ECONOMICS OF PRODUCTION AND MARKETING OF BANANA IN WASHIM DISTRICT

THESIS

Submitted to
Dr. Panjabrao Deshmukh Krishi Vidypeeth, Akola
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By

TELANG SWAPNIL RAMESH

DEPARTMENT OF AGRICULTURAL ECONOMICS AND STATISTICS
POST GRADUATE INSTITUTE,

DR. PANJABRAO DESHMUKH KRISHI VIDYAPEETH
KRISHINAGAR PO, AKOLA (MS) 444104

Enrolment Number II-1305 **2016**

DECLARATION OF STUDENT

I hereby declare that the experimental work and its interpretation of thesis entitled **"ECONOMICS OF PRODUCTION AND MARKETING OF BANANA IN WASHIM DISTRICT"** or part thereof has neither been submitted for any other degree or diploma of any University, nor the data have been derived from any thesis or publication of any university or scientific organization. The sources of material used and all assistance received during the course of investigation have been duly acknowledged.

Place :- Akola

Date :- 21/6/2016

(TELANG SWAPNIL RAMESH)

Enrolment No. II/1305

CERTIFICATE

This is to certify that the thesis entitled **"ECONOMICS OF PRODUCTION AND MARKETING OF BANANA IN WASHIM DISTRICT"**. Submitted in partial fulfilment of the requirement for the degree of **"Master of Science in Agriculture (Agricultural Economics)"** of Dr. Panjabrao Deshmukh Krishi Vidhyapeeth Akola is a record of bonafide research work carried out by **Telang Swapnil Ramesh** under my guidance and supervision. The subject of thesis has been approved by the student advisory committee.

Place : Akola
Date : 23/6/2016

(Dr. V. K. Khobarkar)
Chairman
Advisory Committee

Countersigned

Associate Dean
Post Graduate Institute
Dr. Panjabrao Deshmukh Krishi Vidhyapeeth, Akola

THESIS APPROVED BY THE STUDENT'S ADVISORY COMMITTEE INCLUDING EXTERNAL EXAMINER (AFTER VIVA – VOCE)

1.	Chairman	Dr. V.K.Khobarkar	
2.	Member	Dr. S.J.Bankar	
3.	Member	Dr.D.M.Mankar	
4.	Member	Shri R.D. Walke	
5.	External Member	Dr. R.G. Deshmukh	

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It believes that passion at work is important. It's not just a carrier or a job, it's your life. Don't want to just do the work to be another number, want the work to count and be memorable and want to be valued, for that, be one of the part of a culture that believes in first class rewards for top performance. If you make one decision you will solve many problems. If you put a lot of hard work you will attain lasting success. By peeping back to my educational life, today I feel that I am at the meridian movement achieving the goal.

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Place: Akola
Date: 23 / 6 /2016

(Telang Swapnil Ramesh)
Enrollment No. II/1305

TABLE OF CONTENTS

A) LIST OF TABLES

B) List of Figures

C) List of Plates

D) LIST OF ABBREVATIONS

%	-	Per cent
/	-	Per
Dr. PDKV	–	Dr. Panjabrao Deshmukh Krishi Vidyapeeth
Rs	-	Rupees
Econ	–	Economics
Etc.	–	Et cetra
Fig	-	Figure
N	-	Nitrogen
P	–	Phosphorous
K	–	Potash
Kg	–	Kilogram
Ha	–	Hectare
i.e.	–	That is
J.	–	Journal
M.S.	–	Maharashtra State
MT	–	Million tones (Metric tones)
Sr.No	–	Serial Number
Unpub.	–	Unpublished
Qt	–	Quintals

(F) THESIS ABSTRACT

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- Name of the student : **TELANG SWAPNIL RAMESH**
- Name and Address of major Advisor : **Dr. V. K. KHOBARKAR**
  Assistant Professor,
  Department of Agricultural Economics and Statistics
  PGI, Dr. PDKV Akola.
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- Signature, Name and address of forwarding authority

Head

Department of
Agricultural Economics and
Statistics, PGI . Dr .PDKV, Akola.

ABSTRACT

In Washim district Karanja Mangrulpir and Manora tahsils are well known for banana cultivation. Different varieties viz., Mahalaxmi, Shrimanti, G-9, Kedila mostly grown in these area. The present study was undertaken to study the socio economics characteristics of farmers,

economics of production and marketing of banana which will help to suggest remedial measures for improving practices during production and marketing of banana. Based on area under banana, the study was restricted to Karanja Mangrulpir and Manora tahsils of Washim district.

From each tahsils three villages were selected and they were grouped into small, medium and large size on the basis of their land holdings. In each group 20 Banana growers were selected. In all, 60 Banana growers were selected.

The data on cost of cultivation and marketing of banana was obtained for the year of 2014-2015 with the help of specially designed schedules by survey method.

The overall per hectare cost of cultivation of banana was Rs.. 301996.34 The overall average gross return per hectare was Rs. 588524.81 and overall average profit per hectare was Rs.. 286528.47 The study revealed that banana crop is economical in this area.

The benefit cost ratio of Banana at cost 'C' was 1.86 in small group,1.93 in medium group and 2.06 in large group.

In small and at overall level, the regression analysis reavaled that,the variable seed significant contribution at one per cent.

Producer's share in consumer rupee was highest in channel I (spot marketing) i.e 100. per cent.

The major problem faced by banana grower while production were high cost of planting suckers, high wind during monsoon causing damage to the plant, lack of technological knowledge about disease, pest control measure. While marketing problem are inadequate storage facilities, combining two small bunches as one bunch during counting for price fixing.

CHAPTER I

INTRODUCTION

Banana (*Musa* sp.) is the second most important fruit crop in India next to mango. Its year round availability, affordability, varietal range, taste, nutritive and medicinal value makes it the favorite fruit among all classes of people. It has also good export potential .Hi-tech cultivation of the crop is an economically viable enterprise leading to increase in productivity, improvement in produce quality and early crop maturity with the produce commanding premium price. Banana evolved in the humid tropical regions of S.E.Asia with India as one of its centres of origin. Modern edible varieties have evolved from the two species – *Musa acuminata* and *Musa balbisiana* and their natural hybrids, originally found in the rain forests of S.E.Asia. During the seventh century AD its cultivation spread to Egypt and Africa. At present, banana is being cultivated throughout the warm tropical regions of the world between 30^0 N and 30^0 S of the equator. In India banana ranks first in production and third in area among fruit crops. It accounts for 13% of the total area and 33% of the production of fruits. Production is highest in Maharashtra (3924.1 thousand tones) followed by Tamil Nadu (3543.8 thousand tonnes). Within India, Maharashtra has the highest productivity of 65.70 metric tonnes /ha. Against national average of 30.5 tonnes/ha. The other major banana producing states are Karnataka, Gujarat, Andhra Pradesh and Assam

Fruits are undoubtedly man's oldest food. The history of fruits is as old as that of Adam, Eve and the fridden apple. In an organized agriculture, farmers prominently gave place to the cultivation of various fruit trees. As such, the technique of fruit cultivar and fruit utilization received an attention of human being at a very early stage.

In India, the cultivation of fruit crops dates back to ancient times. In the fourth century B.C. and even in the pre-Buddhist period, horticulture was an important vocation in India. Mango, Banana, Phalsa, Jackfruits, Beal are such important indigenous fruits grown in India. The

production of fruits and vegetables is vital important as it provides three to four times more income than other crops. Fruits and vegetables are the prime source of vitamin and minerals without which human body cannot maintain proper health to resist the diseases. Banana is one of the oldest fruit of the world. Its names "Adam's fig", "Apple of paradise" and the botanical name *Musa paradisica* are suggestive of its antiquity. Unlike other fruits, banana is a herbaceous plant. This fruit is delicious and seedless and substantive solid food for babies and like invariably by all age groups in human society. It is a rich source of energy in the form of sugar and starch and the cheapest fruit in India.

Banana is also a good source of vitamin 'A' and a fair source of vitamin 'C', 'B' and 'B_2' (Riboflavin). Banana fruits are rich source of minerals like magnesium, sodium, potassium and phosphorus and a fair source of calcium and iron. Banana contain 70 per cent water, 27 per cent carbohydrates, 0.5 per cent crude fiber, 0.3 per cent fats, 1.2 per cent proteins, 80 ppm calcium, 290 ppm phosphorus, 6 ppm iron, 2.5 ppm carotene, 0.8 ppm riboflavin, 7 mgs ascorbic acid per 100 mgs fruits and energy 104 calories per 100 mgs of fruit. Banana is second important commercial fruit crop and also popular next to mango in India. It is grown mostly under tropical conditions of high humidity in the countries like Cuba, Jamaica, Panama and Colombia. Ripe fruits of banana are delicious and are used intensively in weddings, festivals and for worship. The immature fruits are used as vegetable. Many products are made from banana such as jam and dried fruits as an antiscorbic. Banana flour is prepared from unripe fruits and banana powder from ripe fruits. Starch is manufactured from the pseudostem. The pseudostems of all type of banana have been used for manufacturing paper boards. In South India, the leaf of banana is used as a plate for serving meals. The sheathes and leaves are used for making crude ropes. Banana yield a good fibre. The species *Musa* textiles is well known for their strong fibre quality.

Being available in all seasons of the year this nutritious fruits is a state subsidiary food within the reach of buying capacity by all. Because these reason's the fruits has universal demand for consumer.

Total area under banana in India is 569.50 thousand hectares and production 18887.8 thousand tones and productivity 33.20 tonnes per hectare during 2005-06 which is continuously increasing day by day. During 2008-09 the area under banana was 709.00 thousand hectares, production 26217.0 thousand tonnes, and productivity 37.0 tonnes per hectares. Banana ranks second occupying about 13 per cent of total area next to Mango an accounting for about 34.2 per cent of the total production of fruits. India has the 1st position in the world in banana production and area. In India, Kerala, TamilNadu, Orissa, Karnataka, Gujarat, West Bengal, Andhra Pradesh, Maharashtra, Assam, Bihar and Madhya Pradesh are major banana growing states.

In the year, 2013-14, in Maharashtra, area under banana was 73.40 thousand hectares and 4321.90 thousand million tonnes production and productivity was 63.00 MT/hectare which has increased to 80 thousand hectares in area, 4960.00 thousand MT in production, 63.00 MT/hectares in productivity during the year 2008-09. In Maharashtra, Jalgaon, Nanded, Solapur, Nandurbar, Ahmednagar, Buldhana, Parbhani, Sangali, Wardha, Washim and Amravati are the major banana growing districts.Cultivation of banana now a days is followed in most of the parts of major states in India. It is being undertaken with enthusiasm, intensive care and with proper economic investment. There are various known varieties of banana which include Monthan, Harichhal, Rajapuri, Champa, D. Cavaudish, Poovan of Laluelchi, Giant Naine, Mahalaxmi and Shrimanti. Considering the growing characters of each of these varieties, the peculiar one is chosen for the specific area. In selected area of Washim district, most of the farmers are growing Mahalaxmi, Shrimanti, and G-9 varieties of banana.

Mahalaxmi

The physical characteristics of *Mahalaxmi* variety of Banana are such that, its plant attains the height of 2.25 to 2.50 meters. The purple spots are invariably observed on leaves. The size of fruits is 17.20 to 20 cm in length and it is round in shape. The plant of this variety of banana develops a bunch of fruits at 45^0 angles with stem and weight of developed

bunch is in general measures to 15 to 20 kg. The banana of this variety are largely sold in market.

Shrimanti

The physical characteristics of *Shrimanti* variety of banana are such that the plant height of this variety is 1.80 to 1.95 meters. The fruits of this variety are elongated round shaped with a length of 20 to 22 cm. The bunch of fruits of this variety evergest at 70^0 emerges with the stem with a length of 90 to 95 cm. The weight of a developed bunch invariantly measures to 20 to 22 kg. The banana of this variety are poor in sweetness in comparison to Mahalaxmi variety.

Mahalaxmi and Shrimanti varieties of banana are mostly grown on large scale in Mangrulpir, Karanja and Manora tahsil of Washim district. Considering the importance of banana, the present study "Economics of production and marketing of banana in Washim district" has been undertaken with the following objectives

Objectives of the study

- To study the socio-economic characteristics of selected farmers of Banana growers.
- To study the economics of production of banana.
- To study the marketing of banana.
- To identify constraints faced in production and marketing by banana grower.
- To study the resource use efficiency of banana.

The results of the study based on the above objectives would be useful to banana growers in knowing the present technology of cultivation of banana and possibilities of increasing the returns through optimum utilization of resources. The study will provide guidelines and directions for proper use of resources for maximization of profits in banana cultivation. It will also help to the government in framing the price polices

and for planning and implementing different development programmes in the state.

Importance

The study is undertaken in Karanja, Mangrulpir and Manora tahsils of Washim district which are famous for banana cultivations. Mostly the farmers are growing Mahalaxmi , Shrimanti, G-9 and Kedila varieties of banana on a large scale in this area but no more research on banana has been done in these, district. This research study is definitely expected to generate an inertia amongst banana growers in a selected area.

Limitations

The study has been conducted in a limited area of selected tahsils of banana zone i.e Karanja , Mangrulpir Manora tahsils of Washim district. The findings of the research can therefore be applicable only in such areas and where similar type of conditions exists in respect of agro-climatic conditions.

CHAPTER II

REVIEW OF LITERATURE

Studies on economics of banana production and marketing have attracted the attention of research workers in recent years. .Economic research provides information and knowledge needed for the formulation and evolution of economic policies. In modern age, farming is regarded as business rather than a way of life. To make this business more remunerative and profitable, multiple efforts are being made by individual farmers to increase management efficiency. The estimation of cost of production is one of the fundamental objective of agricultural economics. In India, number of the research workers have attempted the cost studies. Review of work done by different research workers in the field helps the researcher not only to formulate plans of one's research programme but also to avoid pit falls in collection of data and to conduct the work on proper lines. It is intended therefore to review the work done by different research workers in the field. Few empirical studies, having direct or indirect bearing on the objectives of the present investigation are reviewed in this chapter.

Mahajan (1980) studied the economics of banana in Jalgaon district. An estimated per hectare average cost 'A' of banana cultivation was Rs 7,58.29 which formed 71.8 per cent of total cost. Considering, overall average cost 5.18 per cent of the cost was incurred on irrigation, 38.00 per cent on manures and fertilizers and 9.32 per cent on hired human labour. Average total cost of cultivation of banana was Rs 10,014.55. Total cost in the case of small, medium and large groups was Rs 10,920.67, Rs 9,839.33 and Rs 10,074.00, respectively. Material cost showed an increasing trend with increase in the size of holding. Cost of production of banana was estimated to Rs 41.28, Rs 34.06 and Rs 31.90 per quintal in small, medium and large size groups, respectively.

Patil *et al.* (1981) studied seasonal variation in weekly prices of banana. The prices of banana were much greater in the month of June and December than that of January to May. Secondly, price per unit of

banana was comparatively higher during the first week of August, September, December and January and fourth week of July and June in Nanded market. Arrivals and prices were negatively correlated and the relationship was statistically significant.

Chundawat *et al.* (1982) studied high density plantation in relation to yield and quality of Basrai banana. More dense planting has been evaluated for productivity and quality in Basrai banana. Two years of record of yield in Basrai banana planted at five different spacing, revealed that, spacing had significant effect on yield with the maximum (65,140 kg/ha) under the closed spacing (1.2 x 1.2 m) and the minimum (35,120 kg/ha) under the widest spacing (1.8 x 1.8 m). The increase in the yield has been mainly due to increased population per unit area as with the reduction in spacing significant reduction in bunch weight and number of fingers per bunch was recorded. Total soluble salts, percentage remained unaltered but maturity was significantly delayed by about 197 days in closer spacing (1.2 x 1.2 m) over the widest spacing (1.8,xl.8m).

Birari and Kasar (1983) studied factor share in banana cultivation in Jalgaon district. The total cost of cultivation of banana was estimated with the help of cost concepts normally used in farm management studies. The relative factor share in banana output was estimated in proportion to the factor elasticities obtained by fitting Cobb-Douglas production function. It was noted that the rental value of land accounted for the highest share i.e. 29.43 per cent of total cost followed by fertilizers with 25.71 per cent, human labours 9.86 per cent, manures 9.23 per cent and irrigation 7.45 per cent. As regards the relative factor share, it was revealed that, the area under banana alone accounted for about 67 per cent of output of banana.

Bandyopadyaya (1987) conducted a study on the extent of banana cultivation during the period 1970-71 to 1983-84 in the State of Maharashtra and observed that Maharashtra plays an important role in regard to the area under banana cultivation, volume of production and improved productivity of banana. The study revealed that the compound

growth rates area, production and yield of banana in Maharashtra were 1.97 per cent, 2.18 per cent and 0.24 per cent per annum, respectively. The value of the correlation coefficient and regression coefficient in his studies indicated that with the allocation of more land under banana the production would significantly increase in Maharashtra State.

Madalia (1987) traced the history of banana development in Gujrat. He observed that, irrigation and fertilizers were the major items of cost structures. He observed in his study that the banana growers from large holdings were least efficient. Cobb-Douglas production function was used to estimate the productivity of labour, manures and fertilizers and working capital. The total income from banana was explained by these variables. It was concluded that, by reallocation of these sources, the income can be increased by 390 per cent.

Singh and Kumar (1987) studied the changes in prices and marketing margins of fruits in India. They revealed that the producer's share in consumer's rupee of fruit varied from market to market because of existence of large difference in the marketing system. During the recent period the producer's share in the consumer's rupee has declined in fresh fruits but in the case of dry fruits it has remained more or less same during the period. 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.

Thomas and Gupta (1987) calculated cost of cultivation of banana in Kottayam district of Kerala. They worked out the net returns Rs. 6101 per hectare. The benefit cost ratio was estimated to 1.22. Cobb-Douglas type of production function was used to find out the productivity of manures, fertilizers and working capital.

Arputhraj (1988) studied the economics of banana cultivation in Kerala for the year 1987. The cost of cultivation of banana was Rs. 36,252 per hectare. The highest item of expenditure was human labour forming 23 per cent of' the total cultivation expenses. He also worked out the total man days requirement for banana cultivation as 272 man days per

hectare out of which preparatory cultivation accounted for 27 per cent of total man days. The average income per hectare was estimated to Rs. 56,025. The number of suckers per hectare was 6730 which worth Rs. 3,365. Net income per hectare at cost 'C' was Rs. 22,318.

Chennreyudu and Rao (1988) studied the land use efficiency of banana. They observed that the operational costs contributed to the extent of 69.55 per cent of the total cost of cultivation of banana. The operational and fixed costs were in proportion of 70:30. Amongst the various items under operational costs, manure and fertilizers possessed large share followed by human labour. The costs of manure and fertilizer per hectare was Rs. 5,042.66 and that of human labour wasRs.5,021.66. The benefit cost ratio was low and the net income per hectare was Rs. 8,917.55. As the crop is a high risk crop, farmers are naturally reluctant to increase their investment and hence the low ratio. The Cobb-Douglas production function was fitted to study the resource productivity and returns to scale. They noticed that the R^2 was 0.89which reveals that the fitted Double Log Model was adequate in capturing the variation in net income. The regression coefficient of land was exerting significant (impact on net income indicating that, for one per cent increasing of land keeping all other variable constant at geometric mean level would increase in net income by 0.80 per cent. The land size efficiency was more in large farmers as compared to marginal farmers.

Radhakrishnan (1988) studied economics of banana cultivation in Irinjalakkuda block in Trichure district of Kerala. The study revealed that the per hector cost of cultivation of banana was Rs. 36,249 and gross returns was Rs. 45,068 and the net income was Rs. 8,819 at cost 'C'. The main items of expenditure in the cost of cultivation of banana were human labour and manure accounting 26.98 per cent and 28.40 per cent of the total cost, respectively. The contribution of family labour showed a decreasing trend as the size of holding increases.

Parkale and Babar (1989) studied the cost of cultivation of banana in Kolhapur district. Per hectare total cost of cultivation of banana

was Rs. 44,699.52 (Cost 'C'). The proportion of cost 'A' in total cost was 54.02 per cent while proportion of cost 'B' was 88.26 per cent. Rental value of land, human labour, manures and fertilizers, and seed were observed to be the major items of cost. Yield per hectare was 57.50 metric tonnes and the gross returns per hectare was Rs. 78,296.54 and given net profit was Rs. 33,570 per hectare.

Kulkarni (1990) studied economics of production and marketing of banana in Edalabad tahsil of Jalgaon district. He worked out average per hectare cost of cultivation (Cost 'A') to Rs. 22,944.88 which formed 68.58 per cent of total cost. Out of this 23.64 per cent cost was on hired human labour,17.63 per cent cost on fertilizers, 7.34 per cent on interest on working capital and 6.77 per cent on manures. The cost 'B' was Rs. 28,534.75 per hectare which accounted for 85.28 per cent of total cost. The cost 'C' was Rs. 33,456.57. The cost 'C' per hectare in case of small, medium and large group was Rs. 30,082.90, Rs. 34,160.27 and Rs. 36,126.36, respectively. The yield per hectare was 61.96 metric tonnes and gross returns per hectare was Rs. 69,632.31 giving the net profit of Rs. 36,176.80 per hectare. On an average per metric tonne cost of cultivation was Rs. 539.10. The average output- input ratio was 3.03 at cost 'A', 2.44 at cost 'B' and 2.08 at cost 'C'.

Norman and Radhakrishnan (1990) conducted a study on marketing channels and marketing costs and efficiency in respect of Nendran banana in Malappuram district in Kerala. The average price received by the farmer was Rs. 2.51 per kg, while the average price paid by the consumer was Rs. 3.51 per kg. Farmer's share was 71.51 per cent and price spread was 49 per cent. The study revealed that total net margins of the intermediaries was more than 20 per cent of the consumer's price. This was very high as compared to the cost of marketing which was only 8.26 per cent of the consumer's price. As against this, those farmers who sold directly in the wholesale market, channel III (Producer - Commission agent - Retailer - consumer) received slight better net price per kg of Rs. 2.61. In this case farmers share was 74.36 per cent and price spread was 25.64 per cent. Accordingly, the index worked out to 2.51 in. channel -I (Producer -

Village trader [pre harvest contractor] - Commission agent - Retailer - Consumer] it was 2.9 in channel II. Thus channel II was slightly more efficient than channel I.

Shingane (1990) studied the cost of cultivation of banana in 'Amravati' district. Per hectare total cost of cultivation (Cost 'C') of banana was Rs. 30,846.94. The proportion of cost 'A' in total cost was 65.50 per cent while the proportion of cost 'B' was 96.53 per cent. Rental value of land, human labour, fertilizers, interest on working capital and manures were observed to be the major items .of the cost. These five items together accounted 84.56 per cent of total cost. The yield per hectare was 45.57 metric tonnes and gross returns per hectare was Rs. 56,272.30 giving net profit of Rs. 25,425.36 per hectare. Per metric tonnes cost of production was Rs. 678.40. The average output- input ratio was 2.78 at cost 'A' and 1.81 at cost 'C'.

Gadre *et al.* (1992) revealed that maximum cost of marketing of banana in Jalgaon market was Rs. 90.99 per quintal in channel III (Producer - Private agency - Commission agent - Wholesaler - retailer - Consumer) followed by Rs. 84,46 in Channel II (Producer - Group sale egency - Commission agent - Wholesaler - Retailer - Consumer) and Rs. 89 in Channel I (Producer - Cooperative society - Fruit sale society – commission agent - Wholesaler - Retailer - Consumer). Marketing margins under channel III was higher than those under Channel II and channel I The same were found to Rs. 287.58, Rs. 282.86 and Rs. 282.26 per quintal in Channel I, II and III, respectively. The producer's share in consumer's rupee was 32.57 per cent in Channel I, 32.43 per cent in Channel II and 31.31 per cent in Channel III.

Kale *et al.* (1992) conducted study in Parbhani and Nanded districts of Maharashtra for high grade banana. They revealed that the per quintal and per dozen net price received by the producer was Rs. 184 and Rs. 2.45, respectively. The total marketing cost was Rs. 64.50 and Rs. 3.86. Total profit 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 and

Rs. 4.65 per quintal and per dozen, respectively, when the sale was carried out through private agents - Intermediaries - Commission agents - Wholesalers -retailers - Consumer, a most common channel. Producer's share in consumer's rupee was 52.6 per cent, while marketing margin accounted in the order of merit for retailers, intermediaries, wholesalers, commission agent and private agents was 19.72, 13.86, 5.86, 4.86 and 3.14 per cent, respectively.

Sale and Nawadkar (1992) undertaken a study in Jalgaon and Sangli districts of Maharashtra on marketing of bananas and grapes, respectively. The result showed that the major proportion of total produce was marketed through two marketing channels. The producers associations of grapes growers sent the supervisors for supervising fruits 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 a predominant share. The cost on account of transport, commissions of wholesalers and marketing agencies was lower for the members of producer's associations (co-operatives) than the non-members. The producers profit margin of bananas was 34.53 and 31.05 per cent for member and non-member producers, respectively. Whereas, in case of grapes, it was 24.20 per cent for producers associations as against 20.38 per cent for the non-members. The members of producer association could, therefore, derive relatively higher profit margins from fruits trade than non-members.

Potekar *et al.* (1992) conducted the study on marketing in Basmath taluka of Parbhani district. In this study they observed that in year 1990-91, banana growers fetched Rs.170.00 per quintal for 15 kg Rs. banana. The transportation of bunches .from field to co-operative society's market yard was done by cultivator at his own cost and transportation of purchased banana to further market was done by co-operative society. A commission of 8 per cent was charged to cultivators, whereas 5 per cent commission was paid to wholesaler Profit was distributed within the members and if some loss was occurred, it was bared by co-operative society. The shares of expenditure on cultivation, transportation of bunches

and commission was 65.60, 19.30 and 15.10 per cent, respectively. Per hectare and per plant net profit was Rs. 34,803 and Rs. 11.51, respectively. A profit of Rs. 8.18 per quintal was observed for the year 1990-91 through sale of banana through the co-operative society.

Phuke *et al.* (1992) conducted study on marketing of banana in Hyderabad Market. They observed that majority of the banana growers inclined to sale their produce through private agencies. Cost of marketing of banana through co-operative fruit sale societies and private agency was Rs. 58.37 and Rs. 61.50 per quintal, respectively. Major item of cost was the transportation followed by commission in Hyderabad market in both the channels, which was 49 to 50 per cent of the total marketing cost. Per quintal and per dozen price spread was higher (51.65 per cent) in co-operative fruits sale societies than private agency (48.37 per cent). Nearly 50 per cent consumer's price was distributed over the expenses and margins of intermediaries. The margin of wholesaler and retailer was lower in co-operative fruits sale societies than private agency i.e. 6.71,11.08 and 7.68 per cent, respectively.

Maurya *et al.* (1996) studied the cost of cultivation of banana in Hazipur district (Bihar). Per hectare production of banana was 42.5 tonnes which was less than expected yield with the recommended packages of practices (expected, yield of banana with recommended packages of production is 55 tonnes/ hectare). At the current price, the gross value of this produce was Rs. 49,958.15 per hectare and net profit from banana cultivation was Rs. 29,798.05. Cost of production was Rs. 474.40 per tonne while the price received by the producer came to Rs. 1175.50 per tonnes. It provide a net income of Rs. 29,798.05 per hectare with the total expenditure of Rs. 20,160.70.

Anil Kumar *et al.* (1997) examined the costs and returns of banana production. The per hectare gross returns from local banana (Ram Bhog) amounted to Rs. 493.87 and the net returns was Rs. 21393 with output-input ratio 1.64. The gross and net returns from Harichhal banana

were higher than those from local banana, being Rs. 96,596 and 43059, respectively with an output-input ratio of 1.80.

Kharabe (1999) studied comparative economics of papaya and banana in Wardha district. It revealed, that the per hectare cost of cultivation of papaya was estimated to Rs. 54976.74 giving net profit of Rs. 91774.76. The output-input ratio in papaya at Cost 'C' was 1:2.66. While, in banana per hectare cost of cultivation was Rs. 57325.41 giving net profit of Rs. 62006.74. The output-input ratio in banana at Cost 'C' was 1:2.01.

Gadge (2000) studied the economics of production and marketing of banana in Amravati district. It was observed that cost per hectare was Rs. 63084.50 in small, Rs. 66343.35 in medium, Rs. 65473.04 in large size groups and overall level it was Rs. 64967.02. The gross income per hectare received by small, medium and large sized groups was Rs. 1,29,048.00, Rs. 1,38,595.50 and Rs.1,33,522.50, respectively and the overall average was Rs. 1,33,722.00.

The per hectare, net income at cost 'C' was Rs. 65,963.50, Rs. 72,251.95 and Rs. 68,049.46 in small, medium and large sized groups, respectively and overall average was Rs. 68,754.97. The output-input ratio at cost 'C' on an average was 1 : 2.05 and that of small, medium and large sized group was 1 : 2.04, 1 : 2.08 and 1 : 2.03, respectively.

In marketing of banana, the producer's share in consumer's rupee in small, medium and large sized groups was 55.57 per cent, 52.94 per cent and 57.17 per cent, respectively.

Mishra *et al.* (2000) studied on production and marketing of banana in Gorakhpur district of Uttar Pradesh. It was indicated that, cost of small medium and large farms was Rs. 36,281.50, 37,820.50 and 38,447.50, respectively whereas total cost on average farms was Rs. 37,516.50. On an average, the operational material cost and other cost. (rental value of and, interest on working capital) came to Rs. 8725.00, Rs. 8833.33 and Rs. 1958.6, respectively. Per hectare average gross

returns came to Rs. 71,133.33 which was higher on large farms (Rs. 73,400.00) followed by medium farms (Rs. 72,250.00) and small, farms (Rs. 67,750.00). The average output-input ratio came to 1:1.89. The inter-channel comparison revealed that, the price received by the producer was maximum (Rs. 342.50) in Channel IV (Producer – Direct sale in local market) followed, by Channel I (Producer - Wholesaler) i.e. Rs. 255.25; Channel II (Producer - Village Trader) i.e. Rs. 241,25. The marketing cost incurred by the producer was Rs. 37.50 per quintal in Channel IV and Rs. 24.25 per quintal in Channel V (Producer - Commission agent-cum-wholesaler). The marketing cost incurred by the village trader was Rs. 34.50 per quintal in Channel II. The marketing cost incurred by the pre-harvest contractor was Rs. 22.25 per quintal. Marketing cost incurred by the retailer was higher Rs. 54.75 per quintal in channel I, followed by channel V (Rs. 51.50), channel II (Rs. 35.50) and channel III (Producer – Pre-harvest contractor) Rs. 33.25 per quintal. The marketing cost incurred by the commission agent was Rs. 31.50 in Channel V (Rs. 2675) in channel III and Rs. 24.25 in channel II. The marketing cost incurred by the wholesaler was Rs. 25.75 per quintal in channel I.

Vitonde *et al.* (2000) studied economic analysis of banana cultivation in Amravati district. It was observed that, the per hectare production of banana was 45.47 tonnes which was less than the expected yield with the recommended package of practices. The cost of production per tone was Rs. 414.29 while price received by the producer was Rs. 1237.57 per tone not only covered the cost of .production but also left substantial margin of profit to the producer. The B:C ratio which shows the profitability of investment was 2.99 indicating that the banana cultivation was highly profitable as the net income of Rs. 37,434 per hectare was much higher income than other crops commonly grown in the Amravati district. Banana is however a capital intensive crop, if the credit facility is made available to the farmers, the growers can increase their income by way of adoption of new technology also.

Mali *et al.* (2003) studied economics of production and marketing of banana in Jalgaon district of Western Maharashtra. They

observed that the per hectare cost of cultivation of banana worked out to Rs. 133477.36. The per hectare gross returns of banana was Rs. 214867.24 and the net returns of Rs. 66761.87. Among the three marketing agencies, 57 per cent of total quantity was marketed to the local traders, 26 per cent to the private traders through co-operative fruit sale societies and 17 per cent in daily market through co-operative fruit marketing societies. The per quintal cost of marketing was the highest (Rs. 29.47) in case of local traders followed by co-operative fruit sale societies selling the produce to the private traders (Rs. 27.32). The per quintal cost of marketing was the lowest (Rs.16.50) in case of co-operative fruit marketing societies selling the produce in daily market. The average per quintal cost of marketing of these three marketing agencies was Rs. 27.55. The average per quintal net price realized by the banana growers in Jalgaon district was Rs. 341.89.

CHAPTER III

METHODOLOGY

The present study relates to research on "Economics of production and marketing of banana in Washim district". The importance and utility of any study depends on the reliability of the data collected and the soundness of the materials and methods used in the study. This chapter accordingly, deals with the preparation of schedule and selection of samples etc. for the collection of appropriate data and sequential order of methods used for the analysis of the data.

3.1 Selection of area

The present study was undertaken in three tahsils of Washim district namely, Mangrulpir, Karanja and Manora these tahsils were selected purposively because the concentration of banana cultivation is more in this area. Three villages viz; Poha, Sohal and Dhamni from Karanja tahsil and Manglsa, Baldev and Aajgaon from Mangrulpir tahsil and Talap, Vitohli and Kupta from Manora tahsil were selected purposively. The list of banana grower was obtain from Taluka Agriculture officer. Twenty farmers from each tahsils were selected randomly to constitute total sample of 60 farmers. The primary data was collected for the year 2014-15 for estimation of the cost of cultivation, net income, price spread, problem face by farmer in selected area of banana.

3.2 Preparation of schedule

The schedules were therefore specially prepared for the collection of data. The schedules were pre-tested and then finalized for the collection of data. The schedule included the following components.

- Socio-economics information of selected banana growers.
- Details about their land holding.
- Cropping pattern.
- Cultivation record

a. Quantity and expenses on materials use viz.; planting materials, manures, fertilizers, plant protection etc.
b. Labour utilization and wages
c. Inventory
d. Production and marketing of banana.

3.3 Collection of Data

The study was based on primary data collected from nine villages of the selected three tahsils. Total 60 banana growers were selected randomly and were categorized in to three groups i.e small (up to 2.00 ha),medium (2.01 to 4.00 ha),and large (4.01 and above) based on total land holding of Banana grower. The farmers used tissue culture suckers for plantation of banana and the commonly grown varieties was Shrimanti and Mahalaxmi.

3.4 Analysis of Data

Simple tabular analysis was carried out to work out per unit fixed cost, input utilization, variable cost, marketing costs, price spread and net return of banana. The collected data were accordingly compiled and analyzed to accomplish the objectives of the present study.

3.5.1 Input utilization

Level of input utilization was studied with reference to units of different useful items used by banana growers in each land holding groups for each variety of banana.

3.5.2 Estimation of cost of cultivation

The cost of cultivation of banana was estimated by using the following cost concepts

- Cost 'A'
- Cost 'B'
- Cost 'C'

a) Cost 'A'

Cost 'A' includes all variable costs. Therefore, all variable items were included for calculating the per hectare Cost 'A'. The cost 'A' includes the expenditure on following items.

- Hired human labour (Male and Female)
- Bullock labour (days)
- Machinery (hr)
- Planting materials (no)
- Manures (ton)
- Fertilizers (kg/ha)
- Growth hormones (lit)
- Plant protection (lit)
- Wind breaks
- Irrigation (no)
- Land revenue
- Depreciation
- Repairs of implement (Rs)
- Interest on working capital @ 6% per annum

Measurement and evaluation of different cost elements.

1) Hired human labours (Male and female)

It includes both the male and female labour used on the farm. The wages actually paid in cash or in kind were taken into consideration.

2) Bullock Labour

Hired bullock labours were evaluated at the rates of actual charges paid for the operation and owned bullock labours were charged at the hiring rates of bullock pair prevailing in the area of study.

3) Machinery charges

The actual cost paid by the cultivator for machineries was taken into account.

4) Planting materials

For banana cultivation, suckers are the main planting material. The actual price paid for purchase of suckers was taken in to account.

5) Manures

The purchased F.Y.M. was charged at the actual price paid by the cultivators. The manures prepared on own farm was evaluated at the prevailing market rates in that locality.

6) Fertilizers

The cost of fertilizers was worked out on the basis of actual expenses paid by the farmers for purchasing the same including the transportation charges.

7) Growth hormones

This included the actual cost paid for growth hormones with hiring charges of appliances.

8) Plant protection

This included the price paid for the purchase of insecticides, fungicides with hiring charges of appliances.

9) Wind breaks

Wind breaks are essential for banana because it save this crop from hot winds and helps to maintains the rate of transportation, the cost of seed of wind breaks was considered.

10) Irrigation charges

For the use of electric motors, electric bill actually paid by the cultivator was considered. The hire irrigation charges were estimated on the basis of prevailing irrigation rates on hour basis in the area of study.

11) Land revenue and other cesses

It included the actual land revenue with other cesses paid by the farmers for the total land holdings. The land revenue per hectare was calculated by dividing total land revenue and other cesses by the gross cropped area of the respective crop.

12) Depreciation

Depreciation on the farm implements, machineries and buildings was calculated by straight line method and at the rare of 10 per cent of the value of assets.

13) Repairs of implements

The actual cost paid for repairs and hiring of implements were considered.

14) Interest of working capital

The interest on working capital was charged at the rate of 6 per cent for the entire growing period of crop.

b) Cost 'B'

Cost 'B' was estimated as under,Cost B = Cost A + Rental value of land + Interest on fixed capital

1) Rental Value of land

The rental value of land was evaluated at the rate of $1/6^{th}$ of the gross value of produce minus land revenue.

2) Interest of fixed capital

The interest on fixed capital was estimate @ of 10 per cent per annum.

C) Cost 'C'

Cost 'C' was calculated as under, Cost 'C' = Cost 'B' + imputed value of family labour

While calculating Cost 'C', the imputed value of family labour was considered. The value of family human labour i.e. both male and female were evaluated at the wage rates prevailing in the locality.

3.5.3. Production per hectare

Production per hectare in quintal of banana under each land holding groups was considered.

15. Marketing cost and market margin

Market cost and market margin was worked out from the actual data collected from local market 10 wholesalers and 10 retailers. Marketing cost incurred by producers was estimated from the data collected from selected cultivators for the present study.

Marketing cost: Total marketing cost incurred by producer and various intermediaries involved in the sale and purchased of commodity till the commodity reaches to the ultimate consumer.

Market margin: It refers to difference between the prices prevailing as successive stages of marketing at given period of time. Profits of the various market functionaries involved in moving the produce for the initial point of production till it reaches to the ultimate consumer. The absolute value of the marketing margin varies from channel to channel, market to market and time to time.

Evaluation of output

Main produce and by produce of banana were evaluate at the prices prevailing at the time of sale.

Gross returns

Returns obtained form sale of crop i.e., main produce and by produce. This is the consolidate income realized from output of corps. Valuation of produce was done at the prevailing market price.

Net returns

Net returns were obtained at different costs concepts i.e. cost 'A' and cost 'B' and cost 'C' by deducting respective costs from the gross returns.

Output-Input ratio

The profitability of banana production cannot be judged by completely unless the Input-output ratio is worked out. It indicates the returns from per rupee invested in banana production. It was calculated at cost 'A', cost 'B' and cost 'C'.

$$\text{output-Input ratio at cost 'A'} = \frac{\text{Gross returns}}{\text{Cost 'A'}}$$

$$\text{output-Input ratio at cost 'B'} = \frac{\text{Goss return}}{\text{Cost 'B}}$$

$$\text{output-Input ratio at cost 'C'} = \frac{\text{Gross returns}}{\text{Cost 'C'}}$$

Price Spread

To study the marketing of banana the assessment of 10 wholesaler and 10 retailer were done .Price spread, producer's share in consumer's rupee in respect of banana under different markets were also studied.

Problems faced by farmers

Problems faced by farmers in production and marketing of Banana in Washim district were studied.

3.6 Resource use efficiency

The Resource use efficiency in agriculture refers to, an efficient farmer allocates his land, labor, water and other resources in an optimum manner, so as to maximize his income, at least cost, on sustainable basis.

The Resource use efficiency in Banana production was studied by using Cobb-Douglas Production Function. The function can be expressed as

$$\text{Log } y = \log a + b_1 \log x_1 + b_2 \log x_2 \ldots\ldots bn \log xn + u$$

Where,

y = Output of Banana (qt. /ha).

a = Intercept

x_1 = Human labour, (days/ha).

x_2 = Bullock labour (days/ha).

x_3 = Machine labour (hr)

x_4 = Suckers (No/ha)

x_5 = Nitrogen (kg/ha)

x_6 = Phosphorous (kg/ha)

x_7 =Potash (kg/ha)

u =Random variable satisfying necessary assumption required for the principles of ordinary least squares

b_i = Regression coefficients

CHAPTER IV

SOCIO-ECONOMIC CHARACTERISTICS OF WASHIM DISTRICT

The finding of any field research study in agriculture at the micro level cannot be generalized at the national level. However, finding of each study can be taken for granted as relevant for those areas having similar condition with regards to other factors. The finding therefore, must follow a clean mention about the socio-economic features of study area to facilitate better understanding of the observation and also to apply same in other areas with similar features. The present chapter is therefore devoted to discus in brief some of the socio-economic features of Washim district, just to facilitate comparison and to get better idea of the economy.

Maharashtra state has six revenue divisions viz., Mumbai, Pune, Nasik, Aurangabad, Amravati and Nagpur. Vidarbha area includes Amravati and Nagpur revenue division comprising eleven districts viz., Buldana, Akola, Washim, Amravati, Yevatmal, Wardha, Nagpur, Bhandara, Gondia, Chandrapur and Gadchiroli. Washim and Gondia are newly formed districts bifurcating Akola and Bhandara districts respectively. Nagpur division includes Nagpur, Bhandara, Gondia, Chandrapur, Gadchiroli and Wardha are the eastern district of Vidarbha. The western districts are Buldana, Akola, Amravati, Yevatmal and Washim. The western districts are known for its cotton crop and the eastern region is for good quality of rice. Vidarbha as a whole contributes soybean, cotton, rice, jowar, millets, oilseeds, citrus, forest timber etc.

The present study is confined to Washim district of Western Vidarbha. The agro-climatic conditions differ from place and even in close vicinity also.

4.1 Location of district:

The district is located in the Vidarbha Region of Maharashtra; India Washim is located in the eastern region of Vidarbha. Akola lies to its

north, Amravati lies to its northeast, Hingoli lies to its south, Buldhana lies to its west, Yavatmal lies to its east.

The geographical coordinates of Washim District are 76 degree 7 East Longitude and 19 degree 61 North Latitude. The entire district has divided into 6 talukas, which are Mangrulpir, Manora, Karanja, Washim, Risod and Malegaon. There are as many as 789 villages forming part of the Washim District in Maharashtra.

4.2 Area and population

The entire district occupies an area of about 5150 sq kilometer. The district had a population of 1,197,160 of which of 2011.

4.3 Topography and soil

The soil of the district is basically derived from volcanic trap rock and it is quite fertile. It is classified into categories as coarse soil found in south, medium black soil in the plain and deep black soil found in river valley.

4.4 Climate and rainfall

The Washim district extreme climate in winter is too cool, while in summer it is too hot. The average minimum and maximum temperature extremities observed throughout the year was 10^0 C and 42.5^0 C, respectively. Washim district falls is assured rainfall zone of Maharashtra state having on an average rainfall between 970 mm.

4.5 Land use pattern

The details of land use pattern of Washim district are presented in Table 4.

Table 4.1: Land use pattern of Washim district.

Sr. No.	Particular	Area ('000ha)
1.	Total geographical area	514
2.	Cultivable area	386
3.	Area under forest	35
4.	Barren and uncultivable land	18
5.	Permanent pastures and other grazing land	34
6.	Land under miscellaneous tree crops and grooves not included in net area sown	1
7.	Cultivable waste land	10
8.	Land put under non-agricultural use	8
9.	Current fallow	8
10.	Other Fallow	12

(Source: District Socio-economic Review, 2013-14)

4.6 Cropping pattern

The usual cropping is determined by large number of factors. The most important factors are climate, soil, topography, customs and distance to market (table 4.1).

Table 4.2: Cropping pattern of Washim district

Sr. No.	Crop	Area ('000ha)
1.	Wheat	3.0
2.	Sorghum	29.9
3.	Bajra	0.5
4.	Gram	55.7
5.	Tur	47.4
6.	Other Pulses	88.4
7.	Cotton	67.8
8.	Soybean	185.1
9.	Safflower	2.3
10.	Groundnut	1.5
11.	Total fruits and Vegetables	15.7
	Gross cropped area	**424.0**

(Source: District Socio-economic Review, 2013-14)

4.7 Crop season and crop rotation

There are two important crop season i.e. *Kharif* and *Rabi* where as in summer season land generally remains fallow and preparatory tillage operations are under taken.

Soybean are important crops grown in *Kharif* season on large scale. Tur, mung, udid, cotton, jowar are also grown in *Kharif* on large scale. Soybean crop is grown by the farmers on large area. Wheat and gram are important *Rabi* crops grown in the area. Linseed, sunflower, safflower, some spices and vegetable, fruit crop are also grown in *Rabi* season wherever the sources of irrigation is mostly through wells and cannel. The manners in which crop rotation are commonly followed is presented in Table 4.2.

Table 4.3: Crop season and crop rotation

Sr. No.	*Kharif*	*Rabi*
1	Cotton	-
2	Cotton + Tur + Jowar	-
3	Soybean	Gram
4	Soybean + Tur	Wheat
5	Jowar	Gram
6	Cotton+ Mung / Udid	Safflower / Wheat
7	Cotton + Tur	Safflower
8	Cotton+ Tur + Jowar +Mung	Sunflower
9	Mung	Safflower
10	Cotton + Mung	-

4.8 Input supply

Agricultural inputs like seed, manure, fertilizers, insecticides, pesticides etc. are required by the farmers are made available to them through number of agricultural service centers established at district level and block level.

Maharashtra State Seed Corporation Ltd (MAHABEEJ), Dr. PDKV, Akola and other private seed companies supply the quality seeds to the farmers. The farm inputs are made available to the farmers by co-operative societies and nationalize banks functioning at block level, panchayat samiti also provide inputs to the farmers. Co-operative society supply input against the loan sanctioned by the District Central Co-operation Bank to individual cultivator.

4.9 Markets

For the marketing of agricultural produce, agricultural produce market committees are functioning in the district. All six tahsils are having facilities of regulated markets functioning in the district. These sub-markers are connected with roads and having facilities of banking, electricity etc.

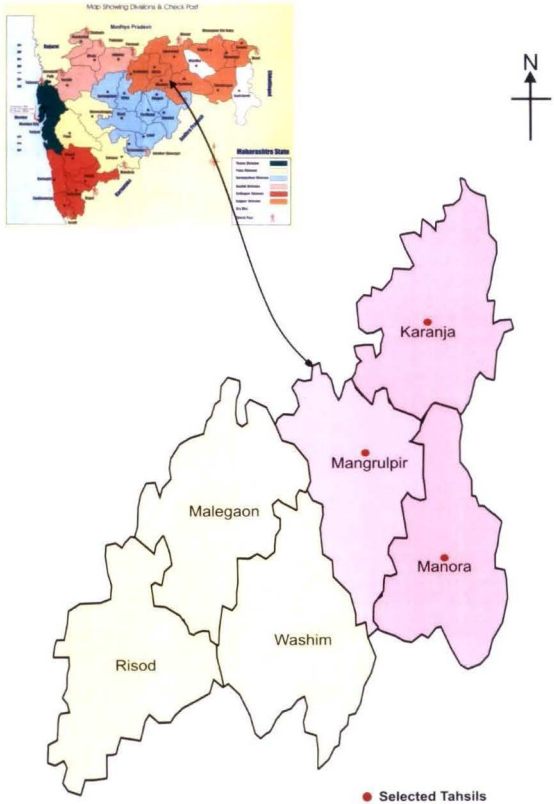

Fig. 1 Map of Washim district

CHAPTER V

RESULTS AND DISCUSSION

The study deals with the economic analysis of production and marketing of Banana in Washim district. This chapter deals with general information of the selected Banana growers which include family size, educational status, land use pattern and cropping pattern etc. Input utilization, costs and returns of Banana grown in the Washim district and marketing aspects of Banana is included in this chapter and findings of this study are presented below.

5.1 Socio-Economic Characteristics of Selected Banana Growers

The socio-economic parameters of the farmers influenced the production, income and marketing activities of the agro-produce on his farm. The family size, educational status, land use pattern, cropping pattern and fixed capital investment are the major socio-economic factors need to be studied for studying economic analysis of production and marketing of Banana. These factors are explained below.

5.1.1 Average family size of selected Banana growers

The average family size of selected Banana growers is given in Table 5.1.1.

Table 5.1.1. Average size of family of selected Banana growers (no)

Sr. No.	Particulars	Size of Land Holding			
		Small	Medium	Large	Overall
1	Male	3 (42.86)	3 (50.00)	3 (42.86)	3 (42.86)
2	Female	2 (28.57)	2 (33.33)	3 (42.86)	2 (28.57)
3	Children	2 (28.57)	1 (16.67)	1 (14.29)	1 (14.29)
	Total	**7 (100)**	**6 (100)**	**7 (100)**	**6 (100)**

(Figures in parentheses indicates the percentage to total)

It is revealed from the table that, the average family size was 7 members in small group, 6 members in medium group and 7 members in large size group. The share of male in family size was highest in medium size group i.e. 50.00 per cent followed by small and large size group i.e. 42.86 per cent. Whereas share of female in family size was highest in large size group i.e. 42.86 per cent followed by medium and small size group i.e. 33.33 and 28.57 per cent.

The share of children in family size was observed highest in small size group i.e. 28.57 per cent followed by medium size group 16.67 and large size group was 14.29 percent. The overall size of family was 6 members including 42.86 per cent male, 28.57 per cent female and 14.29 per cent children's per family.

5.1.2 Educational status of selected Banana growers

The educational status of Banana growers in washim district is presented in Table 5.1.2.

Table 5.1.2. Educational status of selected Banana growers

Sr.No.	Particular	Small	Medium	Large	Overall
1	Illiterate	4 (19.05)	2 (9.09)	1 (5.88)	2 (11.67)
2	Primary	4 (19.05)	2 (9.09)	1 (5.88)	2 (11.67)
3	Secondary	6 (28.57)	8 (36.36)	7 (41.18)	7 (35.00)
4	High.Sec	4 (19.05)	5 (22.73)	4 (23.53)	4 (21.67)
5	Graduate	3 (14.29)	5 (22.73)	4 (23.53)	4 (20.00)
	Total	**21 (100)**	**22 (100)**	**17 (100)**	**20 (100)**

(Figures in parentheses indicates the percentage to total)

It is observed from the Table 5.1.2 that, the overall illiterate percentage was 11.67 per cent. Among the different size groups percentage of illiteracy was observed more in small size group i.e. (19.05%) followed by medium size group (9.09%) and large size group (5.88%). The percentage of primary education was also observed highest in small size group of farmers i.e. (19.05%) followed by medium size group (9.09%) and small size group (5.88%). The percentage of secondary education was also observed highest in large size group of farmers i.e. (41.18%) followed by medium size group (36.36%) and small size group (28.57%). The percentage of higher secondary education was observed highest in large size group i.e. (23.53%) followed by medium size group i.e. (22.73%) and small size group i.e. (19.05%).

The number of farmers having graduate level education was highest in large size group of farmers i.e. (23.53%) followed by medium size group i.e. (22.73%) and small size group i.e. (14.29%).

The overall educational status of farmer was 20.00 per cent at graduate level, the illiteracy percentage was 11.67 per cent, primary percentage was 11.67 per cent, secondary education was 35.00 per cent and higher secondary education was 21.67 per cent.

5.1.3 Land use pattern of selected Banana growers

Land utilization indicates the area of land actually utilized for different purposes like crop production, current fallow land and net cultivated land, etc. The results presented in Table 5.1.3 indicated the land use pattern of the selected Banana grower's in Washim district.

The total land holding of the Banana growers was observed highest in large size group i.e. 6.15 hectares. Whereas, in medium size group the total land holdings was 3.06 hectares and small size group was 1.88 hactares .The cropping intensity in small, medium and large size group was 190.86 166.8and 155.6 per cent, respectively.

Table 5.1.3.Land utilization pattern of selected Banana growers (Area in'ha')

Sr. No.	Particular	Size of Land holding			
		Small	Medium	Large	Overall
1	Total land holding	1.88	3.06	6.15	3.52
2	Fallow	0.02	0.06	0.59	0.20
		(0.56)	(1.19)	(6.92)	(3.52)
3	Irrigated area	1.15	2.15	3.98	2.32
		(32.39)	(40.26)	(46.71)	(41.33)
4	Unirrigated area	0.71	0.85	1.58	1.01
		(20.00)	(15.92)	(18.54)	(17.96)
5	Net sown	1.86	3.20	5.47	3.37
		(52.39)	(59.93)	(64.20)	(60.07)
6	Area sown more than once	1.69	2.14	3.05	2.24
		(47.61)	(40.07)	(35.80)	(39.93)
7	Gross cropped area	**3.55**	**5.34**	**8.52**	**5.61**
		(100)	**(100)**	**(100)**	**(100)**
8	Cropping intensity (%)	190.86	166.88	155.76	166.46

(Figures in parentheses indicates the percentage to total gross cropped area)

At overall level, the total land holding was 3.52 hectares per farm. At overall level the cropping intensity was 166.46 per cent.

5.1.4 Cropping pattern of selected Banana growers

Cropping pattern refers to allocation of area under different crops. On the basis of experience, irrigation facilities available, the pattern of distribution of rainfall and type of soil available with farmer, he decide the cropping pattern. The cropping pattern for kharif, *rabi* and *summer* season for selected farmers are presented in Table 5.1.4.

Table 5.1.4. Cropping pattern of selected Banana growers

Sr. No.	Particulars	Size of Land holding			
		Small	Medium	Large	Overall
A	**Kharif**				
1	Soybean	0.79 (22.27)	1.45 (27.15)	2.46 (28.87)	1.51 (26.81)
2	Tur	0.48 (13.53)	0.83 (15.54)	1.42 (16.67)	0.87 (15.58)
3	Cotton	0.16 (4.51)	0.25 (4.68)	0.54 (6.34)	0.30 (5.36)
4	Kharif jowar	0.09 (2.54)	0.14 (2.62)	0.24 (2.82)	0.15 (2.69)
5	Green gram	0.11 (3.10)	0.18 (3.37)	0.32 (3.76)	0.20 (3.48)
6	Black gram	0.06 (1.69)	0.10 (1.87)	0.15 (1.76)	0.10 (1.78)
7	Banana	0.17 (4.79)	0.25 (4.68)	0.34 (3.99)	0.25 (4.41)
	Sub total	**1.86 (52.42)**	**3.20 (59.93)**	**5.47 (64.20)**	**3.37 (60.10)**
B	**Rabi**				
1	Gram	0.40 (11.27)	0.56 (10.49)	0.93 (10.92)	0.61 (10.85)
2	Wheat	0.35 (9.86)	0.49 (9.18)	0.90 (10.56)	0.56 (9.92)
3	Jowar	0.09 (2.54)	0.12 (2.25)	0.20 (2.35)	0.13 (2.35)
4	Safflower	0.14 (3.95)	0.16 (3.00)	0.06 (0.70)	0.12 (2.22)
5	Maize	0.15 (4.23)	0.12 (2.25)	0.18 (2.11)	0.15 (2.63)
	Sub total	**1.13 (31.85)**	**1.45 (27.15)**	**2.27 (26.64)**	**1.57 (27.97)**
C	**Summer**				
1	Groundnut	0.44 (12.35)	0.50 (9.36)	0.55 (6.46)	0.49 (8.77)
2	Other	0.12 (3.38)	0.19 (3.56)	0.23 (2.70)	0.18 (3.15)
	Sub total	**0.56 (15.73)**	**0.69 (12.92)**	**0.78 (9.15)**	**0.67 (11.92)**
	GCA	**3.55** (100)	**5.34** (100)	**8.52** (100)	**5.61** (100)

(Figures in the parthenses indicates the percentage to total gross cropped area)

The table 5.1.4 revealed that, the percent share of area under *kharif* crop was higher in large size group (64.20%) followed by medium size group (59.93%), small size group (52.42%) and at overall level (60.10%). the percent share of area under *rabi* crop was highest in small size group i.e. (31.85%). The per cent share of area under summer crop was highest in small size group i.e. (15.73%). The overall area under *kharif* crop was 3.37 hectares i.e. 60.10 per cent, area under *rabi* crop was 1.57 hectares i.e. 27.97 per cent, area under summer crop was 0.67 hectares i.e. 11.92 per cent. At overall area under soyabean was 1.51 hectare (26.81%), followed by tur 0.87 ha (15.58%) and cotton 0.30 hectare (5.36%), respectively.

In *rabi* season, gram and wheat were dominating crops. The percentage share of gram was highest in small size group i.e. (11.27%) per cent followed by large size group (10.92%).

The share of Banana in small, medium and large size group was 4.79, 4.68 and 3.99 per cent, respectively. The overall level the area under Banana was 0.25 ha (4.41%).

5.2 Economics of Banana cultivation

5.2.1 Per hectare input utilization of selected Banana growers

Farm product is the result of different input factors utilized in the process of production. A study of input utilization helps to determine the profitability of crop enterprises. The information regarding per hectare input utilization of the selected Banana growers is presented in Table 5.2.1.

It is seen from the table that, the per hectare hired human labour utilization was observed in small, medium and large group were 98.85, 116.48, 130.17 days, respectively, and at overall level it was 114.19 labour days. It is observed that the hired human labour utilization was highest in large group. Among the groups, the utilization of hired female labour was observed highest in large size group followed by medium and small size group i.e. 92.24, 81.67, 71.71 days, respectively and at overall level it was 81.18 days.

The bullock labour utilization was observed highest in small size group i.e. 25.71 pair days followed by medium and large size group were 18.33 and 13.79 pair days, respectively and at overall level it is 19.63 pair days.

Table 5.2.1. Per hectare input utilization of selected Banana growers

(per ha)

Sr. No.	Particulars	Unit	Size of land holding			
			Small	Medium	Large	Overall
1	Hired human labour		98.85	116.48	130.17	114.19
	a)Male	Days	27.14	34.81	37.93	33.01
	b)Female	Days	71.71	81.67	92.24	81.18
2	Bullock Pair	Pair	25.71	18.33	13.79	19.63
3	Machine charges	Hrs.	8.88	9.63	11.14	9.80
4	Manures	Qtl	214	226	235	224.35
5	Irrigation	Hrs.	850	912	952.00	901.63
6	Fertilizers					
	N	Kg	411.43	398.15	394.83	401.86
	P	Kg	123.43	120.37	115.52	120.07
	K	Kg	740.57	722.22	693.10	720.39
7	suckers	No/ha	4440	4440	4440	4440.00
8	Plant protection chemicals	Liter	5.41	4.26	3.28	4.38
9	Family human labour					
	a)Male	Days	34.57	22.96	14.96	24.76
	b)Female	Days	77.14	66.85	41.03	63.14

The average per hectare utilization of machinery was found to be highest in large size group (11.14 hours) followed by medium and small and at overall level it is 9.63, 8.88 and 9.80, respectively.

In small ,medium and large size group per hectare utilization of planting suckers was equals i.e 4440 plant /ha.

The farmers of large size group used more amount of manure i.e. 235 quintal per hectare followed by medium 226 quintal per hectare and small 214 quintal per hectare and at overall level it was 224.35 quintals per hectare. It is observed that amongst all three and holding groups per

hectare utilization of fertilizer was observed highest in small size group followed by medium and large group in utilization of fertilizers.

5.2.2 Cost of cultivation of selected Banana growers

The cost of cultivation of selected Banana is depicted in table 5.2.2.

It is revealed from the table that human labour, fertilizer, machine labour charges, planting suckers and bullock labour were the major items of total cost in size of group. Among all expenses incurred in cost C the percentage share of rental value of land was highest in large size group (34.38%) followed by medium and small size group 32.17 per cent and 31.04 per cent, respectively and 32.45 per cent was at overall level.

Table 5.2.2.Per hectare cost of cultivation of Banana (Rs/ha)

Sr. No.	Particulars	Size of land holding			
		Small	Medium	Large	Overall
1	Hired human labour				
	a)Male	5428.57 (1.87)	6407.41 (2.13)	7576.21 (2.39)	6395.98 (2.12)
	b)Female	7171.43 (2.46)	8707.41 (2.90)	9224.14 (2.91)	8316.22 (2.75)
2	Bullock labour	6828.57 (2.35)	4583.33 (1.52)	3448.28 (1.09)	5047.57 (1.67)
3	Machine charges	7810.34 (3.51)	8990.74 (2.99)	10571.0 (4.86)	9209.38 (3.05)
4	Manures	6482.67 (2.23)	7056.65 (2.35)	7638.75 (2.41)	7020.69 (2.32)
5	Irrigation	32300 (11.10)	34656 (11.53)	36176.0 (11.40)	34262.0 (11.35)
6	Fertilizers				
	N	14811.0 (5.090	14333.3 (4.77)	14213.7 (4.48)	14466.6 (4.79)
	P	4813.71 (1.65)	4694.44 (1.56)	4505.17 (1.42)	4682.56 (1.55)
	K	20291.6 (6.97)	19788.8 (6.58)	18991.0 (5.99)	19738.8 (6.54)
7	Planting suckers	59965.7 (20.60)	61631.4 (20.50)	64303.4 (20.27)	61805.5 (20.47)

8	Plant protection chemicals	8123.10 (2.79)	7248.75 (2.41)	6964.53 (2.20)	7474.24 (2.47)
9	Land revenue	85.00 (0.03)	95.00 (0.03)	100.00 (0.03)	92.92 (0.03)
10	Dpreciation	3212.17 (2.21)	4356.26 (2.69)	5420.17 (1.71)	4329.53 (1.43)
11	Interest on working capital @6 per cent	10441.6 (3.59)	10685.9 (3.55)	11016.7 (3.47)	10705.1 (3.54)
12	Cost-A	187765.53 (64.51)	193235.5 (64.27)	200149.26 (63.10)	193547.28 (64.09)
13	Rental value of land	90347.2 (31.04)	96718.2 (32.17)	109059. (34.38)	97994.5 (32.45)
14	Interest on fixed capital @ 10 per cent	2280.35 (0.78)	2395.74 (0.80)	2517.24 (0.79)	2389.78 (0.79)
15	Cost-B	280393.16	292349.60	311725.98	293654.82
16	Family human labour	(96.34)	(97.23)	(98.27)	(97.24)
	a)Male	4494.29 (1.54)	2985.19 (0.99)	2198.28 (0.69)	3290.42 (1.09)
	b)Female	6171.43 (2.12)	5348.15 (1.78)	3282.76 (1.03)	5051.10 (1.67)
17	Cost-C	291058.88 (100)	300682.94 (100)	317207.02 (100)	301996.34 (100)

(Figures in parentheses indicates the percentage to cost c)

After planting matarials and fertilizer the major contributing input in total cost was irrigation .In case of large, medium and small size group the cost of N fertilizer was Rs.14213, Rs.14333.33 and Rs.14811.00 respectively.

The cost of manures was observed highest in large size group i.e. Rs. 7638.75 followed by medium and small size group i.e. Rs. 7056.65 and Rs. 6482.67, respectively. Overall cost of manure was 7020.69 which accounted 2.32 per cent. The total cost of cultivation (cost C) of was highest in the large size group i.e. Rs. 317207.02 per hectare followed by Medium size group Rs. 300682.94 and Small size group Rs.291058.88 per hectare, respectively. At overall level cost C was Rs. 301996.34 per hectare.

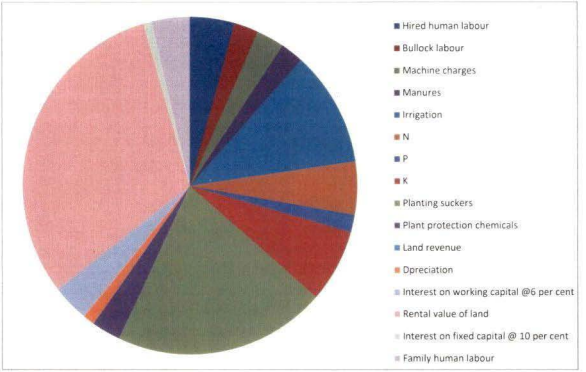

Fig. 2 Per hectare percentage expenditure on important items to cost "C" at small farmer group

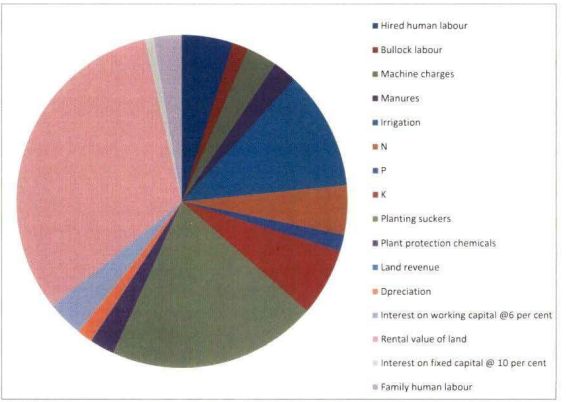

Fig. 3. Per hectare percentage expenditure on important items to cost "C" at medium farmer group

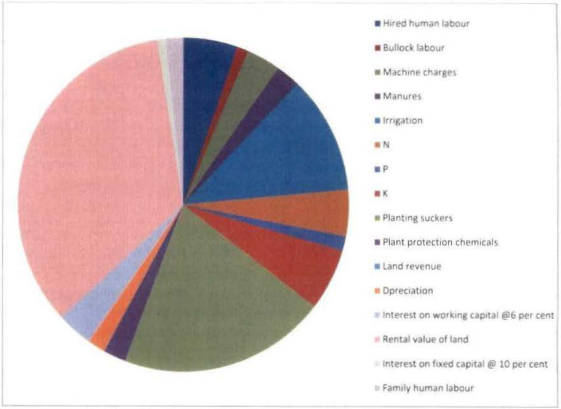

Fig. 4. Per hectare percentage expenditure on important items to cost "C" at large farmer group

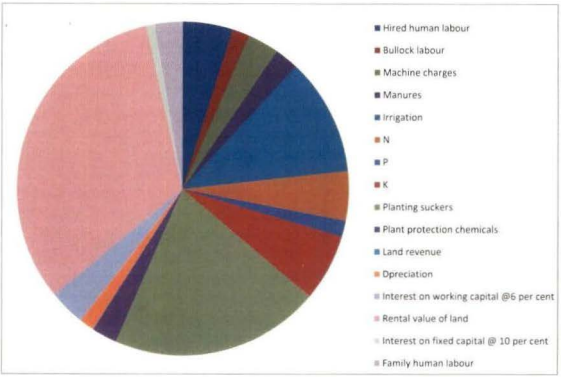

Fig. 5. Per hectare percentage expenditure on important items to cost "C" at overall farmer group

Cost A which includes the direct expenses, was highest in large size group i.e. Rs. 200149.26 per hectare, followed by medium size group 193235.59 and small size group Rs. 187765.53.At overall level cost A was 193547.28 per hectare.

Cost 'B' which includes indirect expenses is observed highest in large size group i.e. Rs. 311725.98 per hectare followed by medium size group Rs. 292349.60 and small size group Rs. 280393.16 per hectare respectively. Cost B for overall level was Rs. 293654.82 per hectare which share 97.24 per cent in total cost.

5.2.3 Economics of Banana cultivation in Washim district

The per hectare Economics of Banana are given in Table 5.2.3.

Table5.2.3 : Per hectare economics of Banana Production (Rs./ha)

Sr.No	Particulars	Size of Land holding			
		Small	Medium	Large	Overall
1	Average yield (qtl/ha)	745.71	795.37	871.03	799.43
2	Average price received per quaintal	726.19	731.82	750.00	735.00
3	Gross Returns (Rs.)	542755.71	580879.63	654956.88	588524.81
4	Cost of cultivation (Rs.)				
A	Cost -A	187765.53	193235.59	200149.26	193547.28
B	Cost-B	280393.16	292349.60	311725.98	293654.82
C	Cost-C	291058.88	300682.94	317207.02	301996.34
5	Net return over cost (Rs.)				
A	Cost -A	354990.18	387644.04	454807.62	395244.87
B	Cost-B	262362.55	288530.03	343230.90	294869.99
C	Cost-C	251696.83	280196.69	337749.86	286528.47
6	Benefit - Cost ratio				
A	Cost -A	2.89	3.01	3.27	3.04
B	Cost-B	1.94	1.99	2.10	2.00
C	Cost-C	1.86	1.93	2.06	1.95

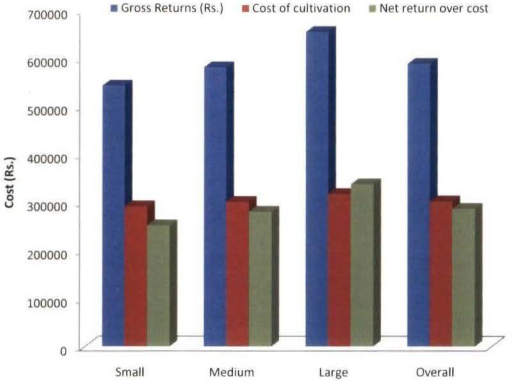

Fig. 6. Per hectare cost, net returns and profitabiliy of Banana on different farms

It is revealed from the table that, the highest yield of Banana received to large size group farmers i.e. 871.03 quintals per hectare followed by 795.37 quintals in medium and 745.71 quintals in small size group, respectively. At overall level, the yield of Banana was worked out to 799.43 quintals per hectare.

The per hectare gross returns of Banana in large, medium and small groups were Rs. 654956.88, Rs. 580879.63 and Rs. 542755.71, respectively. And at overall level, the per hectare gross returns was found to be Rs. 588524.81. The net returns obtained from Banana cultivation at cost C were Rs. 251696.83. Rs. 280196.69 and Rs. 337749.86 from small, medium and large size group, respectively and at overall level it was Rs. 286528.47 per hectare.

Benefit cost ratio

The benefit cost ratio indicates the return over each rupee investment in Banana cultivation. The result revealed that the highest return at cost A is received by large size group i.e. 3.27 followed by medium size group i.e. 3.01. At overall level in Washim district, the return at cost A was ' 3.04 over per rupee invested. At cost 'C' the benefit cost ratio was highest in large size group as compared to other two groups i.e 2.06 At overall level, B:C ratio was 1.95.

5.3 Resource use efficiency in Banana

One of the objective of the present investigation was to study the resource use efficiency in Banana crop. The productivity of various input factors was also calculated along with the resource use efficiency by fitting Cobb-Douglas production function to the data and results are presented in table 5.3.1.

It is revealed from the table that the Coefficient of multiple determination (R^2) was 0.78 which indicate that 78 per cent of variation in Banana explained due to variation in all independent variable s. ' It is also observed from the table that regression coefficient of suckers was 0.85 which was highly significant at one per cent level. It inferred that if one per cent increased in suckers over its geometric mean, it would lead to 'Banana

production by 0.85 per cent. On the contrary, regression coefficient of human labour, bullock labour, N fertilizer and P fertilizers were non-significant.

Table 5.3.1 Estimates of Cob-Douglas production function in banana production

Sr. No.	Independent Variable	Regression coefficient (bi)	Marginal Physical Product (MPP)	Marginal value product (Rs.)	price of input (Rs.)	MVP to price ratio
1	Human labour (days)	-0.07	-0.09	-69.10	150.00	-0.46
2	Bullock labour (days)	-0.13	-5.83	-4295.06	250.00	-17.18
3	Machine labour (hrs.)	0.02	1.47	1087.46	850.00	1.28
4	Sucker/ha	0.85*	0.15	115.65	15.00	7.71
5	N fertilizes (kg.)	-0.21	0.03	22.45	36.00	0.62
6	P fertilizes (kg.)	0.04	0.33	244.83	39.00	6.28
7	k fertilizer(kg)	0.05	0.06	45.57	27.40	1.66

$R^2 = 0.78$. * indicate significant at 1% leval . NS- non significant.

5.4 Marketing of Banana in Washim District

In the preceding section economic aspects viz., costs and returns in the production of Banana crop selected for study have been discussed. But the process of production is not completed till the product reaches into the hands of final consumer. However, various aspects pertaining to marketing of Banana viz., channels of distribution, price spread, producer's share in consumer's rupee, etc. have been studied and discussed. Cost of marketing of Banana includes marketing cost incurred by producer, wholesaler and retailer and includes various charges as loading, transportation, grading, commission, miscellaneous expenditure, market cess etc.

- **Channels of distribution**

Following are the channels of distribution have been observed while marketing of Banana.

Channels I : Spot Marketing
Channels II : Producer → Wholesaler → Retailer → Consumer

Table 5.4.1. Cost of marketing of Banana in channel II

	Cost of marketing of banana		
Sr.No	Particular	Cost	Per cent
A	**Marketing cost incurred by producer**		
1	Transportation cost	7	5.88
2	Market fee	10	8.40
3	Cost of loading and unloading	3	2.52
4	Octroi	2	1.68
5	Commission 1.75 %	10.50	8.82
6	Misecllaneous Expenditure	4	3.36
	Total	**36.50**	**30.67**
B	**Marketing cost incurred by wholesaler**		
1	Grading	4	3.36
2	Transportation cost	5.5	4.62
3	Market fee	10	8.40
4	Cost of loading and unloading	3	2.52
5	Commission 1.75 %	12.0	10.08
6	Misecllaneous Expenditure	5	4.20
	Total	**39.5**	**33.19**
C	**Marketing cost incurred by retailer**		
1	Transportation	4	3.36
2	Cost of loading and unloading	3	2.52
3	Shop rent	30	25.21
4	Misecllaneous Expenditure	6	5.04
	Total	**43**	**36.14**
	Total market cost	**119**	**100.00**

(Figures in parentheses indicates the percentage to total cost of marketing)

It is observed from the table that the total cost required for marketing of banana was Rs.119 the contribution of producer in total markrtng cost was Rs.36.50 i.e 30.67 percent,However wholesaler and retailer incurred Rs.39.5 and Rs.43 in the total cost respectively.

Table 5.4.2 Marketing of Banana by channel I.

Sr. No.	Method of Sale	Selling Price of producer Rs/qt	Marketing Cost Rs/qt	Net Price received to producer Rs/qt	Producer's Share in Consumer's Rupee%
1.	Spot	740	0	740	100

Marketing of Banana through Spot Sale (channel I)

The marketing of banana through spot sale is presented in table 5.4.2 Price per quintal through spot sale for different varieties of banana received were range from Rs. 735-750 and get average price for per quintal 'Rs.740. In respect of price per quintal there were no commission charges in spot selling.

Under this method of sale, the banana growers have negotiated the transactions with commission agent during entire season. Depending upon the quality of produce, the price per quintal of banana of each of variety was determined. It was revealed in the study that during entire season, the price per quintal ranges as above.

Plate 1: Marketing of Banana through spot sale

Table 5.4.3 Channel wise price spread of Banana

Sr.No	Particulars	Channel I	Channel II
A	**Producers**		
1	Gross Price received	740.00	735.00 79.03
2	Cost incured		36.50 3.92
3	Net price received		698.50 75.11
B	**wholesaler**		
1	Purchase price		735.00 79.03
2	Cost incured		36.35 3.91
3	Net margin		78.65 8.46
4	Selling price		850.00 91.40
C	**Retailers**		
1	Purchase price		850.00 91.40
2	Cost incured		39.00 4.19
3	Net margin		41.00 4.41
4	Consumer purchase price		930.00 100.00
D	**producers sharein cons sumer rupee(%)**	100.00	75.11
E	**Price spread Rs./Qtl.**		231.50

It is observed from the table 5.4.3 that the producer share in consumer rupee was highest (100%) in channel I i.e Spot marketing. and lowest in(75.11) in channel II.

5.5 Constraints faced by farmers in production and marketing of Banana in Washim district

All the selected Banana growers were interviewed for the problems they are facing while producing and marketing the Banana. The information regarding the important problems faced by the growers is presented in Table 5.5.1.

Table 5.5.1: Constraints faced by farmers in production and marketing of Banana in Washim District

Sr. No.	Particulars	Groups of farmers			
		Small	Medium	Large	Average
A)	**Problems in production of Banana**				
1	High cost of planting suckers	18.00 (85.71)	15.00 (68.18)	13.00 (76.47)	15.48 (76.52)
2	High wind during monsoon causing damage to the plant	15.00 (71.43)	18.00 (81.82)	12.00 (70.59)	15.25 (75.37)
3	Non harvest of small size bunches	14.00 (66.67)	16.00 (72.73)	9.00 (52.94)	13.32 (65.82)
4	Lack of technical knowledge about disease, pest and control measure	12.00 (57.14)	14.00 (63.64)	15.00 (88.24)	13.58 (67.13)
5	High cost of pesticide/fungicide	15.00 (71.43)	12.00 (54.55)	9.00 (52.94)	12.20 (60.30)
6	High cost of irrigation facilities	9.00 (42.86)	11.00 (50.00)	7.00 (41.18)	9.17 (45.30)
B)	**Problems in marketing of Banana**				
8	Non institutional agencies and undesirable market practices in the markets	14.00 (66.67)	11.00 (50.00)	8.00 (47.06)	11.20 (55.35)
9	Combining two small bunches as one bunch during counting for price fixing	11.00 (52.38)	14.00 (63.64)	10.00 (58.82)	11.82 (58.40)
10	Inadequate storage facilities	16.00 (76.19)	15.00 (68.18)	10.00 (58.82)	13.93 (68.86)
11	Non existing institutional marketing agency like regulated market, co-operative marketing	14.00 (66.67)	12.00 (54.55)	8.00 (47.06)	11.57 (57.17)
	Total	**21.00 (100)**	**22.00 (100)**	**17.00 (100)**	20.23 **(100)**

(Figures in parentheses indicates the percentage to total)

The Table 5.5.1 Observed that (76.52) per cent farmer faced the problem of high cost of planting suckers followed by high wind during monsoon causing damage to the plant (75.37). Lack of technological knowledge about disease ,pest and control measure (67.13). Non harvet of small size bunches.(65.82).

In case of marketing of Banana ,Inadquate storage facilities (68.86) is the major problem faced by the grower. Farmers reported that combining of two small bunches as one bunch during counting for price fixing is the second most important.marketing problem i.e 58.40

CHAPTER VI

SUMMARY AND CONCLUSIONS

The production of fruits and vegetables is vital important as it provides three to four times more income than the other crops. Fruits and vegetables are the prime source by vitamin and minerals without which human body cannot maintain proper health to resist the diseases

The marketing of Banana from producer to consumer also involves various activities like transportation, loading, storage, etc. during this process of marketing the quality as well as quantity of Banana get damaged and lost. The Banana growers face number of problems at each stage of production, marketing and distribution like lack of technical knowledge, lack of market intelligence, inadequate transportation and meager market yard facilities.

The present study was undertaken to study the economics of production and marketing of Banana in Washim district with the following objectives.

- To study the socio economic characteristics of selected farmers of banana growers
- To estimate the economics of production of banana.
- To study the marketing of banana.
- To identify constraints faced in production and marketing by banana grower
- To study the resource use efficiency of banana.

The study was based on primary data. The primary data of 60 farmers were collected from three tahsil and market functionaries involved. In Banana marketing chain, producer, wholesalers and retailer were selected for collecting the information on marketing. The necessary information of selected Banana growers was collected by survey method in

prescribed schedules for the year 2014-2015 and the collected data were tabulated and analyzed.

The socio-economic characteristics of farmers i.e. size of family, educational status, land utilization pattern, cropping pattern and fixed capital investment were studied. The standard cost concept i.e. cost 'A', and cost 'B', cost 'C' were used in present study.

The results of the study are summarized as follows.

1) The grossed cropped area was highest in large size group i.e. 8.52 hectares followed by medium size group (5.34 ha.) and small size group (3.55 ha.) respectively.

2) The area under Banana in small, medium and large size of land holding group and at overall level in gross cropped area was 4.79, 4.68, 3.99 and 4.41 per cent respectively.

3) Among all the crops Soyabean dominated the cropping pattern in kharif and gram in rabi.

4) Per hectare cost 'A' was highest in large size group i.e.Rs.200149.26 followed by medium size group (`193235.59) and small size group (` 187765.53), respectively.

5) The per hectare total cost of cultivation of Banana i.e. cost 'C' was highest in the large size group i.e. ` 317207.02 per hectare followed by medium size group (` 300682.94) and small size group (` 291058.88) respectively.

6) The benefit cost ratio of banana cultivation at cost 'C' was higher in large size group i.e. 2.10, followed by medium size group (1.99) and small size group (1.94).

7) Two major channels of distribution were observed in marketing of Banana.

- spot marketing
- Producer → Wholesaler → Retailer → Consumer

8) The producer share in consumer rupee was 100 per cent in spot marketing ,where as 75.11 per cent in channel II.

9) The major problem faced by banana grower while production were high cost of planting suckers, high wind during monsoon causing damage to the plant, lack of technological knowledge about disease, pest control measure. While marketing problem are inadequate storage facilities, combining two small bunches as one bunch during counting for price fixing.

Conclusions:

1. In Banana cultivators total overall family size was 6 members which contribute 3 male, 2 female, and 1 children.

2. Per hectare cost of cultivation of Banana at cost C was highest in the large group i.e. Rs. 317207.02 followed by medium group (Rs.300682.94) and small group (Rs. 291058.88). The average yield and gross returns per hectare increased with the increase in size of farms.

3. The benefit cost ratio of Banana at cost 'C' was 1.86 in small group, 1.93 in medium group and 2.06 in large group. This indicates that, Cultivation of an Banana was economically beneficial.

4. In case of Banana, Producers share in consumer's rupees was highest in Channel I (spot marketing) i.e. 100 per cent followed by channel II (Producer - wholesaler - Retailer - Consumer) i.e. 75.11 per cent. From this, it was concluded that channel-I was most profitable than channel II.

5. The major constraints faced by Banana cultivators overall level was High cost of planting suckers i.e. 76.52 % followed by High wind during monsoon causing damage to the plant i.e.75.37 % and inadequate storage facilities (68.86).

CHAPTER VII

POLICY IMPLICATIONS

From the results discussed and conclusions drawn some of the possible implications were made which are as fallows.

1. Result revealed that Banana cultivation is profitable hence area under banana can be expanded these area.
2. The producer share in consumer rupee is more (100) percent in spot marketing therefore it is suggested that farmer should sale their produce directly to the consumer..

CHAPTER VII

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VITA

1. Name of student : **Telang Swapnil Ramesh**
2. Date of Birth : 08/06/1992
3. Name of college : Post Graduate Institute, Dr. PDKV., Akola
4. Residential Address : Near town hall main road Mangrulpir. Tq, Mangrulpir Dist. Washim 444403 (M.S) Mo.NO.9096573791

5. Academic Qualification

Sr. No.	Name of degree Awarded	Year in which degree obtained	Division / class	Name of awarding university	Subject
1	B.Sc. (Forestry)	2014	First	Dr. PDKV Akola	Agriculture and allied subject

6. **Research paper published** : Nil
7. **Field of Interest** : Administration

Place: Akola

Date: 2/6 /2016

Signature of Student