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**MARKETING OF ORANGE IN VIDARBHA REGION
OF
MAHARASHTRA STATE**

By
VAIDKAR RAJESH DAMODHAR
(Reg. No. 9837)

A Thesis submitted to the

**MAHATMA PHULE KRISHI VIDYAPEETH,
RAHURI, DIST. AHMEDNAGAR
MAHARASHTRA, INDIA**

*in partial fulfilment of the requirements for the degree
of*

**DOCTOR OF PHILOSOPHY
in
AGRICULTURAL ECONOMICS**

**DEPARTMENT OF AGRICULTURAL ECONOMICS
POST GRADUATE INSTITUTE
MAHATMA PHULE KRISHI VIDYAPEETH
RAHURI- 413 722, DIST. AHMEDNAGAR
MAHARASHTRA, INDIA**

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Approved by

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DEPARTMENT OF AGRICULTURAL ECONOMICS
POST GRADUATE INSTITUTE

MAHATMA PHULE KRISHI VIDYAPEETH
RAHURI-413 722, DIST. AHMEDNAGAR
MAHARASHTRA, INDIA

2001

(VAIDKAR R.D.)



Dated: / / 2001

Place: M. P. K. V., Rahuri

diploma

a degree or

University or Institute for

or any other person to any other

there of has not been submitted by me

I hereby declare that this thesis entitled or part

CANDIDATE'S DECLARATION

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M.Sc. (Agri.), Ph.D.

Diploma in Economic Development and Planning (Italy)
Professor and Head, Division of Agricultural Economics,
College of Agriculture,
Pune -5.

CERTIFICATE

This is to certify that the thesis entitled, "**MARKETING OF ORANGE IN VIDARBHA REGION OF MAHARASHTRA STATE**", submitted to the Faculty of Agriculture, Mahatma Phule Krishi Vidyapeeth, Rahuri, Dist. Ahmednagar (Maharashtra) in partial fulfilment of the requirement for the award of the degree of **DOCTOR OF PHILOSOPHY** in **AGRICULTURAL ECONOMICS** embodies the results of a piece of *bona fide* research work carried out by **Mr. VAIDKAR RAJESH DAMODHAR**, under my guidance and supervision and that no part of the thesis has been submitted for any other degree, diploma or publication in any other form.

The assistance and help received during the course of this investigation has been duly acknowledged.

Place: M.P.K.V., Rahuri.

Dated: / / 2001


(D.L. SALE)

Dr. S.S. KADAM


Associate Dean,
Post Graduate Institute,
Mahatma Phule Krishi Vidyapeeth,
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Maharashtra State, (India).

C E R T I F I C A T E

This is to certify that the thesis entitled, "MARKETING OF ORANGE IN VIDARBHA REGION OF MAHARASHTRA STATE", submitted to the Mahatma Phule Krishi Vidyapeeth, Rahuri, for the award of the degree of DOCTOR OF PHILOSOPHY in AGRICULTURAL ECONOMICS embodies the results of a piece of *bona fide* research work carried out by Mr. VAIDKAR RAJESH DAMODHAR, under the guidance and supervision of Dr. D.L. SALE, Professor and Head, Division of Agricultural Economics, College of Agriculture, Pune and that no part of the thesis has been submitted for any other degree, diploma or publication.

Place: M.P.K.V., Rahuri.

Dated: / / 2001


(S.S. KADAM)

ACKNOWLEDGEMENTS

Emotion cannot be adequately expressed in words because then emotions are transformed into mere formalities. Nevertheless, formalities have to be completed. My acknowledgements are many more than what I am expressing here.

Time is not far behind when I must in the very opening line, express from bottom of my heart, the profound gratitude towards my honourable and venerable guide Dr. D.L. Sale, M.Sc. (Agri.), Ph.D. Professor and Head, Division of Agricultural Economics, College of Agriculture, Pune, for suggesting, planning and organizing the present research problem and for his constant inspiration, adept guidance, constructive criticism, scholastic valuable and kind advice, constant encouragement through the course of investigation and for critically going through the manuscript of the thesis. If I succeed at least partly to live up his expectation, it is due to his painstaking efforts in sharing the actual research work and knowledge with me. I am highly indebted to him for his generous advice and cooperation in my career building also.

I feel immense pleasure in taking this opportunity of expressing my sincere thanks to the members of advisory committee, Dr. D.V. Kasar, Head, Department of Agricultural Economics, Mahatma Phule Krishi Vidyapeeth, Rahuri, Dr. P.M. Kapase, Professor of Agricultural Economics, Dr. V.D. Deshmukh, Head, Department of Statistics, Post Graduate Institute, Mahatma Phule Krishi Vidyapeeth, Rahuri, for their kind and valuable guidance throughout the course of investigation.

I am highly obliged to Dr. D.V. Kasar, Head, Department of Agricultural Economics, Mahatma Phule Krishi Vidyapeeth, Rahuri for offering critical comments on the research results and providing necessary facilities during the course of this investigation.

I also take this opportunity of expressing my sincere thanks to Dr. S.S. Kadam, Associate Dean, Post Graduate Institute, Mahatma Phule Krishi Vidyapeeth, Rahuri for permission and providing necessary facilities for the research work.

I will be failing in my duties if I do not make a special mention of Dr. S.B. Dangat, Ex- Professor of Agricultural Economics and Dr. V.R. Shete, Associate Professor of Agricultural Economics, for their generous and timely help.

I sincerely acknowledge my cordial thanks to Dr. B.H. Khan, Dr. S.M. Careappa, Associate Professor of Statistics, Dr. B.V. Pagire, Dr. R.R. Suryawanshi, Dr. P.G. Desale, Dr. K.S. Birari, Prof. D.S. Hange, Prof. B.K. Mali Assistant Professor of Agricultural Economics and staff members of Department of Agricultural Economics, Rahuri for their kind help, suggestions and co-operation which spurred me towards higher studies.

I also express my deep sense of gratitude to Dr. B.D. Bhole, Director of Research, Dr. P. D. K. V., Akola, Dr. K.N. Patil, Principal, Vidyabharati Mahavidyalaya, Amravati, Dr. K. M. Kulkarni, Joint Director (H. F.) Amravati Division, Dr. K. B. Lavekar, Ex. Director (Horticulture), Maharashtra.

I am deeply obliged to all the authors whose literature has been cited.

I express my heartness thanks to Dr. Rupkumar, Dr. Jadhav, Dr. Pokharkar, Dr. Nawadkar, Dr. Pawar, Shri. Katore, Shri. Shendge, Shri. Waghmare, Shri. Shinde, Shri. Pawar, Dr. Kakad, Dr. Gaval, Dr. Bembalkar, Shri. Shete, Shri. Kamble, Shri. Kale, who helped me directly or indirectly during my higher studies and in completion of this thesis.

I would like to extent my thanks to my friend Nitin, Yashwant, DK, Ashish, Sudhir, Kiran, Yogesh, Gagendra, Ravi, Vilas, Satish, Vijay, Mahendra, Vasu, Pradip, Anil, VD, Pankaj, Sandip, Sunil, Dnyanu, Ganesh, Hintndra, Manoj, Jayant, Anand, Subhashi and many such friends who helped me directly and indirectly in completion of my research work.

I owe a lot of to my beloved parents, Appa and Vahini for their constant inspiration and sacrifice for academic career and making me a responsible citizen. It with this sense of gratitude that the present piece of research work has been dedicated to them.

I am deeply thankful to Shashikant Patole, Sachin and Shyam who took the necessary pains in word processing and thesis layout.

During the completion of this investigation, many known and unknown hands pushed me forth and learned hearts put me on right track lightened by their knowledge and experience. I ever rest thankfully in debt to them all.

Place : M.P.K.V., Rahuri.

Dated : / /2001



(Vaidkar R.D.)

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ABSTRACT

“MARKETING OF ORANGE IN VIDARBHA REGION OF MAHARASHTRA STATE”

By

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A candidate for the degree

of

DOCTOR OF PHILOSOPHY (Agriculture)

**Mahatma Phule Krishi Vidyapeeth, Rahuri – 413 722,
Dist. Ahmednagar, Maharashtra (India)**

2001

Research Guide	:	Dr. D.L. Sale
Department	:	Agricultural Economics

Marketing of orange has become much delicate as it is based on and is being changed alongwith latest high techs available in the marketing system. The present investigation was therefore, proposed to probe into the details of marketing of oranges.

Vidarbha region could be specified for orange only due to the contribution of Nagpur and Amravati districts, covering about 85 per cent of the total area of Vidarbha region under orange. Therefore, these two districts were selected for the present study of orange marketing in Vidarbha region of Maharashtra State keeping in view the highest acreages under orange. From each district, one tahsil having the highest area under orange was selected. The five villages having maximum area under orange were selected from each tahsil and from these villages at random 60 orange growers were selected. Thus, in all

120 orange growers were finally selected. The selected orange growers were further categorized in three size groups on the basis of area under orange viz., small size group (upto 0.40 hectare), medium size group (0.41 to 0.80 hectares) and large size group (0.81 hectares and above). The required data were collected through specially designed questionnaire. On the basis and nature of the data, simple tabular approach, multiple regression techniques and price function, etc., were employed to satisfy the objectives of the study.

The committee consists of 22 members each in both the market selected from different constituencies. There are 771 market functionaries in Nerkhed and 816 market functionaries in Morshi market.

The income of the Nerkhed and Morshi APMC was Rs. 45.96 lakh and Rs. 56.52 lakh, respectively. While the total expenditure was Rs. 39.74 lakh and Rs. 49.14 lakh of Nerkhed and Morshi markets, respectively. The net profit was Rs. 6.22 lakh and Rs. 7.38 lakh in Nerkhed and Morshi markets, respectively.

The details regarding land use pattern of the selected orange growers indicated that out of the total land possessed 6.86 per cent was uncultivable. The proportion of cultivated land was 93.14 per cent at the overall level. At the overall level the average size of holding of the sample growers was 1.02 hectares. The average per farm area under orange was 0.80 hectares. The cropping intensity worked out to 116.84 per cent at the overall level. The cropping pattern was dominated by orange i.e. 72.72 per cent followed by cereals i.e. 17.27 per cent at the overall level.

The per farm production of orange was 59.70, 118.30 and 257.96 quintals in case of small, medium and large size group of holdings respectively. The average per hectare production of oranges worked out to 184.77, 181.23 and 180.69 quintals in case of small, medium and large size group of holdings respectively. At the overall level per hectare and per farm production of orange was 182.29 and 145.32 quintals respectively. At the overall level the proportion of grade I, II and III in the per hectare production was observed to be 30.64, 50.21 and 19.15 per cent, respectively. The pattern of disposal indicated that on an average 98.58, 98.35 and 98.08 per cent of the total produce was sold by small, medium and large size group of holding orange growers, respectively. At the overall level 98.33 per cent of the total produce was sold and rest of the quantity was used for home consumption, given on gratis, etc.

The per quintal cost of marketing worked out to Rs. 602.05 in Delhi and Rs. 441.54 in Mumbai market. In the total marketing cost, transportation cost accounted the highest contribution (43.41 per cent) followed by packaging (29.23 per cent) and commission charges (11.68 per cent) other market expenses (17.36 per cent) in Delhi market. In Mumbai market packaging accounted the highest contribution (39.84 per cent) followed by transportation (29.77 per cent) and commission charges (15.33 per cent) while in local market transportation cost accounted the highest share (35.22 per cent) followed by commission charges (24.17 per cent).

In all, six marketing channels were noted in the present study. Majority of the orange growers (25.83 per cent) sold their 26.89 per cent produce through the marketing Channel-IV *viz.*, producer – pre-harvest contractor – wholesaler (distant market) – retailer – consumer. The price premiums received per quintal between different grades, markets were found considerably high.

The producers share in consumer rupee in local market was the highest in case of Channel-I (76.90 per cent) while in distant market the same was the highest (69.84 per cent) in Mumbai market and (73.71 per cent) in Delhi market.

The results of estimated net price function for all the orange growers together revealed that the net price received was influenced by the market distance, agencies through which produce was sold and grade of produce, implying that the orange growers should sell their produce through appropriate agencies and grade the produce to get remunerative prices for their produce.

At the overall level compound growth rates in arrivals and prices of oranges were found positive and significant and the same were 12.77 and 14.50 per cent respectively in Nerkhed market and in Morshi market the same were 11.84 and 12.22 per cent respectively. The regression coefficients of lag year price in both the markets were positively significant at one per cent level indicating thereby that the orange growers were found to be responsive to lagged price.

As regards the problems faced by the orange growers, majority of the sample orange growers opined that the fear of breaking contract by pre-harvest contractor (63.33 per cent), delay in harvesting of fruits by pre-harvest contractor (51.66 per cent), high cost of transportation (56.66 per cent), the commission agents generally do not give the information about rates in distant markets (46.66 per cent), longer chain of intermediaries (40 per cent), lack of storage facilities (36.66 per cent), pre-harvest contractors insist on low price in the event of damage due to natural calamities (36.66 per cent) and pre-harvest contractor makes several deduction from the contracted amount (33.33 per cent).

In the present situation the way in front of orange growers is to increase the level of quality oranges by converting the maximum quantity of produce into superior grade i.e. grade II produce into grade I and grade III produce into grade II. The existence of large number of intermediaries increases the marketing expenses hence there is great need to decrease the number of intermediaries in the orange marketing to reduce the cost of marketing. In orange marketing cost, transportation cost, packaging charges and commission charges accounted major share. For reducing the marketing cost adopting the low cost packaging material, co-operative transport facility and reducing the number of intermediaries in the market. The infrastructural facilities required in terms of pre-cooling facilities, cold storage and refrigerated containers, low cost packaging material and cost involved in this facilities also require more attention.

INTRODUCTION



1. INTRODUCTION

Agriculture sector is the bed rock of the Indian Economy as it remains mainly an agrarian economy in spite of the planned efforts to industrialise it. The Indian agricultural planning was cereal-food-oriented and it was only in the Fourth Five Year Plan that horticultural crops were given attention and investment support at the national level.

A decision on an appropriate strategy, the evolution of a proper policy and a choice of policy instruments calls for a continual flow of advice, information and assessment of the existing system. Every system generates impulses as a result of environmental changes. These impulses have to be observed, recorded, analysed and interpreted for the benefit of the policy-makers. A study of the orange marketing system is necessary for an understanding of the complexities involved and the identification of bottlenecks with a view to providing efficient services in the transfer of farm products and inputs from producers to consumers. An efficient marketing system minimizes costs, and benefits all the sections of the society.

1.1 Importance of fruits in human nutrition

Fruits in human nutrition make balance diet which leads to the development of sound health and happiness of human beings, Fruits have the following main role to play.

Vitamins

Vitamin 'A' is essential for growth and reproduction. It helps resistance to infections, increase longevity and decreases senility. Deficiency causes night blindness, Xerophthalmia, retardation in

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growth, roughness of skin, formation of stones in kidney and the bladder, Vitamin 'A' can be obtained from fruits like mango, persimmon, apricot fresh, passionfruit juice, raspberry, papaya, loquat, dates, jackfruit rayan, etc.

Vitamin B₁ (Thiamin)

It is essential for the maintenance of good appetite and normal digestion. It is necessary for growth, fertility and lactation and for normal functioning of nervous tissue. Deficiency of Vitamin B₁ causes the well known disease beri-beri, loss of sensitivity of skin, paralysis, enlargement of heart, loss of appetite, weight loss and fall in body temperature. Fruits like cashewnut, walnut, almond, apricot, banana, apple and plum are rich sources of this vitamin.

Vitamin B₂ or G (Riboflavin)

It is important for growth and health of the skin and for respiration in poorly vascularized tissues such as the cornea. It is present in the retinal pigment of the eyes where it plays an important part in light adoption. Deficiency of this vitamin causes pellagra and alopecia, loss of appetite, loss of weight, sore throat, development of contaract, swollen nose and baldness. The fruits like bael, litchi, papaya, pineapple, pomegranate are rich sources of Vitamin B₂.

Vitamin B₆

It comprises of pyridoxine, pyridoxal and pyridoximine. A deficiency of this vitamin is associated with anemia. The fruits like cherimoyer, custard apple, mango, etc. are sources.

Pantoheinic acid

A deficiency of this causes dermatitis and other disorders.

Folic acid and B₁₂

A deficiency of these factors may lead to anaemia. Fruits like avocado, peach, grapes, guava and plum are good sources.

Vitamin C (Ascorbic acid)

It is a dietary essential for human beings since human body cannot synthesize it as do most animals. Deficiency causes scurvy disease, pain in joints, swelling of limbs, unhealthy gums, tooth decay, delay in wound healing and rheumatism. The fruits-like west Indian cherry, aonla, guava, orange, lemon, lime, grapefruit, strawberry, cape gooseberry, pineapple and ber are rich sources of Vitamin C.

Proteins

These are important for body growth. Proteins contain essential amino acids which are necessary for the formation and maintenance of body tissues. Proteins are found in fruits like west Indian cherry, avocado, custard apple, banana, apricot, guava, grape, palm, peach, cashewnut, etc.

Carbohydrates and fats provide energy to human body. Nuts and avocado are rich sources of these.

Minerals

Fruits are a rich source of minerals. Ten minerals are essential for the growth and development of the human body. Of these, calcium, phosphorus and iron are most essential. The deficiency of calcium in the body causes rickets, osteomalacia, etc. Calcium is obtained from fruits like fig, citrus, guava, dates, sapota, grape, custard apple, apricot and west Indian cherry. Phosphorus is essential for cell multiplication of bones and soft tissues. It helps in the liberation of energy on oxidation of carbohydrates. Frutis-like woodapple,

raspberry, avocado, apricot dried, dates, lasora, pomegranate, raisins, etc. are rich sources. Iron acts as oxygen carrier in the body. It is an essential element in the body (2, 3, 4). Iron can be supplied by karonda west Indian cherry, dates, guava, grapes, apricot, avocado, custard apple, sapota, plum, etc. Besides, cobalt, copper, iodine, manganese and zinc are the trace elements essential in human nutrition. These are found in varying concentration in different fruits.

Source of energy

Fruits are a good source of energy because many of them contain digestible form carbohydrates in the form of sugar or starch or both. Some fruits are cashewnut, avocado, olives, etc.

Source of organic acids

For proper digestion of foods organic acids play important role. They also help in increasing appetite. The most common acids are citric acid, malic acid, etc. The rich source of these acids are citrus fruits, guava, sapota, mango, etc.

Source of enzyme

A few fruits are also a good source of enzymes which are helpful in metabolic activities, leading to proper digestion of food. The fruits like jaman and papaya are the best example.

Medicinal value

Almost all fruits have medicinal value one way or the other. Therefore they should be preferred to be eaten the seasonal fruits in adequate quantity. Obesity is a sort of disease. A diet predominated by seasonal fruits and taking controlled food is said to a boon to health and to increase the longevity of life.

Fruits are rich in vitamins and minerals, perhaps, therefore, they have medicinal value. Doctors recommended fruit juice for the treatment of many ailments like scurvy, nightblindness, asthma, bronchitis, fever, anaemia, ulcers, angular stomatitis, etc. Bael, papaya and pomegranate are very beneficial in curing certain stomach problems. Other parts of fruits species like leaves, bark, roots, etc. are used in therapeutics.

In brief it can be said that

1. Fruits are important component for making balance diet as they provide adequate quantity of vitamins and minerals.
2. Fruits are cheap source of energy.
3. Fruits are good source of organic acids, enzymes and roughages.
4. Fruits have medicinal values therefore they are known as 'protective foods'.
5. Fruits are attractive in appearance, delicious in taste and easily digestible therefore they are liked by young and old alike.

1.2 Composition and uses : Citrus

Different species of citrus fruit have different chemical composition. While in the sweet group, the principal, constituents of the edible portions are sugars (glucose and sucrose) and acid (primarily citric acid and little of malic acid), the fruits of acid groups contain primarily the acids in the fruits juice. The rind of citrus fruits is rich in pectin and certain essential oils. The rind also contains certain glucosides (hesperdin in oranges, lemons and naringins in the grape fruit). Citrus fruit contain considerable amount of ascorbic acids, the vitamin. The total soluble solids (T.S.S.) in the fruit juice, in most of the sweet group of citrus, varies from 8-12 per cent, while the titrable

acidity usually ranges from 0.5 to 1.5 per cent. Usually, for oranges and mandarins a TSS – acid ratio of 8 : 1 and in grape fruit the ratio of 6 : 1 was considered to be optimum for marketable fruits. In the lemons and limes titrable acidity of fruit juice usually ranges from 5 to 6 per cent. The vitamin C (ascorbic acid) contents in the fruit juice of different citrus species have been recorded to be variable and 25 to 85 mg per 100 ml of juice could be recorded. Besides world-wide demand of oranges as fresh fruits, oranges marmalade has long been an important products and is one of the main uses of the sour orange. Sweet orange, grape fruits and other types are also used in this way. Orange, lemon, lime and grape fruit juices are bottled and canned in large scale-lemon-barley water is prepared from the common lemon. The production of canned juice and pulp and particularly, of frozen concentrated juice has been increasing very rapidly throughout the world. The flowers, leaf and rind of citrus contain oil of good fragrance and has good commercial value. Lemon and orange oils are most important citrus oils used for flavouring purposes, followed by lime, grapefruit and tangerine oils. Other commercial products are citric acid and pectin, made primarily from cull and unmarketable fruits.

1.3 Technological Change in Agriculture

Technology developments in agriculture, such as the evolution of high yielding varieties of seeds, increased use of modern inputs and cultivation practices in the agricultural sector, have resulted in substantial increase in farm production. The marketed surplus of the agricultural produce has therefore increased. Production-conscious farmers have also become income/price conscious. This has resulted in the growth of the marketing system.

The importance of an efficient marketing system as a vital link between the farmer and the consumer was recognized way back in 1928 by the Royal Commission on Agriculture. Since then, a good deal of progress has been made in organizing agriculture marketing by the adoption of the various administrative and legislative measures by the Government from time to time. The establishment of the Directorate of Marketing and Inspection in 1935, the enactment of the Act for the grading and standardization of agricultural commodities, the conduct of commodity market surveys, and the establishment of regulated markets in the country – these are some of the measures which have been taken up to improve the marketing situation and to make agricultural marketing as efficient as possible.

During the First and Second Five Year Plans, agricultural marketing did not receive importance. Whatever development that took place in the sphere of marketing was due to the gradual progress towards the commercialization of agriculture, as a result of its own dynamic nature, and not because of any specific government efforts.

The National Commission on Agriculture remarked “There is an increasing awareness that it is not enough to produce a crop or animal product, it must be marketed well. Increased production, resulting in a greater percentage increase in the marketable surplus accompanied by the increase in demand from urban population, calls for a rapid improvement in the existing marketing system”. This statement emphasized the increased importance of marketing of agricultural commodities and the need for the adoption of measures to increase production.

1.4 Features of marketing

Common feature of our agriculture is that much attention has been given, after independence, on production side of various field crops which includes invention of new varieties and evolution of improved horticultural practices, etc. This has resulted into increase in yield of various crops. It is also well known that the farmers are always interested in maximizing their profit and not merely production. Since it is evident that the minimization of cost being one way of maximizing profits, the other being obtaining highest possible market price through proper marketing.

Though the scientific marketing plays an important role in the present days of complex commercial fork, unfortunately as due to lack of proper knowledge and understanding of the problems, the same has not been fully appreciated by the growers. The problem is more acute particularly in the case of orange growers of Vidarbha region. Now it is the time to pay equal attention to this important aspect of orange marketing. It should be the effort to treat orange marketing as a commercial activity rather than a simple earning activity of the growers.

1.5 Production of citrus fruits in India and world with special reference to orange

India ranks sixth in the world in production of oranges. At present Brazil is world's largest producer (i.e. 23 million tonnes) of orange followed by USA (i.e. 11.64 million tonnes). Orange occupies first place in the production of citrus fruit in India. Citrus is the worlds leading fruit crop. Its world production in 1997 totaled 64.84 million tonnes. The production of citrus fruits in India has gone up from

20,76,000 tonnes in 1986-87 to 37,98,000 tonnes in 1995-96. Oranges are cultivated in different states of India viz., Maharashtra, Punjab, Madhya Pradesh, Tamil Nadu, Assam, Meghalaya, Tripura, Haryana, Rajasthan and West Bengal.

The word 'Mandarin' means golden coloured orange fruit brought by angel. Its synonyms are Mikam (Japan), Ponkan (China), Batangas (Philippines), Mandarin (Italy) and Santra (India). Mandarin is a native of China and South East Asia introduced in Japan early in 1278 A.D. It reached England from China in 1805 and later to Malta Sicily, Italy and other countries.

Citriculture in India is of ancient origin. Many citrus fruits originated in Assam. These are Jamberi, Rangpur, Karna, Sweetlime and Sour orange. Mandarin orange (*Citrus reticulata Blanco*) are mainly grown in Maharashtra (Vidarbha), Karnataka (Coorg), Asam (Khasi), Punjab (Kinnow) and NEFA (Arunachal Pradesh, Meghalaya, Tripura) and Sikkim.

Nagpur Mandarin is native of India. Ponkan of China, Coorg, Khasi, Butwal and Sikkim are strains/clone/bud lines of Nagpur Santra.

1.6 Present status of orange in Maharashtra

The world famous mandarin orange locally known as 'Nagpur Santra' is grown in Vidarbha region of Maharashtra State. In Maharashtra, at present about 1 lakh hectares of land is under oranges with 75,000 hectares accounting for mandarin orange and 20,000 hectares for sweet orange. In 1997, the orange crop in Amravati district in Maharashtra was affected by drought. The scarcity of water affected the size of fruit besides loss in yield.

The Maharashtra State government has now stopped the promotion of area expansion in oranges by withdrawing incentives and subsidies. In 1997-98 the output of oranges in the State is reported to dropped by 9 lakh tonnes.

1.7 Marketing functions involved in orange marketing

Orange marketing involves very special functions, which are inevitable and are required to be performed with almost care if good returns are to be expected from the sale of oranges. These functions are i) harvesting the produce at proper time ii) grading iii) packing iv) quick transportation v) storage vi) sale of the produce in distant markets, etc.

These functions are performed by large number of intermediaries. Their number and role can not be eliminated in orange marketing system. However, the malpractices followed by them and their way of functioning has to be checked and rectified in the interest of the growers. Therefore, the present marketing study needs to delineate the loopholes in their working if any.

1.8 Objectives of the study

The overall objectives of the present study are to have an economic evaluation of marketing system of orange in Maharashtra State. The study was undertaken in the following specific objectives.

- i) To study the structure and organisation of selected markets and the marketing practices for orange.
- ii) To estimate the marketing costs, marketing margins and price spread in respect of orange.
- iii) To study the arrival pattern and price movements of orange.
- iv) To ascertain the constraints in marketing of orange.
- v) To suggest the line of improvement in the marketing organisation.

1.9 Hypotheses

- i) The producers share in consumer rupee is higher for the marketing channel involving small number of intermediaries.
- ii) Transports cost and packaging cost are higher for sale in distant market, whereas the net prices received are higher in these markets.
- iii) Graded orange ensures the higher net prices to the producers.

1.10 Scope of study

The main aim of producer in marketing is to raise producer's share in consumer's rupee. Since 'Santra' produced in Vidarbha region is considered to be more delicious than those produced in other parts of the country to the important consuming centres outside the State such as Delhi, Chennai, Kolkata, Kanpur, Lucknow, etc. and even in foreign countries. Hence, orange marketing needs special attention. Orange growers are exposed to the high risk and uncertainties connected with marketing of orange. Many times they suffered heavy losses due to delay in transportation, because produces perishability. Orange production is concentrated in Amravati and Nagpur districts of Vidarbha region. Hence, this area is known as 'California' of Maharashtra for orange production.

Without improving the marketing system of agricultural produce it is not possible to achieve the goal of sustainable agricultural growth. In the wake of liberalization policies which give much accent on globalization of the Indian economy, the agricultural sector at the moment present a mix of great hopes and challenges. The hope is that the Indian agriculture is lightly competitive in the global trade environment but the benefits of it could be adequately derived only through augmenting agricultural production and improving its

marketing system. On the production front the country has made significant stride in recent years but its distributional efficiency still needs to be achieved which is possible only through developing efficiency in marketing of agricultural produce. Indian agricultural marketing system even today suffers from a number of deficiencies leading to low returns to the farmers on the one hand and the high price paid by the consumers on the other.

Exploitation of producers as well as consumers by the middlemen is supposed to discourage production of horticulture crops in the country. This needs an intensive study of marketing particularly for the perishable agricultural product like orange. This indicates the necessity of stressing on research and development in the field of agricultural marketing.

For this purpose, micro level studies and macro analysis are necessary. But until now, very little has been put forth and much more has to be done. There are very few research studies in Maharashtra of the present type. The research work under study is to strengthen the research in agricultural marketing.

Realising the wide scope for development of orange production in the country and abroad in near future, it felt necessary to study the marketing of orange in the locality. An attempt has therefore, been made to study the marketing practices like channels of distribution, methods of selling, transportation, packaging and estimation of their economics, estimates of marketing costs and marketing margins at various stages in different channels and price spread in orange marketing. Efforts will also be made to study the arrival pattern and price movement in orange over a period of time.

1.11 Utility of study

The study is primarily centred around the various marketing aspects of orange in Vidarbha region of Maharashtra State. A study of this kind is expected to be useful and interesting in a state like Maharashtra where horticulture could not perform well despite various developmental efforts and the resultant achievement under different horticultural development programmes continued to persist. The study will, therefore, be useful to know absolute changes with the successful propagation of new technology alongwith various marketing aspects.

The findings of the study may have policy implications relative to introduction of certain practical solutions to the present marketing problems acting as a stumbling block in the welfare of the concern fields and the ultimate respondents. The study will project various problems that may with hold the process of horticultural development in the individual region in the immediate future on the basis of present and past problems of marketing. Hence the present study covering the various aspects of marketing of orange in the context of the geographical, socio-economical and agro-climatical status of the study area are of crucial importance to researchers, extension workers, farmers and specially to planners and policy makers for identifying the lagging fields so as to evolve new specific strategies for bringing out better developmental activities for the welfare of the farmers in particular and for the prosperity of the state through better management practices in horticultural and corresponding marketing aspects in general.

REVIEW OF LITERATURE

2. REVIEW OF LITERATURE

Marketing had its beginning in agriculture. It developed only after man was able to produce more food than he needed for himself, and only after a way of exchanging the products of his labour for those of others had been found. This transition from production for consumption to production for exchange came about slowly. About a century ago, farmers used to consume most of what they produced; but, now, most of what the farmers produce is exchanged for the other things which they require. To reach this stage, farmers became production minded. This tendency has increased their dependence on marketing, which has resulted in the overall development of the market mechanism.

An attempt is made in this chapter to bring together the findings of some of the studies closely related to the present study.

The available literature having relevance to the present study has been reviewed in this chapter so as to have guidelines for the present study. The reviews have been grouped into the following groups.

- 2.1 Marketing of fruits in general
- 2.2 Cost of marketing of fruits
- 2.3 Price fluctuations in fruits
- 2.4 Problems in marketing of fruits

2.1 Marketing of fruits in general

Singh Karan (1983) conducted the study on marketing of grapes through co-operatives in Ludhiana district of Punjab and the budgeting technique was used to estimate the costs of assembling,

grading, packing, transportation and to examine the possibility of setting up various co-operative societies for marketing of grapes on a profitable basis. The budgeting analysis showed that through co-operative marketing, the net returns could be increased by reduction in marketing costs and increase in gross returns by selling at the right places. Through co-operative marketing, costs decreased by 21.29 per cent while returns increased by 24.55 per cent i.e. Rs. 2.67 per pack.

Nagraj *et al.* (1985) studied the market channels, price spread, market efficiency and the problems of the producers and market intermediaries in case of important fruits and vegetables in Karnataka. The main channels observed in case of grapes are as follows.

- i) Producer – Pre-harvest Contractor – Wholesaler – Retailer – Consumer
- ii) Producer – Pre-harvest Contractor – Wholesaler – Hawker – Consumer
- iii) Producer – Co-operative society – Consumer
- iv) Producer – Co-operative society – Retailer – Consumer

The producer received just one half of the consumer rupee while the retailer gained relatively high margin of profit. It was 18.98 per cent and 14.58 per cent in case of Anab-e-shahi and Thompson seedless, respectively in case of retailers.

The producers share in case of Anab-e-shahi and Thompson seedless were 56.33 and 59.72 per cent, respectively. The relative share of the consumers rupee to producer in case of fruits was less than in case of vegetables, thus fruit market was less efficient than the vegetable market. The grape producers opined that the important factors for success of the grape co-operative are increasing purchase

capacity, operation of more number of retail outlets, modifying working hours and provision of timely and adequate credit.

Subrahmanyam (1986) studied the marketing of horticultural crops covering mangoes, banana, mandarin, papaya and pineapple in Karnataka. He observed that the cultivators sold their produce mainly to the commission agents at the markets or pre-harvest contractor/trader at the field/village level. The study also revealed that the commission agents played a dominant role in marketing of horticultural crops.

Kahlon (1987) stated that the agricultural marketing is not keeping pace with production technology in India. Marketing has taken long time to become an economic philosophy in such highly populated developing countries as India where the size of the domestic market is large and faces persistent shortages in several sectors of the economy. Producers of industrial and agricultural products and services could sell almost any commodity or service they produced without much concern for quality as a marketing techniques. With low income elasticity of demand for agricultural commodities/products and high output elasticity of marketed surplus for most of the agricultural products are characterized by serious price fluctuations. Co-operative marketing institutions have a future only if they learn to introduce scale economies in their marketing operations and provide efficient and comparable service to the customers in competition with the private trade. The need of the hour is to sensitize production patterns to changing conditions of demand. It is a common knowledge that marketing aspects are ignored while preparing agricultural production plans in India. As a result, production targets are set without matching them with demand dimension of various crops/products. Producer

oriented marketing extension service is to be established to advice farmers on post-harvest marketing technology.

Deshmukh (1990) stated that 'Hatta' system is adopted for fixing the rates of grapes in Mumbai market and this has a lot of disadvantageous, from the grower's point of view who never knows what was the general rate prevailing on the day and whether he got less or more. He further found that the present method of packing into 4 kg and 2 kg boxes, results into high transport cost and marketing expenses in Mumbai market. It was found that on an average the cultivator has to spend from Rs. 3.50 to 4.00 per 4 kg box for all the expenses at various stages from harvesting till he gets his money from the Dalals.

Parthasarthy (1990) studied packaging of fruits and vegetables in Hyderabad market. He observed that farmers were resorting to traditional methods of packaging for fruits viz., wooden baskets, gunny bags, etc., rather than modern packages. Some of the farmers simply fill the trucks without any packaging for some of the fruits. He suggested that there is a need for educating the growers, traders and consumers about the importance, need and necessity of scientific packaging though it costs a bit more.

Sale and Nawadkar (1992) conducted a study on Impact of producer's association on marketing of grapes and bananas in Jalgaon and Sangli districts of Maharashtra, where producer's associations are actively engaged in marketing of banana and grapes respectively. The results showed that the major proportion of total produce was worked through two marketing channels. The producer's associations of grape growers sent the supervisors for supervising fruit trade in wholesale markets and also for providing marketing intelligence to the producers. Among the various items of cost of

marketing, the transport from assembling centre to wholesale market occupied prominent share. The cost on account of transport, commission of wholesalers and marketing agencies was lower for the member of producers association than non-members. The producers profit margin of grapes was 24.20 per cent for the members as against 20.38 per cent for the non-members. The members of producers association would therefore, derive relatively higher profit margin from fruit trade than non-members.

Alshi *et al.* (1992) conducted the study for estimation of growth in area, production and yield of fruit crops in Maharashtra State, to project the demand for fruit crops in the State in 2001 A.D. and to suggest policy measures to increase fruit production in the State. The study included the four major fruit crops *viz.*, banana, grape, orange and cashewnut of Maharashtra as these four crops together account for more than 80 per cent of total area under fruit crops in the State. Among these crops the highest growth rate of area was observed for grapes (11.49 per cent) followed by orange with 4.83 per cent during the period 1975-76 to 1987-88. Among the crops, production of grape increased substantially at the rate of 12.15 per cent per annum during the period 1975-76 to 1987-88. The per hectare yield of banana and grape increased at a very slow rate during the period 1975-76 to 1987-88. The growth rate of yield for grape was 0.76 per cent. The present population of Maharashtra State is 7.87 crores. Presuming that the growth rate of population during the decade 1991-2001 would remain the same as during the decade 1981-91, the population of the State during 2001 would be 9.86 crores. The present fruit production of the State is 2204.27 thousand tonnes while estimated requirement would be 4318.68 thousand tonnes. To achieve this level, the total

fruit production in the State during 1991-2001 should grow at the rate of 6.98 per cent per annum.

Pawar *et al.* (2000) revealed that the productivity of ber was higher in small size ber garden due to intensive care taken by the growers belonging to small sized gardens. Further, it was seen that grading of ber fruit has not been popularized so far on large scale. The sale of fruit was more popular in channel I *viz.* producer – commission agent – retailer – consumer while channel III was found to be the least popular among the ber growers. This channel comprised producer – retailer – consumer.

2.2 Cost of marketing of fruits

As marketing of agriculture produce involves many intermediaries and market agencies, the costs and margin associated with them are quite high. Thus, the producers from agricultural sectors in general and producers of perishable commodities such as vegetables and fruit in particular are exploited by the market agencies and a lions share in the consumers rupee is exploited by them. Thus, the net price received by the producer in the consumers rupee in these cases is low. Higher prices provide incentives to the farmers to produce more. Studies relating to the marketing cost and price spread in respect of fruits are briefly abstracted below.

Pannu and Sidhu (1963) studied the economics of grading of sweet oranges under AGMARK and found that the graded fruits fetched a premium of 12.90 per cent over ungraded fruits.

Pawar and Patil (1976) studied price spread in marketing of important fruits in Mumbai market. They noticed that the total marketing cost in the case of sweet orange (per dozen), apple (per kg),

grapes (per kg) and mangoes (per dozen) was Rs. 0.99, Rs. 0.76, Rs. 0.44 and Rs. 1.19 respectively. The payment of these costs was generally made by the wholesaler and the producer was paid for his produce after deducting these marketing costs. The per unit expenses incurred by producer in the case of sweet orange (per dozen), apples (per kg), grapes (per kg) and mangoes (per dozen) worked out to Rs. 0.51, Rs. 0.62, Rs. 0.92 and Rs. 22.03, respectively. The price spread in marketing of different fruits showed that the producers could get only 36.07 to 54.03 per cent of the consumer price. The lowest and the highest price spread was in the case of sweet orange and grapes, respectively. The margin of wholesalers was about 5.0 per cent of the consumers price in the case of all fruits. The marketing costs involved charges paid for transport from farm site to market place ranged between 5 to 19 per cent of the consumers price in different fruits, while retailers expenses ranged between 8 to 25 per cent of the consumers price. The retailers were found to be real beneficiaries in the fruit trade.

Karan Singh and Gurtej Singh (1977) revealed that larger the number of intermediaries, the lesser was the producers share in the consumers rupee also different intermediaries had different effects on the distribution of share of the producers and consumers. When the pre-harvest contractor was eliminated, the producer was benefited, when the wholesaler was also eliminated, cost and the benefits percolated to the retailer.

Deshpande and Autkar (1988) conducted a study on marketing of Nagpur mandarin (oranges) in Akola and observed that overall average cost of marketing worked out to Rs. 17.47 per quintal. In the total marketing cost, middleman's share was major component

constituting 35.11 per cent followed by transportation cost 32.41 per cent. Producer – Pre-harvest Contractor – Wholesaler – Retailer – Consumer was the biggest channel of distribution and the producers share worked out to 31.40 per cent.

Patil and Dhongade (1988) studied the price spread of pomegranate marketing in Maharashtra and worked out marketing cost Rs. 34 and Rs.11 per quintal in Mumbai and Rahuri markets, respectively in the channel *viz.*, producer – commission agent – retailer – consumer. The margin of intermediaries in the above markets and the channel was 40 and 27 per cent, respectively. The producers share in consumers rupee in the markets was 44.55 and 64.96 per cent respectively.

Subrahmanyam (1988) studied the marketing of horticultural crops in Karnataka and suggested need for controlling the activities of the commission agents and encouraging self marketing. For this purpose there is a need to introduce auctioning, grading and selling by weight, etc., for orderly transactions. For elimination of pre-harvest contractors and to improve marketing steps like advancing production, market credit, etc., be taken up. The co-operative societies should be developed as a real alternative channel of trade.

Ingely (1989) studied cost of production per thousand fruits, Cost A, B and C were worked out to Rs. 112.10, Rs. 172.93 and Rs. 176.10 respectively. With gross income of Rs. 350 per thousand fruits, the net receipts at cost A, B and C were Rs. 237.90, Rs. 177.07 and Rs. 173.90, respectively. Gross income per plant worked out to Rs. 106.08, Rs. 203.70 and Rs. 26.43 at three sequential phases of orange production respectively.

Productivity of oranges over the productive life period was worked out by fitting polynomial function of 4th power, which gave the best fit. The R² values of fitted functions ranged between 0.76 to 0.87 for different tahsils. The form of productivity curve fitted showed the increasing, constant and declining stages over the period of time, which was consistent with general behaviour of orange gardens.

Thakur (1991) studied the economics and operational efficiency in marketing of Himachal Pradesh apples. He found that producers get less than 50.00 per cent of the consumer price of apple. More than 40.00 per cent of the marketing margins shared by commission and profit of the middleman in the market.

Bhole *et al.* (1992) estimated the price spread in marketing of oranges by sample growers from Nagpur and Amravati districts. They revealed that the farmers were benefited and received about 32 per cent higher price by selling their produce themselves in APMC against selling to pre-harvest contractors in garden itself. Marketing margins were worked out to about 48 per cent of price paid by consumers in local market.

Deshpande *et al.* (1992) examined the price spread in different channels of marketing grapes in Latur district and identified four channels for marketing of grapes.

- A - Producer – Adtya – Retailer – Consumer
- B - Producer – Wholesaler – Retailer – Consumer
- C - Producer – Consumer
- D - Producer – Retailer – Consumer

The study revealed that the channel 'C' incurred minimum marketing cost of Rs. 76.60 per quintal of grapes as compared to that in channel 'A', 'B' and 'D'. The channel 'A' and 'B' showed the highest marketing cost per quintal i.e. Rs. 166.95. This was due to the

involvement of large number of intermediaries. In channel 'A' and 'B' commission was 39.38 per cent. In channel 'D' weighing and packing shared 55.52 per cent to the total marketing cost. The transportation charges were maximum in channel 'C' (16.10 per cent). The producers share in consumers rupee was maximum in channel 'C' (91.34 per cent).

Gangwar and Shyam Singh (1999) revealed that the marketing of Nagpur mandarin transportation cost of fruits from orchards to distant market ranged between 30 to 45 per cent and packaging cost was 33 per cent. In case of local market transportation cost shared lions share of 37.06 per cent.

2.3 → Price fluctuations in fruits

The prices of farm products when examined over a period of time exhibit certain trend, which is important in projecting the prices in future. Similarly, the study of seasonal fluctuations in arrivals and price of fruits can be used by producers and government to manipulate the supply in relation to demand for stabilizing the prices. The studies related to above aspects have been referred and abstracted here.

Talukdar (1985) examined farm price received by analyzing the various factors affecting net price received by farmers with the help of modified perfect market model. The study showed inverse relationship with the length of channel of marketing intermediaries. The study concluded that prices were inequitable among different groups of farmers due to time of sale, agency of sale and the total volume of marketed surplus. The authors suggested to improve the bargaining of small farmers to enable them to get higher prices by providing storage and credit facilities to prevent post harvest sale.

Tilekar (1985) made an attempt to study the difference in the nature and magnitude of problems faced by different groups of farmers. Ratnagiri district in Maharashtra was purposively selected for this study. A price analysis approach was used in this study, since the effects of the various marketing problems are reflected in the net prices received by the farmers. The findings of the study revealed that the size of the produce agency to whom sold and the time of sale were the most important factors influencing the net prices received by all classes of farmers. The model used in the study gave significant and high values of R^2 , varied from one group to another. The smaller the size of holding, the larger was the degree of imperfection faced in the market.

According to Kahlon and Randhawa (1986), the solution to the marketing problems starts at production stage. Moreover, seasonal fluctuations in the price of horticultural products were not only due to over – production but more due to bad distribution.

Singh and Pramod Kumar (1987) made an attempt to examine the relative price structure of fruits in various markets of the country, studied the spatial and temporal changes in the share of the producer in the consumers rupee of fruits and measured the gross marketing margins for fruits and their behaviour over space and time in various markets. The results of the study indicated that during last decade (1970-71 to 1980-81), the wholesale price indices of almost all the fruits except apple showed a rising trend. The results indicated that the producers share in the consumers rupee of fruits varied from market to market because of existence of large difference in the marketing system. During recent period the producers share in the consumers rupee was declined in fresh fruits. The gross marketing margins varied from market to market and from fruit to fruit and they were relatively higher in fresh fruits than in dry fruits. T-4795



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Mankar (1988) revealed that the per cent share of producers in price paid by consumer was ranged between 60 to 70 per cent for out of the State and the State level market. The total marketing margin in this market received by different functionaries was ranged between 10 to 17 per cent. In marketing of orange in local market producers share in consumers rupee was ranged between 50 to 60 per cent concluded that producers share increased where producer themselves sell in both the market.

* Sharma *et al.* (1988) examined the structure and behaviour of apple prices and the pattern of arrivals in five major Indian markets *viz.*, Simla, Delhi, Mumbai, Kolkata, Chennai market registered the highest price trend for all the varieties of apple compared to other markets, followed by Delhi, Simla market registered the maximum variation in apple arrivals and price there of. The highest arrivals were in the months of December in Simla and the same were highest in the month of May and June in the remaining markets. The study of arrivals pattern showed the maximum arrivals were in August, September and October in Simla market. The supply to other markets was mainly from cold storage from Delhi.

Korde *et al.* (1991) concluded that the establishment of orange processing units in India resulted in a higher supply of oranges, provided the prices of the product to be stable. This was evidenced from the study of major market Nagpur.

* Kale *et al.* (1992) conducted a study in Basmath and Nanded talukas, the largest traditionally banana growing tract of Parbhani and Nanded districts of Maharashtra State. They observed that the per quintal and per dozen net price received by the producer were Rs. 184.00 and Rs. 2.45, respectively. The total marketing cost worked out was Rs. 64.50 and Rs. 0.86, respectively. The total profit

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earned by all the intermediaries was to the tune of Rs. 101.50 and Rs. 1.35, while price paid by the consumer was Rs. 350.00 and Rs. 4.65 per quintal and per dozen, respectively. The sale was carried out through private agents – intermediaries, commission agents – wholesalers – retailers – consumers was the most common channel. Producers share in consumers rupee came to 52.60 per cent, retailers 19.72 per cent, intermediaries 13.86 per cent, wholesalers 5.86 per cent, commission agents 4.85 per cent and private agents 3.14 per cent.

* Gangwar and Shyam Singh (2000) concluded that the present system, high cost of transportation packaging material and sizeable amount of commission agents charges reduced the net returns to the mandarin growers. Therefore, the government should take steps for rationalization of middlemen's profit. To increase the producer's share in consumers price, cheap and adequate supply of packaging material should be ensured. The government should provide air cargo and rail wagons for the transport of mandarins at low freight so that the fresh fruits reach to the markets. There is an urgent need for improving the marketing system and providing cold storage facilities in the orchards and markets for the benefits of the growers. The stability in prices could be achieved through effective management and providing incentives for establishment of citrus processing industries in central India. The government of Maharashtra has already taken initiatives for establishing orange processing plants. The arrangement should be made in processing plants. The arrangement should be made in processing plant to process substandard fruits which don't have much demand as compared to fresh fruits in the market.

2.4 Problems in marketing of fruits

In case of perishable commodities like fruits and vegetables, marketing problems are more, because they need immediate post-harvest technological support. Several studies have been conducted on this aspect. These studies invariably came to the conclusion that indigenous marketing system was exploitative and collusive.

Agrawal (1981) reported that the agricultural marketing is the crux of the problem of agricultural improvement in India. He pointed out the existence of forced sale of produce by growers. Intermediaries forced the farmers to sell their produce during post-harvest period to them at a price fixed in advance which are much below the market price. He reported the weakness such as the large number of middleman, unregulated markets, malpractice in mandies, lack of infrastructure facilities, etc., make the marketing system inefficient in performing its function.

Gawande (1982) pointed out that storage and marketing facilities go a long way in regulating the market prices. He further concluded that wastage of fruits in process of marketing and high transport and storage cost with very poor and unscientific methods increase the gap between what the producer receives and what the consumer pays at the other end.

Pant and Singh (1985) studied the problems of perishables in the hill regions of Uttar Pradesh and found that the absence of warehouse, cold storages and godowns were lacking in this region. These facilities would not only prolong the perishability of the produce but would also enable the growers to ask for better returns.

Vigneshwara (1986) in his paper *viz.*, dynamics of fruits and vegetables marketing in India, pointed out various problems such as fluctuations in prices, absence of grading and standardization, absence of adequate financial facilities, non availability of efficient marketing information system, lack of packing, non-existence of organization of growers, etc. He suggested that farmer should establish co-operative vegetable and fruit marketing society and to create storage facility. Financial facilities available to the growers would initiate the production and it would act as an incentive to them.

Subbanarasaiah and Mohan (1987) studied the marketing problems of citrus fruit growers in Andhra Pradesh. According to them main problems were lack of proper storage and warehousing facilities, inadequate transport facilities, absence of co-operative and regulated markets and high fluctuations in the prices. In addition to above problems, growers were facing high loading and unloading charges, lack of proper grading facilities, no control over wastage due to handling and improper weighing and delay in cash disbursement from intermediaries.

Thakur and Chandan (1987) conducted the study on efficiency and weakness of regulated markets. The following problems faced by growers were pointed out (i) low prices (ii) non availability of storage at the time of low prices (iii) lack of competition for produce (iv) lack of space, damage and spoilage of produce in the absence of sheds, unauthorized deductions, etc. (v) boarding delay in auction (vi) dominance of traders in deciding and paying low price in the market. (vii) high cost of marketing and malpractices resulting in low price to the farmers (viii) high rate of commission of traders and (ix) transport and financial problems.

Kapse (1990) in his study on constraints in marketing of ber in Solapur district enlightened on common constraints *viz.*, 1) The higher charges required for grading and packing, 2) In transportation the constraints expressed by the farmers were non-availability of vehicle in time and high cost of transport and 3) In regard to place of markets the farmers expressed the difficulties such as high cost of marketing charges, high cost of packing material, heavy charges of transportation and unawareness of market rates for different qualities of fruits. Similarly, the middleman's high margin, non-payment of receipts, the auction taking place in unhealthy conditions and deceiving nature of middleman were the more important constraints observed in markets of ber.

Mallareddy and Kaur (1990) studied the problems and prospectus in marketing of sweet orange in Andhra Pradesh. They revealed that there was a lack of storage facilities, poor transport and the absence of co-operative marketing structure for the product. There were also unpredictable fluctuations in the prices of oranges. The study recommends that step be taken to ensure the non-occurrence of contracts and adequate marketing facilities be developed in the region.

Renuka *et al.* (1991) studied the problems in marketing of agricultural products at market yard in Andhra Pradesh. They observed that most of the farmers had to sell their output immediately after harvest due to lack of storage facilities to meet present consumption or to clear off loans. It was observed that the majority of the commission agents were having close contact with the purchasers at the time of bidding, lack of proper accounts maintained by the farmer, no knowledge of the sale, management and scarcity of infrastructural facilities at the market yard were the problems faced by the

respondents. Among all the disturbing features, the deduction problem was found to be very serious.

Pagire (1995) conducted study on marketing of grapes in Maharashtra and revealed that the packaging material, transportation and commission charges constituted nearly 70 to 80 per cent of the cost of marketing. Nearly, 50 per cent share was taken away by various market intermediaries. As regards the problem 93 per cent sample grape grower opined that the commission charges were high and there were unauthorized deductions. Nearly, 88 per cent growers stated that packaging material was costly and 83 per cent said that there were no availability of skilled labours. The grape growers can have incremental returns by following the standard packing of practices with little extra expenditure, by production of the high grade quality grapes and co-ordination at the selling time, selling to proper agency and a particular market.

Suryanwashi (1997) concluded that the majority of ber growers sold nearly 65 per cent of their produce through the marketing channel *viz.*, producer – commission agent – retailer – consumer. In general, costly packaging material, high transport charges, lack of market intelligence, high commission charges and unauthorized deductions were the main problems reported by the sample ber growers. Efforts should be made to improve both technical and economic efficiency in the marketing of fruits in general and ber in particular in the study area and State as a whole.

Patil *et al.* (2001) stated that all the wholesaler and the retailers involved in marketing of minor fruit crops highlighted constraints of quick and timely transportation. Besides this, transportation cost was too high. This is because of hilly terrain and

undulating topography of the study area. Therefore, rural marketing scenario is still beset with the lack of adequate and proper transport facilities in hilly land. This has attributed to inadequate communication facilities and poor access to the area. The labour scarcity and high wages were important constraints pointed out by the marketing functionaries. This is due to the harvesting season of all minor fruit crops commence at one time only.

After going through the review of empirical studies discussed in sub-sections in respect of marketing of fruits in general, cost of marketing of fruits, price fluctuations in fruits and problems in marketing of fruits, it is clearly observed that most of the studies either related to single fruit or number of fruits in comparisons with each other and confined to single tahsil or district of region or state subjected to one or more variates of marketing and the respective suggestions in accordance with the objective of the study. In effect, these studies were handicapped in getting the complete picture of the fact in respect of the fruit growers socio-economic status, geographical features, marketing infrastructure, marketing methods and prevailing malpractices in the market besides better avenues in distant markets with little extra efforts.

Further, the empirical studies relating to various analytical tools adopted by various researchers to estimate marketing cost, net price received, seasonal indices, compound growth rate and price function were applied singly or more than one or two and that too for limited sample size for limited time period for either local or distant market only.

Considering the above shortfalls the present study is a modest attempt to explore the following areas of research.

1. The study simultaneously covers the geographical, agro-climatical and various marketing aspects alongwith the constraints and the respective suggestions for the study area.
2. The unit of the study is a homogeneous districts covering 60 intermediaries and 120 respondents in all for obtaining primary data in addition to the requisite secondary data.
3. Though the present study mainly concentrated on primary data due importance has been given to the secondary data pertaining to the arrivals and corresponding prices of oranges alongwith market structure and organisation having direct as well as indirect effect on the present and future status of the fruit and hence the respective interest of the respondents in the study area.
4. The study adopted various analytical tools like tabular form for estimation of marketing cost, multiple regression for net price received by the sample orange growers, seasonal indices for working out seasonality in arrivals and prices of orange, compound growth rates in arrivals and prices of orange, price function to observe the effect of arrivals and lagged prices on current price of orange in the markets under study. The study also covers the various constraints in marketing of orange.
5. From the obtained results the present study came to certain practical suggestions alongwith some feasible policy implications for better future and welfare of the respondents in particular, and for prosperity of the state in general, through better management of horticultural products in the context of marketing.

METHODOLOGY

3. METHODOLOGY

The development of an efficient marketing system is important in ensuring that scarce and essential commodities reach different classes of consumers. Marketing is not only an economic link between the producers and the consumers; it maintains a balance between demand and supply. The objectives of price stability, rapid economic growth and equitable distribution of goods and services cannot be achieved without the support of an efficient marketing system.

Agricultural marketing plays an important role not only in stimulating production and consumption, but in accelerating the pace of economic development. Its dynamic functions are of primary importance in promoting economic development. For this reason, it has been described as the most important multiplier of agricultural development.

India's age-old farming practices have taken a turn in recent years. There has been a technological breakthrough – the evolution of high-yielding variety seeds, increased use of fertilizers, insecticides, pesticides, the installation of pumping sets and tractorization. This technological breakthrough has led to a substantial increase in production on the farms and to the larger marketable and marketed surplus. To maintain this tempo and pace of increased production through technological development, an assurance of remunerative prices to the farmer is a prerequisite, and this assurance can be given to the farmer by developing an efficient marketing system.

An investigator or a scientist has to adopt appropriate methods and procedures to obtain the results pertaining to the scientific study. Thus, this chapter constitutes the plan of the investigation in brief, stating the different methods, techniques and tools of data analysis used for having the meaningful conclusions as per the objectives of the study.

3.1 Data requirement

In order to study the marketing of orange in Maharashtra the data were obtained from the selected sample orange growers in the study region through specially designed questionnaire. The data were also obtained for arriving at conclusions in respect of arrivals and prices, etc. The same data were also collected from the office of the APMC in the study region. The data requirement of the study pertained to the following aspects :

i) Brief general information of the sample orange growers, ii) detail information regarding the marketing functions and marketing agencies involved in the orange marketing iii) information on marketing costs and iv) information on the different problems faced by the sample orange growers in respect of marketing activities.

3.2 Sampling design

The study was carried out on the basis of the factual information at the farm level obtained from the sample orange growers. The basic information regarding the marketing of orange was collected from the sample cultivators. For this purpose, a multistage sampling technique was adopted to select the ultimate unit of the sample. At first stage, the district was selected purposively having the highest acreage

under the orange fruit as a primary unit, the second stage constituted the secondary unit the tahsil having the highest acreage under the crop, the growers or producers of orange as an ultimate unit of sampling. The procedure used for drawing samples of orange growers is outlined as:

3.2.1 Selection of districts and tahsils

Vidarbha region was purposively selected for the present study in view the highest area under orange in the State. Thus, Amravati and Nagpur districts were selected for the study. Table 3.1 gives the information regarding the area under orange in the two districts in the State. The same procedure was adopted for selection of tahsil from each district.

Table 3.1 Area under orange in selected districts and tahsils

District	Area (ha)	Tahsil	Area (ha)
Nagpur	31612	Nerkhed	7680
Amravati	40726	Morshi	9940

Source : The Statistical Abstract of Maharashtra State, Pune – 1998.

3.2.2 Selection of sample orange growers

From the selected tahsil from each district, five villages having maximum area under orange were selected on the basis of maximum area under orange. From cluster of these villages, total 60 sample orange growers were selected randomly. The number of orange growers to be selected from each of the selected villages was determined on the basis of the probability. Equal number of orange

growers (i.e. 12) had been selected from each village of each selected tahsil. Thus, the total sample drawn from two tahsils were 120. There were three size groups on the basis of area under orange determined as follows:

- 1) Small size group - Upto 0.40 ha
- 2) Medium size group - 0.41 ha to 0.80 ha
- 3) Large size group - 0.81 ha and above

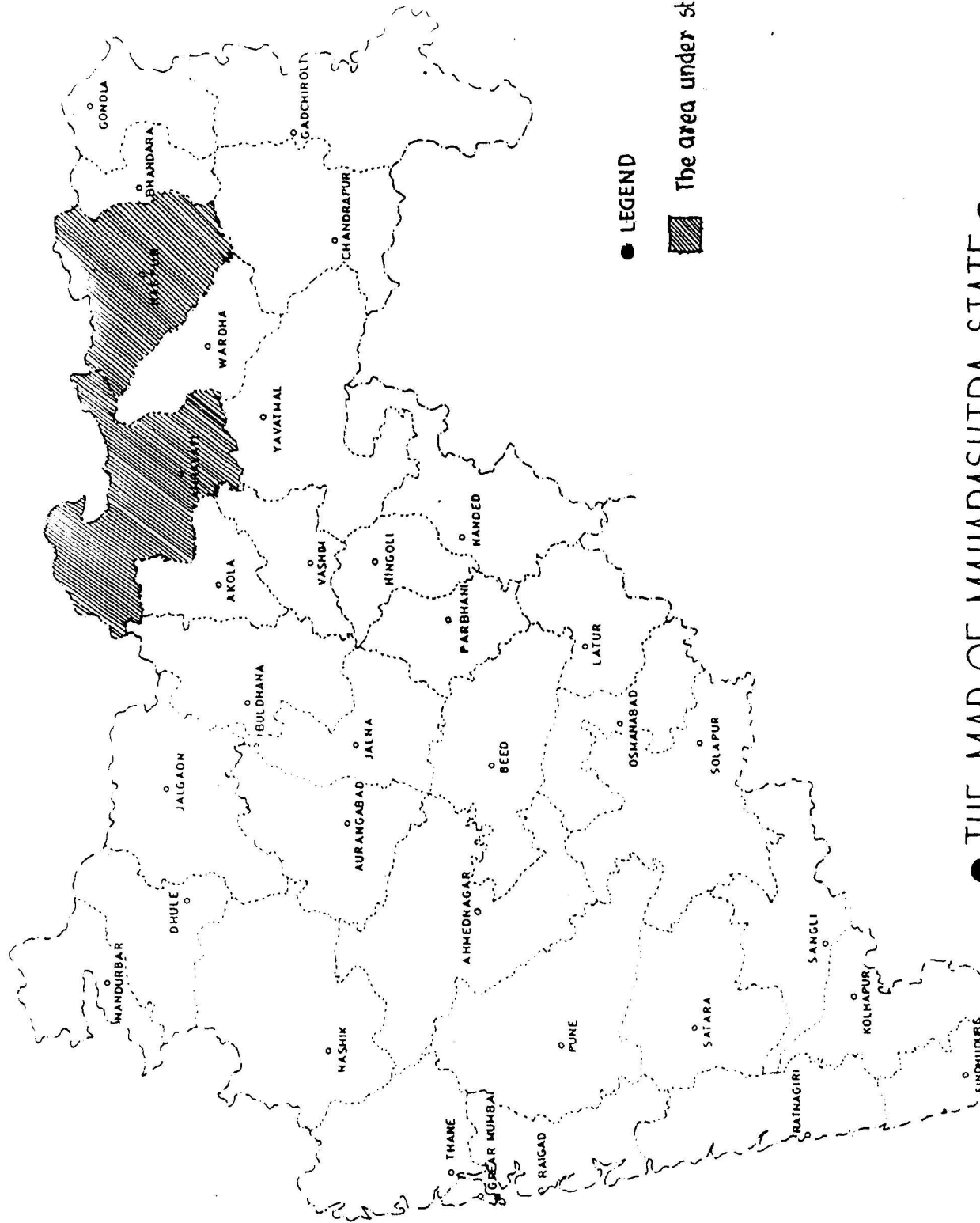
Thus the total sample of 120 orange growers comprised 67 small size orange growers, 36 medium size orange growers and 17 large size orange growers. Similarly, 20 pre-harvest contractors, 20 wholesalers and 20 retailers were also selected randomly.

Table 3.2 District, tahsil, cluster villages and number of sample orange growers selected

District	Tahsil	Cluster villages	No.	District	Tahsil	Cluster villages	No.
Amravati	Morshi	Morshi	(12)	Nagpur	Nerkhed	Nerkhed	(12)
		Hiwarkhed	(12)			Thugaon	(12)
		Durgwada	(12)			Ambada	(12)
		Rajurwadi	(12)			Khorsoli	(12)
		Umarkhed	(12)			Pimpalgaon	(12)
Total sample orange growers			60				60

3.3 Collection of data

The data were collected by survey method by conducting personal interviews using specially designed questionnaire developed for the study purpose. The primary data in respect of marketing pattern,



● LEGEND



The area under study.

marketing cost and margin and problem faced by orange growers in selling their produce were collected from the selected respondents.

The data on arrivals and prices in two markets, viz. Amravati and Nagpur were collected from the respective Agricultural Produce Market Committees. The data were also collected from pre-harvest contractors, wholesalers and retailers with the help of specially designed questionnaire.

The data pertained to the year 1997-98.

3.4 Analysis of data

The primary as well as secondary data thus collected were further compiled and analysed.

The data were analysed on the following lines.

A) Marketing cost

In order to know the net price received by the growers, it was required to take into consideration the cost of marketing as one of the major cost component. The following items were considered while calculating the marketing cost :

- i) Labour cost for grading and packing
- ii) Packaging material cost
- iii) Transportation cost (including loading and unloading)
- iv) Different market charges and
- v) Share of the different agencies involved in the marketing

B) Net price received by the sample orange growers

For estimating the effect of various factors in receiving the net price per quintal, the following multiple regression model was fitted to the data.

$$Y = a + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 D_T + b_5 D_{A1} + b_6 D_{A2} + b_7 D_{A3} + b_8 D_{G1} + b_9 D_{G2} + U_t$$

Where,

Y = Net price received in Rs./quintal

X_1 = Quantity of oranges sold in quintal

X_2 = Distance of market place in kilometer

X_3 = Area under orange in hectare

D_T = Dummy variable representing the time of sale.

If sale falls in period I then $D_T = 1$ otherwise, $D_T = 0$ (Period I indicates month Oct. to Dec, period II indicates month Jan. to April.).

D_{A1} = Dummy variable representing the agency of sale.

If sale is through pre-harvest contractor, then $D_{A1} = 1$ otherwise, $D_{A1} = 0$.

D_{A2} = Dummy variable representing the agency of sale.

If sale is to wholesaler, then $D_{A2} = 1$, otherwise $D_{A2} = 0$.

D_{A3} = Dummy variable representing the agency of sale.

If sale is to retailer. Then $D_{A3} = 1$, otherwise $D_{A3} = 0$.

D_{G1} = Dummy variable representing the different grades.

If Grade - I, then $D_{G1} = 1$, otherwise $D_{G1} = 0$.

D_{G2} = Dummy variable representing the different grades.

If Grade - II, then $D_{G2} = 1$ otherwise $D_{G2} = 0$.

U_t = Error term.

C) Arrivals and prices of orange

i) Seasonality in arrivals and prices of orange

To point out the seasonality in arrivals and prices of orange in the selected markets, the indices were worked out with 1987-88 as a base year.

ii) Compound growth rate

The annual compound growth rates in arrivals and prices were estimated with the help of exponential function of the following type.

$$Y = a b^t$$

$$\text{i.e. } \log Y = \log a + t \log b$$

The per cent compound growth rates were estimated by using the formula

$$\% \text{ CGR} = (\text{Antilog } b - 1) \times 100$$

D) Price function

To observe the effect of arrivals, lagged arrivals and lagged prices on current price of oranges in the markets under study, the following function was employed.

$$P_t = a + b_1 A_t + b_2 A_{t-1} + b_3 P_{t-1} + U_t$$

Where,

$$P_t = \text{Current average price of orange (Rs./quintal)}$$

$$A_t = \text{Current average arrivals of orange in quintal}$$

$$A_{t-1} = \text{Lagged arrivals of orange in quintals}$$

$$P_{t-1} = \text{Lagged price (Rs./quintal)}$$

$$a = \text{Constant}$$

$$b_i\text{'s} = \text{Regression coefficients}$$

$$U_t = \text{Error term}$$

**INFORMATION OF THE
STUDY AREA**

4. INFORMATION OF THE STUDY AREA

In agricultural production, agro-climatic conditions play an important role. The cultivation and growth of crops depends primarily on the soil types and the precipitation. Though these natural factors are beyond the control of man, the farmer adjusts his farming in such a way as to take advantage of the prevailing climatic conditions. Besides these factors, irrigation, communication facilities, development of production facilities and market centres, progress in the field of education, credit, storage facilities, etc., play an important role in production of agricultural commodities. The knowledge about physical feature and economic background of the tract facilitates better understanding of the problem under investigation.

4.1 Location

Vidarbha region of Maharashtra State lies between 20° to 40° North latitude and 78.5° to 79.40° East longitude respectively. It is surrounded by Madhya Pradesh on northern side, Chhattisgarh on eastern side, Andhra Pradesh on southern side and Western Maharashtra on Western side. It comprises of eleven districts divided into two divisions *viz.*, Nagpur division and Amravati division. The Nagpur division is comprised of six districts *viz.*, Nagpur, Bhandara, Chandrapur, Gadchiroli, Wardha and Gondia. Five districts of Amravati division are Amravati, Akola, Yavatmal, Buldhana and Washim. Two districts in Vidarbha i.e. Nagpur and Amravati are having maximum concentration of orange and hence have been selected for present research work.

Nagpur district is surrounded by Seoni and Chhindwara districts of Madhya Pradesh in the north, while Bhandara district stands on the east, Chandrapur in south and Wardha and Amravati in south-west side. Amravati district is surrounded by Nagpur district on the east, Chhindwara district of Madhya Pradesh on the north, Yavatmal district on the south and Akola district on the western side.

Nagpur district is comprised of thirteen tahsils *viz.*, Nagpur (Rural), Kamptee, Hingna, Ramtek, Kuhi, Mouda, Parseoni, Umred, Bhivapur, Nerkhed, Katol, Kalmeshwar and Saoner. Amravati district is also comprised of thirteen tahsils *viz.*, Daryapur, Anjangaon, Achalpur, Morshi, Warud, Chandur Bazar, Dharni, Teosa, Bhatkuli, Chikhaldara, Nandgaon, Amravati and Chandur (Rly.).

Both the districts are situated in the heart of the country and are spread over the south west of Satpura hills. The elevation for both the districts is between 300 to 700 M (M.S.L.). Other important hills are Ambagad hills which has a spread in Ramtek Tahsil, Pilkapar hills lying across Katol tahsil and hilly range spread over the south east border of both the Nagpur and Amravati districts.

4.2 Rainfall

The rainfall in both the districts is not uniform. South eastern part of the Nagpur district receives more precipitation whereas, north west portion, receives very less precipitation. Rainfall in Amravati district ranges from 700 mm to 1000 mm per year. The pattern of precipitation decides the cropping pattern. These differences lead to remarkable change in the mode of cropping pattern.

Cotton and jowar are the major crops in north west part of Nagpur district and the entire Amravati district, whereas, rice and

chillies are the main crops of eastern and southern parts of the Nagpur district. The rains are received from west monsoon which starts from June and lasts upto September. The non-seasonal rains occurred in January and February. Occasional thunder storm and hail storm, damages the rabi crops and orange gardens.

Table 4.1 Climate of the study area

Sr. No.	District	Temp (° C)		Mean RH (%)	Annual Rainfall (mm)
		Max.	Min.		
1.	Nagpur	42-46	11-15	53	1070-1175
2.	Amravati	41-45	10-12	70	740-1100

Source - Districtwise Socio-economic Report, 1998-99.

Being away from the sea, both the districts attains high temperature besides a great variation in maximum and minimum temperature range. The maximum temperature is not less than 110° F in both the districts. The mercury rises upto 116° F or more in the month of May. The lowest temperature of 40° F is generally recorded in the month of December and January. The temperature rapidly drops from June, with the arrival of monsoon when the rainy season starts and continues upto September.

4.3 Soil

Nagpur and Amravati districts are spread with deccan trap and hence the soil of these districts is black cotton soil. In spite of the above soil types, Amravati district is having a long deep saline patch running through Daryapur and Anjangaon tahsils with irrigation and compel the cultivator to grow only salt resistant and rainfed crops like

jowar, cotton, tur, etc. Efforts are being made by different agencies from time to time to reduce the salinity, but since, the concentration is too high and the patch is too long, it is practically going difficult either to remove it completely or to reduce it to substantially low level so far. However, optimum conditions for orange orchard prevail on light to medium, well aerated, deep loose soils which are away from stagnant moisture. These are deep alluvial loam soils having good drainage found in Indo-gangetic plains. The roots of orange tree penetrate to a depth of about 5', the soil should, therefore, be free from such defects, as high water table impression, substratum of clay and hard pan. Orange trees are susceptible to high salt concentration in general and alkaline salts in particular and flourish on soil with pH ranging between 6.00 to 8.5 though the pH value of 6.5 is regarded as optimum.

Table 4.2 Soil genesis of the study area

Sr. No.	District	Soil type	Clay (%)	pH	CaCO ₃ (%)
1.	Nagpur	Medium to heavy	44-45	7.7-8.0	3.7
2.	Amravati	Medium	45-46	6.0-8.4	6.0

Source : Districtwise Socio-economic Report, 1998-99.

The most favourable agro-climatic conditions as stated above do exist in Nerkhed of Nagpur district and Morshi of Amravati district, due to which, the orange orchards concentration is maximum as compared to other parts of districts of Vidarbha region.

4.4 Land utilization pattern of selected districts

The details regarding land utilization pattern of selected districts are presented in Table 4.3.

Table 4.3 Land utilization pattern of the selected districts

(Area '00' ha)

Sr. No.	Particulars	Nagpur	Amravati
1.	Geographical area	9864 (100.00)	12217 (100.00)
2.	Forest	1589.00 (16.11)	3171.00 (25.95)
3.	Barren and unculturable land	337.00 (3.42)	199.00 (1.63)
4.	Area under non-agricultural land	866.00 (8.78)	402.00 (3.30)
5.	Culturable waste land	412.00 (4.18)	105.00 (0.86)
6.	Permanent pasture and grazing	551.00 (5.58)	289.00 (2.36)
7.	Under miscellaneous	102.00 (1.03)	50.00 (0.41)
8.	Current fallow	341.00 (3.46)	279.00 (2.28)
9.	Other fallow	340.00 (3.45)	272.00 (2.23)
10.	Net sown area	5326.00 (53.99)	7450.00 (60.98)
11.	Gross cropped area	6659.00	9156.00
12.	Cropping intensity (%)	125.02	122.89

(Figures in the parentheses indicate the percentages to the geographical area)

Source : Districtwise Socio-economic Report, 1998-99.

The table 4.3 reveals that the geographical area of the Nagpur and Amravati districts is 986400 and 1221700 ha respectively. Out of the total geographical area, the largest area is net sown area with 53.99 per cent and 60.98 per cent net sown area in Nagpur and Amravati districts respectively.

The cropping intensity as is revealed by the table is more in Nagpur district (i.e. 125.02 per cent) than Amravati district (i.e. 122.89 per cent).

The area under forest in both the districts is 16.11 per cent and 25.95 per cent of the total geographical area respectively.

The area under non-agricultural land in Nagpur district is more (i.e. 8.78 per cent) than in Amravati district (i.e. 3.30 per cent).

4.5 Cropping pattern of selected districts

Nagpur and Amravati districts are famous for fruit growing especially with reference to 'orange' which is main fruit crop of these districts. Apart from fruit cultivation, these tracts are also famous for cotton, jowar, paddy (low land or transplanted upland or drilled) wheat, oil seeds, etc.

The crop rotations generally practiced in these tracts are as follows

- i. Cotton – Jowar – 2 years rotation
- ii. Cotton – Jowar – Mung – Groundnut – 3 years rotation
- iii. Cotton – Tur – Jowar – Mung – Wheat – 3 years rotation
(Growing Cotton – Tur – Jowar together.)

The details of cropping pattern of these two districts is presented in Table 4.4.

Table 4.4 Cropping pattern of Nagpur and Amravati districts

Sr. No.	Crop	(Area '00' ha)	
		Nagpur	Amravati
1.	Paddy	399.54 (6.00)	109.87 (1.20)
2.	Jowar (Kharif)	752.86 (11.31)	1318.46 (14.40)
3.	Jowar (Rabi)	213.08 (3.20)	-
4.	Wheat	665.9 (10.00)	164.80 (1.80)
5.	Other cereals	25.62 (0.08)	87.87 (0.96)
6.	Total cereals	2037.00 (30.59)	1681.00 (18.36)
7.	Gram	352.93 (5.30)	485.26 (5.30)
8.	Tur	499.42 (7.50)	897.28 (9.80)
9.	Other pulses	168.66 (2.53)	551.46 (6.02)
10.	Total pulses	1021.00 (15.33)	1934.00 (21.12)
11.	Cotton	632.61 (9.50)	3753.96 (41.00)
12.	Other fibre	0.39 (0.01)	3.04 (0.04)
13.	Total fibre	633.00 (9.51)	3757.00 (41.04)
14.	Edible oilseed	2017.00 (30.29)	1222.00 (13.35)
15.	Non-edible oilseed	221.00 (3.32)	5.00 (0.05)
16.	Total oilseed	2238.00 (33.61)	1227.00 (13.40)
17.	Orange	316.00 (4.75)	407.00 (4.44)
18.	Total fruits and vegetables	437.00 (6.56)	489.00 (5.35)
19.	Total cond. and spices	268.00 (4.02)	52.00 (0.57)
20.	Total sugarcane crop	20.00 (0.30)	14.00 (0.15)
21.	Total non-food crops	5.00 (0.08)	2.00 (0.02)
	Gross cropped area	6659.00 (100.00)	9156.00 (100.00)

(Figures in the parentheses indicate the percentages to the gross cropped area)

Source : Districtwise Socio-economic Report, 1998-99.

4.6 Production status

Orange occupies first place in the production of citrus fruit in India. Table 4.5 shows the details of orange production of major orange producing countries.

Table 4.5 Output of major orange producing countries in the world

(Million tonnes)

Country	1989-91*	1994	1995	1996	1997
World	50.90	53.90	58.26	61.14	64.84
Brazil	18.06	17.42	19.84	21.87	23.00
China	1.47	1.84	2.17	2.24	2.31
Egypt	1.53	1.51	1.56	1.61	1.37
France	1.31	1.58	1.57	1.60	-
India	1.94	2.00	2.08	2.08	2.08
Italy	1.89	1.81	1.60	1.77	2.08
Mexico	2.32	3.81	3.57	3.99	4.05
Philippines	1.12	1.35	1.37	1.40	1.41
Spain	2.65	2.70	2.70	2.15	2.60
U.S.A.	7.42	9.37	10.37	10.37	11.64

* Triennium average (Source : FAO).

It is seen from the Table 4.5 that the total orange production was 64.84 million tonnes of world in 1997. Out of this total production Brazil ranks first (i.e. 23.00 million tonnes) followed by United States of America (i.e. 11.64 million tonnes). India ranks sixth in the world with the 2.08 million tonnes orange production in the year 1997.

Table 4.6 shows the details of orange production in India during the period of 1991-92 to 1995-96.

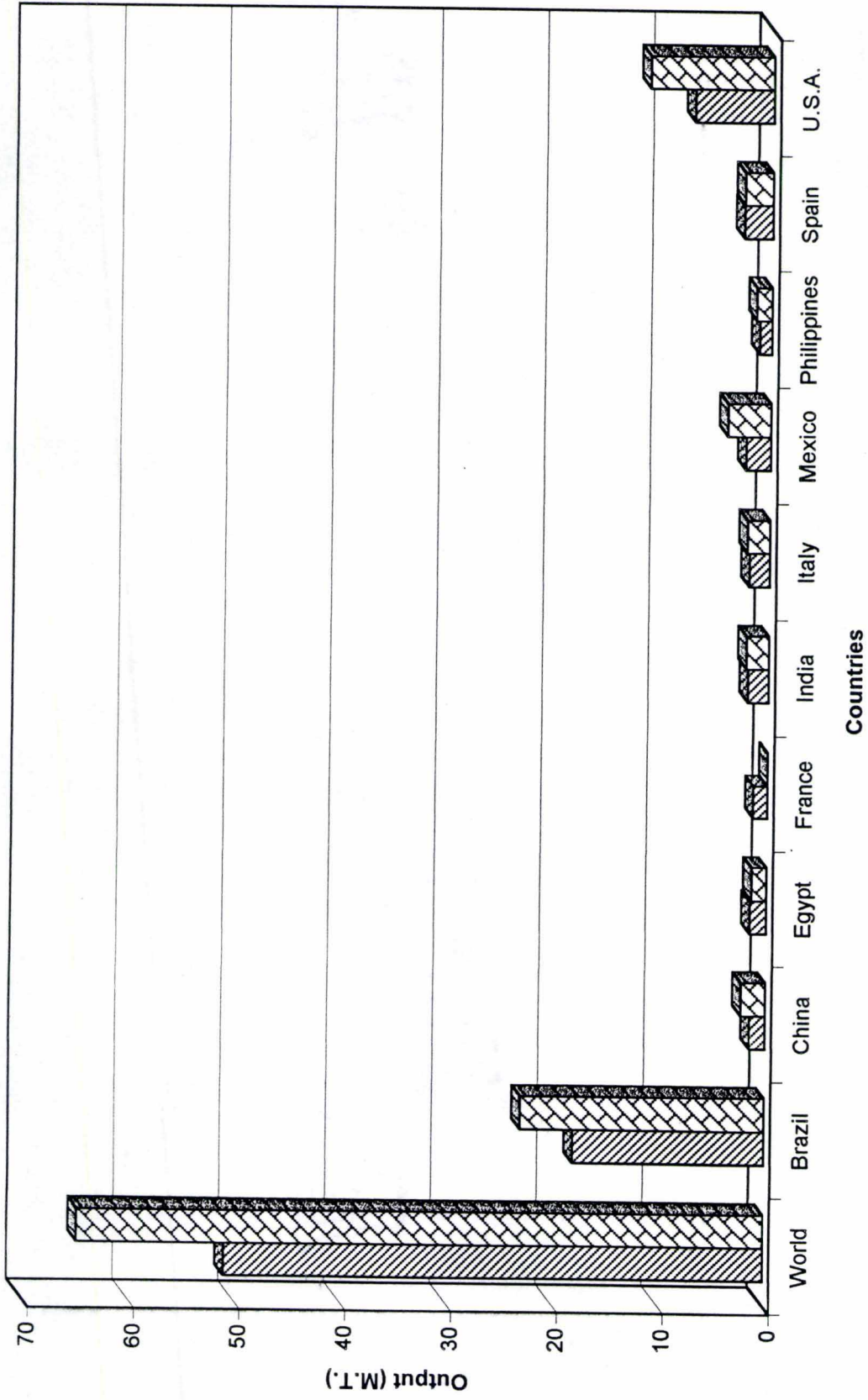


Fig. 1 Output of major orange producing countries in the world

Table 4.6 Area, output and yield of orange in India
(Area in Lakh hectares, Output in Lakh M.T., Yield in Kg/hectare)

Year	Area	Output	Yield
1991-92	1.20	8.23	6,875
1992-93	1.43	9.38	6,540
1993-94	1.19	10.58	8,880
1994-95	1.31	7.09	5,420
1995-96	1.34	11.62	8,680

Source : National Horticultural Board.

It is evident from Table 4.6 that the area under orange production was lowest in the year 1993-94, but the yield (i.e. 8880 Kg/ha) was highest in the same year.

Table 4.7 shows the area, production and productivity of orange in Maharashtra during the period of 1990-91 to 1997-98.

Table 4.7 Area, production and productivity of Maharashtra

Year	Area (ha)	Production ('00' tonnes)	Productivity (tonnes/ha)
1990-91	29941	2297.7	7.67
1991-92	34949	652.6	1.86
1992-93	34949	1770.2	5.06
1993-94	45266	3612.8	7.98
1994-95	45266	4547.6	10.04
1995-96	53843	7643.6	14.19
1996-97	87347	12172.9	13.93
1997-98	87347	13257.4	15.17

Source : Districtwise Agricultural Statistical Information of Maharashtra, Part-II (1998-99)

It is revealed from the Table 4.7 that the production and productivity was highest in the year 1997-98 i.e. production 1325740 tonnes and productivity 15.17 tonnes/ha while it was lowest in the year 1991-92 i.e. 65260 tonnes and 1.86 tonnes/ha respectively.

Table 4.8 shows the details of statewise area, output and yield of orange.

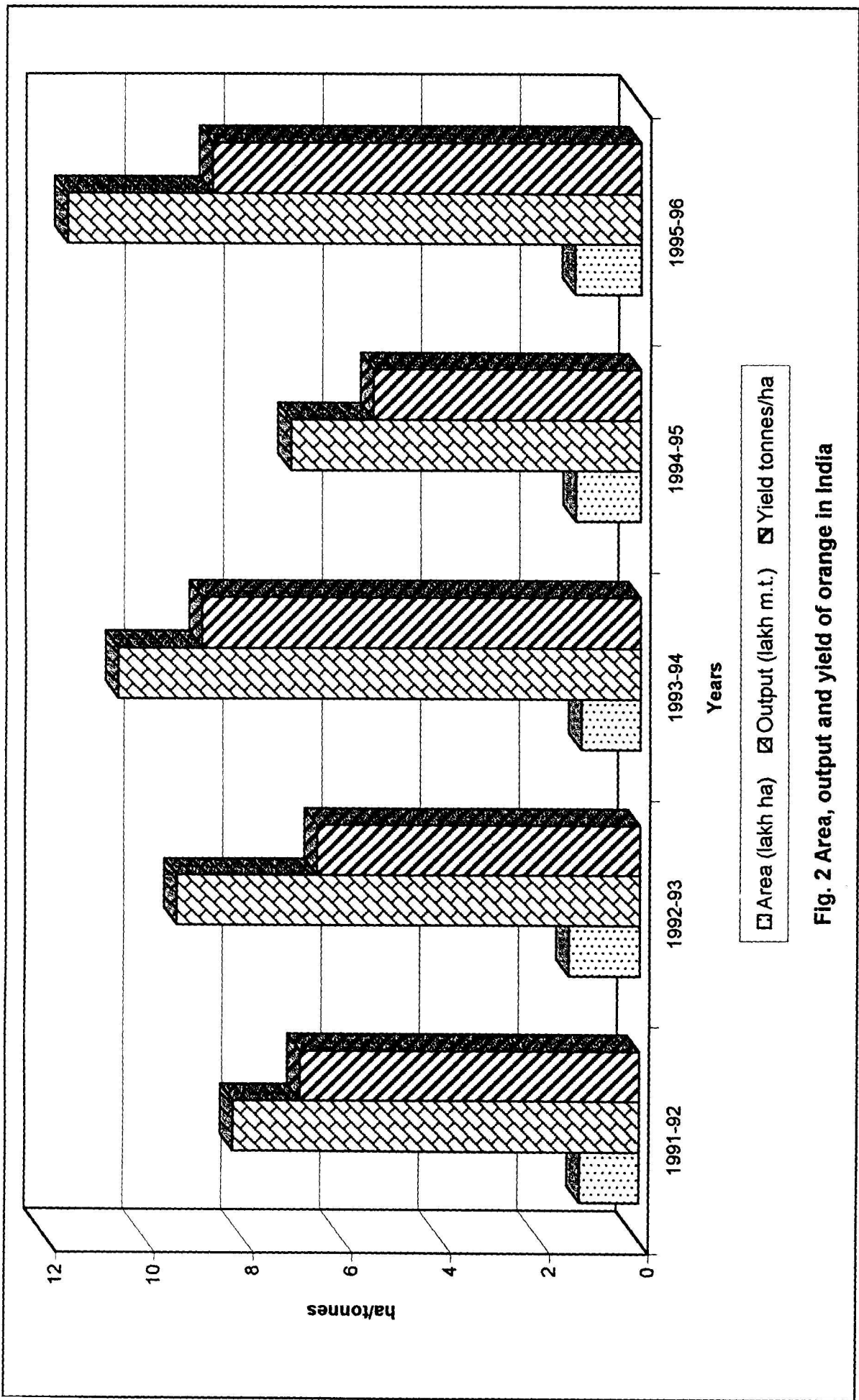


Fig. 2 Area, output and yield of orange in India

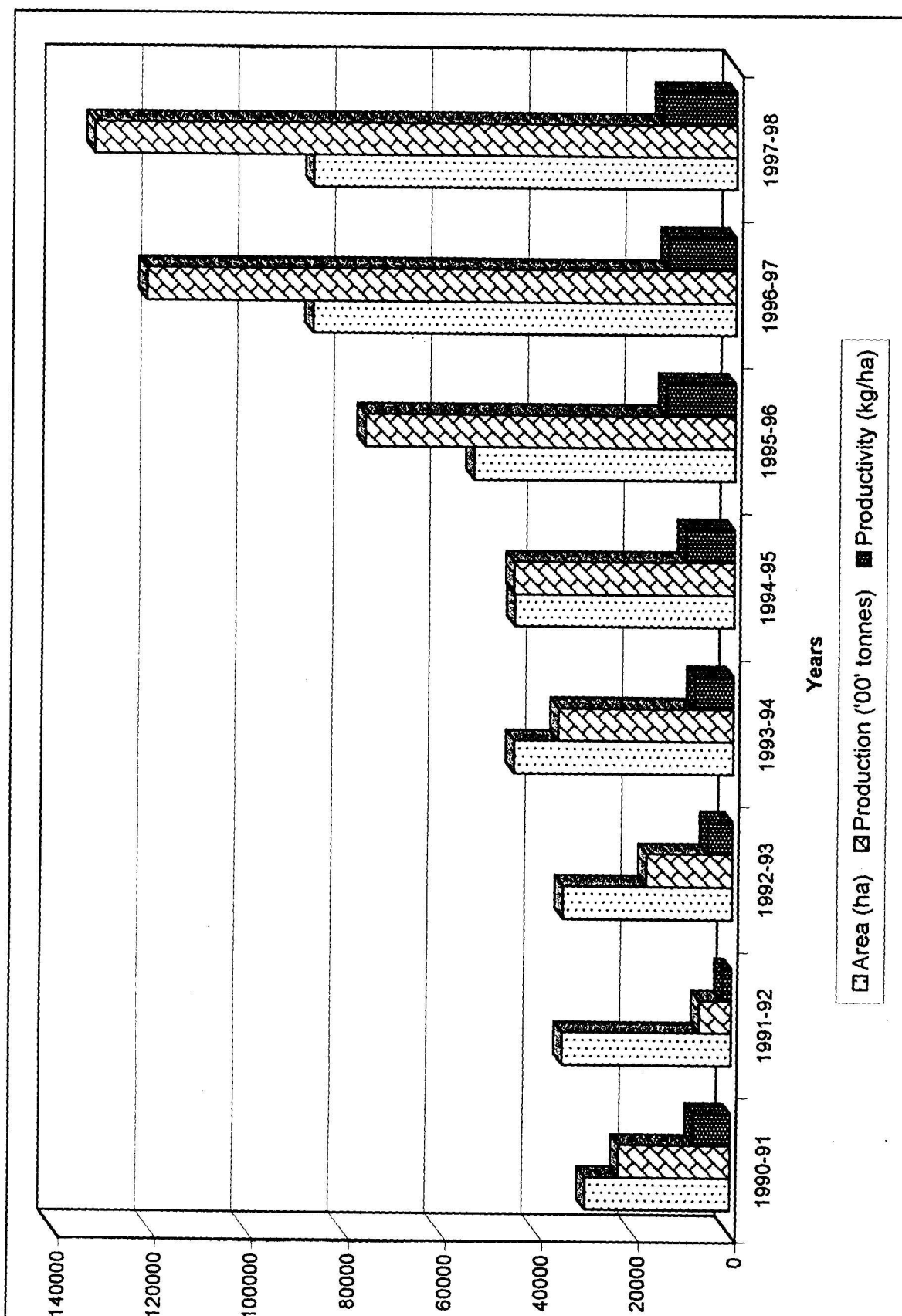


Fig. 3 Area, production and productivity of orange in Maharashtra

Table 4.8 Statewise area, output and yield of orange

(Area : Hectare, Output : M.T., Yield : M.T./ha)

State	1993-94			1994-95			1995-96		
	Area	Output	Yield	Area	Output	Yield	Area	Output	Yield
Arunachal Pradesh	5,210	8,265	1.59	5,210	8,268	1.59	6,457	12,545	1.94
Assam	5,758	57,567	10.00	5,830	58,221	9.99	5,883	69,787	11.86
Himachal Pradesh	13,311	2,250	0.17	13,341	2,250	0.17	13,683	3,725	0.27
Jammu and Kashmir	-	-	-	1,900	1,030	0.54	1,985	1,062	0.43
Karnataka	2,636	29,084	10.63	2,700	27,000	10.00	2,700	27,000	10.00
Madhya Pradesh	8,147	1,36,000	15.96	8,222	1,39,000	15.94	8,816	1,42,000	15.96
Maharashtra	62,172	6,58,725	10.60	63,390	2,72,299	4.30	67,254	7,12,879	10.60
Manipur	1,690	7,000	4.14	573	2,010	3.51	577	2,020	3.50
Mizoram	5,482	21,795	3.98	6,549	25,650	3.92	6,932	27,728	4.00
Rajasthan	2,123	10,715	5.00	2,299	32,273	14.04	2,247	38,390	17.09
Sikkim	-	-	-	6,500	8,500	1.31	6,500	8,500	1.31
Tamil Nadu	4,011	91,484	22.81	3,753	86,503	23.05	3,753	86,503	23.05
Tripura	7,668	39,000	5.09	7,668	39,000	5.09	4,723	23,100	4.98
Average	1,19,093	10,57,846	8.88	1,30,675	7,08,501	5.42	1,33,858	11,61,746	8.68

It is observed from the Table 4.8 that the area under orange, output and yield was highest in Maharashtra State as compared to other states in the year 1995-96. The lowest area under orange was in Manipur State i.e. 577 hectares, the lowest output was in Jammu and Kashmir i.e. 1062 M.T. and the lowest yield was in Himachal Pradesh 0.27 M.T./ha.

4.7 Research and development

The National Research Centre for Citrus, Nagpur has developed the technique of 'in vitro shoot-tip grafting' in Nagpur mandarins. This technique is expected to help in producing virus-free, true to type disease-free planting material. This technique has already been employed in Spain, Brazil and California to boost productivity and longevity of orchards.

Simultaneously efforts should be taken in the field of post harvest technologies in the context of glut in market, and corresponding lower prices to the produce. Hence research and development practices are welcome in the field of value addition and nutritious by products from oranges to get better prices in domestic as well as foreign markets.

In 1997, Enday Texofood Industries Ltd. launched 100 per cent natural orange juice in 250 ml and 1000 ml tetrapacks under its brand name 'Onjus'. The company is extracting and packing the juice in its state of the art plant at Bhilad in South Gujarat. The company has obtained ISO-9002 certificate for quality and its plant is approved by FDA also. Dabur India is also producing and marketing REAL orange nectar. Diluted orange juice as a fruit drink is also being marketed by Parle, Godrej foods and NDDDB under brand names of Frooti, Jumpin and Safal.

RESULTS AND DISCUSSION

5. RESULTS AND DISCUSSION

The importance of research has increased after independence and following rapid changes in the economy from the “very little capital investment and few marketing services” stage to the “monetized and surplus” one. Specialization in production has resulted in the concentration of agricultural products in the most favourable areas. On the consumer’s side, the pattern of demand has been changing with increases in incomes. Industrialization and urbanization have resulted in the concentration of population in places that are far from the areas of production, as a result of which food has to move over long distances. The movement of food over time and space has added a new dimension to agricultural marketing.

The need for research in agricultural marketing has been recognized by the planners and policy-makers. Research in this field can contribute to the establishment of facts and the evolution of the policy measures that may be necessary for developing a successful marketing strategy with regard to production, consumption, distribution and pricing.

Orange is a delicious fruit among all the fruits and is very much liked by the consumers of all the income groups and age. The increased consumption of orange induces its production. The producers get satisfied with the increased prices. However, many a times, the interest of both the consumers and producers get spoiled

because of the fraudulent marketing practices followed by the intermediaries involved in orange marketing. Moreover, the fruit marketing/trade in our country do not safeguard the interest of neither producers nor of ultimate consumers. All these results in payment of higher prices to fruits by the consumers and producers are deprived of their legitimate share in the consumers rupee. Keeping in mind the present state of marketing, it was felt necessary to go into the existing facts in the orange marketing and also to arrive at some solutions to these problems. This chapter deals with the presentation, interpretation and analysis of the data. The process of marketing of orange has been examined in detail to study various marketing aspects such as market structure and marketing practices, marketing costs, channelwise price spread, indices of arrival and prices, factor affecting net prices, price function and constraints in marketing of orange, etc.

5.1 Structure and organization of selected markets

The regulated markets are the primary institution in marketing of agricultural produce. In Nagpur and Amravati districts there are 13 regulated markets in each districts, out of 13 regulated markets Nerkhed (Nagpur district) and Morshi (Amravati district) are on forefront in business activities and developmental aspects. The Nerkhed and Morshi APMC have been ideally outlined on an area of 17 acres and 13 acres respectively. These markets made a steady progress. The establishment of Nerkhed market was in 1969 and of Morshi market in 1971. It has been dealing with very wide range of agricultural produce *viz.*, fruits, vegetables, cereals, pulses, etc. These

markets provide all the essential amenities to both farmers and traders. These amenities include spacious office building, banks, post office, canteens, drinking water supply, rest house for farmer and labourers, etc.

The structure (management body) consists of 22 members each selected from different constituencies of each of the market. The composition of the members is shown in Table 5.1.

Table 5.1 Structure of the selected markets

Sr. No.	Particulars	Nerkhed	Morshi
1.	Agriculturist	10	12
2.	Traders	3	2
3.	Local authorities	3	2
4.	Co-operative processing societies	2	2
5.	Representative of Hamal and Weighman	1	1
6.	Govt. Nominees	2	2
7.	Expert	1	1
Total		22	22

The market organization of selected markets during the year 1998-99 is shown in Table 5.2. It is revealed from the table that there was majority of Trader class I, Trader class II, General commission agents.

Table 5.2 Market organization of the selected markets

Sr. No.	Particulars	Nerkhed	Morshi
1.	General commission agent (unlimited transaction)	74	80
2.	Trader class I (transaction above Rs. 50,000)	150	155
3.	Trader cum processor class – I	5	7
4.	Trader Class – II (transaction upto Rs. 50,000)	154	174
5.	Trader cum processor – II (transaction upto Rs. 50,000)	1	1
6.	Trader Class – III (transaction below Rs. 50,000)	72	83
7.	Trader cum processor Class – III (transaction below Rs. 50,000)	1	1
8.	Trader Class – IV (transaction below Rs. 50,000)	-	1
9.	Office staff		
	a) D.D.R.	1	1
	b) Clerk	3	4
	c) Supervisor	2	2
	d) Weighman	17	25
	e) Assistant	134	155
	f) Hamal	155	165
	g) Warehouseman	1	1
	h) Watchman	1	1

5.2 Income and expenditure of selected markets

The income and expenditure of Nerkhed and Morshi APMC for the year 1998-99 is presented in Table 5.3.

Table 5.3 Income and expenditure of the selected markets during the year 1998-99

(Rs. in lakh)

Particulars	Nerkhed	Morshi
Income	45.96	56.52
Expenditure	39.74	49.14
Net profit	6.22	7.38

From the Table 5.3 it is observed that the total income of the Nerkhed APMC was Rs. 45.96 lakh, while the total expenditure was Rs. 39.74 lakh indicating thereby a net profit of Rs. 6.22 lakh during the year 1998-99. While the total income of Morshi APMC was Rs. 56.52 lakh, while the total expenditure was Rs. 49.14 lakh, indicating thereby a net profit of Rs. 7.38 lakh during the year 1998-99.

5.3 Marketing functions performed by the sample orange growers

In modern marketing, the agricultural produce has to undergo a series of operations before it finally reaches to the consumer. The returns depends largely on the way in which these operations are performed. It is very strongly applicable to the agricultural produce like fruits and vegetables and if the fruit is of orange type, a perishable one, utmost care is required to be taken while making it ready for marketing.

In the present study following operations are studied those are performed by the sample orange growers.

5.3.1 Harvesting

Orange generally do not improve either in taste or in colour after they are harvested. In the present study it is observed that almost all the sample orange growers started harvesting of their gardens when fruit mature i.e. 210 to 240 days from fruit setting depending upon the bahar. Orange picking is done by the labour by putting fruit in a gunny bags kept on the shoulders. These fruits are then kept in shade and care is taken to avoid any bruises to the fruit while emptying the fruit from the bag. The harvesting time of the sample orange growers is shown in Table 5.4.

Table 5.4 Number of the sample orange growers harvesting orange in different months

Month	Nagpur (Nerkhed)	Amravati (Morshi)	Overall
October	1 (1.67)	-	1 (0.83)
November	3 (5.00)	2 (3.33)	5 (4.17)
December	5 (8.33)	2 (3.33)	7 (5.83)
January	8 (13.33)	7 (11.67)	15 (12.50)
February	21 (35.00)	22 (36.67)	43 (35.83)
March	19 (31.67)	19 (31.67)	38 (31.67)
April	3 (5.00)	8 (13.33)	11 (9.17)
Total sample of orange growers	60 (100.00)	60 (100.00)	120 (100.00)

(Figures in the parentheses indicate the percentage to the total).

It can be seen from the Table 5.4 that the orange growing goes down in mrig and ambia bahar. The mrig bahar fruits harvested during the month of January to April and ambia bahar fruits harvested during the month of October to December. The sample orange growers from the district of Nagpur started harvesting their gardens in the month of October. While that of Amravati districts sample orange growers started harvesting in the month of November. The highest percentage of harvesting of orange gardens observed in the month of February in both the districts i.e. Nagpur (35.00 per cent) and Amravati (36.67 per cent).

At the overall level 35.83 per cent sample orange growers harvested their gardens in the month of February followed by 31.67 per cent in the month of March.

5.3.2 Grading

This function determines the quality of fruits. The grading carried out on the basis of size, shape, colour and weight. Several studies conducted in the past have revealed that grading at producers level has significant effect on realising better remunerative prices for their produce in the market.

In the present study, it was found that all the sample orange growers graded the produce into three grades viz., grade I, grade II and grade III. Grade I produce consists of the orange size 3 inches and above having no wrinkles and should not be green, while grade II produce consists the size 2.50 inches to 3 inches, having free from cuts, infestation of insect and diseases and grade III produce consists of the orange size less than 2.50 inches. The grade I and grade II produce was sent to the distant market. After deciding the Ist and IInd grade, the remaining produce is considered as the grade III produce. This grade IIIrd produce is mostly sold in the local markets.

Table 5.5 shows the details regarding adoption of grading.

Table 5.5 Size groupwise number of orange growers adopting grading

Particulars	Small N = 67 (100.00)	Medium N = 36 (100.00)	Large N = 17 (100.00)	Total N = 120 (100.00)
Grading followed	39 (58.21)	20 (55.55)	9 (52.94)	68 (56.67)
Grading not followed	28 (41.79)	16 (44.45)	8 (47.06)	52 (43.33)

(Figures in the parentheses indicate the percentages to the total).

It can be seen from Table 5.5 that at the overall level 56.67 per cent of the total sample orange growers carried out grading. Most of the farmers have sold non-graded produce to the pre-harvest contractor. In small size group of holding majority (58.21 per cent) farmers followed grading. It was more than medium and large size group of holding.

5.3.3 Packaging

Packaging is another important function in case of perishables such as fruits and vegetables. An ideal package reduce losses in transport and decaying in storage, maintains the quality of produce and ultimately leads to better prices. Packaging material is selected on the basis of market preference, durability, cost, suitability for handling, ability to maintain keeping quality, distance of market, mode of transport, etc. Generally wooden boxes are used for packing of orange fruits. Paddy straw and old newspapers are used as cushioning material. The size of each wooden box is 45 x 32 x 32 cm (18" x 13" x 13") and some space is left in between the panels for aeration. The details of sample orange growers who have used wooden boxes are presented in Table 5.6.

Table 5.6 Size groupwise number of orange growers adopting packaging

Particulars	Small N = 67 (100.00)	Medium N = 36 (100.00)	Large N = 17 (100.00)	Total N = 120 (100.00)
Adopting packaging	12 (17.91)	6 (16.67)	2 (11.76)	20 (16.67)
Packaging not followed	55 (82.09)	30 (83.33)	15 (88.24)	100 (83.33)

(Figures in the parentheses indicate the percentages to the total).

Generally wooden boxes used when produce sold in distant market. From the Table 5.6 it is observed that at the overall level 16.67 per cent of the total sample orange growers carried out packaging while 83.33 per cent growers sold in loose consignment. In small, medium and large size groups of holding percentage of adopting packaging was very low i.e. 17.91, 16.67 and 11.76 per cent respectively.

5.3.4 Transportation

Quick and efficient transportation of farm produce to the desired place has direct bearing on the operational efficiency in the marketing. Transportation is essential for creation of place utility which helps in timely supply of a particular commodity to both nearby and distant markets. Transport efficiency depends upon the timely availability of vehicles, condition of roads, etc. The mode of transport varies with the nature of commodity and the distance to be covered. To sell the orange fruits in distant markets the produce was transported by truck or tempo and in local market transported by tractor and cartloads. The information relating to transportation means used by sample orange growers is presented in Table 5.7.

Table 5.7 Transport means used by the sample orange growers

Particulars	Small N = 67 (100.00)	Medium N = 36 (100.00)	Large N = 17 (100.00)	Total N = 120 (100.00)
Truck	12 (17.91)	6 (16.66)	2 (11.76)	20 (16.67)
Tempo	9 (13.43)	5 (13.89)	2 (11.76)	16 (13.33)
Tractor	38 (56.72)	19 (52.78)	11 (64.72)	68 (56.67)
Cartload	8 (11.94)	6 (16.67)	2 (11.76)	16 (13.33)

(Figures in the parentheses indicate the percentages to the total).

It is observed from the Table 5.7 that at the overall level majority of the growers i.e. 56.67 per cent respondents transported their produce by tractor followed by truck i.e. 16.67 per cent. In small, medium and large size group of holding the highest percentage of transportation was shared by tractor because of most of the farmers have their own tractor.

5.4 Land use pattern of the sample orange growers

The average holding size and other details about the land use pattern of the selected sample orange growers are given in Table 5.8.

Table 5.8 Land use pattern of the sample orange growers

(Area in ha)

Sr. No.	Particulars	Small	Medium	Large	Overall
1.	Average size of holding	0.40 (100.00)	0.78 (100.00)	1.90 (100.00)	1.02 (100.00)
2.	Permanent fallow	0.01 (2.50)	0.04 (5.13)	0.17 (8.95)	0.07 (6.86)
3.	Cultivable land	0.39 (97.50)	0.74 (94.87)	1.73 (91.05)	0.95 (93.14)
	a) Irrigated	0.32 (80.00)	0.66 (84.61)	1.48 (77.89)	0.82 (80.39)
	b) Unirrigated	0.07 (17.50)	0.08 (10.26)	0.25 (13.16)	0.13 (12.75)
4.	Area under oranges	0.32 (80.00)	0.65 (83.33)	1.43 (75.26)	0.80 (78.43)
5.	Gross cropped area	0.46	0.83	2.03	1.10
6.	Cropping intensity (%)	120.00	112.16	117.34	116.84

(Figures in the parentheses indicate the percentages to the average size of holdings).

It is revealed from the table that the average overall holding size of the sample growers was 1.02 ha. The average holding size of the small, medium and large holding size groups was 0.40 ha, 0.78 ha and 1.90 ha respectively.

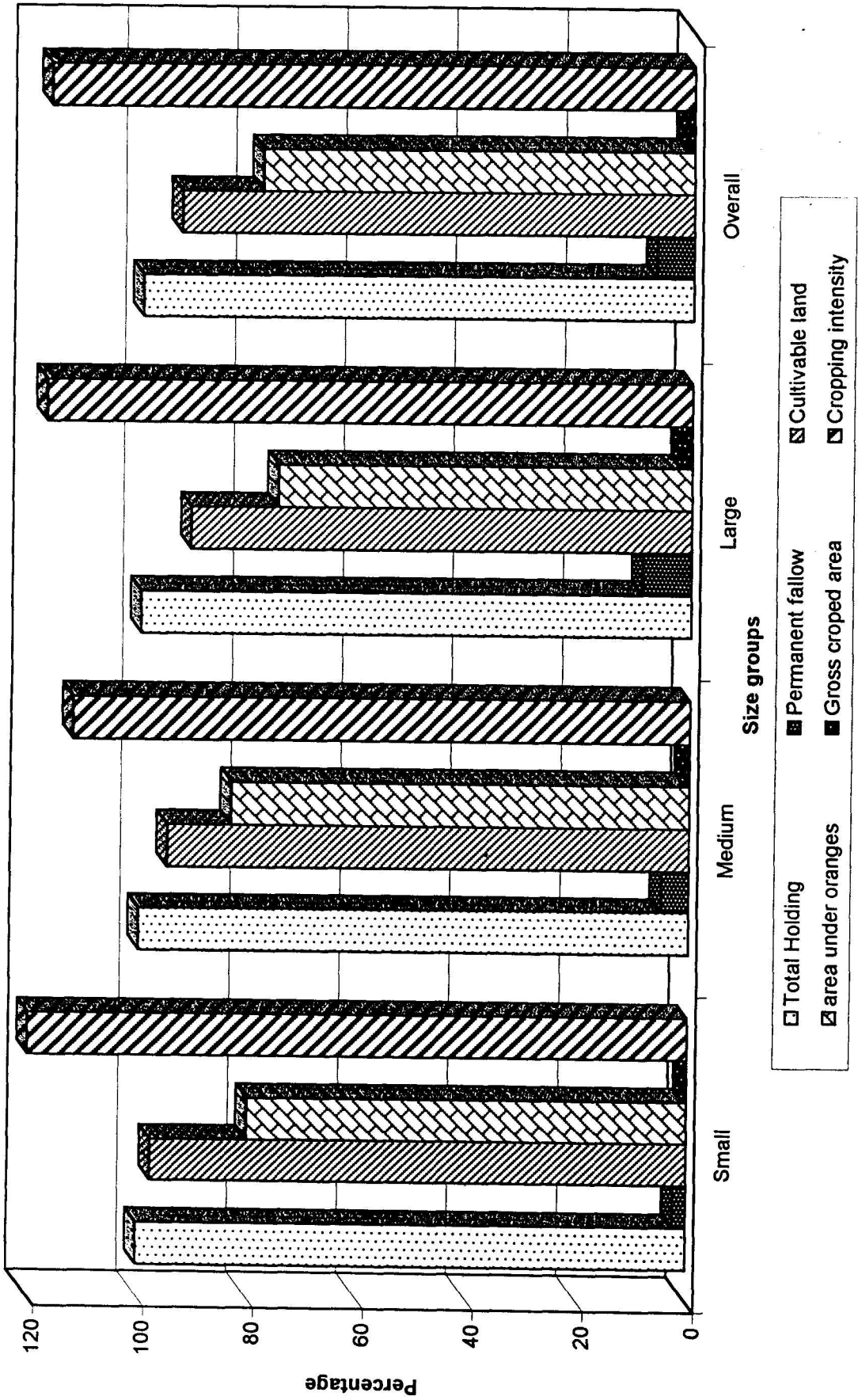


Fig. 4 Land use pattern of the sample orange growers

The overall cropping intensity was found to be 116.84 per cent. The highest (i.e. 120 per cent) cropping intensity was observed in case of small size group holding. The lowest (i.e. 112.16 per cent) cropping intensity was observed in case of medium size group of holding. The overall average gross cropped area for all the sample growers was 1.10 ha. The average gross cropped area for small, medium and large holding size groups was found to be 0.46 ha, 0.83 ha and 2.03 ha respectively.

Out of the total land holding the largest percentage (i.e. 83.33 per cent) of land under orange was observed in case of medium size group of holding. It was lowest (i.e. 75.26 per cent) in case of large size group of holding.

On an average 93.14 per cent of the land with all the sample growers was in cultivable state. The highest percentage of the cultivable land (i.e. 97.50 per cent) was found in case of small size group of holding. It was lowest (i.e. 91.05 per cent) in case of the large size group of holding.

5.5 Cropping pattern of the sample orange growers

Cropping pattern is another vital factor influencing the level of expenses on farm and the returns from farm business. It is also an indicator of the economic condition of the selected farm families. The information on area under different crops during the reference year (1998-99) of the sample cultivators is presented in Table 5.9.

Table 5.9 Cropping pattern of the sample orange growers

Sr. No.	Particulars	Small	Medium	Large	Overall
1.	Cereals	0.10 (21.73)	0.12 (14.45)	0.35 (17.24)	0.19 (17.27)
	a) Kharif Jowar	0.06 (13.04)	0.07 (8.43)	0.20 (9.85)	0.11 (10.00)
	b) Wheat	0.04 (8.69)	0.05 (6.02)	.015 (7.39)	0.08 (7.27)
2.	Pulses	0.03 (6.53)	0.02 (2.41)	0.05 (2.46)	0.03 (2.72)
3.	Oilseeds	-	-	0.02 (0.99)	0.01 (0.91)
4.	Vegetables	-	0.01 (1.21)	0.05 (2.46)	0.02 (1.83)
5.	Orange	0.32 (69.57)	0.65 (78.31)	1.43 (70.44)	0.80 (72.72)
6.	Cotton	0.01 (2.17)	0.02 (2.41)	0.10 (4.93)	0.04 (3.64)
7.	Misc. Crops	-	0.01 (1.21)	0.03 (1.48)	0.01 (0.91)
8.	Gross cropped area	0.46 (100.00)	0.83 (100.00)	2.03 (100.00)	1.10 (100.00)

(Figures in the parentheses indicate the percentages to the gross cropped area).

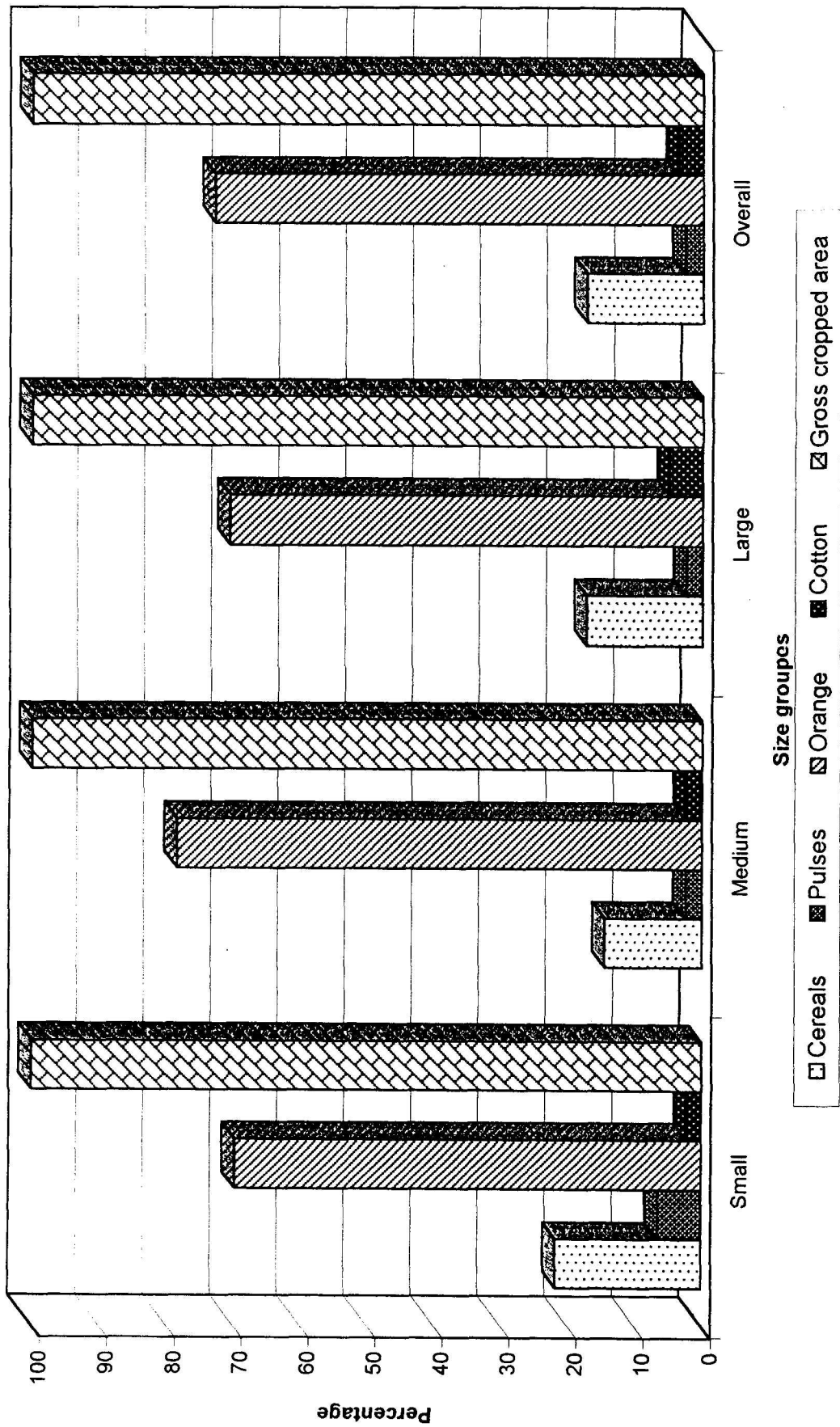


Fig-5 Cropping pattern of the sample orange growers

Table 5.11 Gradewise orange production of the sample growers

(Area in hectares and Production in quintals)

Sr. No.	Particulars	Size groups of holding based on area under oranges			
		Small	Medium	Large	Overall
1.	Number of sample orange growers	67	36	17	120
2.	Total area under orange	21.65	23.50	24.27	23.14
3.	Total production	4000.27	4258.90	4385.36	4214.84
	a) Per farm	59.70	118.30	257.96	145.32
	b) Per hectare	184.77 (100.00)	181.23 (100.00)	180.69 (100.00)	182.23 (100.00)
4.	Grade I				
	a) Total production	1130.60	1277.67	1256.41	1221.56
	b) Per farm	16.87	35.49	73.91	42.09
	c) Per hectare	61.34 (33.20)	54.37 (30.00)	51.77 (28.65)	55.83 (30.64)
5.	Grade II				
	a) Total production	2050.40	2140.10	2240.92	2143.81
	b) Per farm	30.60	59.45	131.82	73.96
	c) Per hectare	91.09 (49.30)	91.08 (50.26)	92.33 (51.10)	91.50 (50.21)
6.	Grade III				
	a) Total production	819.27	841.13	888.03	849.48
	b) Per farm	12.23	23.34	52.24	29.27
	c) Per hectare	32.34 (17.50)	35.78 (19.74)	36.59 (20.25)	34.90 (19.15)

(Figures in the parentheses indicate the percentages to the total per hectare production)

It can be seen from the Table 5.11 that at the overall level, the average per farm and per hectare orange yield was 145.32 and 182.23 quintals, respectively. The per hectare yield was 184.77, 181.23 and 180.69 quintals in small, medium and large size groups, respectively. The per hectares graded quantity of orange by the selected sample growers in three grades contributed as Grade I (30.64 per cent) Grade II (50.21 per cent) Grade III (19.15 per cent). More than half of the total produce was Grade II quality.

In the yield per hectare the highest percentage at the overall level was found to be of Grade II orange. The lowest percentage (i.e. 49.30 per cent) of Grade II orange was found to be in small size group of holding.

The highest percentage of Grade I orange (i.e. 33.20 per cent) was found to be in small size group of holding. Whereas the lowest percentage of the Grade I orange (i.e. 28.65 per cent) was in the large size group of holding.

The highest percentage of Grade II orange (i.e. 20.25 per cent) was found to be in large size group of holding. Whereas the lowest percentage of Grade III orange (i.e. 17.50 per cent) was found to be small size group of holding.

5.8 Production and marketed quantity of orange

The details of average production and disposal pattern of orange presented in Table 5.12.

Table 5.12 Size groupwise disposal pattern of orange

(Quantity in quintals)

Sr. No.	Particulars	Size group of holdings			
		Small	Medium	Large	Overall
1.	Total quantity produced	4000.27 (100.00)	4258.90 (100.00)	4385.36 (100.00)	4214.84 (100.00)
2.	Used for home consumption	23.30 (0.18)	22.70 (0.53)	22.64 (0.52)	22.88 (0.54)
3.	Given on gratis	10.67 (0.27)	12.94 (0.30)	23.54 (0.54)	15.72 (0.37)
4.	Pest and diseases affected fruits	22.92 (0.57)	34.67 (0.82)	37.90 (1.16)	31.83 (0.76)
5.	Marketed surplus	3943.35 (98.58)	4188.59 (98.35)	4301.28 (98.08)	4144.41 (98.33)

(Figures in the parentheses are the percentages to the total quantity produced)

Table 5.12 shows that the overall average of total quantity produced by all the respondents was 4214.84 quintals. The average total quantity produced by small, medium and large farmers was found to be 4000.27 quintals, 4258.90 and 4385.36 quintals, respectively.

Of the total quantity produced 98.33 per cent produce was found to be marketed surplus. The average percentage of the marketed surplus for small, medium and large farmers was 98.58 per cent, 98.35 per cent and 98.08 per cent respectively.

The overall average of the quantity used for home consumption was found to be 0.54 per cent. The average quantity used for home consumption in case of small, medium and large size groups of holding was found to be 0.18 per cent, 0.53 per cent and 0.51 per cent, respectively.

At the overall level, the average quantity given on gratis was 0.37 per cent. The average quantity given on gratis for small, medium and large size groups of holding was 0.27 per cent, 0.30 per cent and 0.54 per cent respectively.

The highest quantity (i.e. 1.16 per cent) of pest and diseases affected fruits was found in large size groups of holding, while the lowest quantity (i.e. 0.57 per cent) of pest and disease affected fruits was found in small size holding groups.

5.9 Marketwise distribution of marketed surplus

The information on quantities sold in different market places is presented in Table 5.13.

It can be seen from the Table 5.13 that the small size group of orange growers sold 39.98 per cent (Nagpur 15.99 per cent + Amravati 23.99 per cent) quantity of their produce in local market and rest of the quantity 60.02 per cent (Mumbai 24.00 per cent + Delhi 36.02 per cent) sold in distant market. The average price received by the orange growers in the small size groups of holding was Rs. 574.01 and Rs. 567.17 for Nagpur and Amravati markets, respectively. In case of Mumbai and Delhi markets the price received was Rs. 1624.94 and Rs. 1942.34 by small size group of holding.

Table 5.13 Disposal pattern of orange in different market

(Quantity in quintals and price in Rs.)

Size group of holding	Total marketed quantity	Local market						Distant market					
		Nagpur			Amravati			Mumbai			Delhi		
		Quantity	Price	Quantity	Price	Quantity	Price	Quantity	Price	Quantity	Price	Quantity	Price
Small	3943.35 (100.00)	630.62 (15.99)	574.01	945.93 (23.99)	567.17	946.72 (24.00)	1624.94	1005.36 (24.01)	1618.17	1507.89 (36.00)	1420.08 (36.02)	1942.34	
Medium	4188.59 (100.00)	575.65 (13.74)	552.05	1099.69 (26.25)	543.27	1005.36 (24.01)	1618.17	1507.89 (36.00)	1618.17	1507.89 (36.00)	1420.08 (36.02)	1942.34	
Large	4301.28 (100.00)	586.55 (13.64)	515.03	1133.63 (26.36)	510.79	949.65 (22.08)	1600.21	1631.45 (37.92)	1600.21	1631.45 (37.92)	1631.45 (37.92)	1917.45	
Total	12433.22 (100.00)	1792.82 (14.42)		3179.25 (25.57)		2901.73 (23.34)		4559.42 (36.67)		4559.42 (36.67)			

(Figures in the parentheses are the percentages to the total)

In the medium size group, quantity sold was 39.99 per cent (Nagpur 13.14 per cent + Amravati 26.25 per cent) in local markets and rest of the quantity 60.01 per cent (Mumbai 24.01 per cent + Delhi 36.00 per cent) sold in distant market. The average price received by medium size group was Rs. 552.05 and Rs. 543.27 for Nagpur and Amravati markets, respectively. In case of Mumbai and Delhi, price received by medium size group was Rs. 1618.17 and Rs. 1922.77, respectively.

In the large size group, quantity sold was 40.00 per cent (Nagpur 13.64 per cent + Amravati 26.36 per cent) in local market and rest of quantity 60.00 per cent (Mumbai 22.08 per cent + Delhi 37.92 per cent) sold in distant markets. The average price received by the large size group was Rs. 515.03 and Rs. 510.79 for Nagpur and Amravati market, respectively. In case of Mumbai and Delhi markets price received by the large size group was Rs. 1600.21 and Rs. 1917.45, respectively.

At the overall level 60.01 per cent quantity was sold in distant markets and 39.99 per cent quantity sold in local markets.

5.10 Gradewise sale and price received

The orange growers carried out grading according to colour, size, weight, attractiveness and maturity of fruits. The orange growers graded their fruits into three grades.

5.10.1 Gradewise sale and price received in local markets

The information regarding gradewise quantity of orange sold at different markets places is presented in Table 5.14. For the convenience both the local markets *viz.*, Nagpur and Amravati were clubbed together.

Table 5.14 Gradwise quantity sold and price received in local markets

(Quantity in quintals and price in Rs.)

Size Grade	Size group of holdings							
	Small		Medium		Large		Overall	
	Quantity	Price	Quantity	Price	Quantity	Price	Quantity	Price
I	476.55 (30.22)	608.17	575.24 (34.34)	566.28	505.49 (29.39)	561.49	519.06	578.64
II	886.44 (56.23)	559.43	893.26 (53.31)	549.57	955.63 (55.55)	546.41	911.78	551.80
III	213.56 (13.55)	544.17	206.84 (12.35)	527.13	259.06 (15.06)	523.13	226.45	531.47
Total	1576.55 (100.00)		1675.34 (100.00)		1720.18 (100.00)			

(Figures in the parentheses indicate the percentages to the total).

From the table 5.14 it is observed that in the local market the total quantity sold by the small sized orange growers was 1576.55 quintals and the percentage of Grade I was 30.22 per cent, Grade II 56.23 per cent and Grade III 13.55 per cent and the prices received were Rs. 608.17, Rs. 559.43 and Rs. 544.17, respectively.

In the medium size group of holding the total quantity sold was 1675.34 quintals and the percentage of Grade I was 34.34 per cent Grade II 53.31 per cent and Grade III 12.35 per cent and the prices received were Rs. 566.28, Rs. 549.57 and Rs. 527.13, respectively.

In the large size group of holding, the total quantity sold was 1720.18 quintals and the percentage of Grade I was 29.39 per cent, Grade II 55.55 per cent and Grade III 15.06 per cent and the prices received were Rs. 561.49, Rs. 546.41 and Rs. 523.13, respectively.

At the overall level the total quantity sold of Grade I, Grade II and Grade III was 519.06, 911.78 and 226.45 quintals respectively and prices received were Rs. 578.64, Rs. 551.80 and Rs. 531.47, respectively.

The information regarding the gradewise and size groupwise quantity sold in local markets showed that the medium size group sold the highest 34.33 per cent quantity of Grade I while it was the highest i.e. 56.23 per cent in the small size group of Grade II and 15.06 per cent in the large size group of Grade III.

5.10.2 Gradewise sale and price received in distant market

Table 5.15 presented the gradewise sale and price received in the distant markets. The information pertained to the Grade I and II as only these two grades fruits were sold in those markets.

From the Table 5.15 it is observed that in the Mumbai market, in case of the small size group of holding, the total quantity sold was 946.72 quintals and the percentage share of Grade I was 67.05 per cent and Grade II was 32.95 per cent while the price received was Rs. 1639.91 and Rs. 1609.97, respectively.

Table 5.15 Gradewise quantity sold in the distant markets

(Quantity in quintals and price in Rs.)

Size Grade	Market name	Size group of holdings								
		Small		Medium		Large		Overall		Price
		Quantity	Price	Quantity	Price	Quantity	Price	Quantity	Price	
I	Mumbai	634.75 (67.05)	1639.91	693.29 (68.95)	1631.05	704.14 (74.14)	1617.02	677.37	1629.32	
	Delhi	997.37 (70.23)	1984.59	1048.13 (69.50)	1973.69	1094.74 (67.10)	1964.28	1046.74	1974.18	
II	Mumbai	311.97 (32.95)	1609.97	312.07 (31.05)	1605.29	245.51 (25.86)	1583.40	289.85	1599.55	
	Delhi	422.71 (29.77)	1900.09	459.76 (30.50)	1871.85	536.71 (32.90)	1870.62	437.06	1880.85	
Total	Mumbai market	946.72 (100.00)		1005.36 (100.00)		949.65 (100.00)				
	Delhi market	1420.08 (100.00)		1507.89 (100.00)		1631.45 (100.00)				

(Figures in the parentheses are the percentages to the respective totals)

In the medium size group of holding the total quantity sold in Mumbai market was 1005.36 quintals and the percentage share of Grade I was 68.95 per cent and Grade II was 31.05 per cent while price received were Rs. 1631.05 and Rs. 1605.29, respectively.

In the large size group of holding total quantity sold in Mumbai market was 949.65 quintals, the percentage of Grade I was 74.14 per cent and Grade II 25.86 per cent and price received was Rs. 1617.02 and Rs. 1583.40, respectively.

In the Delhi market the small size group of holding, total quantity sold was 1420.08 quintals, the percentage of Grade I was 70.23 per cent and Grade II 29.77 per cent and price received was Rs. 1984.59 and Rs. 1900.09, respectively.

In the medium size group of holding total quantity sold in Delhi market was 1507.89 quintals, the percentage of Grade I was 69.50 per cent, Grade II 30.50 per cent and price received was Rs. 1973.69 and Rs. 1871.85 respectively.

In the large size group of holding total quantity sold in Delhi market was 1631.45 quintals, the percentage of Grade I was 67.10 per cent and Grade II 32.90 per cent and price received was Rs. 1964.28 and Rs. 1870.62 respectively.

At the overall level the total quantity of Grade I sold in Mumbai and Delhi markets was 677.37 and 1046.74 quintals, respectively and prices received were Rs. 1629.32 and Rs. 1974.18, respectively. In case of Grade II, the total quantity sold in Mumbai and Delhi markets was 289.85 and 437.06 quintals, respectively while the prices received were Rs. 1599.55 and Rs. 1880.85, respectively.

From the above discussion the third hypothesis under consideration, regarding the graded orange ensures the higher net prices to the producers was proved and accepted.

5.11 Marketing cost

The marketing cost constitutes the expenses on picking, grading, packaging, transportation, weighing, market fees, commission charges, postage and other charges. The itemwise information on per quintal marketing cost of orange is presented in Tables 5.16 and 5.17.

5.11.1 Marketing cost in local markets

It is apparent from the Table 5.16 that at local market (Amravati and Nagpur together) the average per quintal cost of marketing worked out to Rs. 102.60. The major items of the cost of marketing were transportation i.e. 35.22 per cent followed by commission charges i.e. 24.17 per cent and labour charges i.e. 22.29 per cent.

Table 5.16 Marketing cost of orange in local markets

Sr. No.	Item of cost	Per quintal (Rs.)
1.	Labour charges	
a.	Harvesting, assembling and loading	18.87 (18.39)
b.	Unloading	1.47 (1.43)
c.	Heap making and grading	2.53 (2.47)
2.	Transportation (orchard to local market)	36.13 (35.22)
3.	Packing and handling	8.27 (8.05)
4.	Market fee	4.60 (4.48)
5.	Commission charges	24.80 (24.17)
6.	Miscellaneous charges	5.93 (5.79)
	Total marketing cost	102.60 (100.00)

(Figures in the parentheses are the percentages to the total)

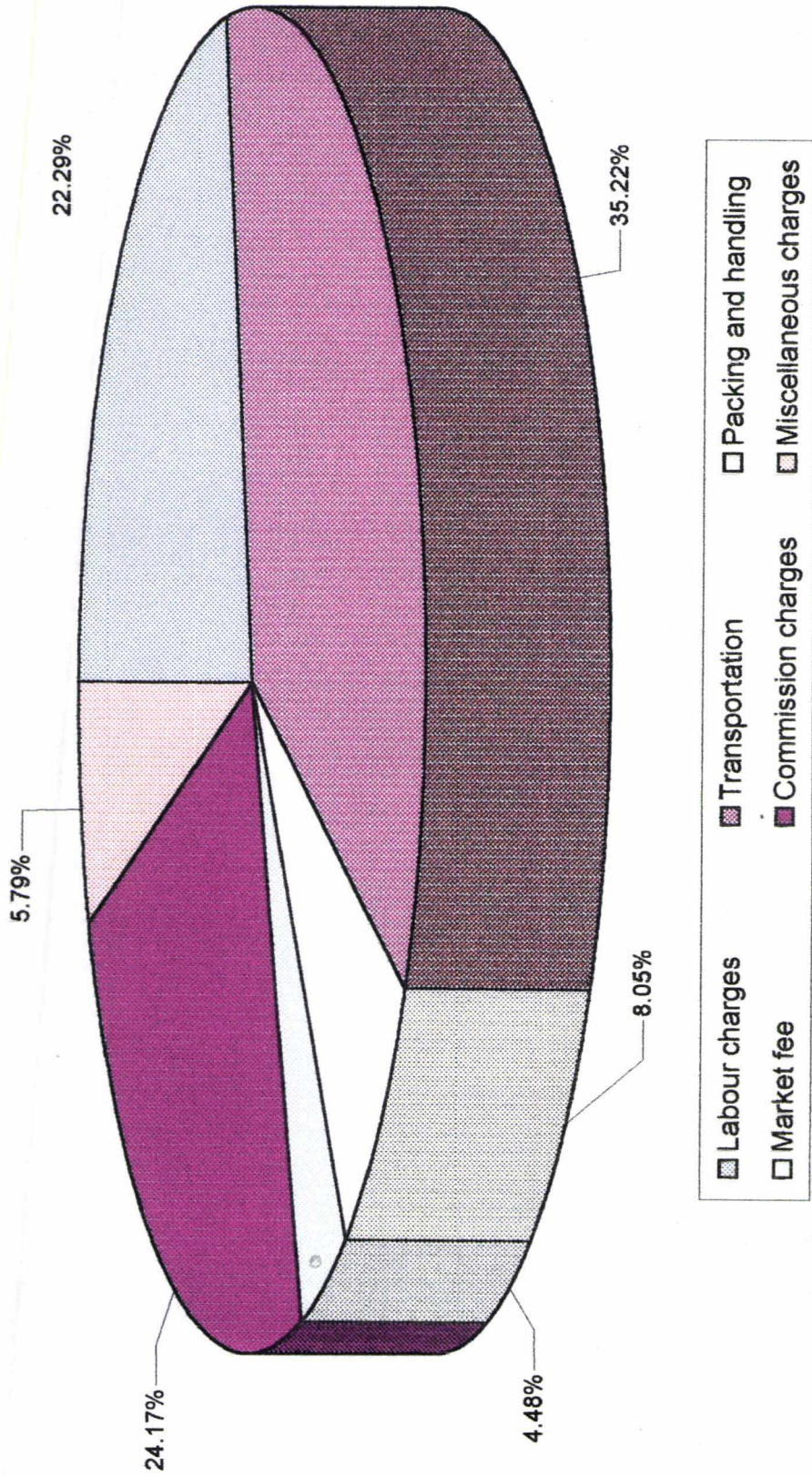


Fig. 7 Marketing cost of orange in local markets

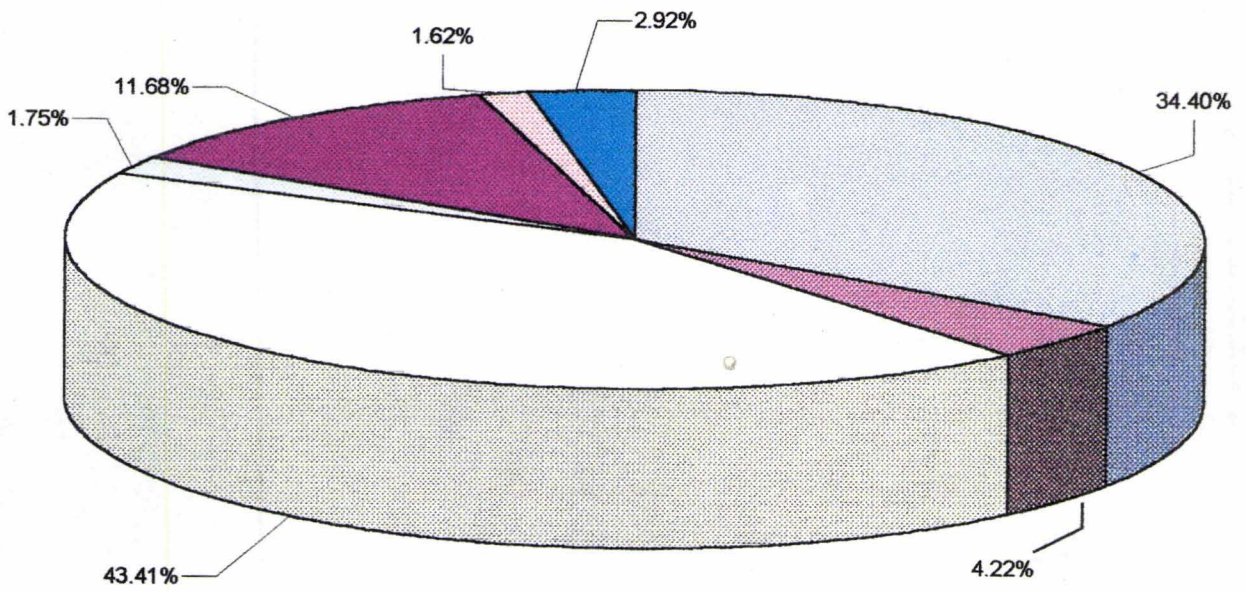
5.11.2 Marketing cost in distant markets

The information on itemwise per quintal marketing cost of orange in distant markets is presented in Table 5.17.

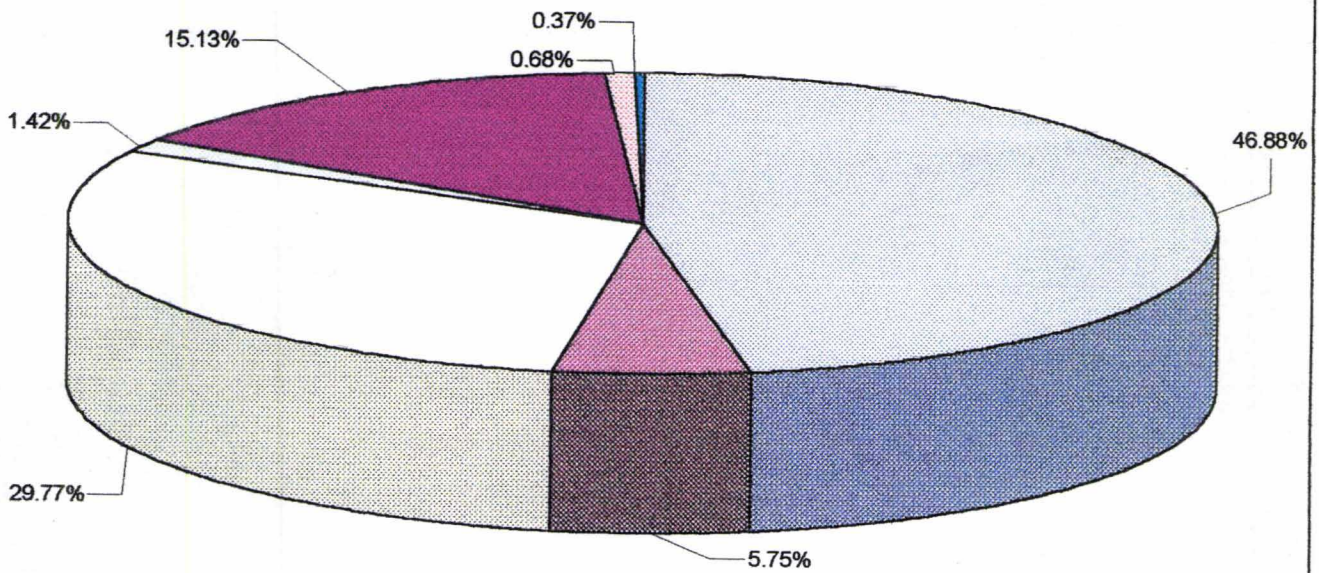
Table 5.17 Marketing cost of orange in distant markets

Sr. No.	Particulars	Delhi market		Mumbai market	
		15 kg box	Per qtl. (Rs.)	15 kg box	Per qtl. (Rs.)
1.	Cost of packaging materials				
a.	Packing box (wooden)	26.40 (29.23)	176.00 (29.23)	26.40 (39.84)	176.00 (39.84)
b.	Paddy straw and old news papers	2.39 (2.65)	15.93 (2.65)	2.39 (3.60)	15.93 (3.60)
c.	Nails and ropes	2.28 (2.52)	15.20 (2.52)	2.28 (3.44)	15.20 (3.44)
2.	Labour charges				
a.	Assembling and grading	0.84 (0.93)	5.60 (0.93)	0.84 (1.27)	5.60 (1.27)
b.	Packing	0.96 (1.06)	6.40 (1.06)	0.96 (1.44)	6.40 (1.44)
c.	Nailing and roping	0.98 (1.09)	6.53 (1.09)	0.98 (1.49)	6.53 (1.49)
d.	Truck loading	1.03 (1.14)	6.87 (1.14)	1.03 (1.55)	6.87 (1.55)
3.	Truck freight	39.20 (43.41)	261.33 (43.41)	19.72 (29.77)	131.47 (29.77)
4.	Market fee	1.58 (1.75)	10.53 (1.75)	0.94 (1.42)	6.27 (1.42)
5.	Commission charges	10.55 (11.68)	70.33 (11.68)	10.02 (15.13)	66.67 (15.13)
6.	Unloading at terminal market	1.46 (1.62)	9.37 (1.62)	0.45 (0.68)	3.00 (0.68)
7.	Miscellaneous	2.64 (2.92)	17.60 (2.92)	0.24 (0.37)	1.60 (0.37)
	Total marketing cost	90.31 (100.00)	602.05 (100.00)	66.25 (100.00)	441.54 (100.00)

(Figures in the parentheses indicate the percentages to the total marketing cost)



Marketing cost of orange in Delhi market



Marketing cost of orange in Mumbai market

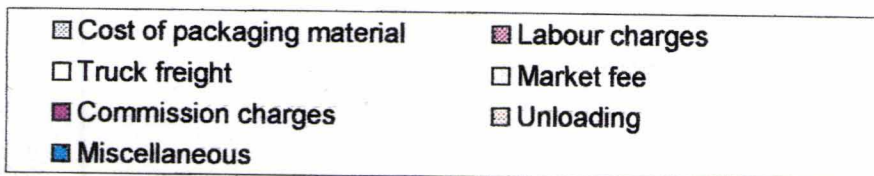


Fig. 8 Marketing cost of orange in distant markets

It is apparent from the Table 5.17 that at Delhi market, the average per quintal cost of marketing worked out to Rs. 602.05 and for 15 kg box to Rs. 90.31. The major items of the cost of marketing were packaging cost and transportation cost which constitute more than 50 per cent of the total cost.

In case of Mumbai market, the average per quintal cost of marketing worked out to Rs. 441.54 and for 15 kg box Rs. 66.25. The major items of the cost of marketing were packaging cost and transportation cost which constitute more than 50 per cent of the total cost. The similar type of results were observed by Mankar (1988).

5.12 Price spread

Price spread refers to the difference between the price paid by the consumer and the price received by the orange growers for an unit quantity of orange. These consist of marketing costs and margins of the intermediaries. The cost and margin of each agency in different channels were worked out and the details are presented in Tables 5.18, 5.19 and 5.20.

5.12.1 Channelwise price spread in local markets

The produce was marketed in local markets through three Channels. Channel I (producer - retailer - consumer) Channel II (producer - pre-harvest contractor - wholesaler - retailer - consumer) and Channel III (producer - wholesaler - retailer - consumer).

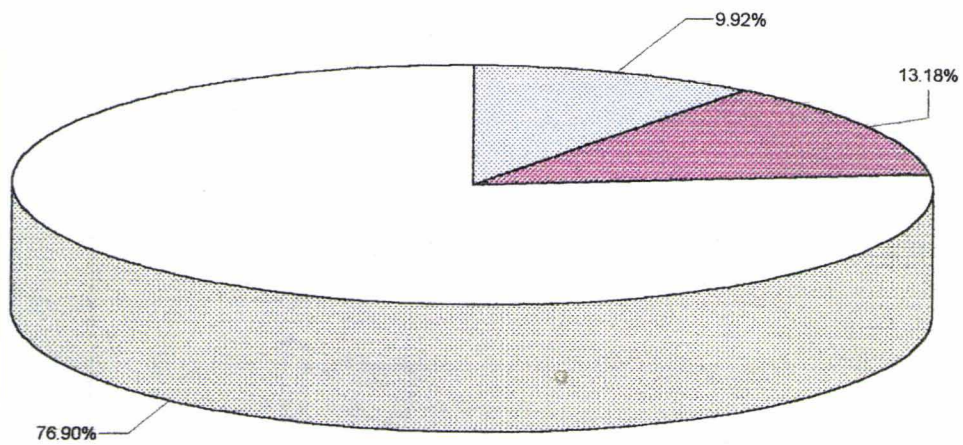
The details of channelwise cost spread in local market is presented in Table 5.18.

Table 5.18 Channelwise marketing cost, marketing margin and price spread of orange in local markets

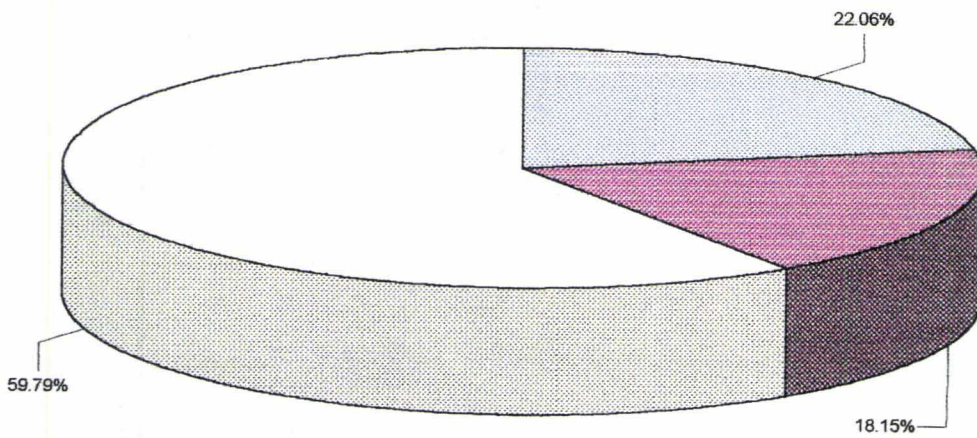
(Rs./qtl.)

Producer	Marketing channel		
	I	II	III
Gross price received	543.67	503.03	584.31
Cost incurred	-	-	50.51
Net price received	543.67	503.03	533.80
Pre harvest contractor			
Price received	-	652.97	-
Cost incurred	-	90.37 (10.74)	-
Commission	-	59.57 (7.08)	-
Wholesaler			
Price received	-	756.35	754.92
Cost incurred	-	49.58 (5.89)	86.36 (10.24)
Commission	-	53.80 (6.39)	84.25 (9.99)
Retailer			
Price received	706.96	841.34	842.54
Cost incurred	70.12 (9.92)	45.65 (5.42)	46.93 (5.57)
Commission	93.17 (13.18)	39.36 (4.68)	40.69 (4.82)
Consumer price	706.96 (100.00)	841.34 (100.00)	842.54 (100.00)
Total cost incurred	70.12 (9.92)	185.58 (22.06)	183.80 (21.81)
Total margin	93.17 (13.18)	152.73 (18.15)	124.94 (14.83)
Producers share in consumer rupee %	76.90	59.79	63.36

(Figures in the parentheses indicate the percentages to the consumer price).



Channel - I



Channel - II



Channel - III

Total cost incurred
 Total margin
 Producers share in consumers rupee

Fig. 9 Channelwise marketing cost, marketing margin and price spread of orange in local markets

It is revealed from the Table 5.18 that the highest (i.e. 76.90 per cent) share of producer in consumer rupee was found to be in Channel- I. While the lowest share (i.e. 59.79 per cent) of producer in consumer rupee was found to be in Channel- II. The share of producer in consumer rupee in Channel- III was found to be 63.36 per cent. The total margin of the intermediaries was found to be highest (i.e. 18.15 per cent) in Channel- II. The lowest total margin (i.e. 13.18 per cent) was found to be in Channel I. The highest commission was charged by the retailer in Channel I.

Of all the intermediaries the highest cost incurred (i.e. 10.74 per cent) was by the pre-harvest contractor in Channel – II. The highest amount (i.e. 22.06 per cent) of the total cost incurred by all the intermediaries was found in Channel-II and The lowest amount (i.e. 9.92 per cent) of total cost incurred by all the intermediaries was in Channel – I.

Thus from the above discussion the first hypothesis putforth as the producers share in consumers rupee is higher for the marketing channel involving small number of intermediaries was proved and accepted.

5.12.2 Channelwise price spread in Mumbai market

The produce was marketed for the distant market through three Channels. Channel- IV (i.e. producer - pre-harvest contractor – wholesaler (distant market) – retailer - consumer), Channel – V (i.e. producer – wholesaler (local market) - wholesaler (distant market) –

retailer – consumer), Channel – VI (i.e. producer - wholesaler (distant market) – retailer – consumer).

From the Table 5.19 it is revealed that the per quintal net price received by the orange growers in Mumbai market was Rs. 1614.44, Rs. 1639.31 and Rs. 1773.00 in Channel IV, Channel V and Channel VI, respectively. The highest net price i.e. Rs. 1773.00 received by the orange growers in the Channel VI in which growers send their produce to the wholesaler of the distant market. The producers share in consumer rupee was the highest in Channel VI (69.84 per cent) and the lowest in Channel V (63.68 per cent).

The total margin of all the intermediaries was found to be highest (i.e. 16.36 per cent) in Channel – V while it was lowest (i.e. 10.49 per cent) in Channel- VI.

The largest amount (i.e. 6.85 per cent) of commission was obtained by the wholesaler (local market) in Channel V. The lowest amount (i.e. 3.95 per cent) of commission was obtained by the wholesaler (distant market) in Channel- IV.

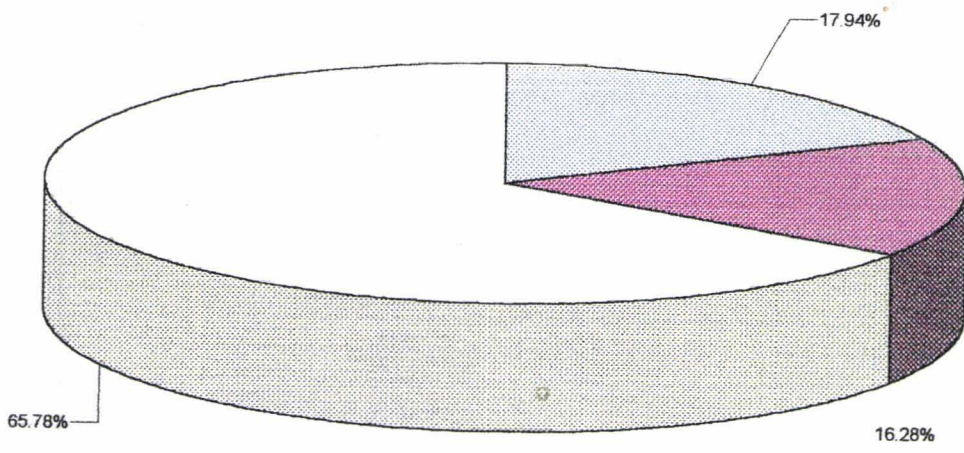
The total cost incurred by all the intermediaries was found to be highest (i.e. 19.96 per cent) in Channel – V. The highest amount (i.e. 10.16 per cent) of cost incurred by an individual intermediary was by the pre-harvest contractor in Channel – IV. It was lowest (i.e. 2.50 per cent) by the retailer in Channel – IV and Channel – V. The same results were obtained by Gangawar and Shyam Singh (1999).

Table 5.19 Channelwise marketing cost, marketing margin and price spread of orange in Mumbai market

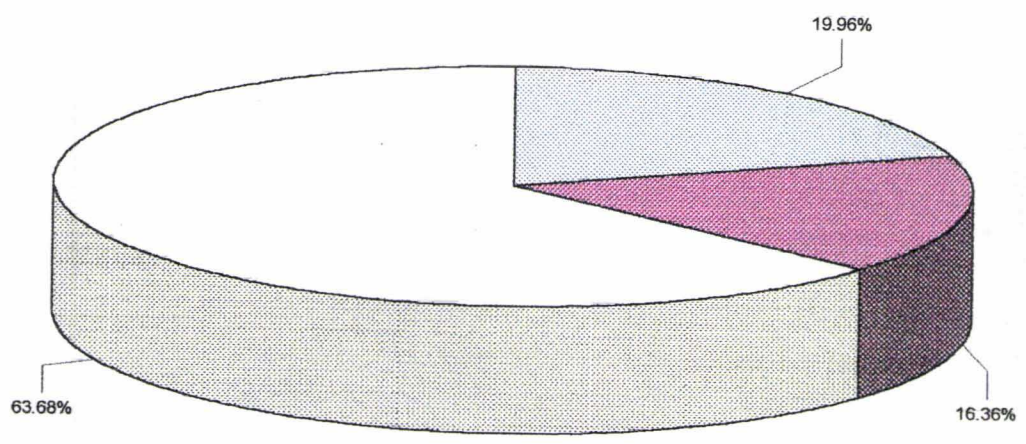
(Rs./qtl.)

Producer	Marketing channels		
	IV	V	VI
Gross price received	1614.44	1691.91	2028.57
Cost incurred	-	52.60	255.57
Net price received	1614.44	1639.31	1773.00
Pre harvest contractor			
Price received	2025.33	-	-
Cost incurred	249.45 (10.16)	-	-
Commission	161.44 (6.58)	-	-
Wholesaler (Local market)			
Price received	-	2122.66	-
Cost incurred	-	261.27 (10.15)	-
Commission	-	169.48 (6.85)	-
Wholesaler (distant market)			
Price received	2251.68	2360.42	2317.53
Cost incurred	129.48 (5.28)	135.83 (5.28)	176.19 (6.94)
Commission	96.87 (3.95)	101.93 (3.96)	112.77 (4.44)
Retailer			
Price received	2360.00	2574.22	2538.49
Cost incurred	61.35 (2.50)	64.32 (2.50)	67.36 (2.65)
Commission	141.36 (5.76)	149.48 (5.81)	153.60 (6.05)
Consumer price	2454.39 (100.00)	2574.22 (100.00)	2538.49 (100.00)
Total cost incurred	440.28 (17.94)	514.02 (19.96)	499.12 (19.67)
Total margin	397.67 (16.28)	420.89 (16.36)	266.37 (10.49)
Producers share in consumer rupee (%)	65.78	63.68	69.84

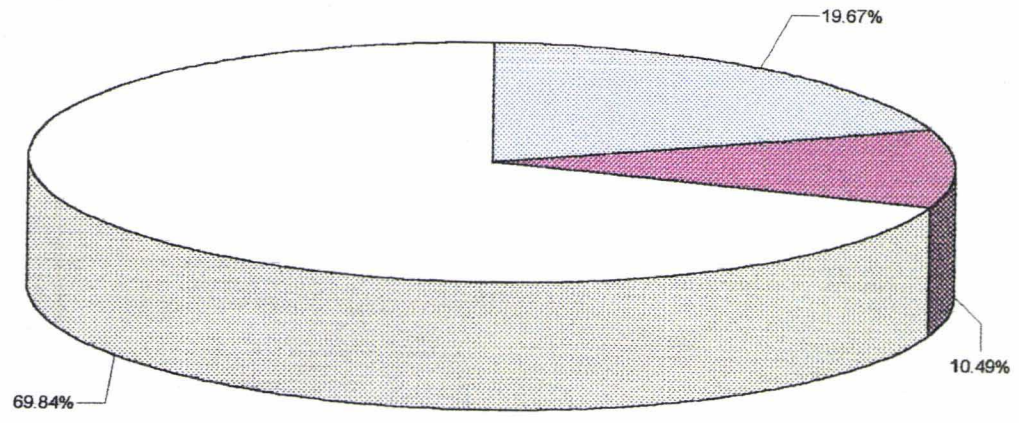
(Figures in the parentheses indicate the percentages to the consumer price)



Channel - IV



Channel - V



Channel - VI

Total cost incurred
 Total margin
 Producers share in consumers rupee

Fig. 10 Channelwise marketing cost, marketing margin and price spread of orange in Mumbai market

5.12.3 Channelwise price spread in Delhi market

It is observed from Table 5.20 that the per quintal net price received by the orange growers in Delhi market was Rs. 1927.52, Rs. 1971.03 and Rs.2273.82 in Channel-IV, Channel-V and Channel-VI, respectively. The highest net price i.e. Rs. 2273.82 was received by the orange growers in the Channel- VI in which growers send their produce to the wholesaler of distant market. The producers share in consumers rupee was the highest in Channel- VI (73.72 per cent) and the lowest in Channel- V (64.49 per cent).

Thus the results obtained from sub-point 5.11.2 and 5.12.2 the third hypothesis under consideration as transportation cost and packaging cost are higher for sale in distant markets whereas the net price received are higher in these markets was proved and accepted.

The total margin of commission obtained by all the intermediaries was found to be highest (i.e. 16.17 per cent) in Channel-V. It was lowest (i.e. 9.85 per cent) in Channel-VI.

The highest amount (i.e. 19.34 per cent) of the total cost incurred by all the intermediaries was found to be in Channel-V. While it was lowest (i.e. 16.44 per cent) in Channel VI.

The highest amount (i.e. 6.11 per cent) of the commission obtained by an individual intermediary was found in case of the retailer in Channel-VI. The lowest amount (i.e. 3.73 per cent) of the commission was obtained by the wholesaler (distant market) in the Channel-IV and the Channel-V.

The highest amount (i.e. 9.99 per cent) of cost incurred by an individual intermediary was found in case of the pre-harvest contractor in Channel-IV. It was lowest (i.e. 2.63 per cent) in case of the retailer in Channel-IV. The same results were obtained by Gangwar and Shyam Singh (1999).

Table 5.20 Chanelwise marketing cost, marketing margin and price spread of orange in Delhi market

(Rs./qtl.)

Producer	Marketing channels		
	IV	V	VI
Gross price received	1927.52	2024.20	2540.30
Cost incurred	-	53.17	266.48
Net price received	1927.52	1971.03	2273.82
Pre-harvest contractor			
Price received	2401.42	-	-
Cost incurred	289.37 (9.99)	-	-
Commission	184.53 (6.37)	-	-
Wholesaler (Local market)			
Price received	-	2523.19	-
Cost incurred	-	304.69 (9.98)	-
Commission	-	194.30 (6.36)	-
Wholesaler (Distant market)			
Price received	2653.73	2789.36	2814.48
Cost incurred	144.23 (4.98)	152.33 (4.98)	158.33 (5.13)
Commission	108.02 (3.73)	113.84 (3.73)	115.85 (3.76)
Retailer			
Price received	2897.50	3056.11	3084.48
Cost incurred	76.11 (2.63)	80.71 (2.64)	82.60 (2.68)
Commission	167.66 (5.79)	186.04 (6.09)	188.40 (6.11)
Consumer price	2897.50 (100.00)	3056.11 (100.00)	3084.48 (100.00)
Total cost incurred	509.71 (17.59)	590.90 (19.34)	507.40 (16.44)
Total margin	460.21 (15.89)	419.18 (16.17)	304.25 (9.85)
Producers share in consumer rupee (%)	66.52	64.49	73.71

(Figures in the parentheses indicate the percentages to the consumer price).

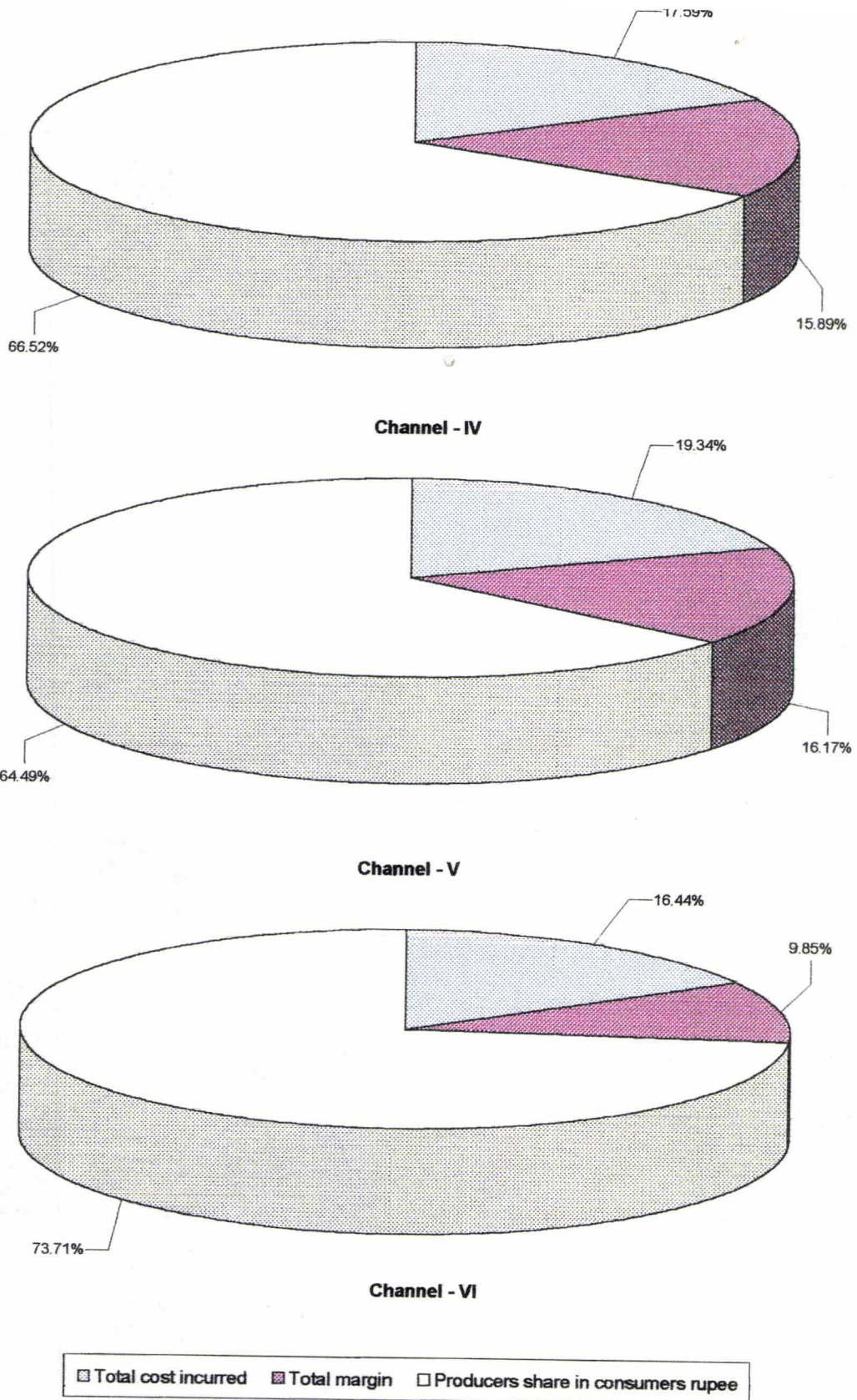


Fig. 11 Channelwise marketing cost, marketing margin and price spread of orange in Delhi market

5.13 Quantity of orange sold through different marketing channels

The information relating to the quantity of orange sold through different marketing channels and price received is presented in Table 5.21.

It is observed from the Table 5.21 that the produce of all the sample growers was marketed either in local market (Channel I, II and III) all to distant market of Mumbai and Delhi (Channel IV, V and VI).

The highest number (i.e. 17.51 per cent) of the total sample growers sold their produce in the local market through Channel-III. The lowest number (i.e. 5.00 per cent) of the sample growers sold their produce to the distant market of Mumbai through Channel-V.

The highest quantity of the produce (i.e. 18.18 per cent) was sold in the local market through Channel-III. While the lowest quantity of produce (i.e. 5.90 per cent) was sold to the distant market of Mumbai through Channel-V.

The highest average price (i.e. 2540.30 Rs./qtl.) was obtained by selling the produce to the distant market of Delhi through Channel-VI. While the lowest price (i.e. 503.03 Rs./qtl.) was obtained on selling the produce in the local market through Channel-II.

The highest number (i.e. 17.91 per cent) of small size holding sample growers preferred to sell their produce in the local market through Channel-III. They sold highest (i.e. 19.69 per cent) of the total produce through this Channel.

The highest number (i.e. 16.67 per cent) of medium size holding sample growers preferred to sell their produce either in local market (Channel- III) or to the distant market of Delhi (Channel-IV). They sold 18.94 per cent and 15.39 per cent of their total produce through these channels, respectively.

Table 5.21 Quantity of orange sold and price received through different marketing channels

Size group of holding	Categories of marketing channels												Total						
	I			II			III			IV				V			VI		
	Mumbai	Delhi	Delhi	Mumbai	Delhi	Delhi	Mumbai	Delhi	Delhi	Mumbai	Delhi	Delhi		Mumbai	Delhi	Delhi	Mumbai	Delhi	
Small (No.)	6 (8.96)	8 (11.94)	12 (17.91)	7 (10.45)	9 (13.43)	9 (13.43)	3 (4.48)	10 (14.92)	10 (14.92)	5 (7.46)	7 (10.45)	67 (100.00)							
Quantity sold (qtls)	313.56 (7.95)	486.44 (12.34)	776.55 (19.69)	430.28 (6.91)	580.74 (14.72)	580.74 (14.72)	202.25 (5.13)	520.00 (13.19)	520.00 (13.19)	314.19 (7.97)	319.26 (8.10)	3943.35 (100.00)							
Price received (Rs./qtls.)	547.00	505.00	591.09	1619.02	1933.18	1933.18	1697.17	2029.01	2029.01	2033.14	2543.63	2249.69							
Medium (No.)	3 (8.33)	5 (13.89)	6 (16.67)	4 (11.11)	6 (16.67)	6 (16.67)	2 (5.56)	4 (11.11)	4 (11.11)	3 (8.33)	3 (8.33)	36 (100.00)							
Quantity sold (qtls)	306.84 (7.33)	575.24 (13.73)	793.26 (18.94)	480.78 (11.48)	644.65 (15.39)	644.65 (15.39)	229.48 (5.48)	603.40 (14.41)	603.40 (14.41)	295.10 (7.04)	259.84 (6.20)	4188.59 (100.00)							
Price received (Rs./qtls)	544.00	503.02	587.17	1617.07	1929.14	1929.14	1693.13	2023.00	2023.00	2027.06	2539.13	2243.78							
Large (No.)	1 (5.88)	3 (17.66)	3 (17.66)	2 (11.75)	3 (17.66)	3 (17.66)	1 (5.88)	2 (11.75)	2 (11.75)	1 (5.88)	1 (5.88)	17 (100.00)							
Quantity sold (qtls)	355.08 (8.26)	674.85 (15.69)	690.25 (16.05)	505.14 (11.74)	701.48 (16.31)	701.48 (16.31)	302.15 (7.02)	643.26 (14.95)	643.26 (14.95)	142.36 (3.31)	286.71 (6.67)	4308.28 (100.00)							
Price received (Rs./qtls)	540.00	501.07	574.67	1607.23	1920.31	1920.31	1685.43	2020.05	2020.05	2025.51	2538.14	2235.40							
Total (No.)	10 (8.33)	16 (13.33)	21 (17.51)	13 (10.83)	18 (15.00)	18 (15.00)	6 (5.00)	16 (13.33)	16 (13.33)	9 (7.50)	11 (9.17)	120 (100.00)							
Quantity sold (qtls)	975.48 (7.85)	1736.53 (13.97)	2207.06 (18.18)	1416.20 (11.39)	1926.87 (15.50)	1926.87 (15.50)	633.88 (5.90)	1766.44 (14.20)	1766.44 (14.20)	751.65 (6.04)	865.81 (6.97)	12433.00 (100.00)							
Average price received (Rs./qtls)	543.67	503.03	584.31	1614.44	1927.52	1927.52	1691.91	2024.20	2024.20	2028.57	2540.30	2242.95							

(Figures in the parentheses are the percentages to the total)

The largest number (i.e.17.66 per cent) of the large size holding sample growers preferred to sell their produce in the local market (Channel – II and III) or to the distant market of Delhi (Channel – IV). They sold 15.69 per cent, 16.05 per cent and 16.31 per cent of their total produce through the above mentioned three channels, respectively.

5.14 Price differentials between different grades and markets

The details of prices differentials between different grades and markets are presented in Table 5.22.

Table 5.22 Price differential between different grades and markets

(Price in Rs.)

Grade	Local market	Distant market	
		Mumbai	Delhi
I – II	26.84	29.77	93.33
II – III	20.33	-	-
I – III	47.17	-	-

It is seen from the Table 5.22 that the price differential for Grade- I and Grade- II was of Rs. 26.84 in local market. The same gets little reduced for Grade- II and III showing that Grade- II produce less premium over Grade- III produce. The difference between Grade-II and Grade-III was Rs. 20.33. The figure for Grade- I and III for local market was of Rs. 47.17 which indicated that the orange growers received high premium for Grade- I over the Grade- III produce.

In case of distant market only Grade-I and Grade –II produce was sold. It is observed that the Grade-I produce had price differentials of Rs. 29.77 over Grade-II in Mumbai market. If the orange growers succeed in producing the Grade-I produce rather than Grade-II, they would have this premium of Rs. 29.77 per quintal. In

case of Delhi market, the Grade-I produce had a price differential of Rs. 93.33 over Grade-II. If the orange growers succeed in getting the Grade-I produce rather than Grade-II produce the premium would be Rs. 93.33 per quintal.

5.15 Indices of arrivals and prices

The data pertaining to arrivals and prices in Nerkhed and Morshi markets obtained from the respective agricultural produce market committees for a period of ten years from 1987-88 to 1998-99 were analysed for estimating indices based on 1987-88 as a base year.

5.15.1 Indices of arrivals and prices in Nerkhed market

The details about arrivals and prices in Nerkhed market are presented in Table 5.23.

Table 5.23 Yearly indices for arrivals and prices in Nerkhed market

(1987-88 = 100)				
Year	Arrival	Indices	Price	Indices
1987-88	76793.47	100.00	264.08	100.00
1988-89	281001.11	365.12	189.17	71.44
1989-90	105308.39	137.73	396.15	149.60
1990-91	231031.77	300.21	269.04	101.60
1991-92	121581.65	158.98	387.46	146.32
1992-93	81626.51	106.77	502.73	189.85
1993-94	292668.83	381.27	492.68	186.05
1994-95	231592.27	301.47	558.33	210.84
1995-96	415161.73	541.16	654.27	247.08
1996-97	367213.17	478.79	660.31	249.36
1997-98	401488.91	523.36	783.16	295.75
1998-99	502577.22	654.23	822.55	310.63
Average	259003.75	337.42	498.33	188.21

It is observed from the Table 5.23 that there were much variations in arrival in Nerkhed during the period 1987-88 to 1996-97, over the base year 1987-88 and 1997-98 onwards and upward trend was noticed. Examination of price trend showed the ups and downs during the years 1987-88 to 1993-94. The prices showed an upward trend after 1994-95 over the base year 1987-88.

5.15.2 Indices of arrivals and prices in Morshi market

The details about arrivals and prices in Morshi market are presented in Table 5.24.

Table 5.24 Yearly indices for arrivals and prices in Morshi market

(1987-88 = 100)

Year	Arrival	Indices	Price	Indices
1987-88	95714.01	100.00	263.75	100.00
1988-89	371428.91	388.14	190.20	72.11
1989-90	187604.73	196.90	398.25	150.99
1990-91	295040.11	308.67	274.35	104.01
1991-92	146441.48	153.33	386.98	146.72
1992-93	112459.10	117.72	522.23	198.00
1993-94	352455.17	368.11	498.70	189.08
1994-95	272840.41	285.59	538.23	204.06
1995-96	525270.37	549.39	524.18	198.74
1996-97	444814.43	465.67	648.21	245.76
1997-98	482494.14	504.71	712.34	270.08
1998-99	525779.16	549.12	827.48	313.73
Average	317695.16	323.94	482.07	182.77

The Table 5.24 showed that the arrivals in Morshi market observed very much variations during the period 1987-88 to 1996-97 over the base year 1987-88. While 1997-98 onwards an upwards trend was noticed. The price showed wide fluctuations from the year 1987-88 upto 1995-96. The prices from 1996-97 onwards showed increasing trend.

5.15.3 Seasonal indices for arrivals and prices of orange in Nerkhed and Morshi market

The data pertaining to the arrivals and prices in these two markets obtained from the respective Agricultural Produced Market Committees for a period of ten years from 1987-88 to 1997-98 were analysed for estimating seasonal indices. The data obtained from the markets were analysed for two bahars i.e. bahar I was Ambe bahar (October, November and December) and bahar II was Mrig bahar (January, February, March and April) by the way of simple method seasonal index. To know the seasonality in arrival and prices in these two markets, the indices were worked out and presented in Table 5.25.

Table 5.25 Seasonal indices for arrivals and prices in Nerkhed and Morshi markets

Month	Nerkhed market		Morshi market	
	Arrival	Price	Arrival	Price
Ambia bahar				
October	3.22	8.19	6.76	8.11
November	12.85	10.15	12.36	9.02
December	8.91	7.65	5.87	7.86
Mrig bahar				
January	3.78	6.16	9.81	8.66
February	14.32	9.79	14.35	9.06
March	10.22	9.50	8.18	7.84
April	5.00	7.87	5.98	7.81

It is observed from the Table 5.25 that there was peak of arrivals in the month of November (12.85 and 12.36 per cent) in Ambia bahar and February (14.32 and 14.35 per cent) in Mrig bahar in both the markets. The seasonability of arrivals increased very sharply in November and February month.

It was observed that the prices in Nerkhed and Morshi markets generally remained stable for two bahars. The prices increased during the months of November and February in two markets. After peak period of November in Ambia bahar and February in Mrig bahar the prices showed a decreasing trend. Thus, it can be concluded that there were variations in the arrivals and prices of oranges during different months in these two markets, the prices in general showed the similar trend of being more or less stable.

5.16 Compound growth rates in arrivals and prices

Compound growth rates in arrivals and prices of orange of Nerkhed and Morshi markets are presented in Table 5.26.

Table 5.26 Compound growth rates in arrivals and prices of Nerkhed and Morshi markets

Month	Nerkhed		Morshi	
	Arrival	Price	Arrival	Price
October	8.44**	13.00***	12.09 ^{NS}	11.12***
November	9.87*	12.71***	10.89***	11.07***
December	12.77*	12.61*	12.07***	11.07***
January	9.14*	12.66***	9.90**	9.72***
February	20.55***	13.63***	12.66***	11.53***
March	15.39***	12.46***	11.94***	10.15***
April	13.21*	12.74***	9.92**	9.97***
Overall	14.50***	12.77***	12.22**	11.84***

*** 1% level of significance

** 5% level of significance

* 10% level of significance

NS - Non-significant

It is observed from the Table 5.26 that the compound growth rates in arrivals and prices of Nerkhed market at the overall level were 14.50 and 12.77 per cent and Morshi market 12.22 and 11.84 per cent respectively.

The compound growth rates of arrivals and prices were positively significant in all the months in Nerkhed and Morshi markets with the exception of arrivals of Morshi market in October. In Morshi tahsil arrival of oranges in October month was observed non-significant because in Morshi tahsil the farmers harvested the orange fruits after the month of October. The compound growth rates in arrivals and prices of February month were higher than all other months indicated that the arrivals and prices of orange were highest in the month of February.

5.17 Price function

The results of the price function fitted to Nerkhed and Morshi tahsils are shown in Table 5.27.

Table 5.27 Results of price function

Independent variable	Nerkhed	Morshi
Current arrival (A_t)	- 0.3290* (0.1702)	- 0.3518* (0.1633)
Lagged year arrival ($A_t - 1$)	0.2760** (0.1027)	0.3071** (0.1038)
Lagged year price ($P_t - 1$)	0.8591*** (0.2477)	0.8240*** (0.2196)
R^2	0.6477	0.6196
F value	54.19***	51.79***

*** 1% level of significance

** 5% level of significance

* 10% level of significance

The R^2 value of Nerkhed and Morshi markets was 0.6477 and 0.6196 respectively, indicating thereby that nearly 65 per cent variation in the dependent variable was explained by the independent variables. The F value was 54.19 and 51.79 for Nerkhed and Morshi markets respectively and it was highly significant. The regression coefficient of the current arrivals in Nerkhed was -0.3290 and in Morshi it was -0.3518 . The regression coefficient of current arrival in Nerkhed and Morshi tahsil were found negatively significant at 10 per cent level. The regression coefficient of the lagged year arrival in Nerkhed was 0.2760 and in Morshi 0.3071. The regression coefficient of the lagged arrival was positively significantly at five per cent level.

The regression coefficient of the lagged year price in Nerkhed was 0.8591 and in Morshi it was 0.8240. The regression coefficients of the lagged year price in both the market were positively significant at one per cent level. It indicated that the lagged year arrivals and lagged year prices had positive impact/influence on the current prices of orange.

5.18 Multiple regression analysis

The tabular analysis only shows the effect of individual factor at a time, with the effects of other factors remaining constant. In other words, it's a kind of static analysis. In functional analysis, the effects of factors which are thought to influence the dependent variable (factor) are considered at a time. Therefore, the functional analysis is thought to be most important and reachable tool in the problem where

many more factors (independent variables) have to be taken into account, influencing the dependent variable.

In the present study, the multiple regression analysis technique was employed for accounting the simultaneous effect of the factors under consideration. Therefore, the multiple regression analysis was carried out and the results so obtained are given in the Tables 5.28 and 5.29.

5.18.1 Results of multiple regression analysis according to market

The details of marketwise results of multiple regression analysis are presented in Table 5.28.

It can be revealed from the Table 5.28 that the independent variable *viz.*, total quantity sold in quintals (X_1), distance of market place in kilometers (X_2), area under orange in hectares (X_3) as real variables and agencies to whom produce is sold (D_{A1} , D_{A2} and D_{A3}), time period of sale (D_T) and grade of the orange sold (D_{G1} and D_{G2}) as dummy variables together explained variation in the net price received to the extent of 64.47 per cent at the overall level.

At the overall level the factors those have turned out to be significant at different levels were X_2 , D_{A1} , D_{A2} and D_{G1} . The factor X_2 representing the place of sale was significant at 5 per cent level indicating thereby if the orange were sold in distant market, on an average, the orange growers would get an additional price of Rs. 0.184 per quintal.

Table 5.28 Marketwise result of multiple regression analysis of factors affecting the per quintal net price received by the sample orange growers

Variable	Nerkhed (N = 60)	Morshi (N = 60)	Overall (N = 120)
X ₁	- 0.0991 ^{NS} (1.8337)	- 0.0015 ^{NS} (0.5125)	0.0119 ^{NS} (0.4980)
X ₂	0.1010*** (0.0127)	0.1430*** (0.0047)	0.1840*** (0.0049)
X ₃	12.0319 ^{NS} (345.6971)	- 37.6878 ^{NS} (90.0009)	- 16.8478 ^{NS} (90.5927)
D _T	- 1.9036 ^{NS} (23.7291)	- 4.7115 ^{NS} (23.2842)	- 16.2931 ^{NS} (17.3497)
D _{A1}	40.1781*** (5.5771)	42.1314 ^{NS} (52.3466)	111.1746*** (52.5394)
D _{A2}	11.4498 ^{NS} (65771.94)	54.0690** (23.6951)	102.6463* (52.8732)
D _{A3}	-113.8783 ^{NS} (45771.9321)	59.0337 ^{NS} (49.4265)	45.3895 ^{NS} (50.3749)
D _{G1}	696.3413*** (55.7712)	661.3331*** (106.3312)	677.5389*** (100.3251)
D _{G2}	- 123.452 ^{NS} (50771.94)	634.9812 ^{NS} (9603.3811)	- 31.7936 ^{NS} (100.2504)
R ²	0.6965	0.7048	0.6447
F value	14.74***	15.45***	11.67***

(Figures in the parentheses indicate standard errors)

*** 1% level of significance

** 5% level of significance

* 10% level of significance

NS - Non-significant

As regards the regression coefficients of dummy variables representing agency of sale D_{A1} and D_{A2} i.e. pre-harvest contractor and wholesaler turned out to be significant. The magnitude of regression coefficient of D_{A1} and D_{A2} variable was 111.17 and 102.64 with ten per cent and one per cent level of significance respectively. It implies that if the orange growers would sale their orange to pre-harvest contractor they would get an additional Rs. 111.17 per quintal and if sold to wholesaler they would get an additional Rs. 102.64 per quintal over that of retailer.

As regards the regression coefficients of dummy variables representing the different grades of orange sold, revealed that the regression coefficient of D_{G1} (Grade I) turned out to be significant at one per cent level. It implies that the orange growers would get a premium of Rs. 677.53 per quintal over that of Grade III produce.

In Nerkhed market the independent variables explained the variations in the net price received to the extent of 69.65 per cent. The factors those turned out to be significant at different levels of significance were X_2 , D_{A1} and D_{G1} . The factor X_2 representing the place of sale was significant at one per cent level indicating thereby if the orange were sold in distant market, on an average, the orange growers would get an additional price of Rs. 0.1010 per quintal.

As regards the regression coefficient of dummy variables representing agency of sale only D_{A1} i.e. pre-harvest contractor turned out to be significant. The magnitude of regression coefficient of D_{A1} variable was 40.17 with one per cent level of significance. It implies that if the orange growers would sale their orange to pre-harvest contractor they would get an additional Rs. per 40.17 per quintal over the retailer.

As regards the regression coefficients of dummy variables representing the different grades of orange sold, revealed that the regression coefficient of D_{G1} (Grade I) turned out to be highly significant. It implies that the orange growers would get a premium of Rs. 696.34 per quintal over that of Grade III produce.

In Morshi market the independent variables explained the variations in the net price received to the extent of 70.48 per cent. The factors those turned out to be significant at different levels of significance were X_2 , D_{A2} and D_{G1} . The factor X_2 representing the place of sale was one per cent level found to be significant indicating thereby if the orange were sold in distant market, on an average the orange growers would get an additional price of Rs. 0.1430 per quintal.

As regards the regression coefficients of dummy variables representing agency of sale only D_{A2} i.e. wholesaler turned out to be significant. The magnitude of regression coefficient of D_{A2} variable was 54.06 with five per cent level of significance. It implies that if the orange growers would sale their orange to wholesaler they would get an additional Rs. 54.06 per quintal over that of retailer.

As regards the regression coefficients of dummy variables representing the different grades of orange sold, revealed that the regression coefficient of D_{G1} (Grade I) turned out to be significant at one per cent level. It implies that the orange growers would get a premium of Rs. 661.33 per quintal over that of Grade III produce.

5.18.2 Results of multiple regression analysis according to size group of holdings

The details of size groupwise results of multiple regression analysis are presented in Table 5.29.

Table 5.29 Size groupwise results of multiple regression analysis of factor affecting the per quintal net price received by the sample orange growers

Variable	Small (67)	Medium (36)	Large (17)
X ₁	-3.0862 ^{NS} (4.3650)	0.3104 ^{NS} (2.1872)	- 0.5978 ^{NS} (0.4826)
X ₂	0.1370*** (0.0043)	0.2400*** (0.0006)	0.6144*** (0.02703)
X ₃	90.6906 ^{NS} (733.8552)	- 65.3666 ^{NS} (441.4463)	107.6267 ^{NS} (126.3187)
D _T	-15.5448 ^{NS} (26.6437)	- 8.6917 ^{NS} (32.3189)	-24.4983 ^{NS} (40.4897)
D _{A1}	96.2904 ^{NS} (108.3168)	80.4533 *** (27.8507)	275.0984*** (75.6621)
D _{A2}	107.7781* (60.0711)	71.0852 ^{NS} (86.7877)	107.3149 ^{NS} (256621.9541)
D _{A3}	30.1513 ^{NS} (100.0238)	64.2005 ^{NS} (94.2285)	247.8632 ^{NS} (458621.954)
D _{G1}	404.1590*** (125.6844)	343.88*** (18.5364)	332.4310*** (15.6621)
D _{G2}	365.3104 ^{NS} (15435.9511)	- 200.0801 ^{NS} (2853.6468)	40.7562 ^{NS} (656621.954)
R ²	0.6116	0.8083	0.7002
F value	11.57***	30.61***	17.16***

(Figures in the parentheses indicate standard errors)

*** 1% level of significance

** 5% level of significance

* 10% level of significance

NS - Non-significant

In all the three size groups of holdings the factors those were thought to be responsible for variations in the per quintal net price received for the orange produced are quantity of orange sold in quintals (X_1), distance of market place in kilometers (X_2), area under orange in hectares (X_3), as real variables and agencies to whom produce was sold (D_{A1} , D_{A2} and D_{A3}), time period of sale (D_T) and grade of orange sold (D_{G1} and D_{G2}) as dummy variables.

The above explanatory variables were regressed on dependent variable *viz.*, net price received per quintal and the result are presented in Table 5.29.

The value of coefficient of multiple determination i.e. R^2 turned out to be 0.6116 in case of small size group of holding meaning thereby nearly 61 per cent variation in the per quintal net price received for orange was explained by all the factors under consideration. The factors those have turned out to be significant at different levels of significance were X_2 , D_{A2} and D_{G1} . The significance of variable X_2 indicates that the place of sale was found to be significant at one per cent level indicating thereby if the orange were sold in distant market, the orange growers would get an additional price of Rs. 0.137 per quintal.

As regards the regression coefficients of dummy variables representing agency of sale, only D_{A2} i.e. wholesaler turned out to be significant. The magnitude of regression coefficient of D_{A2} variable was 107.77 with ten per cent level of significance. It implies that if the orange growers would sale their orange to wholesaler, they would get an additional Rs. 107.77 per quintal over that of retailer.

As regards the regression coefficients of dummy variables representing the different grades of oranges sold, revealed that the regression coefficient of D_{G1} (Grade I) turned out to be significant at

one per cent level. It implies that the orange growers would get a premium of Rs. 404.15 per quintal over that of Grade III produce.

In the medium size group of holding the value of coefficient of multiple determination, i.e. R^2 was 0.8083 implying thereby nearly 80 per cent variation in the net price received by the orange growers was accounted by the different variables under consideration, which were hypothesized to influence the net prices.

The factors turned out to be significant at one per cent level of probability were X_2 , D_{A1} and D_{G1} . The significance of variable X_2 indicates that if the orange were sold in distant market, the orange growers would get an additional gain in price of Rs. 0.24 per quintal.

As regards the regression coefficients of dummy variables representing the agency of sale D_{A1} i.e. pre-harvest contractor turned out to be significant at one per cent level. The magnitude of regression coefficient of D_{A1} variable was 80.45 indicating thereby if the orange growers would sale orange through pre-harvest contractor they would get an additional price of Rs. 80.45 per quintal.

As regards the regression coefficients of dummy variables representing the different grades of orange sold, revealed that the regression coefficient of D_{G1} (Grade I) turned out to be significant at one per cent level. It implies that the orange growers would get a premium of Rs. 343.88 per quintal over that of Grade III produce.

In large size group of holding the value of coefficient of multiple determinations i.e. R^2 was 0.70 implying thereby nearly 70 per cent variation in the net price received by the orange growers was accounted by the different variables under consideration.

The factors turned out to be significant at different level of probability were X_2 , D_{A1} and D_{G1} . The regression coefficient of variable X_2 representing market place of sale was found to be significant at five per cent level indicating thereby if the orange would

have been sold in distant market, the orange growers would get an additional price of Rs. 0.614 per quintal.

As regards the regression coefficients of dummy variables representing agency of sale D_{AI} i.e. pre-harvest contractor turned out to be significant. The magnitude of regression coefficient of D_{AI} variable was 275.09 with one per cent level of significance. It implies that if the orange growers would have sold their orange to pre-harvest contractor, they would get an additional price of Rs. 275.09 per quintal.

As regards the regression coefficients of dummy variables representing the different grades of orange sold, revealed that the regression coefficient of D_{GI} (Grade I) turned out to be significant at five per cent level. It implies that the orange growers would get a premium of Rs. 332.43 per quintal over that of Grade III.

5.19 Constraints in marketing of orange

The constraints in marketing of orange faced by the growers are enormous in number. However, from amongst the numerous problems few, which are of serious nature and need the special and immediate attention were studied and the results are presented in Table 5.30.

It is seen from the Table 5.30 that the major constraints faced by the sample orange growers were fear of breaking contract by pre-harvest contractor (63.33 per cent), delay in harvesting of fruit by pre-harvest contractor (51.66 per cent), high cost of transportation (56.66 per cent), the commission agents generally do not give the information about rates in distant market (46.66 per cent), longer chain of intermediaries (40 per cent), lack of storage facilities (36.66 per cent), pre-harvest contractor insist on low price in the event of damage due to natural calamities (36.66 per cent) and pre-harvest contractor makes several deductions from the contracted amount (33.33 per cent).

Table 5.30 Constraints in marketing of orange

Sr. No.	Constraint	Sample orange grower		
		Nerkhed (N=60)	Morshi (N=60)	Total (N=120)
1.	Fear of breaking contract by pre-harvest contractor	35 (58.33)	41 (68.33)	76 (63.33)
2.	Delay in harvesting of fruit by pre-harvest contractor	33 (55.00)	29 (48.33)	62 (51.66)
3.	Pre-harvest contractor insist on low price in the event of damage due to natural calamities	23 (38.33)	21 (35.00)	44 (36.66)
4.	Delay in payment by pre-harvest contractor	27 (45.00)	29 (48.33)	56 (46.66)
5.	Pre-harvest contractor makes several deductions from the contracted amount	21 (35.00)	19 (31.66)	40 (33.33)
6.	High cost of packaging material	27 (45.00)	29 (48.33)	56 (46.66)
7.	High cost of transportation	33 (55.00)	35 (58.33)	68 (56.66)
8.	Lack of storage facilities	21 (35.00)	23 (38.33)	44 (36.66)
9.	Longer chain of intermediaries	25 (41.66)	23 (38.33)	48 (40.00)
10.	The commission agents generally do not give the information about rates in distant market.	27 (45.00)	29 (48.33)	56 (46.66)

(Figures in the parentheses are the percentages to the total)



5.20 Suggestions

Vidarbha region of Maharashtra State is famous for Nagpur mandarin. The tendency among the farmers to market their produce has been increasing. Production is complete only when the product is marketed at a price remunerative to the farmer. Increasing specialization in production, higher marketable/marketed surplus of the produce and alternative channels of marketing have increased the importance of the marketing activity for the farmers.

The farmers can gain more if they follow the following suggestions of marketing.

1. The produce brought by the farmers for sale in the market must be clean and free from such impurities as dirt, sand and pebbles, and should be unmixed with produce of another quality. Impurities, when present, lower the price offered by the trader-buyer in the market. The fall in price is more than the extent of the impurity present in the produce would warrant. Many buyers are interested in buying only clean produce, and are ready to pay a higher price for it. Clean produce attracts more buyers and in turn higher prices to the seller.
2. The produce of different varieties should be marketed separately. Many farmers mix the lots because of their small quantity, and get a low price for the mixed lot. It has been observed that when different varieties of products are marketed separately, the farmers get a higher average price because of the buyer's preference for specific varieties.

3. It is always advantageous for the farmer to market the produce after grading it. Graded produce is sold off quickly. Studies have shown that sellers get a higher total income when they sell the produce after grading it. The additional income generated by the adoption of grading is more than the cost incurred on the process of grading. This shows that there is an incentive for the farmers for the production of good quality products.
4. There must be full utilization of the capacity of the transportation facility in terms of the load. This would reduce the per quintal cost of transportation.
5. The transportation cost per quintal can be reduced by fixing the rate of transportation for different means. At present, each agency charges what it likes and not on the basis of any rational computation of the cost factor.
6. There should be reduction in spoilage, damage, breakage and pilferage during the period of movement as a result of better handling, packing and the use of the proper types of wagons.
7. There should be a reduction in the barriers to inter-state movement of the produce. If this happens, the time taken in transportation and the quantity of the fuel consumed would be reduced.
8. The speed and capacity of the vehicles used in transportation should be increased. This can be done by research in respective areas. The speed and capacity of bullock carts can be increased by (a) the use of pneumatic tyres instead of the existing wooden and iron wheels (b) the use of springs in the axle of the cart (c) the development of atleast good all-weather roads in the areas.

9. The farmer must keep in touch with market news in order to know the prices that prevail in different markets. Price information helps him to take decisions about when and where to sell the produce so that a better price may be obtained. Farmers who go to the market for sale without prior knowledge of the prevailing prices repent later. By and large, they agree to sell at a price which is lower than the price expected by them because it is difficult and cumbersome for them to postpone the sale or take the produce to another market.
10. Farmers should weigh their produce with fixed quantity before moving to the market for sale. A majority of the farmers do not weigh their produce before taking it for sale and suffer loss by way of a possible malpractice in weighing, or they may have to make excess payments in transit (octroi, transport costs).
11. The material must have protective strength. It must have enough strength to protect the goods from breakage leakage, spoilage and pilferage. It must be cheap and the material used in packaging should be useful for domestic and other purpose after the use of the contents. In case the material cannot be reused, it must be bio-degradable.
12. Farmers should avoid sales immediately after a harvest. The prices of the produce touch the lowest level in the peak marketing season. Farmers can get better prices by availing themselves of the storage facilities existing in their area. Farmers can meet their cash needs by pledging the store receipts to nationalized banks. However, before taking such

- decisions, they should carefully compare the expected rise in the prices from the post-harvest season to the later months with cost of storage and interest on the value of the produce.
13. The term cold storage refers to a refrigerated chamber for the storage of perishable commodities. In these storage structures, the temperature is controlled and maintained so that the stored perishable products may not deteriorate in quality. In a cold storage, the temperature is maintained in the range of -1.1° to 10° C (30° to 50° F). The other form of cold storage is the freezer storage, in which the temperature is kept below 1.1° C (30° F), and the product remains in frozen state. It helps in the price stabilization of perishable commodities by removing the gluts occurring in the production season. Such facilities should be created at the production point or at market place either by State Government or on co-operative basis by growers themselves.
 14. Farmers can get better prices by sales through a co-operative marketing society and can avoid the possibility of being cheated in the process of marketing their produce. The cost of marketing, particularly the transportation cost for farmers having a small quantity of marketable surplus, is minimized, if transportation is arranged co-operatively by the society, and the profit earned by the society is shared among its members. Superior grade product fetches better prices in market and hence cultivators should be motivated for grading the produce.
 15. Over the years, the consumers are becoming increasingly conscious of chemical residues. So much so that the products grown on land without the application of chemical fertilizers

and insecticidal sprays/dustings are bought at premium prices. Given this change in consumer preferences, the growers would need to avoid the indiscriminate use of chemicals in farming for realizing higher prices of their products.

16. By increasing the quantity to be handled at a time one can effectively reduce marketing cost and increase marketing efficiency. The adoption of proven management techniques increases efficiency. By a constant monitoring of costs and returns, the efficiency at each stage in marketing may be stepped up. Changes in marketing practices (such as sale of orange juice, instead of orange) reduce marketing costs and increase efficiency. Large number of intermediaries with considerable share in producers share be reduce. It is high time to reorganise their numbers, fees and mode of functioning by the government through marketing committee for the betterment of the growers.
17. The government should support by way of making the credit available to the farmers in time, reduce intermediaries and encouraging them for their involvement in self marketing. The non-governmental organizations are also to be encouraged for providing marketing information to the farmers by the state and central government by giving financial and administrative support to them.

**SUMMARY AND
CONCLUSIONS**

6. SUMMARY AND CONCLUSIONS

The agricultural situation in India has undergone a rapid change in last decades. Investment in agricultural sector has increased. Agricultural production in general has achieved a reasonable growth rate but the growth rate has not only to be maintained, but also to be accelerated and the fluctuations in agricultural production are to be minimized. The efforts are underway to evolve location specific technologies, transfer them to farmers field and assure input supply to farmers in right time at right place and of good quality. The rate at which new technology and yield increasing inputs are adopted by farmers is affected by the prices of inputs and outputs. Simultaneously, the consumers also expect the availability of goods at reasonable prices. For achieving these conflicting objectives marketing system for agricultural commodities has to play a very crucial role. This necessitates an understanding of marketing system and market structure for agricultural products.

The year 1935 is a milestone in the field of agricultural marketing research, for it was then that the Central Marketing Department (now the Directorate of Marketing and Inspection) was established. The Central Marketing Directorate realized that no improvement in the marketing system can be brought about unless the existing system was studied in detail. It, therefore, conducted commodity surveys for the study of the existing marketing system and brought out commodity survey reports from time to time. These reports paved the way for further research in the applied field of agricultural marketing.

Research in agricultural marketing is also undertaken by universities and other institutes. But very few macro level studies were taken up by these institutions. The research in agricultural marketing, particularly of applied nature, has been meager and scanty because of the strenuous and time-consuming job of collecting primary data from different market functionaries. Most market functionaries are not ready to part with correct information and data. A lot of scope exists for research in this field. Marketing research in India has yet to make some headway.

An attempt is made in the present study to examine in detail the process of marketing of orange with regards to marketing functions, marketing practices, marketing costs and price received and problem faced by the orange growers in the Vidarbha region of Maharashtra State. A study of this kind is expected to be useful and interesting in a State like Maharashtra where orange marketing could not perform well, despite of various developmental efforts and the resultant achievements under different agricultural development programmes. The study, will therefore, be useful to know in detail the improvements in marketing system of orange which ultimately increase the returns to the orange growers.

With this object in view, the investigation *viz.*, 'Marketing of orange in Vidarbha region of Maharashtra State' was undertaken with the following specific objectives.

- i) To study the structure and organization of selected markets and the marketing practices for orange.
- ii) To estimate the marketing costs, marketing margins and price spread in respect of orange.

- iii) To study the arrival pattern and price movements of orange.
- iv) To ascertain the constraints in marketing of orange.
- v) To suggest the line of improvement in the marketing organisation.

The districts *viz.*, Nagpur and Amravati were purposively selected for the present study. Since most of the area under orange cultivation is concentrated in these two districts of the State. One tahsil was selected from each of the district on the basis having the highest area under orange. Thus, the tahsils, *viz.*, Nerkhed and Morshi were selected from Nagpur and Amravati districts respectively. From each of these tahsils, five villages were selected having maximum area under orange and finally 60 sample orange growers were selected randomly from these villages. The selected orange growers were further categorized in three size groups on the basis of the area under orange crop *viz.*, small size group (upto 0.40 hectare), medium size group (0.41 to 0.80 hectare) and large size group (0.81 hectare and above). The data in order to accomplish the objectives of the study were collected through specially designed questionnaire from these sample orange growers and market functionaries involved in the orange marketing and secondary data were collected from the market committees of the selected markets.

The data collected were compiled and analysed for interpretation of results in the context of the objectives, both tabular and statistical methods of analysis (i.e. growth rate, price function and multiple regression technique) were used to accomplish the objectives of the study. The findings are briefly summarized below.

6.1 Summary

1. The committee consisted of 22 members in both the market (Nerkhed and Morshi) selected from different constituencies. There were 771 market functionaries in Nerkhed and 856 market functionaries in Morshi market. The income of the Nerkhed and Morshi APMC was Rs. 45.96 lakh and Rs. 66.52 lakh, respectively. While the total expenditure was Rs. 39.74 lakh and 59.14 lakh of Nerkhed and Morshi market, respectively. The net profit was Rs. 6.22 lakh as Rs. 7.38 lakh of Nerkhed and Morshi market respectively.
2. At the overall level the highest percentage of the sample orange growers harvested in the month of February followed by March. At the overall level 56.67 per cent of the total sample orange growers carried out grading while 43.33 per cent growers did not follow grading. Because of high cost of packaging material at the overall level 16.67 per cent of the total sample orange growers carried out packaging. At the overall level majority of the sample grower transported their produce by tractor for the local market and truck for the distant market.
3. The details regarding the land use pattern of the selected orange growers indicated that out of the total land possessed 6.86 per cent was uncultivable. The proportion of cultivated land was 93.14 per cent at the overall level. At the overall level the average size of holding of the sample growers was 1.02 hectares. The average per farm area under orange was 0.80 hectares. The cropping intensity worked out to 116.84 per cent. Considering the size groupwise intensity it was the highest (i.e. 120.00 per cent) in the case of the small size group of holding.

4. At the overall level the cropping pattern of sample orange growers was dominated by orange (72.72 per cent) followed by foodgrains consisting of cereals (17.27 per cent) and pulses (7.27 per cent). The cash crops grown by the sample orange growers were vegetables (1.83 per cent) and cotton (3.64 per cent). The same trend was observed in all the three size groups of holding.
5. The per farm average size of holding was 1.02 hectares at the overall level. The average per farm size of orange orchards was 0.80 hectares. The production and productivity was 4214.84 quintals and 182.23 quintals/ha respectively.
6. The per farm production of orange was 59.70, 118.30 and 257.96 quintals in case of small, medium and large size group of holdings, respectively. The average per hectare production of orange worked out to 184.77, 181.23 and 180.69 quintals in case of small, medium and large size group of holdings. At the overall level per hectare and per farm production of orange was 182.23 and 145.32 quintals, respectively. At the overall level the total per hectare production proportion of grade I, II and III was observed to be 30.64, 50.21 and 19.15 per cent, respectively.
7. The size groupwise pattern of disposal indicated that on an average 98.58, 98.35 and 98.08 per cent of the total produce was sold by small, medium and large sized orange growers, respectively. At the overall level, 98.33 per cent of the total produce was sold and rest of the quantity was used for home consumption, for giving on gratis, etc.

8. The information regarding gradewise and size groupwise quantity sold in local market showed that the medium size group sold the highest i.e. 34.33 per cent quantity of Grade I while it was the highest i.e. 56.23 per cent in the small size group of Grade II and 15.06 per cent in the large size group of Grade III.
9. At the overall level the total quantity sold in distant market of Grade I in Mumbai and Delhi market was 677.37 and 1046.74 quintals, respectively and the price received was Rs. 1629.32 and Rs. 1974.18, respectively. In case of Grade II, the total quantity sold in Mumbai and Delhi market was 289.85 and 437.06 quintals, respectively while the price received was Rs. 1599.55 and Rs. 1880.85, respectively.
10. The average per quintal cost of marketing worked out to Rs. 602.05 in Delhi and Rs. 441.54 in Mumbai market. The major items of the cost were the cost of transportation and packing. In case of Mumbai market transportation cost accounted Rs. 131.47 and in Delhi market Rs. 261.33 and the cost of packing was Rs. 176.00 in both the markets. In case of local market the average per quintal cost of marketing worked out to Rs. 102.60. The major item of the cost of marketing were transportation (i.e. 35.22 per cent).
11. In the present study the following marketing channels were identified through which the marketing of orange was carried out : Local market – Channel I (Producer – Retailer – Consumer), Channel II (Producer – Wholesaler – Retailer – Consumer), Channel III (Producer – Pre-harvest contractor - Wholesaler – Retailer – Consumer)

Distant market – Channel IV (Producer – Pre-harvest contractor – Wholesaler (distant market) – Retailer), Channel V (Producer – Wholesaler (local market) – Wholesaler (distant market) – Retailer), Channel VI (Producer – Wholesaler (distant market) – Retailer).

12. The average per quintal price received by producer ranged from Rs. 503 to Rs. 543 in local market in different channels and Rs. 1614 to Rs. 2273.82 in distant market in different channels. When the price spread was examined for Mumbai market for marketing channel IV, V and VI it was noticed that the producer's share in consumer's rupee was 65.78, 63.68 and 69.84 per cent, respectively and in case of Delhi market for marketing channels IV, V and VI it was noticed that the producers share in consumer's rupee was 66.52, 64.49 and 73.72 per cent, respectively. The per quintal average net price received for orange sold through channel VI compared to other channels was the highest and lowest in channel I. Among all three markets the producers share in consumer's rupee was the highest (i.e. 76.90 per cent) in channel I and the lowest (i.e. 59.79 per cent) in channel II.
13. In case of distant markets majority of orange growers i.e. 25.83 per cent (i.e. 10.83 per cent in Mumbai market and 15.00 per cent in Delhi market) sold their produce through the channel IV viz., Producer – Pre-harvest contractor – Wholesaler (distant market) – Retailer – Consumer. The highest quantity was sold through this channel. The extent of sale of produce through this channel was 26.89 per cent of the total quantity sold.

In case of the local market it was observed that majority of orange growers (i.e. 17.51 per cent) sold their produce through the Channel III viz., Producer – Pre-harvest contractor – Wholesaler – Retailer – Consumer. The highest quantity was also sold through this channel. The extent of sale of produce through this channel was 18.18 per cent of the total quantity sold.

14. The yearly indices for arrivals and prices of oranges in two markets viz., Nerkhed and Morshi for a period of ten years were worked out. It is revealed that there were much variations in arrivals in Nerkhed market during the period 1987-88 to 1996-97, over the base year 1987-88 and 1997-98 onwards an upward trend was noticed. Examination of price trend showed the ups and downs during the years 1987-88 to 1993-94. The prices showed an upward trend after 1994-95, over the base year 1987-88. In case of Morshi market, the arrivals showed much variation during the period 1987-88 to 1996-97, over the base year 1987-88 and 1996-97 onwards an upward trend was noticed. The prices showed wide fluctuations from the year 1987-88 upto 1995-96. The prices from 1996-97 onward showed increasing trend.

The seasonal indices were peak in arrivals in the month of November (Nagpur 12.85 per cent and Amravati 12.36 per cent) in Ambia bahar and February (Nagpur 14.32 and Amravati 14.35 per cent) in Mrig bahar in both the markets. When the prices considered it was observed that prices were high in the month of November and February in both the markets.

15. Compound growth rates in arrival and prices of Nerkhed market at the overall level were 14.50 and 12.77 per cent and in Morshi market 12.22 and 11.84 per cent and the same were found positively significant. The compound growth rate in arrivals and prices of February month were higher than all other months indicated that the arrivals and prices of orange was the highest in that month.
16. The factors *viz.*, current arrival, lagged arrival and lagged prices were regressed on price of orange in Nerkhed and Morshi market. It was observed that nearly 25 and 22 per cent variations in the prices were explained in Nerkhed and Morshi markets, respectively by the variables included in the model. In both these markets all the variables were found to be significant.
17. The multiple regression analysis was carried out for observing the effect of various factors in receiving the per quintal net price for the small, medium and large sample orange growers. The values of the coefficient of multiple determination i.e. R^2 turned out to be 0.6116, 0.8083 and 0.7002 for small, medium and large size groups respectively indicating thereby nearly 61, 81 and 70 per cent variations, explained by the factors under considerations. The factors *viz.*, (i) place of sale (X_2), (ii) type of grade (D_{G1}), (iii) sale of orange through pre-harvest contractor (D_{A1}), (iv) sale of oranges through wholesaler (D_{A2}) were observed to be highly significant. For the Nerkhed, Morshi tahsils and at the overall level the values of coefficient of multiple determination i.e. R^2 turned out to be 0.6965, 0.7048 and 0.6447 respectively indicating thereby nearly 69, 70 and 64 per cent variations respectively were explained by the factors

under considerations. The factors *viz.*, (i) place of sale (X_2), (ii) type of grade (D_{G1}), (iii) sale of orange through pre-harvest contractor (D_{A1}), (iv) sale of oranges through wholesaler (D_{A2}) were observed to be highly significant.

18. It was found that the majority of the sample orange growers opined that the major constraints in marketing are fear of breaking contract by pre-harvest contractor (63.33 per cent), delay in harvesting of fruit by pre-harvest contractor (51.66 per cent), high cost of transportation (56.66 per cent), the commission agents generally do not give the information about rates in distant market (46.66 per cent), longer chain of intermediaries (40 per cent), lack of storage facilities (36.66 per cent), pre-harvest contractor insist on low price in the event of damage due to natural calamities (36.66 per cent) and pre-harvest contractor makes several deductions from the contracted amount (33.33 per cent).
19. The existence of large number of intermediaries increases the marketing expenses hence there is great need to decrease the number of intermediaries in the orange marketing to reduce the cost of marketing. In orange marketing cost, transportation cost, packaging charges and commission charges accounted major share. For reducing the marketing cost adopting the low cost packaging material, co-operative transport facility and reducing the number of commission agents in the market could be suggested. The infrastructural facilities required in terms of pre cooling facilities, cold storage and refrigerated containers, low cost packaging material and cost involved in this facilities also required more attention.

6.2 Conclusions

The above findings led us to draw the following specific conclusions from the present study.

1. There are several marketing channels in orange marketing. Six marketing channels were identified of which channel IV was most common covering 25.83 per cent sample orange growers and nearly 26.89 per cent of their produce.
2. The orange growers generally packed and transported (by truck) the produce in wooden boxes (16.67 per cent sample orange growers and 13.01 per cent of produce) for the distant market.
3. The per quintal cost of marketing in local markets was Rs. 102.60. For the distant market Mumbai and Delhi it was observed Rs. 441.54 and Rs. 602.05 respectively indicated higher marketing costs in distant markets.
4. The price premium received between different grades and markets were considerably high that too in distant markets.
5. The factors *viz.*, (i) place of sale, (ii) type of grade, (iii) sale through pre-harvest contractor, (iv) sale through wholesaler were found to be significant affecting the price received for oranges.
6. The compound growth rate in arrivals and prices of February month was higher than all other months indicated that the arrivals and prices of orange was the highest in that month.
7. The price function shows the coefficient of lagged arrival and lagged price was positive and significant. It indicates that price received by the farmers mostly influenced by the lagged year arrivals and lagged prices of that market.

6.3 Policy implications

1. Presently, most of the markets do not have spacious market yards and the transactions are carried on in congested areas in the centre of the city and on the roadsides. Recently, some market committees have constructed spacious market yards; but a majority of market committees do not have them because of the paucity of funds and the non-availability of land.

With increased market arrivals, and in order to enforce strictly market regulations, it is necessary that a large number of market yards should be developed in rural areas with all the necessary marketing facilities. Without spacious market yards, it is not possible to centralize and effectively supervise the transactions taking place in the area. The development of these spacious market yards is also essential for the performance of various marketing functions.

2. The increasing instability in prices adversely affects the income of farmers as well as the tempo of the green revolution. There is, therefore, a need for reducing price instability. Some of the steps to check price instability are: fixation of minimum support/procurement prices of the crops by the government; purchase of the commodities if market prices fall below that level; and development of warehousing facilities to check post-harvest sales among the farmers.

4. The producers suffer in the absence of grading because they get the same price for the best quality of the produce and for a fair average quality. Grading ensures that producers receive a price which is commensurate with the quality of the produce. At the same time, grading protects the consumers against adulteration. The progress in the adoption of grading by farmers and consumer preference for graded rather than ungraded produce has been poor; and this situation needs to be corrected. Scientific quality testing machines and equipment can solve this problem by rendering a quick and systematic grading service.
5. With the increase in production and marketed surplus, farmers and traders were faced with the problem of adequate and quick means of transportation of the produce at the village level, inter-market level and inter-State level. Farmers generally transport the produce from the farm or village to the market in their bullock carts or tractors. These take a lot of time and involve a high cost of transportation by reason of their slow speed and low carrying capacity. The mechanization of transportation for the haulage of the produce at this level is very important, and the construction of metalled roads is a prerequisite for this purpose.
6. To make farming more attractive and the hard labour of the farming community more remunerative, it is necessary that storage facilities should be extended right upto the producers' level. This is possible only by having a network of warehouses all over the country, which can serve not only as places of storage but as places of orderly transactions of selling and

buying, and thus ensure that farmers do not travel long distances to market their produce. Once this system is evolved, a farmer will be in a better position to market his produce and get benefits of hard work.

The problem of the storage of produce has been accentuated by the increase in the volume of production. Storage is necessary, at the village site to check the tendency of immediate post-harvest sale by the farmers, and at the market level so that the various marketing functions may be performed and advantage may be taken of any price rise. In the recent past, warehouses have been constructed by the Food Corporation of India, the Central Warehousing Corporation, the State Warehousing Corporations, Co-operative Marketing Societies and the government. Individuals also have built-up storage space. The available storage space in these warehouses is less than the requirement. There is, therefore, a need for the construction of more godowns, specially in rural areas.

7. Market development with all the ancillary facilities is highly capital-intensive, and returns on investment in it accrue slowly over a period of years. For market development, a special arrangement for financing is necessary.
8. It is equally necessary to educate farmers in marketing of products so that they may derive necessary benefits of their activities. Without proper education, benefits cannot reach the farmers fully. This is more so in the present context with the

availability of increased marketed surplus with producer – farmers.

9. The efforts of the government to improve the marketing system of agricultural commodities have been only partially successful in creating healthy conditions for scientific and efficient marketing. Moreover, the progress of regulated markets is not uniform in all areas. The need for strengthening co-operative organization has, therefore, been recognized for the marketing of the produce of farmers and for making inputs available for them at the right price and time. The co-operative institutions are expected to function as competitors of private traders in the market. These organizations pool the produce of the small farmers having a small surplus to market and improve their bargaining power. They have also helped government agencies in the execution of the policy decisions bearing on the procurement and distribution of other essential commodities.

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APPENDICES

8. APPENDICES

I. Questionnaire for orange producers

1. Producers name -
 Village -
 Tahsil -
 District -
 Experience of growing Santra (in years) -
2. Total land holding

	Hectare	Price	Farm tax
Rainfed			
Irrigated			

3. Details about Santra fruit

Plot No.	Area in ha	Years of planting	Year of commencement of production	Current age	Remaining years	Current value
1						
2						
3						

4. Production in previous 2-3 years

Year	Area in ha	Production (qtl/ton)	Income (Rs.)
1995-96			
1996-97			
1997-98			

5. Details about Santra marketing

	Year	Area in ha
A. Marketing on pre-harvest contract basis		
B. Marketing on post-harvest basis		
C. Personally marketing in markets		
D. Other		

6. Details about pre-harvest contract (if undertaken) marketing

A. In which stage of growth is the contract made ?

1. At half maturity
2. At just maturity
3. At inflorescence stage

B. What are the conditions of contract ?

1. About payment
 - i. In advance
 - ii. When harvesting half done
 - iii. When harvesting completed
 - iv.
2. About harvesting
 - i. Whole crop will be harvested at once
 - ii. Harvesting will be in 2/3/4 stages
 - iii. Harvesting will depend upon market condition
 - iv.

C. Advantages and disadvantages of pre-harvest contract marketing

Advantages -

- i.
- ii.
- iii.

Disadvantages

- i.
- ii.
- iii.

7. Details about personal marketing (if undertaken)

A. When do you start harvesting

1. At just maturity
2. After complete maturity
- 3.

- B. Do you consider market demand while undertaking harvesting ? Yes/No.

If yes, which market do you consider

1. Local
2. State level
3. Out of state

- C. Other aspects

8. Details about Santra harvesting

1. When do you undertake harvesting

- i. In morning
- ii. In afternoon
- iii. Throughout the day

2. Does harvesting in cool hours have any advantage in storage ? Yes/No

9. Details about grading and packaging

Type	Labour (hr/days)			Charges (Rs.)		
	Male	Female	Total	Male	Female	Total
1. Harvesting						
0.20 ha						
0.40 ha						
0.60 ha						
1 tonne						
2 tonne						
2. Grading and packaging						
1 tonne						
2 tonne						
4 tonne						
8 tonne						
Total						

10. Do you undertake grading of Santra ? Yes/No

A. If yes, what are the grades ?

1.

2.

3.

B. Which of the following do you take into consideration while grading the Santra fruits ?

1. Size of the fruit

2. Colour

3. Weight of the fruit

4. Market

5. Compactness, variety

6. Others

C. Gradewise income

Quintal/tonne

11. Do you undertake packaging of Santra ? Yes/No

If yes, give details about it ?

Sr. No.	Type	Size (kg)	No. of fruits /pack	Price / fruit (Rs.)	Is it reusable? If yes, how many times	Which type is best

12. Do you use filler while packing Santra fruits ? Yes/No

A. If yes, which type

B. Cost per kg of filler material (Rs.)

13. What are the constraints you face during grading and packaging?

1.

2.

3.

14. Do you take into consideration the type of market while grading and packaging ?

Yes/No

Does a particular market requires particular type of packing ?

If yes, what are the reasons behind it ?

1.

2.

3.

15. Do you label the packs with brand name ?

If yes, what is it ?

1.

2.

16. Quantity and cost of the packaging material

Material	Quantity (No./kg)	Cost (Rs.)
1. Boxes		
2. Grass		
3. String, tape etc.		
Total		

17. Transportation of Santra

A. Details about the means of transportation

Means	Quantity	Market	Distance from village	Expenditure (Rs.)
Truck				
Railway				
Tempo				
Bullock cart/ Tractor				
Total				

B. Transportation by which of following is timely and safe ?

Time required per 100 km transport

1. Truck
2. Railway
3. Tempo

C. Which of the following is the cheaper means of transport ?

Freight charges per 100 km/quintal/ton transport

1. Truck
2. Railway
3. Tempo

D. Which of the following causes most transportation loss ?

Percentage

1. Truck
2. Railway
3. Tempo

- E. Are railway wagons available timely in case of rail transport ? Yes/No
1. Is adequate space available in railway wagons? Yes/No
2. Is the space available in express trains ? Yes/No

F. Freight charges

Per 100 km/ctl/ton (Rs.)

1. Truck : per ctl/ton (Rs.)
2. Railway : per ctl/ton (Rs.)
3. Tempo : per ctl/ton (Rs.)

G. Constraints and remedies in transportation

Constraints

Remedies

- | | |
|----|----|
| 1. | 1. |
| 2. | 2. |
| 3. | 3. |

18 A. Details about the total income

Sr. No.	Grade	Quantity (ctl/box)
1.		
2.		
3.		
Total		

18 B. Details about marketing in the year (1998-99)

Sr. No.	Name of the buyer	Time (month/week)	Quantity (qtl/ton/box)	Market and distance from village in km	Rates obtained (per qtl/box)	Income (Rs.)
1.						
2.						
3.						

19. Details about the marketing cost

Sr. No.	Particulars	Labour/material	Expenditure (Rs.)
1.	Harvesting		
2.	Grading		
3.	Packaging		
4.	Transportation		
5.	Labour charges		
6.	Octroi		
7.	Commission		
8.	Postage		
9.	Damage		
10.	Other expenditure		
11.	Personal expenses		
Total			

20. Which market offered more price ?

Average price

1. Local market
2. State level market
3. Out of state market

21. What should be done to get good prices ?

(Ex. Timely harvesting, grading, packaging, proper market)

- 1.
- 2.
- 3.

22. Is the consumers choice pattern taken into consideration while sending the fruit to market ?

Yes/No

If yes, how it is addressed ?

(Ex. Peculiar and attractive packaging, proper grading)

- 1.
- 2.

23. 1) Did you sale your Santra crop through co-operative society ?

Yes/No

If yes, give the quantity (qtl/ton/boxes)

2) If yes, did it help you fetch good price ?

Yes/No

3) What price did you get so ?

4) What is the marketing cost through co-operative channel ?

24. 1) Do you have cold storage facilities for storage of Santra? Yes/No
- 2) If not, did you hire cold storage facilities? Yes/No
- 3) For how many days did you cold store the Santra ?
- 4) What are the expenses incurred upon cold storage ?
(Rs./qtl/month)
- 5) What price did the cold stored Santra fetch ?
(Rs./kg/qtl/box)
-

B. Rates of Santra in the year while making pre-harvest contracts

1. Per acre

2. Per ton

3.

C. Expenditure on packaging and grading

1. Per qtl (Rs.)

2. Per box (Rs.)

3.

D. Expenditure on transportation

1. Per qtl (Rs.)

2. Per km (Rs.)

3. Per truck load (Rs.)

11. Rates you obtained on selling the Santra

Sr. No.	Particulars	Market name
1.	Per qtl (Rs.)	
2.	Average per ton (Rs.)	
3.	Per box (Rs.)	

12. Quantity of Santra and different markets to which the fruits were sent

Sr. No.	Name of market	Quantity (qtl/ton/box)
1.		
2.		
3.		

13. Do you sell the Santra through your own agency ? Yes/No
 If not, through which of following agency do you sell it
1. Wholesale Dealer
 2. Commission agent
 3. Retail Traders
14. Details about your business
- A. Strength of your staff
 Number - _____ Total salary - _____
 - B. Do you own an office ? _____ Yes/No
 Place – _____
 If hired, what is rent (per month/year) (Rs.) _____
 - C. Do you use cold storage for storing the fruits ? Yes/No
 Its charges (per month) (Rs.) _____
 - D. Expenditure an office related things (Rs.)
 (Ex. Stationary, postage, telephone bill, electric bill, etc.)
 - E. What is your annual turnover in this business (ton/boxes)
 - F. Santra worth how many rupees did you take on contracts ?
 Annual turnover in 1998-99 (Rs.) _____
15. Do you have your own transportation means ? _____ Yes/No
 If yes, what type - Truck/Tempo/Tractor
16. Enlist the advantage and disadvantages of pre-harvest contract method
- | Advantage | Disadvantage |
|-----------|--------------|
| 1. _____ | 1. _____ |
| 2. _____ | 2. _____ |
| 3. _____ | 3. _____ |
17. Main constraints you are facing in this business ?
1. _____
 2. _____

III. Questionnaire for Wholesale Dealers

1. Name -
Village -
Tahsil -
District -
2. Name of the market -
3. What is your position in this business ?
Wholesaler
Commission agent
4. For how many years are you in this business ?
5. Details about your business
 1. In which fruit do you trade ?
(Mango/Grape/Sweetorange/Orange/Pomegranate/
Ber/Sapota/Guava/Papaya)
 2. Do you own the business place ? Yes/No
If hired, what is the rent/month (Rs.)
 3. What is the licence fee ?
 4. In which market do you have branches ?
 5. Strength and salaries of the staff
Number - Salary -
6. On which aspect do you levy extra charges

Name of fruits	Aspects	Rates /kg/box/ctl
1.		
2.		
3.		

7. Details about the Santra fruit available for sell in current season

Month	Quantity (qtl/ton /box)	Selling price	Minimum selling price

8. Do the producer send fruits after grading ? Yes/No

9. Constraints in business

A. Market related -

1)

2)

B. Grading and packaging related -

1)

2)

C. Storage and transportation related -

1)

2)

D. Commission related -

1)

2)

E. Others -

1)

2)

IV. Questionnaire for Retailers

1. Name -
 Village -
 Tahsil -
 District -
2. Name of the market -
3. For how many years have you been working as a retailer ?
4. Details about your business
 - A. Are you a shopper or hawker ?
 Shopper/Hawker
 - B. Do you have your own stall ? Yes/No
 - C. If hired, what is the hiring charge ?
 (Rs. -)
 - D. Have you kept some deposit for hiring it ? Yes/No
 If yes, amount (Rs.)
 - E. If hawker, the hand kush cart is your own or not ? Yes/No
 (Price Rs. -)
 - F. If it is your own, it market price ? (Rs. -)
5. From whom, do you purchase the Santra fruit ?
 - i. Wholesale dealer
 - ii. Commission agent
 - iii. Farmer
 - iv. Pre-harvest contractor
6. When do you purchase the fruit ?
 - i. Daily
 - ii. On alternative days
 - iii. Twice a week
 - iv. Once a week

7. What is the payment pattern for fruit purchase ?
 - i. Cash
 - ii. Payment after selling the fruit
 - iii. On the weekend
 - iv.
8. What quantity do you purchase at once ?
9. Do you pay any extra charge on purchasing ? Yes/No
If yes, on which aspects ?
10. What is the turnover of your business ?
 - i. Weekly (Rs.)
 - ii. Monthly (Rs.)
 - iii. Annually (Rs.)
 - iii. Retail selling rate –
11. What are the main constraints of this business ?
 - i.
 - ii.
 - iii.

VITA

9. VITA

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A candidate for the degree

of

DOCTOR OF PHILOSOPHY

in

AGRICULTURAL ECONOMICS



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T-4795