Economics of Production and Marketing of Onion in Bagbahra block of Mahasamund district (C.G.)

THESIS

Submitted to the

Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur

In partial fulfilment of the requirement for the Degree of

MASTER OF SCIENCE

In

AGRICULTURE

(AGRICULTURAL ECONOMICS & FARM MANAGEMENT)

By

SHOBHA PAUL

Department of Agricultural Economics & Farm Management
College of Agriculture, Jabalpur 482004
Jawaharlal Nehru Krishi Vishwa Vidyalaya
Jabalpur, Madhya Pradesh

2016

CERTIFICATE – I

This is to certify that the thesis entitled ***"Economics of Production and Marketing of Onion in Bagbahra block of Mahasamund district (C.G.)"*** *submitted in partial fulfillment of the requirement for the degree of* ***MASTER OF SCIENCE (Agriculture) in Agricultural Economics and Farm Management*** *of Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur is a record of the bonafide research work carried out by* ***Ms. Shobha Paul*** *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 her.

Place: Jabalpur
Date :

Dr. S.B. Nahatkar
Chairman of the Advisory Committee

THESIS APPROVED BY THE STUDENT'S ADVISORY COMMITTEE

Committee	Name	Signature
Chairman	Dr. S.B. Nahatkar	……
Member	Dr. D.N. Tiwari	.....
Member	Dr. S.K. Agrawal	.....

CERTIFICATE – II

This is to certify that the thesis entitled ***"Economics of Production and Marketing of Onion in Bagbahra block of Mahasamund district (C.G.)".*** *submitted by* ***Ms. Shobha Paul****, 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.*

Place : Jabalpur
Date :

Dr. S.B. Nahatkar
Chairman of the Advisory Committee

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Committee	Name	Signature
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Member	Dr. D.N.Tiwari	.....
Member	Dr. S.K.Agrawal	.....
Head of the Department	Dr. N.K. Raghuwanshi	.....
Director of Instruction	Dr. Dhirendra Khare	.....

Declaration and Undertaking by the Candidate

I, **Shobha Paul** D/o **Lalit Paul** certify the work embodied in thesis entitled **"Economics of Production and Marketing of Onion in Bagbahra block of Mahasamund district (C.G.)."** is my own first hand bonafide work carried out by me under the guidance of **Dr. S.B.Nahatkar** 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.

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Date: …… **(Shobha Paul)**

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Name of the candidate	:	Shobha Paul
Subject	:	Agricultural Economics
Department	:	Agricultural Economics and Farm management
College	:	College of Agriculture, Jabalpur
Year of thesis submission	:	2016

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Date:
Place: Jabalpur

Dr. S.B. Nahatkar
(Chairman of Advisory Committee) **(Shobha Paul)**

CURRICULUM VITAE

The author of this thesis **Ms. Shobha Paul** D/o Shri Lalit Paul was born on 12th April, 1991 at Mahasamund (C.G.). She passed the High School Examination in the year 2006 with 75 per cent marks and Higher Secondary Examination in the year 2008 acquiring 70 per cent marks from Kendriya Vidyalaya, Mahasamund (C.G.). She joined the College of Agriculture; Rajnandgaon affiliated to Indira Gandhi Krishi Vishwa Vidyalaya, Raipur (C.G.) in the year 2010 and successfully completed the degree of B.Sc. (Ag.) in June, 2014 with (7.47 OGPA out of 10.00 point scale).

After completing graduation, she was selected for M.Sc. (Agri.) degree programme in Jawaharlal Nehru Krishi Vishwa Vidyalaya, Jabalpur for specialization in Agricultural Economics. She has successfully completed all the course requirements for Master's degree with First Division securing an OGPA of 8.2 out of 10 point scale.

For the fulfilment of the Master's degree programme, he was allotted a research problem entitled **"Economics of production and marketing of onion in Bagbahra block of Mahasamund district (C.G.)".** This is duly completed by her and presented in the form of this thesis.

ACKNOWLEDGEMENT

First of all I would like to thank and praise Almighty “Lord Shiva” the most beneficent and merciful, for all his love and blessings conferred upon mankind.

With great reverence I Express my warmest feeling with deep sense of gratitude to my advisor and chairman of my advisory committee Dr. S.B.Nahatkar, Principal Scientist,Directorate of Research Services, J.N.K.V.V., Jabalpur. I have no word to express my heartfelt thanks to him for his illuminating guidance, unfailing encouragement, scholarly suggestion, unique supervision, construction criticism, sympathetic attitude and keep interest during the course of my research and preparation of this manuscript.

I have intense desire to express my wholehearted sense of gratitude to venerable member of my advisory committee namely Dr. D.N.Tiwari (Department of Agricultural Economics and Farm Management), Dr. S.K.Agrawal (Department of Extension Education) for their valuable guidance and fruitful suggestions during the course of study. I extend my profound indebtedness and thanks to Dr. N.K. Raghuvanshi, Professor and Head, Department of Agricultural Economics & Farm Management.

I am very much thankful to Dr. D.Khare, Director of Instruction, JNKVV, Jabalpur and Smt. Dr. Om Gupta Dean, College of Agriculture, Jabalpur for their supervision during the period of investigation.

I express my sincere thanks else I would be failing in my duty if I forget to express my due obligations to Dr. P.K.Awashti, Dr. R.M. Sahu, Dr. H.O. Sharma, A. Shrivastava, Dr. A.K. Sarawgi and Dr. D. Rathi, for their constant encouragement and suggestions at various stages during the course of this study.

I feel myself duly bound to express my heartfelt and sincere thanks to Kavita Malhotra, Librarian, Department Library, and all the Staff Members of the Department of Agricultural Economics and Farm Management, J.N.K.V.V., Jabalpur for their help during the course of my investigation.

It is my pleaser thanks to my Best friends Anika and Hamid, my Batch mates Chandrika and Vinod and my Hostel mates for their unforgettable love, co-operation and exuberant caring during my stay at Jabalpur.the moments we shared will always be cherished.

For the most important personalities of my life, there are not enough words to express my gratitude to my Father Shri Lalit Paul, Mother Smt Annapurna Paul, Rahul and my relatives whose blessings and guidance helped me in the timely completion of this manuscript.

My thanks are also due to all the sample farmers for their co-operation and providing vital information.

Place: Jabalpur

Date: **(Shobha Paul)**

CHAPTER - I

INTRODUCTION

The onion (*Allium cepa* L.) is one of the most important commercial vegetable grown and consumed all over the country. India rank second in onion production in the World. In India onion is cultivated under 11.81 lakh hectare with total production of 189.24 lakh Metric Tonne of bulbs for consumption as well as for export purpose (Agril. Stastistics 2014-15). The major onion producing states in India are Maharashtra, Bihar, Karnataka, Gujarat, Andhra Pradesh, Uttar Pradesh, Orissa and Madhya Pradesh.

Onion is an indispensable item in every kitchen as condiment and vegetable. It is used either in raw form and dehydrated form to add flavour and taste to Indian cousins. Since onion has medicinal value, it is used in some pharmaceutical preparation also. It has many uses as, folk remedies and recent report suggests that onion play a part in preventing heart diseases and other ailments. Onion bulb is rich in minerals like phosphorous, calcium and carbohydrate. The pungency in onion is due to a volatile oil known as allyl-propyl disulphide.

Onion is a famous spice commodity grown all over the world and consumed in the various forms. Onion is a major ingredient in Indian food and commodity is typically cultivated in monsoon, winter and summer. Onion adds taste and flavor to a food and hence it is invariable used in several cuisines and culinary preparations. Onion is processed in various products such as ketchup, chutney, sauce, puree, salsa, dry soup mixture etc. A global review of area and production of onion shows that it is grown in 126 countries over an area of 2.3 million hectares producing 40.0 million tones of dry onion. Sixty-two percent of the world’s production is from Asiatic countries.

Horticulture has been recognized as a vibrant sector in agriculture, which provides avenues for diversification, enhanced returns per unit area, better land and water use with opportunities for employment generation. The wide range of horticultural crops provide ample opportunities to farmers to adopted multi layer cropping for minimizing risk of crop failure, maximizing their farm income. Onion is one of the important horticultural crop which enhance the farmers economy. The improved cultivation of onion farming

calls for the adoption of balanced and efficient use of modern inputs for profitability and increasing production. Due to capital oriented improved onion cultivation technology the farmers needs higher capital. Hence, the use of modern technology needs a careful management of resources before allocating the area under onion cultivation. Farmers should well aware with different types of costs incurred and returned obtained from particular crop, for minimizing the risk factor and easy adoption of modern technology of particular crop. If farmers have such valuable information they can allocate a manageable area under particular crop and can also achieve a desirable benefit.

On the other hand the problem is arising due to the pattern of onion production which is changing over time in different regions. The shifts in preference of domestic consumers, increasing urbanization, rising incomes, demographic and social factors and the changes in productivity of onion have brought about changes in the pattern of consumption and hence, the demand for onion. The production pattern of onion also affected due to resource use pattern, level of production technology and price factor of input and output respectively. It has been found in various studies that the yield of onion is directly influencing with level of technology used in production, or we can say that the influence of technology development in onion production and its adoption is augmenting regarding total production and productivity of onion is being recognized. However, wide gap prevails between the performance of technology at the progressive farmer's level and of the fields of general farmers. The constraint operating due to modern onion production technology are more of capital intensive and the farmers have to invest more on yield attributing inputs like seed, fertilizers, plant protection measures and irrigation etc. Due to high cost of inputs and ignorance about improve practices general farmers are not judiciously use improve technology. In this respect question arising that "are investment on modern technology was proportionately enhanced the output" and net return needs investigation and verification in respective of onion growing area. The prices of onion fluctuate widely and farmers response to price change causes bumper production which tends to decrease prices of onion drastically. Thus, onion production in Indian economy is caught in cob-web cycle and thus farmers suffers when there is bumper production and even sometime they are not able to cover the cost of production. This year also the onion growers are facing such problem and

therefore, the study on cost and returns from onion become pertinent along with to work out the break-even in onion production.

Chhattisgarh is an agricultural state and due to large production of rice it is known as the Rice bowl. Paddy covers seventy percent of the total area in the state. Apart from paddy, vegetables are also grown in area of 414440 hectare with total production of 5697974 Metric Ton. Chhattisgarh produce 369382 Metric Tonne of Onion bulb from an area of 24129 ha. (Director Horticulture,C.G.,Raipur). In Mahasamund District of Chhattisgarh, total production of Onion is 12476 Metric Tonne from an area of 893 hectare (Director Horticulture,C.G.,Raipur) .

Thus, looking to the importance of Onion production and its potential as cash crop in irrigated area due to irrigation development projects in Chhattisgarh, the economics of its production and marketing is essential for future policy making.

1.1 Specific objectives

The specific objectives of the proposed study are

1) To examine the socio- economic characteristics of onion growers
2) To evaluate cost and profitability of onion
3) To assess the marketing pattern of onion
4) To identify the constraints associated with production and marketing of onion and needed policy interventions thereof

1.2 Limitations of the study

During the course of investigation several difficulties were faced in the collection of data from cultivators. The cultivators generally did not maintain any farm records and supply data on the basis of their memory, which may not be very correct. The literacy of the farmers also added in this problem. Some of the farmers did not co-operate in giving data because of some misunderstanding regarding agriculture taxes, ceiling, recovery of loan etc. They were biased in providing data towards higher side of the investment and lower side towards productivity. However, sufficient care was taken to collect the data by cross checking with the educated neighboring farmers and other village leaders, etc.

CHAPTER - II

REVIEW OF LITERATURE

In this chapter, an attempt has been made to review pertinent literature keeping in view the problem entitled, — Economics of Production and Marketing of onion in Bagbahra block of Mahasamund District(C.G.). A brief account of the work reported by the past researcher has been discussed under the following heads:

2.1 Economics of production and marketing of vegetables crops:

Amuthan et al. (2000) studied on farm level storage of small onion at abnormal prices. Farmers obtained Rs. 210.50 per quintal in season- I (kharif) and Rs. 911.35 per quintal in season-II (rabi) of 1997-98 by immediate sale after harvest while in 1998-99, the loss were Rs. 234.44 to Rs. 248.66 per quintal. Multiple regression analysis showed that price of stored onion was significantly and positively increased by months of storage and variety of onion whereas, it was significanlty decreased by loss of value of onion stored and season- I in 1997-98 when the onion price was normal to high. The model did not behave well during 1998-99 as the signs of coefficients were not in conformity with a priori expectations and explanatory variables explained only 23.88 per cent variation in price of stored onion which make immediate sales profitable than storing during price crash.

Gadre et al. (2002) observed that the production of white onion on sample farms was 144.91 quintals/ha. of which 89.23% was marketed surplus. The marketing system for white onion was in the hands of marketing functionaries to the extent of 93%. The maximum quantity of white onion was passed through channel-iv i.e. Producer- Wholesaler- Retailer- Consumer (66.96%) followed by channel-iii i.e. Producer- Retailer-Consumer (17.23%), channel-II i.e. Producer- Wholesaler- Consumer (14.62%) and channel-I i.e. Producer- Consumer (1.07%). The producer share in consumer rupee was the highest in channel-I (98.85%) and it was lowest (65.60%) in channel-ii.

Balappa and Hugas (2003) revealed that the average marketing cost incurred by the producer- seller in onion in the overall study area accounted to

Rs. 56.72 per quintal, its magnitude was higher in Gulabarga (Rs. 68.76/q.) and Raichur (Rs. 60.81/q.) markets as compared to Bijapur (Rs. 56.06/q.) Belgaum (Rs. 43.55/q.) and Dharwad (Rs. 41.05/q.) markets, mainly due to higher commission paid by them. They further revealed that majority of the farmers of these three districts sold their produce in the Hyderabad market (Andhra Pradesh) due to higher price prevailing in that market and pay commission charges of six per cent as against two per cent in Karnataka. Similar pattern was observed in marketing cost incurred by the farmers per hectare. Out of the total marketing cost incurred by the product-seller, the commission charge (35.95%) accounted for major component followed by expenditure on transportation (32.04%) and cost of packing (17.35%) in the overall study area, Similar pattern was observed in all the markets except Belgaum and Dharwad markets wherein transportation cost was the major component followed by cost on packing and commission charges. These three components alone accounted for about 85.34 per cent of the total marketing cost incurred by the farmers.

Jain and Tegar (2003) studied Economics of production and marketing of tomato in Jashpur district of Chhattisgarh. The study assures about profit level, cost of cultivation is measures that help the farmers to take rational decision about production. The analysis is divided into four categories marginal group (34 farmers), small group (24 farmers), and medium (14 farmers). The cropping intensity on various farm sizes is estimated to be 108.18 per cent, 111.15 percent, 115.01 per cent and 118.38 per cent on marginal, small, medium and large farms respectively. The total cost is estimated by adding variable cost, fixed cost and marketing cost. It showed maximum cost at large farms while minimum at marginal firms. The total marketing cost ranged from 19.87 per cent at marginal farm to 13.52 per cent at medium farms. Net return on various sizes of farms is examined as Rs.25317 per ha. at marginal, Rs.28022 per ha. At small, Rs.29987 per ha. at medium and Rs.52192 per ha. at large farms. The cost– benefit ratio on large farms is observed to be highest among various sizes of farms. It is noted as 1:1.91, 1:1.98, 1:2.22 and 1:2.90 at marginal, small, medium and large farms respectively.

Babu et al. (2003) revealed that net share of the producer in the consumer's rupee was very low (41.48%). It was due to the presence of large number of intermediaries in between the producer and the consumer. So, the farmers were not getting good remunerative price for their produce. It was due to the absence of middlemen and negligible marketing cost. Generally, farmers dispose off their produce immediately after harvest due to lack of infrastructure facilities.

Chole et al. (2003) found that the producer's share in consumer's rupee was maximum in channel I (68.28%), followed by channel II (57.94%) and channel III (53.14%). The share of retailer in consumer's price was 21.04 per cent in channel I, 24.37 per cent in channel II and 25.83 per cent in channel III. The share of wholesaler in consumer's price was 5.12 per cent in channel II and 5.06 per cent in channel III. The net share of commission agent was 6.17 per cent in consumer's rupee in channel III. The total marketing cost was maximum in channel III (46.86%) and minimum in channel I (30.72%). It was also revealed that the marketing efficiency was higher in Channel-I (2.25%) followed by Channel-II (1.37%) and Channel-III (1.13%).The vegetable growers marketed almost all the produce from the farm after using 0.36 per cent quantity for family consumption, while the losses were 0.22%. The disposal pattern revealed that the marketed surplus decreased with increase in farm size. It was observed that out of the total quantity of brinjal (1399.80 qntls) marketed by vegetable growers, 59.30 per cent was handled by the wholesaler. The per quintal price received by the producers was higher when sold through retailer (Rs.726.57).

Devaraja (2004) revealed that the producers share in consumer’s rupee is higher in case of all vegetables marketed at Mysore than at Bangalore. The producers share are 41.10, 40.72, 53.94, 48.47, 58.79 and 72.68 per cent respectively for tomato, cabbage, cauliflower, lady finger, brinjal, and onion respectively. While they are 23.07, 29.50, 29.61, 40.9, 42.78 and 53.12 per cent for the respective vegetables to be sold at Bangalore. Consumers are required to pay higher prices at Bangalore than that in Mysore for all vegetables except cabbage. The price differential in consumer’s price at these two places is statistically significant. Total marketing cost and margins

of intermediaries show that they are higher for Bangalore market than the Mysore market for all the vegetables. He further reported that the net prices realized by the producers for selling tomato, cabbage, cauliflower and onion in Mysore market are higher than that of Bangalore market. While the net prices realized in case of brinjal and bhindi are same for selling it in either of the markets.The total marketing cost for selling all the vegetables in Mysore market (rural) are comparatively lower than that or selling in Bangalore market (urban market). Of the total cost, packing material, transportation and commission are the major items sharing more than 60 per cent of the total marketing cost.

Sudha et al. (2005) revealed that the producers with small quantity of produce are selling the produce through village merchants. The village merchant is entering the market as farmer and sells the produce to wholesaler at market. The wholesaler sells the produce to miller where the produce get transformed into oil and cake. From there the oil reach the consumer through oil wholesaler and oil retailer. It was noted that the average net price received by the cultivator was Rs. 1123.87 and Rs. 1093.66 through channel I and II respectively. The net share of the producer was 80.72 per cent and 78.55 per cent in channel I and channel II respectively. The village merchants purchase price Rs. 1093.66 per quintal. They had to incur the same costs as producers which accounted to be Rs. 10.46 and sell the produce @ Rs. 1133.33.

Kumar et al. (2005) reported that the producer's share in consumer's rupee was maximum in channel-I i.e.,producer-consumer (96.95%) since the farmers sold the onion to consumer directly followed by channel-II - producer-retailer-consumer (81.82%) and channel-III- producer-wholesaler-retailer-consumer (65.50%).

Singh (2006) observed that the producers share in the consumer's rupee was 60.90% for tomato, 67% for onion, 50.15% for arvi, 61.01% for okra, 60.37% for brinjal and 63.75% for potato with the rest going to the middlemen. Arvi had the highest marketing efficiency followed by okra, brinjal, tomato, onion and potato. Five marketing channels were identified. The majority of producers used the producer-wholesaler-retailer-consumer or producer- wholesaler-consumer channels with the lowest number using

producer- consumer. Marketing costs were highest for potatoes, followed by onions, tomatoes, brinjal, okra and arvi. This included packing, packaging, weighing, transportation, chungi, dalali, corporation tax and miscellaneous expenses. For middlemen, marketing costs were Rs. 40 for tomatoes, Rs. 23 for onions, Rs. 25 for arvi, Rs. 27 for okra, Rs. 28 for brinjal and Rs. 26 for potatoes.

Singh and Banafar (2006) have conducted a study on economic analysis of production and marketing of cauliflower in Durg District of C.G state. The main objective of study was to find out the cost of production, marketing channel and marketing efficiency. It was concluded that the average cost of cultivation of cauliflower per hectare was Rs.25228.57.It showed a rising trend with the rise in the size of farm. It was due to the fact that the large farm could incur more expenditure on modern input. Average per hectare output was Rs.48156.20. Average, per hectare benefit cost ratio (BCR) was estimated to 1:1.91. Slightly higher share i.e.85.91 percent and 80.15 percent in Shastri market, where it was 83.60 and 78.37 percent for the same vegetable respectively. Channel -2 was found to be more efficient as compare to channel-1.

Banafar and Salam. (2008) revealed that the cost of production per quintal of sweet potato crop depicted a declining trend with increase in the farm size on an average per ha. Yield of sweet potato was 94.94 quintal. The average cost of production per quintal was worked out to Rs. 170.11, productivity of sweet potato and input-output ratio increase with increase in farm size. There were two marketing channels for the marketing of sweet potato, channel- I: producer- consumer : channel-ii : producer village merchant- wholesaler- retailer- consumer. The most efficient marketing channel for tuber crops was found to be channel-I followed by channel- ii. The producer share in consumer rupee were higher in channel-I.

Verma (2008) concluded that multistage random sampling technique was used to select sample of farmers from four villages of Indore Block of the district. Mainly three marketing channels were found through which onion growers sold their produce vis. Channel- i: Producer- Consumer, channel-ii: Producer- Retailer- Consumer and channel-iii: Producer - wholesaler- Retailer- Consumer. The marketing cost was highest in channel-iii, followed by channel-ii and i.

Singh et al. (2008) identified different marketing channels in marketing of potato : channel-i : Producer- Consumer ; channel - ii : Producer - Retailer- Consumer; channel-i : Producer - Wholesaler- Retailer- Consumer and channel-iv : Producer village merchant- Wholesaler- Retailer - Consumer in the case of marketing of potato the producer received lower share of consumer's price in channel-iii than channel- ii. Moreover in channel-iv, producer's- share in consumer's price was marked lowest as compared to channel-ii and channel- iii. The marketing margins received by the wholesaler and retailer were lower as compared to channel- ii, iii, and iv were 5.75, 4.39 and 3.96 respectively. The index of marketing efficiency was higher in channel- iii that the channel- iii and channel- iv, indicating respectively higher marketing efficiency in this channel.

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 revering 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 ha. 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 is 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.

Ramya (2009) analyzed the production and marketing of major vegetables in Bilaspur district of Chhattisgarh, the main objectives of study were to examine the marketing pattern, and find out the constraints in production and marketing of vegetable and suggest suitable measures. It was concluded that the cost of cultivation of tomato, brinjal and okra was calculated Rs.29782.82, RS.26252.01 and Rs.29788.78 respectively and its input output ratio was 1:2.76, 1:2.82 and 1:2.36 on the sample farms.

Meri (2009) conducted study on structure and efficiency analysis of vegetable production and marketing in Sindh, Pakistan. He made a valuable addition to the knowledge required for efficient production and marketing of onion, tomato and chilies in Sindh. The results revealed that there was high degree of competition among wholesalers and retailers, which suggested that their market margins were not excessive except wholesalers where indication of collusive oligopoly could be said as the profit margins and returns to investment of wholesaler were significantly higher when compared with other factors. The result further revealed that the market of onion, tomato and chilies across location in Pakistan were efficient as the market price information in regional markets were transferred to order markets. The results further reveled that markets were integrated and there were spatial price linkage across regional markets.

Joshi (2011) examined the marketed surplus and price spread of brinjal in western Uttar Pradesh. The study was undertaken to analyzed marketed surplus and price spread for brinjal in western Uttar Pradesh cluster sampling techniques was used to select the sample villages and respondents. Primary data were collected by personal interview of respondents. Simple statistical tools were employed to accomplish different objectives of the study. The marketed surplus of the medium category of farms have slightly higher surplus than marginal, large and small categories of farms, their relative proportion was 94.84 per cent, 94.51 per cent, 94.49 per cent and 94.48 per cent respectively of the total production. The marketing cost incurred by wholesaler in different channel were estimated 5.01 per cent, 6.39 per cent and 7.88 per cent of the consumer price respectively and their corresponding net margins were 9.68 per cent, 9.61 per cent and 10.23 per cent of the price paid by the consumer.

Joshi (2012) analyzed the marketed surplus and price spread of okra in western Uttar Pradesh, cluster sampling techniques was used to select the sample villages and respondents. Primary data were collected by personal interview of respondents. Simple statistical tools were employed to accomplish different objectives of the study. The marketed surplus of the medium category of farms have slightly higher surplus than marginal, large and small categories of farms. The relative proportion was 95.31 per cent, 94.85 per cent and 92.76 per cent respectively of the total production. The marketing costs incurred by wholesaler in different channel were estimated 6.92 percent, 6.98 per cent and 8.29 per cent of the consumer price respectively and their corresponding net margins were 9.76 per cent, 10.13 per cent and 12.78 per cent of the price paid by the consumer.

2.2 Constraints in production and marketing of vegetables crops:

Waman and Patil (2000) reported that high cost of onion seed and fertilizers was considered as major constraints for onion growers. Lack of knowledge about recommended fertilizer doses, difficulty in identifying the pests and diseases of onion, water shortage in summer, labour problem for weed control, ineffective and costly weedicide, had the production constraints of onion growers. Labour problem during harvesting, lack of knowledge about improved storage structure, lack of knowledge about grading, open auction sale leading to less market price, low price and fluctuation in market price. irregular purchase of onion by NAFED were the marketing problems faced by growers.

Pandey (2000) presents the constraints limiting onion productivity and increasing post harvest losses in Andhra Pradesh, India, and the strategies to increase productivity and minimize post harvest losses by adopting production and post harvest technologies in onion production such as the use of quality seeds of the recommended variety, selection of suitable land, use of manures and fertilizers, weeding, irrigation, suitable chemical treatments and proper storage.

Jain and Chetan (2002) studied the marketing of major horticulture crop in Dharsiwa block of Raipur. The main objective of study was to identify

the different marketing channels involved in marketing of fruits and vegetables, estimate the marketing cost and marketing margins in fruit and vegetable marketing and estimate the marketing efficiency prevailing in different marketing channel. The result of study showed that the area under horticulture crops increased at small and medium farm but decreased at large farm.

Babu et al. (2003) conducted study on Price Spread and Marketing of Green Chilies in Andhra Pradesh. It was clear from the study that the producer's shares in the consumer's rupee as well as marketing efficiency were high in the channel II, where there were no middlemen. But, the majority of the farmers were forced to dispose of their commodity to the village merchant who provided credit to them. The main problems associated with marketing of green chilies were, absence of cold storage structures, high transportation cost unawareness of market information, lack of support price and unsatisfactory marketing arrangements. Based on the findings of the study, the policy implications which emerged out are (i) there is a need of installation of cold storage structures (ii) Proper market information should be made available to the farmers. For that, the extension agency should be strengthened (iii) Adequate and timely credit should be provided to the farmers. (iv)The government should give priority for the establishment and smooth functioning of regulated markets. (v) Production and marketing techniques have to be integrated to reduce postharvest losses and (vi) The government should provide a good support price for the produce.

Balappa and Hugas (2003) studied the Economic Evaluation of onion Production and its Marketing System in Karnataka. In view of the major cost on labour, there was immediate need to develop the labour saving practices such as use of weedicides, improved tools for planting, harvesting, etc. Appropriate extension method may be adopted to evaluate the farmers on optimum use of inputs. Though the farmers are producing adequate quantity of onion to meet the consumer demand, they were facing problems in marketing of their produce. On the other hand, market intermediaries were accruing higher margin by incurring less cost and services. Therefore, in order to regulate the expenditure on commission, transportation and packing, efforts

should be made to develop the necessary infra-structure for the marketing of onion in the state. Alternatively, it was suggested to develop the farmer's market for vegetables in general and onion in particular.

Durgawati et al. (2005) conducted a study on economic analysis of onion and potato in the Malwa Region of Madhya Pradesh and revealed that the gross income obtained from onion was highest in small size group of farmers i.e., Rs. 55290 followed by Rs. 51870 in medium size group of farmers and Rs. 50472 in large size group of farmers. The average productivity and gross return of onion recorded in the study area was 87.57 q./ha and Rs.52554, respectively. In potato the gross income was Rs. 56,100 (highest) in small size group of farmers followed by Rs.54200 in medium size group of farmers and Rs.53880 in large size group of farmers. The average productivity and gross return potato recorded in the study area was 120 q./ha and Rs. 55319, respectively.

Singh (2006) reported production problems in vegetables such as lack of information, manpower, finance/credit, inputs, insect/pest and diseases, synchronous maturity and theft. Marketing problems in vegetables included poor transportation, standardization and grading, infrastructure, unfair deductions, storage, information and bargaining. Middlemen had problems of uncertainty of arrival of producers and consumers, produce quantities, standardization and grading, storage information on market prices, quality of produce, varied mixture of produce and its highly perishable nature. Consumers' problems were quality and mixture of produce, bargaining, fluctuation in prices, freshness, standardized and graded produce, poor storability of produce and cheating during weighing.

Das (2006) 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 analysis revealed a somewhat imperfect market structure and wide price spread. 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.

Banafar and Salam. (2008) reported that the major constraints in the production of sweet potato were lack of technical knowledge and lack of resources. The constraints in marketing of tuber crops were the lack of storage facilities followed by lack of regulated market and co-operative society. Marketing of tuber crops in the study area is not properly organized and so the farmers share in the price paid by the ultimate consumer is very small.

Patel (2009) reported several constraints barring the sustainable production of the traditional or local practices of onion crop in the area; these are related to resources management faults and stresses of abiotic and biotic nature. The main constraints were found to high cost of inputs followed by low price received for output, unavailability of proper market, lack of own fund and lack of knowledge about recommended dose of inputs and recommended practices of onion cultivation respectively.

Barakade et al. (2011) conducted study in western part of the Satara district considering 180 onion growers was from 20 villages in ten tehsils 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. In view of this, an attempt in this study is made to study profitability and resource productivity in onion production in Satara district. He 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.

Narasimha and Yashodhara (2012) conducted study in Chitradurga district of Karnataka to know the marketing behaviour of onion growers. The findings of the study depicts that the 51.25 per cent of onion growers sell their produce of onion one month after harvest and 48.75 per cent of onion growers sell onion immediately after harvest. Majority (53.75%) of the onion growers marketed to commission agents followed by traders (21.25%), wholesaler (16.25%) and village level traders (8.75%).

Verma et al. (2013) conducted study in 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.

CHAPTER - III

PROFILE OF 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 regard to similarities and variation of various components and this will help in providing the background and importance of the study area.

Mahasamund District is an administrative district in Chhattisgarh state in eastern India. The city of Mahasamund is the district headquarters. Mahasamund District is bounded by Raipur District - Gariyaband District – Baloda Bazar District -Raigarh District of Chhattisgarh state and Bargarh and Nuapada District of Odisa state. District has a perfect balance between agricultural productivity and industrial developments. The main crops of the district are paddy, wheat, gram and pulses on which agricultural economy is depended. Granite rocks can be found in the Bagbahra, Basna and Pithora region. Rocks are predominantly limestone of the Chhattisgarh group contemporary to the Cuddapah group of the Upper Pre-Cambrian age, consisting of limestone layers, shale, sandstone, or quartzite. Neo-granite, dolerite, and quartz in intrusive forms are also found in the district. Hence there is a great scope of intense mining activity.

3.1 Location & Geographical area

Mahasamund district is spread out in an area of 4790 Sq. Kms in the Central-East of Chhattisgarh State. The district lies between 20°47' to 21°31'30'' latitude and 82°00' to 83°15'45'' longitude, surrounded by districts of Raigarh and Raipur of Chhattisgarh State and Nawapara and Bargarh of Orissa.

Table 3.1 Geographical condition of Mahasamund district

District	Latitude	Longitude	altitude
Mahasamund	20^0 47' to 21° 31'30”	82° 00' to 83°15'45”	220 metres

Source: District statistical handbook of Mahasamund 2010-11

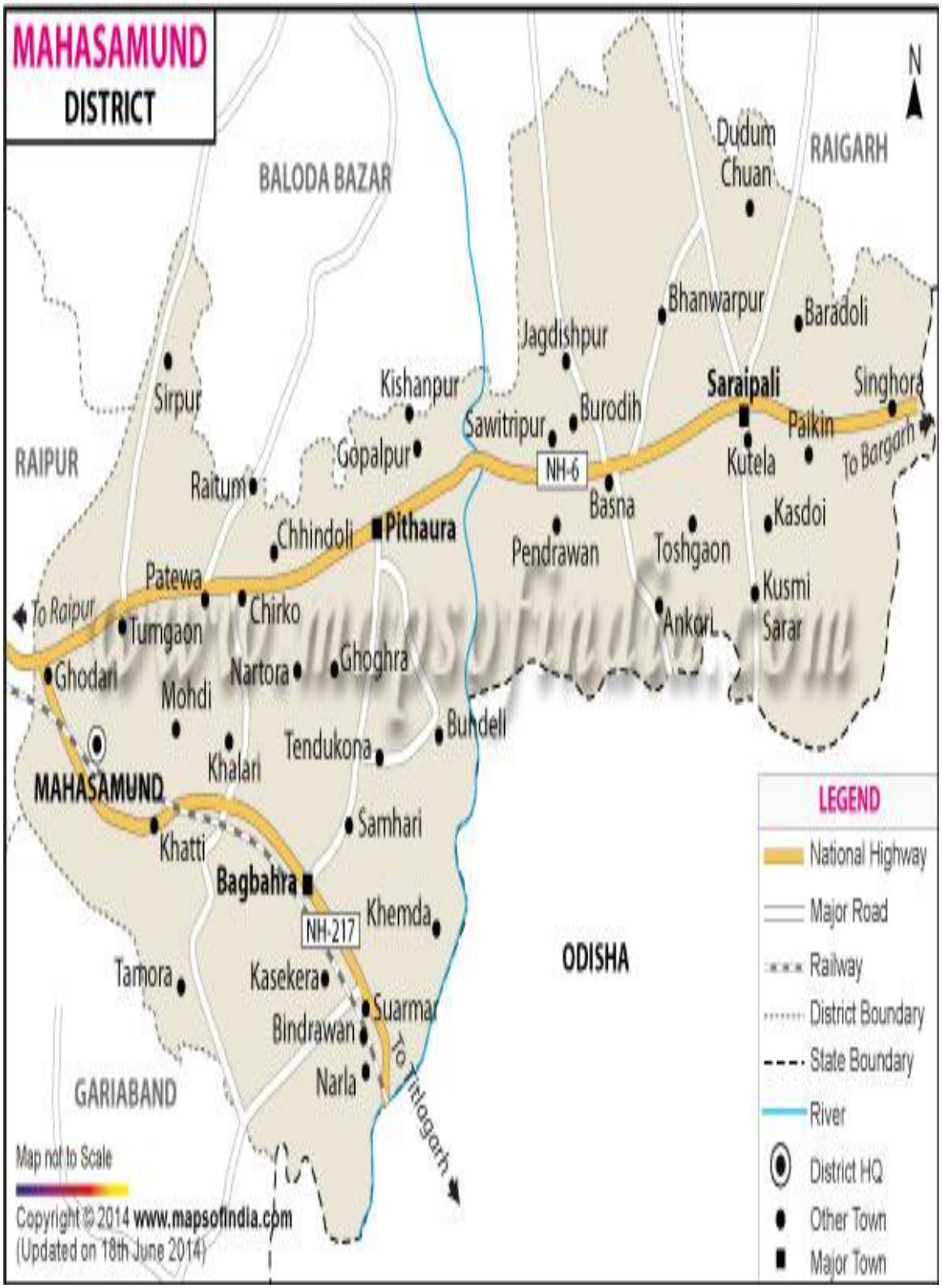

Fig. 3.1. Map of Mahasamund District

3.2 Topography

The topography of this district indicates abundance of granite rocks of the Archean Period to stratified rocks of Cuddupah group of upper Cambrian age, and alluvial soil and sand of recent age are found in abundance in the district. Also found in the region are Neo-granite, Dolerite and Quartz in intrusive forms

3.3 Climate and rainfall

The climate is tropical in Mahasamund. In winter, there is much less rainfall than in summer. Climate is too hot during summer. Mahasamund district summer highest day temperature is in between 31^0 C to 45^0 C. The average annual temperature is 26.8^0 C. The annual rainfall of Mahasamund district is 1027.9 mm. Actual rainfall during 2012 was 1434.7 mm and normal rainfall was 1044 mm. The driest month is November. There is 3 mm of precipitation. With an average of 430 mm, the most precipitation falls in July.

With an average of 35.3^0 C, May is the warmest month. December has the lowest average temperature of the year it is 20.2^0C.

Table 3.2 Annual average rainfall pattern of Mahasamund district (mm)

Rainfall	Normal RF(mm)	Normal Onset	Normal Cessation
SW monsoon(June-Sep):	923	17^{th} June 25^{th} SMW, June	30 September,39^{th} SMW, September
NE Monsoon(Oct-Dec):	66.4	Post monsoon (October-December)	--
Winter (Jan- March.)	18.2	Winter rains	--
Summer (Apr-May)	20.4	--	--
Annual	1027.9	--	--

3.4 Soil type

Major soils found in Mahasamund district are Bhata(Entisols), Matasi(Incepticol), Dorsa(Alfisol), Kanhar(vertisol) and Bharri.

3.5 Demography feature of Mahasamund district

Mahasamund district is one of the district in Chhattisgarh. Chhaattisgarhi is the local language here, people also speaks hindi and oriya. The district is divided into 5 tehsils namely Mahasamund, Bagbahra, Basna, Pithora ans Saraipali, with 496 panchayat and 1145 villages. Largest tehsils is Mahasamund and smallest is Basna. In 2011, total 286 families live on footpath or without any roof cover in Mahasamund district of Chhattisgarh. Total population of all who lived without roof at the time of census 2011 numbers to 1107. This approx 0.11 per cent of total population of Mahasamund district.

3.6 Demographic profile

In 2011, Mahasamund had population of 1032754 of which male and female were 511,967 and 520,787 respectively. In 2001 census, Mahasamund had a population of 860,257 of which males were 426,201 and remaining 434,056 were females. The initial provisional data released by census India 2011, shows that density of Mahasamund district for 2011 is 216 people per sq. km. In 2001, Mahasamund district density was 180 people per sq. km. Mahasamund district administers 4790 sq. km. of areas.

Table 3.3 Demographic detail of Mahasamund district

Description	2011	2001
Actual Population	**1032754**	**860257**
Male	511967	426201
Female	520787	434056
Population Growth	**20.05%**	**8.73%**
Area Sq. Km	4790	4790
Density/km^2	**216**	**180**
Proportion to Chhattisgarh Population	4.04%	4.13%
Sex Ratio (Per 1000)	**1017**	**1018**
Child Sex Ratio (0-6 Age)	971	979
Average Literacy	**71.02**	**67.01**
Male Literacy	82.05	81.08
Female Literacy	60.25	53.30

Total Child Population (0-6 Age)	**134448**	**136705**
Male Population (0-6 Age)	68207	69076
Female Population (0-6 Age)	66241	67629
Literates	**637963**	**484836**
Male Literates	364089	289545
Female Literates	273874	195291
Child Proportion (0-6 Age)	**13.02%**	**15.89%**
Boys Proportion (0-6 Age)	13.32%	16.21%
Girls Proportion (0-6 Age)	12.72%	15.58%

Source: Census of India 2011

3.7 Literacy rate

Average literacy of Mahasamund in 2011 were 71.02 compared to 67.01 of 2001. If things are looked out at gender wise, male and female literacy were 82.05 and 60.25 respectively. For 2001 census, same figures stood at 81.08 and 53.30 in Mahasamund district. Total literate in Mahasamund district were 637963 of which male and female were 364089 and 273874 respectively. In 2001, Mahasamund district had 484836 total literates.

3.8 Sex ratio

With regards to sex ratio in Mahasamund it stood at 1017 per 1000 male compared to 2001 census figure of 1018. The average national sex ratio in India is 940 as per latest reports of census 2011. In 2011 census, child sex ratio is 971 girls per 1000 boys compared to figure if 979 girls per 1000 boys of 2001 census data.

3.9 Child population

In census enumeration, data regarding child under 0 – 6 ages were also collected for all district including Mahasamund. There were total 134448 children under age of 0-6 against 136705 of 2001 census. Of total 134448 male and female were 68207 and 66241 respectively. In 2001, children under 0-6 formed 13.02 per cent of Mahasamund district compared to 15.89 per cent of 2001.there was net change of -2.87 per cent in this compared to previous census of India.

Table 3.4 Urban and rural population of Mahasamund district

Description	Rural	Urban
Population (%)	88.37 %	11.63 %
Total Population	912,602	120,152
Male Population	451,691	60,276
Female Population	460,911	59,876
Sex Ratio	1020	993
Child Sex Ratio (0-6)	974	951
Child Population (0-6)	119,269	15,179
Male Child(0-6)	60,428	7,779
Female Child(0-6)	58,841	7,400
Child Percentage (0-6)	13.07 %	12.91 %
Male Child Percentage	13.38 %	12.63 %
Female Child Percentage	12.77 %	12.36 %
Literates	552,067	85,896
Male Literates	317,171	46,918
Female Literates	234,896	38,978
Average Literacy	69.59 %	81.83 %
Male Literacy	81.06 %	89.37 %
Female Literacy	58.42 %	74.28 %

Source: Census of India 2011

3.10 Population

Out of the total population for 2011 census, 11.63 per cent lives in urban regions of district. In total 120,152 people lives in urban areas of which males are 60,276 and females are 59,876. Sex ratio in urban region of the district is 993 as per 2011 census data. Similarly child sex ratio in the district was 951 in 2011 census. Child population (0-6) in urban region was 15,179 of which males and females were 7,779 and 7,400. This child population figure of Mahasamund district is 12.91 per cent of total urban population. Average literacy rate in urban areas of Mahasamund district as per census 2011 is 83.83 per cent of which males and females are 89.37 per cent and 74.28 per cent literates respectively. In actual number 85,896 people are literate in urban region of which males and females are 46,918 and 38,978 respectively.

As per 2011 census, 88.37 per cent population of district lives in rural areas of villages. The total Mahasamund district population living in rural areas is 912,602 of which males and females are 451,691 and 460,911 respectively. In rural areas of Mahasamund district sex ratio is 1020 females per 1000 males. If child sex ratio data of district is considered, figure is 974 girls per 1000 boys. Child population in the age 0-6 is 119,269 in rural areas of which males and females were 60,428 and 58,841. This child population comprises 13.38 per cent of total rural population of Mahasamund district. Average literacy rate in rural areas of Mahasamund district as per census 2011 is 65.59 per cent of which males and females are 81.06 per cent and 58.42 per cent literates respectively. In total 522,067 people are literate in rural region of which males and females are 317,171 and 234,896 respectively.

3.11 Land use pattern

The land use pattern of Mahasamund district is given in table 3.5

Table 3.5 Land use pattern of the district

(in ha)

Particular	Area (ha)	Percentage to geographical area
Geographical area	342383	100
Cultivable area	285481	83.38
Forest area	30383	8.87
Land under non- agricultural use	37055	10.82
Permanent pastures	29734	8.68
Cultivable wasteland	NA	-
Barren and uncultivable land	6497	1.89
Current fallows	3348	0.97
Other fallows	5630	1.64
Net sown area	267.64	0.07
Area sown more than once	34.41	0.01
Gross cropped area	302.06	0.08
Cropping intensity %	112	-

Source: Agriculture statistics, 2010-11

The above table shows that in the district the maximum total land (83.46%) was under notified area under cultivable area followed by land under non agricultural use (10.82%), area under forest(8.87%),permanent pasture (8.68%), and barren and uncultivable land (1.89) respectively. The pattern of land use in the district is conditioned by to sets of factors: Ist the physical factors like climate, topography and soil type which set the broad limits upon the capabilities of the land and IInd the human factors like length of occupation of the area, density of population, socio economic factors and the technological levels of the people, which determine the extent to which the physical capacities of land are utilize.

The net sown area was 267.64 thousand hectare in agricultural land but 34.41 thousand hectare area sown more than one time. Gross cropped area was 302.05 thousand hectare. In Mahasamund district cropping intensity was 112 per cent.

3.12 Irrigation

The irrigated area and irrigation source in district is given in table 3.6 and 3.7

Table 3.6 Total irrigated area in Mahasamund district

(in thousand ha)

Irrigation	Area (000'ha)
Net irrigated area	100.08
Gross irrigates area	108.16
Rainfed area	193.89

Table 3.7 Available source of irrigation in Mahasamund district

Sources of Irrigation	Number	Area ('000 ha)	Percentage of total irrigated area
Canals	77	41.64	13.54
Tanks	3521	6.88	6.36
Open wells	5093	0.78	0.72
Bore wells	NA	NA	-
Pump sets	7781	4.95	4.57
Total Irrigated Area		108.16	

Source: Agriculture statistics, 2010-11

The table 3.6 above shows that in the district maximum area is under rainfed (193.89 ha) and net irrigated area is 100.08 ha. The area under rainfed is almost the double of net irrigated area. Table 3.7 above shows that 13.54 per cent of total irrigated area is irrigated through canal followed by tanks (6.36 per cent), pumpsets(4.57 per cent) and open wells(0.72 per cent).

3.13 Cropping pattern

The cropping pattern in general has great variations within the districts of the Division. But the place where irrigation is available to crops rotations in to some extent is common practice in the Division. In the rainfed areas single or double cropping has followed depend upon the degree of moisture available for favourable germination and plants growth.

Table 3.8 Cropping pattern of the district

S. No.	Major field crops cultivated	Area (‘000 ha)	Production (‘000 mt)	Productivity (Kg/ha)
Kharif				
1	Rice	270.96	521.88	1930
2	Black gram	9.69	2.67	120
3	Pigeon pea	0.16	0.17	20
4	soybean	-	0.30	1800
Rabi				
5	Lathyrus	5.08	2.07	410
6	Wheat	-	2.07	-
7	Gram	0.21	0.28	1330

The table above shows that in kharif season, rice occupies the highest area (270.96 ‘000 ha) as rice is the major crop followed by black gram (9.69 ‘000 ha) and pigeon pea (0.16 ‘000 ha). In rabi season, highest area is under lathyrus (5.08 ‘000 ha) followed by gram (0.21 ‘000 ha).

Table 3.9 Major horticultural crops of the district

(in ha)

S. No.	Horticultural crops: Fruits	Total area
1	Mango	68
2	Banana	9
3	Papaya	-
4	Guava	10
5	Citrus	-
Horticultural crops: Vegetables		
6	Potato	189
7	Onion	243
8	Tomato	460
9	Brinjal	470
10	Okra	471
11	Cauliflower	338
12	Cabbage	341

Source: Agriculture statistics, 2010-11

Table 3.9 shows that in fruit crops, highest area is under mango i.e.,68 ha followed by banana (9 ha) and guava (10 ha).

Under vegetables, highest area is under okra (471 ha) followed by brinjal (470 ha), tomato (460 ha), cabbage (341 ha), cauliflower (338 ha), onion (243 ha) and potato (189 ha). Here it is shown that the area under fruits and vegetables are very less as compared to rice.

CHAPTER - IV

MATERIAL AND METHODS

This chapter involves various steps applied to the study of the problem. The material and methods is described into following sub heads:

1. Selection of the study area
2. Selection of respondents
3. Period of study
4. Method of analysis

1. Selection of the study area

Out of 27 districts of Chhattisgarh, Mahasamund district was selected purposely for the study. Mahasamund district comprises of five blocks namely Mahasamund, Bagbahra, Pithora, Basna and Saraipali. Out of 5 blocks, Bagbahra block was selected purposively to keep the proposed study within manageable limits. Three villages namely Khusrupali, Amurda and Kamroud were selected on the basis of area under Onion.

2. Selection of respondents

From the selected villages,a list of onion growers was obtained from Rural Horticulture Extension Officer and 25 growers from each village was selected randomly so that the total number of respondents were 75. Primary data was collected from onion growers through personal interview with the help of well prepared pre-tested interview schedule. In addition 5 Wholesaler, 3 Retailer and other market functionaries involved in the marketing of onion were also included in the study. The important channel of marketing of onion in the study areas was:

I. Producer – Consumer
II. Producer – Commission agent- Wholesaler – Consumer
III. Producer – Wholesaler – Retailer – Consumer

3. Reference period

The reference period of study is Agricultural year 2015-2016

4. Method of analysis

Following analytical tools will be used to analyze the collected data:-

1.Cost of profitability

a) Cost of cultivation: To work out the cost of cultivation standard method of cost concept were adopted, which includes cost $A_{1,}$ cost A_2, cost B_1,cost B_2, cost $C_{1,}$ cost C_2 and cost C_3.

Cost A_1: It includes: -

i. Value of hired human labour,

ii. Value of hired and owned bullock labour,

iii. Value of hired and owned machinery labour,

iv. Value of owned and purchased seed,

v. Value of fertilizers, manures and chemical,

vi. Value of insecticide and pesticides,

vii. Expenditure on irrigation,

viii. Land revenue and taxes,

ix. Interest paid on crop loan if taken,

x. Depreciation on farm assets excluding land,

xi. Interest on working capital,

xii. Miscellaneous expenses.

Cost A_2: It includes-

Cost A_1 + rent paid for leased in land

Cost B_1: It includes-

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

Cost B_2: It includes-

Cost B_1 + rental value of owned land

Cost C_1: It includes-

Cost B_1+ imputed value of family labour

Cost C_2: It includes-

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.

b) Cost of production: cost of production is also worked out to assess the minimum prices farmers to get to cover his total cost.

$$\text{Cost of production} = \frac{\text{Value of main product/ha – value of by product/ha}}{\text{Yield (q/ha)}}$$

This will work out at different cost concepts.

Evaluation of farm inputs

Methods followed in evaluating different farm input for the present study are described in the following paragraphs.

i. Hired human labour

The farmers normally engage permanent farm labour on the basis of yearly wages and casual labour on daily wages basis, for performing farm operations. The casual labour was evaluated on the basis of actual wages prevailed in the locality. The wages of male and female labour included payment given both in cash or kind. The value of kind components given to the labour was calculated at their prevailing market prices.

ii. Family labour

The family labour cost was evaluated at the rate of prevailing wages of the locality for casual hired labour at various stages of operations.

iii. Bullock and machinery labour

Estimation of bullock and machine labour charges on actual wage prevailed in the locality were considered.

iv. Depreciation on farm assets

For estimation of depreciation, interest on working capital, interest on fixed capital and rental value of owned land, following standard norms were used.

The straight-line method was used for calculating rate of depreciation. The depreciation rates for different farm assets were taken as 10 per cent for crop period.

v. Interest on working capital

It is worked out @ 10 per cent for half of the duration of the crop.

vi. Interest on fixed capital

Interest is charged @ 10 per cent per annum on the value of implements, machineries, farm building, and irrigation structure and drought animals. It excludes interest on land input, because rental value of owned land is calculated separately.

vii. Rental value of owned land

It is calculated on the basis of ($1/6^{th}$) of the gross income or prevalent rate in the area for the same.

c) Value of farm produce

This includes the value of main product and the by product of the crop if any. The harvest price of the crop was considered for calculating the value of main produce. The value of by-product was calculated at the prevailing price in the locality.

d) Profitability concepts

For the estimation of profitability from onion, the following efficiency measures were used in this study:

a. Gross income,
b. Net farm income,
c. Input- output ratio,

These are defined as under: -

(i) Gross income: It is defined as: total value of main product +by product.

(ii) Net farm income: It is defined as: gross income – cost 'C_3'

(iii) Benefit - cost ratio

$$\text{Benefit – cost ratio} = \frac{\text{Gross income}}{\text{Cost of cultivation}}$$

Worked out at different cost concepts.

2) Marketing cost

Marketing cost includes all the marketing charges paid by producers, wholesalers and retailers of onion from local assembling to retailing center in the marketing processes.

$$MC = Cf + Cm1 + Cm2 + \ldots\ldots + Cmi$$

Where, MC = Total Marketing Cost

Cf = Cost paid by the producers from the time the produce leaves the farm till he sell it,and

Cmi = Cost incurred by the ith middleman in the process of buying and selling the product.

3) Marketing margin of a middleman

It includes profit of margins kept by different market functionaries.

a) Absolute margin of ith middleman(Ami)

$Ami = Pri - (Ppi + Cmi)$

b) Percentage margin of ith middleman(Pmi)

$$P_{mi} = \frac{P_{ri} - (P_{pi} + C_{mi})}{P_{ri}} \times 100$$

c) Percentage mark-up margin of ith middleman(Mi)

$$Mi = \frac{Pri - (Ppi + Cmi)}{Ppi} \times 100$$

Where, Pri = Total value of receipts per unit(sale price)

Ppi = Total value of goods per unit(purchase price)

Cmi = Cost incurred on marketing per unit.

4) Price spread

This is the difference between price paid by the consumer and the price received by the producer for an equivalent quantity of farm produce.

5) Producer share in consumer rupee $= \frac{\text{Price received by the producer}}{\text{Price paid by the consumer}} \times 100$

CHAPTER - V

RESULTS AND DISCUSSION

In this chapter assembled data after processing and analysis are presented in an appropriate, and logically consistent tabular form. This chapter is necessary because the collected data are discussed in a logical order that is consistent with the major objectives of the research problem. This chapter also deals with interpretation of the true meaning of the facts presented, in terms of the purpose of the study in the form of data. The purpose of interpretation and generalization is to search the broader meaning of these answers by linking them to the other available knowledge. For the convenience of the study the chapter consists of five sections as below:

Micro level analysis of primary data

Finally, the primary data collected for study has been analyzed and the results of the study are presented under following headings:

1. Socio economic characteristics of onion growers.
2. Cost and return of onion growers.
3. Marketing cost, marketing margin and price spread under selected marketing channels.
4. Production and marketing problems of onion growers.

5.1 Socio economic characteristics of onion growers

Socio economic characteristics of farmers is one of the most important independent variable which directly or indirectly influence the level of adoption of improved onion production technology which ultimately changed the production level and profitability per unit of production. In present study the socio economic characteristics of onion growers including the age, education, size of family and occupation of family are given in table 5.1 to 5.4. The detail information of socio economic characteristics per family is presented in following statements.

5.1.1 Age

The data on age of onion growers are given in table 5.1

Table 5.1 Age group of sample respondent

Age	Young (18–40)	Middle (41-59)	Old (60 & above)	Total
No.	12 (16)	57 (76)	6 (8)	75 (100)

Figures in parenthesis show the percentage to total.

As evident from the data presented in table 5.1, there were 12 respondent out of 75 respondent in young aged group ranging from 18 to 40 years of age of onion growers .In middle aged group, ranging from 41 to 59 years age of onion growers, there were 57 respondent and in old aged group, ranging from 60 and above they were 6 respondents. It was due to fact that the middle aged farmers are more concerned and active towards farming activities. This also revealed that still young generation is not willing to take farming as family profession as business venture.

5.1.2 Literacy level

The data on education level of onion growers is given in table 5.2

Table 5.2 Classification of sample respondents as per education level

Education level	Up to primary (5^{th})	Up to middle (8^{th})	Up to HSSC (12^{TH})	Graduate & above	Total
No.	5 (6.66)	8 (10.6)	38 (50.66)	24 (32)	75 (100)

Figures in parenthesis show the percentage to total.

The study shows that the onion growers were literate (100%). The literacy position reflected that among the total onion growers the majority of the onion growers had an education of HSSC level (50.66%) followed by graduate (32%), middle school (10.6%) and primary level (6.66%) respectively. Thus It is apparent that majority (82.66%) of the onion growers were well literate and got higher education and thus are able to take self decision in farming business.

5.1.3 Average family size

The average size of family of onion growers are given in table 5.3

Table 5.3 Average size of family of onion growers

Family Size			Total	Average Family Size
Adult		Children		
Male	Female			
167 (53)	133 (42)	15 (5)	315 (100)	4

Figures in parenthesis show the percentage to total.

The data reveals that total number of male in 75 farm families were 167 which is 53% to total followed by total number of female were 133 which is 42% to total followed by the total number of children below 16 years were 15 which is 5% to total number of members. It is shown that the average family size is 4 person per farm family and revealing that majority of sample farmers are having individual family system.

5.1.4 Occupation

The data on occupation of onion growers is given in table 5.4.

Table 5.4 Occupation of sample respondents

Occupation	No.
Agriculture	60 (80)
Agriculture + other	60 + 15 (80) (20)
Total	75 (100)

Figures in parenthesis indicate percentage to total

The data revealed that the occupation of 80% of respondent was primary i.e., agriculture and 20% of the respondent have other as main occupation including agriculture also. This is due to the fact that most of them have very lower size of holding and they used to adopt other occupation also as a source of family income.

5.1.5 Land use pattern and level of irrigation

Land is the most important resource of onion growers and it is the primary fixed input of production constituting the major portion of the fixed cost. The land use pattern and level of irrigation on different size of holdings is given in table 5.5.

Table 5.5 Average land use pattern and level of irrigation on sample farm

(ha./farm**)**

S. No.	Particulars	Area	Percentage
1	Total land holding	2.35	100.00
2	Uncultivated area	0.35	14.89
3	Cultivated area	2.00	85.11
4	Irrigated area	1.98	84.25
5	Kharif crop area	1.81	77.02
6	Rabi crop area	1.41	60.00
7	Gross cropped area	3.22	137.02
8	Cropping intensity	161 %	_
9	Area under onion	0.40	17.02

It is evident from the data that the average size of holding represents 2.35 hectare per farm in the area which is ranged from minimum area 0.21 hectare to maximum 10.33 hectare. The data also clearly shows that the net cultivated area as percentage to gross cropped area was found to be 85.11 percent. The average irrigated area as percentage to size of holding was found to be 84.25 percent. Although the irrigation facilities are in 84.25% area, only 137.02 per cent area was covered under crops in a year when both the kharif and rabi crops were taken into consideration. On the other hand, kharif crops were found to predominate over rabi crop and found to be 77.02 per cent to size of holding. Cropping intensity was found to be 161% which reflects towards higher use of irrigation facility created on sample farms.

The area under onion is the important factor considered in the study. On an average 17.02 per cent of total size of holding was found under onion cultivation which represented on an average 0.40 hectare per farm.

5.1.6 Irrigation source

The data on irrigation source of onion growers is given in table 5.6.

Table 5.6 Irrigation source on sample farm

(ha./Farm)

S. No.	Source	Area	Percentage
1	Tubewell	1.70	85.85
2	Canal	0.28	15.15
	Total	1.98	100.00

The data revealed that on an average 1.70 hectare area was irrigated through tubewell followed by 0.28 hectare, irrigated through canal. Total average irrigated land was 1.98 and unirrigated area was 0.37 ha. This revealed that majority on onion growers are having their own irrigation facility which minimize their risk in farming.

5.1.7 Cropping pattern

Cropping pattern of onion growers are given in table 5.7.

Table 5.7 Cropping pattern of onion growers

(ha/farm)

Kharif			
S. No.	Crop	Area	Percentage to total
1	Paddy	1.7	93.92
2	Moong	0.08	4.41
3	Urd	0.03	1.65
	Total	1.81	100.00
Rabi			
S.No.	Crop	Area	
1	Paddy	0.5	41.7
2	Onion	0.40	28.36
3	Gram	0.19	13.47
4	Tomato	0.12	8.43
5	Okra	0.02	1.91
6	Coriander	0.01	0.56
7	Chilli	0.04	2.83
8	Moong	0.005	0.35
9	Wheat	0.04	2.62
10	Total	1.41	100.00

Figures in parenthesis show the percentage to total.

The data revealed that the highest area in kharif season was occupied by paddy (93.92%) followed by moong(4.41%) and urd(0.03%). Thus it is apparent that majority of farmers cultivate paddy during kharif season.

The data revealed that majority of area in rabi was also occupied by paddy (41.7%) followed by onion (28.36%),gram(13.47%),tomato(8.43%),chilli (2.83%), wheat (2.62%), okra(1.91%), coriander (0.56%) and moong (0.35%). Thus it is clear that major portion of the area was used under paddy and less portion of area was cultivated under vegetables. But among vegetables onion was grown in highest percentage area.

5.1.8 Investment on fixed farm assets

The values of the fixed farm assets in the farming generally determine the absolute surpluses generate on farm, which is invested during the past years. The data on present average value of investment on fixed assets per farm are presented in table 5.8.

Table 5.8 Average value of total fixed farm assets on sample farm

(Rs./Farm)

S. No.	Assets	Value	Percentage to total
1	Land	3746000	-
2	Farm house	148000	29.09
3	Bullock	30000	5.89
4	Cow	11300	2.22
5	Buffalo	8000	1.57
6	Calf	1000	0.19
7	Heifer	1800	0.35
8	Poultry	5000	0.98
9	Fishery	700	0.13
10	Goat	400	.07
11	Tractor	142000	27.91
12	Tubewell	146000	28.70
13	pumpset	5900	1.16
14	Bullock cart	7000	1.37
15	Plough	1200	0.23
16	Sprayer/duster	300	.05
	Total	508600	100.00

Figures in parenthesis show the percentage to total.

The data presented in table 5.8 revealed that the value of the land is by and large the costliest asset among all the farm assets. On an average, total value of farm assets excluding the value of land on the sample onion growing farms was found to be Rs.508600 per farm.

The above data show that the maximum investment after land was on farm house followed by tubewell, tractor, bullock, cow, buffalo, bullock cart and so on, on the sample onion growing farms of the area. This shows that onion growers are well equipped with major required farm assets.

5.2 Inputs use pattern in onion cultivation

The pattern of utilization of resources by onion growers indicates the degree of resources management, their choice and decision-making which reflect the efficiency of production. Besides the above it also indicates the level of technology adopted by the onion growers in onion cultivation. Labour (human, bullock, and machine) utilization, seed, manures, fertilizers, plant protection measures and irrigation are the basic type of resources used being considered in the present study. The detailed information regarding input utilization in onion cultivation per hectare and per farm are presented in table 5.9.

Table 5.9 Physical unit of input utilization and level of yield of onion

(per ha.)

S. No.	Input utilization	unit
1	Hired labour (days)	
	Male	72
	Female	33
2	Family labour (days)	
	Male	39
	Female	6
3	Total	150
4	Bullock pair(days)	3
5	Machine(hours)	4
6	Seed(kg)	5
7	FYM(tonn)	13.3
8	Fertilizer(kg)	415
9	Irrigation charge(Rs.)	6956
10	Yield(qntl)	131

The data presented in case of input utilization was as per hectare for making compression on economic utilization of resources. In case of human labour utilization pattern, it was observed that the farmers utilized maximum on an average 72 male and 33 female hired labour days per hectare on total onion cultivation. Utilization of family labour was 39 male and 6 female family labour days.

The bullock labour and machine labour utilization pattern also shows that farmers used higher of bullock labour days (3 days per hectare), while the machine labour hours was higher only 4 hours per hectare. The investment on seed shows that the farmer used highest of 5 kg of seeds per hectare. With respect to fertilizer and manure utilization pattern, data shows that on average farmer utilized 13.3 tonne of FYM and 415 kg of fertilizer per hectare respectively. With respect to irrigation utilization pattern, data shows that on an average farmer utilized Rs.6956 per hectare. The average yield of onion in the study area was found to be 131 quintal per hectare.

5.2.1 Cost of cultivation

A study on economics of onion cultivation is pertinent to find out their profitability in order to choose best alternative resources, cultivation practices and scale of production etc. Secondly, it gives an estimate of the amount which will be required for cultivating as per size of crop area with different level of technological adoption. It is a well known fact that profitability of crop production depends upon the cost of production, yield per unit of area and their relative market prices. Hence, these all are analyzed in present study. The cost of cultivation of onion is given in table 5.10.

Table 5.10 Cost of cultivation of onion on sample farm

(Rs/ha)

S. No.	Input utilization	Rs./ha	Percentage to cost C_3
1	Hired Human labour	11900	19.81
2	Bullock labour	800	1.33
3	Machine power	385	0.64
4	Seed	2422	4.03
5	Fertilizer + Manure	14201	23.63
6	Plant protection	553	0.92
7	Irrigation	6956	11.57
8	Interest on working capital	620.28	1.03
9	Depreciation	1438	2.39
10	Land revenue	10	
	Cost A1	39285	65.38
11	Interest on fixed capital	144	0.23
	Cost B1	39429	6.15
12	Rental value of land	10000	16.64
	Cost B2	49429	82.26
13	Imputed value of family labour	5193.5	8.64
	Cost C1	44622.5	74.26
	Cost C2	54622.5	90.90
	Cost C3	60084.75	100.00

It is revealed that the average operational cost (i.e. cost A_1) of onion was accounted for Rs.39285 per hectare and it was due to higher use of yield attributing inputs and labour. This trend was also found in case of cost B_1 and B_2 also.Cost B_1 was accounted for Rs. 39429 and cost B_2 was accounted for Rs.49429.

The cost estimates i.e. cost C_1, C_2 and C_3 based on the imputed values. It is attributable to the fact that onion growers make maximum use of resources they purchase, but it is also not justifiable to take into account only paid out cost. To determine the cost structure cost C_1, C_2 and C_3 were also analyzed in the present study.

It is revealed that the average Cost C_3 of onion cultivation was Rs.60084.75 per hectare .This shows that indirect cost accounts for nearly Rs.20000 per ha and farmers did not make any account for there costs and therefore their cost is under estimated and thus profit is over estimated.

5.2.2 Cost of production

The cost of production of onion is also worked out as per different cost concepts and data on the same is given in the table 5.11

Table 5.11 Cost of production of onion on sample farms as per different cost concept (Rs./Q)

Cost concept	Cost of production
A_1	299.8
B_1	300.9
B_2	377.3
C_1	340.6
C_2	416.9
C_3	458.6

It is revealed that the average cost of production per quintal of onion was Rs.299.8, Rs.300.9, Rs.377.3, Rs.340.6, Rs.416.9 and Rs.458.6 per quintal respectively at cost A_1, B_1, B_2, C_1, C_2 and C_3 respectively. Thus it can be revealed that if farmers get minimum of Rs.420 per quintal price he will be able to cover his per quintal costs only.

5.2.3 Profitability

Gross income, net income and B.C.ratio are the basic tools employed for estimating the economics or profitability of production of the crop. For this purpose, the profitability of onion cultivation in different size of holding per hectare is presented in table 5.11.

Table 5.12 Profitability from onion on sample farms

(Rs./ha)

S. No.	Particular	Rs.
1	Gross income	233230
2.	Net income	173145
3.	B:C ratio at -	
	Cost A_1	1:5.93
	Cost B_1	1:5.91
	Cost B_2	1:4.71
	Cost C_1	1:5.22
	Cost C_2	1:4.26
	Cost C_3	1:3.88

With respect to gross income, it is revealed that the average gross income per hectare of onion cultivation was Rs.233230 per hectare.Net income is the main important factor of profitability of any enterprise. With respect to net income, it is revealed that the average net income per hectare of onion was Rs.173145 per hectare. This shows that net return was found to be beneficial due to efficiency of farmers. Since, in general, farmers have normal economic condition and scarcity of resources and hence, tried for higher economic return from per rupee investment. It is revealed that the B.C. ratio of onion was 1:5.93, 1:5.91, 1:4.71, 1:5.22, 1:4.26 and 1**:** 3.88 respectively at cost A_1, B_1, B_2, C_1, C_2 and C_3 respectively.

5.3 Marketing cost, marketing margin and price spread

Two main marketing pattern of onion were observed in the study area and they are following

(1) Sale in the local market

Here the produce is assembled in the local market by farmers themselves and sold directly to the consumer no middlemen was involved in this process but only transportation cost and tax of local market is involved. Thus the channel found here was:

Channel I: Producer→ Consumers

(2) Sale through commission agent or wholesale

Here the produce is brought to the commission agent by the farmers to sell their produce for getting fair or reasonable price of their produce and in turn,farmers used to give per quintal commission charge to the commission agent after the produce is sold.

Another method adopted by farmers was selling directly to the wholesaler without any commission agent. They go to nearby wholesale shop and sold their produce which is then sold to retailer and then to consumer thus the chhanels involved are:

Channel II: Producer→ Commission agent→ wholesalers → Retailer → Consumers

Channel III: Producer → Wholesalers → Retailers → Consumers

The data on total quantity of onion consumed and sold by respondents on per farm basis is given in table 5.13.

Table 5.13 Total consumption and sell of onion per farm (quintal/farm)

S. No.	Particular	Quantity (in qntl.)
1	Quantity consumed	1.00
2	Quantity sold through -	
	Channel I	16.82 (32.66 %)
	Channel II	18.33 (35.6 %)
	Channel III	16.35 (31.74 %)
	Total quantity sold	51.5 (100 %)

From the above table, it is concluded that the total quantity of onion consumed per farm is 1 quintal and the quantity sold is higher in channel II(18.33 qntl.) followed by channel I(16.82 qntl.) and channel III(16.35 qntl.). Thus, total quantity of onion sold per farm is 51.5 qntl.

The data on marketable and marketed surplus per farm is given in table 5.14

Table 5.14 Marketable and Marketed surplus

S. No.	Particulars	Quintal/farm
1	Total production	52.5
1	Marketable surplus	51.5
2	Marketed surplus	51.5

In the above table, it is shown that the total production of onion per farm is 52.5 quintal, marketable surplus per farm is 51.5 quintal and marketed surplus is 51.5 quintal per farm. Thus the commodity is having high marketable surplus and hence this is one of the source of family income on onion growing farms.

5.3.1 Marketing cost and margins under different marketing channels

Marketing cost includes all the market from local assembling (farm gate) to the final consumer. The chain of marketing costs and marketing margins of onion from producer to ultimate consumer is divided in following sub heads:

1. Charges paid by the producers
2. Charges paid by different intermediaries
3. Total Margins of different intermediaries

The table 5.15 presents the detail of marketing cost and margins at different marketing channels of onion used by sample onion growers

Table 5.15 Marketing cost and margins at different marketing channels of onion

(Rs./q)

S. No.	Particulars	ChannelI	Channel II	Channel III
I	Producer	_	_	_
	Sale price	1830	1857	1766
	Marketing cost	41	60	76
	Commission agent	-	22	-
	Net price received	1789	1775	1690
II	Wholesaler		_	_
	Purchase price	-	1857	1766
	Marketing cost	-	82	60
	Margin	-	52	154
	Sale price	-	1990	1980
III	Retailer	-	-	-
	Purchase price	-	1990	1980
	Marketing cost	-	35	35
	Margin	-	175	185
	Consumer purchase price	1830	2200	2200

The data revealed that among all these channels on an average the producer received maximum price (net amount) in channel I i.e. Rs.1789 /q. followed by sale in the market through commission agent in channel II i.e., Rs.1775/q and sale of onion through wholesaler in channel III i.e.,Rs.1690/q. In channel I there have been found no involvement of local functionaries and agent of marketing hence there was fair dealing. Hence, the marketing cost was lowest (Rs.41) and no involvement of margin but it is only used when quantity of production and sale is less. The highest marketing cost and margin was observed as Rs.510 per quintal in case of channel III.

Hence, it is concluded that channel I (sale in the local market) was found to be more remunerative, where the producers received net amount Rs.1789 per quintal of produce as net saving and the marketing cost and margin was only Rs.41 per quintal.

5.3.2 Price spread of onion in different marketing channels

Now a days, efficient marketing is most important so that farmers can get remunerative return from their produce of onion. An efficient marketing system enables producers to get the best possible revenue by reducing gap between the price earned by actual producer and price paid by the ultimate consumer. Direct linkage always gives higher returns to the producer and the consumers are also benefited as they get the goods at reasonable price far less than the price paid through other channels either through different groups of intermediaries. Price spread is a tool which determines actual marketing cost and marketing margin incurred per quintal in onion marketing. The details of price spread in marketing of onion through different marketing channels is presented in table 5.16.

Table 5.16 Price spread in marketing of onion through different channel

(Rs/q)

S. No.	Particular	Channel I	Channel II	Channel III
Marketing Cost				
1	Producer	41 (2.2)	60 (2.72)	76 (3.45)
2	Wholesaler	-	81 (3.68)	60 (2.72)
3	Retailer	-	35 (1.59)	35 (1.59)
	Total marketing cost(MC)	41 (2.2)	176 (8)	171 (7.76)
Marketing Margin				
1	Commission agent	-	22 (1)	-
2	Wholesaler	-	52 (2.36)	154 (7)
3	Retailer	-	175 (7.95)	185 (8.40)
	Total marketing margin(MM)	-	249 (11.31)	339 (15.40)
	MC + MM	41 (2.2)	425 (19.36)	510 (22.72)
	Producer rupee	1789	1775	1690
	Consumer rupee(100 %)	1830	2200	2200
	Price spread(%)	2.2%	19.36%	22.72%
	Marketing efficiency	43.6	4.17	3.31

The analysis of total producer's share in consumer's rupees through sale of onion by different channels involved in marketing process shows variations due to number of intermediaries and charges. The data revealed that the producer's share in consumer's rupee was found to be highest in marketing through channel I (selling in the local market) i.e. 97.75 per cent. The highest producer's share was due to the onion growers sold their produce in the market through fair dealing and low marketing cost was incurred in this channel.

The next important marketing channel was found to be sale through channel II (through commission agent) in which producer's share in consumer's rupee was found to be 80.68 per cent. In channel III the marketing cost was highest, which reduce the producers share in consumer's rupees i.e., 76.8 per cent. It is concluded that through channel I (sell in the market),

producer get maximum share in consumer's rupees followed by channel II and channel III respectively, but channel I is only applicable when quantity for sale is less. The marketing efficiency was 43.6, 4.17 and 3.31 respectively in channel I, II and III.

5.4.1 Production constraints in onion

The constraint was reported based on the opinion survey of the sample farmers thus; the generalizations of results are the feedback of the farmers engaged in onion farming in the region. It is evident from the data that farmers were used different quantity of inputs in cultivation of per unit area. Thus, utilization of different level of inputs might be caused in yield difference in respective farm.

Several constraints barring the sustainable production of the local practices and with the improved production technologies at various level of onion crop in the area; these are related to resources management level and abiotic and biotic stresses.

The farmers' opinion was obtained regarding the factors adversely affecting the adoption of various improved technology and practices; same are presented in table 5.17

Table 5.17 Production constraints of onion on sample farm

S. No	Constraints	Total	Rank
1	Unavailability of quality seed and plants	4 (5.33)	IX
2	Lack of knowledge about seed treatment	27 (36)	VI
3	Lack of knowledge about disease and insect/pest of onion	33 (44)	IV
4	Lack of knowledge about insecticide/pesticide and its doses	39 (52)	III
5	Desired fertilizer not available	30 (40)	V
6	Lack of knowledge of nutrient content of different fertilizer	57 (76)	I
7	Inadequate water supply	19 (25.33)	VII
8	Lower visit of extension worker	46 (61.33)	II
9	Problem about human labour	16 (21.33)	VIII

Data shows the distribution of onion growers according to order of seriousness of the constraints perceived by them. The most important constraints was " lack of knowledge of nutrient content of different fertilizer " confronting by 76 per cent onion growers was the main constraints followed by "lack of regular visit of extension worker" found 61.33 per cent, " lack of knowledge about insecticide/pesticide and its doses "found to be 52 per cent , " lack of knowledge about disease and insect/pest of onion ",confronting 44 per cent, " desired fertilizer not available " found 40 per cent, " lack of knowledge about seed treatment " 36 per cent, ”inadequate water supply“ found 25.33 per cent,” shortage of human labour at peak period” found 21.33 per cent and “unavailability of quality seed and plants” confronting 5.33 per cent. This revealed that low level of knowledge about improved onion production practices are the main constraints on sample respondent’s farm.

5.4.2 Marketing constraints of onion marketing

The marketing constraints in onion is given in table 5.18

Table 5.18 Marketing constraints of onion marketing on sample farms

S. No.	constraints	No.	Rank
1	Lack of transportation facility	40 (53.33)	III
2	Lack of storage facility	61 (81.33)	II
3	Not getting the satisfactory price	71 (94.66)	I
4	Lack of marketing facilities	20 (26.66)	IV
5	Financial problem	4 (5.33)	V

The data shows that the most important marketing constraint faced by farmers was” not getting the satisfactory price” confronting by 94.66 per cent of onion growers followed by” lack of storage facility” as reported by 81.33 per cent, “lack of transportation facility” reported by 53.33 per cent, “lack of marketing facilities” observed to be 26.66 per cent and “financial problem” confronting by 5.33 per cent of the sample respondents.

CHAPTER - VI

SUMMARY, CONCLUSION AND SUGGESTIONS

6.1 Summary

The onion(*Allium cepa* L.) is one of the most important commercial vegetable grown and consumed all over the country. India rank second in onion production in the World. Onion is an indispensable item in every kitchen as condiment and vegetable. It is used either in raw form and dehydrated form to add flavour and taste to Indian cousines. Onion is a famous spice commodity grown all over the world and consumed in the various forms. Onion is a major ingredient in Indian food and commodity is typically cultivated in monsoon, winter and summer. Onion is processed in various products such as ketchup, chutney, sauce, puree, salsa, dry soup mixture etc. In India onion is cultivated in 11.81 lakh hectare area with total production of 189.24 lakh Metric Tonne of bulbs for consumption as well as for export purpose . The major onion producing states in India are Maharashtra, Bihar, Karnataka, Gujarat, Andhra Pradesh, Uttar Pradesh, Orissa and Madhya Pradesh. Chhattisgarh is an agricultural state and due to large production of rice it is known as the Rice bowl. Paddy covers seventy percent of the total area in the state. Apart from paddy, vegetables are also grown in area of 414440 hectare with total production of 5697974 Metric Ton. Chhattisgarh produce 369382 Metric Tonne of Onion bulb from an area of 24129 ha. In Mahasamund District of Chhattisgarh, total production of Onion is 12476 Metric Tonne from an area of 893 hectares. Looking to the problem faced by onion growers in the recent past, the study on economics of its production and marketing was under taken with following objectives.

The specific objectives of the proposed study were:

1. To examine the socio- economic characteristics of onion growers
2. To evaluate cost and profitability of onion
3. To assess the marketing pattern of onion
4. To identify the constraints associated with production and marketing of onion and needed policy interventions thereof

Mahasamund district of Chhattisgarh has been selected purposively for this study. For the study firstly, Bagbahra block in Mahasamund district was selected purposively due to most suitable area for Onion crop. Secondly, a list of villages in selected block was prepared as per ascending order of area under onion crop. Among these villages, 3 villages were selected purposively (Amurda, Kamroud and Khusrupali). Lastly, for the selection of respondents, a list of Onion growing cultivators of each village was prepared. From each village 25 farmers was selected randomly for detail investigation and finally 75 onion growers were selected randomly for the study purpose.

Depending upon the objectives of the study primary data was used. The primary data was collected from selected respondents using pre-tested interview schedule through survey method. Each selected respondents was approached personally for recording relevant data. Secondary data regarding production, area, and yield etc was collected from the Department of Agriculture and Department of Statistics. The data was collected for the Agricultural year 2015-2016. The data on marketing pattern, cost and margin were collected from 3 retailers and 5 wholesalers.

- There were 12 respondent out of 75 respondent in young aged group ranging from 18 to 40 years of age of onion growers .In middle aged group ranging from 41 to 59 years age of onion growers there were 57 respondent and in old aged group ranging from 60 and above they were 6 respondents.
- The onion growers were literate (100%). The literacy position reflected that among the total onion growers the majority of the onion growers had an education of HSSC level (50.66%) followed by graduate (32%), middle school (10.6%) and primary level (6.66%) respectively. Thus It is apparent that majority (82.66%) of the onion growers were well literate and got higher education.
- Total number of male in 75 farm families was 167 which is 53% to total followed by total number of female was 133 which is 42% to total followed by the total number of children below 16 years were 15 which is 5% to total number of members. It is shown that the average family size is 4 person per farm family.

- The occupation of 80% of respondent was primary i.e., agriculture and 20% of the respondent have other as main occupation including agriculture also.
- The average size of holding was 2.35 hectare per farm in the area which is ranged from 0.21 hectare to 10.33 hectare. The data also clearly shows that the net cultivated area as percentage to gross cropped area was 85.11 percent. The average irrigated area as percentage to size of holding was 84.25 percent.
- The area under onion is the important factor considered in the study and it accounts for 17.02 percent of total size of holding which represented on an average 0.40 hectare per farm.
- Study revealed that the maximum investment after land was on farm house followed by tubewell, tractor, bullock, cow, buffalo, bullock cart and so on, on the sample onion growing farms of the area.
- The study shows that the average yield of onion in the study area was found to be 131 quintal per hectare.
- The study revealed that the average Cost C_3 of onion cultivation was Rs.60084.75 per hectare
- The study revealed that the average cost of production per quintal of onion was Rs.458 per quintal at cost C_3.
- The study shows that the average gross income per hectare of onion was Rs.233230 per hectare**.**
- The study shows that the on an average net income per hectare of onion was Rs.173145.
- It is revealed that the B.C. ratio of onion was being 1**:** 3.88 at cost C_3.
- Marketable surplus was 51.5 quintal per farm.
- The quantity of onion sold is higher in channel II (18.33 qntl.) followed by channel I(16.82 qntl.) and channel III(16.35 qntl).
- It is concluded that channel I (sale in the local market) was found to be more remunerative in which the producers received net amount

Rs.1789 per quintal of produce as net saving and the marketing cost was Rs.41 per quintal. The highest marketing cost and margin was observed as Rs.510 per quintal in case of channel III.

- The study revealed that the producer's share in consumer's rupee was found to be highest in marketing through channel I (selling in the local market) i.e. 97.75 per cent.

6.2 Conclusion

From the foregoing result it could be concluded that:

- The middle aged farmers are more concerned and active towards farming activities and still young generation is not willing to take farming as family profession as business venture.
- Majority (82.66%) of the onion growers were well literate and got higher education.
- The average family size is 4 person per farm family and majority of sample farmers are having individual family system.
- Majority of respondents have agriculture as their primary occupation.
- The average size of holding per farm is less anf the area under onion is also very less.
- Majority on onion growers are having their own irrigation facility which minimize their risk in farming.
- Among vegetables onion was grown in highest percentage area (28.36).
- Onion growers are well equipped with major required farm assets.
- The average cost C_3 of onion cultivation was Rs.60084.75 per hectare respectively. This shows that indirect cost accounts for nearly Rs.20000 per ha and farmers did not make any account for their costs and therefore their cost is under estimated and thus profit is over estimated.
- The B.C ratio shows that the onion growers were in profit.
- Net return was found to be beneficial due to efficiency of farmers. Since, in general, farmers have normal economic condition and scarcity of resources and hence, tried for higher economic return from per rupee investment.

- The commodity is having high marketable surplus and hence this is one of the source of family income on onion growing farms.
- Through channel I (sell in the market), producer get maximum share in consumer's rupees followed by channel II and channel III respectively, but channel I is only applicable when quantity for sale is less.
- Low level of knowledge about improved onion production practices and not getting the satisfactory price are the main constraints on sample respondents farm.
- It has intensive labour use involving more investment.
- It is profitable if onion is sell above Rs. 5/kg.
- It has marketable and marketed surplus.
- The bulk volume is channelized through wholesaler where the price spread is higher.
- Small produce is mainly channelized through direct local market sale or through retailers.

6.3 Suggestion

On the basis of results of the study following suggestions and policy implications are suggested:

1. Though maximum number of farmers are growing the high yielding variety of onion but proper fertilization and irrigation is lacking as recommended to get higher yield. So farmers are suggested to use fertilizer and irrigation in production process to get optimum profit from onion cultivation.
2. Since it is labour intensive prepositions, small farm mechanization, machinery and equipments specially for the planting and time to time earthing is required.
3. Most of the varieties of onion are developed by the private sector and therefore cost of seed is very high. Thus, there is a need of public sector varieties with low seed cost.

4. The prices of improved inputs required for onion cultivation has increased many fold over a decade and hence the cost of production in general has increased. On the contrary the price of output not only fluctuated over years, but also did not rise in tune with increase in the factor price. The national policy is to encourage condiments production; the purpose cannot be achieved without fair and remunerative price and adequate incentive to the onion growers in the area. The price has to be remunerative enough to earn a legitimate profit. Alternatively, the marginal farmers could also be encourage to augment to get maximum profit, by reducing their cost of cultivation by subsidizing the inputs like fertilizer, quality seed and plant protection materials etc..
5. The prime importance should be given to transfer of technology of onion cultivation because generally farmers follow their own conventional method of cultivation or not applying proper, adequate inputs and practices, resulting into low yield. They have lost faith in what is said but they have faith when they see with their own eyes, similarly farmer's follow apart from seed, fertilizer, plant protection and irrigation practices by conventional methods and those who use scientific methods do not follow in proper time and as per recommendations. Hence, recommended technology needs to be demonstrate to the farmers. The over all aim should to trained farmers in the crop production techniques under existing economic and other requisite condition to the large extent so that the productivity of onion can be improve.
6. Required storage and transport is not available in the area therefore, it is recommended to develop the infrastructure for proper storage and transport of onion by nearby markets for getting higher prices.
7. Government should intervene in case of market failure to protect the interest of onion growers and this particular year government of Madhya Pradesh is purchasing onion from farmers at Rs.6/kg.
8. The horticultural crops like onion, garlic, dry chillies, spices etc needs to be brought under the purview of minimum support prices to protect the interest of producers and consumers.

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COLLEGE OF AGRICULTURE JABALPUR (M.P.) JNKVV, Jabalpur
Department of Agricultural Economics and Farm Management

Title of the Research Problem:Economics of Production and Marketing of Onion in Bagbahra Block of Mahasamund District(C.G.)

INTERVIEW SCHEDULE

Investigator **Guided by**
Shobha Paul **Dr. S.B.Nahatkar**

Date of Interview:

अ. सामान्य जानकारी

1. किसान का नाम .....
2. आयु .....
3. आधार कार्ड/वोटर कार्ड/अन्य नाम .....
4. शिक्षा .....
5. मोबाइल नं. .....
6. जाति (सामान्य/पिछड़ा वर्ग/अनु.जाति/अनु.जनजाति) .....
7. ग्राम .....
8. पोस्ट .....
9. ब्लॉक .....
10. जिला .....
11. बाजार से दूरी .....
12. पक्की सड़क से दूरी .....

ब. परिवार का विवरण

क.	परिवार के सदस्यों का नाम	मुख्या से संबंध	लिंग स्त्रि/पुरूष	आयु	शिक्षा	व्यवसाय

1 अशिक्षित, 2. प्राथमिक, 3. माध्यमिक शिक्षा, 4. महाविद्यालय

स. भूमि स्वामित्व का विवरण (हेक्टेयर में)

1. कुल स्वामित्व भूमि .....
2. कृषि उपयोग हेतु .....
3. गैर कृषि उपयोग हेतु .....
4. पट्टे में .....
5. पट्टे पर .....

6. फसलीय क्षेत्रफल .....
   सिंचित .....
   असिंचित .....
7. सब्जियों का क्षेत्रफल .....
8. वर्तमान में परती भूमि (हां/नही)
9. यदि हां तो कारण (सिंचाई की कमी/बंजर भूमि/अन्य) .....

द. सिंचाई के स्रोत

क.	सिंचाई के स्रोत	सिंचित क्षेत्रफल	भूमि के प्रकार	उगाई हुई फसल
1. टंकी				
2. नहर				
3. न्लकूप				
4. स्टॉप डेम				
5. अन्य				
कुल				

इ. फसल पद्धति

क.	खरीफ की फसल		रबी की फसल		ग्रीष्मकालीन फसल	
	फसल	क्षेत्रफल (हे.)	फसल	क्षेत्रफल (हे.)	फसल	क्षेत्रफल (हे.)

फ.(1) फार्म हाउस

क.	वस्तु	संख्या	निर्माण का व"र्ा	वर्तमान मूल्य (रू.)	वार्षिक मरम्मत पर व्यय (रू.)
	प्रक्षेत्र भवन				
	अ. पक्का ब. अर्ध पक्का स. कच्चा				

2. पशुधन एवं प्रक्षेत्र संपत्ति रजिस्टर

क.	पशु/उपकरण	संख्या	खरीद मूल्य (रू.)	खरीदी का वर्ष	वर्तमान मूल्य (रू.)
1.	पशु				
	अ. गाय				
	ब. बैल				
	स. भैंस				

	द. बछड़ा				
	इ. बछिया				
	फ. मुर्गीपालन				
	ज. मत्स्य				
	ह. बकरी				
	झ. सुअर				
2.	उपकरण				
	अ. ट्रैक्टर				
	ब. नलकूप				
	स. बैल गाड़ी				
	द. पम्प सेट				
	इ. फूस काटने वाले				
	फ. हल				
	ज. स्प्रेयर/डस्टर				
	झ. अन्य				

ज. प्याज की खेती की लागत

किस्म .....

बुवाई की दिनांक .....

खुदाई की दिनांक .....

क्षेत्रफल .....

1. श्रमिक लागत

क्रं.	कार्य	परिवार मानव श्रम (दिनों में)			नियुक्त किया मानव श्रम (दिनों में)					बैल शक्ति			यंत्र शक्ति			विशेष रूप से कार्य पर कुल व्यय
		M	F	T	M	R	F	R	T	O	H	R	O	H	R	
1.	नर्सरी तैयारी															
2	खेत की तैयारी															
3.	रोपाई															
4	खाद एवं उर्वरक का छिड़काव अ. खाद ब. उर्वरक प्रथम द्वितीय तृतीय															
5	सिंचाई 1. 2. 3. 4. 5. 6.															

6.	शस्यन क्रिया पहली निंदाई दूसरी निंदाई तीसरी निंदाई															
7.	पौध संरक्षण															
8.	खुदाई															
9.	क्षेत्र से घर के लिये ढुलाई															
10.	अन्य															
11.	कुल															

M = Male, F = Female, T = Total, O = Family labour, H =Hired labour, R = Rate/Unit (Rs.)

2. लागत मूल्य

क्र.	उत्पादक	मात्रा	दर (रू./ईकाई)	स्रोत
1.	बीज (किग्रा.) अ. ब.			
2.	खाद/कम्पोस्ट (टन में)			
3.	उर्वरक (किग्रा.) अ. ब. स.			
4.	पौध संरक्षण रसायन अ. ब. स.			
5.	वृद्धि हार्मोन अ. ब.			
6.	अन्य			
कुल				

3. सिंचाई लागत

4. निर्धारित मूल्य

अ. पट्टे में भूमि का किराया मूल्य (रू.)

ब. भू–राजस्व (रू.)

उत्पादन

फसल	**मात्रा (क्वि.)**	**सेवन**	**विक्रय हुआ** (रू./क्वि.)	**मूल्य** (रू.)

5. विपणन लागत

क.	विवरण	
1.	बेची गई मात्रा	
2.	जिसे बेचा गया	
3.	विक्रय मूल्य	
4.	बाजार से दूरी	
5.	ढुलाई के साधन अ. ट्रैक्टर ब. ट्रक स. बैलगाड़ी द. अन्य	
6.	ढुलाई लागत (रू./क्वि.)	
7.	चढाई/उतराई लागत (रू./क्वि.)	
8.	कमीशन लागत (रू./क्वि.)	
9.	सफाई लागत (रू./क्वि.)	
10.	अन्य लागत	

1. उत्पादक का सकल मूल्य (रू./क्वि.)
   उत्पादक का ‘ ाुद्ध मूल्य (रू./क्वि.)
   कुल विपणन लागत (रू./क्वि.)
2. थोक विक्रेता का क्रयमूल्य (रू./क्वि.)
   थोक विक्रेता द्वारा किया हुआ व्यय (रू./क्वि.)
   अ. ढुलाई
   ब. चढ़ाई/उतराई
   स. भण्डारण लागत
   द. तौलाई लागत
   ई. दुकान किराया लागत
   फ. अन्य
3. फुटकर विक्रेता का क्रय मूल्य (रू./क्वि.)
   फुटकर विक्रेता द्वारा किया हुआ व्यय (रू./क्वि.)
   अ. ढुलाई
   ब. चढ़ाई/उतराई
   स. थैले का ‘ ाुल्क
   द. अन्य
4. फुटकर विक्रेता का विक्रय मूल्य
   (उपभोक्ता द्वारा दिया गया मूल्य)

प्याज उत्पादन में समस्यायें :–

क.	समस्या	हां / नही
1.	गुणात्मक बीज की अनुपलब्धता	
2.	बीज उपचारण ज्ञान की कमी	
3.	प्याज के रोग तथा कीट संबंधी ज्ञान की कमी	
4.	रोगनाशक तथा कीटनाशक संबंधी ज्ञान की कमी	
5.	वांछित उर्वरक की अनुपलब्धता	
6.	विभिन्न उर्वरकों में पो" ाक तत्व की मात्रा संबंधित ज्ञान की कमी	
7.	आवश्यकतानुसार पानी की अनुपलब्धता	
8.	प्रसार कार्यकर्ता से भेंट	
9.	मानव श्रमिक की समस्या 1. बुआई के समय 2. ' ास्य क्रिया के समय 3. खुदाई के समय	

प्याज के विपणन में समस्यायें –

क.	समस्या	हां / नही
1.	ढुलाई की समस्या	
2.	भण्डारण सुविधा की कमी	
3.	संतोषजनक मूल्य न मिलना	
4.	विपणन सुविधा की कमी	
5.	वित्तीय समस्या	
6.	अन्य समस्या	