree can be greatly increased by proper cultivation, manuring, irrigation, spraying, etc.

But this improvement cannot be extended beyond a certain limit which is based on inherent characteristic of the parent tree.

**Diseases and Pests.** *Mottle leaf.* Disease seems to be very common in Rajampet taluk. Plants become weaker and yield is reduced. Spraying with zinc sulphate has been found to be useful. The Kodur Fruit Growers' Co-operative Society has purchased a sprayer and recently a spraying campaign has been started. Recent trials at Fruit Research Station, Kodur, indicate mottling may not be always due to zinc deficiency or may not always be cured by spraying of zinc sulphate. Application of several compounds like zinc sulphate, ferrous sulphate, manganese sulphate, boric acid and lime to soil, in small doses in a number of crowbar holes have been tried at the station with very interesting results. It has been found that some of the trees which do not respond to zinc sulphate spraying have been fully cured by this treatment.

*Gummosis* is also prevalent throughout the taluk. Application of Bordeaux paste after the removal of the gum and the bark with knife has been found useful.

*Root rot.* The whole tree becomes yellow and in course of time becomes weak, dries up and dies. Timely action such as digging up, exposure of the roots, removal of the affected and rotten roots and application of Bordeaux paste has proved beneficial.

The fruit sucking moth does havoc during the rainy season. Hand netting has been carried on by many orchard owners. The use of tomatoes as a catch crop has not been established, but is being advocated by the entomological section.

The flying foxes are a nuisance to growers causing a very heavy damage to orange crop. They are nocturnal in habit doing damage despite the owners engaging whole-night watchmen with guns. They usually prefer the biggest and the best sized fruits and when they fly from tree to tree and alight on fruit laden branches with their huge wings, cause more fruits to drop than are actually devoured by them and the fruits that drop down are unfit for export. Exploding devices such as crackers and guns helped little to scare away the birds. Fixing up of huge nets reaching great heights was tried as traps for these birds. A number of them were killed and the pest was fairly brought under control.

Oranges grown in different parts of India, present a striking contrast primarily due to climatic differences. Differences in varieties and seasons of maturity are likewise in sharp contrast. In Kodur area, for example, the fruit maturing season is from August to December, while in Rajampet area it is from November to March. Because of this difference in climate and soil, the fruit of the Kodur area cannot be safely kept on trees, beyond December, while those in Rajampet area can be kept till the end of March. Ecological considerations play therefore a very great part in influencing the

flowering of oranges. The second season fruits called the *gairangam* fruits (from June to August) are more profuse in Kodur area than in Rajampet area. This remarkable variation in time of blooming, fruiting and harvest in such closely situated areas as Kodur and Rajampet are not only of scientific interest but also of considerable practical value in that Rajampet Taluk is blessed with conditions very favourable for the harvest of oranges over a protracted period of the year.

The fruits of different seasons, *angam*, *gairangam* and *edagaru* need only to be briefly differentiated. The fruits of the main *angam* season taste much sweeter, are better coloured, more attractive and juicier than the other two off-season fruits. Despite the inferior quality of the off-season fruits they possess high market value and therefore form a highly welcome feature of the orange cultivation in this tract.

Although the orange trees in this taluk uniformly produce a very high crop of blossoms every year, the very frequent occurrence of heavy shedding of the flowers and fruits in the orchards results in keen disappointment to the growers. These annual losses are believed to be caused primarily by certain physiological disorders about the exact nature of which the growers are yet in the dark. Irregular and unstandardised cultural practices may certainly predispose the trees to these serious maladies and there appears to be a great scope for the horticultural advisers to educate the growers in the matter of improvement of these orchard practices.

*Harvesting.* The usual practice is to pull the fruits from the branches of the trees. The fruits are thrown down and are received by a man standing beneath the tree. This throwing of fruits is harmful in that though the fruits are not apparently damaged at that time, still they show dark patches and rot due to the hard compact. Hence fruits should be received in a canvas bag held by the person who picks the fruits on the tree.

The fruits owned by members are picked by coolies employed by them. The harvesting problem is two sided:—

1. The fruit must be handled carefully at all times.
2. Each picker should pick a sufficient quantity to keep the labour costs within reasonable limits.

1. Ladders are used to reach the heights of trees. As mentioned above while harvesting fruits a uniformly careful handling should be ensured. The fruits should not be injured during various operations. Careless handling results in a loss to the producer.

2. If the harvest is begun the practice in Rajampet taluk is to pick all the fruits of the trees in that particular row, with the result fruits of various degrees of maturity and sizes are harvested at the same time. But on the other hand if a garden owner were to go round each tree and pick such fruits which are best sized and properly matured it is impossible to keep labour costs within reasonable limits. It is a difficult problem to keep a

desirable relation between quality and quantity of the work. This quantity—quality work is secured through trained labour and more efficient supervision.

The picking cost also depends upon the size and age of the trees, the size and quality of the crop and lastly on the fruit season, weather and whether the crop is *Angami*, *Gairangam* or *Edagaru* crops. In the main *Angam* season the picking cost is much lower than during the *Gairangam* or *Edagaru* seasons. Thus the reduced yield in each tree in the off-season increases the picking cost.

After the harvest is over the fruits are taken in baskets to a packing shed. Here the fruits are spread on the floor, hand graded and counted and packed in baskets. The fruits were used to be packed with green leaves. But these spoil the fruits earlier due to the moisture they contain. Hence dry straw is now advocated as packing material. This is now being largely practised. The number of fruits in a basket depends upon the size of the fruits and varies from 60 to 90 per basket.

*Marketing.* Co-operative marketing vs. individual effort.

There is a widespread belief that if planting of gardens goes on at the present rate, fruit growing would soon become unprofitable as fruits will sell very cheap due to overproduction. This is entirely erroneous and is based on the misunderstanding of the whole situation. Our country with its varied climatic conditions and soils and cheap labour should be able to build up a decent trade in fruits. While there is a great room for improvement by (a) increasing average tree yield (b) improving the quality of the fruit and (c) reducing the cost of production there are ways for getting increased profits from orchards by reducing the middlemen's profit and undertaking co-operative marketing and ensuring a uniform distribution for a longer period. This can be achieved only by adopting co-operative methods and not by individualistic efforts. The success achieved by the Kodur Fruit Growers' Co-operative Society makes a study of the organisation of more than usual value.

In Rajampet taluk, as perhaps in the rest of the fruit growing areas of India, the common practice with small garden owners is to sell the fruits on trees to contractors or middlemen for one or even more seasons. The contractors are therefore responsible for picking, packing, and marketing the fruits, and usually do it in a manner suited to them not caring for the interests of the garden. They keep the fruits in the garden till very late in the season in order to get better prices, with the result trees get spoiled, manuring operations are delayed and irrigations become irregular and the flowering of the next year's main crop is considerably affected and the yield consequently reduced. In many cases the contractors when in need of money from the commission agents, gather immature fruits and spoil the market due to bad quality fruits. But in horticulturally advanced countries the fruit growers not only look to production side of fruits but take

very keen interest personally in marketing them. The co-operative organised efforts give them an opportunity to control the trade and regulate the distribution to suit the demand at any particular market.

It is perhaps not too much to say that the Rajampet fruit growers at present think that their responsibility ends with mere production of fruits and play almost no part in the further marketing of the same. This is because watching expenses are saved and other agricultural operations for crops like paddy, jonna and turmeric besides dry crops like horsegram demand their attention. Ignorance of marketing technique and lack of information regarding the market, stand in the way of their directly marketing the fruits.

But after the inception of the Kodur Fruit Growers' Co-operative Society during the year 1937 many have found the benefit in the society. In certain big areas like Nagavaram and a number of villages the entire produce goes through the society. Temporary advances are made by way of loans. The society has established fruit sale depots at Anantapur, Hindupur, Bangalore and Hyderabad. But the bulk of the produce goes to Madras from where the fruits are further consigned to southern districts like Madura, Tanjore, Trichy, etc. The progress of work done by the society during the year 1940—1941 is as follows:—

<i>Particulars.</i>	<i>Baskets.</i>	<i>Gross sales.</i>
1. Oranges	36,095	} Rs, 1,63,408.
2. Mangoes	2,561	
3. Limes	802	
4. Melons	1,763	
5. Sapotas	10	
6. Pineapples	184	
7. Betel leaves	30,418	

The society is undertaking from 1—8—41 one of the important functions of grading oranges at two important fruit growing areas and from these ware houses directly consign them to moffussal areas. The cheap, simple and efficacious "Kodur Chinee grader" devised at the Fruit Research Station, Kodur, which helps to grade the fruits into four sizes, namely,  $2\frac{3}{4}$ " , 3" ,  $3\frac{1}{4}$ " and  $3\frac{1}{2}$ " will be used. The grading stations will also help to teach the growers the proper methods of harvesting, gathering, culling, grading and packing.

The society addressed the M. S. M. Railway authorities and got concessional rates for oranges to Madras, Bangalore, Anantapur, Hindupur and Hyderabad stations. The society is also moving the S. I. R. and M. S. M. Railway authorities to grant concessional rates to all important towns in South India.

*Scope for improvement.* The Fruit Research Station located in the important orange tract has already become very useful to growers in giving very valuable suggestions of a practical nature. Many of the intelligent growers are convinced that in due course results of research that is being carried on at the station will be of far reaching importance in removing

various uncertainties in the prevalent methods of orange culture, particularly in the matter of selections of stock, lay out of orchards, methods of cultivation, treatment of diseases, etc.

More intensive research in Fruit Canning and By-products are required as the work now being carried on at Kodur Research Station seems to be very much hampered, for lack of facilities. It is very difficult to rely on private nursery men but the growers throughout the Province are able to get the "real" plant from the Government nursery. But it is regretted that the Government is not at present able to raise enough plants to meet the demand and it is requested that the Government may be pleased to give necessary facilities. We are glad to note that the Government has decided to appoint a Fruit Specialist for our Province who will devote all his attention for improving the Fruit Industry.

On behalf of the Kodur Fruit Growers' Co-operative Society I have tried to present in this paper some of the salient features of the fruit industry in Rajampet taluk. I am sure it will be clear to all that there is a good deal to do towards making the fruit industry as prosperous as it has a right to be. The activities of the society has contributed its share to effectively ameliorate the condition of the growers. But this is not all. In the interest of the fruit growers who form a most important section of our rural population and in the interest of a still larger class of fruit consumers the society pleads for much greater assistance from the Government. While on the one hand we demand a marked extension of research and advisory activities on fruits, on the other we plead for more active assistance, by way of annual subsidy and also assistance in the matter of exploration of new markets and establishment of sale depots throughout the Province and outside, and an all-round extension of transportation facilities and of reduction of railway freights for our fruits. These are but very modest requests and we hope that they will be readily granted by the Government.

## **A Note on the Marketing of Cotton in the Regulated Cotton Markets of Berar and Bombay Presidency.**

By M. JEEVAN RAO, B.Sc. (Ag.)

*Secretary, The Adoni Cotton Market Committee.*

In the following lines the marketing conditions in the regulated markets of Dhulia in Bombay Presidency, and Amraoti, Akola and Khamgaon in the Berar, are briefly summarised. Although the markets visited are but a few that are working in the Bombay Presidency and the Berar, they are the most important ones, and the conditions prevailing in these markets may be taken as representative.

### **Amraoti Market.**

Of the regulated markets in Berar, the biggest is Amraoti with an annual transaction of about  $1\frac{1}{4}$  lakhs of bales of cotton. This is a municipal market, and classified as a first class one. Amraoti is the headquarters