

**Economic Analysis of Production and Marketing of Harad
(*Terminalia chebula*) in Jammu District**

By

HONEY KUMAR BASETIA

(J-18-M-57-ABM)

Project submitted to Faculty of Post graduate Studies

in partial fulfilment of the requirements

For the degree of

MASTERS OF BUSINESS ADMINISTRATION

(AGRI-BUSINESS MANAGEMENT)



**Division of Agricultural Economics and ABM
Sher-e-Kashmir University of Agricultural Sciences and Technology
of Jammu Main Campus, Chatha, Jammu 180009
2020**

CERTIFICATE – I

This is to certify that the project entitled “**Economic Analysis of Production and Marketing of Harad (*Terminalia chebula*) in Jammu District**” submitted in partial fulfilment of the requirement for the degree of **MBA (Agri-Business Management)** to the faculty of Post- Graduate studies, **Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu** is a record of bonafide research carried out by **Honey Kumar**, Registration No. **(J-18-M-57-ABM)** under my supervision and guidance. No part of the project has been submitted for any other degree or diploma. It is further certified that such help and assistance received during the course of investigation have been duly acknowledged.



Dr. Anil Bhat
(Major Advisor)

Place: Jammu

Date: 23.12.2020

Endorsed


23.12.2020
Head of Division

Division of Agricultural Economics & ABM

Date 23.12.2020

CERTIFICATE – II

We, the members of the Advisory Committee of Mr. Honey Kumar, Registration No. J-18-M-57-ABM, a candidate for the degree of MBA (Agri-Business Management), have gone through the manuscript of the project entitled “Economics Analysis of Production and Marketing of Harad (*Terminalia chebula*) in Jammu District” and recommend that it may be submitted by the student in partial fulfilment of the requirement for the degree.



Dr. Anil Bhat
Assistant Professor (Agril. Economics)
Major Advisor & Chairman
Advisory committee

Place: Jammu

Date: 23/12/2020

Advisory committee members

Dr. S.P. Singh

(Member from Major subject)

Assistant Professor

Division of Agricultural Economics & ABM



Dr. Puneet Choudhary

(Member from Minor Subject)

Senior Scientist (Agro-forestry) & Head, KVK-Jammu

R.S. Pura, SKUAST - Jammu



Dr. Renu Gupta

Assistant Professor

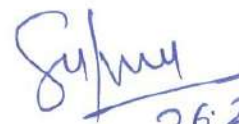
(Dean's Nominee)

Division of Soil Science and Agril. Chemistry



CERTIFICATE -III

This is to certify that the project entitled “**Economic Analysis of Production and Marketing of Harad (*Terminalia chebula*) in Jammu District**” submitted by **Honey Kumar Basetia** Registration No. (**J-18-M-57-ABM**) to the faculty of Post- Graduate studies, Sher-e-Kashmir University of Agricultural Sciences and Technology of Jammu in partial fulfilment of the requirements for the degree of **MBA (Agri-Business Management)** was examined and approved by the Advisory Committee and External Examiner(s) on 26-02-2021.


26.2.2021

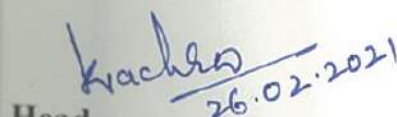
External Examiner

(Dr. Supran Kumar Sharma)


Associate Professor, School of Business
Dean, Faculty of Management
SMVD University,
Katra (J&K)


26.2.2021

Dr. Anil Bhat
(Major Advisor)


26.02.2021

Head
Division of Agricultural Economics & ABM


Dean, Faculty of Agriculture
SKUAST-JAMMU

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Honey Kumar

Honey Kumar

Place: Jammu

Date: 23-12-2020

ABSTRACT

| | | |
|--|---|---|
| Title of Project | : | Economic Analysis of Production and Marketing of Harad (<i>Terminalia chebula</i>) in Jammu District |
| Name | : | Honey Kumar |
| Registration No | : | J-18-M-57-ABM |
| Major Subject | : | Agribusiness Management |
| Name and Designation of Major Advisor | : | Dr. Anil Bhat Assistant Professor |
| Degree to be awarded | : | MBA (ABM) |
| Year of award of degree | : | 2020 |
| Name of University | : | Sher-e-Kashmir University of Agricultural Sciences and Technology-Jammu |

The present study investigation entitled “**Economic Analysis of Production and Marketing of Harad (*Terminalia chebula*) in Jammu District**” was carried out on the basis of primary as well as secondary data. The research was conducted with the help of questionnaire based on the information collected from the farmers and traders in area of Jammu District of Jammu and Kashmir state during the year 2019-20. Two Blocks, Mathwar and Bhalwal were selected on the basis of highest area under cultivation during 2018-19. Four villages from each block were selected on the basis of highest number of Harad trees. The ultimate units, that is Harad farmers were selected randomly from each village so as to constitute a total sample size of 60 (15 from each village) farmer from the whole area under study. Primary data on resources use efficiency, costs and returns, constraints faced were collected by interviewing the farmers personally with the help of structured and presented schedule. Collection of information regarding marketing was done by visiting farmers, wholesalers, retailers of different markets.

Terminalia chebula in Jammu region forest division, few scattered trees of *Terminalia chebula* other broadleaved tree species and dense scrub were found in Mansar block of Jindrah The results obtained during the present investigation on Distribution and in Jammu region are described under the information on the distribution pattern of Harad in different forest divisions of Jammu division and described as under *Terminalia chebula* along with scrub were found in Mansar block of Jindrah 30 range and Ramnagar rakh block of Jammu range in an area of 12879 ha which represents 18.32 percent of the total area. Ahmed,2005 in his study stated that India holds the monopoly in the export of Chebulic myrobalans in the form of whole

fruits or crushed form or as extracts to the world market. UK, USA, Australia, Belgium, Pakistan, and Malaya Federation are the main importers of crushed myrobalans, whereas, Australia, Bangladesh, France, Pakistan, UK, and the USA import whole myrobalans. Pakistan, New Zealand, Australia, and Japan are the chief importers of myrobalans extract. The current market price of fresh fruit is ₹ 6-10/kg while dried and without seeds was about ₹ 60/kg.

From the study it is revealed that overall, per 100 trees total maintenance cost of cultivation of Harad in Jammu district was ₹ 74570.59. Out of all inputs used, Expenditure on hired human labour and family labour were the important components of variable cost. The cost structure of per 100 trees revealed that cost A1, cost A2, cost B1, cost B2, cost C1, and C2 and Cost C3 were ₹ 367147.34, ₹ 367047.34, ₹ 366791.92, ₹ 364691.92, ₹ 358079.42 , ₹ 355979.42 and ₹ 348283.44, respectively and net returns over cost A1, cost A2, cost B1, cost B2, cost C1, and C2 and Cost C3 were ₹ 367147.34, ₹ 367047.34, ₹ 366791.92, ₹ 364691.92, ₹ 358079.42 , ₹ 355979.42 and ₹ 348283.44 respectively, while the return per rupee investment on all farms over cost A1, cost A2, cost B1, cost B2, cost C1, cost C2, and cost C3 were ₹ 6.78, ₹ 6.77, ₹ 6.74, ₹ 6.53, ₹ 5.05, ₹ 5.93, ₹ 5.77 and ₹ 5.23, respectively. It was also found that Harad for 100 trees was earning more net profit i.e., ₹ 355979.42 with a cost benefit ratio of 5.77:1. The total plantation cost of establishment was highest in Ranjan block which was ₹ 13850 followed by Mathwar block (₹ 13550), Rabta block (₹ 13400) and Bhalwal block (₹ 13280). It constitutes labour cost and material cost out of which labour cost highest in both Mathwar and Ranjan block (₹ 9900), respectively and material cost was highest in Ranjan block and Bhalwal block ₹ 3950 and (₹ 3780), respectively. A total of two marketing channels were found in the study are which are farmer- wholesaler- retailer- consumer and farmer- wholesaler1- wholesaler2 - retailer-consumer. The most commonly channel used by farmer was channel I while the most efficient one is channel II.

Keywords: Harad, marketing, distribution, cost analysis, farmers, traders.



Signature of the Major Advisor



Signature of the Student

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CHAPTER – I
INTRODUCTION

INTRODUCTION

Terminalia chebula is one of the very important indigenous multi-purpose tree species belonging to Family Combretaceae and popularly known as “Myrobalan” (Khare, 2004) and it is commonly known as Harrar, Harra, Hirda and Haritaki. Myrobalan (*T. chebula*) is having chromosome number varying from 24 to 72 (Burkill, 1985) and indigenous to India and South East Asia (Dymock *et al.*, 1976). In India it is found in sub-Himalayan tract from the Ravi eastward to West Bengal and Assam, ascending up to an altitude of 1500 m in the Himalayas, whereas in Himachal Pradesh it is confined to sub-tropical zone (400-900 m elevation) in pockets. The Harad trees are distributed sporadically in north western states of Himachal Pradesh, Jammu and Kashmir, Punjab, Haryana, Uttar Pradesh and Uttarakhand sub mountainous area. The average height of the tree is 10.70 m, diameter at breast height of 82.81 cm with crown width of 18.50m bearing fruits of average weight of 44.60 gms. Leaves not clustered, often sub-opposite, 7-18 cm long, ovate or elliptical usually acute, not acuminate, rounded at the base; petiole 2.5 cm often with glands at its summit. Fruits drupe, 2.5-4 cm long, glabrous, ellipsoidal or obovoid from a broad base, yellowish green, more or less 5-ribbed when dry due to the 5 ribbed. Under conditions of Kandi area, flowering occurs between April and May and fruit development continues from June to December. Fruit dispersal occurs between December and March. The fruit matures in 2 months (Sankanur, 2012).

It is capable of growing on different soils ranging from poor rocky ground to sandy, clayey, deep or shallow loam, lateritic loam, gravelly fertile alluvium of the Indo-Gangetic plains and the bhabar and tarai region of the sub-Himalayan tract. It requires maximum temperature in range of 36°- 47.6° C and minimum temperature range from 0 to 17.5° C. Fruits of Harad are routinely used as a household remedy and in many of the standard preparations such as 'Triphala' and 'Chayvanprash'. The edible tissue of Harad fruit contains 10.3 times more vitamin C, 15.4 per cent more proteins and three times more energy value than Apple (Barthakur and Arnold, 1991). The demand for its fruit has increased tremendously, because of its medicinal value, its fruit are sold at price ranging between 10-60/kg. *T. chebula* is a rich source of tannin (27.3% - 40%) which varies with genotype and

graphical location (Thakur *et al.*, 2008). In some states of India and some countries from Gulf like Arabic, Afghanistan and Pakistan, fruit jam is used as food supplement. Large sized fruits fetch a premium price of minimum three times that of the wild variety. They are used in making 'Murabba' and are, therefore, called as 'Murabbi' variety and are three to five times as large as wild variety called 'Kachri'.

It plays an important role in the livelihoods of rural people. The fruits are rich in tannin and used in leather industry for tanning). The tree is also lopped for fodder in some areas during lean period (Chopra, 1958). Besides, it provides good quality durable timber, which can be used for building agricultural implements and other purposes (Jain, 1994). The tree is lopped for leaves to feed the livestock during winter when other green fodder is very scarce in this region. The leaves contain 1.73 per cent nitrogen (equivalent to 10.80 % protein content) and 2.75 per cent calcium (Singh, 1982). The wood is used as timber due to its resistance to termites. As far as the medicinal properties are concerned, fruits are an important constituent of 'Triphala' (a medicinal digestive stew) in Indian system of medicine and used in many Ayurvedic medicine to treat flatulence, dyspepsia, liver and spleen disorders, constipation, cancer, and cardio-vascular diseases like ulcers, leprosy, arthritis, gout and epilepsy (Suryaprakash *et al.*, 2012). It has been reported as antioxidant, antidiabetic, antibacterial, antiviral, antifungal, anticancerous, antiulcer and antimutagenic (Kim *et al.*, 2001; Rao and Nammi, 2006; Kannan *et al.*, 2009; Suchalata and Devi, 2009). In Jammu and Kashmir State, few plantations of grafted Harad (with large size fruit size) have been undertaken by the farmers in different areas in sub-tropics of Jammu.

1.1 Distribution of *Terminalia chebulain* Jammu region

Terminalia chebula in Jammu region forest division, few scattered trees of *Terminalia chebula* other broadleaved tree species and dense scrub were found in Mansar block of Jindrah The results obtained during the present investigation on Distribution and in Jammu region are described under The information on distribution pattern of Harad in different forest divisions of Jammu division is presented Table 1 and described as under: *Terminalia chebula* along with scrub were found in Mansar block of Jindrah 30 range and Ramnagar rakh block of Jammu range in an area of 12879 ha which represent 18.32 per cent of the total area.

In Jammu forest division, pure crop of *Terminalia chebula* was absent. On the basis of classification made in the revised survey of forest types of India by Champion and Seth, *Terminalia chebula* occurs only in forest type 5B/C₂ - northern dry mixed deciduous forests having density 8.37 trees per ha along with broad leaved associates which covered 16 per cent of the total area of the division. Whereas, it was absent in forest type 9C₁/DS- Himalayan subtropical dry scrub type 9/C₁ - Himalayan subtropical pine forest (Kalsi, 2017). In Ramnagar Forest Division, *Terminalia chebula* occurred along with other broad-leaved plant species in three ranges namely Ramnagar South, Ramnagar North and Basantgarh at an elevation up to 1700 m amsl. Scattered trees of *Terminalia chebula* are in lower Shivalik Chir Pine forest - 9/C_{1A} in all the three ranges on shivalik rock types along nallas, depressions and on cooler aspects (Iqbal, 2017). In Udhampur Forest Division, few trees of *Terminalia chebula* were found along with other broad-leaved tree species at an elevation ranges from 500 m amsl to 1700 m amsl in Udhampur, Pancheri and Dudu ranges of Chir Pine (*Pinus roxburghii*) forests (Khan, 2017). In Reasi Forest Division, few trees of *Terminalia chebula* are managed for medicinal purpose in northern dry mixed deciduous forest type -5B/C₂ which comes under Reasi, Katra and Thakrakot ranges (working Plan Reasi 2014-2024).

Table 1. Distribution of *Terminalia chebula* in Jammu region

| Forest Division | Forest Range | Forest Type | Source of Information |
|------------------------|--|--|---------------------------------|
| Jammu | Jindrah, Jammu | Northern Dry Mixed Deciduous Forest (5B/C ₂) | Working Plan Jammu 2014-2024 |
| Ramnagar | Ramnagar South, Ramnagar North, Basantgarh | Chir Pine Forest (9/C ₁) | Working Plan Ramnagar 2014-2024 |
| Udhampur | Udhampur, Pancheri, Dudu | Chir Pine Forest (9/C ₁) | Working Plan Udhampur 2014-2024 |
| Reasi | Reasi, Katra, Thakrakot | Northern Dry Mixed Deciduous Forest (5B/C ₂) | Working Plan Reasi 2014-2024 |

1.2 Marketing and Regeneration of *Terminalia chebula*:

India holds the monopoly in export of Chebulic myrobalans in the form of whole fruits or in crushed form or as extracts to the world market. UK, USA, Australia, Belgium, Pakistan and Malaya Federation are the main importers of crushed myrobalans, whereas, Australia, Bangladesh, France, Pakistan, UK and USA import whole myrobalans. Pakistan, New Zealand, Australia and Japan are the chief importers of myrobalans extract. The current market price of fresh fruit is `10-60/kg while dried and without seeds was about `60/kg (Ahmed, 2005). In India, production is estimated to be 1,00,000 tonnes of which 20% is exported to countries like Europe and USA (World Agroforestry Centre, 2017). In Jammu and Kashmir State, the annual production of Harad fruit is about 500 tonnes (as per conversation with local trader of Jammu). The Harad fruits of this region were being sold in Majeetha Mandi, Amritsar and from where it is further sold to Arab countries. Now it is being sold to Majeetha mandi Amritsar. Sixteen Variation in fruit characteristic of *Terminalia chebula* has been reported by many researchers. Large size fruits fetch more price than smaller ones and thus farmers have shown preference for large sized fruit trees on their crop land.

The perishable nature of forestry produce makes its marketing an important aspect of study. Marketing of forestry produce involves various intermediaries' channels. In case of *Terminalia chebula*, being a medicinal fruit tree and involvement of various quality parameters like size, weight, pulp fruit ratio, etc, it needs special care in grading and marketing of produce. This species is found as single tree which is observed from the survey conduct and also reported in the working plans of all the divisions. This may be due to the many reasons such as unavailability of fruits on the forest floor due to its collection for use in the pharmaceuticals industry, the premature fruit drop as a result of attack of fruit borers, insect and leaf rust causes yellow spot on the leaves that reduces photosynthetic activity. Other reasons may be infestation of forest floor with Lantana camara, poor regeneration due to dormancy and no formation of kernals, hard mesocarp, etc. Srivastava (2017) also reported poor natural regeneration of Harad due to its hard mesocarp, thick shell and poor formation of kernel. Chander

and Chouhan (2014) found that *Lantana camara* forms thick mat on forest floor and seeds don't get proper conditions and space for germination and hence, natural regeneration of Harad in Shiwalik belt of Haryana and Himachal Pradesh is less. Similar observations have been reported by Sharma and Kant (2014) in sub-tropical kandi Shiwaliks of Jammu. Wherein, regeneration of Harad has been affected by heavily infestation of dense patches of *Lantana camara* weed. Sahu *et al.* (2012) found contagious behaviour of Harad in tropical deciduous forest of Malyagiri hill ranges, Eastern Ghats, India with a density of 1.3 per ha.

CHAPTER – II
THE PROJECT

THE PROJECT

2.1 Title and statement of problem

The project work entitled “**Economic Analysis of Production and Marketing of Harad (*Terminalia chebula*) in Jammu District**” was carried out in Jammu district of J&K during the year 2020.

Agriculture has been associated with the production of essential food crops but presently agriculture includes forestry, dairy, fruit cultivation, flower cultivation, poultry, bee keeping, mushroom etc. processing, marketing and distribution of crops and livestock products are acknowledged as part of current agriculture in India, about 47 percent people are working in the agriculture sectors and working towards the food security of the nation. Agriculture, along with fisheries and forestry, is one of the largest contributors to the gross domestic products (GDP). In 2014 total production of agriculture sector was \$366.92 billion. India is second largest producer of agriculture product and accounts for 7.68 percent at total global agricultural output (Rani, 2015). The growth of overall GDP during eleventh five year was 8 percent while the growth of agriculture was 4.1 percent (Anonymous, 2016). As per the central statistics office, forestry and fishing accounted for `1995251 crores at current prices and `1584293 crores at constant (2011-12) prices (ministry of Statistics and Programme Implementation, GOI, 2015). Agriculture products are third largest principal commodity having a share of 12.5 percent in export followed by manufactured products (67%) and petroleum products (18%) in 2014-15 (Krishna and Kumar, 2015). Agriculture, being the most dignified and oldest profession in the mankind over 1.3 billion people throughout the world or 40 per cent of global workforce agriculture provides livelihood to half of the population in about 50 countries and even 75 percent in poorer nation (International Fund for Agricultural Development, 2011).

Terminalia chebula Retz. is called the ‘King of Medicine’ in Tibet and is always listed at the top of the list of ‘Ayurvedic Materia Medica’ because of its extraordinary power of healing. The whole plant possesses high medicinal value and

traditionally used for the treatment of various ailments for human beings. Some of the folklore people used this plant in the treatment of asthma, sore throat, vomiting, hiccup, diarrhea, dysentery, bleeding piles, ulcers, gout, heart and bladder diseases. The plant has been demonstrated to possess multiple pharmacological and medicinal activities, such as antioxidant, antimicrobial, antidiabetic, hepatoprotective, anti-inflammatory, antimutagenic, antiproliferative, radioprotective, cardioprotective, antiarthritic, anticaries, gastrointestinal motility and wound healing activity. But no systematic updated information on the therapeutic effectiveness of *Terminalia chebula*, a popular herbal remedy in India and South-East Asia has so far been reported. This review highlights an updated information particularly on the phytochemistry and various pharmacological and medicinal properties of *Terminalia chebula* Retz. and some of its isolated compounds, along with their safety evaluation. This may provide incentive for proper evaluation of the plant as medicinal agent against the human diseases and also to bridge the lacunae in the existing literature and future scope which may offer immense opportunity for researchers engaged in validation of the traditional claims and development of safe and effective botanical medicine.

In India, production is estimated to be 1, 00, 000 tonnes of which 20% is exported to countries like Europe and USA (World Agro forestry Centre n.d, 2017). In Jammu and Kashmir State, the annual production of Harad fruit is about 500 tonnes (as per conversation with local trader of Jammu). Before 2007-2008, the Harad fruits of this region were being sold in Majeetha Mandi, Amritsar. Now it is being sold to Pakistan and Arab countries through Islamabad in Uri sector and Chakan-da-Bagh in Poonch sector under Line of Control Trade agreement between India and Pakistan.

2.2 Pharmacological investigation of *Terminalia chebula*

Kumar *et al.* 2019 in his study entitled “Health Benefits of *Terminalia Chebula* and *Rosa Canina*” discussed pharmacological investigation of *Terminalia chebula* under different headings viz., hepaprotective, cytoprotective, nephroprotective, anti-diabetic, anti-spasmodic, anti-bacterial, anticaries agent, radioprotective, chemo-preventive, hypo-cholesterol emic, improves the digestion, balances the three *Doshas*, improves skin tone, increases longevity, helps relieve constipation, good nourishment. The study further revealed that the ethanolic extract

of *T. chebula* fruit exhibited a notable cytoprotective effect on the HEK-N/F cells and also significant cytoprotective effect against UV-induced oxidative damage. The aqueous extract of *T. chebula* prior to whole body irradiation of resulted in a reduction of peroxidation of membrane lipids in the mouse liver as well as a decrease in radiation-induced damage to DNA. *T. chebula* had the chemo-preventive effect on nickel chloride –induced renal oxidative stress, toxicity and cell proliferation response in male Wistar rats. Ethanolic extract and ethyl acetate fractions of fruits were found to possess significant hypolipidemic activity. You get increased metabolic strength by having tonics contain Hari-Taki fruit. The digestive system gets a boost. It helps contain the stomach spasms. If you receive it with *Ghee*, it will balance the *Vata Dosh*a. The dietary fibers in the extract of Harad are helpful in regulating the bowel movement. The good nourishing nature of the *Terminalia chebula* fruit helps to refresh all the organs in the body. The person puts on weight due to the improved health conditions. To treat piles, take a large flat pan and fill it with water. Add two tablespoons of Haritaki powder and stir. Another good effect of the *Terminalia chebula* fruit is the way it relieves the symptoms of asthma patients. The usual treatment for the asthma patient is to chew two dried fruits before sleep. The fruit promotes hair health and so if you apply this paste on the head regularly, soon the hair will become healthy.

2.3 Objectives

- To study the cost and returns analysis of Harad.
- To analyze the marketing pattern.
- To identify the challenges, opportunities and problems in production and marketing.

2.4 Scope of the study

The scope of the study is to analyse the cost and returns, marketing pattern and to identify the challenges, opportunities and problems in production and marketing of Harad (*Terminalia chebula*) in Jammu district. This study is based on primary and secondary data. The study is entirely focused towards the objectives. The result during the study will be helpful the different aspects of production and marketing including the problems faced by the households engaged in the production of Harad.

2.5 Limitations of the study

1. The study relates only the farmers of the agriculture areas of Jammu of J & K therefore, the findings cannot be true representation of all farmers (total population).
2. The personal bias of respondents has been also limitation.
3. Respondent's ignorance to certain question also posed as barrier towards certain responses.
4. The respondent's responses were immediate and therefore time taken for deciding was less which led to responses with not much thought. Therefore, time constraint has also been a limitation during this study.
5. In spite of the above said limitations, as a researcher attempt was made to extract more knowledge with corrections.

CHAPTER – III
REVIEW OF LITERATURE

REVIEW OF LITERATURE

This chapter reviews the research work done in the fields related to the objectives of study. There are hardly few comprehensive studies made on Economic Analysis of Production and Marketing of Harad (*Terminalia chebula*) in the study area. A few studies conducted on production and marketing of Harad Products have been reviewed and presented under the following sub heads:

- 3.1 The cost and returns analysis of Harad.
- 3.2 Analyze the marketing pattern.
- 3.3 The challenges, opportunities and problems in production and marketing.

3.1 The cost and returns analysis of Harad.

Chitra *et al.* (1997) in the study on economics of ber production in and around Hyderabad city of Andhra Pradesh found that, payback period in ber cultivation was 4.42 years and the benefit cost ratio was 5.25 indicating the profitability of ber cultivation. The net present value worked out was ₹12,061. The IRR was 73.54 per cent which was higher than the lending rates of commercial banks. The results of the study indicated that even though ber cultivation required relatively higher initial capital investment compared to other fruit crops, the returns were higher during the bearing period and economic indicators clearly indicated that the production of ber was economically viable.

Farooqi *et al.* (2000) had worked out the economics of Palma Rosa cultivation at Bangalore and found that the cost of establishment was ₹ 15,355 per ha and maintenance cost was ₹ 14,900 per ha per year. From this study, land preparation (₹ 4000) was the main cost of the establishment and 10 distillation and fertilizers were the main costs in maintenance cost of Palma Rosa cultivation. They also worked out the economics of geranium cultivation in Bangalore and found that the cost of establishment geranium was ₹ 87,000 per ha and average cost of maintenance was ₹ 16,500 per ha per year. They found that the average net returns were ₹ 83,500. It was revealed from the study that cost of planting material (₹ 75,000), harvesting (₹ 2000) and distillation were the important items of expenditure. They worked out the

economics of patchouli cultivation. They found that the establishment cost was ₹65,800 per ha and the average net returns was ₹78,800 per year. From their study, it was revealed that cost of planting material (₹50,000) was the single major important cost in the establishment of the crop.

Dahiya *et al.* (2002) conducted a study on cost-benefit analysis of ber cultivation in Rohtak district Haryana. To examine the economic feasibility investments in ber cultivation four indicators like net present value, internal rate of return, benefit cost ratio and payback period were used. The study indicates that ber cultivation is intensive with an IRR of 22.5 per cent. The NPV and BCR at a discount rate of 14 percent are ₹26,346 and 1:1.22 respectively. The investment in ber orchard has a payback period of 7 year. Liberal credit facilities, adequate supply system on inputs particularly good quality of planting materials, efficient marketing system etc. are a few measures required to be taken to make ber cultivation a successful venture.

Sundaravardarajan and Ramanathan (2003) estimated the establishment cost of cashew plantation for the first year at ₹7690, ₹8664 and at ₹9491 for marginal, small and large farmers respectively. The maintenance costs of cashew plantation in the case of marginal farms were ₹4059, ₹4410, ₹4910, ₹5385, ₹841, ₹6332, ₹6771 and ₹6990 for second, third, fourth, fifth, sixth, seventh, eighth, ninth year respectively and in case of large farms the maintenance cost were ₹5040, ₹5250, ₹6764, ₹6145, ₹116558, ₹7021, ₹7438 and ₹7745 for second, third, fourth, fifth, sixth, seventh, eighth and ninth year respectively. The input output ratio per ha were 1.43, 1.55 and 1.83 for farms.

Sharma *et al.* (2004) studied the role of Non-timber Forest Products (NTFPs) in tribal economy of Madhya Pradesh. The study covered three categories of villages namely core villages, peripheral villages and distant villages (5 km. from forest) and each category consisted of five villages and reported that the cash income realized through the sale of various NTFP species by the tribal of core, peripheral and distant villages was found to be ₹12,300, ₹28,693 and ₹39,283 per household per annum respectively. The cash earning from the sale of various NTFPs increased to three folds from core to peripheral and distant villages respectively. This finding was on contrast to common motion that due to high availability of forest resources, core villagers will

have more earning from NTFPs. Another interesting feature was that inhabitants of core villages dependent on a smaller number of NTFP species than the inhabitants of peripheral and distant villages. They also studied the participatory involvement of tribal household members in the collection of Non-Timber products (NTFPs) in the villages of Madhya Pradesh. The study revealed that there was no significant difference in participatory involvement among males, females and children. 32.24 per cent males, 33.10 per cent females and 34.66 per cent children participated in collection of various NTFPs. Participation percentages of males, females and children showed that though children participated in collection of almost all NTFP species, their participation share was lowest in general whereas female's participation share was highest.

Rajesh (2006) studied the economic evaluation of vanilla cultivation in Konkan district of Karnataka and found total cost incurred in processing of vanilla bean was ₹6775.94 per quintal. The study revealed that labour cost was ₹4680 (69.07 %), packing material was ₹50 (0.73 %) and fuel was ₹60 (0.88 %). Gross returns and net returns obtained from 20 kg of processed vanilla bean were ₹30, 000 and ₹23, 224.06 respectively.

Deorukhakar *et al.* (2007), conducted a study in Sindhudurg district of Maharashtra, India, to study cost and returns structure in kokum (*Garcinia indica*) processing units and to estimate value addition as well as employment potential. The data from 30 kokum processing units were collected with the help of specially-designed schedules for the year 2003-04 production seasons. The study revealed that the total cost of processing of one-quintal fruits into kokum 13 syrup was ₹2440.88, kokum agal ₹867.90 and kokum rind ₹1102.18. The gross returns obtained after processing one quintal kokum fruits into kokum syrup was ₹3780.52 whereas gross returns per quintal from kokum agal and kokum rind were ₹1344.24 and ₹1707.10, respectively. Net returns per quintal obtained were ₹1339.63, ₹476.33 and ₹604.91 from kokum syrup, kokum agal and kokum rind respectively.

Aijan *et al.* (2008), studied the economic analysis of cultivation and marketing of gloriosa in Tamil Nadu and estimated ₹2.38 lakhs as cost of cultivation of gloriosa per ha per year. Gross returns and net returns per ha per year were ₹4 lakhs and ₹1.612 lakhs respectively. The study revealed that cost of cultivation in first year was

very high ₹6.68 lakhs) and very low in fifth year ₹0.72 lakhs). Similarly, gross returns in first year were high ₹6.69 lakhs) and very low ₹0.72 lakhs) in the last year. Net returns in first year were found negative ₹- 0.69 lakhs) and high in 2nd year ₹3.90 lakhs).

Aggrawal (2013), concluded that NTFPs have attracted considerable global attention in recent years due to increase in recognition of their contribution to household economies and food security. NTFPs can provide important community needs for improved rural livelihood, household food security, local and regional economies. Several million households all around the world depend heavily on NTFP for both subsistence and regular income.

3.2 Analyze the marketing pattern.

Raikar (1990), in his study on investment in production and marketing of cashewnut in Karnataka, identified six channels of trade namely, Grower - Itinerant Trader – Processor, Grower - Pre-Harvest Contractor - Itinerant Trader – Processor, Grower - Village Merchant – Processor, Grower - Trader – Processor, Grower – Processor, Grower - Commission Agent - Trader - Processor. The results further revealed that producers share in consumer's price were more (52 %) in Grower - Village Merchant – Processor. This share was reduced to 37.50 per cent when producer sold his crop to pre-harvest contractor. The study further indicated that per ha NPV was found to be ₹28, 440.58 in case of small, ₹16780.84 in large and ₹21034.59 in average orchards. The benefit cost ratio at 12 per cent discount rate was 2.87 on small orchard 12.25 on large orchard and 2.99 in an average orchard. The payback period varied between 8 to 9 years. The internal rate of return was found to be 20.20, 17.88 and 18.88 per cent in small, large and average cashew orchard respectively.

Hammett and Chamberlain (1997), collected primary data through direct in-person interviews with market players such as collectors, dealers, producers and sellers. Interviews were conducted within three product categories: craft, 15 medicinal/herbal, and specialty wood products. These categories were chosen due to their expected importance in the NTFP trade in southwest Virginia.

Muraleedharan *et al.* (1999), concluded that in Kerala, the NTFPs are marketed through different channels depending upon a variety of factors such as nature of the product, demand, distance of the market etc. In the first channel, the products are marketed through the 'Federation'. In the second channel, the products are marketed through private trader. In some part of the State, Forest Department also practices marketing of some products. The primary collectors of the products also sell the products to retail shops. They are mostly owners of small provision stores in the locality.

Pawar *et al.* (1999), examined the marketing channels, marketing costs and margins of ber. Data were obtained from a sample of 51 growers in Usmanabad district and from 10 per cent of the wholesaler and 5 per cent of the retailer operating in the cities of Osmanabad and Tuljapur. The sale of ber was more popular in Channel-1 (through commission agents). Per quintal cost of marketing was estimated to be ₹81.41, the net margin retain by wholesaler was estimated to be ₹16.40 (2.91 %), retailers net share in the consumer's price was higher in channel- 3 (through retail market) i.e. 4.59 per cent as compared to channel- 1 (3.72 per cent) and channel- 2 (through wholesale market) i.e. 3.74 per cent.

Sundaravaradarajan and Jagmohan (2002), studied the marketing cost, margin, price spread and marketing channels of cashew in Tamil Nadu observed the five different marketing channels of cashew, Farmer - Village Trader - Wholesaler - Processor - Trader, Farmer - Cooperative Marketing Society, Farmer - Commission Agent - Wholesaler - Processor and Farmer - Processor. A majority of the farmers (60 %) adopted Farmer - Village Trader - Wholesaler - Processor - Trader followed by Farmer - Cooperative Marketing Society (26.25 %), Farmer - Commission Agent - Wholesaler - Processor (10 %) and Farmer - Processor (3.75 %).

Das (2003), studied the marketing channels involved in the marketing of sal leaf plates in Medinipur, Bankura and Purulia district of West Bengal. He found that when the producer sold the sal leaf plates directly to the consumer benefitted with the maximum price and as the number of intermediaries increased in the marketing channel, the price realized by the producer went on decreasing. The channels involved were Producer - Consumer, Producer - Retailer - Consumer, Producer - Wholesaler -

Retailer – Consumer, Producer - Commission Agent - Local Wholesale - Wholesaler of City Retailer - Consumer.

Talathi *et al.* (2005) conducted a study on economics of marketing of sapota in Konkan region and reported that commodity passes through four different channels of trade namely, Producers - Fruit Merchants - Commission 18 Agents - Retailers – Consumers, with a share of 28.39 per cent, Producer - Commission Agents - Retailers – Consumers with a share of 34.40 per cent, Producers - Cooperative Society - Commission Agents - Retailers – Consumers with a share of 32.23 per cent, Producers - Fruit Merchants - Hawkers - Consumers with a share of 31.61 per cent.

Greene (2008), concluded that marketing system of crafts, medicinal and herbal, and specialty wood products are studied using exploratory and qualitative research methods. Fifty market players at various levels in marketing chains are interviewed to get the information on elements of marketing system products, product differentiation, value addition, pricing, promotion, distribution and marketing chains.

Shahidullah and Haque (2010), gathered explanations for the resultant improvements in livelihoods and the wider acceptance of the production of medicinal plant species in the locality. The findings revealed that the primary and secondary wholesale markets were mostly dominated by middlemen who cause inflated prices due to lack of competition in the medicinal plants value chain. A closer linkage between the producers and processors through vertical integration in the value chain could result in a multitude of benefits to both the producers and processors of medicinal plants in terms of price, quality, lead time and overall control of the supply chain.

Singh and Sharma (2011), identified four marketing channels viz. Producers - Local Trader - Processors, Producers - Commission agents - Processors, Producers – Wholesaler – Processors and Producers - Processors of mint oil in Moradabad district of Uttar Pradesh. The net price received by the farmers was high when sold through commission agent ₹474.16/kg) as against local traders ₹460.96). The profit margin earned by all the three intermediaries amounted to ₹172.46 per kg for local traders, ₹175.51 per kg for commission agents ₹147.24 per kg for wholesale ₹ The marketing margin/ price spread was highest in case of Producers - Commission agents - Processors ₹196.36/kg) followed by Producers - Local Trader - Processors

(₹185.65/kg) and Producers– Wholesaler – Processors (₹ 166.00/kg). Producer's share in consumer's rupee was the highest (about 81 %) in Producer - Consumer due to self-sale in the market with highest marketing efficiency. The economic appraisal indicated positive NPV and IRR along with Benefit-Cost ratio of more than one.

Bhat *et al.* (2015) studied three marketing channels viz., channel 1. Producer → commission agent → retailer consumer. Channel 2. Producer → retailer → consumer channel. Channel 3. Producer → consumer to find out marketing costs and price spread of citrus fruit in samba district of Jammu division, Jammu and Kashmir. They concluded that, average marketing cost at producer's level is ₹438.65, ₹264 and ₹226.67 per quintal for channel 1,2 and 3, respectively and per quintal net price received by the producer were ₹945.90, ₹1036 and ₹1073.33 which was 44.00%, 51.29% and 82.56% of the price paid by the consumer for channel 1,2 and3, respectively.

3.3 The challenges, opportunities and problems in production and marketing.

Ramaiah (1971), in his study on problems of small coffee growers revealed that high incidence of indebtedness and large family size, limited number of co-operatives, credit supply being neither need based. Supply of inputs like fertilizers being untimely and often poor in quality, too much fragmentation of land holdings resulting in a large number of non-viable units and inadequacy of technical services were the problems of small coffee growers.

Edwards (1993), observed that high fluctuations of prices, seasonality, very few established markets, lack of certification and lack of region specific 22 tested cultivation technology are few of the most important lacunae which make the trade and making the marketing of MAPs a very difficult and uncertain proposition. Even basic grading and cleaning operations tend to be centralized in major Indian cities.

Deorukhakar *et al.*, (1995) studied the constraints in technology adoption of cashew nut cultivation in the Sindhudurga district of Konkan region, Maharashtra and found that one third of the growers (68%) opined that there was no need to use of fertilizers and plant protection chemicals, high cost of fertilizers (13%) and plant protection chemicals (27%) were other constraints expressed by 23 the cashew growers. They further reported that the 41 and 32 per cent of the respondents

expressed the high cost of improved planting material and irregular supply, respectively.

FAO (1995) reported that the intermediaries are capable of maintaining a stronghold in the marketing network due to their ability to meet the immediate needs of the primary gatherers. They offer quick and timely credit, make quick payment and also have a good network of procurement at the door step of the producer. A combination of factors, such as gatherers' lack of knowledge of market price, poor marketing structure, poverty and impoverishment and the ineffective state agencies also strengthen the middlemen's hold. Further, poor communication and transportation facilities, highly segregated markets and unequal bargaining powers between buyers and sellers make the field more profitable for middlemen. Thus, middlemen can and often do exploit the producers', weak bargaining power due to latter's ignorance of the market factors, and thereby retain a disproportionate share of producers' earnings.

Mott (1998), reported that the most forest extractors are poor, chronically indebted to middlemen or landowners, and are thus not in control over their labour or other terms of exchange. They would stagnate at the subsistence level, and not benefit from high prices, unless they get out of their serfdom. Thus, underdeveloped rural credit markets and extreme poverty influence the disposal of NTFPs at a low price.

Ondachi (1999), found that indigenous fruit tree species have faced a great danger in the recent past due to high population growth, which exerted high pressure on woodland resources. For a long time, mankind has relied on nature to provide wild fruits without managing them or putting in any effort to propagate them. This, coupled with lack of ex situ conservation strategies, has led to loss of wild fruits in the natural woodlands and forests.

Alibaba *et al.* (2000) showed that labour spent on gum and tamarind collection was significant in generating income by tribe's in forest areas and concluded that all the tribal households faced problems in searching minor forest products and danger of wild animals. Furthermore, there was a need for controlled exploitation of minor forest products in order to give scope for rejuvenation of forests.

Mishra *et al.* (2000) identified unavailability of quality suckers and high cost of seed suckers, high cost of transportation, lower ruling price for produce due to

unavailability of sufficient storage facilities and weak finance structure as major problems faced by farmer in their study. Problem of electricity supply in critical period and non-availability of fertilizers and insecticides at reasonable prices were some of the other constraints identified in the area.

Subrat *et al.* (2001) found that there was a long chain between primary gatherers and end-user. There were village level traders who work for market-based commission agents or wholesalers, who would then supply to other wholesalers outside the state. For medicinal herbs, the share of the gatherers in the final price in most of the cases is less than 33 per cent, and often as low as 10 per cent. In these species there was little scope for value addition other than cleaning and grading. Despite the number of middlemen between the producers and consumers being large, gatherers do not have the choice of many intermediaries. This may be due to interlocking of credit and output markets forcing the gatherer to sell to the moneylender. In a competitive and efficient system there should be a choice of several buyer.

Benerjee (2002), found that non availability of quality seeds, non-involvement of organized institutions, lack of finance, fluctuation in price, buyer's quality specifications are not known, unknown extraction technique, inadequate awareness among entrepreneurs and lack of financial assistance to set up entire unit as the major problems in the production and processing of senna leaves.

Raghu *et al.* (2006) studied economics of production and marketing of patchouli in North Karnataka. Problems identified by them were water logging in rainy seasons, frequent irrigation, nematode attack, lack of proper package of practice and non-availability of method/ instrument to assess the quality of patchouli herbage at farm level.

Rajesh (2006), studied the economic evaluation of vanilla cultivation in Uttar Kannada district of Karnataka and identified problems in production, processing and marketing of vanilla. Non availability of genuine planting material, non-availability of organic manures, incidence of pest and diseases and non-availability of credit facility were major production problems. Lack of knowledge to process the bean, non-availability of skilled labour for processing, occurrence of pest and diseases after processing and low price for poor quality processed bean were major processing

problems. Price fluctuation and lack of marketing facilities were major problems in marketing.

Mittal and Singh (2007), identified problems in production and processing of aromatic plants and found that high initial cost of production, poor quality of inputs and delay in their supply, lack of awareness about loan facility, incentives and procedural delays in obtaining loan, price fluctuations, inadequate market information, lack of trained labour for cultivation, high rate of interest, lack of training programs on cultivation methods and their awareness to farmer and prevalence of pests and diseases were major production problems. Other problems were lack of basic infrastructure and organized marketing system, lack of processing facilities, high processing cost, improper handling of herbage and longer distances between farms and distillation units.

Singh and Sharma (2011), studied the problems and prospects in production and marketing of mint oil in Moradabad district of Uttar Pradesh and found that the major problems confronted by farmers in production of menthe oil were poor technical guidance and inadequate distillation facility. Improper storage arrangements, corrupt practices of trading and mono-cultivation as impediment in cultivation and marketing of mint oil were expressed by 82 per cent, 81 per cent and 80 per cent of the farmer High price volatility and lack of minimum support price were the problems among about 65 per cent of the farmer Specifications and standards for menthe oil are lacking due to non-availability of laboratories to assess the above factor.

Ram Suresh (2012), while studying the constraints in production of aromatic crops, found that lack of improved production techniques, no availability of quality planting material, absence of input subsidies and poor access to credit were faced by 85 per cent of the farmers/grower About 45 per cent of growers reported shortage of labour during harvesting season. The problems in marketing of the aromatic crops, highlighted by 80 per cent of 27 growers were, lack of minimum support price, a smaller number of buyers, lower price, absence of legal market information, lack of regulated market, lack of storage facilities, ignorance about quality of produce, lack of testing facilities and delays in payment.

CHAPTER – IV
RESEARCH METHODOLOGY

RESEARCH METHODOLOGY

A methodology is usually a guideline system for solving a problem with specific components such as phases, tasks, methods, techniques and tools.

3.1 Area of Study:

The study was conducted with the help of questionnaire based on the information collected from the farmers and traders of Jammu district.

3.2 Technical Programme:

The technical programme followed for conducting the present investigation was discussed in the following headings: -

- **Sampling design**

Four villages were selected from Jammu district on the basis of maximum number of Harad tree population.

- **Selection of farmers**

In the second stage of sampling, fifteen farmers each were selected randomly from the four selected villages to make a sample size of 60 farmers in all for carrying out the study.

- **Collection of data**

Following the conventional survey technique, primary data on resource use, input-output level and some other relevant information will be collected by interviewing the farmers personally with the help of pre-tested questionnaire. Secondary data regarding location, climate, soil type, population, land utilization pattern of the area was compiled from the records of Jammu district and other relevant government publication.

- **Economic analysis**

The data collected was subjected to analysis for examining the costs and returns, price spread, marketing efficiency and Henry Garret ranking technique

3.3 Analytical Tools and Techniques

- **For estimating the costs and returns**

The cost and returns analysis will be worked out using CACP cost concepts like Cost A₁, cost A₂, Cost B₁, cost B₂, Cost C₁, Cost C₂ and Cost C₃.

Cost A₁ includes:

1. Wages of hired human labour
2. Value of hired bullock labour
3. Value of owned bullock labour
4. Value of owned machinery labour
5. Hired machinery charges
6. Value of seed (both farms produced and purchased)
7. Value of insecticides and pesticides
8. Value of manure (owned and purchased)
9. Value of fertilizer
10. Depreciation on implements and farm buildings
11. Irrigation charges
12. Land revenue, cesses and other taxes
13. Interest on working capital
14. Miscellaneous expenses

Cost A₂:

Cost A₁ + rent paid for leased-in land

Cost B₁:

Cost A₁ + interest on the value of owned fixed capital assets (excluding land).

Cost B₂:

Cost B₁ + rental value of owned land + rent paid for leased in land

Cost C₁:

Cost B₁ + imputed value of family labour

Cost C₂:

Cost B₂ + imputed value of family labour

Cost C₃:

Cost C₂ + value of management input (10 % of Cost C₂)

3.3 Analysis of Marketing

The data collected will be tabulated and analyzed for examining the marketing cost, margins, price spread and the marketing efficiency.

3.3.1 Marketing Margins, Costs and Loss

The post-harvest loss at various stages of marketing has been included either in the farmer's net margin or market intermediaries' margin. In the present study, the marketing loss at different stages has been explicitly estimated. The modified formulae have been used for separating the 'post-harvest loss during marketing' at different stages of marketing as well as for estimating the producers' share, marketing margins and marketing loss.

a) Net Farmers Price

The net price received by the farmer has been estimated as the difference in gross price received and sum of marketing costs and value loss during harvesting, grading, transport and marketing. Thus, the net farmer's price is expressed mathematically as follows:

$$NP_F = GP_F - \{C_F + (L_F \times GP_F)\} \text{ or} \quad (1)$$

$$NP_F = \{GP_F\} - \{C_F\} - \{L_F \times GP_F\}$$

Where NP_F is net price received by the farmers (₹/kg),

GP_F is gross price received by the farmers or wholesale price to farmers (₹/kg),

C_F is the cost incurred by the farmers during marketing (₹/kg),

L_F is physical loss in produce from harvest till it reaches assembly market (₹/Kg or %).

b) Marketing Margins

The margins of market intermediaries included profit and returns, which accrued to them for storage, the interest on capital and establishment after adjusting for the marketing loss due to handling. The general expression for estimating the margin for intermediaries is given below.

$$\begin{aligned} \text{Intermediaries Margin} &= \text{Gross price (sale price)} - \text{Price paid (cost price)} - \text{Cost of marketing during wholesaling} - \text{Loss in value} \end{aligned}$$

Net marketing margin of the wholesaler is given mathematically by

$$\begin{aligned} MM_w &= GP_w - GP_F - C_w - (L_w \times GP_w) \quad \text{or} \\ MM_w &= \{GP_w - GP_F\} - \{C_w\} - \{L_w \times GP_w\} \end{aligned} \quad (2)$$

Where MM_w is net margin of the wholesaler (₹/kg),

GP_w is wholesaler's gross price to retailers or purchase price of retailer (₹/kg)

C_w is cost incurred by the wholesalers during marketing (₹/kg),

L_w is physical loss in the produce at the wholesale level (₹/kg)

In the marketing chain, when more than one wholesaler is involved, i.e., primary wholesaler, secondary wholesaler, etc, then the total margin of the wholesaler is the sum of the margins of all wholesalers. Mathematically,

$$MM_w = MM_{w1} + \dots + MM_{wi} + \dots + MM_{wn}$$

Where MM_{wi} is the marketing margin of the wholesaler.

Net marketing margin of retailer is given by:

$$\begin{aligned} MM_R &= GP_R - GP_W - C_R - (L_R \times GP_R) \quad \text{or} \\ MM_R &= \{GP_R - GP_W\} - \{C_R\} - \{L_R \times GP_R\} \end{aligned} \quad (3)$$

Where MM_R is net margin of the retailer (₹/kg),

GP_R is price at the retail market or purchase price of the consumers (₹/kg)

L_R is physical loss in the produce at the retail level (₹/ kg),

C_R is the cost incurred by the retailers during marketing (₹/kg).

The first bracketed term in equations (1), (2) and (3) indicates the gross return, while the second and third bracketed terms indicate respectively the cost and loss at different stages of marketing.

Thus, the total marketing margin of the market intermediaries (MM) is calculated as

$$MM = MM_W + MM_R$$

Similarly, the total marketing cost (MC) incurred by the producer/ seller and by various intermediaries is calculated as

$$MC = C_F + C_W + C_R$$

Total loss in the value of produce due to injury/ damage caused during handling of produce from the point of harvest till it reaches the consumers is estimated as

$$ML = \{L_F \times GP_F\} + \{L_W \times GP_W\} + \{L_R \times GP_R\}$$

c) Marketing Efficiency

Most commonly used measures are conventional input to output marketing ratio, Shepherd's ratio of value (price) of goods marketed to the cost of marketing (Shephard, 1965) and Acharya's modified marketing efficiency formula (Acharya and Agarwal, 2001). However, all these measures do not

explicitly mention the loss in the produce during the marketing process as a separate item in marketing. As reduction in loss itself is one of the efficiency parameters, there has been a need to incorporate this component explicitly in the existing marketing ratios to get correct measures of marketing efficiency while comparing alternate markets/ channels. 'Marketing loss' component was incorporated in the widely used formula as given by Acharya and Agarwal (2001) and the modified marketing efficiency (ME) formula is given below.

$$ME = \frac{NP_F}{MM + MC + ML}$$

Where NP_F is net price received by the farmers (₹/kg),

MM is the marketing margin,

MC is marketing cost,

ML is marketing loss.

3.4 Henry Garret Ranking Techniques

In this technique, the percentage position of each rank obtained is converted into scores by referring to the table given by Henry Garret. Then for each factor the scores of individual respondents are added together and divided by the total number of respondents for whom the scores are added.

$$\text{Percentage position} = 100(R_{ij} - 0.5)/n$$

Where R is the rank

N = Number of items

After the calculation of per cent position the Garret values were assigned as per the Garret table. The factor score was calculated by multiplying the value of each column with their respective Garret value. The total score was calculated by adding the values present in each respective row. The average score was calculated by dividing the total score with 100. Then the factors having highest average value were given the highest ranks respectively.

3.5 Benefit cost ratio

The benefit-cost ratio of an investment is ratio of the discounted value of all cash inflows to the discounted value of all cash outflows during the life of the project and computed as

$$\text{BCR} = \text{Gross Income} / \text{Cost } C_2$$

CHAPTER – V
RESULTS

RESULTS & DISCUSSION

The results pertaining to the present study have been presented in this chapter under the following headings:

5.1 Economics of production of Harad

5.1.1 Costs and Returns

5.2 Marketing of Harad

5.2.1 Marketing channels

5.2.2 Marketing costs, loss, margins and price spread

5.3 Opportunities and Constraints faced by farmers

5.3.1. Opportunities

5.3.1 Production constraints

5.3.2 Marketing constraints

5.1 Economics of production of Harad

The cost of cultivation and returns to different factors of production helps in decision making about selection of an enterprise. Hence, different components of cost of cultivation, cost structure, cost concept, gross returns and net returns from Harad were worked out and presented in Table 5.1 to 5.4.

5.1.1 Costs and Returns

5.1.1.1 Cost structure for Harad cultivation

The variable cost of cultivation of Harad of sampled farms was presented in Table 5.1 and Fig. 5.1. It revealed that per 100 trees variable cost of cultivation was ₹ 74179.47 in Mathwar, ₹ 69664.81 in Rabta, ₹ 71233.48 in Bhalwal and ₹ 72452.42 in Ranjan with overall average of ₹ 71882.54. Expenditure on hired human labour and family labour were the important components of variable cost. Similarly, rental value of owned land was the most important component of fixed cost. The result further revealed that out of all the inputs used, the expenditure incurred on hired labour for

100 trees was found to be highest with an overall average of ₹ 57500.00. However, on overall basis, the variable cost per 100 trees was ₹ 71882.54 and fixed cost was ₹ 2688.04, respectively. Total cost of cultivation per 100 trees was found to be highest in Mathwar block i.e., (₹ 76859.81).

Table 5.1: Block wise maintenance cost of cultivation of Harad (₹ /100 tree)

| S. No. | Functionaries | Mathwar | Rabta | Bhalwal | Ranjan | Overall Average |
|--------------------------|---|-----------------|-----------------|-----------------|-----------------|-----------------|
| A. Variable costs | | | | | | |
| I | Hired Human labour | 60000.00 | 55000.00 | 57000.00 | 58000.00 | 57500.00 |
| II | family labour | 8500.00 | 9000.00 | 8600.00 | 8750.00 | 8712.50 |
| III | FYM | 3594.31 | 3664.19 | 3582.23 | 3620.07 | 3615.20 |
| IV | Miscellaneous | 417.40 | 434.36 | 449.72 | 453.41 | 438.72 |
| V | Interest on working capital @ 9.5% per annum | 1667.76 | 1566.26 | 1601.53 | 1628.94 | 1616.123 |
| | Subtotal (A) | 74179.47 | 69664.81 | 71233.48 | 72452.42 | 71882.54 |
| | (from I to V) | | | | | |
| B. Fixed Costs | | | | | | |
| VI | Rental value of owned land (net of land revenue) | 2000.00 | 2000.00 | 1500.00 | 1500.00 | 2000.00 |
| VII | Rent paid for leased-in land | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |
| VIII | Depreciation | 325.65 | 340.22 | 337.12 | 327.48 | 332.62 |
| IX | Interest on fixed capital @10.5% per annum | 254.69 | 256.22 | 255.90 | 254.89 | 255.42 |
| | Sub –Total (B) | 2680.34 | 2696.44 | 2193.02 | 2182.37 | 2688.04 |
| | (from VI to IX) | | | | | |
| | Total cost (A +B) | 76859.81 | 72361.26 | 73426.49 | 74634.78 | 74570.59 |

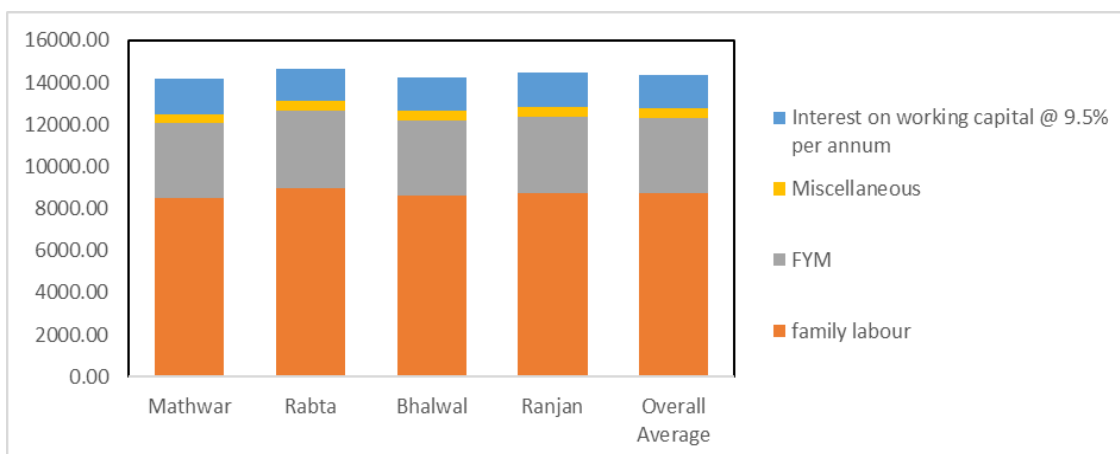


Fig. 5.1: Block wise maintenance cost of cultivation of Harad (₹ /100 tree)

5.1.1.2 Concept wise maintenance analysis of Harad cultivation (₹ /100 trees)

In order to view that the cost of cultivation of Harad, in various cost concepts were worked out on per 100 trees were presented in Table 5.2 and Fig. 5.2. The table revealed that cost A_1 on the farms of per 100 trees in blocks of Mathwar, Rabta, Bhalwal and Ranjan were ₹ 66005.12, ₹ 61005.03, ₹ 62970.60 and ₹ 64029.90 with overall average ₹ 63502.66, respectively. Cost A_2 on the farms per 100 trees in Mathwar, Rabta, Bhalwal and Ranjan were ₹ 66105.12, ₹ 61105.03, ₹ 63070.60 and ₹ 64129.90 with overall average ₹ 63602.66, respectively. Similarly, per 100 trees cost B_1 of Mathwar, Rabta, Bhalwal and Ranjan were ₹ 66359.81, ₹ 61361.25, ₹ 63326.50 and ₹ 64384.79 with per 100 trees overall average ₹ 63858.08 whereas per 100 trees cost B_2 was ₹ 68459.81, ₹ 63461.25, ₹ 64926.50 and ₹ 65984.79 with overall average ₹ 65958.08. The per 100 trees cost C_1 of Mathwar, Rabta, Bhalwal and Ranjan were ₹ 74859.81, ₹ 70361.25, ₹ 71926.50 and ₹ 73134.79 with overall average ₹ 72570.58. The cost C_2 per 100 trees in blocks of Mathwar, Rabta, Bhalwal and Ranjan were ₹ 76959.81, ₹ 72461.25, ₹ 73526.50 and ₹ 74734.79 with overall average ₹ 74670.58. After working out management cost, i.e., 10 per cent of cost C_2 , per 100 trees cost of C_3 was found to be ₹ 84655.79, ₹ 80157.23, ₹ 81222.48 and ₹ 82430.77, in Mathwar, Rabta, Bhalwal and Ranjan, respectively with an overall average of per 100 trees ₹ 82366.56 on all farms.

Table 5.2: Concept wise maintenance cost of cultivation of Harad cultivation (₹ /100 trees)

| Functionaries | Mathwar | Rabta | Bhalwal | Ranjan | Overall Average |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|
| Hired Human labour | 60000.00 | 55000.00 | 57000.00 | 58000.00 | 57500.00 |
| Value of Manure | 3594.31 | 3664.19 | 3582.23 | 3620.07 | 3615.20 |
| Miscellaneous | 417.40 | 434.36 | 449.72 | 453.41 | 438.72 |
| Interest on working capital @ 9.5% per annum | 1667.76 | 1566.26 | 1601.53 | 1628.94 | 1616.123 |
| Cost A1 | 66005.12 | 61005.03 | 62970.60 | 64029.90 | 63502.66 |
| Rent paid for leased-in-land | 100 | 100 | 100 | 100 | 100 |
| Cost A2 | 66105.12 | 61105.03 | 63070.60 | 64129.90 | 63602.66 |
| Interest on fixed capital | 254.69 | 256.22 | 255.90 | 254.89 | 255.42 |
| Cost B1 | 66359.81 | 61361.25 | 63326.50 | 64384.79 | 63858.08 |
| Rental value of owned land | 2000.00 | 2000.00 | 1500.00 | 1500.00 | 2000.00 |
| Cost B2 | 68459.81 | 63461.25 | 64926.50 | 65984.79 | 65958.08 |
| imputed value of family labour | 8500.00 | 9000.00 | 8600.00 | 8750.00 | 8712.50 |
| Cost C1 | 74859.81 | 70361.25 | 71926.50 | 73134.79 | 72570.58 |
| imputed value of family labour | 8500.00 | 9000.00 | 8600.00 | 8750.00 | 8712.50 |
| Cost C2 | 76959.81 | 72461.25 | 73526.50 | 74734.79 | 74670.58 |
| imputed value of family labour | 8500.00 | 9000.00 | 8600.00 | 8750.00 | 8712.50 |
| Cost C3 | 84655.79 | 80157.23 | 81222.48 | 82430.77 | 82366.56 |

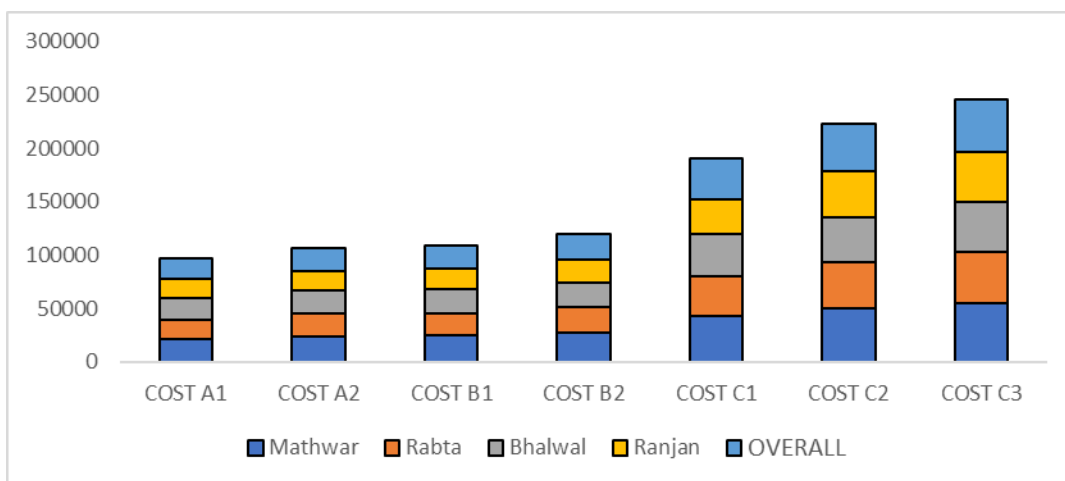


Fig. 5.2: Concept wise cost of cultivation of Harad cultivation (₹/ha)

5.1.1.3 Productivity and income from cultivation of Harad in study area

The productivity and income from cultivation of Harad was presented in Table 5.3 which indicated that the productivity of 190 q per 100 trees on the farms of Mathwar, 193 q per 100 trees on the farms of Rabta, 202 q per 100 trees on the farms of Bhalwal and 198 q per 100 trees on the farms of Ranjan with an overall average of 195.75q per 100 trees. It was found that the gross income per 100 trees was higher on the farms of Bhalwal (₹ 444400) followed by the farms of Ranjan (₹ 435600), on the farms of Rabta (₹ 424600) and Mathwar (₹ 418000).

5.1.1.4 Cost wise economics of and Benefit cost ratio Harad cultivation on samples farms under study

Cost concept wise economics of Harad was presented in Table 5.3 which was revealed that per 100 trees net returns over cost. A1, cost A2, cost B1, cost B2, cost C1, and C2 and Cost C3 were ₹ 367147.34, ₹ 367047.34, ₹ 366791.92, ₹ 364691.92, ₹ 358079.42, ₹ 355979.42 and ₹ 348283.44, respectively. The return per rupee investment on all farms over cost A1, cost A2, cost B1, cost B2, cost C1, cost C2, and cost C3 were ₹ 6.78, ₹ 6.77, ₹ 6.74, ₹ 6.53, ₹ 5.05, ₹ 5.93, ₹ 5.77 and ₹ 5.23, respectively.

Table 5.3 Productivity, Income and Cost Benefit Ratio of Harad cultivation (₹ /100 trees)

| Particulars | Mathwar | | Bhalwal | | Overall Average |
|---|-----------|-----------|-----------|-----------|-----------------|
| | Mathwar | Rabta | Bhalwal | Ranjan | |
| Yield (100 trees in q) | 190 | 193 | 202 | 198 | 195.75 |
| Gross income (₹) | 418000 | 424600 | 444400 | 435600 | 430650 |
| Net return over different costs (₹ /ha) | | | | | |
| Cost A1 | 351994.88 | 363594.97 | 381429.40 | 371570.10 | 367147.34 |
| Cost A2 | 351894.88 | 363494.97 | 381329.40 | 371470.10 | 367047.34 |
| Cost B1 | 351640.19 | 363238.75 | 381073.50 | 371215.21 | 366791.92 |
| Cost B2 | 349540.19 | 361138.75 | 379473.50 | 369615.21 | 364691.92 |
| Cost C1 | 343140.19 | 354238.75 | 372473.50 | 362465.21 | 358079.42 |
| Cost C2 | 341040.19 | 352138.75 | 371938.75 | 360865.21 | 355979.42 |
| Cost C3 | 333344.21 | 344442.77 | 363177.52 | 353169.23 | 348283.44 |
| Cost benefit ratio over different costs | | | | | |
| Cost A1 | 6.33:1 | 6.96:1 | 7.06:1 | 6.80:1 | 6.78:1 |
| Cost A2 | 6.32:1 | 6.95:1 | 7.05:1 | 6.79:1 | 6.77:1 |
| Cost B1 | 6.30:1 | 6.92:1 | 7.02:1 | 6.77:1 | 6.74:1 |
| Cost B2 | 6.11:1 | 6.69:1 | 6.84:1 | 6.60:1 | 6.53:1 |
| Cost C1 | 5.58:1 | 6.03:1 | 6.18:1 | 5.96:1 | 5.93:1 |
| Cost C2 | 5.43:1 | 5.86:1 | 6.04:1 | 5.83:1 | 5.77:1 |
| Cost C3 | 4.94:1 | 5.30:1 | 5.47:1 | 5.28:1 | 5.23:1 |

5.1.1.5 Cost and return structure of Harad

Cost and return analysis of Harad on 100 trees basis on all the farms were analysed and are presented in Table 5.4 and Fig. 5.3 which revealed that, the total cost of cultivation was higher in Mathwar (₹ 76859.81) followed by Ranjan (₹ 74634.78) than Bhalwal (₹ 73426.49), Rabta (₹ 72361.26) and with an overall average of ₹ 74570.59. The gross returns of 100 trees realized were higher for the farmers of Bhalwal (₹ 444400) and lower for the farmers of Mathwar (₹ 418000). The returns of 100 trees were also higher for the farmers of Bhalwal (₹ 371938.75). Overall, on all farms the gross returns, net returns and Benefit cost ratio of 100 trees realized were ₹ 430650, ₹ 355979.42 and 5.77:1, respectively.

Table 5.4 Costs and return of Harad (₹ /100 trees)

| Sr. No. | | Mathwar | Rabta | Bhalwal | Ranjan | Overall |
|----------|----------------------------|-----------|-----------|-----------|-----------|-----------|
| 1 | Cost | | | | | |
| | Total variable cost | 74179.47 | 69664.81 | 71233.48 | 72452.42 | 71882.54 |
| | Total fixed cost | 2680.34 | 2696.44 | 2193.02 | 2182.37 | 2688.04 |
| | Total cost | 76859.81 | 72361.26 | 73426.49 | 74634.78 | 74570.59 |
| 2 | Return | | | | | |
| | Gross returns | 418000 | 424600 | 444400 | 435600 | 430650 |
| | Net returns | 341040.19 | 352138.75 | 371938.75 | 360865.21 | 355979.42 |
| | Benefit cost ratio | 5.43:1 | 5.86:1 | 6.04:1 | 5.83:1 | 5.77:1 |

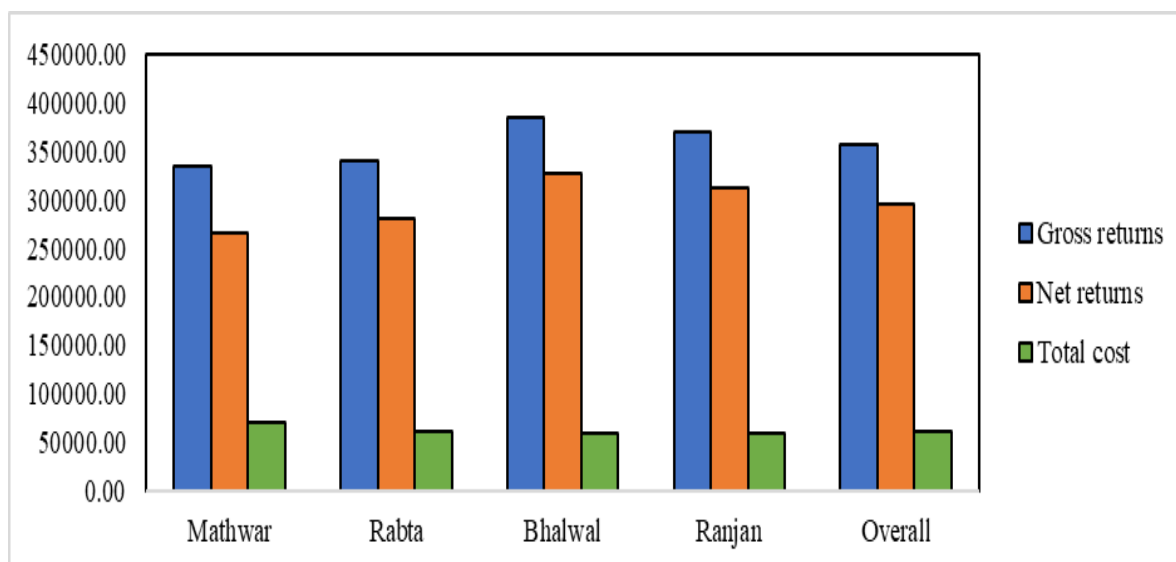


Fig. 5.3 Cost and return of Harad

Table 5.5 Block wise establishment and maintenance cost of grafted Harad ₹ /100 plants

| Items | Mathwar | Rabta | Bhalwal | Ranjan |
|------------------------------|--------------|--------------|--------------|--------------|
| Labour cost | | | | |
| Bush clearing | 1100 | 1150 | 1200 | 1050 |
| Digging of pits | 7300 | 6900 | 6750 | 7150 |
| Planting | 600 | 650 | 700 | 750 |
| FYM | 900 | 1100 | 850 | 950 |
| Sub-total | 9900 | 9800 | 9500 | 9900 |
| Family labour | 3300 | 3400 | 3200 | 3500 |
| Hired labour | 6600 | 6400 | 6300 | 6400 |
| Material cost | | | | |
| Planting material | 2150 | 2150 | 2150 | 2150 |
| FYM | 600 | 500 | 550 | 650 |
| Miscellaneous | 900 | 950 | 1080 | 1150 |
| Sub-total | 3650 | 3600 | 3780 | 3950 |
| Total plantation cost | 13550 | 13400 | 13280 | 13850 |

Block wise establishment and maintenance cost of grafted Harad per 100 plants revealed in Table 5.5. It revealed that total plantation cost of establishment was highest in Ranjan block which was ₹ 13850 followed by Mathwar block (₹ 13550), Rabta block (₹ 13400) and Bhalwal block (₹ 13280). It constitutes labour cost and material cost out of which labour cost highest in both Mathwar and Ranjan block (₹ 9900) respectively and material cost was highest in Ranjan block and Bhalwal block ₹ 3950 and (₹ 3780) respectively. The result further revealed that items used in labour cost were bush clearing, digging of pits, planting and FYM out of which digging of pits were the important component of labour cost and that found to be highest in all four blocks whereas digging of pit were found be highest in Mathwar block ₹ 7300 followed by Ranjan block ₹ 7150, Rabta block ₹ 6900 and Bhalwal block ₹ 6750 while the family labour were highest in Ranjana block ₹ 3500 and hired labour highest in Mathwar block ₹ 6600. However total material cost was found highest ₹ 3950 for Ranjan block followed by ₹ 3780 for Bhalwal block and ₹ 3650 in both Mathwar and Rabta block. The result revealed that material cost constitutes of planting material, FYM and miscellaneous out of which planting material was highest in all blocks i.e. ₹ 2150.

5.2 Making channels of Harad

The chain of various intermediaries/functionaries commonly known as marketing channel comprising of agencies like producers, wholesalers, retailers and sometime, direct sale of producer help in distribution of Harad from producers to ultimate consumers in Jammu District. **5.2.1 The marketing channels operating in Mathwar are as under:**

1. Producer- Wholesaler-Retailer- Consumer
2. Producer-Wholesaler1-wholesaler2-Retailer-consumer

5.2.2 The Marketing channels operating in Bhalwal district are as under:

1. Producer - Wholesale - Retailer - Consumer
2. Producer – Wholesaler1 - wholesaler2 – Retailer - consumer

The quantity of Harad sold through the different marketing channels is given in table 5.5. The table revealed that the quantity sold through channel I and II in Mathwar block was worked out to be 9432q and 3553q, respectively and in Bhalwal

block, the quantity sold through channel I and II was worked out to be 7042q and 1065q, respectively.

Table 5.6. Disposal of Harad through different channels in quintals (q)

| Marketing Channels | Mathwar | Rabta | Bhalwal | Ranjan |
|--|-----------------|-----------------|-----------------|-----------------|
| Producer - Wholesaler - Retailor - Consumer | 9432 (72.14) | 8138 (62.66) | 7042 (74.32) | 9030 (72.95) |
| Producer - Wholesaler 1- Wholesale2- Retailor - Consumer | 3553 (27.85) | 2678 (37.33) | 1065 (26.03) | 1456 (27.04) |
| Total | 12985 | 10816 | 8107 | 10486 |

(Figures in parenthesis indicates percentage of total)

5.2.2 Marketing costs, Margins, losses and price spread

5.2.2.1 Marketing cost of Harad

In general, marketing constitutes the expenses on the items like container cost, filling, packing, transportation, carry, bags cost and other charges. These costs are the actual expenditure incurred for the smooth running of businesses as well as for efficient marketing of particular farm commodity.

The channels wise decomposition of marketing costs components for Harad in Mathwar is given in table 5.6 which reflects the major items of marketing expenses in all the channels at producers 'level included transportation cost, cost of carry bags and labour charges. These costs varied to the extent of ₹ 185.60 and ₹ 159.50 in channel I as far as marketing cost for intermediaries was concerned in channel I and channel II, retailer had incurred the cost of ₹ 40 and ₹ 55 and while cost incurred at wholesale level was formed to be ₹ 120 in both the channels.

The channels wise decomposition of marketing costs components for Harad in Bhalwal is given in table 5.7 which reflects the major items of marketing expenses in all the channels at producers 'level included transportation cost, cost of carry bags and labour charges. These costs varied to the extent of ₹ 163.50 and ₹ 171.80. and the retailers marketing cost was concerned, in channel I and channel II, retailer had

incurred the cost of ₹ 50 and ₹ 55 and while cost incurred at wholesale level was ₹ 140 and ₹ 150. The total cost was formed to be ₹ 325.60 and ₹ 334.50 in channel I and II, respectively.

Table 5.7 Channel wise decomposition of marketing cost components for Harad in Mathwar (₹ /q)

| Sr. No. | Functionary | Channel I | Channel II |
|---------|--|---------------|---------------|
| | Marketing cost incurred at producer level | 185.60 | 159.50 |
| 1 | Transportation cost | 45.60 | 39.50 |
| 2 | Labour engaged | 120.00 | 100.00 |
| 3 | Cost of carry bags | 20.00 | 20.00 |
| | Marketing cost incurred at wholesaler level | 120.00 | 120.00 |
| 1 | Cost of carry bags | 20.00 | 20.00 |
| 2 | Labour engaged | 100.00 | 100.00 |
| | Marketing cost incurred at retailer level | 40.00 | 55.00 |
| 1 | Transportation cost | 20.00 | 35.00 |
| 2 | Cost of carry bags | 20.00 | 20.00 |
| 3 | Shop charges | 0.00 | 0.00 |
| | Total marketing cost | 325.60 | 334.50 |

Table 5.8 Channel wise decomposition of marketing cost components for Harad in Bhalwal (₹ /q)

| Sr. No. | Functionary | Channel I | Channel II |
|---------|---|---------------|---------------|
| | Marketing cost incurred at producer level | 163.50 | 171.80 |
| 1 | Cost of containers | 0.00 | 0.00 |
| 2 | Transportation cost | 43.50 | 51.80 |
| 3 | Labour engaged | 100.00 | 100.00 |
| 4 | Cost of carry bags | 20.00 | 20.00 |
| | Marketing cost incurred at wholesale level | 140.00 | 150.00 |
| 1 | Cost of carry bags | 20.00 | 20.00 |
| 2 | Labour engaged | 120.00 | 130.00 |
| | Marketing cost incurred at retailer level | 50.00 | 55.00 |
| 1 | Transportation cost | 30.00 | 35.00 |
| 2 | Cost of carry bags | 20.00 | 20.00 |
| 3 | Shop charges | 0.00 | 0.00 |
| | Total marketing cost | 353.50 | 376.80 |

5.2.2.2 Price spread and marketing margin

The price spread as per cent of consumers 'rupee for different market functionaries of Harad under different channels in Mathwar is presented in table 5.8. The Harad growers of Mathwar received the net price of about ₹ 2100/q and ₹ 2150/q in channel I and II, respectively. The producers' sale price of Harad was ₹ 2634/q in channel while it was ₹ 2664.4/q in channel II. The table further revealed that the per quintal marketing cost incurred by the farmers was 163.5 on channel I followed by channel II (₹ 171.8/q). The marketing loss incurred by the wholesaler was ₹ 140/q. The wholesaler' sale price ₹ 3168/q in channel I and ₹ 3178.8 in channel II. Total margin was found ₹ 878 in channel I and ₹ 824.2 in channel II.

The price spread as per cent of consumers' rupee for different market functionaries of the Harad under channels in Bhalwal block is presented in table 5.9. The Harad growers received the net price ₹ 2000 and ₹ 2200/q which were the price

paid by the consumer for channel I and II respectively. The producers' sale price of Harad was ₹ 2538.1/q in channel I while it was ₹ 2820/q in channel II. The table further revealed that the per quintal marketing cost incurred by the farmers was ₹ 185.6 on channel I followed by channel II (₹ 159.5/q). The marketing loss incurred by the producer was ₹ 352.5/q in channel I and ₹ 460.6. The wholesaler's sale price ₹ 3076.2/q in channel I and ₹ 3440.2 in channel II. Total margin was found ₹ 956.1 in channel I and ₹ 1065.2 in channel II.

Table 5.9 Price spread of Harad under different marketing channels in Mathwar (₹/q)

| Sr. No. | Particulars | Channel I | Channel II |
|---------|---|---------------|---------------|
| 1 | Net price received by the producer | 2100.00 | 2150.00 |
| 2 | Marketing cost incurred by the producer | 163.50 | 171.80 |
| 3 | Marketing loss of producer | 370.50 | 342.60 |
| 4 | Producer's sale price | 2634.00 | 2664.40 |
| 6 | Marketing cost incurred by the wholesaler | 140.00 | 150.00 |
| 7 | Marketing loss of wholesaler | 0.00 | 0.00 |
| 8 | Marketing margin of the wholesaler | 394.00 | 364.40 |
| 9 | Wholesaler sale price | 3168.00 | 3178.80 |
| 10 | Marketing cost incurred by the Retailer | 50.00 | 55.00 |
| 11 | Marketing loss of Retailer | 23.40 | 26.80 |
| 12 | Marketing margin of the retailer | 484.00 | 459.80 |
| 13 | Retailer's sale price | 3725.40 | 3720.40 |
| 14 | Price paid by the consumer | 3725.40 | 3720.40 |
| 15 | Producer's share in consumer's rupee | 56.37 | 57.79 |
| 16 | Total marketing margin | 878.00 | 824.20 |
| 17 | Total marketing loss | 393.90 | 369.40 |

Table 5.10 Price spread of Harad under different marketing channels in Bhalwal
(₹ /q)

| Sr. No. | Particulars | Channel I | Channel II |
|---------|---|---------------|----------------|
| 1 | Net price received by the producer | 2000.00 | 2200.00 |
| 2 | Marketing cost incurred by the producer | 185.60 | 159.50 |
| 3 | Marketing loss of producer | 352.50 | 460.60 |
| 4 | Producer's sale price | 2538.10 | 2820.10 |
| 6 | Marketing cost incurred by the wholesaler | 120.00 | 120.00 |
| 7 | Marketing loss of wholesaler | 0.00 | 0.00 |
| 8 | Marketing margin of the wholesaler | 418.10 | 500.10 |
| 9 | Wholesaler sale price | 3076.20 | 3440.20 |
| 10 | Marketing cost incurred by the retailer | 40.00 | 55.00 |
| 11 | Marketing loss of retailer | 0.00 | 0.00 |
| 12 | Marketing margin of the retailer | 538.00 | 565.10 |
| 13 | Retailer's sale price | 3654.20 | 4060.30 |
| 14 | Price paid by the consumer | 3654.20 | 4060.30 |
| 15 | Producer's share in consumer's rupee | 54.73 | 54.18 |
| 16 | Total marketing margin | 956.10 | 1065.20 |
| 17 | Total marketing loss | 352.50 | 460.60 |

5.2.2.3 Marketing efficiency in different channels

The marketing efficiency is an important tool and therefore requires more attention. The marketing efficiency of different marketing channels of Mathwar block is shown in table 5.10. The Harad farmers received highest net return per quintal from channel II (₹ 2100) followed by channel I (₹ 2150) whereas the marketing cost was

found maximum in channel II (₹ 376.8/q) and channel II (₹ 353.5/q). Marketing loss was worked out to be ₹ 393.5/q in channel I and ₹ 393.4/q in channel II. Channel II with marketing efficiency 1.37 was found most efficient marketing channel for Harad farmers in Mathwar block followed by channel I.

The marketing efficiency of different marketing channels of Bhalwal is shown in table 5.11. The Harad farmers received highest net return per kg form channel II (₹ 2200/q) followed by channel I (₹ 2000/q) whereas the marketing cost was found maximum in channel II (₹ 334.5/q) followed by channel I (325.6/q). Channel I with marketing efficiency 1.22 was found most efficient marketing channel for Harad farmers Bhalwal block followed by Channel II.

Table 5.11 Market efficiency of different channels of Harad in Mathwar

| Particulars | Channel I | Channel II |
|------------------------------------|------------------|-------------------|
| Net price received by the producer | 2100 | 2150 |
| Total marketing margin | 878 | 824.2 |
| Total marketing loss | 393.9 | 369.4 |
| Total marketing cost | 353.5 | 376.8 |
| Marketing efficiency | 1.29 | 1.37 |

Table 5.12 Market efficiency of different channels of Harad in Bhalwal

| Particulars | Channel I | Channel II |
|------------------------------------|------------------|-------------------|
| Net price received by the producer | 2000 | 2200 |
| Total marketing margin | 956.1 | 1065.2 |
| Total marketing loss | 352.5 | 460.6 |
| Total marketing cost | 325.6 | 334.5 |
| Marketing efficiency | 1.22 | 1.18 |

5.3 Opportunities and Constraints faced by farmers

5.3.1 Opportunities

All the Harad cultivators can form into a group and create FPO (farmers produce organization) to get good returns and better marketing facility as well as buyers who provides a good value to the produce according to the latest marketing prices. It will provide good employment opportunities to the growers as well as educated youth for the smooth running of the organization. Apart from employment generation, Harad cultivation yields maximum gross returns.

5.3.2 Production constraints are faced by the farmers

The Table 5.12 and Fig. 5.4 illustrates that, out of 60 respondents 5 respondents faced constraints regarding lack of technical knowledge, 19 respondents faced constraints regarding financial resources, 13 respondents faced constraints regarding high cost of labour, 11 respondents faced constraints regarding damage by animals and 12 respondents faced constraints regarding high charges of forest stamp.

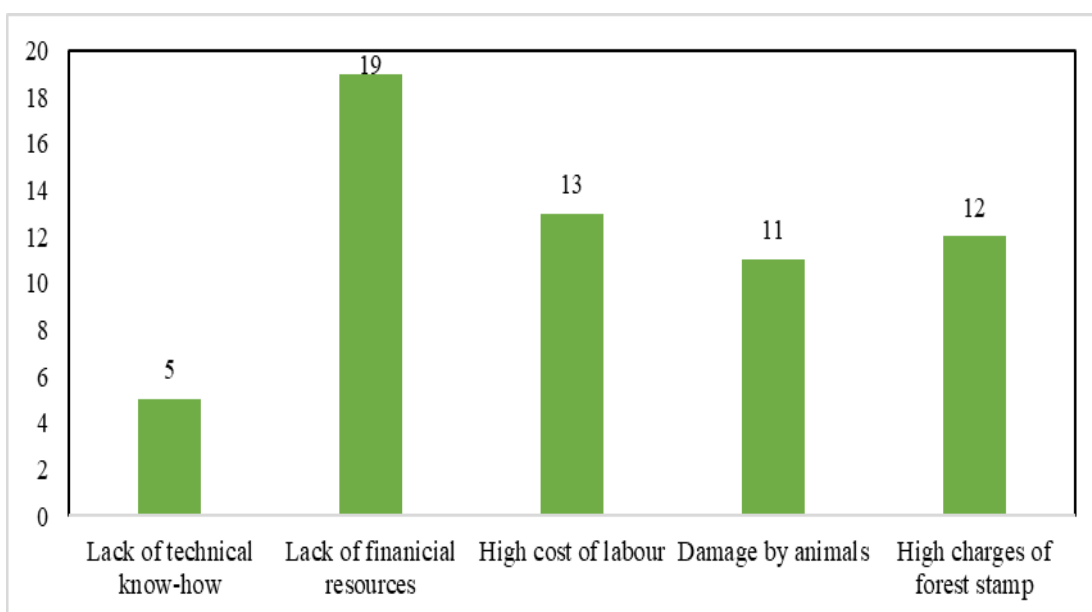
The Table 5.13 illustrates the allocation of rank for production constraints faced by the farmers with the help of garret ranking technique. It concluded in terms of the lack of financial resources ranks number 1 followed by high cost of labour, damage by animals, lack of technical knowledge and high charges of forest stamp at 2nd, 3rd, 4th and 5th positions, respectively

Table 5.13 Production constraints faced by the farmers

| Sr. No. | Constraints | Response |
|---------|------------------------------|----------|
| 1 | Lack of technical know-how | 5 |
| 2 | Lack of financial resources | 19 |
| 3 | High cost of labour | 13 |
| 4 | Damage by animals | 11 |
| 5 | High charges of forest stamp | 12 |

Table 5.14 Computation of Garret score and allocation of rank to the response

| Sr. No. | Constraints | Total | Average Score | Ranking |
|---------|------------------------------|-------|---------------|---------|
| 1 | Lack of technical know-how | 375 | 3.75 | IV |
| 2 | Lack of financial resources | 1140 | 11.4 | I |
| 3 | High cost of labour | 650 | 6.5 | II |
| 4 | Damage by animals | 440 | 4.4 | II |
| 5 | High charges of forest stamp | 288 | 2.88 | V |

**Fig. 5.4 Production constraints faced by the farmers**

5.3.3.3 Marketing constraints are faced by farmers

The Table 5.14 and Fig. 5.5 illustrates that, out of 60 respondents 23 respondents faced constraints regarding distant markets, 16 respondents faced constraints regarding high transportation cost, 13 respondents faced constraints regarding high cost labour, 3 respondents faced constraints regarding high charges of forest stamp and 5 respondents faced constraints regarding malpractices by traders, respectively.

The Table 5.15 illustrates the allocation of rank for marketing constraints faced by the farmers with help of garret ranking technique. It concluded in terms of

the high transportation cost rank number 1 followed by distant markets, high cost of labour, high charges of forest stamp and malpractices by the traders at 2nd, 3rd, 4th and 5th positions, respectively.

Table 5.15 Marketing constraints faced by the farmers

| Sr. No. | Constraints | Response |
|---------|------------------------------|----------|
| 1 | Distant markets | 23 |
| 2 | High transportation cost | 16 |
| 3 | High cost of labour | 13 |
| 4 | High charges of forest stamp | 3 |
| 5 | Malpractices by traders | 5 |

Table 5.16 Computation of Garret score and allocation of rank to the response

| Sr. No. | Constraints | Total | Garret score | Ranking |
|---------|------------------------------|-------|--------------|---------|
| 1 | Distant markets | 1725 | 17.25 | II |
| 2 | High transportation cost | 1960 | 19.6 | I |
| 3 | High cost of labour | 650 | 6.5 | III |
| 4 | High charges of forest stamp | 160 | 1.6 | IV |
| 5 | Malpractices by traders | 96 | 0.96 | V |

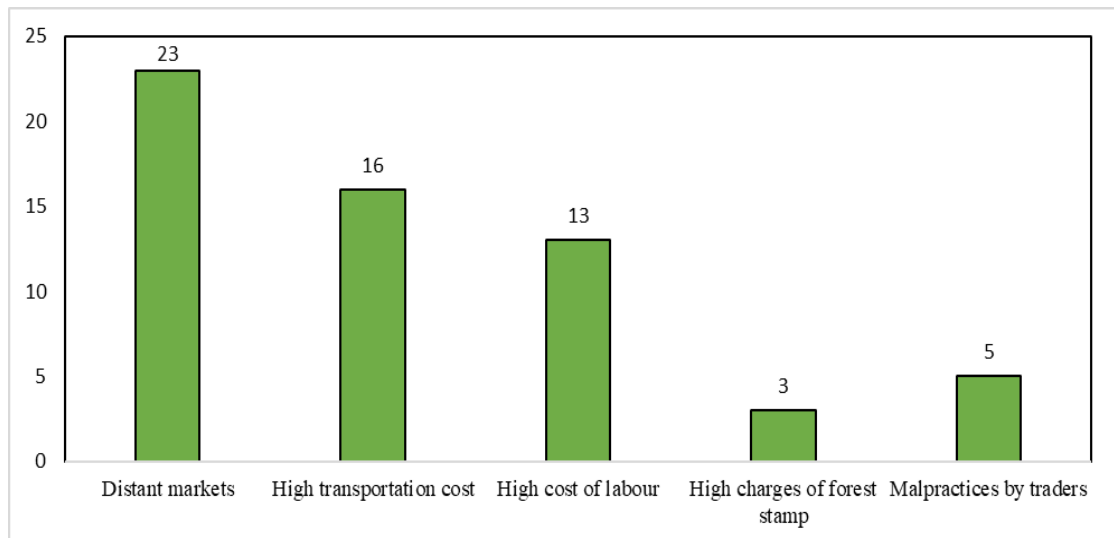


Fig 5.5 Marketing constraints faced by the farmer

CHAPTER – VI
SUMMARY
AND
CONCLUSION

SUMMARY AND CONCLUSIONS

A study entitled “**Economic Analysis of production and marketing of Harad (*Terminalia chebula*) in Jammu District**” was conducted in area of Jammu District of Jammu and Kashmir UT during the year 2019-20. Two Blocks, Mathwar and Bhalwal were selected on the basis of highest area under cultivation during 2018-19. Four villages from each block were selected on the basis of highest number of Harad trees. The ultimate units, that is Harad farmers were selected randomly from each village so as to constitute a total sample size of 60 (15 from each village) farmer from the whole area under study. Primary data on costs and returns, constraints faced were collected by interviewing the farmers personally with the help of structured and presented schedule. Collection of information regarding marketing was done by visiting farmers, wholesalers, retailers of different markets.

The data collected were subjected to analysis for examining the objectives of the investigation viz, cost and returns, marketing channels, marketing costs, price spreads, constraints in production and marketing. The findings of the present study have been briefly summarised in this chapter.

6.1 Economics of Production of Harad

The variable cost of cultivation of Harad of sampled farms was presented in Table 5.1 and Fig. 5.1. It revealed that per 100 trees variable cost of cultivation was ₹ 74179.47 in Mathwar, ₹ 69664.81 in Rabta, ₹ 71233.48 in Bhalwal and ₹ 72452.42 in Ranjan with overall average of ₹ 71882.54. Expenditure on hired human labour and family labour were the important components of variable cost. Similarly, rental value of owned land was the most important component of fixed cost. The result further revealed that out of all the inputs used, the expenditure incurred on hired labour was found to be highest with an overall average of per 100 trees was ₹57500.00. However, on overall basis, the variable cost per 100 trees was ₹ 71882.54 and fixed cost was ₹ 2688.04, respectively. Total cost of cultivation per 100 trees was found to be highest in Mathwar block i.e., (₹ 76859.81). In concept wise cost A1 on the farms of per 100 trees in blocks of Mathwar, Rabta, Bhalwal and Ranjan were ₹ 66005.12, ₹ 61005.03, ₹ 62970.60 and ₹ 64029.90 with overall average ₹ 63502.66, respectively. A2 on the

farms per 100 trees in Mathwar, Rabta, Bhalwal and Ranjan were ₹ 66105.12, ₹ 61105.03, ₹ 63070.60 and ₹ 64129.90 with overall average ₹ 63602.66, respectively. Similarly, per 100 trees cost B₁ of Mathwar, Rabta, Bhalwal and Ranjan were ₹ 66359.81, ₹ 61361.25, ₹ 63326.50 and ₹ 64384.79 with per 100 trees overall average ₹ 63858.08 whereas per 100 trees cost B₂ was ₹ 68459.81, ₹ 63461.25, ₹ 64926.50 and ₹ 65984.79 with overall average ₹ 65958.08. Cost C₁ of per 100 trees in Mathwar, Rabta, Bhalwal and Ranjan were ₹ 74859.81, ₹ 70361.25, ₹ 71926.50 and ₹ 73134.79 with overall average ₹ 72570.58. The cost C₂ per 100 trees in blocks of Mathwar, Rabta, Bhalwal and Ranjan were ₹ 76959.81, ₹ 72461.25, ₹ 73526.50 and ₹ 74734.79 with overall average ₹ 74670.58. After working out management cost, i.e., 10 per cent of cost C₂, per 100 trees cost of C₃ was found to be ₹ 84655.79, ₹ 80157.23, ₹ 81222.48 and ₹ 82430.77, in Mathwar, Rabta, Bhalwal and Ranjan, respectively with an overall average of per 100 trees ₹ 82366.56 on all farms. The farms of Mathwar, Rabta, Bhalwal and Ranjan were producing per 100 trees was 190q, 193q, 202q and 198q with an overall average 195.75q. The gross income per 100 trees was higher on the farms of Bhalwal (₹ 444400) followed by the farms of Ranjan (₹ 435600), on the farms of Rabta (₹ 424600) and Mathwar (₹ 418000). The returns per 100 trees were also higher for the farmers of Bhalwal (₹ 371938.75) followed by the farmers of Ranjan (₹ 360865.21) than the farmers of Rabta (₹ 352138.75) and the farmers of Mathwar (₹ 341040.19) with an overall ₹ 355979.42. On the basis of cost C₂ the returns per rupee were higher for farms of Bhalwal (₹ 6.04) followed by the Rabta (₹ 5.86). Result also revealed that total plantation cost of establishment was highest in Ranjan block which was ₹ 13850 followed by Mathwar block (₹ 13550), Rabta block (₹ 13400) and Bhalwal block (₹ 13280). It constitutes labour cost and material cost out of which labour cost highest in both Mathwar and Ranjan block (₹ 9900) respectively and material cost was highest in Ranjan block and Bhalwal block ₹ 3950 and (₹ 3780) respectively.

6.2 Marketing of Harad

The marketing chain of two types mainly (1) farmer – wholesaler – retailer – consumer, (2) farmer – wholesaler¹ – wholesaler² – retailer – Consumer were followed in the sample area.

In Bhalwal Block, I and II marketing channels were followed. The major items of marketing costs in all the channels of Bhalwal block for various market functionaries included labour cost and transportation cost. The average per quintal marketing cost at productions' level varied to the extent of ₹ 185.60 and ₹ 159.50 per quintal for channel I and II respectively. The average per quintal cost borne by the wholesaler in channel I and II was ₹ 120.00 and ₹ 120.00 per quintal while it was ₹ 40.00 and ₹ 55.00 per quintal in channel I and II respectively at retailer's level.

In Mathwar block the average per quintal marketing cost at producer's level varies to the extent of ₹ 163.50 and ₹ 171.80 for channel I and II respectively, whole marketing cost was borne by the retailer as there was farm marketing of the produce. The average per kg marketing cost borne by the wholesaler in channel I was ₹ 140.00 and ₹ 150.00 while it was ₹ 50.00 and ₹ 55.00 channel I and II respectively, whole marketing cost was borne by the producer as there was direct marketing of producer.

The Harad farmers of Bhalwal block received the net price of about ₹ 2000/q and ₹ 2200/q in channel I and II respectively, whereas the net price received by the farmers of Mathwar block was ₹ 2100/q and ₹ 2150/q in channel I and II respectively. A comparison of different channels thus showed that producers' share in consumers' rupee was highest in case of channel I and lowest in channel II.

In Mathwar block, channel II with marketing efficiency 1.37 found to be the most efficiency marketing channel of farmers followed by the channel I (1.29), while in Bhalwal block, channel I with marketing efficiency (1.22) was more efficient followed by channel II (1.18).

Conclusion

The cost of cultivation 100 trees of Harad in Jammu district was ₹ 86009.05. Out of all inputs used, the expenditure incurred on hired labour was found to be highest with an overall average of ₹ 57500.00 per 100 trees. The cost structure revealed that cost A1, cost A2, cost B1, cost B2, cost C1, cost C2 and cost C3 were ₹ 86009.05, ₹ 88009.05, ₹ 88566.01, ₹ 90566.01, ₹ 99278.51, ₹ 111148.63 and ₹ 119861.13, respectively and the overall net returns of 100 trees were obtained cost A1, cost A2, cost B1, cost B2, cost C1, cost C2 and cost C3 were ₹ 371490.95, ₹ 369490.95, ₹ 368933.99, ₹ 366933.99, ₹ 358221.49, ₹ 346351.37 and ₹ 337638.87,

respectively. The return per rupee investment on all farms over cost A1, cost A2, cost B1, cost B2, cost C1, cost C2, and cost C3 were ₹ 5.38, ₹ 5.20, ₹ 5.17, ₹ 5.05, ₹ 4.61, ₹ 4.12 and ₹ 3.82, respectively. A total of two marketing channels were found in the study are which are farmer- wholesaler- retailer- consumer and farmer- wholesaler1- wholesaler2 - retailer-consumer respectively. The most commonly used channel by the farmer was channel I while the most efficient one is channel II. It was also found that 100 trees of Harad was earning more net profit i.e., ₹ 346351.37 with a benefit cost ratio of 4.12:1.

Recommendations

- The farmers are suggested that they should focus on value addition, to increase their income.
- Marketing facilities needs to be organized for their produce.
- Awareness, training and extension program should be organized by the department for making its cultivation more profitable and successful.

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APPENDIX



**SHER-E-KASHMIR UNIVERSITY OF AGRICULTURAL SCIENCES
AND TECHNOLOGY OF JAMMU**
Survey Schedule for Data Collection of MBA-ABM Research Problem
Economic Analysis of Production and Marketing of Harad
(Terminalia chebula) in Jammu District

SCHEDULE

Dear Respondent

I, Honey Kumar, student of Sher-e-Kashmir University of Agricultural Sciences & Technology of Jammu, under **Reg. No J-18-M-57-ABM** in **Division of Agricultural Economics and Agri-Business Management**, doing my project on **“Economic Analysis of Production and Marketing of Harad (*Terminalia Chebula*) in Jammu District”** would be grateful to you if you could kindly cooperate with my work for betterment of my knowledge. All the data will be kept confidential and will be used just for analysis of the project. I request you to tick the option which in your opinion believes to be true.

Sr. No: _____ Village: _____ Block: _____ Date: _____

SOCIO-DEMOGRAPHIC PROFILE OF THE RESPONDENT AND BASE LINE DATA

1. Name of the farmer Sh. _____
2. Father’s name Sh. _____
3. Age (years) _____
4. Marital Status : Married/ Un-married/ Widow/ Widower
5. Sex : Male/Female
6. Telephone/ Mobile No.: _____
7. Occupation :
 - i) Main:
 - ii) Subsidiary :
8. What is the highest grade in School/College you have completed? ____
9. No of family members

10. Family Composition

| Name | Relation | Sex | Age | Higher Education | Income/Year | Source of income |
|------|----------|-----|-----|------------------|-------------|------------------|
| | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

11. Working people in family? _____

12. Members of farmer's organization

i. _____ ii. _____ iii. _____

10. How far is your village from nearest market (km)? _____

11. How far is your house from nearest Agriculture Extension Office (km)?

12. Operational land holdings (in kanals).

| | <u>Irrigated</u> | <u>Unirrigated</u> | <u>Total</u> |
|------------------|------------------|--------------------|--------------|
| (i) Owned | _____ | _____ | _____ |
| (ii) Leased in | _____ | _____ | _____ |
| (iii) Leased out | _____ | _____ | _____ |

13. List the crops cultivated last year.

| S.no | Crop | Area (in kanal) | Production (kanal) |
|------|------|-----------------|--------------------|
| | | | |
| | | | |
| | | | |
| | | | |

14. Crops grown for self-consumption or sale, if sold, income out of it.

| Crop | Income (₹) |
|------|------------|
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |

15. Whether the respondent has planted Harad (yes/no)

If yes, give the following details

| Types of Harad planation | Area planted | No. of trees | Years of planation/age | Production (q) |
|--------------------------|--------------|--------------|------------------------|----------------|
| Desi | | | | |
| Grafted | | | | |
| Post Grafted | | | | |

Mode of selling:

Fruit collection

whole tree sold

Problems in marketing

a)

b)

c)

16. Marketing Pattern

Marketing cost incurred by intermediary (₹/q)

| Harad | Farmer | First intermediary | Second intermediary | Third intermediary | Fourth intermediary |
|---------------------|--------|--------------------|---------------------|--------------------|---------------------|
| Transportation cost | | | | | |
| Picking cost | | | | | |
| Cost of gunny bags | | | | | |
| Loading/unloading | | | | | |
| Weighing charges | | | | | |
| Any other cost | | | | | |

17. Total income from the Harad crop during the last year?

(i) _____

(ii) _____

Since, how many years have you cultivating Harad crops? -----

18. Farm Inventories:

| S.No. | Equipment | No. | Year of Purchasing | Depreciation (%) | Depreciation (₹) | Present value (₹) |
|-------|----------------|-----|--------------------|------------------|------------------|-------------------|
| 1. | Farm Building | | | | | |
| 2. | Tractor | | | | | |
| 3. | Tube well | | | | | |
| 4. | Bullock Cart | | | | | |
| 5. | Pump set | | | | | |
| 6. | Chaff Cutter | | | | | |
| 7. | Plough | | | | | |
| 8. | Sprayer/Duster | | | | | |
| 9. | Others | | | | | |

19. Livestock

| S.No | Kind of animal | No. | Breed | Age (in yrs) | Owned/ Purchased | Month and year of purchase | Purchase value (₹) | Present value (₹) | Expected life period (yrs.) |
|------|----------------|-----|-------|--------------|------------------|----------------------------|--------------------|-------------------|-----------------------------|
| 1. | Bullock | | | | | | | | |
| 2. | Cow (local) | | | | | | | | |
| 3. | Cow (hybrid) | | | | | | | | |
| 4. | Buffalo | | | | | | | | |
| 5. | Sheep | | | | | | | | |
| 6. | Goat | | | | | | | | |
| 7. | Poultry | | | | | | | | |
| 8. | Others | | | | | | | | |

20. Crop produce and its disposal pattern:

| Crop | Quantity sold (in kg/ctl) | Home consumption (in kg/ctl) | Given for wages (in kg/ctl) | for | Rate/ctl | Channel of market |
|------|---------------------------|------------------------------|-----------------------------|-----|----------|-------------------|
| | | | | | | |
| | | | | | | |

21. Wage rate/day:

1. Male (₹ /day)

Female (₹ /day)

2. Bullock labour/day:

3. Machine Rate/day/hour

22. IRRIGATION

| Source | Number | Crop and area (acres) irrigated |
|---------------------|--------|---------------------------------|
| Canal | | |
| Diesel pump set | | |
| Electronic pump set | | |
| Seasonal river | | |
| Perennial river | | |
| Any other | | |

23. Existing Marketing practices and channels

1. Markets Available _____
2. Pre Harvest Contract _____
3. Farm Marketing _____
4. Self-Marketing (Local/ Town/ City market)
5. Out of state export marketing _____
6. Cooperative marketing _____
7. Self-Help group marketing _____
8. Government aided marketing _____
9. Any Other _____

24. Marketing Channels:

- 1.
- 2.
- 3.

24. Marketing Cost incurred by Producer (₹ Per qtl.)

| S.no. | Operation | Value |
|-------|---------------------------|-------|
| 1. | Name of market | |
| 2. | Location of market | |
| 3. | Quantity to be sold (qtl) | |
| 4. | Whom to be sold | |
| 5. | Price (₹) | |

| | | |
|-----|---------------------------------------|--|
| 6. | Means of transportation | |
| 7. | Distance from field to market (km) | |
| 8. | Transportation cost (₹) | |
| 9. | Picking, filling (₹) | |
| 10. | Cost of Container/ gunny bags (₹) | |
| 11. | Market fee (₹) | |
| 12. | Loading/ unloading charges (₹) | |
| 13. | Commission charges (₹) | |
| 14. | Weighing charges (₹) | |
| 15. | Sale tax on value (₹) | |
| 16. | Shop/rehri charges (₹) | |
| 17. | Cost of carry bags (₹) | |
| 18. | Labour engaged in selling process (₹) | |
| 19. | Any other cost (₹) | |
| 20. | Cost incurred (per qtl) | |

25. Cost of Cultivation:

| S.No. | Name of operation | Harad | | Wheat | | Any other | |
|-------|---|--------------|------------|--------------|------------|--------------|------------|
| | | Response/qty | Total cost | Response/qty | Total cost | Response/qty | Total cost |
| 1. | Area in ha | | | | | | |
| 2. | Land preparation 1) Bullock/Tractor | | | | | | |
| 3. | Seed/Sowing a) Variety b) Source c) Quantity d) Cost of seed treatment e) Method of sowing f) Labour | | | | | | |
| 4. | FYM a) Quantity used qtl b) Labour used | | | | | | |
| 5. | Fertilizer a) Urea i) Quantity b) DAP | | | | | | |

| | | | | | | | |
|------------|--|--|--|--|--|--|--|
| | i) Quantity c) Potash i) Quantity d) Others, if any (Zn/S) e) Labour | | | | | | |
| 6. | Irrigation i)Number ii) Time iii)Source iv) Labour | | | | | | |
| 7. | Intercultural operations i)Nos and times of hoeing ii) By machine/chemical iii) Labour | | | | | | |
| 8. | Weed Control i) Weedicide used ii) Quantity iii) Cost of hiring sprayer etc. iv) Labour used | | | | | | |
| 9. | Pest & Disease control i)Fungicide/Pesticide used ii) Quantity iii) Labour | | | | | | |
| 10. | Harvesting(Labour) | | | | | | |
| 11. | Threshing & Winnowing Machine/Manually Labour | | | | | | |
| 12. | Transportation Bullock cart/Tractor Trolley | | | | | | |
| 13. | Land rent | | | | | | |
| 14. | Production Main crop By product | | | | | | |

1. Wholesaler's survey:

1. General information:

- i. Name of Wholesaler/Village Merchant:
- ii. Name of market/place:
- iii. Date of interview:

2. Marketing cost incurred:

| S.No. | Particulars | Value |
|-------|----------------------------------|-------|
| 1. | Quantity purchased (qtl) | |
| 2. | Purchase price (₹) | |
| 3. | Quantity sold (qtl) | |
| 4. | Selling price(₹) | |
| 5. | Distance from market place (km) | |
| 6. | Means of transportation | |
| 7. | Transportation cost(₹) | |
| 8. | Picking, filling (₹) | |
| 9. | Cost of Container/ gunny bags(₹) | |
| 10. | Octroi/ market fee(₹) | |
| 11. | Loading/ unloading charges (₹) | |
| 12. | Commission charges (₹) | |
| 13. | Weighing charges(₹) | |
| 14. | Sale tax on value(₹) | |
| 15. | Shop/rehri charges(₹) | |
| 16. | Cost of carry bags(₹) | |
| 17. | License fee(₹) | |
| 18. | Maintenance expenditure(₹) | |
| 19. | Expenditure on stationary(₹) | |
| 20. | Rent on shop per month(₹) | |
| 21. | Final Destination | |
| 22. | Any other cost(₹) | |

2. Retailer's survey:

1. General information:

- Name of Retailer:
- Name of market/place:
- Date of interview:

2. Marketing cost incurred:

3.

| S.No. | Particulars | Value |
|-------|-------------|-------|
|-------|-------------|-------|

| | | |
|-----|--|--|
| 1. | Quantity purchased (qtl) | |
| 2. | Purchase price (₹) | |
| 3. | Quantity sold (qtl) | |
| 4. | Selling price (₹) | |
| 5. | Distance from market to selling place (km) | |
| 6. | Total cost of transportation(₹) | |
| 7. | Cost of container/gunny bags(₹) | |
| 8. | Loading/unloading charges(₹) | |
| 9. | Commission charges(₹) | |
| 10. | License fee(₹) | |
| 11. | Packaging cost(₹) | |
| 12. | Rent of shop(₹) | |
| 13. | Cost of carry bags(₹) | |
| 14. | Wastage/ loss (qtl) | |
| 15. | Mandi fees(₹) | |
| 16. | Maintenance/expenditure fee(₹) | |
| 17. | Other expenses(₹) | |

CERTIFICATE-IV

Certified that all the necessary corrections as suggested by the external examiner and the advisory committee have been duly incorporated in the thesis entitled "**Economic Analysis of Production and Marketing of Harad (*Terminalia chebula*) in Jammu District**" submitted by **Honey Kumar**, Registration No. **J-18-M-57-ABM**.



Dr. Anil Bhat
Major Advisor & Chairman
Advisory Committee

Place: Jammu

Date: 15.03.2021


Head 15.03.2021

Division of Agricultural Economics and ABM

VITA

VITA

Name : Honey Kumar
Father's Name : Mohinder Pal
Mother's Name : Bimla Devi
Date of Birth : 17-10-1995
Nationality : Indian
State/Country : Punjab
Permanent Address : House no. 180, Ward No. 13,
Raman, Mandi, Bathinda
Pin code : 151301
Mobile No. : 7508779178

EDUCATIONAL QUALIFICATIONS

Bachelor's Degree : B.Sc. (Hons.) Agriculture
University and Year of Award : Guru Kashi University
CGPA : 5.97/10
Master's Degree : MBA (ABM)
University and year of award : SKUAST, Jammu (2020)
OGPA : 7.56/10