

CERTIFICATE – I

*This is to certify that the thesis entitled “**An economic analysis of production and marketing of Garlic in Ratlam District of Madhya Pradesh.**” submitted in partial fulfilment of the requirement for the degree of **MASTER OF SCIENCE (Agriculture) in AGRICULTURAL ECONOMICS** of Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur is a record of the bonafide research work carried out by **Mr. Shanti Lal Vasuniya** under my guidance and supervision. The subject of the thesis has been approved by the Student’s Advisory Committee and the Director of Instructions.*

All the assistance and help received during the course of the investigation has been acknowledged by him.

Place : Jabalpur

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(Dr. Deepak Rathi)
Chairman of the Advisory Committee

THESIS APPROVED BY THE STUDENT’S ADVISORY COMMITTEE

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CERTIFICATE – II

*This is to certify that the thesis entitled “**An economic analysis of production and marketing of Garlic in Ratlam District of Madhya Pradesh.**” submitted by **Mr. Shanti Lal Vasuniya**, to the Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur in partial fulfillment of the requirements for the degree of **Master of Science (Agriculture) in Agricultural Economics and Farm Management** in the **Department of Agricultural Economics and Farm Management** has been, after evaluation, approved by the External Examiner and by the Student’s Advisory Committee after an oral examination on the same.*

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Declaration and Undertaking by the Candidate

I, **Shanti Lal Vasuniya** certify the work embodied in thesis entitled “**An economic analysis of production and marketing of Garlic in Ratlam District of Madhya Pradesh.**” is my own first hand bonafide work carried out by me under the guidance of **Dr. Deepak Rathi** at Department of Agricultural Economics and Farm Management, College of Agriculture, Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur during 2016.

The matter embodied in the thesis has not been submitted for the award of any other degree/diploma. Due credit has been made to all the assistance and help.

I, undertake the complete responsibility that any act of misinterpretation, mistakes, and errors of fact are entirely of my own.

I, also abide myself with the decision taken by my advisor for the publication of material extracted from the thesis work and subsequent improvement, on mutually beneficial basis, provided the due credit is given, thereof.

Place: Jabalpur

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Title of the Thesis : “An economic analysis of production and marketing of Garlic in Ratlam District of Madhya Pradesh.”

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VITAE

The author of this thesis, **Shanti Lal Vasuniya s/o Duli Chand Vasuniya** was born on 10th February, 1992 Vill Rawdiya Post- Birmawal, Teh+Dist –Ratlam PIN-457441



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For the partial fulfillment of the master's degree programme he was allotted a research problem on ***“An economic analysis of production and marketing of Garlic in Ratlam District of Madhya Pradesh.”*** which was successfully conducted by him and being submitted in the form of this thesis.

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CHAPTER-I INTRODUCTION

Garlic (*Allium sativum*) is one of the most important bulbous spices and medicinal crop grown commercially. Garlic holds fifth position in the area under cultivation among vegetable crops in India. India stands second in area and third in production of garlic in the world.

The main producing states in India are Madhya Pradesh, Gujarat, Rajasthan, Orissa, Karnataka, Tamil Nadu, Maharashtra and Bihar. In India Garlic is cultivated under 247.52 thousand hectare with total production of 11.7 M tonnes and productivity of 4.51 tonnes per hectare. India's share in the world garlic production stands at a meagre 4.6 percent. Total export of garlic from India in 2014 -15 has been estimated at 12,550 tonnes (Rs 10,291 Lakh in value). Other major importing countries include Bangladesh, Malaysia and Nepal.

Garlic is one of the important spice crops of Madhya Pradesh, Thus to assure the availability of garlic throughout the year and to minimize the fluctuation of prices in the market, the advanced techniques of storage of garlic should be practiced. The major losses during the storage of garlic are loss in weight, rotting, sprouting etc. The important factors affecting the shelf life of garlic are the variety of the garlic, the dose of fertilizer, irrigation, and harvest treatment, time of harvesting and technique of harvesting.

The storage of garlic is done by the traditional methods i.e. in the environmental conditions. Due to this practice there is no control over the temperature and moisture. Garlic is a perishable commodity having very high post harvest losses estimated to the tune of 20-30 percent. Any attempt in loss prevention of perishable commodities directly adds to the productivity. Reduction of post harvest losses through genetic and cultural manipulations has been tried. Further, low cost ventilated storage structures designed by various institutes have been demonstrated to the farmers and traders.

Value added products of Garlic have their own value, Garlic is dehydrated for use in curries and soup powders. Dehydrated Garlic is also used in pharmaceutical preparation. Such products are not only cost effective, nutritionally superior and have a long shelf life. Garlic extracts are obtained from aged garlic cloves after their processing.

Garlic cultivation requires a high level of working capital and human labour that profit margins were good and that price levels were generally stable and concluded that timely and adequate irrigation facilities are essential in raising the profitability of the Garlic crops.

The major constraints in the production of garlic are the fluctuation in the market prices, the lack of storage facilities and the transportation. Also the lack of processing industries is one of limiting factors in the production of garlic. Keeping the view the present study “An economic analysis of production and marketing of garlic in Ratlam district of Madhya Pradesh” aims at pursuing the specific issues with the following.

Madhya Pradesh is also leading in garlic production, area and productivity than other state. In Madhya Pradesh major garlic producing districts are Ratlam, Ujjain, Dewas, Mandsaur, Dhar and Indore. Now a day's production of garlic in Ratlam district is increasing significantly. In Ratlam district, garlic is cultivated in 17435 ha. Area and production is 2135576 quintal in year 2014-15 which contributed 10% total production of Madhya Pradesh.

1.1 OBJECTIVE OF STUDY

Therefore, keeping the above facts in view the present investigation has been proposed with the following objectives:

1. To analysis the cost and return of garlic cultivation.
2. To identify the different marketing channels of garlic.
3. To analyze the marketing margin, price spread and producer share in consumer rupee in garlic marketing.
4. To identify constraints and future thrusts in garlic production and marketing.

1.2 Assumption

The farmers have limited resources and have to operate within resource limitation.

It is assumed that the main objective of the farmers is to maximize profits.

It is also assumed that farmers are free to make any decision regarding their farming business.

1.3 Limitations

The most important limitation of this study is that it pertains to the data collected for only Rabi season. The farmers do not keep any systematic records of their farming practices and have provided the information based on their recall memory. Thus, there is possibility of certain bias to enter in the present study.

The study includes only those factors which are under the control of the farmers and contribute significantly towards the returns and use of resources. There is no reference made to factors like risk and uncertainty.

Chapter- II

Review of literature

Future is the manifestation of the past. So past research studies would have the way for the future researchers. It also provides a basis to theoretical framework in addition to helping researcher to get an insight in to methods and procedures. Thus a comprehensive review of the literature is an eventual part of any investigation in view of the above fact, efforts were made to collect the research findings on the subject possessing similar characteristics. Since, there are less research studies on

An economic analysis of garlic production in Ratlam Distirct of Madhya Pradesh. The work done related to the topic either directly or indirectly has been reviewed and presented under the following sub-headings-

Raghuwanshi *et al.* (2000) found that the magnitude of change indicated that there was a sustained increase in the area (31.91%) of garlic in Malwa plateau of Madhya Pradesh. The growth in per hectare productivity had more impact than the growth in area towards total production and this shows that the garlic production becoming technological respective.

Barncczki and Stoilona(2000) reported that current and future prospects for garlic production in Hungary are presented with reference to cultivars, quality mechanization, investment, and training requirements for new producer.

Kamble *et al.* (2002) the cost and return structure of onion production in Bellary and Dharwad districts, Karnataka, India was evaluated based on data from 120 sample farms (38 small, 38 medium, and 44 large farms). Mean per hectare total cost of cultivation in Dharwad district was Rs. 7338.55, 8723.78, and 7916.97 on small, medium and large farms, respectively. In Bellary district, mean per hectare total cost of cultivation was Rs. 9739.39, 11 190.37 and 11 874.39 on small, medium and large farms, respectively. Mean per hectare net returns in Dharwad district were Rs. 6602.45, 11 426.97, and 7484.28 on small, medium and large farms, respectively. In Bellary district, mean per hectare net returns were Rs. 6350.13, 4553.60, and 6558.78 on small, medium and large farms, respectively.

Madan *et al.* (2002) this paper analyses the status of the spices sector in Andhra Pradesh, India, in terms of area, production, productivity, share in exports, as well as the problems in production, post harvest handling, and marketing. Prospects for the development of the spices industry in the state are explored.

Vadivel and Madhusoodanan (2003) following a brief background on garlic and its cultivation, this paper describes the area, production, productivity and exports of garlic in India during the 1990s up to 2000. The uses of garlic (as food and medicine) are then discussed, followed by the constraints in garlic production and the future outlook of this crop in India.

Dixit and Singh (2003) experiments were conducted in a farmer's field in Madhya Pradesh, India, during the rabi season from 1998/99 to 2000/01 to study the effects of improved farming techniques and farmers' practice on the yield and profitability of tomato and onion. The adoption of improved farming practices recorded an average yields of 256 quintal/ha for tomato and 200 quintal/ha for onion, which were higher by 43.5 and 39.5% than the yields recorded for farmers' practice. The average net returns obtained with the adoption of improved farming practices were 12 868.70 and 27 424.30 rupees/ha for tomato and onion, respectively. The average incremental cost benefit ratios recorded for tomato (2.73) and onion (3.87) indicated the profitability of using improved farming technologies.

Raghuvanshi *et al.* (2003) conducted an experiment for two years 2001 to 2002-03 to study the performance of twelve genotypes of garlic. The results revealed that genotype DARL-52 was found most promising in terms of bulb yield (119.74 quintal/hectare) and cost benefit ratio (1:4:66).

Pramanic *et al.* (2003) a study was undertaken to find out the economics of production and marketing of vegetables in Andaman and Nicobar Island. Results indicated that the yield of ginger, cucumber, bitter gourd, chilli and ridge gourd were higher in that order. Correspondingly, the total cost of cultivation was observed to be higher for ginger, bitter gourd, chilli, brinjal, ladyfinger etc. It was also found that the yield of all the vegetables were higher in hilly land than in valley land. Cost – benefit ratio was higher for chilli followed by cucumber, ladyfinger, marsea, cowpea, snake gourd etc, and it was found to be higher in hilly land than in valley land for all

the vegetables. The margin to both the wholesaler and the retailer was highest in ginger (Rs.14.10 and Rs.32.50 per Kg, respectively). Conversely, the marketing margin was the lowest in basal and marsa (Rs.0.90) for wholesale and in potato (Rs.1.50) for retailer.

Asati *et al.* (2004) reported the technological options for higher productivity of spices cultivation in Madhya Pradesh. It has been estimated that the spices are grown in 163537 hectare. Producing about 96109 Million Tonne. It was also understood that the specific location like Mandsaur need special encouragement, for garlic and onion. There is tremendous scope for improving productivity of spices in Madhya Pradesh.

Verma *et al.* (2004) this paper analyses the economics of onion production on different farm size groups in Indore district, Madhya Pradesh, India. Primary data for the year 2000-01 on cost of cultivation, fixed assets, yield, returns, and constraints in production and marketing were collected from a sample of 80 farmers (40 small-, 25 medium- and 15 large-scale farmers). Production function analysis is employed to evaluate resource productivities and resource-use efficiency. The growth of onion exports is also examined based on time-series data.

Verma (2004) reported the determines the costs, returns, profitability and resource use efficiency of garlic production. It also identifies the marketing channels for garlic in the district, and determines the marketing costs, margins and efficiency. Also examined the compound growth rates, and the relationship between, market arrivals and wholesale prices of garlic in the Indore Vegetable Mandi over the period 1997/98-2001/02. Finally, constraints in garlic production and marketing in the study area were identified, and measures for improvement were suggested.

Kumawat and meena (2005) study on growing and instability in area, production and yield of spice crops such as coriander, cumin, fenugreek, fennel, garlic and chilli in Rajasthan vis-à-vis india indicated that almost all the spices registered significant growth rates in their production in mainly due to significant increases in the same during post technology Mission on Oilseeds (TMO) period (from 1986/87 to 2000/01). The significant increase in coriander production was mainly due to significant increase in yield whereas in cumin

and fennel, it was due to significant increase in area. In fenugreek, the increase in production was the result of increase in both area and yield. In case of chilli and garlic, both area and yield at the national level and only area at the state level played significant role in increasing the production. In majority of the spice crops the instability in production increased during the post- TMO period over the pre-TMO period (1967/68 to 1985/86) in Rajasthan and India as well. However, the magnitudes of coefficients of variations were more pronounced at the state level than at the national level. The instability in area in the state was higher in the post- TMO period than in the pre-TMO period. The same was true of India except that the magnitudes of coefficients of variations were less at the national level. In general yield instability, on the other hand decreased during the post- TMO period over the pre-TMO period in both Rajasthan and India. As regards sources of variance of production, area variance played a dominant role in case of coriander, cumin, fennel and garlic. Yield variance predominantly destabilized the production of chilli in Rajasthan and of fenugreek in India in majority of spices area yield covariance helped stabilize the production in Rajasthan as well as in India.

Durgawati *et al.* (2005) conducted a study on economic analysis of onion and potato in the Malwa Region of Madhya Pradesh and revealed that in small size group the obtained gross income from onion Rs. 55290 (maximum) followed by Rs. 51870 in medium size and Rs. 50472 minimums in large size. The average productivity and gross return of the study area onion was recorded 87.57q./ha and Rs.52554, respectively. In potato crop the gross income was Rs. 56,100 (maximum) in small size group followed by 54200 in medium size of and Rs. 53880 minimum in large size. The average productivity and gross return of the study area from potato was recorded 120.4q./ha and Rs. 55319, respectively.

Mota *et al.* (2005) during reported the geometric rate of growth of garlic production in Brazil 1991-2000 was studied to analyze the comparative return to the dispersion of prices and indicate the trend in national and regional production. It is revealed that garlic production has a favorable response to investment, and presents a trend of productivity increase.

Sarker and Das (2005) studied that the value addition and processing not only contributed significantly to the family income but employment

generation is also another contribution to the economy. The present study highlighted some of the aspects of value addition especially in spices where it was found that it could help to boost the economy in the rural and peri-urban areas of West Bengal.

Singh (2005) using data collected for the agricultural year 1997-98, this study analyses the production and marketing of selected vegetables (tomato, onion, arvi, okra, brinjal [aubergine], and potato) in Madhya Pradesh, India. production costs and returns; marketable and marketed surplus; marketing costs, channels, margins and efficiency; and production and marketing problems.

Das (2006) was attempted to evaluate the impact of increased vegetable production on the structure and performance of vegetable marketing in Papua New Guinea. As it is often believed that the price spread is very high in vegetable marketing and the marketing functionaries absorb a major share of consumer money, the study measured the price spread for some selected vegetables and evaluated factors that contribute to it. The price spread range between 76.4 per cent and 84.1 per cent of consumer price under the major channels of vegetables marketing in Lae.

Adakpe *et al.* (2007) reported that use of herbicide to control weeds in garlic production in 2002-2003 and 2003-04 dry seasons indicated a considerable reduction in the cost of weed control and labour demand with the application of herbicide although the hoe weeding and the herbicide gave comparable bulb yield in 2002-03 dry season, the net return per hectare was higher with herbicide application in both seasons similarly, the value of labour saved through herbicides use was positive throughout and increased significantly in 2003-04 dry season.

Jain (2009) reported that garlic is the most important foreign exchange earning spicy vegetable crop commercially grown in India the export of dehydrated flakes and powder was to the tune of 986 tonnes worth Rs. 545 Lakh (Yr: 2006-07) to regulate the production and prices it is necessary to develop the dehydration industry in our country. Processing industries in any commodity play an important role in stabilizing prices in domestic markets. Garlic offer very good scope for value addition in the form of dehydrates

flakes powder, granules, paste, oils, juice and garlic salts among all these products.

Patel (2009) reported that on an average the cost of cultivation per hectare of onion crop found to Rs.17860.55 as cost 'A₁' and it was the 64.52 per cent of the total cost. There is no cost A₂, because farmers used their own land for the cultivation of onion. It is also that the average operational or variable cost that is cost B₁ found to Rs.18032.98 per hectare which was 65.14 per cent of total cost. In case of cost B₂ the average value was found to Rs.21532.98 per hectare and it was 77.78 per cent of total cost. It is noted from the study that cost C₁, C₂ and C₃ found to Rs.21983.39, Rs.25483.39 and Rs.27681.73 per hectare in cultivation of onion respectively. The cost C₁ and C₂ was 79.41 and 92.05 per cent of total cost C₃ respectively. It also reported that the average productivity of onion on sample holding was found to 149.18 quintal per hectare which was satisfactory. The overall average gross income per hectare of this crop was found Rs.50732.50 followed by Rs.23050.77 per hectare as a net income respectively. It can be concluded that cultivation of onion had a positive impact on the overall economics of onion growers in study area. This was evident from higher gross, net, benefit cost ratio (2.20), family labour income (Rs.29199.52) and farm business income (Rs.32070.95) per hectare of onion production respectively. However, adoption of improved production technology should be more or the farmers should invest more on main yield attributing resources is more important which is found to scare in area.

Hsiaoping et al. (2010) reported that production and trade of commodities, especially vegetable and fruit were greatly promoted. For understanding the impact of trade liberalization on farmer's household income in the impact of trade liberalization on farmer's household income in the context of regional development and globalization, we selected garlic as a studying object to conduct research. Garlic exports of Thailand come mainly from Shandong, the major garlic producer of China. Yunnan also is a garlic exporter to Thailand, so they have competitive relations. To Thailand 90 percent garlic is produced in the northern areas, and the increasing garlic

import from china, especially from Yunnan will affect garlic farmers' income and production. Through our analysis on the secondary data from interviews and household questionnaires, we found that the high benefit from garlic production is a vital force that promotes garlic production in Yunnan. The lower cost and high yield of garlic production in Yunnan attracted traders from various areas for garlic exporting. Meanwhile, the garlic production in Thailand faced a challenge because of relatively costly and lower yield compared with that of Yunnan. Improved varieties, careful preparation of seed bulb, suitable environment, rich farming skill and continuous government support might have been advantages of Yunnan over Thailand. Currently. We cannot conclude that the garlic produced in Yunnan has more market share.

Hassan et al. (2010) reported that garlic is promoted for use as a preventive factor against the formation of cancer although several compounds in garlic may have anti-cancer properties, the daily sulfide compounds are said to play a major role, garlic is known to help in regulating blood sugar levels therefore, yoghurt was manufactured by using the aqueous extract of garlic to produce a healthy yoghurt. Different concentration of this extract; 0.1, 0.2, 0.3, 0.4 and 0.5% were added to yoghurt milk. Results showed that 0.1% of garlic extract was the best concentration which gained the highest score. The resultant yoghurt treatments were analyzed chemically and organoleptically when fresh and after storage at 5+or-1 degrees C until 15 days. Yoghurt acidity was gradually increased during storage at 5 + 01-1 degrees C until 2 weeks, either for control or different treatments. On the other hand pH took an opposite trend of acidity. The resultant fresh yoghurt had high acetaldehyde, diacetyl, WFA viscosity values than control, whereas it showed low whey syneresis. During storage at (5+or -1 degrees C) acetaldehyde. Diacetyl decreased while TVFA, viscosity, whey syneresis values were increased. Statistical analysis showed high significant difference (Alpha 0.05) for acidity, TVFA, viscosity, diacetyl values and non significant difference (alpha 0.05) for acetaldehyde content between treatments and between treatments and during storage.

Barakade et al. (2011) a study was conducted in western part of the Satara district. A sample of 180 onion growers was selected randomly from 20 villages in ten tahsils of Satara district of Maharashtra State. The selected cultivator was classified into three categories i.e. small (below 2 ha.), medium

(2-4 ha.) and large (above 4 ha.) based on land holding size of the farmers. In view of this, an attempt in this study was made to study profitability and resource productivity in onion production in Satara district. That was reported that the marketing efficiency ratio was higher in the channel I mainly because of higher price realization by the farmers due to reduced marketing cost. Marketing efficiency calculating using only Shepherd formula was much higher in channel-I (13.41) than in channel-II (4.61), channel-III (4.51) and channel-IV (4.13). This means that the higher marketing margins taken away by the market intermediaries in channel-II, III and channel-IV resulted in poor efficiency recorded by them.

Samavatean et al. (2011) found that this paper studies the energy balance between the input and the output per unit area for garlic in Humedan province of Iran. In this study, data were collected by administering a questionnaire in face- to face interviews. Results showed that the highest share of energy consumption belongs to chemical fertilizers (41.7%) followed by diesel (13.94%) the results indicated that a total energy input of 40307.89 MJ ha⁻¹ was consumed for garlic production. The energy productivity and net energy value were estimated as 0.416 kg MJ⁻¹ and 13477.82 MJ ha⁻¹, respectively. The ratio of energy outputs to energy inputs was approximately 0.66. Results indicated that direct indirect, renewable and non-renewable energies were (28.18%), (71.85%), (36.73%) and (63.26%) respectively. Highest shares of expenses were found to be 45% and 19% for human labor and hired machineries, respectively. Cost analysis revealed that total cost of production for 1 ha garlic production was around 6969.11, Accordingly, the benefit-cost ratio was estimated as 1.36. Using Cobb-Douglas model, energy function was estimated with the coefficient of determination, R² of (80%), and expenses function was estimated with coefficient of determination, R² of (83%).

Goyal (2011) reported that the cost of onion cultivation for different level of technology used and on the basis of different cost concepts, the data on cost of cultivation per hectare on sample holding revealed that the average cost A1 comes to Rs.17341.52. This cost found to higher in the farm of high adoption level i.e. Rs.18999.01 followed by Rs.15684.04 on low adoption level of farm respectively. The reason for higher cost in high technological adoption status of onion production was due to judicious and higher use of inputs and their respective cost evolved in production process.

Wiczkoński (2011) study conducted under this chapter covers the production, nutritive and biological properties, biochemistry (Biosynthesis and structures of biologically active chemical constituents, such as flavonoids, alkaline cysteine sulfoxides and organosulfur compounds) and processing aspects of garlic and onion.

Akinpelu et al. (2011) studied marketing margin analysis revealed that spices' marketing in these agro-ecological zones of Nigeria was efficient and profitable. The marketing margin and efficiency of the spices sampled were in the ascending order garlic > monodora > ginger.

Haque et al. (2013) Reported that profitability, input-output relationship, and constraints to garlic production. The cob-Douglas production function revealed that human, land preparation cost, manure, TSP, irrigation and insecticide had positive effect on the yield of garlic. Non availability of HYV garlic seed, lack of technical knowledge about improved cultivation practices of garlic, infestation of insect and disease and low market price were the major problem for garlic cultivation.

Meena et al. (2013) found that costs A1 to cost C3 were increases with the increase in size of holding and total cost was also increased with increase farm size. Gross income per hectare was highest in large farmers followed by small and medium farmers respectively. Net income and farm business income per hectare were decreased with increase farm size. The cost benefit ratio was found to be best on the small size farms followed by the large and medium size farms.

Verma et al. (2013) study was conducted on the production and marketing of cumin crop in Jodhpur district of Rajasthan. It is based on the data collected from 60 cumin-producers in the tehsils of Falodi and Looni. The study was revealed that cumin cultivation in Rajasthan is a profitable enterprise as the returns per rupee invested have been found to be 1.95 on overall basis, varying from 1.84 on small farms to 2.16 on large farms. The costs on machine labor (14.4 %) and human labor (13.0 %) have emerged as the major components in the total operational costs. The cumin-producers have been found to follow two channels for the marketing of cumin; Channel-I: Farmer → Village trader → Wholesaler → Retailer; and Channel-II: Farmer → Wholesaler (Mandi) → Retailer. The marketing cost has been found to be higher in Channel-I due to involvement of more middlemen in the channel. The producer share has been computed as 62.1 per cent in Channel-I and

68.1 per cent in Channel-II. The study has suggested that measures need to be adopted to increase access of farmers to market information and they should be motivated to market the produce collectively to reduce the cost on transportation.

Jat et al. (2014) A study was conducted in Dewas District of Madhya Pradesh. He was reported based on maximum area under onion grown in Dewas block, Amarpura, Khjuriya, Anandpur, Dungariya, Lohari, Chhapri, Nagukhedi RHEO circle, six villages was selected for the study. From each village 25 farmers were selected by using purposively sampling procedure. Thus, the sample size for the study was 80. The major finding was draw on onion production technology and marketing behavior of onion growers are significantly differ, it shows that production technology is easily adopted by the farmers where as marketing behavior it shows unimproved variation.

Mishra et al. (2014) garlic (*Allium sativum* L.) are the most important commercial crops grown all over the world and consumed in various forms. In India, garlic have been under cultivation for the last 5000 years. It is generally used as vegetables, spices or as medicines. India ranks second to China in area and production in garlic. This crops are generally grown throughout the country especially in the states of Maharashtra, Uttar Pradesh, Orissa, Gujarat, Madhya Pradesh, Haryana, Punjab, Rajasthan, Uttaranchal, Jammu and Kashmir, Bihar, Andhra Pradesh and Karnataka.

Molaei (2014) to studied regression analysis showed that variables of household size, farmers' knowledge, agricultural experience, age, area of cultivated land, and the number of services or operations have done on garlic had a significant effect on garlic marketing obstacles. Regression analysis for the other dependent variable i.e. price of garlic on wholesale buyers' center revealed that garlic production cost, market oriented marketing, the cost of processing garlic, accessing loans and total frequency of garlic are significantly effective on this variable.

Chapter-III

PROFILE OF THE STUDY AREA

A research programme requires the knowledge of the area in which an investigation is to be carried out. General characteristics of the study area will facilitate the discussion with regards to similarities and variation of various components and this will help in providing the background and importance of the study area.

Ratlam is an agricultural based economy area of the State where many industries are located in whole district. Ratlam district is situated in the West-Northern parts of Madhya Pradesh State. District has a perfect balance between agricultural productivity and industrial developments. The main crops of the district are soybean, wheat, gram and pulses on which agricultural economy is depended. The district also has many industries out of which the most important are the pulses mills. Ratlam is also known as the city of Save Nagari. So the industries of geru based are growing rapidly besides these pulses mills are very much found in Ratlam. All these have made good position of Ratlam in commerce and industry field along with farming occupation.

Location & Geographical Area:

Ratlam district is the important stick of Malwa plateau of Madhya Pradesh. The area which has rich cover of the forest and important river tributaries suffering from drought causes reduction in the floral wealth of the region. Ratlam is located in the West Northern part of MP. Ratlam district lies between 23°.05' and 23°.55' north latitudes and 74°.30' and 75°.42' east longitudes. The shape of the district is roughly triangular, tapering to the North but the nearest portion falling at the latitude of Ratlam town. It has an area of 4,861 km². The Chambal River flows through the district. The whole district lies on the Malwa plateau with an average height of 488 meters. Among the prominent features are the Malwa range and the Ratlam range which traverse across the southern part and the north-eastern part, respectively.

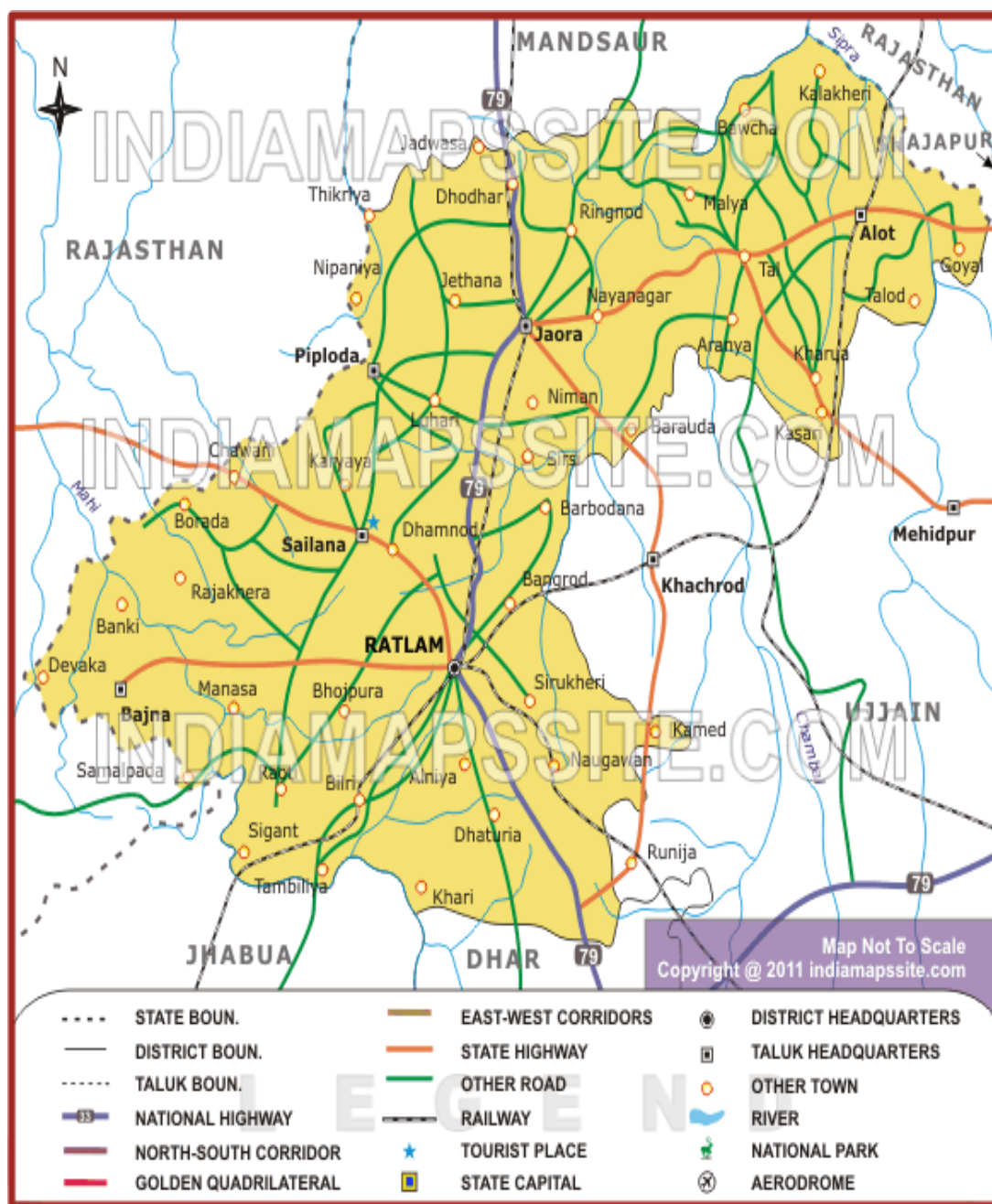


Fig. 3.1: Map of Ratlam District

Table 3.1: Geographical condition of Ratlam district.

District	Latitude	Longitude	Altitude
Ratlam	23°.05' to 23°.55' N	74°.30' to 75°.42' E	488 msl

Source: District statistical handbook of Ratlam 2014-15

Topography:

The terrain of the reserve is characterized by extensive plateaus and gorges. The topography in the Ratlam district can broadly be divided into two

distinct tablelands - the Malwa Plateau, and the Ken valley while there are series of undulating hills and plateaus on the other side of Chambal river in the Mandsoor district.

Geographical condition of Ratlam district:

Climate and rainfall:

Ratlam has a subtropical climate like most of the west India it has a hot dry summer (April-June) followed by monsoon rains (July-September) and a cool and relatively dry winter. Average annual monsoon rains (July-September) and a cool and relatively dry winter. Average annual rainfall is 895.9 mm. Minimum temperature during winter is 6-8 degree celsius while maximum temperature during summer is 40 to 44 degree celsius.

Table 3.2: Climate and rainfall of Ratlam district

Rainfall	Normal RF(mm)	Normal Onset	Normal Cessation
SW monsoon(June-Sep):	988.6	2nd week of week of June	1st week of October
NE Monsoon(Oct-Dec):	35.3	--	--
Winter (Jan- Feb.)	24.1	--	--
Summer (March-May)	12.4	--	--
Annual	895.9	--	--

Source: District statistical handbook of Ratlam 2014-15

The normal annual rainfall of Ratlam district of 895.9mm. The district receives maximum rainfall during south-west monsoon period i.e. June to September. About 84.6 per cent of the annual rainfall falls during monsoon season. Only 15.4 per cent of the annual rainfall takes place between October to May period. Thus surplus water for ground water recharge is available only during the southwest monsoon period.

The normal maximum temperature noticed during the month of May is 43.1⁰C and the minimum during the month of December 13⁰C.

Soil:-

In the district the major area i.e. 80 percent is occupied by medium black soil having medium water holding capacity. From nutrients content point of view the soil of the district are with low to medium nitrogen and phosphorus and high in potash content.

Land use pattern:-

The district is rich in forest, about 34,300 hectare(7.05) is under forest, which is quite enough in forest wealth point of view The detail about land utilization of Ratlam district have been given In table3.3.

Table3.3 shows that the total geographical area of the district is 4,86,159 hectare, out of which the net sown area was found 68.49 per cent. The area under land not available for cultivation was found 31.51. These categories comprise of barren and hill mounds etc. which cannot be put under cultivation.

The land utilization pattern also shows that there was very less scope to increase the cultivation to the fellow land.

Table3.3: Land use pattern of Ratlam district.(2014-15)

S.No.	Particulars	Ratlam area (ha.)	Percentage
1	Geographical area	486159	30.99
2	Forest area	34300	2.10
3	Land under non agricultural area	30700	1.95
4	Double cropped area	167000	10.64
5	Cultureable waste land	15200	0.96
6	Fallow land	2400	0.15
7	Gross area sown	500000	31.87
8	Net area sown	333000	21.22
	Total area	1568759	100.00

Source: Ratlam Land Records Office.

Cropping pattern:-

The cropping pattern shows the seasonal distribution of cropped area which gives indication to the intensity of land use. The area under different crops of Ratlam district is shown in table 3.4 it is quite evident from the table that wheat and gram are the most important Rabi season crops, which occupied a leading position in the cropping pattern of the district. In Rabi seasons 50.82 and 36.96 percent area was covered by wheat and gram crop respectively. Other Rabi seasons war i.e. Garlic is grown in district. In Kharif seasons soybean was the most important crop, which occupied 74.48 percent area of Kharif season. Other Kharif crops viz. Maize, Cotton, and Groundnut, also grown in the district. The cropping intensity 169 percent in Ratlam district.

Table 3.4: Cropping pattern of Ratlam district (M.P.) (2014-2015)

Crops	Total area (000,ha.)	Percentage	Production(000,tan)	Percentage
Kharif crops				
Soybean	233.00	74.48	384.45	67.38
Cotton	25.00	7.99	41.25	7.35
Maize	41.75	13.34	131.78	23.09
Rice	0.90	0.28	1.49	0.26
Black gram	1.45	0.46	1.16	0.20
Green gram	8.50	2.71	7.65	1.34
Arhar	1.30	0.40	1.43	0.25
Groundnut	0.50	0.15	0.90	0.15
Till	0.40	0.12	0.44	0.07
Total	312.8		570.55	
Rabi crops				
Wheat	110	50.82	390.50	53.41
Gram	80	36.96	112.00	15.37
Pea	2	0.95	2.42	0.33
Garlic	17.43	8.05	213.57	29.21
Mustard	7	3.23	12.60	1.72
Total	216.43		731.09	

Source: District Land Records Office.

Irrigation:-

Irrigation is considered to be the carrier of agricultural technology for enhancing the agricultural production. Ratlam district has ample potentially to

increase irrigation by different means viz. canals, tube wells, wells tanks, and other sources. Source-wise irrigated area of Ratlam district has been given in table-3.5

Table3.5: Source-wise irrigated area of Ratlam district(2014-15)

S.No.	Source	Ratlam irrigation area (ha.)
1	Canals	2400
2	Tube wells	79500
3	Wells	48300
4	Tanks	3300
5	Other	10800
6	Net irrigated area	144300
7	Gross irrigated area	144700
8	Net sown area	333000
9	Gross cropped area	500000
	Total area	1266300

Source: District Land Records Office.

Table.3.5 shows that 144700 hectares of cultivated area under irrigation in the district. Tube wells, was the principle sources of irrigation, which accounted for (54.94%) percent of total irrigated area as well accounted (33.37%) percent covered 144300, hectares of irrigated area.

Through the irrigation potential in the district was enormous as it has a large irrigation dam called “Dholawad dam multipurpose irrigation project” but still the area irrigated mainly by tube wells.

Table 3.6: General information

	Ratlam district
No. of Village	1053
No. of Gram Panchayat	418
Total Population	1455069
Male	738241
Female	716848
Rural	1020038
Urban	516468
Total number of Literate person	825880
Total number of Schedule tribes	28.17
Total number of Schedule castes	13.64

Table 3.7: Number of farm machinery(2014-15)

S.No.	Source	Ratlam district
1	Plough	
	Wood	29464
	Iron	5147
2	Bullock Trolley	11997
3	Irrigation by Diesel pump	2588
	Electricity	72584
4	Tractor	4250

Source: District Land Records Office.

Table 3.8: Cattle Population of the Ratlam district. (2014-15)

Categories	Population of Ratlam district
Cow	361326
Buffaloes	180348
Goat	203279
Sheep	4233
Poultry Birds (Backyard)	176467
Piggery	1099

Source: District Land Records Office.

CHAPTER-IV

MATERIAL AND METHODS

MATERIAL AND METHOD:

This chapter deals with the research methodology adopted in the selection of block, villages, farms and markets for the present study, under the following heads.

1. Study area
2. Sampling technique
3. Collection of data and method of enquiry.
4. Analytical tools

1. Study area:

The study confined to Ratlam District of Madhya Pradesh which comprises 6 development blocks namely:- Ratlam, Jaora, Piploda, Alot, Sailana, and Bajana. One blocks have highest area was selected.

2. Sampling technique:

A multistage stratified random sampling technique was adopted to select the block, villages and the respondents, market and different functionaries involved in garlic marketing in Ratlam district. The details of the sampling techniques at various stages are given as under.

(i) Selection of block:

A list of all the development blocks of district Ratlam was prepared out of these blocks, one development block, Ratlam was selected having highest area under garlic cultivation.

(ii) Selection of the villages:

A list of all the villages growing garlic, falling under selected block was prepared and cluster of three villages was selected.

(iii) Selection of farmers:

From each of the selected village, a list of garlic growers was prepared in accending order, according to the size of their holding. Stratified random sampling procedure was adopted for the selection of ultimate sampling unit of garlic producers from selected three villages. The garlic producing farmers

were then categorized as small (>2 ha.) ,medium (2 to 4 ha.) and large (above 4 to 10 ha.), based on land holding size of the farmers ,25 farmers from each selected village were selected randomly among three size groups. All the sample garlic producers were sold their produce through the forwarding agent in the wholesale market. The actual marketing cost incurred by the sample garlic producers through different channels was considered. The tabular method and percentage analysis were carried out to examine costs, margins and price spread in Ratlam vegetable mandi. The relevant information regarding the marketing of garlic was obtained from these selected market intermediaries by interviewing personally with the help of pre-tested schedules. The primary data on the relevant, aspects specified in objectives were collected from the sample farmers for the reference year 2014-15 survey method.

Size of samples:

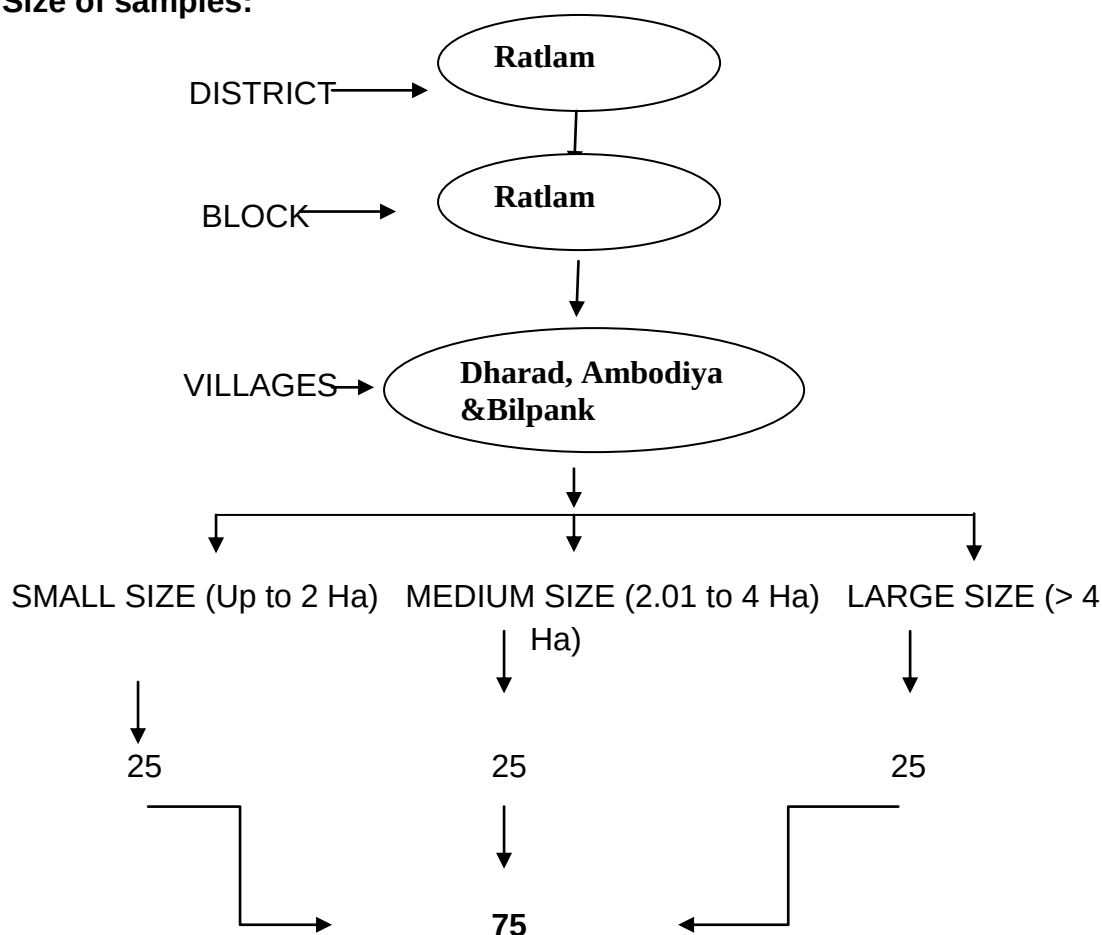


Table 4.1: Number of villages and selected farmers of Ratlam block.

Name of selected villages	Number Of families selected			Total
	Small (>2 ha.)	Medium (2 to 4 ha.)	Large (Above 4to10ha.)	
Dharad	8	8	9	25
Ambodiya	9	8	8	25
Bilpank	8	9	8	25
Total	25	25	25	75

Cost items:

The items of cost of cultivation cover both paid out cost (out of pocket expenses cash + kind) and the imputed costs. The items covered under these costs are:

Paid – out costs:

- (i) Hired labour (human, animal and machinery).
- (ii) Maintenance expenses on owned animals and machinery.
- (iii) Expenses on material inputs such as seed (home grown and purchased), fertilizer, manure (owned and purchased), pesticides, and irrigation.
- (iv) Depreciation on implements and farm buildings. (Such as cattle sheds machine sheds, storage sheds).
- (v) Land revenue.
- (vi) Rent paid for leased in land.

Imputed cost:

Include the value of family labour /managerial input of the farmer, rent of owned land and interest on owned fixed capital for which the farmer does not incurred any cash expenses.

Total cost:

The sum of fixed and variable costs make total cost for producing per hectare crop or per unit number of livestock.

ANALYTICAL TOOLS:**I cost analysis:**

A. Operational cost – The expenses related to the costs of running a business operations. These are two types fixed costs and variable costs.

(1) Fixed costs: These costs are related to fixed resources and overhead costs. Rent, interest, depreciation, taxes and wages of the permanent labour constitute fixed costs.

(2) Variable costs: These costs are related to the variable resources and changes with the level of output.

II Profitability concept:

1. TOTAL PRODUCTION: Total quantity of output produced by a firm for a given quantity of inputs.

$$\text{Total production} = \text{Main product} + \text{by product}$$

2. Gross income: It is the total value of main product and value of by product.

$$\text{Gross Income} = \text{Value of main product} + \text{Value of by product}$$

3. Net income: It is net profit after deduction of all cost items, variable and fixed gross income.

$$\text{Net Income} = \text{Gross Income} - \text{Total Cost}$$

4. Cost of production (Rs/q): The expenditure incurred in producing a unit quantity of output is called cost of production.

$$\text{Cost of production (Rs/q)} = \frac{\text{Total cost}}{\text{Yield}}$$

(a) Average variable cost: It is the amount spent on the variable inputs to produce a unit of output.

$$\text{Average variable cost} = \frac{\text{Total Variable cost}}{\text{Yield}}$$

(b) Average fixed cost:

$$\text{Average fixed cost} = \frac{\text{Total fixed cost}}{\text{Yield}}$$

9. Price spread (%):

$$\text{Price spread (\%)} = \text{Consumer price} - \text{Producer price}$$

10. Producer's share in consumer rupee:

It is the price received by the farmer expressed as a percentage of the retail price. It has been calculated by using following formula;

$$P_S = \frac{P_F}{P_R} \times 100$$

Where,

P_F = Producer's price

P_R = Consumer retail price

P_S = Producer's share in the consumer rupee.

11. Marketing margin:

It's is difference between the total payments (Cost +Purchase price) and receipts (sale price) of the middleman.

Cost concepts:

Cost A_2 : Cost A_1 + rent paid for leased in land.

Cost B_1 : Cost A_2 + interest on value of owned fixed capital assets (excluding land)

Cost B_2 : Cost B_1 + rental value of owned land.

Cost C_1 : Cost B_1 + imputed value of family labour.

Cost C_2 : Cost B_2 + imputed value of family labour.

Cost C_3 : Cost C_2 + 10 percent of cost C_2 to account for managerial input of the farmer.

Cost C_3 is more comprehensive and represents the total cost of cultivation. It is very important when farming is considered to be strictly commercial preposit.

CHAPTER - V

RESULTS AND DISCUSSION

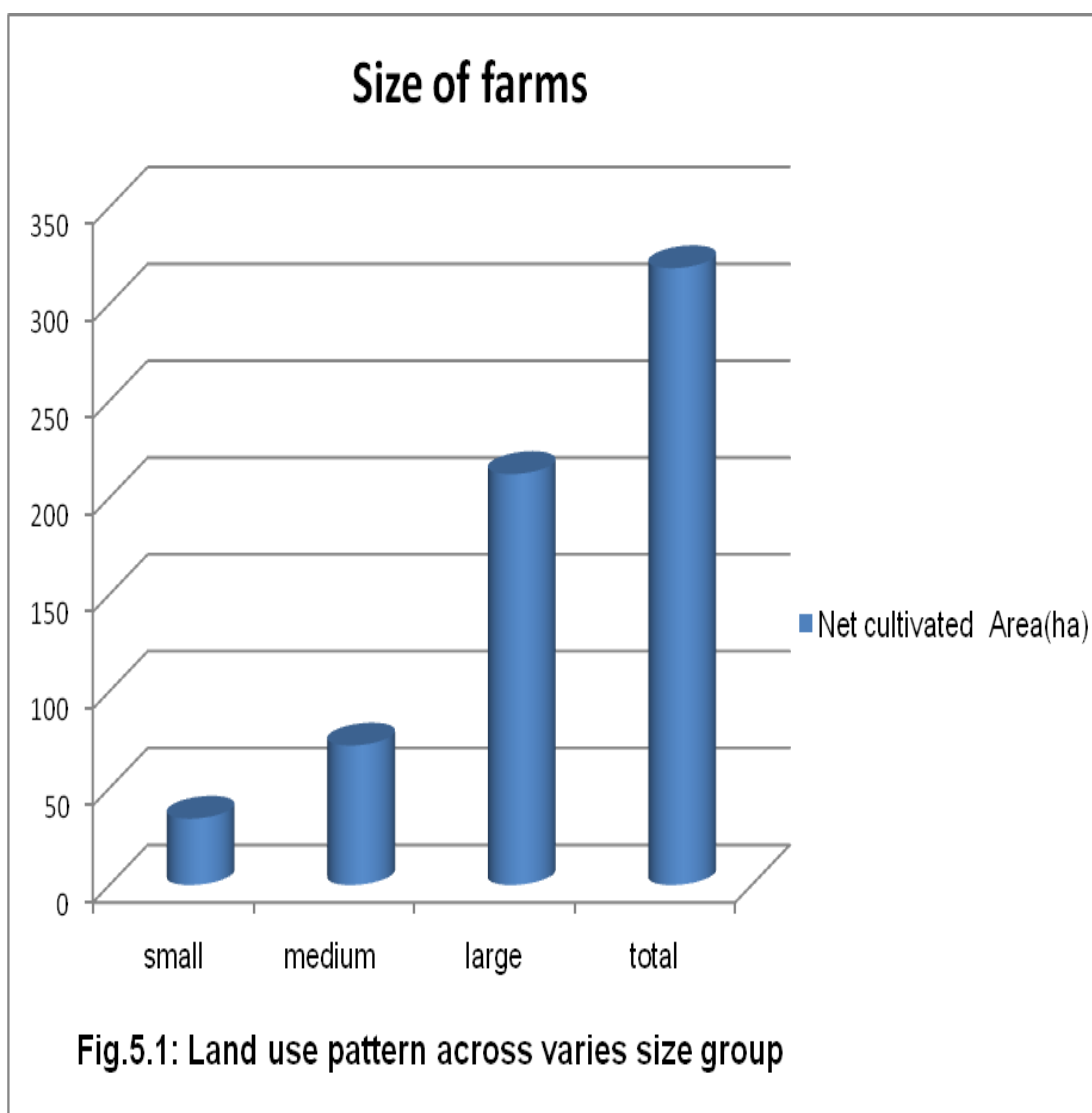
The economy of a farming firm mostly depends upon properly developed farm infrastructure as a base for creation of sufficient surplus fund to employ various input factor under the sound management and effective organization is the ultimate objective of producer. The scientific cultivation supported with adopted recommended package of practices which influences the farm income 60 percent and the rest 40 percent farming come is the resultant of efficient marketing. The conjugation of these two potent elements if are properly handled provides higher return otherwise keep the producer in loss.

Size of land holding:

Size of sample of respondents was allocated 25, 25 and 25 from small, medium and large size farm respectively. Total numbers of respondents were 75. Average size of holding falling in small, medium and large size group was 1.43, 2.95 and 8.64 hectares, respectively (Table 5.1).

Table 5.1 Land use pattern across varies size group.

Particulars	Size group			Total
	Small	Medium	Large	
Number of farmers	25	25	25	75
Total land holding (ha.)	35.75 (10.98)	73.75 (22.65)	216 (66.35)	325.5 (100.00)
Average size of land holding	1.43	2.95	8.64	13.02
Net cultivated Area	34.25 (10.75)	72.04 (22.61)	212.2 (66.62)	318.49 (100)
Uncultivated land	1.5 (21.39)	1.71 (24.39)	3.8 (54.20)	7.01 (100)
Net sown area	32.75 (10.51)	70.33 (22.57)	208.4 (66.90)	311.48 (100)
Fallow land	1 (11.11)	2 (22.22)	6 (66.66)	9 (100)



Irrigated area:

Area under irrigation was 26.69, 53.2 and 162.7ha. in small, medium and large size of farms respectively. Nearly 76.16 percent area under study was irrigated to the net cultivated area, indicating that irrigation was sufficient to allocate for selected crops as per choice of respondents. Within the size of group variation in irrigated area was not high (Table 5.2).

Table 5.2 Irrigated area under different sizes of the sample farms.

(ha.)				
Particular	Small	Medium	Large	Overall
Irrigated area	26.69 (77.92)	53.2 (73.86)	162.7 (76.67)	242.59 (76.16)
Un-irrigated area	7.56 (22.07)	18.84 (26.15)	49.5 (23.32)	75.9 (23.83)
Net cultivated area	34.25 (100)	72.04 (100)	212.2 (100)	318.49 (100)

Cropping Pattern and Cropping Intensity:

The intensity of cropping was highest in small farm (208%) followed by (195.04%) and (187.07%) in medium and large size farm. Average cropping intensity was approaching (196.70%) per cent (Table 5.3)

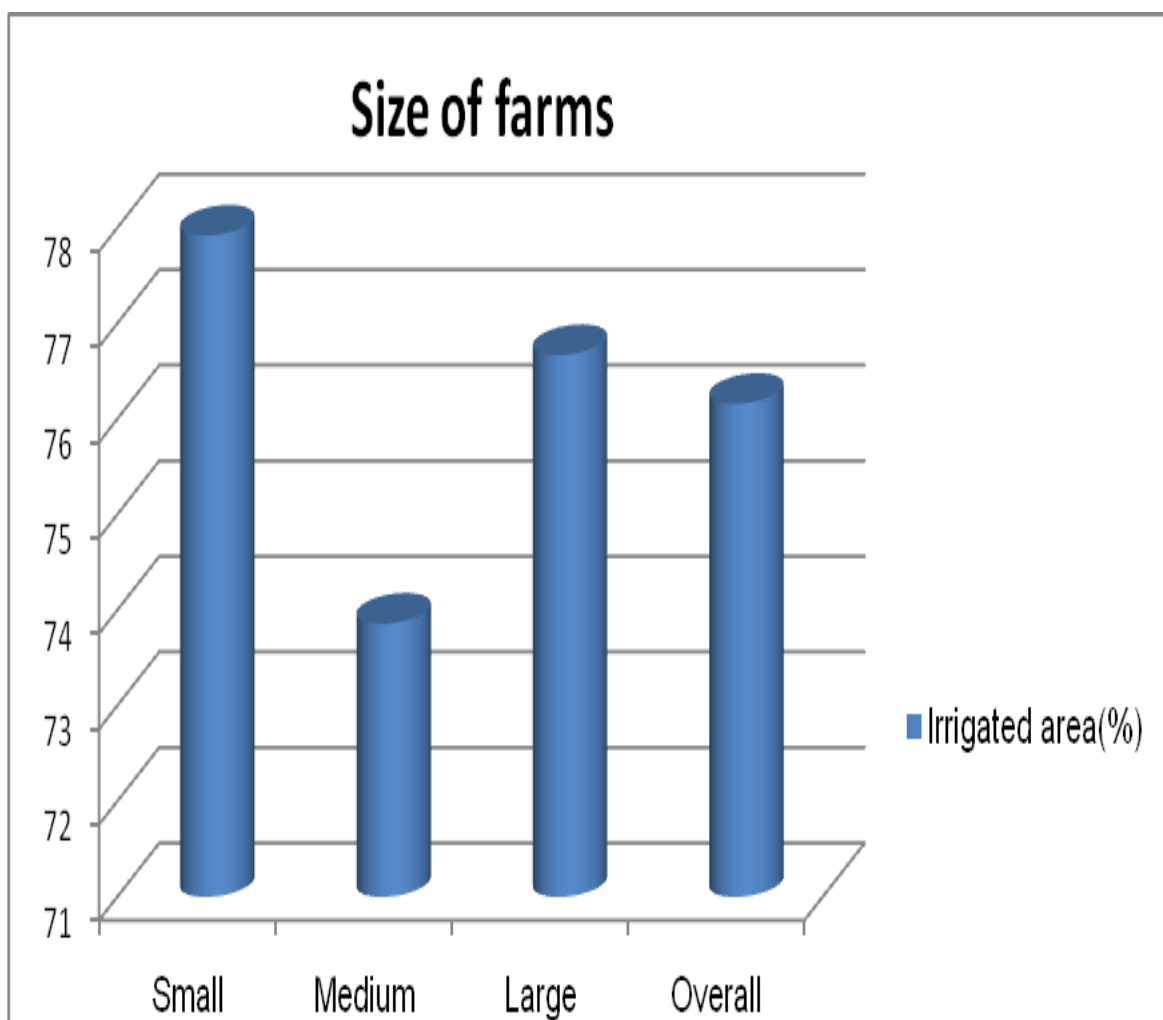
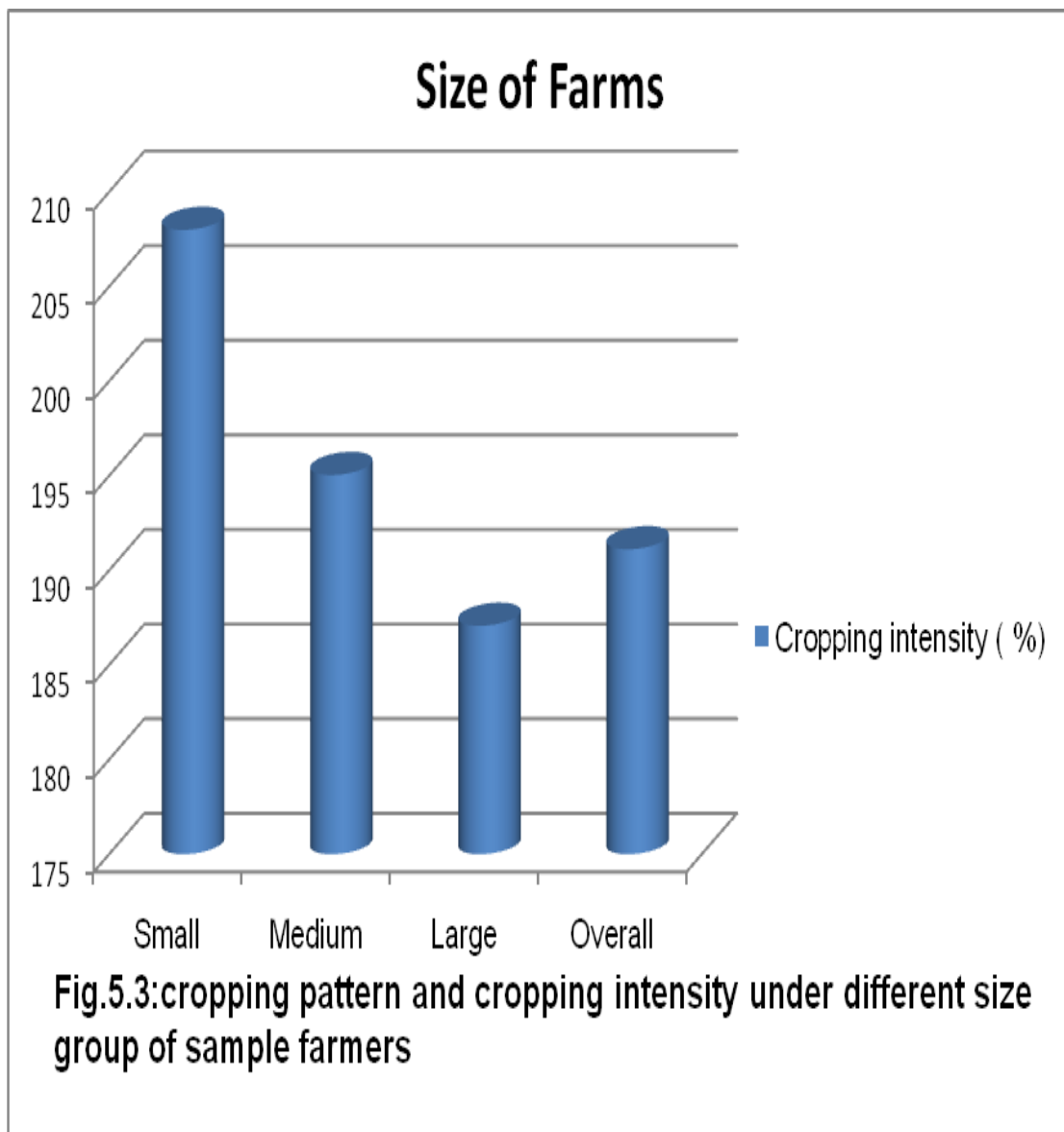


Fig.5.2:Irrigated area under different sizes of the sample farms

Table 5.3 cropping pattern and cropping intensity under different size group of sample farmers (ha)

S. No.	Crops	Size group			Overall
		Small	Medium	Large	
A.	Kharif				
1.	Soybean	19.5 (58.64)	42.45 (60.62)	121 (58.68)	183.2 (59.20)
2.	Cotton	3.25 (9.77)	8.25 (11.78)	24.5 (11.88)	36 (11.63)
3.	Urd/Moong/cowpea	2.65 (7.96)	4.5 (6.42)	15.6 (7.56)	22.75 (7.35)
4.	Maize	5.7 (17.14)	11.14 (15.90)	33.43 (16.21)	50.27 (16.24)
5.	Other	2.14 (6.43)	3.66 (5.22)	11.43 (5.54)	17.23 (5.56)
Sub Total		33.25 (46.67)	70.02 (49.83)	206.2 (51.94)	309.45 (50.83)
B.	Rabi				
1.	Pea	1.75 (6.55)	2.43 (4.56)	14.1 (8.77)	18.28 (7.59)
2.	Wheat	4.1 (15.36)	8.41 (15.80)	41.68 (25.94)	54.19 (22.52)
3.	Chickpea	2.95 (11.05)	5.23 (9.83)	29.40 (18.29)	37.58 (15.62)
4	Garlic	17 (63.69)	35.75 (67.19)	58.9 (36.65)	111.65 (46.41)
5	Other	0.89 (3.33)	1.38 (2.59)	16.59 (10.32)	18.86 (7.84)
Sub Total		26.69 (37.46)	53.2 (37.84)	160.67 (40.47)	240.56 (39.42)
C.	Summer				
1.	Jowarchari	3.5 (30.97)	4.6 (26.60)	8.85 (29.40)	16.95 (28.88)
2.	Vegetables	7.8 (69.02)	12.69 (73.39)	21.25 (70.59)	41.75 (71.13)
Sub Total		11.3 (15.86)	17.29 (12.30)	30.1 (7.85)	58.69 (9.64)
Gross cropped area		71.24 (100)	140.51 (100)	396.97 (100)	608.7 (100)
Net cropped area		34.25	72.04	212.2	318.49
Cropping intensity (per cent)		208	195.04	187.07	191.12



Garlic

Breakup of inputs use under different size of farms for garlic Cultivation:

Family labour was maximum used in small size (90 days) followed by medium size (70 days) and large size (60 days, minimum). Hired human labour increased as per increase in the size of farm from 58 days, 105 days and 122 (small, medium and large). Total human labour days employment was maximum in large size (182 days) followed by medium and small size (175 and 148 days, respectively). Bullock labour days employment was comparatively higher in small size group but leaving a narrow difference between medium and large size. Seed has the same amount of investment in rupees 34500. Manures & fertilizers was than to be Rs. 14783.42 (minimum in small size) but in use of medium and large size the amount was Rs. 15705 and Rs. 15831 respectively. It indicates that the allocation on manures & fertilizers in rupees was higher in large group which tend to decline as per decrease in the size of farm. Irrigation charge was Rs. 8958 (minimum) in case of small size group and which as increased upon Rs. 10500 in large size and Rs. 9851 in medium size.

On the basis of above observation the conclusion is that small size farm invested more, on human labour, bullock labour and fertilizer. Higher allocation on human labour was a result of sufficient availability of family labour. (Table 5.4).

Table 5.4: Breakup of inputs use in under different size of farms for garlic Cultivation (per ha.)

S.No.	Particular	Small	Medium	Large	Overall
1.	Family labour days	90	70	60	73.33
	Hired labour days	58	105	122	95
	Total human labour days	148	175	182	168.33
2.	Bullock labour cost (Rs.)	900	750	590	746.66
3.	Machine power cost (Rs.)	7215	6340	5445	6333.33
4.	Seed (Rs.)	34500	34500	34500	34500
5.	Manures & Fertilizers (Rs.)	14783.42	15705	15831	15439.80
6.	Irrigation (Rs.)	8958	9851	10500	9769.66

Input wise cost of cultivation of garlic crop per hectare:

Hired human labour cost in the form of wage was substantially higher in large size farm Rs. 24400 (maximum) and Rs. 11600 in small size (minimum) and medium size farm Rs. 22000. In per cent term, the same pattern was followed as indicated in wage term. Bullock labour cost was higher in small size group (Rs. 900 maximum) and Rs. 590 (minimum) large size farm. Machine labour charge was higher in Small size group (7215, maximum) and Rs. 5445 (minimum) large size group. Seed cost was same confirmed for small size group, medium size group and large size group. Manures and fertilizers application was lower in small size group (Rs. 14783.42), increased Rs. 15705 in medium and Rs. 15831(maximum) in large size of group. The same behaviour was observed in percent distribution of these inputs among the various sizes. Irrigation charge was Rs. 8958 in small size which was increased at the rate of Rs. 10500 in large and medium size group Rs. 9851. Land revenue state or village panchayat tax was Rs. 12 for each size group.

The operational cost known as cost A_1/A_2 accounted for Rs. 115821.3 in medium size followed by Rs. 114122.84 in small size, and Rs. 110132.4 in large farm size. Cost B_1 a sum of cost A_1 and interest on fixed capital amounted for Rs.3525 in small size, Rs. 3250 in medium and Rs. 3800 in large size group. The same trend was also observed in the case of cost B_2 . The cost C_1 and C_2 was found minimum in large size farm (Rs. 125932.4 and Rs. 146832.4) and maximum in small size (Rs. 135647.84 and Rs. 160347.84) and medium size farm (Rs. 133071.3 and Rs. 155286.3) respectively. Cost C_3 known as total cost per hectare accounted for Rs. 176382.62, 170814.93 and 161515.64 small, medium and large size groups respectively.

On the basis of foregoing discussion the major component of cost C_3 (total) and operational cost known as A_1/A_2 of Medium farm as there was maximum and when size of farm increase to decrease the total cost as per size of farm and the same thing happened in B_1 and B_2 . Cost C_1 was higher in small size group due to lack of management of labour. Almost the same trend was there in the case of cost C_2 . Cost A_1/A_2 was higher in medium followed by small and large size group due to involvement of more human labour,

machine power, irrigation charge associated with depreciation, repairs and interest incurred on various inputs used in this process.

Table 5.5 Input-wise cost of cultivation of garlic under different size farms

(Rs/ ha)					
S.No.	Cost item	Small	Medium	Large	Overall
A	Labour cost				
1	Value of family labour	18000	14000	12000	14666.66
2	Value of hired human labour	11600	22000	24400	19333.33
3	Value of family bullock labour (H + O)	900	750	590	746.66
4	Value of family machin labour (H+ O)	7215	6340	5445	6333.33
5	Other variable cost	26752	16585	7810	17069
	Sub total	64467	59675	50245	58148.98
B	Material Cost				
1	Value of Seeds	34500	34500	34500	34500
2	Value of fertilizer & manure	14783.42	15705	15831	15439.89
4	Irrigation charges	8958	9851	10500	9769.66
	Sub total	58241.42	60056	60831	59709.55
C	In-direct cost				
1	Taxes, land revenue	12	12	12	12
2	Depreciation	3968	4565	5800	4777.66
3	Interest on working capital	5434.42	5515.3	5244.44	5399.07
4	Rental value of own land	24700	22215	20900	22705
5	Interest on fixed capital	3525	3250	3800	3525
	Sub total	37638.92	35557.3	35756.44	36418.73
	Grant total	160347.34	155288.3	146832.4	154277.24

Cost and returns of Garlic Production:

The productivity of garlic in term of yield per hectare was small size group 130 q/ha followed by 118.5 q/ha and 110 q/ha in medium and large size farm, respectively. Gross income is a sum of yield multiplied by unit price of garlic had also denoted in the same pattern as followed in productivity. In

small size group the obtained gross income was Rs. 494000, medium size group the gross income was Rs. 450300 and Rs. 418000 in large size. The average productivity and gross return of study area of garlic was recorded 119.5 q/ha and Rs. 454100 respectively. On the basis of various costs as observe in input wise cost Table as per their cost concept net return per hectare recorded in the order of Rs. 317617.38 for small size Rs. 279485.07 in medium size and Rs. 256484.36 in large size. Similarly, net return over cost B_1 was in the order of Rs. 376352.16, 331228.7 and Rs. 304067.6 in small, medium and large group. Net return over cost B_2 in small, medium and large size group was Rs. 351652.16, Rs. 309013.7 and Rs. 283167.6 respectively. The net return over cost C_1 was Rs. 358352.16, Rs. 317228.7 and Rs. 292067.6 in small, medium and large size groups respectively. In case of the net return over cost C_2 it was Rs. 333652.16 in small size group, Rs. 295013.7 and Rs. 271167.6 in large size group. The net return over cost C_3 known as net farm income determines the profitability status of crop recorded Rs. 317617.38 in small size, Rs. 279485.07 in medium size and Rs. 256484.36 in large size group. Per quintal cost of production of garlic was Rs. 1356.78 in the case of small size group, Rs. 1441.47 in medium and Rs. 1468.32 in large size group. The benefit cost ratio was higher in the case of small size group 1:2.80 (maximum) followed by large size 1:2.58 in (minimum) and 1:2.63 in medium size group (Table 5.6).

On the basis of above discussion the conclusion is that net return over cost A_1/A_2 and net return on cost C_3 was comparatively higher in small size farm. Reverse to that, production cost per quintal was higher in large size farm followed by medium and small size group. The additional bonus point gone in the favours of small size group was higher benefit cost ratio in Large size farm indicate that inspire of financial crisis and other constraints this category of farm organized and managed its farm operation effectively compared to medium size farms in the cultivation of garlic crop. Involvement of higher human labour in this category indicates that under the situation of zero opportunity cost of family labour was appreciably utilized in this category with this intension that in cash payment term it required nothing except food and shelter which was a fixed liability of garlic growers.

Table 5.6: Cost and returns of garlic production based on cost concepts of different size farms. (Rs. /ha)

S. No.	Cost	Size group			
		Small	Medium	Large	Overall
1	Cost A ₁ (A ₂)	114122.84	115821.3	110132.4	113380.6
2	Cost B ₁	117647.84	119071.3	113932.4	116905.6
3	Cost B ₂	142347.84	133071.3	125932.4	131572.26
4	Cost C ₁	135647.84	133071.3	125932.4	131572.26
5	Cost C ₂	160347.84	155286.3	146832.4	154177.98
6	Cost C ₃	176382.62	170814.93	161515.64	169654.98

Particulars	Size group			
	Small	Medium	Large	Overall
Main product (q/ha)	130	118.5	110	119.5
Price of per quintal	3800	3800	3800	3800
Gross income (Rs/ha)	494000	450300	418000	454100
Net income(Rs/ha)	317617.38	279485.07	256484.36	284444.02
Benefit cost ratio	1:2.80	1:2.63	1:2.58	1:2.67

Cost of production

Rs.

Particulars	Size group			
	Small	Medium	Large	Overall
Main product (per q.)	1356.78	1441.47	1468.32	1419.69

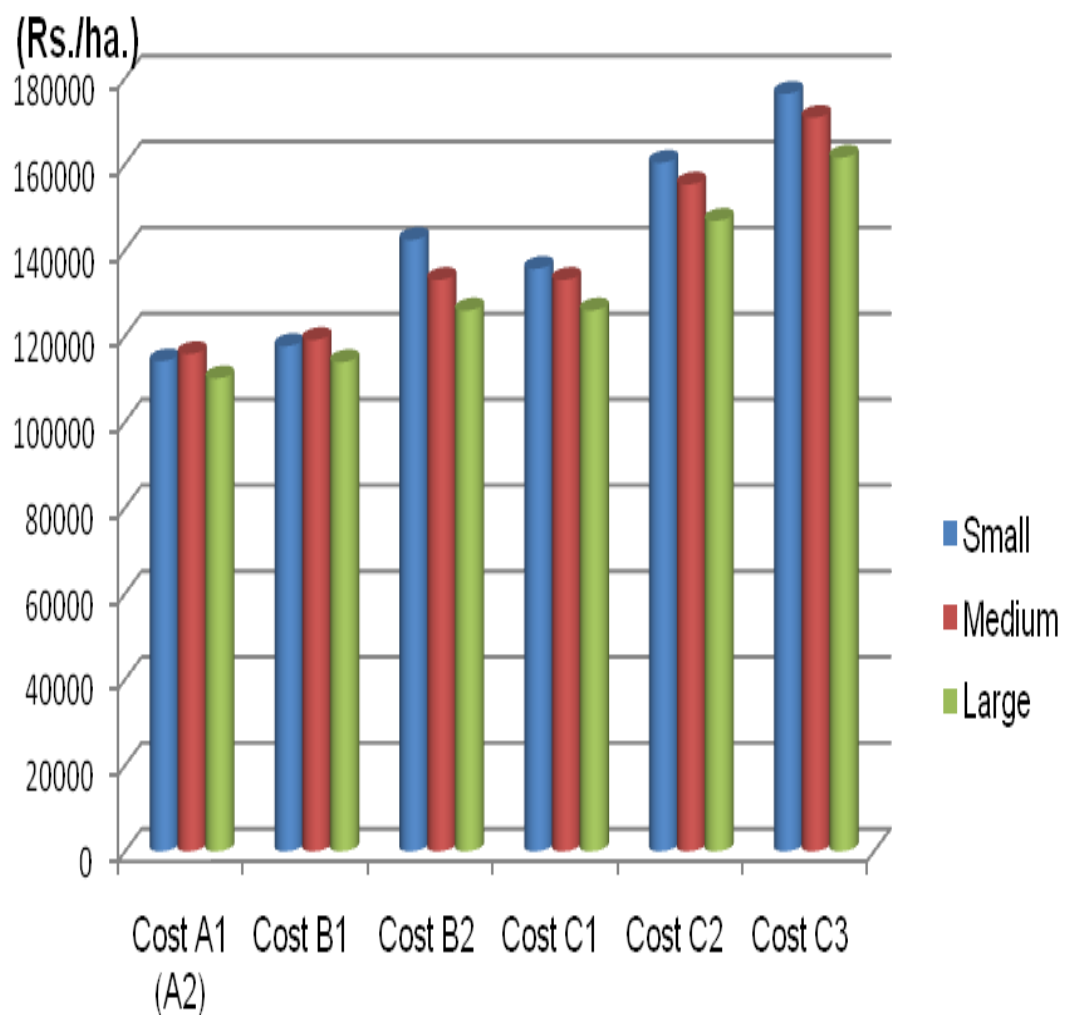
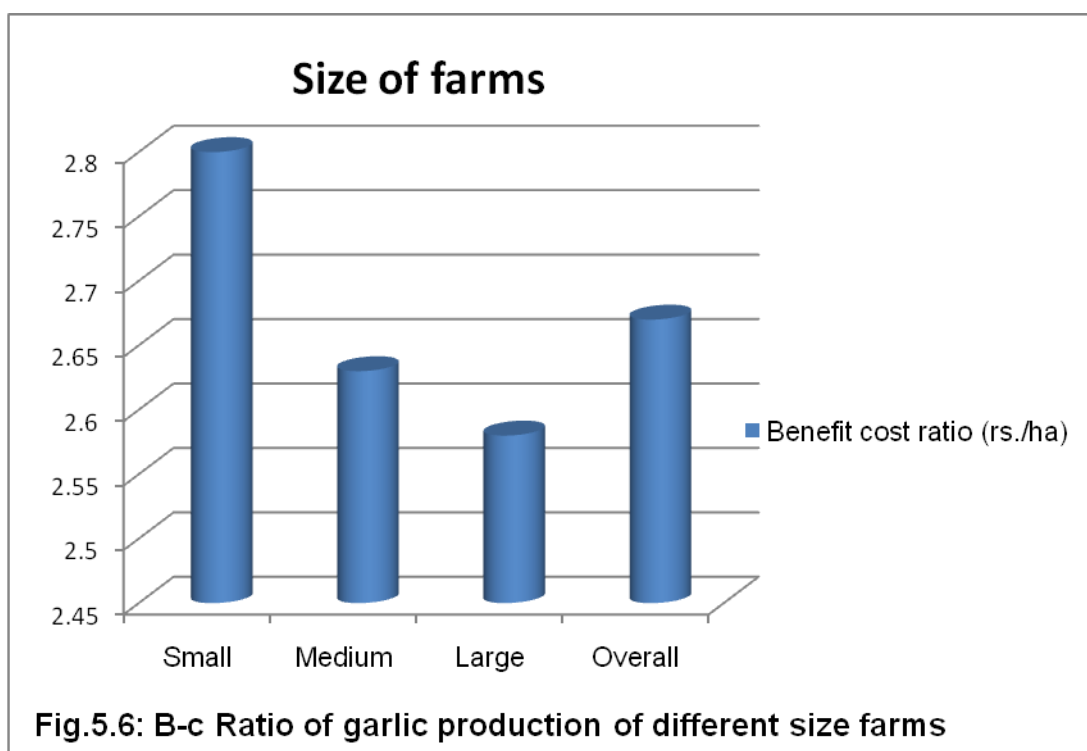
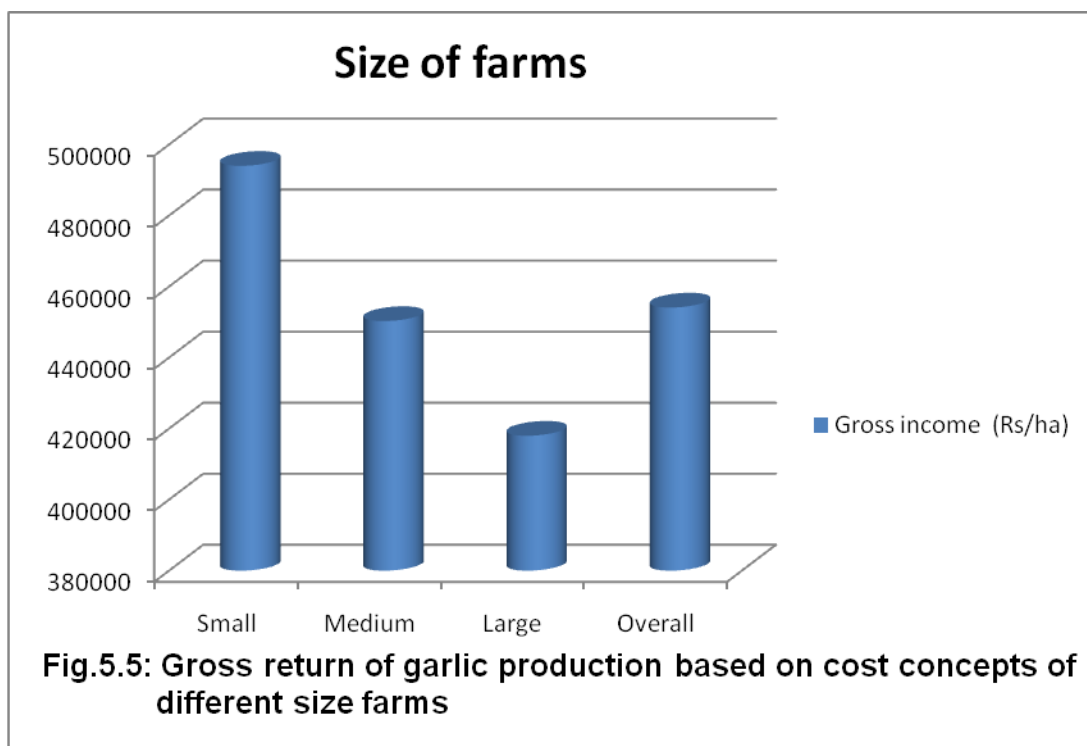


Fig.5.4: Cost and returns of garlic production based on cost concepts of different size farms



Identified marketing channels of Garlic area under study.

Channel –I	Producer to consumer
Channel –II	Producer to wholesaler to consumer
Channel –III	Producer to wholesaler to retailer to consumer

Cost and margin of various agencies in the marketing of garlic in Channel-I:

It is the simplest marketing channel having no involvement of market intermediaries in the trading of garlic marketing as interaction was directly made between producer and ultimate consumer. It resulted minimum cost in marketing of garlic incurred by producer. The share of producer in consumer's paid price was maximum as nearly 98.68percent (Table 5.7).

Table 5.7 Average costs and margins of various agencies in the marketing of garlic per quintal through Channel- I:

S. No.	Particulars/ Market functionaries	Amount (Rs./q)
1	Marketing costs at producer level	
	Transportation	30
	Loading, unloading & weighing	20
	Sub total	50
	Producer net price	3750
	Consumer paid price/producer sale price	3800
2.	Producer's share in consumer's rupee (%)	98.68%
3.	Price Spread	1.31%

Channel II:

The involvement of retailer between producer and consumers denoted by channel II indicate that beside the relevant cost incurred by producer the substantive cost and margins incurred in the part of retailer in one side reduced the share of producer 93.63% in ultimate consumer's paid price but given no relief in the part of ultimate consumer because the reduced share of producer ultimately gown in the hand of retailer resulting the expansion in paid price of consumer (Table 5.8).

Table 5.8 Costs and margins borne by various agencies in the marketing of garlic per quintal through channel-II:

S. No.	Particulars/ Market functionaries	Amount (Rs./q)
1	Cost incurred by producer	
	Transportation	30
	Loading, unloading & weighing	20
	Sub total	50
	Producer net price	3750
	Producer's sale price/retailer's paid price	3800
2	Cost incurred by retailer	
	Weighing, loading and unloading	20
	Two gunny bags	45
	Transportation	35
	Sub total	100
	Retailer margin	105
	Retailer's sale price/consumer's paid price	4005
3.	Producer's share in consumer rupee (%)	93.63%
4.	Price Spread	6.36%

Channel III:

In this channel between producer and ultimate consumer there was an involvement of wholesaler and retailer. The function of wholesaler and retailer which plays the part in searching and creation of demand of consumer charge their margin and cost incurred on various activities rendered by them. Due to these functions and involvement of marketing cost and returns margins expanded the difference in price received by producer and price paid by ultimate consumer. Thus resulted in the decrease of producer share up to 90.79 percent in consumer's paid price.

On the basis of foregoing discussion of marketing cost and margins conclusion is that as the marketing functionaries reduced the share of the producer in consumer paid price on one side and on the other size increased the consumer's paid price indicate that share of producer price tend to decline as per increase in the number of marketing functionaries and compelled the consumers to pay higher prices for the same quantity of garlic without any relief.

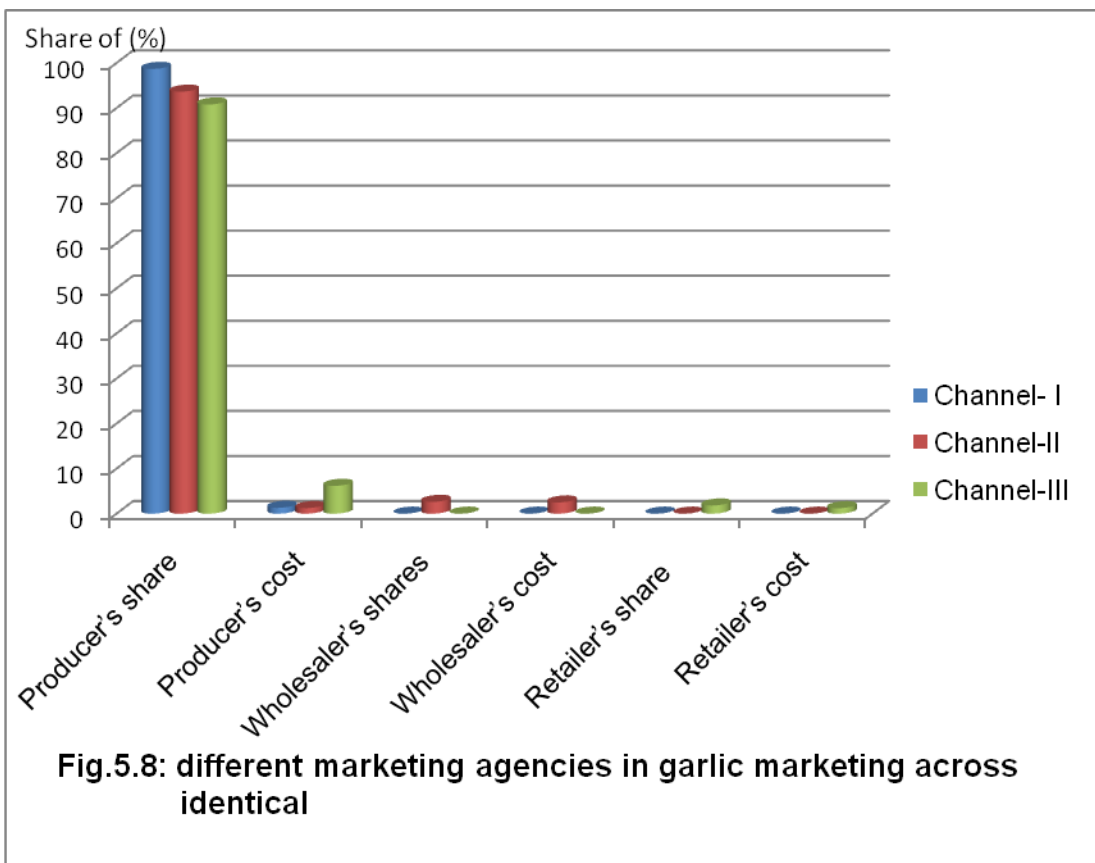
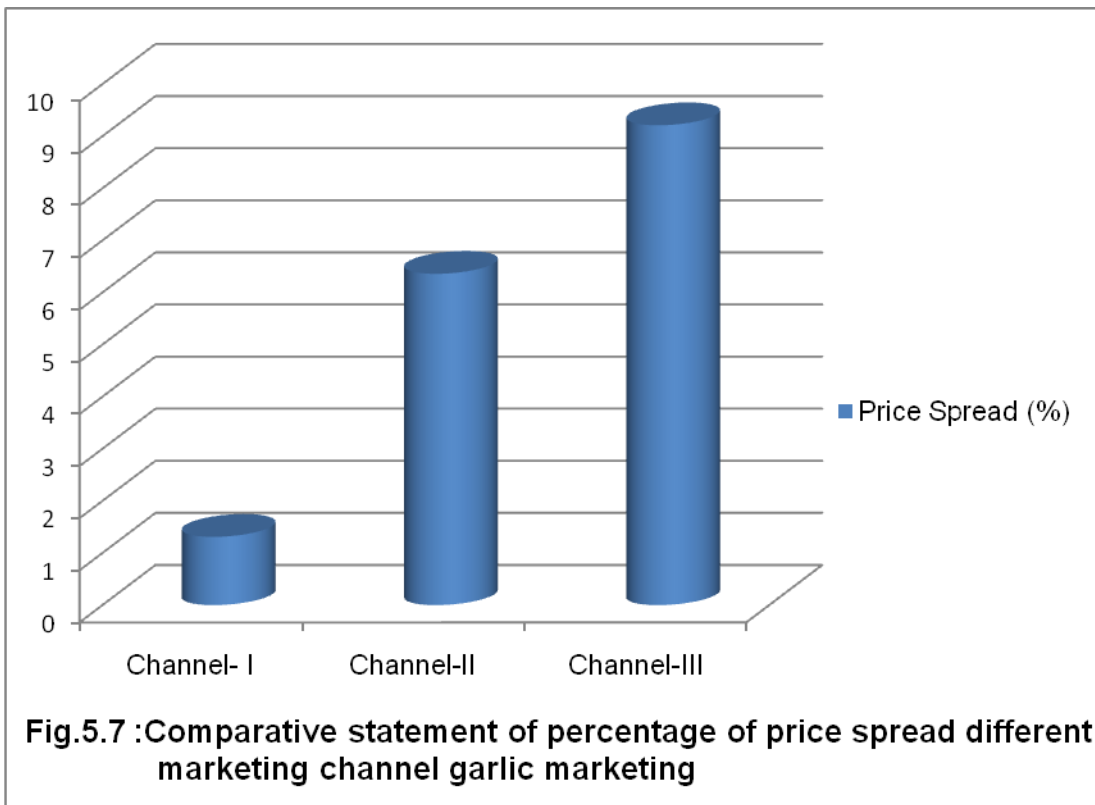
Table 5.9 Costs and margins borne by various agencies in the marketing of garlic per quintal through channel-III.

S. No.	Particulars/ Market functionaries	Amount (Rs./q)
1	Cost incurred by producer	
	Transportation	30
	Loading, unloading & weighing	20
	Sub total	50
	Producer net price	3750
	Producer's sale price/retailer's paid price	3800
2	Cost incurred by wholesaler	
	Weighing, loading and unloading	20
	Two gunny bags	45
	Transportation	35
	Sub total	100
	wholesaler margin	105
	wholesaler 's sale price/retailer's paid price	4005
3.	Costs incurred by retailer	
	Weighing, loading and unloading	20
	Transportation	30
	Sub total	50
	Retailer margin	75
	Retailer's sale price/consumer's paid price	4130
4	Producer's share in consumer rupee (%)	90.79%
5.	Price Spread	9.21%

Comparative statement of percentage of price spread different marketing channelgarlic marketing:

The comparative statement based on the observation on channel I, II, and III on a common platform indicates that when there was no involvement of market functionaries in the trading of garlic producer get higher share nearly 98.63 percent consumer's paid price on one side and provided a chief in the part of ultimate consumer who secured the same quantity of at lesser price (Rs. 3800) contrast to that involvement of retailer in channel II not only decreased the share of producer in consumer's paid price but also increased that price of same quantity of garlic as paid by ultimate consumer (Rs. 4005) in this intercourse of trading the retailer charged 2.62 percent margin beside the cost incurred by him (5.11 percent).

In channel III the involvement of wholesaler and retailer further expended per unit price of garlic as a result of charging of their margins and actual cost incurred in the trading of this commodity. Here on one side the share of producer in consumer's paid price tend to decline up to 90.79



percent and reverse to that expanded the consumer's paid price up to Rs. 4130 (Table 5.10).

On the basis of above comparative statement conclusion is drawn that when there is involvement of higher number of marketing functionaries in the dealing of garlic marketing tend to decrease the producer's share in ultimate consumer's paid price one side and forced the ultimate consumers to pay higher price for the same quantity of garlic as a consequence of incurring of various costs and margins recovered by market functionaries for their rendered services in the trading of this commodity.

Table 5.10: Different marketing agencies in garlic marketing across identical. (Percentage)

S. No.	Particulars	Channel- I	Channel-II	Channel-III
1	Producer's share	98.68	93.63	90.79
2	Producer's cost	1.31	1.24	6.17
3	Wholesaler's shares	-	2.62	-
4	Wholesaler's cost	-	2.49	-
5	Retailer's share	-	-	1.81
6	Retailer's cost	-	-	1.21
	(Rs./q)	3800 (100)	4005 (100)	4130 (100)

Different marketing agencies in garlic marketing across identical

The efficiency of marketing denoted here that when there was no functionaries between the interaction of producer and consumer the market efficiency was higher which tend to decline as per increase of number of marketing functionaries and services rendered by them including their respective margin (Table 5.11)

The marketing efficiency also indicates that if there is creation of utility in a consumer's good in the form of place, time, and form utility its higher degree may be more appreciable as it converted the raw material nearly to more usable form for consumer but without increasing such utilities the expansion of cost and margins of market agencies incurred in the trading of commodities will definitely reduce the efficiency of that commodity in market.

Table 5.11: Comparison of different marketing channels in garlic marketing

S. No.	Particulars	Value of the good (Rs/ha)	Total marketing cost (Rs)	Total margin (Rs.)	Final value of the good (Rs/q)
1	Channel –I	3750	50	-	3800
2	Channel –II	3750	50	105	4005
3	Channel –III	3750	200	180	4130

Post harvest technique prevalence in study area:

In the case of garlic crop there was no post harvest technique followed at producer's level except drying of bulb for a time being and grading of that as per their convenience and removing of dry roots of the bulbs. A few producers having their own store or godowns keep this commodity for a time being and observe the waiting period for better price in future. During the survey period respondents taken into account had no such facilities therefore, study in this respect was not further extended

Constraints faced by sample farmers in the production and marketing of garlic:

The problem faced by the sample farmers in the production and marketing of garlic were clubbed in respective types of problems as per the incidence of their severity commonly faced by all the respondents as an independent unit. Within the observed constraints, problem in obtaining quality seed at reasonable price and higher prices for human labour and fertilizer inputs. Higher human labour input cost due to lack of management and high rate of human labour per days because constraint of human labour. And high fertilizer cost due to lack of market yard and reasonable price and also lack of credit facilities for securing crucial inputs at reasonable prices was not funded timely to garlic growers through institutional financing agency. Traders collusion, fluctuation in garlic unit price, no display of proper marketing information, lack of storage in market yard as well as storage facility, marketing information, lack of storage in market yard as well as storage facility in godowns were the other severe problems ranked in the

descending order viewed seriously which may be verified there given information furnished in Table 5.12

Table 5.12 Constraints faced by the sample farmers in production of garlic.

S. No.	Constraints relating to	Small (N= 25)	Medium (N= 25)	Large (N= 25)	Total (N= 75)	Ranking
1	Lack of capital	22 (88)	15 (60)	13 (52)	50 (66.66)	V
2	Lack of knowledge	20 (80)	13 (52)	10 (40)	43 (57.33)	VIII
3	Costly equipment	18 (72)	14 (56)	15 (60)	47 (62.66)	VII
4	Lack of labour	9 (36)	15 (60)	18 (72)	42 (56)	IX
5	Lack of improve seed	23 (92)	14 (56)	12 (48)	49 (65.33)	VI
6	Lack of local supply of input	9 (36)	6 (24)	5 (20)	19 (25.33)	XI
7	Lack of insect and disease resistance seed	22 (88)	18 (72)	16 (64)	56 (74.66)	I
8	High price of labour and bullock	24 (96)	12 (48)	15 (60)	51 (68)	IV
9	Unavailability in peak time of (labour and bullock)	23 (92)	15 (60)	16 (64)	54 (72)	III
10	Need of more irrigation	10 (40)	8 (32)	12 (48)	30 (40)	X
11	Canal irrigation is not available when needed	24 (96)	14 (56)	17 (68)	55 (73.33)	II

Table 5.13: Problems faced by the sample farmers in marketing of garlic

S. No.	Constraints relating to	Size group				Ranking
		Small (N= 25)	Medium (N= 25)	Large (N= 25)	Total (N= 75)	
1	Lack of agencies to purchased product	22 (88)	20 (80)	17 (68)	59 (78.66)	IV
2	Dependence on middle man for disposal	10 (40)	5 (20)	9 (36)	29 (38.66)	VII
3	Lack of marketing news	24 (96)	18 (72)	19 (76)	61 (81.33)	II
4	Lack of storage facilities	23 (92)	20 (80)	17 (68)	60 (80)	III
5	Lack of proper guidance and training	25 (100)	22 (88)	23 (92)	70 (93.33)	I
6	Irregular visit of agric. Officers	16 (64)	15 (60)	18 (72)	49 (65.33)	VI
7	Lack of govt. facilities	13 (52)	20 (80)	18 (72)	51 (68)	V
8	Lack of transportation	8 (24)	10 (40)	6 (24)	24 (30)	VIII
9	Not getting the satisfactory price	7 (28)	8 (32)	6 (24)	21 (38)	IX

CHAPTER VI

SUMMARY, CONCLUSION AND SUGGESTIONS

Summary:

The present study entitled **“An economic analysis of production and marketing of Garlic in Ratlam District of Madhya Pradesh”** was undertaken in the year 2014-15 with the following objectives:

1. To analysis the cost and return of garlic cultivation.
2. To identify the different marketing channels of garlic.
3. To analyze the marketing margin, price spread and producer share in consumer rupee in garlic marketing.
4. To identify constraints and future thrusts in garlic production and marketing.

A multi-stage random sampling technique was adopted for data collection. The study was conducted in tehsil Ratlam district of Ratlam (M.P.) where garlic is an important cash crop. Stratified random sample procedure was adopted for the selection of villages and farmers. Sample of 3 villages of this tehsil was selected randomly. A sample of 75 farmers in the ratio of 25:25:25 was selected randomly. The farmers were classified into three groups viz., small (<2.00 hectares), medium (2.01-4.00 hectares) and large (4.01 hectares and above) farms. The sample garlic producers for garlic cultivation and disposal of their produce opted independent channels as per convenience. Yield, returns and marketing costs and constraints of production and marketing data were collected from the sample farmer as well as from different market functionaries through the pre-tested schedule for the year 2014-15.

1. The average size of holding in small size group was 1.43 and 2.95 ha in medium and 8.64 ha in large size group, respectively.
2. The number of small size farms were equal compared to medium and higher to large size farms but there was reverse relation so far as operational area was concerned.
3. Within the cropping pattern soybean followed by wheat, garlic and chick pea were the better preferences of large size farm. In medium size soybean

and cotton followed by wheat, garlic, pea and chick pea were the preferential sequence of crops. While in small size soybean followed by wheat, garlic, chick pea and maize were the part of cropping system.

4. Overall cropping pattern in study area was still dominated by wheat followed by soybean and garlic was the next preference.
5. There was a keen competition between garlic acreage leaving a narrow margin in between them in rabi season.
6. The intensity of cropping was higher in small size group followed by medium and large size group.
7. The employment of human labour showed reverse relation with the size of farm but employment of hired human labour showed a scale relation with the size of farm.
8. Bullock labour utilization was higher in small size and tend to decline as per increase of size.
9. Machine power was higher in small size farm followed by medium and large farm size only.
10. Investment on seed was the same in respect of farm size. Similar pattern was also observed in manure application.
11. Fertilizer application was higher in large size and tends to decline as per of farm size because, use of intensive cultivation.
12. Irrigation charge was slightly increased with the increase of size farm. Reverse to that for plant protection there was a strong relation of plant protection use which tremendously increased as per increase of farm size.
13. The operational cost comprised human labour to fertilizer inputs known as cost A_1/A_2 showed a significant negative decrease with the size of farm. The same was observed in the case of cost B_1 , Cost B_2 but in the case of Cost C_1 there was no considerable difference in size farm though slightly higher in small size group. The same was happened in the case of cost C_2 . The cost C_3 was slightly higher in small size followed by other size farms.
14. The productivity of garlic was higher in small size group followed by medium and large size group.
15. The gross return a sum of output, into unit price also followed the same pattern as observed in the garlic productivity.

16. The net return over cost C_3 (total cost) observed higher in small size followed by medium and large size farm in garlic.
17. Family labour income was higher in small size group which tends to decline as per increase of farm size.
18. The net return per farm was higher in small size group due to higher allocation of garlic area and tend to decline as per increase of size farm.
19. The share of producer in marketing cost was appreciably higher in the channel-II but where the storage and commission and other related costs incurred if tend to decline in ultimate consumers paid price.
20. Extension of marketing functions tends to decline the producer's share in consumer paid price.
21. In case of garlic production there was no existence of post harvest technique except the drying of garlic bulb for a few days and cutting of dried roots.
22. Constraints related to inputs use had varying degree and influenced the garlic productivity and returns per hectare. The proper correction, amendment or allocation requires to be observed as indicated in resource use productivity analysis.
23. Per hectare higher returns of garlic as well as higher return ratio over per rupee invested cost shows better prospect for area expansion and production of garlic cultivation.

Conclusion:

The list of results obtained in this research study concludes that the investment on human labour followed by fertilizer and irrigation should highly be considered. Factors having higher production value would be looked after carefully and increase their input level for securing a higher return. To minimize the cost of cultivation of garlic crop in small size farm cost involved on human labour use to be decreased but this avenue is opened for larger size farms. Efficient marketing should be followed for securing higher share of producers in consumer's paid price. Problems observed during the study should accordingly be handled to minimize their incidence. Proper borrowing facility and marketing information should also be followed which influence the return of this crop. Creation of demand and searching of export oriented

substances should be extended to the best level of state and commercial agencies for further increase the prospect of this crop. Farmers in regard of sound farming practices based on scientific recommendation should be acquainted with the researcher and extension agencies for narrowing the gap between potential and actual yield. Regulated market or amendment in marketing practices should be Monitored which unnecessarily expand the gap between producer's price and price paid by ultimate consumer.

Suggestions:

1. Improved variety seeds though are of higher unit price but provide high productivity and return, therefore, to be used as per capacity of the growers.
2. Proper allocation and level of increase in fertilizer, irrigation and human labour, inter culture to be followed for higher return.
3. Quality product attracts higher unit price, therefore, proper grading and cleaning of the garlic should be done at producer's level to increase the income of the producer in marketing of the product.
4. Scarcity of fund adversely influences the income of garlic, therefore, to garner higher productivity of used input resources there should be effective management of fund borrowing from institutional lenders.
5. To sustain the oversupply of garlic at forced sale price, proper storage facility should be created to overcome this problem and better price after a brief waiting period.
6. There is an urgent need of regulation of garlic market to safeguard the interest of producers as well as consumers.
7. Export oriented plans for garlic sale should also be considered for better price and for an earning.
8. Provision of proper marketing information to producers as well as consumers at marketing level should be established.
9. Equipments, repairing and availability of spare parts at producer's level should be provided. Therefore, plant protection and allied operations may be performed timely.
10. To discourage delay payment of garlic selling amount to growers should strictly be shackled through the administrative involvement of state government and corporate bodies.

11. Input supply centres should be established at mandi level so that the producers do not have difficulty in purchasing that inputs at reasonable prices.
12. Online national Agriculture market, must be extended for Garlic crop to having's remember price for the benefited of farms consumes is published and caring the overall marketing efficiency in general for marketing it overall at reasonable prices. With assume of quantity (true value of money) to the consumer.

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APPENDICES

COLLEGE OF AGRICULTURE JABALPUR (M.P.) JNKVV Jabalpur

Department of Agricultural Economics & Farm Management

Title of the Research Problem:

An Economic Analysis of Production and Marketing of Garlic in Ratlam District of Madhya Pradesh.

INTERVIEW SCHEDULE

Name of Guide

Name of investigator

Dr. Deepak Rath

Shanti Lal Vasuniya

(1) General information of the respondents:

(a) Name of farmer:

(b) Father's name:

(c) Age:

(d) Caste.....

(e) Education:

(f) Village:

(g) Block:

(h) District.....

(2) Land and land use pattern:

(a) Total land holding (ha.)

(b) Cultivated area(ha.)

(c) Irrigated area (ha.)

(d) Unirrigated area.....(ha.)

(e) Area under Garlic (ha.)

(f) Land revenue paid Rs. in year

(3) Source of irrigation:

- (a) Well
- (b) Tube well
- (c) Other

(4) Cropping Pattern:

Kharif (ha.)

S. No.	Crop	Area	Irrigated	Unirrigated

Rabi (ha.)

S. No.	Crop	Area	Irrigated	Unirrigated

Summer(ha.)

S. No.	Crop	Area	Irrigated	Unirrigated

(5) Information about farm assets:

S.No.	Particulars	Year of Purchase / Construction	Quantity	Value in Rs.
1.	Land			
2.	Farm House/ Store House			
3.	Tube Well/Well			
4.	Pump Elect/Diesel and accessories			
Bullock operated implements:				
1.	Plough/ Harrow /Cultivator			

2.	Bullock cart			
3.	Seed drill			
Tractor operated implements:				
1.	Tractor/ Cultivator/ Seed drill			
2.	Trolley			
3.	Harrow			
Hand operated implements:				
1.	Spade			
2.	Khurpi			
3.	Tokna / Rope e.t.c.			
Other implements:				
1.	Power thresher			
2.	Winnower			

(6) Information about cost of cultivation:

Variety **area (ha)**

(A) Operational labour (Days)

S. No.	Practices	Human labour				Bullock labour		Machine labour	
		Male		Female		Owned	Hired	Owned	Hired
		F	H	F	H				
1.	Nursery preparation								
2.	Field preparation								
3.	Fertilizer and manure application								
4.	Planting / Sowing								
5.	Irrigation								
5.	Plant protection measures								
6.	Interculture								
7.	Digging								
8.	Transportation								
9.	Other								

(B) Material used:

S. No.	Material	Price per unit	Material used	
			Qty	Cost
1.	Seed/ Seed treatment			
2.	Fertilizer and Manures			
3.	Weed control (Intercultural)			
4.	Plant protection			
5.	Irrigation Charges			
6.	Other Charges			

(7) Output

Yield	Quantity (Q.)	Price (Rs.)

(8) Marketing of Garlic:

i. Name of market:

a. Primary

b. Secondary.....

ii. Distance from farm:

a. Primary

b. Secondary.....

iii. Nearest regulated subjimandi:

a. Name

b. Kilometer.....

iv. Type of road:

a. Kachha

b. Packka

c. Both

v. Source of transportation:.....

vi. Transportation charges Rs. /quintal.....

Vii Storage facilities available: Yes / No

viii. Cold storage charges Rs. /Qut......

ix. Where did you sell?

Village level			Primary level			Secondary level		
Qut	Price Rs/Qut	Value	Qut	Price Rs/Qut	Value	Qut	Price Rs/Qut	Value

x. Produce sold to:

Agent	Qut.	Price Rs./Qu	Total value Rs.
Whole seller			
Retailer			
Other venders			
Consumers			
Others			
Total			

xi. Cost and margins:

S.No.	Name of functionary	Rs./Qut	Percent
1. A	Net price received by producers		
B	Expenses incurred by producers		
	i. Transportation		
	ii. Loading / unloading		
	iii. Taxes / Commission		
2. A	Purchase price of wholesaler (Paid by producer)		
B	Expenses incurred by whole seller		
	i. Commission		
	ii. Losses		
	iii. Auction charges		
	iv. Loading / weighting		

	v. Market fee		
	vi. Miscellaneous		
3. A	Purchase price of retailers (Paid to whole seller)		
B	Expenses incurred by retailer		
	i. loading/unloading & transportation		
	ii. Retailer margin		
	iii. Miscellaneous		
4.	Sale price of the retailer (Price paid by consumers)		

(9)Problems faced by the sample farmers in production of garlic:

S. No.	Constraints	Yes/No
1.	Lack of capital	
2.	Lack of knowledge	
3.	Costly equipment	
4.	Lack of labour	
5.	Lack of improve seed	
6.	Lack of local supply of input	
7.	Lack of insect and disease resistance seed	
8.	High price of labour and bullock	
9.	Unavailability in peak time of (labour and bullock)	
10.	Need of more irrigation	
11.	Canal irrigation is not available when needed	

(10) Problems faced by the sample farmers in marketing of garlic:

S.No.	Constraints	Yes/No
1.	Lack of agencies to purchased product	
2.	Dependence on middle man for disposal	
3.	Lack of marketing news	
4.	Lack of storage facilities	
5.	Lack of proper guidance and training	
6.	Irregular visit of agric. Officers	
7.	Lack of govt. facilities	
8.	Lack of transportation	
9	Not getting the satisfactory price	