

**“Economic Analysis of Production and marketing of
pearl millet in joura, Morena District,
Madhya Pradesh”**

THESIS



Submitted to the

Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya

in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE

In

AGRICULTURE

AGRICULTURAL ECONOMICS

By

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2022

CERTIFICATE – I

*This is to certify that the thesis entitled “**Economic Analysis of Production and Marketing of Pearl Millet in Joura, Morena District, Madhya Pradesh,**” submitted in partial fulfilment of the requirements for the Degree of **MASTER OF SCIENCE in AGRICULTURE** in the **Department of Agricultural Economics** of **Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior**, is a record of the bona-fide research work carried out by **BHAVDESH DHAKAD** under my guidance and supervision. The subject of the thesis has been approved by the Student Advisory Committee and the Director of Instructions.*

No part of the thesis has been submitted for any other degree or diploma or has been published. All the assistance and help received during the course of this investigation has been acknowledged by the scholar.

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ACKNOWLEDGEMENT

*I feel proud to express my deep sense of gratitude to my beloved and respected chairman, **Dr. P.K. Malviya**, Professor and Head of the Section, Department of Agricultural Economics, College of Agriculture, Indore, RVSKVV, Gwalior, for his valuable guidance, encouragement, interest, constructive criticism and ideas throughout the course of my study, which helped me in executing my research work.*

*I am delighted to acknowledge the help rendered by the members of the advisory committee, **Dr. Shobhana Gupta**, Head and Senior Scientist, Department of Agricultural Economics and Extension, RVSKVV, Gwalior; **Dr. O.P. Daipuria**, Ex.Professor and Head, Department of Agricultural Extension and Communication, RVSKVV, Gwalior, **Dr. S.C. srivastava**, Scientist/Technical Officer, Krishi Vigyan Kendra, RVSKVV, Gwalior and **Dr. V.B. Singh**, Professor and Head, Department of Statistics, RVSKVV, Gwalior, for their ingenious suggestions and guidance throughout my research work.*

*I am very happy to mention the names of the elite people of our university Professor **Dr. S.K. Rao**, Hon'ble Vice-chancellor, RVSKVV, Gwalior, **Dr. S.P.S. Tomar**, Director of Instructions, RVSKVV, Gwalior and **Dr. S. S. Tomar**, Dean, College of Agriculture, RVSKVV, Gwalior.*

*I offer my sincere thanks and appreciation to the entire staff of the economics department; **Dr. Sudhir Singh Chouhan**, **Dr. Prashant Sharma**, **Mr. S.G. Telang**, **Mr. Harkesh Balai**, contractual teacher, **Anshul Gupta**, and **Krishna** for their timely assistance during the investigation.*

*I gratefully express my thanks to my senior **Dr. Rahul Ojha**, **Hemant kumar lamba** and my friends **Deepak Dhakad**, **Akash singh**, **Mayank Kushwha**, **Mohit Rathor**, **Ramvaran Rajput**, **Pradeep kumar Patel** and all my Economics and*

Extension. batchmates for their supportive encouragement and pleasant association shown to me.

*Words are not enough to express my heartiest feelings of humble gratitude and profound sense of appreciation to my reverent father and mother, **Shri. Bhagari ram Dhakad** and **Smt. Leela Dhakad**.*

I give all the glory to God for giving me the strength to complete this research work successfully.

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CHAPTER - I

INTRODUCTION

Pearl millet (*Pennisetum glaucum*) accounts for almost half of the global millet production and is the most popular due to its high resistance to drought and high temperatures, adaptability to poor soils, low vulnerability to diseases and insect pests, and good nutritive values, including a superior protein quality and the highest fat content (6%) among cereals. Pearl millet grows well where other crops generally fail completely. In Asia, it is mainly grown in India, Pakistan, and Yemen. India could be the single country which is witnessing the largest decrease in area under pearl millet.

The marketing component is important to ensure remunerative prices for the farmers, which will eventually work as an incentive for them to bring more area under cereals. Marketing can also help in inducing an element of incentive to farmers through participation in the processing and distribution of pearl millet through direct marketing, farmers' markets, or cooperative marketing to get a higher share of the consumer's price. Marketing innovations like group marketing will help in improving the bargaining powers of small and marginal farmers.

Among the various important pearl millet growing states of the country, Madhya Pradesh is the fifth largest producer of pearl millet in the country, which occupies 3.69 percent area with 7.31 percent production with a productivity of 2458 kg/ha, which is above national productivity, which is 1243 kg/ha [Agril Statistics at a Glance, 2019]. Any increase or decrease in the area and production of the pearl millet crop will have a considerable effect on the farm economy of the state, in particular the grid agro-climatic zone of Madhya Pradesh [Gwalior and Chambal division], having the largest area and production of pearl millet, which contributes 94.93 percent of the total area and 96.59 percent of the state during (2018-19). In the Morena district of the Gird agro-climatic zone of Madhya Pradesh, the first position, which contributes 60.48 percent in area and 53.90 percent in production of the state during 2018-19. (Lamba *et al.*, 2022). The present study was conducted to assess the

“Economic analysis of Production and marketing of pearl millet in Jaura, Morena District, Madhya Pradesh”. which under taken with the following specific.

Objectives:

1. To analysis the cost of cultivation and return of pearl millet
2. To find out the marketing cost and price spread under different marketing channels,
3. To analysis the problems faced by farmers in the production and marketing of pearl millet and offer suggestion to overcome them.

1.1 Plan of thesis

The present study is divided into five chapters. the first chapter deals with the introduction and objectives, as well as the plan of the thesis. The second is a review of literature. the third chapter deals with the methodology adopted in the selection of area and crop, the collection of data and analysis. The fourth chapter deals with the results and discussion. the fifth chapter deals with the summary, conclusions, and suggestions of the study, followed by the bibliography and appendices.

1.2. Limitations of the study :

- i. The findings of the study arrived at on the basis of a particular agricultural year 2020-2021, may not stand true for the successive years, mainly due to changes in the prices of inputs and outputs. Hence the findings of the study depend upon the reliability of the assumptions hypothesised in the study.
- ii. The lack of maintenance of records relating to inputs and outputs by the farmers was another limitation. The data was collected through the survey method.
- iii. The information provided by the farmers was based entirely on their recalled memories.

CHAPTER II

REVIEW OF LITERATURE

A comprehensive review of the literature is an essential part of any scientific investigation. Its main functions, apart from determining the work done earlier and assisting in the delineation of problem areas, are to provide an insight into method and procedures adopted by scientific, suggest changes there in and provide a basis for interpretation of findings. A brief account of the available literature on the present topic and other related topics is presented below: An attempt has been made to review some of the important studies related to the present investigation.

2.1 Cost of cultivation.

2.2 Marketing margins, costs, price spreads, and marketing efficiency.

2.3 Constraints and suitable measures

2.1 Cost of cultivation

Chaudhari (2015) studied average cost of bajra cultivation was Rs 32937 per hectare for the district and cost of production, returns over Cost-A, Cost-B, Cost-C₁ and Cost- C₂ was decreased with increase in the size of holdings. The cost of irrigation was the highest, followed by the cost of hired labour, the cost of rental value of owned land, miscellaneous costs, family labour, chemical fertilizer, seed, etc., among the individual costs of items. The family labour cost decreased and the cost of hired labour increased with an increase in the size of the holding because small farmers used more family labour for their farm operations, whereas large farmers had to depend on hired labour to completed their farm operation on time. The human labour cost was the highest for all the farmers and decreased with an increase in the size of holdings. the reason for this was that the small farmers had used resources intensively in crop production. The cost of bajra production for the year 2013-14 showed that the average income over total cost was Rs. 15728 per hectare. The net income of large farmers was the highest, being Rs.16240 per hectare. The per hectare income over cost A of the small farmer was the highest, at Rs. 25033.

Shukla *et al.*, (2015) conducted a study of pearl and finger millets: the hope of food security. Millets are grown expansively in different areas of India as a staple crop to feed a huge section of the population. In India, its production holds the sixth position after wheat, rice, maize, sorghum and bajra. The most important cultivated species of millets in India are foxtail millet (*Setaria italic*), finger millet (*Eleusine coracana*), pearl or cattail millet (*Pennisetum glaucum*), proso millet (*Panicum miliaceum*), Japanese/barnyard millet (*Echinochola crusgalli*), brown top millet (*Panicum ramosum*) and kodo or ditch millet (*Paspalums crobiculatum*). Among these, finger millet and pearl or cattail millet (*Pennisetum glaucum*) offer high nutritional, anti-diabetic and antioxidant properties. India is a socioeconomically meagre country needs a large amount of food grain to fulfill the requirements of its ever increasing population with good nutrient value. To facilitate an improved and healthy food supply, these easily grown vigorous crops would be a good option for the farmers in semiarid regions of India. The planned cultivation of these millets will provide a very nutritious and economical food source for a large proportion of poor people.

Lal *et al.*, (2020) observed that the total cost of cultivation of pearl millet for small, medium and large-sized farms was Rs.27020.70/ha, Rs 26672.20/ha and Rs.25390.50/ha, respectively. The gross returns obtained per hectare by large and medium-sized farms were high (Rs.38000/ha) as compared to small-sized farms (Rs.36000/ha) respectively, and the net returns per hectare obtained by large-sized farms were high (Rs.12609.50/ha) as compared to medium and small-sized farms (Rs.11327.80/ha and Rs. 8979.30/ha) respectively. The Input-output ratio per hectare was highest in large-scale farms (1:1.50) compared to medium and small scale farms (1:1.42 and 1:1.33).

Gautam and Singh., (2020) study, the total cost of pearl millet cultivation was observed to be Rs. 30,779.63 per ha. The Highest contribution to the cost of cultivation was that of human labour. The net return including irrigation charges, was Rs. 4,347.89 per hectare. Input productivity was analysed using the Cobb Douglas production function and it was found that

human labour was overused whereas inputs like seed and manure etc were under utilised. Although pearl millet cultivation gave a profit, it can be made more profitable by efficient utilisation of underutilised and overused inputs.

Sreedhar *et al.*, (2021) investigated cost-C in the cultivation of pearl millet was Rs. 41115.65 per hectare. The proportionate expenditure of hired human labour was 19.05 percent of total costs. The net income was Rs. 4974.2 per hectare. The BCR was higher in small farm, followed by medium and large farms. The partial regression coefficient of hired labor and fertilizers was 0.103 and 0.793, respectively, which were positive and highly significant. It indicated that gross return was increased by 0.793 per cent by increasing one per cent of expenses on fertilizers. The summation of all partial coefficients was 0.656, which indicated a decreasing return to scale. When the production function returns to scale, the average cost of production rises. Input prices have a significant impact on the economic profitability of farmers' crop cultivation. Rainfed pearl millet cultivation is unprofitable at market values in the Thoothukudi district. The current scenario requires the revision of minimum support prices and regulation in the input market, particularly for crops grown in rainfed ecosystems.

Lamba *et al.*, (2022) observed average cost of cultivation (cost C₃) of pearl millet in the study area was found to be Rs. 20655.73 /ha, which was highest on Rs. 21135.31 /ha on large, Rs. 20925.89 /ha on small farmers and Rs. 19906.01/ha on medium farmers. The cost of cultivation of pearl millet decreases with the increase in the size of land holdings. On An average, the share of operational costs was 60.92 per cent of the total cost (cost C₃) for the sample farms. An overall gross income per hectare of pearl millet cultivation was observed at Rs. 23483.6667/ha. the gross income per hectare from pearl millet cultivation was higher on large farms as compared to medium and small sized farms. The (B: C Ratio) input output ratio was highest at 1.17 on a large farm, followed by 1.14 and 1.10 on small and medium farms, respectively.

2.2 Marketing margins, costs and price spread

Deshmukh *et al.*, (2010) observed in their study that farm size of pearl millet was 0.62 hectares at an overall level while the production was 13.79 quintals. The Price paid by the consumer was the highest at Rs. 920 per quintal in Channel-III in which the producers' share in the consumer's rupee was 66.21 per cent. In the case of Channel-II, the price paid by the consumer was Rs.775 per quintal, in which the producer's share of the consumer's rupee was 77.80 percent, whereas in Channel-I (Producer–consumer), price paid by the consumer was less as compared to Channel-II and Channel-III. It was Rs. 599.00 per quintal in which the producer's share in the consumer's rupee was the highest i.e., 97.66 percent as compared to Channel-II and Channel-III. The net price received by the producer was highest in Channel-III, which was Rs. 610.00 per quintal more than that of Channel-II (Rs. 603.00 per quintal) and Channel-I (Rs. 585 per quintal). Similarly, the price spread was also highest in Channel-III, which was Rs. 311.28 followed by Rs. 172.00 in Channel-II and Rs. 14.00 in Channel-I. It was found that the Channel-III was beneficial to both producers as well as intermediaries.

Sharma *et al.* (2013).Conducted a study in most of the markets, the producer's share in consumer rupee was highest in Channel II, followed by Channel I, and it was lowest in Channel III. The analysis of the relative share of producers per quintal of pearl millet revealed that in the Jodhpur market, it was highest (68.84%) in channel I. The relative share of producer in consumer rupee was almost the same (67%) in the Nagaur and Jaipur markets in channel II. The net share of village traders was highest in the Jaipur market (8.94%) in channel I and the net share of commission agents was highest (8.66%) in Nagaur in channel III, followed by Jodhpur (5.98%). The net share of wholesalers (channel I) was highest in the Jodhpur market (6.79%) and lowest in the Jaipur market (1.64%). In the Nagaur market, the relative share of retailers was highest (16.76%) and lowest in the Jaipur market (3.58%). The analysis of the efficiency of channel-I in different markets revealed that it was highest in the Jodhpur market (1.23) and the lowest in the Jaipur market (1.07). The analysis of the efficiency of channel

III revealed that it was the highest (1.09) in the Jodhpur market, followed by Nagaur (0.96).

Sharma *et al.* (2013) conducted a study to estimate the marketing efficiency and price spread of pearl millet in Rajasthan. Regulated markets of Jaipur, Jodhpur and Nagaur were selected for the purpose of studying marketing cost incurred and margins earned by various intermediaries in marketing of pearl millet. Information regarding marketed surplus, price received, and cost incurred in marketing was collected and price spread across different value chains was also analyzed. In most of the markets, the producer's share in consumer rupee was highest in Channel II, followed by Channel I and it was lowest in Channel III. The analysis of the relative share of producers per quintal of pearl millet revealed that in the Jodhpur market, it was highest (68.84%) in channel I. The relative share of producers in consumer rupee was almost the same (67%) in the Nagaur and Jaipur markets in channel II. The net share of village traders was highest in the Jaipur market (8.94%) in channel I and the net share of commission agents was highest (8.66%) in Nagaur in channel III, followed by Jodhpur (5.98%). The net share of wholesalers (channel I) was highest in the Jodhpur market (6.79 %) and lowest in the Jaipur market (1.64%). In the Nagaur market, the relative share of retailers was highest (16.76%) and lowest in the Jaipur market (3.58%). The analysis of the efficiency of channel I in different markets revealed that it was highest in the Jodhpur market (1.23) and lowest in Jaipur market (1.07). The analysis of the efficiency of channel III revealed that it was the highest (1.09) in the Jodhpur market, followed by Nagaur (0.96).

Baba and Maina (2013) examined marketing margin and transaction costs in the pearl millet market supply in Borno State, Nigeria. Purposively, five major millet markets were selected within the state and a total of 120 respondents were considered at random for the study. Findings showed that the highest mean age of the marketers recorded was among wholesalers of millet (46.5 years). The educational attainment of the chain actors showed that all the actors had one form of education or the other, but the majority had a quran education, with the highest attainment showing 90.9% among 22

producers. Millet supply experience showed 41.2% among wholesalers as the most experienced and the least experienced suppliers recorded were among retailers (32.6%). The findings revealed that despite the highest marketing margin incurred by the wholesalers in supplying and marketing millet in the study area, they also incur the highest profit margin (13.73%). The study revealed transportation costs as the highest transaction costs in the pearl millet supply chain in the study area (55%). The percentage of those placing orders with suppliers and the proportion of purchases by order were highest among wholesalers (67.1%) and the least was among collectors (12.3%). The proportion of purchases on order was highest (75%) among wholesalers and the least (12.3%) was among collectors. Despite these general problems, transportation was the major problem faced by the suppliers (84.0%). The study recommends the formation of a group cooperative to avert the high cost of transportation and storage to enhance profit margins among millet suppliers.

Okech *et al.*, (2016) studied profits and efficiency along the Pearl Millet Market Chain: A Value Addition Approach. Pearl millet is the most commonly used millet in the world. However, in Kenya, little information exists concerning the distributional implications of pearl millet market structure, market channel efficiency and its determinants. As a result, the characteristics of the pearl millet value chain have remained scanty in the literature. This paper characterizes Kenya's pearl millet value chain, focusing on its structure, functions and trade within the production areas (Mbeere district) and the final markets (Nairobi) of Kenya. Data was obtained from 255 market actors (120 producers, 2 rural agents/brokers, 25 traders, 8 processors and 100 consumers) between August and September 2012 and analysis was done using a value addition approach and a multiple regression model. Evidence showed that high returns to participation accrued to processors compared to producers and traders, despite their limited functions. Transport costs, border taxes and commission charges were major components of marketing costs. Pearl millet market channel efficiency was positively influenced by level of education and market channel efficiency was positively influenced by level of

education and whether an actor undertook value addition activities before selling positively influenced.

Singh *et al.* (2018) observed that producer share in consumer rupee was found maximum in the channel-III followed by channel –II and minimum in channel-I because number of intermediaries in channel-I were more (P-VT-W-R-C). Each intermediary had a margin within the channel due to which the producer share in consumer rupee increased in channel-III (P-C), followed by channel-II (P-W-R-C) and channel-I (P-VTW-R-C). The Price spread was maximum in channel-I followed by channel-II and was minimum in channel-III in both the districts. The Price spread in channel-I was the maximum due to the fact that the intermediaries were more in channel-I, so marketing cost and margin were the maximum. The marketing efficiency of the Bhiwani market was greater than of the Mohindergarh market in channels-I and channel-II, while efficiency of the Mohindergarh market was greater than the Bhiwani market in channel-III. In Channel-III, marketing efficiency was extremely high as compared to all other channels, mainly because this channel was the smallest and no intermediaries were present in the channel.

Choudhary and Ramchandra (2019) found in their study that the number of respondents who had graduated education was higher in large sized farms followed by medium and Small sized farms, and it was also observed that the number of illiterates was higher in Large sized farms followed by medium and Small size of farms. The price spread in channel I and channel II was (Rs. 545/quintal and Rs. 700/quintal) respectively. Producer's share in consumer's rupee for the channel I was 74.65, and for channel II was 69.57° per cent. Marketing efficiency for channel I was 3.94 percent, and for channel II it was 3.50 percent. High cost of labor, High cost of PFC chemicals etc. and the constraints in marketing of pearl millet were frequent price fluctuations, Lack of storage facilities, High transportation costs, Lack of Information about government schemes and subsidies, high commission charges etc. The present study entitled "An Economic Analysis of Marketing of Pearl Millet in the Jaipur District of Rajasthan", was conducted in the year 2018-19 with a sample of 120 respondents.

Choudhary and Ramchandra (2019) observed that the number of respondents who had graduated education was higher in large-sized farms followed by medium and small sized farms, and it was also observed that the number of illiterates was higher in large-sized farms followed by medium and Small-sized of farms. The price spread in channel I and channel II was (Rs.545/quintal and Rs. 700/quintal), respectively. The Producer's share in the consumer's rupee for the channel I was 74.65 percent, and for channel II it was 69.57° percent. The marketing efficiency for channel I was 3.94percent, and for channel II it was 3.50 percent. High cost of labor, High cost of PFC chemicals etc., and the constraints in marketing of pearl millet were frequent price fluctuations, lack of storage facilities, High transportation costs, lack of information about government schemes and subsidies, High commission charges etc. The present study, entitled "An Economic Analysis of the Marketing of Pearl Millet in the Jaipur District of Rajasthan" was conducted in the year 2018-19 with a sample of 120 respondents.

Sharma (2020) marketed surplus of pigeon pea was found to be more than marketable surplus. Marketable surplus of mustard, wheat, pigeon pea and bajra was initiated to be highest in wheat, followed by mustard, pigeon pea and bajra. Marketed surplus of mustard, wheat, pigeon pea and bajra was initiated to be highest in pigeon pea followed by wheat, mustard and bajra. The study is based on data collected from 320 farmers (80 mustard growers, 80 wheat growers, 80 pigeon pea and 80 bajra growers) who were selected through proportionate random sampling.

Rouamba *et al* (2021) observed in Burkina Faso, pearl millet production is primarily constrained by *S. hermonthica* infestation, which is estimated to cause up to 80% yield losses. Many respondent farmers (68%) used local varieties with low yield potential, which are also highly susceptible to *S. hermonthica* infestation. Hand weeding and hoeing are the most commonly used methods to control *S. hermonthica*, although they are not very effective. The farmers lack resources such as labour, inorganic fertilizer, and finance to implement more effective strategies against *S. hermonthica* and boost agricultural productivity. Therefore, an integrated management approach, which would involve breeding for *S. hermonthica* host resistance combined

with other control measures, may offer a better option for managing *S. hermonthica* infestation in Burkina F also. It is also recommended that variety design and development for *S. hermonthica* resistance be coupled with agricultural development such as improved extension services, increased access to information, access to micro-finance, and developing functional agro-input systems. The provision of an enabling environment would draw maximum benefits from improved varieties of pearl millet. Local farmers perceive that land race varieties have good eating quality and adaptation to adverse effects.

2.4 Constraints

Shinde and Chavan (2004) studied the ex post evaluation of recommended bajra production technology and its constraints in adoption in the Marathwada region of Maharashtra state. They concluded that the margin of profit is very low as compared to the other crops, so farmers do not invest much money for the bajra crop. It was reported by farmers that bajra is not more remunerative crop. Bajra grains as such do not have much alternative uses to fetch the price in the market here is not varietal stability as every year hybrids/ variety are changing. There is no alternative suitable crop for light medium soil in kharif season having less investment.

Mustapha and Dangladima (2008) worked out the effect of socioeconomic factors on pearl millet in Magumeri local government area of Borno state Nigeria and found that the educational level, membership of cooperative union and contact with extension agent were significantly related to millet output level. at 5 percent level of significance. The farmer's age and year of farming experience were not significant to millet production at a 5 percent level of significance.

Pawar *et al.*, (2010) studied the effect of socio economic characteristics on productivity of pearl millet and disclosed that the regression coefficient of family size (0.212), livestock (0.30) and capital investment on bullock pair (0.003) were positive and significant.

Gabriel (2014) conducted constraints in pearl millet marketing in Tanzania: the value chain approach. Pearl millet marketing in the Dodoma region is constrained by various factors, most of which are empirically unknown. In order to effectively invest in value addition and marketing, society needs to look at the value chain and spot and lessen constraints that hamper the growth of a sustainable market. This study is aimed at unlocking the constraints facing pearl millet marketing in Tanzania. Specifically, the study is aimed at examining pearl millet production and marketing challenges, assessing factors influencing its production and marketing, and establishing factors for improving pearl millet market performance along the value chain. The cross-sectional research design was conducted by interviewing a total of 166 respondents. Primary data was collected through observation, focus group discussion, and the use of structured questionnaires. The data were analyzed by using statistical package for social sciences computer software. Gross margin and post hoc tests were employed to determine production and marketing challenges of pearl millet, The results showed significant ($p < 0.05$) influence in value addition of pearl millet at different nodes in the chain, This suggest that an increase in value attached to the product/produce has emanated from different marketing functions performed by value chain actors. Further more, a linear regression model was used to assess factors influencing Production and marketing of pearl millet. the results indicated that pearl millet profit in the chain was significantly ($p < 0.05$) associated with grain quality, level of processing, promotion activities, market distance, and access to marketing formation. This suggests that, marketing factors were important in influencing pearl millet value addition and marketing along the chain. Based on econometric analysis results, it is recommended that pearl millet marketing problems can be alleviated through linking farmers to the market and improving of road infrastructure, production and processing, credit provision, farmer motivation, and promotion of pearl millet products.

CHAPTER III

RESEARCH METHODOLOGY

The scientific study of any problem requires a systematic investigation using appropriate methods and procedures in order to arrive at a reliable and practical conclusion. This chapter deals with the methods used in the present investigation, as discussed below under the following sub-heads:

3.1 Sampling framework

3.2 Collection of data

3.3 Analysis of data

3.1. Sampling framework

3.1.1. Selection of a crop:

The pearl millet crop was selected for the research purpose because this crop is mainly grown by farmers in the Kharif season among cereal crops in the study area.

3.1.2. Selection of the study area:

Morena district of Madhya Pradesh was selected purposely for the study because pearl millet is the major kharif season crop of this district. Multistage sampling was used for drawing the sample famers.

3.1.3 Selection of block

Morena district comprises six blocks, namely Morena, Ambah, Jaura, Pahadgarh, Sabalgarh and Kailaras. Out of these six blocks, Jaura block was selected purposively due to the highest area under pearl millet cultivation in the district.

3.1.4 Selection of the Villages:

In the second stage of sampling, a list of pearl millet growing villages was prepared from the selected block (Jaura) with the help of Krishi Adhikari. Then five villages, namely Dhurukuda, Khiri, Kurroli, Sagoria, and Mamachanu, were selected randomly for the study.

3.1.5. Selection of the farmers

At the third stage of sampling, a list of pearl millet growing farmers from these five villages was prepared along with their size of land holding and arranged in ascending order on the basis of their land holding and categories into three groups, i.e., small (less than 2 ha), medium (2-4 ha) and large (4 ha and above). Thereafter, from each category, 30 respondents (a total of 90) were selected randomly.

3.2. Collection of data

The study utilized both primary and secondary data. The primary data in respect of the pearl millet crop and production of pearl millet, sale pattern, costs incurred by the selected farmers in the sale of pearl millet and sale price of the produce obtained by the farmers, as well as costs incurred by the wholesalers and retailers in the purchase and sale of pearl millet, were collected from the producers, wholesalers, and retailers through the personal interview method, with a set of well structured schedules specifically designed for the purpose of the present study.

The secondary data in respect of monthly wholesaler prices and arrivals of pearl millet in the Morena market for the last years were obtained from the records of the krishi Upaj mandi samiti Morena.

3.2.1. Period of study

The study period pertains to the agricultural year 2020-2021.

3.3. ANALYSIS OF DATA:

For achieving the stated objective, following analytical procedure was used.

3.3.1. Cost A_1 = all actual expenses incurred in cash and kind in the production of the crop i.e.,

- i. Value of hired human labour
- ii. Value of owned bullock labour
- iii. Value of hired bullock labour
- iv. Value of owned machine labour
- v. Value of hired machine labour
- vi. Value of owned seed
- vii. Value of purchased seed
- viii. Value of owned farm yard manure

- ix. Value of purchased farm yard manure
- x. Value of fertilizers and insecticides
- xi. Irrigation charges
- xii. Land revenue
- xiii. Interest on working capital
- xiv. Deprecation
- xv. Miscellaneous expenses

Cost A_2 = Cost A_1 + rent paid for leased in land

Cost B_1 = Cost A_1 / A_2 + interest on owned fixed capital assets (excluding land)

Cost B_2 = Cost B_1 + rental value of owned land

Cost C_1 = Cost B_1 + imputed value of family labour

Cost C_2 = Cost B_2 + imputed value of family labour

Cost C_3 = Cost C_2 + 10% of cost C_2 (as managerial cost)

3.3.2. Cost of Production (per quintal)

Cost of production was worked out with the help of following formula

$$\text{Cost of production} = \frac{\text{Cost of cultivation} - \text{Value of by-product}}{\text{Quantity of main product (per quintal)}}$$

3.3.3. Farm Business Measures-

The various farm business measures were calculated as under

Gross income (G.I.)

It is the total value of the main product as well as of the by-product.

$$G.I. = Q_m \times P_m + Q_b \times P_b$$

Where,

G.I. = Gross income

Q_m = Quantity of main product

P_m = Price of main product

Q_b = Quantity of by-product

P_b = Price of by-product

Farm Business Income (F.B.I)

The various farm business measures were calculated as under:

$$\text{F.B.I.} = \text{Gross income} - \text{Cost } A_1$$

$$\text{Return over variable cost} = \text{Gross income} - \text{Total variable cost}$$

$$\text{Family labour income} = \text{Gross income} - \text{Cost } B_2$$

$$\text{Net income} = \text{Gross income} - \text{Total cost (Cost } C_3)$$

$$\text{B.C. ratio} = \text{Gross income/Total cost (Cost } C_3)$$

3.3. Marketing channels

A marketing channel is a path traced in the direct or indirect transfer of title to a product as it moves from a producer to an ultimate consumer or industrial user. A Market channel is the structure of intra-company agents' dealers, wholesalers, and retailers through which the commodity product or service is marketed.

3.3.4. Studying of Marketing costs, Margins and Price Spread

Average Gross Margin—The average gross margin at each successive level of marketing was worked out using the formula:

$$\text{Average gross margin} = \frac{\text{Total sale value} - \text{Total purchase value}}{\text{Quantity of the produce handled}}$$

Absolute margin

Absolute margin earned by a middleman was calculated as:

$$\text{Absolute margin} = \text{PRi} - (\text{PPi} + \text{CMi})$$

Where,

PPi = Total purchase value of goods per unit (purchase price), and

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

CMi = Per unit cost incurred in marketing by middlemen.

Price spread

The breakup of costs, margin, and share of the producer - farmer and different middlemen was worked out in the consumer's price in simple percentage terms. To study the price spread in the marketing of pearl millet, the marketing costs and margins were worked out as under:

Marketing Cost:

The total cost of marketing was calculated as under:

$$C = CF + CM_1 + CM_2 + CM_3 + \dots + CM_n$$

Where,

C = Total cost of marketing (Rs/qt).

C = Cost borne by the producer/farmer from the time at which the produce leaves the farm till the sale of the produce (Rs/qt).

C = Cost incurred by the middleman in the process of buying and selling (Rs/qt).

P = Purchase price of intermediary (Rs/qt).

C = Cost incurred in marketing of intermediary (Rs/qt).

Producer's share in the consumer's rupee:

The producer's share in the consumer rupee was worked out as under by the following formula:

$$PS = \frac{PF}{PC} \times 100$$

Where,

PS = Producer's share in consumer rupees (in per cent)

PF = Price of the produce received by the farmer (Rs/qt).

PC = Price of the product paid by the consumer (Rs/qt) Producer's share in the consumer's rupee:

Percentage margin-The percentage margin was calculated as:

$$\text{Percentage margin} = \frac{PR_i - (PP_i + CM_i)}{PR_i} \times 100$$

Where,

PR_i = Total value of receipts per unit (sales price),

PP_i = Total purchase value of goods per unit (purchase price), and

CM_i = cost incurred on marketing per unit by middlemen.

Total cost of marketing – Total cost of marketing was calculated as under:

$$C = CF + CM_1 + CM_2 + CM_3 + CM_i + \dots + CM_n$$

Where,

C = Total cost of marketing of the commodity

CF = Cost borne by the producer-farmer from the time at which the produce leaves the farm till the sale of the produce .

CMi = Cost incurred by the middlemen in the process of buying and selling.

3.3.5. Marketing efficiency

Marketing efficiency shows the relationship between marketing variables and how efficiently the marketing system is running. The larger value of marketing efficiency shows that the market is more efficient.

$$\text{Marketing Efficiency} = (V/I) - 1$$

Where,

V = Value of goods sold (consumer's price)

I = Total marketing cost + margins.

The higher the ratio, the more the marketing efficiency.

$$ME = FP/(MC+MM]$$

Where,

ME = Marketing efficiency

FP = Net price receive by farmer (Rs/qt).

MC = Total marketing cost (Rs/qt).

MM = Total marketing margins of intermediaries (Rs/qt).

3.3.6. Constraints in Production, Marketing, and Suggestions

Constraints in respect of production and marketing of pearl millet faced by the farmers were asked and analyzed in terms of percentage.

CHAPTER – IV

RESULTS AND DISCUSSION

In this chapter, the results are presented after analysis of primary data collected entitled “Economic analysis of Production and Marketing of Pearl Millet in Joura, Morena District of Madhya Pradesh”. The results that emerged out of the study have been presented in the following subhead:

4.1 To analysis the cost of cultivation and return of pearl millet.

4.2 To find out the marketing cost, price spread in the different marketing channel.

4.3 To analysis the problems faced by farmers in the production and marketing of pearl millet and provide suggestion to overcome them.

4.1. COST OF CULTIVATION OF PEARL MILLET PRODUCTION

The cost of cultivation of pearl millet production was analyzed category wise as well as overall basis and results are presented in the table 4.1.1. The table depicted that, an average cost of cultivation of pear millet production in the Morena district was observed to be Rs. 29569.74/ha. Across the categories cost of cultivation was found to be maximum Rs. 30490.52/ha on a small farm, followed by Rs. 29332.83/ha on a medium, and Rs. 28885.87/ha on a large farm size, which indicates that the total cost of cultivation pearl millet production decreased as the size of the farm increased due to scale of economies. On an average, in the total cost of pearl millet the highest cost is shared by harvesting (Rs. 4222.78/ha), followed by land preparation (Rs. 3899.55/ha), threshing (Rs. 2445.83/ha), fertilizer (Rs. 1845.94), manure (Rs.1377.00/ha), plant protection (Rs. 983.48/ha), bullock labour charges (Rs. 845.21/ha), and seed (Rs. 693.67/ha), whereas irrigation charges were observed to be zero on all sizes of farms, which indicated that pearl millet growers depend on rainfall for irrigation. On an average, cost of interest of variable inputs, land revenue and depreciation were observed to be Rs. 978.81, Rs. 150, Rs. 717.44 per ha respectively. On an average cost C_3 (Rs. 29569.74), interest on fixed capital, rental value of own land, imputed value of family labour and managerial cost were share Rs. 936.79, Rs. 5550, Rs. 2235.08, and Rs. 2688.16, respectively.

Table 4.1.1. Cost of cultivation of pearl millet under different size of farm (Rs/ha)

Particulars	Small	Medium	Large	Average
Land preparation	4095.66 (13.43)	3890.56 (13.26)	3712.42 (12.85)	3899.55 (13.19)
Manuring	1576.22 (5.17)	1337.82 (4.56)	1216.95 (4.21)	1377.00 (4.66)
Irrigation	0.00	0.00	0.00	0.00
Bullock labour	1034.20 (3.39)	823.59 (2.81)	677.84 (2.35)	845.21 (2.86)
Harvesting	4536.74 (14.88)	4198.00 (14.31)	3933.60 (13.62)	4222.78 (14.28)
Threshing	2445.83 (8.02)	2445.83 (8.34)	2445.83 (8.47)	2445.83 (8.27)
Seeds	611.84 (2.01)	699.34 (2.38)	769.84 (2.67)	693.67 (2.35)
Plant protection	885.38 (2.90)	976.73 (3.33)	1088.33 (3.77)	983.48 (3.33)
Fertilizer	1836.86 (6.02)	1907.25 (6.50)	1793.70 (6.21)	1845.94 (6.24)
Interest on variable cost @ 6 % (working capital)	1021.36 (3.35)	976.75 (3.33)	938.31 (3.25)	978.81 (3.31)
Land revenue	150.00 (0.49)	150.00 (0.51)	150.00 (0.52)	150.00 (0.51)
Depreciation	625.78 (2.05)	725.78 (2.47)	800.78 (2.77)	717.44 (2.43)
Cost A₁	18819.87 (61.72)	18131.65 (61.81)	17527.60 (60.68)	18159.71 (61.41)
Cost A₂	-	-	-	-
Interest on fixed capital	825.78 (2.71)	958.88 (3.27)	1025.71 (3.55)	936.79 (3.17)
Rental value of Land	5550 (18.20)	5550 (18.92)	5550 (19.21)	5550 (18.77)
Imputed value of family Labour	2523 (8.27)	2025.68 (6.91)	2156.57 (7.47)	2235.08 (7.56)
Managerial cost	2771.87 (9.09)	2666.62 (9.09)	2625.99 (9.09)	2688.16 (9.09)
Total cost (Cost C₃)	30490.52 (100.00)	29332.83 (100.00)	28885.87 (100.00)	29569.74 (100.00)

(Source: Field survey - Primary data 2020-21)

Note* - The figure in parenthesis represents percentage of the total cost in the corresponding size of farm.

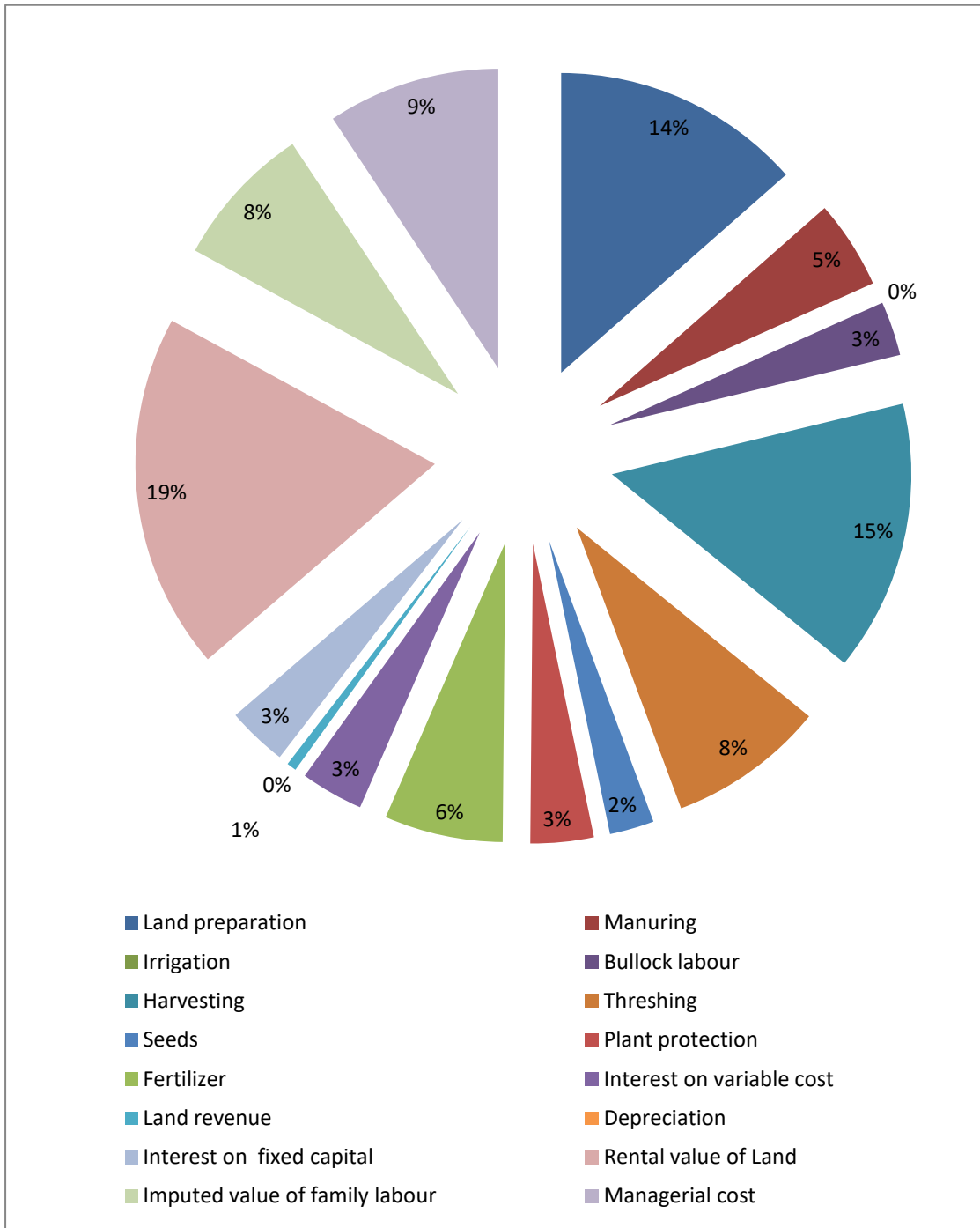


Fig 4.1.1: Average percent share of different cost component in the total cost

4.1.2. Component wise cost of cultivation of pearl millet production

The different costs are presented in table 4.1.2. It was observed from the table that, cost A_1 at the average farm level was reported Rs.18159.71/ha which was highest on the small farm (Rs.18819.87/ha) and lowest on the large farm (Rs.17527.60/ha). This indicates that decreasing trend is observed in the cost of A_1 . There is no cost A_2 was observed in the all sizes farm, indicating that leasing patterns were not adopted by the sample farmer.

On an average cost B_1 , B_2 , C_1 , C_2 , and C_3 were observed Rs.19096.50/ha Rs.24646.50/ha, Rs.21331.58/ha, Rs 26881.58/ha and Rs.29569.74/ha respectively.

Table 4.1.2: Component wise cost of cultivation of pearl millet (Rs/ha)

Cost	Small	Medium	Large	Average
A_1	18819.87	18131.65	17527.60	18159.71
A_2	–	–	–	-
B_1	19645.65	19090.53	18553.31	19096.50
B_2	25195.65	24640.53	24103.31	24646.50
C_1	22168.65	21116.21	20709.88	21331.58
C_2	27718.65	26666.21	26259.88	26881.58
C_3	30490.52	29332.83	28885.87	29569.74

Source: Authors' computation based on primary data 2020-21

4.1.3. Profitability of pearl millet production

It was reported from table 4.1.3 that, an average yield of pearl millet was observed 19.20 qt/ha, which was maximum on a large farm (19.98 qt/ha), followed by a medium farm (19.03qt/ha) and small farm (18.58 qt/ha). On an average production of by product was observed 18.48qt/ha, which was maximum on a large farm (19.23 qt/ha), followed by medium (18.33 qt/ha), and small farm (Rs. 17.87 qt/ha.)

The average gross income was observed Rs. 41397.55/ha, which was highest on a large farm, followed by medium and small farms, *i.e.* Rs. 43526.06/ha, Rs. 40403.80/ha, and Rs. 40262.78/ha, respectively.

The average total cost was observed Rs 29569.74 /ha, which was maximum on a small farm (30490.52/ha), followed by medium (Rs. 29332.83/ha) and large farm (Rs.28885.87/ha). Net income was calculated by deducting gross income from the total cost, which was observed to be Rs.11827.81 per ha. The highest net income was observed on large farms (Rs.14640.20/ha) and the lowest on small farms (Rs. 9772.26/ha).

The average per quintal cost of production was observed Rs.1100.27 /qt, which was highest on small farms (Rs.1152.90/qt), which was decreased as the size of the farm increased, Rs.1114.14/qt, and Rs.1038.11/qt. on medium and large farms, respectively. The profitability of pear millet production can be observed by analyzing benefit cost ratio which was observed 1:1.40. Across the category B:C ratio was reported 1:1.51, 1:1.38, 1.1.32 on large, medium, and small size of farm respectively. On an average basis the family labor income and farm business income were observed to be Rs 16751.05 and Rs. 23237.84/ha.

Table 4.1.3: Profitability of pearl millet production

Particulars	Small	Medium	Large	Average
Production of main product (qtl/ha)	18.58	19.03	19.98	19.20
Production of by product qtl/ha	17.87	18.33	19.23	18.48
Price of main product (Rs/ qtl)	1678.86	1695.90	1770.85	1715.20
Price of by product (Rs/ qtl)	507.53	443.58	423.53	458.21
Income from main product(Rs/ha)	31193.22	32272.98	35381.58	32949.26
income from by product (Rs/ha)	9069.56	8130.82	8144.48	8448.29
Gross Income (Rs/ha)	40262.78	40403.80	43526.06	41397.55
Cost C ₃ (Rs/ha)	30490.52	29332.83	28885.87	29569.74
Net income (Rs/ha)	9772.26	11070.97	14640.20	11827.81
Cost of production (Rs/qtl)	1152.90	1114.14	1038.11	1100.27
Farm business income (Rs/ha)	21442.91	22272.15	25998.46	23237.84
Family labour income(Rs/ha)	15067.13	15763.27	19422.75	16751.05
B:C ratio	1:1.32	1:1.38	1:1.51	1:1.40

Source: Authors' computation based on primary data 2020-21

4.1.4. Net return over different cost in pearl millet production

Net returns on an average basis along with different size of farm were calculated and the results are presented in table 4.1.4.

Net return on an average basis under cost A₁, B₁, B₂, C₁, C₂ and C₃ were reported at Rs. 23129.51/ha, Rs. 22192.72/ha, Rs. 16751.05 /ha, Rs. 19957.63/ha, Rs. 14407.63/ha and Rs. 11719.48/ha, respectively. Across the categories, net return over cost C₃ were reported Rs. 9772.26/ha, Rs. 11070.97/ha and Rs. 14640.20/ha on small, medium, and large farm sizes, respectively.

Table 4.1.4: Net return over different cost in pearl millet production

Cost	Small	Medium	Large	Average
A ₁	21442.91	22272.15	25998.46	23129.51
A ₂	-	-	-	-
B ₁	20617.13	21313.27	24972.75	22192.72
B ₂	15067.13	15763.27	19422.75	16751.05
C ₁	18094.13	19287.59	22816.18	19957.63
C ₂	12544.13	13737.59	17266.18	14407.63
C ₃	9772.26	11070.97	14640.20	11719.48

Source: Authors computation based on primary data 2020-21

4.1.5. Benefit cost ratio over different cost

Return over one rupee investment was calculated under the different sizes of farm as well as average basis and the results are presented in table 4.1.5. It was observed from the table that , the average B:C ratio over cost A₁, B₁, B₂, C₁, C₂, and C₃ was observed 2.28, 2.17, 1.68, 1.94, 1.54 ,and 1.40 respectively. Across the category, the B: C ratio over cost C₃ was observed to be highest on large farms 1.51, followed by on medium 1.38 and small farms 1.32.

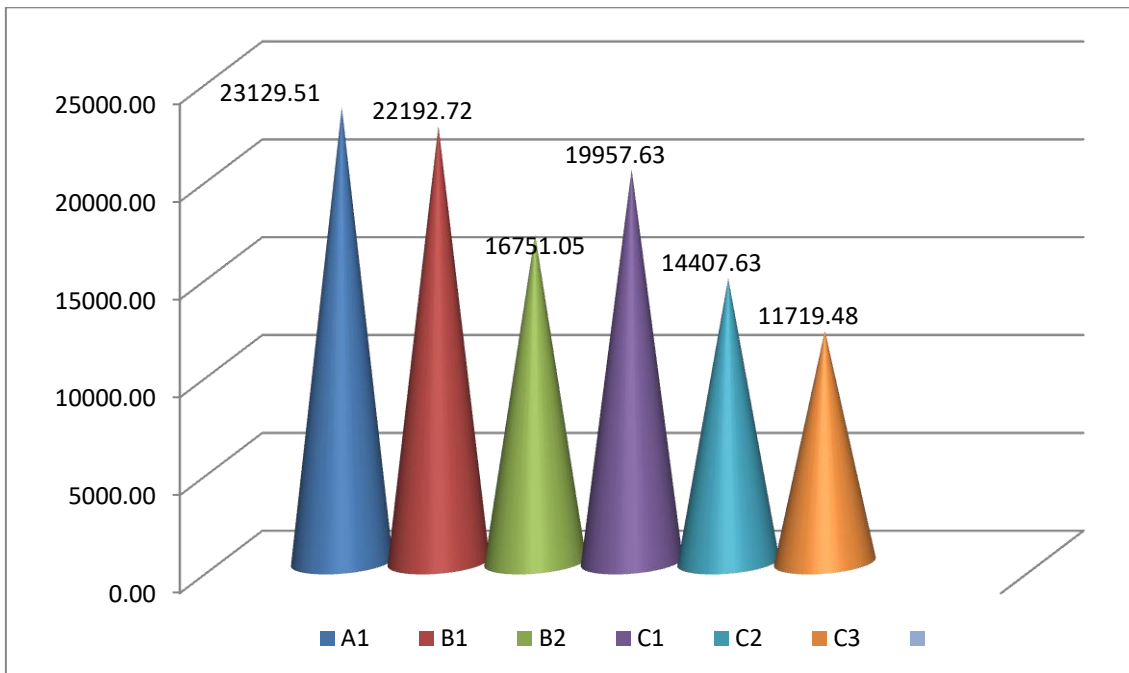


Fig 4.1.2: Net return over different cost in the pearl millet production (Rs/ha)

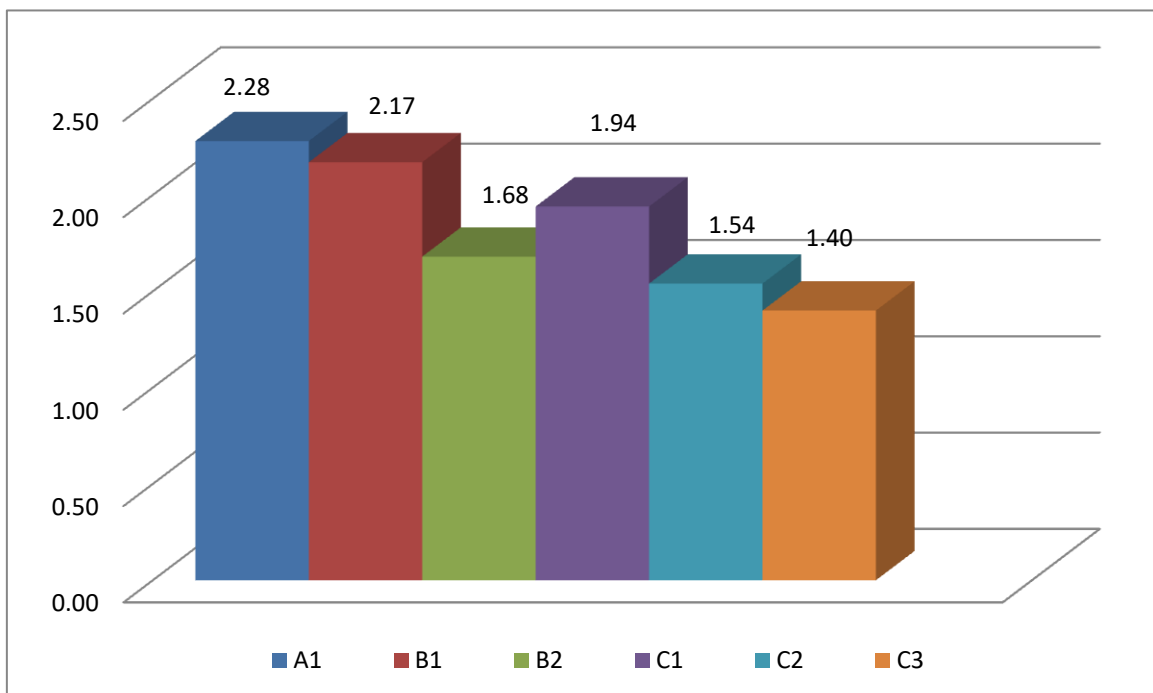


Fig 4.1.3: B: C ratio over different cost in the pearl millet production

Table 4.1.5: Benefit cost ratio over different cost in pearl millet production.

Cost	Small	Medium	Large	Average
A ₁	2.14	2.23	2.48	2.28
A ₂	-	-	-	-
B ₁	2.05	2.12	2.35	2.17
B ₂	1.60	1.64	1.81	1.68
C ₁	1.82	1.91	2.10	1.94
C ₂	1.45	1.52	1.66	1.54
C ₃	1.32	1.38	1.51	1.40

Source: Authors' computation based on primary data 2020-21.

4.2. Marketing cost, Margin and price spread in the different channel of pearl millet

Marketing channel is the way through product move from production point to the ultimate consumer. Three marketing channels were observed in the study area through pearl millet moved from producer to consumer, which is given below.

- i. Channel-I (Producer to consumer)
- ii. Channel-II (Producer to Village trader to retailer to consumer)
- iii. Channel-III (Producer to village trader to whole saler (Mandi) to retailer to consumer)

4.2.1. Marketing cost, and price spread in the channel-I.

Table 4.2.1 depicted that pearl millet move directly from produce to farmer because most of the small farmer direct sells their surplus produce to the consumer in the village and nearby village.

In the channel-I, the net price received by the farmer was Rs. 1560 per quintal, which was 96.84 percent of the consumer rupee. In this channel, the total cost incurred by producers to sell their products to the consumer was observed to be Rs. 50.83 per quintal (3.16 percent of the consumer rupee). The farmer sold his produce to consumers at Rs. 1610.83 per quintal. In this channel, the price spread

came to Rs. 50.83, which was the same as the marketing cost, indicating that there were no inter mediaries involved in this channel.

Table 4 2.1. Marketing cost and price spread in the channel-I

S.N	Particulars	Channel I	
		Rs/qt	% share in consumer rupee
1.	Net price received by producer	1560.00	96.84%
2.	Expenditure incurred by producer	50.83	3.16%
A	Preparation charges	12.50	0.78%
B	Transportation cost	12.0	0.74%
C	Cost of gunny bags	26.33	1.63%
3.	Price spread	50.83	3.16%
4.	Producer sale price/ Consumer Purchase price	1610.83	100.00%

4 2.2: Marketing cost, margin, and price spread in the channel-II

Table 4.2.2 reveals that pearl millet moves from farmer to village trader, village trader to retailer, and retailer to consumer. It was observed from the table that the net price received by the farmer was Rs. 1570/qt. (83.64 percent of the consumer rupee). The cost born by producer to sell their produce for the retailer was Rs. 92.54/qt. (4.93 percent of consumer rupee). The farmer sold his produce to a village trader at Rs.1662.54 (88.57 percent of the consumer rupee). The cost incurred by the village trader was Rs. 64.46/qt. (3.43 percent of consumer rupees). The net margin received by the village trader was Rs. 56.61/qt (3.02 percent of the consumer rupee). Finally village trader sold their produce to retailer at Rs.1783.61/qt. The total cost incurred by the retailer was Rs.34.71/qt. which was 1.85 percent of the consumer rupee. The net margin earned by retailer was Rs. 58.79 per quintal. The price spread was Rs. 307.11/qt, which was 16.36 percent of consumer rupee. Finally the retailer sold their produce to the consumer at Rs. 1877.11/qt.

Table: 4.2.2. Marketing cost, margin and price spread in the channel II

SN	Particulars	Channel II	
		Rs/qt	% share in consumer rupee
1	Net price received by producer	1570.00	83.64%
2	Expenditure incurred by producer	92.54	4.93%
A	Preparation charges	13.30	0.71%
B	Transportation cost	15.00	0.80%
C	Cost of gunny bags	24.00	1.28%
D	Loading unloading	16.00	0.85%
E	Weighing charges	7.55	0.40%
F	Marketing fees	12.00	0.64%
G	Losses	4.69	0.25%
2	Producer sale price/ village trader purchase price	1662.54	88.57%
A	Expenditure incurred by V.T.	64.46	3.43%
B	Grading and cleaning	12.00	0.64%
C	Market fees	8.77	0.47%
D	Loading Unloading	16.50	0.88%
E	Weighing charges	6.80	0.36%
F	Transportation cost	14.70	0.78%
G	Losses	5.69	0.30%
3.	Net margin of village trader	56.61	3.02%
4.	village trader sale price/ retailer purchase price	1783.61	95.02%
5.	Expenditure incurred by retailer	34.71	1.85%
A	Transportation cost	13..22	0.70%
B	Grading and cleaning	8.00	0.43%
C	Loading Unloading	16.50	0.88%
D	Marketing fees	0.00	0.00%
E	Weighing charges	7.66	0.41%
F	Losses	2.55	0.14%
6.	Retailer s Net margin	58.79	3.13%
7.	Price spread	307.11	16.36%
8.	Total marketing margin	115.40	6.15%
9.	Total marketing cost	191.71	10.21%
10	Retailer s sale price/ Consumer s purchase price	1877.11	100.00%

4. 2.3. Marketing cost, margin, and price spread in the channel-III

Table 4.2.3 revealed that pearl millet moved from farmer to village trader, village trader to wholesaler, wholesaler to retailer, and retailer to consumer. Table depicted that, the net price received by the producer was Rs. 1550 per quintal, which was 77.60 percent of the consumer rupee. The marketing cost incurred by the producer was Rs. 90.25 per quintal, which was 4.52 percent of the consumer rupee. The Producer sold their product to a village trader at Rs. 1640.25 per quintal. The cost incurred by the village trader was Rs.67.79 per quintal, which was 3.39 percent of consumer rupee, the net margin earned by the village trader was Rs 58.05 per quintal, which was 2.91 percent of consumer rupee. After that, village traders sold their produce to wholesalers at Rs.1766.09 per quintal. The marketing cost incurred by wholesaler was 59.55 per quintal (2.98 percent of consumer rupee), marketing margin earned by wholesale was Rs.58/qt, and thereafter wholesaler sold produce to retailer at Rs.1883.64 per quintal. The marketing cost and margin of the retailer were Rs.55.56 and Rs.58.30/qt respectively. Finally, the retailer sold their produce to the consumer at Rs. 1997.50/qt.

Table 4.2.3: Marketing cost, margin and price spread in the channel- III

S. N	Particulars	Channel III	
		Rs/qt	Percent
1	Net price received by producer	1550.00	77.60%
2	Expenditure incurred by producer	90.25	4.52%
A	Preparation charges	11.70	0.59%
B	Transportation cost	14.20	0.71%
C	Cost of gunny bags	24.00	1.20%
D	Loading Unloading	16.00	0.80%
E	Weighing Charges	7.55	0.38%
F	Marketing fees	12.00	0.60%
G	Losses	4.80	0.24%
3	Producer sale price/ village trader purchase price	1640.25	82.12%
4	Expenditure incurred by Village trader	67.79	3.39%
A	Grading and cleaning	13.00	0.65%
B	Market fees	8.77	0.44%
C	Loading Unloading	16.50	0.83%
D	Weighing charges	6.90	0.35%
E	Transportation cost	16.74	0.84%
f	Losses	5.88	0.29%
5	Margin of village trader	58.05	2.91%

6	sale price of village trader/ purchase price of whole saler (mandi)	1766.09	88.42%
7	Expenditure incurred by W.S. In Channel	59.55	2.98%
A	Storage charges	7.76	0.39%
B	Transportation cost	16.52	0.83%
C	Loading Unloading	16.50	0.83%
D	Market fees	8.77	0.44%
E	Weighing charges	6.25	0.31%
F	Losses	3.75	0.19%
8	Net margin of whole saler (Mandi)	58.00	2.90%
9	W.S. sale price(mandi) / retailer purchase price	1883.64	94.30%
10	Expenditure incurred by Retailer	55.56	2.78%
A	Transportation cost	15.52	0.78%
B	Grading and cleaning	7.21	0.36%
C	Loading Unloading	16.50	0.83%
D	Marketing fees	7.58	0.38%
E	Weighing charges	6.25	0.31%
F	Losses	2.50	0.13%
11	Net margin of retailer	58.30	2.92%
12	Price spread	447.50	22.40%
13	Total marketing margin	174.35	8.73%
14	Total marketing cost	273.15	13.67%
15	Retailer's sale price/ consumer's Purchase price	1997.50	100.00%

4.2.4. Marketing cost, margin and price spread in the channel I, II, and III

Table 4.2.4 revealed the comparative study of marketing costs, margins, and price spread under different channels, i.e., Channel I, II and III. It was observed from the table that the maximum price spread came in the marketing channel III, followed by channel II, and channel I, at Rs.447.50, Rs. 307.11, and Rs. 50.83 per quintal, respectively. The cost of marketing in Channel I, Channel II and Channel III was seen at Rs. 50.83, Rs. 191.71 (cost born by farmer Rs. 92.54, village trader Rs. 64.46, and retailer 34.71) and Rs. 273.15 (cost born by farmer 90.25, village trader Rs. 67.79, wholesaler Rs. 59.55 and retailer Rs. 55.56 per quintal, respectively).

Total marketing margin were found highest in channel III Rs. 174.35 per quintal (margin of village trader Rs. 58.05, wholesaler Rs. 58, retailer Rs. 58.30) followed by Channel II Rs. 115.40 (margin of village trader 56.61 and retailer 58.79) and there was no marketing margin observed in channel I because farmer sold produce direct to farmer.

Producer's share in consumer's rupee was observed 96.84, 83.64 and 77.60 percent in marketing of pearl millet under channel I, II and III respectively, which indicated that channel I was most efficient because producer sold their produce to consumer without involvement of middlemen, then channel II was observed most efficient whereas, Channel III was noted least efficient due to involvement of large number of middlemen in movement of pearl millet in the study area which inferred that presence of large number of middlemen in channel efficiency of channel would be decrease. Hence it concluded that maximum marketing cost, margin as well as price spread found in channel III followed by Channel II and channel I

Table 4.2.4: Marketing cost, margin and price spread in the channel I, II, and III

SN	Particular	Channel I		Channel II		Channel III	
		Rs/qt	%	Rs/qt	%	Rs/qt	%
1	Net price received by producer	1560	96.84	1570	83.64	1550	77.60
2	Expenditure incurred by producer	50.83	3.16	92.54	4.93	90.25	4.52
a	Preparation charges	12.50	0.78	13.30	0.71	11.70	0.59
b	Transportation cost	12.0	0.74	15.00	0.80	14.20	0.71
c	Cost of gunny bags	26.33	1.63	24.00	1.28	24.00	1.20
d	Loading, Unloading	-	-	16.00	0.85	16.00	0.80
e	Weighing Charges	-	-	7.55	0.40	7.55	0.38
f	Marketing fees	-	-	12.00	0.64	12.00	0.60
g	Losses	-	-	4.69	0.25	4.80	0.24
3	Producer sale price/village trader . purchase price	-	-	1662.54	88.57	1640.25	82.12
4	Cost born by villge trader	-	-	64.46	3.43	67.79	3.39
a	Grading and cleaning	-	-	12.00	0.64	13.00	0.65
b	Market fees	-	-	8.77	0.47	8.77	0.44
c	Loading Unloading	-	-	16.50	0.88	16.50	0.83
d	Weighing charges	-	-	6.80	0.36	6.90	0.35
e	Transportation cost	-	-	14.70	0.78	16.74	0.84
f	Losses	-	-	5.69	0.30	5.88	0.29
5	Net margin of village trader	-	-	56.61	3.02	58.05	2.91
6	Village trader sale price / retailer/ wholesaler purchase price	-	-	1783.61	95.02	1766.09	88.42
7	Expenditure incurred by whole saler	-	-	-	-	59.55	2.98
a	Storage charges	-	-	-	-	7.76	0.39
b	Transportation cost	-	-	-	-	16.52	0.83
c	Loading, Unloading	-	-	-	-	16.50	0.83
d	Market fees	-	-	-	-	8.77	0.44
e	Weighing charges	-	-	-	-	6.25	0.31
f	Losses	-	-	-	-	3.75	0.19
8	Net margin of whole saler	-	-	-	-	58.00	2.90
9	Whole saler sale price/ retailer purchase price	-	-	-	-	1883.64	94.30

10	Expenditure incurred by Retailer	-	-	34.71	1.85	55.56	2.78
a	Transportation cost	-	-	13.22	0.70	15.52	0.78
b	Grading and cleaning	-	-	8.00	0.43	7.21	0.36
c	Loading Unloading	-	-	16.50	0.88	16.50	0.83
d	Marketing fees	-	-	0.00	0.00	7.58	0.38
e	Weighing charges	-	-	7.66	0.41	6.25	0.31
f	Losses	-	-	2.55	0.14	2.50	0.13
11	Net margin of retailer	-	-	58.79	3.13	58.30	2.92
12	Price spread	50.83	3.16	307.11	16.36	447.50	22.40
13	Total marketing margin	-	-	115.40	6.15	174.35	8.73
14	Total marketing cost	50.83	3.16	191.71	10.21	273.15	13.67
15	Consumer's Purchase price	1610.83	100	1877.11	100.	1997.50	100
16	Efficiency Index	30		5.11		3.46	

Note* figure in % represent the percentage of consumer rupee in the corresponding channel

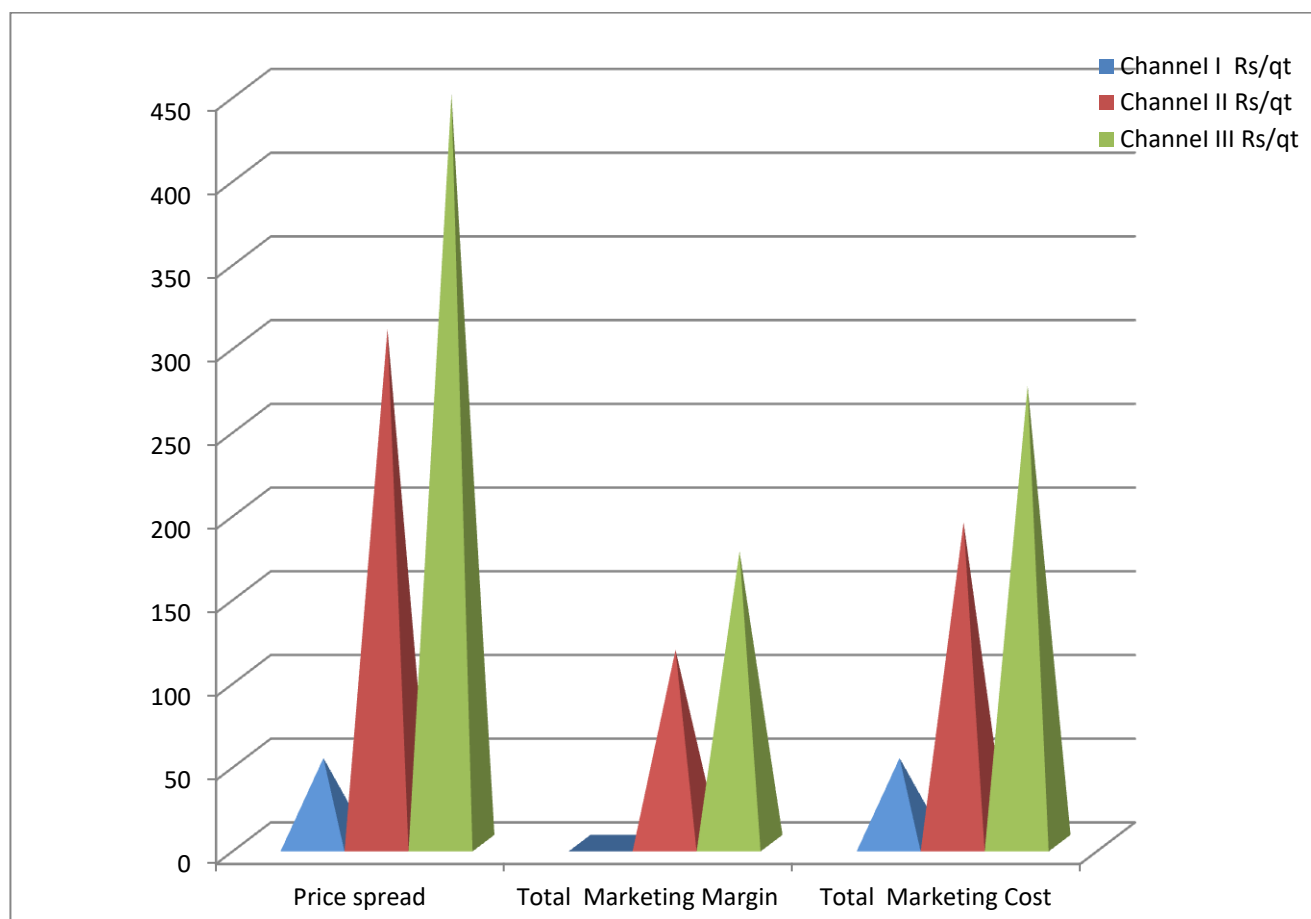


Fig: 4.2.1: Price spread, marketing cost and margin under different marketing channel.

4.3.1. Constraints in the production and marketing of pearl millet

Table 4.3.1 reveals the two types of problems faced by pearl millet growers in the study area out of them the first was production constraints. In these constraints, the major problems were uneven distribution of rainfall (82.22%), followed by a shortage of hired human labour for sowing and harvesting (68.89%), availability of quality seed (64.44%), high cost of input (60.00%), and lack of technical knowledge (50%). In the case of marketing constraints, the major problems were the high cost of transportation (84.44%), followed by delays in cash payment (76.67%), malpractices by middlemen (75.56%), lack of storage facilities at farm level (64.44%), lack of marketing intelligence (61.11%) and price fluctuation (54.44%).

Table 4.3.1: Constraints in the production and marketing of pearl millet

SN	Constraints	Small		Medium		Large		Overall	
		N=30	%	N=30	%	N=30	%	N=90	%
1.	Production problem								
a	High cost of input	17	56.67	20	66.67	17	56.67	54	60.00
b	lack of technical knowledge	15	50.00	16	53.33	14	46.67	45	50.00
c	Availability of quality seed	20	66.67	22	73.33	16	53.33	58	64.44
d	uneven distribution of rainfall	25	83.33	27	90.00	22	73.33	74	82.22
e	Shortage of hired human labor for sowing/ harvesting	23	76.67	21	70.00	18	60.00	62	68.89
2.	Marketing problem								
a	High cost of transportation	26	86.67	22	73.33	28	93.33	76	84.44
b	High fluctuation in prices	19	63.33	13	43.33	17	56.67	49	54.44
c	Delay in cash payment	24	80.00	21	70.00	24	80.00	69	76.67
d	Lack of market intelligence	17	56.67	16	53.33	22	73.33	55	61.11
e	lack of storage capacity at farm level	21	70.00	16	53.33	21	70.00	58	64.44
f	Malpractices by middlemen	17	56.67	27	90.00	24	80.00	68	75.56

CHAPTER V

SUMMARY, CONCLUSION AND SUGGESTIONS

Pearl millet (*Pennisetum glaucum*) accounts for almost half of the global millet production and is the most popular due to its high resistance to drought and high temperatures, adaptability to poor soils, low vulnerability to diseases and insect pests, and good nutritive values, including a superior protein quality and the highest fat content (6%) among cereals. Pearl millet grows well where other crops generally fail completely. In Asia, it is mainly grown in India, Pakistan, and Yemen. India could be the single country which is witnessing the largest decrease in area under pearl millet.

The marketing component is important to ensure remunerative prices for the farmers, which will eventually work as an incentive for them to bring more area under cereals. Though marketing can also help in inducing an element of incentive to farmers through participation in the processing and distribution of pearl millet through direct marketing, farmers' market or cooperative marketing to get a higher share of the consumer's price. Marketing innovations like group marketing will help in improving the bargaining powers of small and marginal farmers.

Among the various important pearl millet growing states of the country, Madhya Pradesh is the fifth largest producer of pearl millet in the country, which occupies 3.69 percent area with 7.31 percent production with a productivity of 2458 kg/ha, which is above national productivity, which is 1243 kg/ha [Agril Statistics at a Glance, 2019]. Any increase or decrease in the area and production of the pearl millet crop will have a considerable effect on the farm economy of the state, in particular the grid agro-climatic zone of Madhya Pradesh [Gwalior and Chambal division] having the largest area and production of pearl millet, which contributes 94.93 percent of the total area and 96.59 percent of the production of the state during 2018-19. Morena district of Gird agro-climatic zone of Madhya Pradesh has first position which contributes 60.48 percent in area and 53.90 percent production of the state during 2018-19. The present study was conducted to assess the **“Economic analysis of the production and marketing of pearl millet in Joura, Morena district, Madhya Pradesh,”** which was undertaken with the following specific objectives.

1. To analysis the cost of cultivation and return of pearl millet
2. To find out the marketing costs and price spread under different marketing channels
3. To analysis the problems faced by farmers in the production and marketing of pearl millet and suggestion to overcome them.

Morena district of Madhya Pradesh was selected purposely for the study because pearl millet is the major kharif season crop of this district. Multistage sampling was used for drawing the sample famers. This district comprises six blocks, namely Morena, Ambah, Jaura, Pahadgarh, Sabalgarh, and Kailaras. Out of them Jaura block was selected primarily due to the highest area under pearl millet cultivation in the district.

In the second stage of sampling, a list of pearl millet growing villages was prepared from selected block (Jaura) with the help of Krishi Adhikari. Then five villages, namely Dhurukuda, khiri, kurroli, sagoria, and Mamachanu were selected randomly for the study. At the third stage of sampling, a list of pearl millet growing farmers from these five villages was prepared along with their size of land holding and arranged in ascending order on the basis of their land holding and categories into three groups, i.e., small (less than 2 ha), medium (2-4 ha) and large (4 ha and above). Thereafter, from each category, 30 respondents (Total 90) were selected randomly.

The study utilized both primary and secondary data. The primary data with respect to the pearl millet crop and production of pearl millet, the sale pattern, costs incurred by the selected farmers in the sale of pearl millet, and sale price of the produce obtained by the farmers, as well as costs incurred by the wholesalers and retailers in the purchase and sale of pearl millet, were collected from the producers, wholesalers, and retailers through the personal interview method, with a set of well-structured schedules specifically designed for the purpose of the present study.

5.1 SUMMARY

- The average cost of cultivation of pearl millet production in the Morena district was observed to be Rs. 29569.74/ha. Across the categories, the cost of cultivation was found to be a maximum Rs. 30490.52/ha on a small farm, followed by Rs. 29332.83/ha on a medium, and Rs. 28885.87/ha on a large farm, which indicates that the total cost of cultivation for pearl millet production decreased as the size of the farm increased due to scale of economies.
- On an average in the total cost of pearl millet, the highest cost is shared by harvesting (Rs.4222.78/ha), followed by land preparation (Rs.3899.55/ha), threshing (Rs.2445.83/ha), fertilizer (Rs.1845.94), manure (Rs.1377.00/ha), plant protection (Rs.983.48/ha), bullock labour charges (Rs.845.21/ha), and seed (Rs. 693.67/ha), whereas irrigation charges were observed to be zero on all sizes of farms, which indicated that pearl millet growers depend on rainfall for irrigation.
- On an average, the cost of interest on variable inputs, land revenue and depreciation were observed to be Rs. 978.81, Rs. 150, and Rs. 717.44 per ha, respectively. On an average cost C_3 (Rs. 29569.74), interest on fixed capital, rental value of own land, imputed value of family labour, and managerial costs were shared at Rs. 936.79, Rs. 5550, Rs. 2235.08, and Rs. 2688.16, respectively.
- At the average farm level cost A_1 was reported at Rs.18159.71/ha which was highest on the small farm (Rs. 18819.87/ha) and lowest on the large farm (Rs.17527.60/ha). This indicates that a decreasing trend is observed in the cost of A_1 . There is no cost A_2 was observed in the all sizes farm, indicating that leasing patterns were not adopted by the sample farmer.
- On an average cost B_1 , B_2 , C_1 , C_2 , and C_3 were observed Rs.19096.50 /ha, Rs.24646.50/ha, Rs.21331.58/ha, Rs. 26881.58 /ha and Rs.29569.74 /ha respectively.
- An average yield of pearl millet was observed 19.20 qt/ha, which was maximum on a large farm (19.98 qt/ha), followed by a medium farm (19.03qt/ha) and small farm (18.58qt/ha). On an average production of by product was observed 18.48 qt/ha, which was maximum on a large farm

(19.23 qt/ha), followed by medium (18.33 qt/ha), and small farm (Rs. 17.87qt/ha.)

- The average gross income was observed at Rs. 41397.55/ha, which was highest on a large farm, followed by medium and small farms, respectively. Rs. 43526.06/ha, Rs. 40403.80/ha, and Rs. 40262.78/ha.
- An average total cost was observed Rs 29569.74 /ha, which was maximum on a small farm (30490.52/ha), followed by medium (Rs. 29332.83/ha) and large farm (Rs.28885.87/ha).
- An average net income from pearl millet production was observed to be Rs. 11827.81 per ha. which was highest on large farms (Rs.14640.20/ha) and the lowest on small farms (Rs. 9772.26/ha).
- The average per quintal cost of production was observed at Rs.1100.27/qt, which was highest on small farms (Rs.1152.90/qt), which decreased as the size of the farm increased, Rs.1114.14/qt, and Rs.1038.11/qt on medium and large farms, respectively.
- The average benefit cost ratio was observed at 1:1.40. Across the category, the B:C ratio was reported at 1:1.51, 1:1.38, and 1.32 on large, medium, and small-sized of farms, respectively.
- On an average basis, the family labor income and farm business income were observed to be Rs. 14515.97 and Rs. 23237.84/ha.
- The maximum price spread came in the marketing channel III, followed by channel II, and channel I, at Rs. 447.50, Rs. 307.11 and Rs. 50.83 per quintal, respectively. The cost of marketing in channel I, channel II and channel III was seen at Rs. 50.83, Rs. 191.71 (cost born by farmer Rs. 92.54, village trader Rs. 64.46, and retailer 34.71) and Rs. 273.15 (cost born by farmer 90.25, village trader Rs. 67.79, wholesaler Rs. 59.55, and retailer Rs. 55.56, per quintal) respectively.
- The total marketing margin was found highest in channel III at Rs. 174.35 per quintal (margin of village trader Rs. 58.05, wholesaler Rs. 58.00, retailer Rs. 58.30), followed by Channel II at Rs. 115.40 (margin of village trader 56.61 and retailer 58.79) and there was no marketing margin observed in channel I because the farmer sold produce direct to the farmer.

- The Producer's share in consumer's rupee was observed at 96.84, 83.64, and 77.60 percent in the marketing of pearl millet in channels I, II and III, respectively, which indicated that channel I was the most efficient because producers sold their produce directly to consumers without the involvement of middlemen. Then, channel II was found to be the most efficient, where as channel III was observed to be the least efficient due to the involvement of a large number of middlemen in the movement of pearl millet in the study area, which inferred that due to the presence of a large number of middlemen in channel efficiency would be decreased.
- In the production constraints, the major problems were uneven distribution of rainfall (82.22%), followed by a shortage of hired human labour for sowing and harvesting (68.89), the availability of quality seed (64.44%), the high cost of input (60.00 percent), and lack of technical knowledge (50%).
- In the case of marketing, the major problems were the high cost of transportation (84.44%), followed by delays in cash payment (76.67%), malpractices by middlemen (75.56%), lack of storage facilities at farm level (64.44%), lack of marketing intelligence (61.11%), and price fluctuation (54.44%).
- The average benefit cost ratio was observed at 1:1.40. in the case of the category it was reported at 1:1.51, 1:1.38, and 1.32 on large, medium, and small size farm respectively, which inferred that production of pearl millet is profitable in the study area.

5.2. Conclusion

From the earlier discussion, the following conclusions emerged:

The average cost of cultivation of pear millet production was observed to be Rs. 29569.74/ha, which was maximum on a small farm (Rs. 30490.52/ha), followed by a medium (Rs. 29332.83/ha) and a large farm (Rs. 28885.87/ha), which indicates that the cost C_3 decreased as the size of the farm increased due to scale of economies. In the total cost of pear millet variable cost share 61.41 percent remaining (38.59 percent) cost together shared by interest on fixed capital, rental value of own land, imputed value of family labour and managerial cost.

In the variable cost, the maximum cost is shared by harvesting (Rs. 4222.78/ha), followed by land preparation (Rs. 3899.55/ha), threshing (Rs. 2445.83/ha), fertiliser (Rs. 1845.94/ha), manure (Rs. 1377.00/ha), plant protection (Rs. 983.48/ha), bullock labour charges (Rs. 845.21/ha), and seed (Rs. 693.67/ha). An average yield of pearl millet was observed at 19.20 qt/ha, which was the maximum on a large farm (19.98 qt/ha), followed by a medium farm (19.03 qt/ha) and a small farm (18.58 qt/ha).

The highest gross income was observed on a large farm, followed by medium and small farms.

- An average net income from pearl millet production was observed to be Rs.11827.81 per ha. Which was highest on large farms (Rs. 14640.20/ha) and the lowest on small farms (Rs. 9772.26/ha).
- Channel-I was the most efficient because producers sold their produce directly to consumers without the involvement of middlemen. Then, channel II was found to be the most efficient, whereas, channel III was observed least efficient due to the involvement of a large number of middlemen in the movement of pearl millet in the study area.

5.3. Suggestions

- In the study area, a major production problem was observed in the uneven distribution of rainfall, which can be overcome by the setup of a solar irrigation system by the government. Second, a reported shortage of labour during peak period which can be overcome by mechanized farming.
- In the case of the marketing problem, a major problem was seen in high transportation costs, which can be reduced by increasing the per unit quantity of output for transportation. Second there was an observed delay in cash payment which can be overcome by adopting a future trading system.
- It was observed in the study area that most the farmers used traditional farming technique so it is required to provide training and technology so that farmers can increase their production.

- Efforts should be made by the extension agencies to educate and encourage the farmers to use manures and fertilizers, plant protection and production technology.
- The malpractices within the market ought to even be checked in order that the farmers get remunerative price of their produce.
- Government should establish sound market intelligence system so that farmers can sell their surplus produce at maximum price.
- The malpractices in the market should also be checked so that the farmers get a fair deal. The farmers should be advised to sell their produce in regulated markets so that they are not the victims of malpractices.

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**DEPARTMENT OF AGRICULTURAL ECONOMICS & FARM MANAGEMENT
COLLEGE OF AGRICULTURAL, GWALIOR, (M.P.)**

Title: Economic analysis of Production and marketing of pearl millet in Joura,
Morena District, Madhya Pradesh

SCHEDULE OF INVESTIGATION

1. Name of the farmer _____ S/o _____

2. Name of the Village: _____ Tehsil: _____

District: _____

3. Land

(a) Operational holding (cultivated area in hectares)

S.No.	Particulars	Irrigated	Unirrigated	Total
1.	Owned land			
2.	Leased in			
3.	Leased out			
	Grand total			

(b) Land Rent/ Revenue

1. Land Revenue paid on owned land cash Rs. _____

2. Land Rent or leased out land cash Rs. _____ kind _____

3. Rent paid on leased in land cash Rs. _____ kind _____

(c) Rental value of owned land _____ Rs.

4. Cropping Pattern

S.No.	Crop	Area under crop (hectares)

Fixed Assets

Farm Machinery/Building

S.N.	Particulars	No.	Age	Purchase Value	Present Value	Depreciation in current year
1.	M.B. plough					
2.	Desi plough					
3.	Pata					
4.	Spades					
5.	Sickle and Khurpi					
6.	Chaff cutter					
7.	Bullocks and bullocks cart					
8.	Sprayers					
9.	Tube-wells					
10.	Thresher					
11.	Tractor					
12.	Diesel Engine/EM					
13.	Buildings(Storage)					
14.						
15.						
16.						
17.						
18.						
19.						
20.	Total					

Crop:

Input-output coefficient

S.No.	Operations/Inputs	Qty/ No.	Hr/ha		
			HL	FL	ML
1.	No. of ploughing				
2.	Planker				
3.	Seed				
4.	Sowing				
5.	Fert. Application				
	Urea				
	DAP				
	SSP				

	FYM				
6.	Inter-culture				
7.	Spray				
8.	Irrigation				
9.	Harvesting				
10.	Threshing				
11.	Transportation				

Rate list

1. Labour hiring: Man _____ Woman _____

2. Tractor _____ Camel/Bullock _____

3. Seed: Hybrid _____ Local _____

4. Urea _____ DAP _____ SSP _____ FYM _____ (per cartload of _____ qt.)

5. DE (hp) _____ (Hrs/irri/ha) Diesel used/irri/ha _____ Cost/irri/ha _____

6. EM (hp) _____ (Hrs/irri/ha) Units used/irri/ha _____ Cost/irri/ha _____

7. Insecticides/Pesticides

APPENDIX - II

Schedule for studying marketing cost and margin

Marketable/Marketed surplus

Last Year Stock _____ Current production _____

Marketable surplus _____

Requirement of family _____ marketed surplus _____

➤ Disposal pattern of Pearl Millet

Method of sale sale value	Quantity of sold	Price/qt.	Total
(a) Sale in local market			
(b) Sale to Agro Industries /crop societies			
(c) Sale in distant market (Place)			
(d) Any other			
Total			

➤ Cost incurred by producer

1. Transportation
2. Loading
3. Unloading

➤ Questionnaires

1. Malpractices by middlemen Yes/No
2. Storage facilities Yes/No
3. Market Intelligence Yes/No
4. Transport facilities Yes/No
5. Delay in payment Yes/No
6. Warehouse facilities Yes/No
7. Distress sale Yes/No

Schedule for Commission Agent

(For studying marketing cost and margin)

1. Name of commission agentS/o.....
2. Purchase of Pearl Millet by the commission agent

S.No.	Date	Quantity purchased	From whom purchased	Purchase price	Value in Rs.

2. Cost incurred by the commission agent in purchase of Pearl Millet

S.No.	Particulars	Quantity Handled (Qtl)	Rate (Rs./Qtl)	Amount (Rs.)
1.	Sale tax			
2.	Mandi tax			
3.	Commission			
4.	Brokerage			
5.	Loading charges			
6.	Unloading charges			
7.	Weighing charges			
8.	Charges of society			
9.	Cost of gunny bags			
10.	Charges of grading			
11.	Qty losses during period of purchase			
12.	Any others			
13.	Total cost			

4. Disposal of Pearl Millet(Bajra)

S.No.	Date of sale	Quantity sold (qt)	Rate (Rs./qt)	Amount (Rs.)	Place of sale

5. Net Price received by the commission agent.....

Schedule for Wholesaler

(For studying marketing cost and margin)

1. Name of Wholesaler.....S/o.....

2. Purchase of Pearl Millet by the Wholesaler

S.No.	Date	Quantity purchased	From whom purchased	Purchase price

3. Cost incurred by the Wholesaler in purchase of Pearl Millet

S.No.	Particulars	Quantity Handled (Qtl)	Rate (Rs./Qtl)	Amount (Rs.)
1.	Sale tax			
2.	Mandi tax			
3.	Commission			
4.	Brokerage			
5.	Loading charges			
6.	Unloading charges			
7.	Weighing charges			
8.	Charges of society			
9.	Cost of gunny bags			
10.	Charges of grading			
11.	Qty losses during period of purchase			
12.	Total cost			

4. Disposal of Pearl Millet (Bajra)

S.No.	Date of sale	Quantity sold (qt)	Rate (Rs./qt)	Amount (Rs.)	Place of sale

5. Net Price received by the Wholesaler.....

Schedule for Retailer

1. Name of Retailer.....S/o.....

2. Purchase of Pearl Millet by the Retailer

S.No.	Date	Place of purchase	Agency from which purchased	Quantity Purchased (qt.)	Rate (Rs. / qt.)

3. Cost incurred by the Retailer in purchase of Pearl Millet

S.No.	Particulars	Quantity Handled (Qtl)	Rate (Rs./qtl)	Amount (Rs.)
1.	Transportation charges from Mandi to shop			
2.	Labour charges for loading and unloading			
3.	Storage facilities			
4.	Other costs			
	Total cost			

4. Disposal of Pearl Millet

S.No.	Date of Sale	To whom sold	Quantity Handled (qtl)	Rate (Rs./Qtl)	Amount (Rs.)

5. Net Price received by the retailer

4. Sale after processing of Pearl Millet

S.No.	Date of Sale	To whom sold	Quantity Handled (qtl)	Rate (Rs./Qtl)	Amount (Rs.)

6. Net Price received by the Miller

Schedule for Mandi

1. Prescribed charges for sale of Pearl Millet in the Mandi

S.No.	Charges	Rate (Rs./qt.)	By whom payable
1.	Loading charges		
2.	Unloading charges		
3.	Weighing charges		
4.	Grading charges		
5.	Commission charges		
6.	Mandi charges		
7.	Other charges (specify)		

2. Information about middlemen in Mandi

Category of middlemen	No. of registered Middleman in Mandi	No. of Middlemen dealing in Pearl Millet during last 2 years

3. General information about Mandi particularly in Pearl Millet:

4. Obtain information from Mandi secretary (Based on experience):

1. Obtain marketing channels in marketing of Pearl Millet

2. Area from where Pearl Millet comes for sale in the Mandi

(a) Name of Village.....

(b) Name of the State

3. Area to which Pearl Millet is taken by the trader of the Mandi for the further sale

.....
(a) Within the state

(b) Outside the state

4. Method of the sale followed in sale of Pearl Millet in Mandi

.....

5. Method of weighing followed for Pearl Millet

.....

6. Problem faced by market middlemen

Type of middlemen – Village Trader /Wholesaler/Retailer

- (a) Problem of storage
- (b) Problem of transportation
- (c) High cost of transportation
- (d) Delay on payments
- (e) High fluctuations in prices
- (f) High cost of labour
- (g) Any others (specify)

(1.) Constraints in Production:-

- | | |
|---|--------|
| (1) Quality seed not available | Yes/No |
| (2) Quality of Insecticide/Pesticide poor | Yes/No |
| (3) Timely availability of DAP not there | Yes/No |
| (4) Shortage of canal water | Yes/No |
| (5) Electricity supply erratic | Yes/No |
| (6) Shortage of HHL for sowing/harvesting | Yes/No |
| (7) Any other (specify) | Yes/No |

(2.) Constraints in Marketing:-

- | | |
|---------------------------------|--------|
| (a) Problem of storage | Yes/No |
| (b) Problem of transportation | Yes/No |
| (c) High cost of transportation | Yes/No |
| (e) High fluctuations in prices | Yes/No |
| (d) Delay on payments | Yes/No |
| (e) High cost of labour | Yes/No |
| (g) Malpractices in the mandi | Yes/No |
| (h) Any others | Yes/No |

(3.) Suggestions if any:-

- 1.....
- 2.....

VITA

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Academic qualifications:

Name of examination	Board/university	Year	Subject	Marks obtained
10 th	M.P.board (RKVM School)	2014	-	65.3%
12 th	M.P. board(RKVM School)	2016	Mathematics(P CM)	52.4%
B.Sc. (Ag)	ITM University, Gwlalior, (M.P.)	2020	B.Sc. (Ag) Hon.	7.6%
M.Sc. (Ag)	College of agricultural, RVSKVV, Gwalior, (M.p.)	-	Agricultural Economics & farm management	-

Special interest:

- Econometric and linear programming
- Agricultural Finance and Marketing

(BHAVDESH DHAKAD)