“An Economic analysis of Production and Marketing of Cotton Crop in Dewas District of Madhya Pradesh”

THESIS

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by

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CERTIFICATE - I

This is to certify that the thesis entitled **"An Economic analysis of Production and Marketing of Cotton Crop in Dewas District of M.P."** submitted in partial fulfilment of the requirements for the degree of **MASTER OF SCIENCE** in **Agricultural Economics and Farm Management** of the Rajmata Vijayaraje Scindia Krishi Vishwa Vidyalaya, Gwalior is a record of the bona-side research work carried out by **Mr. RAMESH DUDWE,** I.D. No. A/KH-420/2006, under my guidance and supervision. The subject of the thesis has been approved by the student's 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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CERTIFICATE-II

This is to certify that thesis entitled "**An Economic analysis of Production and Marketing of Cotton Crop in Dewas district of Madhya Pradesh**" submitted by **Mr. RAMESH DUDWE** to the RAJMATA VIJAYARAJE SCINDIA KRISHI VISHVA VIDYALAYA GWALIOR in partial fulfilment of the requirements for the degree of **MASTER OF SCIENCE** in the Department of Agricultural Economics and Farm Management has been accepted after evaluation by the External Examiner and approved by the Student's Advisory Committee after an Oral examination on the same.

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CHAPTER - I

INTRODUCTION

Cotton is one of the principal commercial crops in India influencing the economy of the country as it provides remunerative income and employment. Since independence, it has played an important role in strengthening the economy of the country. Presently, as estimated, more than 60 million people depend for their livelihood on its cultivation, marketing, processing and export. The textile industries based on this raw material have a weightage average of almost 20% in the entire industrial output of the country. The steady growth of the organized cotton spinning industry paved the way for the phenomenal expansion of decentralized weaving sector consisting of handlooms and power looms especially in the rural and semi-urban areas. At present, there are about 3.6 million handlooms and 1.1 million power looms, which provide direct employment to about 14 million families. In the rural areas of several states, handloom sector comes next to cottage industries in providing employment. The organized textile industry in India is the second biggest in the world with a capacity of 26.7 million spindles, 70000 rotors and 0.178 million looms. It provides direct employment to about 1.2 million workers. Above all, the exports of the raw cotton, cotton-yarn, and textile manufactures including garments and by-products of cotton seed fetch about Rs.60,000 million foreign exchange for the country. This is the largest amount for any sector that contributes to as much as one-fourth of the country's total exchange earnings. The gross value of the cotton crop annually produced at present in India exceeds Rs.60, 000 millions.

Among all the cotton growing countries, India occupies the foremost position in cotton acreage. It is grown in nearly 8 million hectares, which is almost 25 per cent of the world cotton acreage. In Madhya Pradesh, cotton is grown in about 6.00 lakh hectares with an annual production of 4.00 lakh bales (180 kg/ bale) in 2009-10. In M.P., East Nimarh, West Nimarh and some parts of Malwa Pleatue are the area where cotton is chiefly grown. The important cotton growing district were Khargone (40.04%

and production 39.12%), Khandwa (26.68% and production 17.04%)., Dhar (13.97% and production 16.60%) and Dewas (6.80 % and production 6.73%) in 2009-10.

The problem:-

Cotton being a commercial crop requires a judicious decision in the investment due to capital intensive cultivation. Maximization of profit with changing improved technology and resources are the main aims of the farmers and to achieve the goals of maximum profit with different level of technology and resources requires, scientific and intelligent decision making concerning the status of technology. Therefore, farmers are generally confronted with the problems of determining the profitability in cultivation of cotton and productivity with marketing price level at the time of its disposable.

It can be said that production and productivity are not only the criteria for development of cotton. Farmer always desire to get better price from their produce, but due to lack of fair marketing functionaries, market efficiencies and marketing system they are unable to get remunerative price. Marketing system and its efficiency plays a crucial role in remunerative agricultural production. At present in the state, farmers are taking into consideration only production system and they hardly pay any attention to various components of marketing. They spend the whole year on production but the system does not involve much consideration towards marketing. As a matter of fact, marketing has often been kept outside the domain of farmer's production. This results in low producers share in consumer's price. Efficient marketing helps in efficient distribution of farm products and input at the minimum cost from producers to consumers. Such situation is beneficial to both the producers as well as consumers.

The above views show the importance of production as well as marketing system of cotton. The development of market and marketing system is next important as that of increasing productivity also. The trend in modern agriculture is increasing the scope of agricultural marketing from the point of view of product marketing with fair remuneration in agricultural production. Taking into consideration the above facts, the present research has been considered for study with the following objectives.

Objectives:-

1. To analyze the profitability of cotton cultivation.
2. To identify different marketing channels of cotton.
3. To calculate the price spread and marketing cost in different channels.
4. To identify constraints in cotton production and to suggest measures to overcome it

Scope of the study: -

The present study is addressed to the farmers, marketing agencies and policy makers to make then aware regarding cost and return to be made available in the cotton production at farm level. The result of the study could pinpoint the possibilities of increasing yield and return from cotton crop with the cultivation in unit area. The extension workers may use this study for advising the farmers to plan their resource use within the range of input –output prices, considered in the study for enhancing the profitability and adoption of recommended technology as best as possible. The economics of marketing channels will clearly indicate for fair disposal pattern of the producer, so that, the farmer can get remunerative price of their produce.

Limitation of the study: -

1. In this study, no reference is made for factors like risk and uncertainties. Only those factors have been considered which are under the control of the entrepreneurs and contribute significantly towards the returns.
2. The study is limited to Dewas district, comprising of limited selected farmers. This was due to the fact that large area was beyond the capacity and control of the investigator; hence, it may be treated as micro study.
3. The primary data collected for the study are entirely based on memory of the respondents, as they do not keep any records regarding the farm practices.
4. The data are pertaining to the agricultural year 2011-12 only.
5. It is only micro study; so generalized results could not fulfill to solve the constraints of cotton production and marketing in wider cotton producing areas.

CHAPTER - II

REVIEW OF LITERATURE

The necessity of the review of literature for the research worker is to assess what work (both theoretical and empirical) has so far been done in the field of present study, because it provides a basis to understand the problem and help in the proper investigation. In the view, attempt has been made to review the work done in the field of “A study on Economics and Marketing of Cotton”. There are some of the important and relevant studies done so far as reviewed below:

Economics of Production:

Ramamoorthy (1990) reported that the farmers are highly price responsive. Therefore, a stable cotton price policy holds the key for cotton production and productivity. In order to increase the profitability of the cotton-crops, steps may be taken to reduce the cost of production by increasing the yield. The efficiency of vital input like seed, fertilizer and pesticides may be improved as to reduce the cost through increased yield. The overall average yield per hectare was 8.18 quintals and cost of production rupees per hectare and cost of production rupees per quintals of seed cotton in India were Rs.6,100 and Rs. 753 respectively in 1986-87. Low income discourages the use of modern production technologies and act as disincentive to produce more.

Basu *et al*. (1992) reported that the cotton is a labour intensive crop. Risks are high in rainfed cotton from unfavorable rainfall distribution and drought and input use related to field increase influenced by weather factors. Cotton crops are affected serious from pests and diseases, which cause 20-30 per cent loss annually. They also revealed that seed cost of hybrid cotton’s is high. Rainfed cotton yield are far lower compared to irrigate. Average plant protection costs on total cultivation charges is estimated at 25-40 per cent in irrigated crop and about 10-15 per cent in rainfed cotton depending on pests incidence, management strategies, input cost and cotton prices.

Mannikar *et al.* (1992) examined the low productivity of cotton in rainfed regions of India. Study reported the caused of low productivity of cotton and classified as follows poor climate, unsuitable soils, inferior plant type and under cultivation of certified seed, plant population, limited weed control, nutrients management high incidence of pest and diseases, non availability if input and storage, price and marketing inadequacies policies are suggested in the light of the analysis.

Reddy (1997) conducted a study in Guntur District Andhra Pradesh, India to investigate yield gaps and the economics of cotton cultivation on small, medium and large farmers and 126 sample farms for the agricultural year 1993-94. The findings indicate that: (1) Farm size was positively related to total costs and net returns; (2) The yield gap between the research station farms and sample farms was the highest, followed by the yield gap between demonstration farms and sample farms and research station farms and demonstration farm and these were also related to farm size" (3) large farmers have benefited more from the adoption of technological innovation than small and medium farmers; (4) the major factors contributing to yield gap were the gap in the use of nitrogen, phosphorus, human labour, bullock labour and seeds, and excessive use of pesticides; and (5) the major constraints for exploitation of yield potential were identified as lack of technical guidance, pest incidence, lack of owned capital, high cost of inputs and non-remunerative, lack of owned capital, high cost of inputs and non-remunerative prices. The results imply that the yield on actual farms could be increased by 50 per cent over its existing level (12Q/ha) by supplying key inputs at subsidized rates, providing technical

guidance's and institutional credit at reasonable interest rates, making available irrigation water based on regional crop planning remunerative output pricing, and streamlining the existing extension system for effective transfer of technology. These strategies could also reduce income inequalities among the various size groups of farms.

Bell *et al.* (1999) observed that insect populations generally increased in the absence of insecticide sprays. Bt.cotton worked well to control tobacco budworm [Heliothis virescens] and performed well against bollworm. The pyrethroid treatment significantly reduced the bollworm population. In addition, Tracer and the pyrethroid treatments numerically reduced the fall armyworm populations.

Capps *et al.* (1999) reported that Bt.cotton (transgenic Bacillus thuringiensis) varieties are becoming a very important part of the cotton industry. Understanding this technology and knowing how to manage Bt. cotton varieties could improve cotton pest management and increase both profits and yields. Timely insecticide treatments to Bt.cotton when insect pests reach economically damaging levels provide yield protection.

Farkade *et al.* (1999) studied the constraint for the biological control of cotton pests in Marathwada, Maharashtra, India, in 1997-98 by surveying cotton growers in the area, lack of knowledge about natural enemies of insect pests present in the cotton filed was expressed by 74.17 per cent of cultivators. About 50 per cent of respondents were constrained by the low price of cotton, non availability of labour and lack of knowledge about bio-agents/parasites for the control of particular insect pests.

Hubbell *et al.* (2000) examined the potential demand for Bt.cotton in the Southeast from information gathered in the first year of commercialization. It

combines revealed preference (RP) data on adoption of Bt.cotton varieties with stated preference (SP) data on willingness to adopt to estimate demand using a double-bounded maximum likelihood procedure. Using estimated demand equations, the costs of reducing conventional insecticide application through, the cost subsidization of Bt.cotton are simulated. Results indicate that reducing cotton insecticide applications by 40 per cent in Southeast USA Would require a $ 53 million and $ 60 million.

Beyers *et al.* (2002) observed that average yield per hectare and per kilogram of seed was higher for adopters than for non-adopters. Bt. adopters suffered far less of a fall in yields than those who did not adopt. As yields and gross margins are partial measures of efficiency, deterministic and stochastic efficiency frontiers were measured. Both methods confirm the farm accounting results, showing that Bt.cotton adopters were more efficient.

David and Sai (2002) revealed that considerations of yield are still the primary concern in Bt.cotton adoption; damage to crop due to bollworm is considerably less in Bt.cotton than in non-Bt.cotton only under severe past attack; there is not much reduction in pesticide expenditure because farmers still do not distinguish between Bt and non-Bt.cotton; none of the farmers are opposed to Bt.cotton on technical considerations.

Ismael *et al.* (2002) revealed that average yield per hectare and per kilogram of seed was higher for adopters than for non-adopters of Bt.cotton. The increase in yields and reduction in chemical application costs outweighed the higher seed cost, so that gross margins were also considerably higher for adopters. The farm accounting results, showing that the Bt.cotton adopters were considerably more efficient than those who used the non-Bt varieties.

Ismael *et al.* (2002) suggested that Bt.cotton had higher yields than non-Bt varieties and generated greater revenue. Seed costs for Bt.cotton were double those of non-Bt, although pesticide costs were lower. On balance, the gross margins (revenue minus costs) of Bt growers were higher than those of non-Bt growers.

Pray *et al.* (2002) revealed that over 4 million smallholders have been able to increase yield per hectare, and reduce pesticide costs, time spent spraying dangerous pesticides, and illnesses due to pesticide poisoning. Returns are high for adopters of Bt.cotton to make substantial gains in net income.

Yousouf *et al.* (2002) explored the economic benefits of the adoption of Bacillus thuringiensis (Bt) cotton for smallholder farmers in the Republic of South Africa. The study found reason for cautious optimism in that the Bt variety generally resulted in a per hectare increase in yields and value of output with a reduction in pesticide costs. They suggest that Bt.cotton is good for smallholder cotton farmers and the environment.

Gouse *et al.* (2003) stated that both large-scale and small-scale farmers enjoy financial benefits due to higher yields and despite higher seed costs. In addition, those who adopted the technology appear to be more technically efficient than those who do not adopt, indicating that it is perhaps the better farmers who spot the potential benefits of the Bt cotton seed.

Bennett *et al.* (2003) revealed that cost savings emerged in the form of lower requirements for pesticide, but also important were reduced requirements for water and labour. The increasing adoption rate of Bt.cotton appears to have a health

benefit measured in terms of reported rates of accidental insecticide poisoning. Bt.cotton growers emerge as more resilient in absorbing price fluctuations.

Bennett *et al.* (2004) reported substantial and significant financial benefits to smallholder cotton growers of adopting Bt.cotton in terms of increased yields, lower insecticide spray costs and higher gross margins.

Carriere *et al.* (2005) revealed that fitness costs associated with insect resistance to transgenic crops producing toxins from Bacillus thuringiensis (Bt) reduce the fitness on non-Bt refuge plants of resistant individuals relative to susceptible individuals. Because costs may vary among host plants, choosing refuge cultivars that increase the dominance or magnitude of costs could help to delay resistance. Specifically, cultivars with high concentrations of toxic photochemical could magnify costs.

Naik *et al.* (2005) observed that the technology generates overall economic benefits on average, but heterogeneity among farmer needs to be accounted for. The study also finds that germplasm effects can play an important role. For example, if the germplasm into which the Bt gene is incorporated is more susceptible to drought than a locally adapted cultivar, the Bt hybrid will under perform in a dry spell.

Palvi (2006) reported that the overall profitability (input output ratio) of Bt-cotton obtained on the three categories of farm, large farms were observed to be more profitable because of their most favourable input output ratio, at 1:1.87 small farms received lowest profit and could achieve the input output ratio of only 1:1.74 among the two varieties (Rasi-2 and mahyco-162) of Bt-cotton Rasi-2 was found to be most profitable when compared with the Mahyco-162 varieties .The overall

profitability for Rasi-2 and Mahyco-162 was estimated,1:1.80 and 1:1.65 respectively.

Visawadia *et al.* (2006) revealed that the total cost per hectare is higher in Bt.cotton than hybrid cotton. The cost of seed has been found higher in Bt.cotton whereas hybrid cotton growers incur more cost on insecticides/ pesticides. This shows the effectiveness of the new technology (Bt.cotton) for insect resistance. The average total costs of production as well as the bulk line cost have been found lower in Bt.cotton. This depicts a reduction in the unit of cost of Bt.cotton, which is the distinct advantage of the new technology. A higher yield of 29 per cent has been obtained by the Bt.cotton farmers over the hybrid cotton growers. The study has identified the constraints in production, and marketing of Bt.cotton in the area. Bt.cotton has been found a superior technology to hybrid cotton, as it gives higher yield and has low cost of production.

Allawa (2008) reported that the study shows that cost A1, the average cost of Bt.cotton cultivation per hectare found to Rs.12389.00. The lowest cost A1 was found in low adoption level of technology, due to minimum use of operational inputs in the production process. This cost was gradually increased with the increase in the different level of technology on sample respondent's farms respectively. The minimum average cost A1 found to Rs.9943.0 for low level technological status followed by Rs. 12387.0 for moderate and Rs.14837.0 for high technological adoption level per hectare respectively.

Khadi (2010) reported that India holds the unit distinction of being the only county in the world that grows all the four cultivated species of cotton and there hybrids in the vast divers agro-climatic situations prevailing across the length and breadth of the

country cotton is grown in the country on different holdings with varied planting dates, soil and water conditions largely under rainfed situations. Sustainability of production, requisite quality standards and rising cost of cultivation, pest management and environmental implications, defective irrigation practices, unstable production and widespread complains on deterioration of fiber quality are some of the serious challenges for the scientist, developmental staff, field functionaries and the cotton growers to achieve this, scientists worldwide are working to meet serious scientific challenges.

Kumar (2010) reported that cotton is the major fiber crop of the world. Cotton is well known for the excessive consumption of pesticides used to manage a plethora of insect pests and also because of the commercial importance of the crop. A variety of lepidopteron pests attack the crop, the major ones being cotton bollworm (Helicoverpa armigera), pink bollworm (Pectinophora gossypiella), spotted bollworm (Earis spp.) and tobacco caterpillar (Spodoptera litura). It is imperative to adopt eco friendly technologies to manage insect-pest and drastically reduce the consumption of pesticides towards a safe and sustainable agriculture. Such technologies should be very effective against target pests at low concentrations and concomitantly innocuous to mammals, other vertebrates and environment in general.

Marketing of cotton:

George (1973) reported in his study “Roll of price spread in determining agriculture price policies” and analysed the behaviour of the price spread between wholesale price and farm level price of the agriculture commodities. The behaviour of the price could be such that either the farm level price determined the price at other level or, the farm level price was influenced by the retail and wholesale level. The study concluded that as the farm level price increased, the spread between the wholesale and retail price declined.

Sain (1979) reported in the study “Measurement of the price spread for some principal crops” and estimated the price spread between primary market and village neighbouring market mandies for the three crops of the West Bengal viz. paddy, wheat, jute and cotton. The study concluded that the price spread between primary market and

mandies were low for the food can cash crops, farmers received a higher proportion of the mandi price but not of the terminal price.

Suryaprakash (1979) reported in the study “A comparative study of price spread of selected agriculture commodities in Karnataka” and found the margins realized by various intermediaries in the market of commercial crops viz. coconut, copra, cotton and groundnut in Karnataka. The study reported the overall profit of intermediaries which did not exceed 13 per cent could be considered reasonable for the various services provided such as transportation, assembling, storage grading and processing etc. In these produces the realization of about 75 per cent of the consumer rupees by the producer is reasonable in absence of well organized market structure.

Yadev *et al.* (1979) reported in their study of pattern and problems of marketing of agricultural produce that smaller farmers were much more affected by marketing problems than the larger farmers. The study leads to the feeling that farmers should be able to get their produce marketed thorough co-operatives societies and Government agencies. Transport facilities and lack of organization need to be given attention while cash need of the farmers, if met adequately can save them from the forces sale. Mall practices in the market yard diversity of agricultural produce, absence of grading and standardization and lack of organization were the problems of 84 per cent, 47 per cent, 84 per cent and 70 per cent of the farmers respectively.

Patanaik and Umashanker (1987) observed that the regulated market protected the producers from the unhealthy practices of traders and other market functionaries and helped to bring out competitive price bidding for the produce, besides helping the producers to wait for the remunerative prices with the assured storage facilities and financial advances against the produce.

Acharya and Agrawal (1989) studied agricultural marketing in India and observed that the marketing margin or middlemen share is relatively large and the farmers share is small for those commodities which under go elaborate processing operation i.e. cotton oil seeds. They further observed that the higher volume of marketed surplus tends to decrease the assembling cost thus reducing the marketing cost per unit of product.

Mishra (1994) observed from the study that there lies a great gap between commodities notified and commodities actually arrived in the market yard. The regulated markets have not been able to attract o large percentage of agricultural commodities in the market yard over the years except livestock. A few markets adhere to the auction system of sale of agricultural produce because of non-arrival of agricultural produce in the market yard. Market functionaries are not licensed in the market areas. Spot payment of sales produces is absent as a result of which the share of producers in assembling of agricultural produce has been reduced although it was quite high in the beginning of the market regulation scheme. In spite of providing advantage for selling of agricultural produce in the market yard the market committees have been able to generate large amount of income in course of time by posting check gates. It appears that the market committees have turned into fee collecting machineries instead of giving proper attention of the regulatory functions which they should do for providing benefits to the producer-sellers.

Shrivastava (1996) studied the marketing problems in which he encountered during the study that lack of storage facilities was for most important problems in agricultural marketing followed by poor quality of produce due to poor retting facilities, variation in the quality of production of jute fibber, transportation bottlenecks and absence of organized market, market intelligence and market prices respectively.

Pawar (1998) concluded that small farmers sold maximum of their produce in the local market i.e. weekly market and to village vender and received less price as compared to wholesale market and as against other size groups. A reverse result was found in the case of large size groups. A reverse result were found in the case of large size group I.e. they sold maximum o their produce of selected farm products in wholesale market i.e. to wholesaler, commission agent at district market committees and gained higher price than other groups. Channel-II was found to be more efficient due to higher producers share compared to channel-I.

Visawadia *et al.* (2006) reported that the lack of marketing facilities at the village level prevailing in the study area. The study also reported low price for produce at the time of harvesting followed by lack of storage facilities, lack of cheap and efficient

transportation, delay in payment by marketing agencies, lack of grading and less payment by the marketing agencies.

Singh and Sidhu (2007) reported that a good marketing system is essential for the success of the cotton production programme. The production of quality seed will be of no use if it dose not reach the farmers in time. He reported that producer received 84.1 per cent of the consumer purchase price. The margin of the dealer was about 14 per cent of the sell price.

CHAPTER - III

MATERIAL AND METHODS

The present investigation was primarily based on primary data. Hence, this chapter deals about the universe of the study, sampling technique used for selection of sample, methods of data collection, analytical tools used and concept which were taken into consideration, while conducting the research work. This aspect was grouped into following sub-heads for the conveniences.

1. ***Area of study***
2. ***Sampling procedure***
3. ***Period of study***
4. ***The collection of data***
5. ***Analytical tools***
6. ***Concept used***

3.1 Area of study:-

Dewas district of Malwa Plateau Agro-climatic zone of Madhya Pradesh was purposively selected for the study area. The district is an important cotton cultivation zone and it has well realized marketing system of cotton. Hence, the study was conducted in the Dewas district of Madhya Pradesh. Thus the study is related to production and marketing of cotton because cotton crop is one of the major crop of Kharif season in the district.

3.2 Sampling Procedure :-

A multi stage random sampling method was used for selection of block, villages and respondents respectively.

At the first stage, Dewas block of Dewas district was selected purposive because this block has a renowned cotton growing area and it is well known and convenient for data collection. At the second stage, a list of villages growing a large area under cotton under the selected block was obtained from Block Office

and among these villages, five villages were selected randomly. The selected villages were Hirapur, chapri, Kelod, Lohana, Chandana, At the third stage, for the selection of respondents a list of cotton cultivators of each village was prepared in ascending order of size of holding and grouped them into small (upto 2 ha.), medium (2.1-4 ha), and large (above 4 ha) categories. Among these groups 90 farmers were selected randomly using proportionate sampling method. At the fourth stage, for the selection of intermediaries in the study area according to working capacity, 10 intermediaries were selected using random method.

The details of allocation of respondents were as under.

Table: 3.1: Allocation of farmers.

S.No.	Size of group	Total farmers (N)	Sample farmer (n) @25% of total
1.	**Small**	**175**	**43**
2.	**Medium**	**118**	**29**
3.	**Large**	**72**	**18**
4.	**Overall**	**365**	**90**

Thus, the present study has accounted of total 90 farmers from Dewas block of Dewas district in Madhya Pradesh.

3.3. Period of study:- ***Agricultural year 2011-12***

3.4 The data and method of data collection:-

Both primary and secondary data required were collected for the study.

A. Primary data

Primary data were collected *from the sample cotton growers, village merchants,* wholesalers, co-operative society and retailers of the study area. The data w*ere related as following items.*

1. ***General information of sample respondents***

2. ***Family information, land utilization pattern and cropping pattern***

3. ***Production and marketing pattern***

4. ***Marketing charges paid by producers***

5. ***Marketing charges paid by village merchants, wholesalers, co-operative society and retailers***

6. ***Marketing problems of farmers***

B. Secondary data

Secondary data were collected from different selected marketing channels, regulated market.

C. The data collection

The data of the study were primary in nature; hence, an interview schedule (Appendix 1) was prepared. This interview schedule consisted as all the information about the sample farmer viz; land utilization pattern, cropping pattern, cost of production and disposal pattern, marketing pattern, marketing cost and margins and marketing problems related to cotton marketing etc. The prepared interview schedule was pre-tested for its reliability. The primary data were collected from the individual sample respondents using this pre-tested interview schedule through survey method by personal contact.

3.5 Analytical procedure:-

The primary data were classified and tabulated in the light of stated objectives of the study and analyzed as per the suitable statistics and economic tools as follows:

The estimates of profitability (cost benefit ratio) were based on different costs and returns incurred in cotton cultivation.

(a) Cost concepts:

The cost of cultivation classified as recommended by, "Special expert committee on cost estimates, GOI, New Delhi", was used in this study. The cost concepts are given below:

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 chemicals,
vi. Value of insecticides 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.

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 that 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 in 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 that prevailed in the locality were considered.

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

iv. Depreciation on farm assets:

The straight-line method is used for calculating rate of depreciation. The depreciation rates for different farm assets were taken @ of 10 per cent at consolidated method.

v. Interest on working capital:

It is worked out @ 12.50 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.

(**b**) **Value of farm produce:**

This includes the value of main product and the by product of the crop. 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.

Profitability concepts:

For the estimation of profitability from cotton, the following efficiency measures are used in this study:

(i) Gross income,

(ii) Net farm income,

(iii) 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) Input output ratio

$$\text{Input- output ratio} = \frac{\text{Gross income}}{\text{Total cost}}$$

Different Marketing Channels of Cotton:

The producers-sellers and the village merchants play an important role in marketing of produce. The important assembling centers are Khargone Krishi Upaj Mandi. Producers also sell the produce in the villages which are purchased by the village merchant and dispatched to the assembling market.

Main marketing channels of cotton:

Four marketing channels were observed in the study area as following:

Channel I: ***Producers→ Village traders → Retailer→ Consumer***

Channel II: ***Producers→Village traders→Wholesalers in regulated market→ Mill owner***

Channel III: ***Producers→ Wholesalers in regulated market→ Mill owner***

Channel IV: ***Producers→Agent→ Mill owner***

Marketing cost:

This includes all the marketing charges from local assembling to retailing in the marketing process i.e. the cost of performing the various functions of operating various agencies.

Price spread:

The price spread consists of the marketing costs and margins which ultimately determine the producer's share in the price paid by the consumer.

Formula for price-spread is used as:

$$P = \left(\frac{C-M}{C} \right) X\ 100$$

Where,

P= Producer's share in the consumer's rupee

C=Price paid by ultimate consumers

M=Marketing costs including market margins

CHEPTER - IV

RESULTS

The matter presented in this chapter is concerned with the analytical results as per the stated objectives. The chapter consists of four sections and each section has its own importance to answer as per the objectives of study.

I. Socio-economic characteristics of respondents and farm resource structure.

II. Analysis of cost and profitability in cultivation of cotton.

III. Study of cotton marketing.

IV. Enquiry into constraint in cotton production and suggestions to over come it.

4.1 Socio economic characteristics and farm resource structure:

Since the family characteristics and farm resource structure reflect the structure of farm-family with operational, organizational and managerial efficiency of the farm business it is pertinent to study the characteristic of the respondents as below.

(a) Age and education level:

The important decision of the farm business with reference to use of inputs, cropping pattern and other farm managerial decisions are generally made by the farmer as the supreme of family. Therefore, it is pertinent to have an idea regarding the age and education level of respondents which are found to be more important characteristics in farm efficiency.

The data on distribution of respondent according to age and education are presented in Table 4.1.

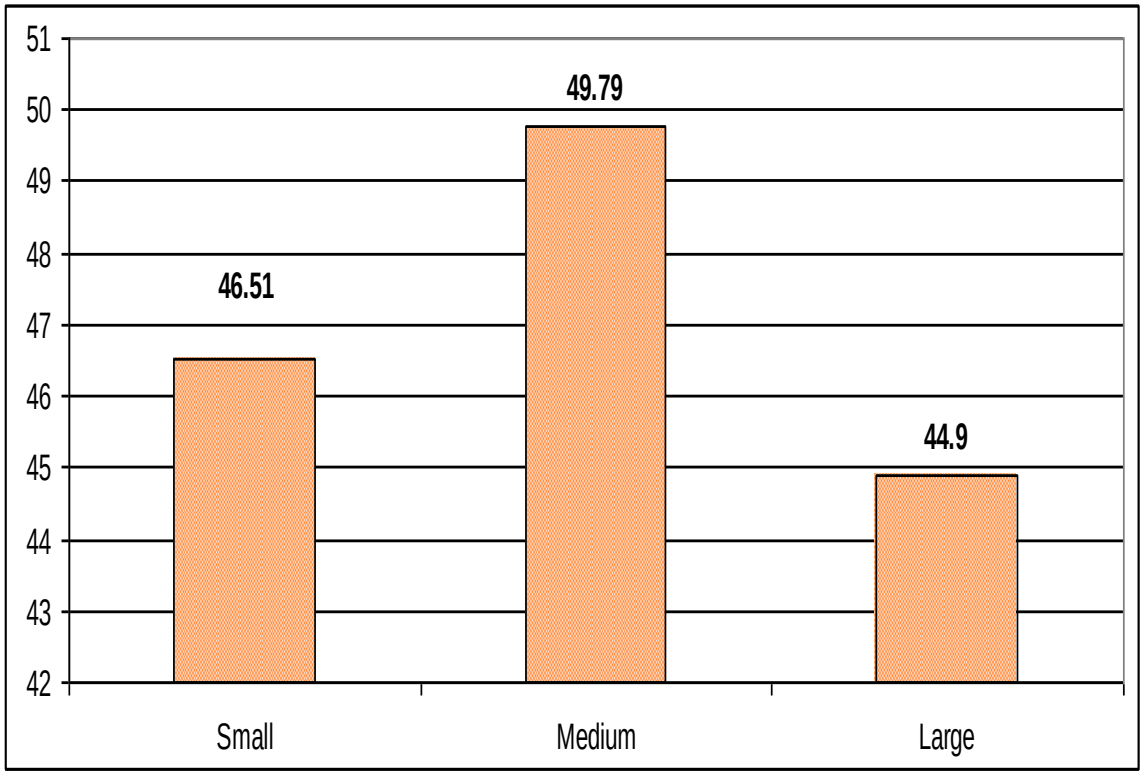
Table: 4.1 Age and education levels of sample farmer. **(No. of farmers)**

S.No.	Age (In year)	Size of holding			
		Small	Medium	Large	Over all
1.	Average age	46.51	49.79	44.90	47.06
Education					
1.	Illiterate	15	10	04	29 (32.23)
2.	Up to primary (5^{th} standard)	12	08	04	24 (26.67)
3.	Up to middle (8^{th} standard)	08	07	03	18 (20.00)
4.	Up to H.S.S.C. (12^{th} standard)	05	02	01	08 (08.88)
5.	Graduate and above	03	02	06	11 (12.22)
	Total	43	29	18	90 (100)

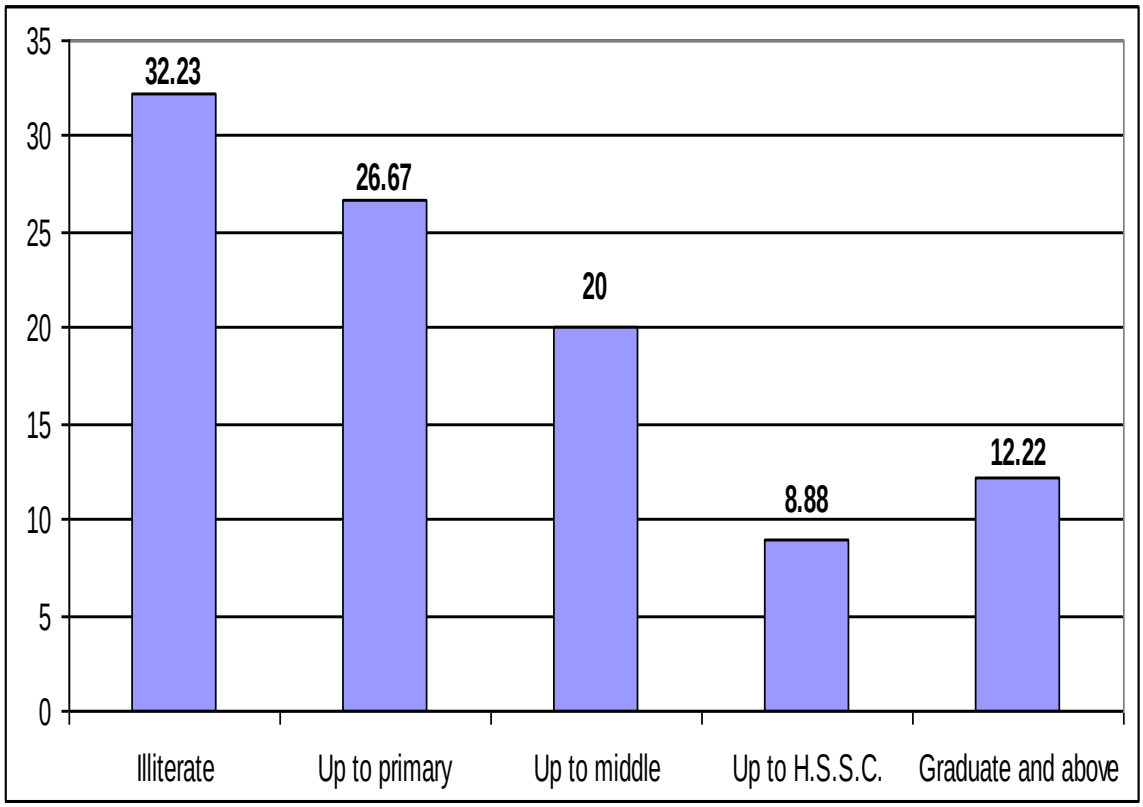
Figures in parenthesis show the percentage to total.

Fig:1:Age and education levels of sample farmer

(Age)



(Education)



As evident from the data presented in Table 4.1, it appears that on an average the respondents were 47.06 year age old. As per the size of holding, in small size group the average age of respondents was 46.51 years while in medium size, the average age of respondent was 49.79 years and in large size group the average age of respondent was found to be 44.90 years respectively.

As observed from the Table 4.1 there was no definite relationship between level of education of respondent and size of holding because majority of the respondents in the different size groups had an education level between primary (26.67 % of total number) followed by middle (20.00%), higher secondary standard (08.88%) respectively. It is interesting to note that 12.22% of total respondents were bearing education level up to graduate and above. It is also apparent that 32.23 per cent of the respondents were illiterate.

Thus, it is concluded that the illiteracy was more in small size group and number of graduate was found to be the highest in large size group.

(b) Strength of the family:

The family composition and average strength of sample farm family is shown in Table 4.2.

Table: 4.2 Average strength of the sample family: (Number/farm)

S.No.	Size of holding	Male	Female	Children	Total
1.	Small	1.65	1.51	3.56	6.74
2.	Medium	1.83	1.69	3.66	7.18
3.	Large	1.70	1.60	4.30	7.60
	Average	1.73 (24.12)	1.60 (22.32)	3.84 (53.56)	7.17 (100.00)

Figures in parenthesis show percentage to total sample in each size group.

The table revealed that children (below 18 years of age) dominated in strength of family i.e. on an average 3.84 per family or 53.56 per cent to total strength of family followed by male (24.12%) and female (22.32%) of total strength of a family respectively. The average strength of the family was found to be 7.17 persons per family.

The data also depicted that the average strength of family in small size of farm was found to be 6.74 persons per family followed by 7.18 persons and 7.60 persons in medium and large size groups respectively. Thus, it is concluded that the strength of the family was found to increase with increase of size of holding.

(c) Work force in the family:

The distribution of respondents and their family members (male and female) as per definition of work force is presented in Table 4.3.

Fig:2: Average strength of the sample family

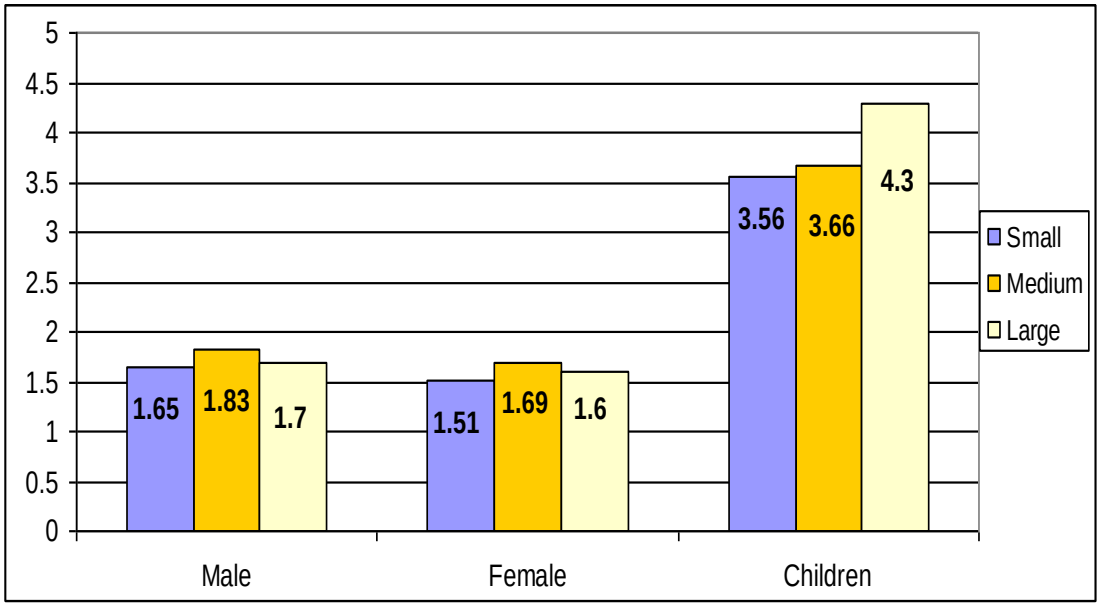


Fig:3: Distribution of family member as work force

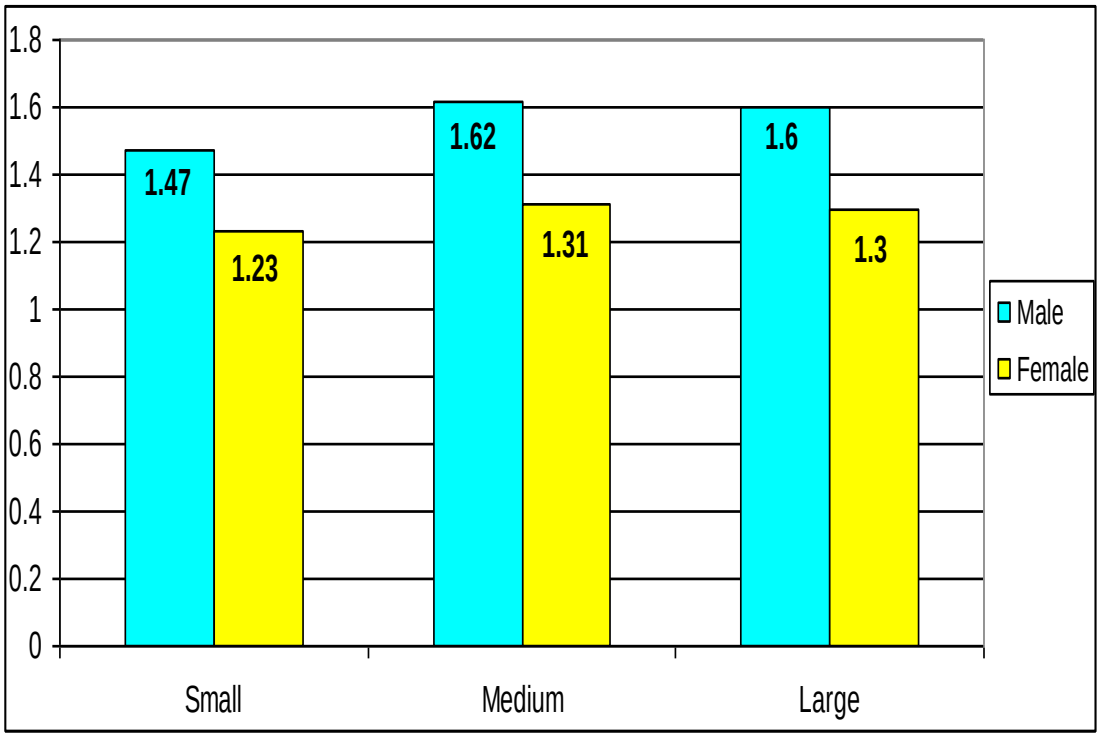


Table: 4.3 Distribution of family member as work force. (Number/farm)

S.No.	Size of holding	Male	Female	Total
1.	Small	1.47	1.23	2.70
2.	Medium	1.62	1.31	2.93
3.	Large	1.60	1.30	2.90
	Average	1.56 (54.93)	1.28 (45.07)	2.84 (100.00)

Figures in parenthesis show percentage to total sample in each size group.

The table revealed that on an average 54.93 per cent of the total working force was male labour while the female labour was found to be 45.07 per cent of total work force in the family. These economically active male and female workers performed or pursued many works related to agriculture and other allied activities for earning the family income.

The data also depicted that the work force in the family found to have no specific relationship with size of holding but the higher number of worker was found in medium size of group.

(d) Land use pattern and level of irrigation:

Land is the most important resource of farmers 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 are given in Table 4.4.

Table: 4.4 Land use pattern and level of irrigation on sample farm:

(hectare per farm)

S.No.	Particulars	Size groups of holding			Average
		Small	Medium	Large	
1.	Size of holding	1.39	3.24	8.37	4.33 (100.00)
2	Uncultivated area	0.07	0.09	0.14	0.10 (02.31)
3	Cultivated area	1.32	3.15	8.23	4.23 (97.69)
4	Irrigated area	0.73	1.19	4.14	2.02 (46.65)
5	Gross cropped area	2.27	5.26	13.49	7.01 (161.89)

Figures in parenthesis show percentage to size of holdings.

It is evident from the data that the average size of holding represents 4.33 hectare per farm in the area. The area of holding differentiates with the size group i.e. 1.39 hectare with small size group followed by 3.24 and 8.37 hectare with medium and large size group respectively. The table also clearly shows that the net cultivated area as percentage to size of holding was found to be 97.69 per cent. The average irrigated area as a percentage of size of holding was found to be 46.65 per cent. Due to low irrigation facilities in the area only 161.89 per cent area was covered under crops in a year (gross cropped area) when both the kharif and rabi crops were taken into consideration.

(e) Cropping pattern on sample farm:

The cropping pattern of sample holding reflects towards crops and crop sequence grown in a year on unit of area. The cropping patterns of farms on sample farmers are presented in Table 4.5.

Fig:4: Land use pattern and level of irrigation on sample farm

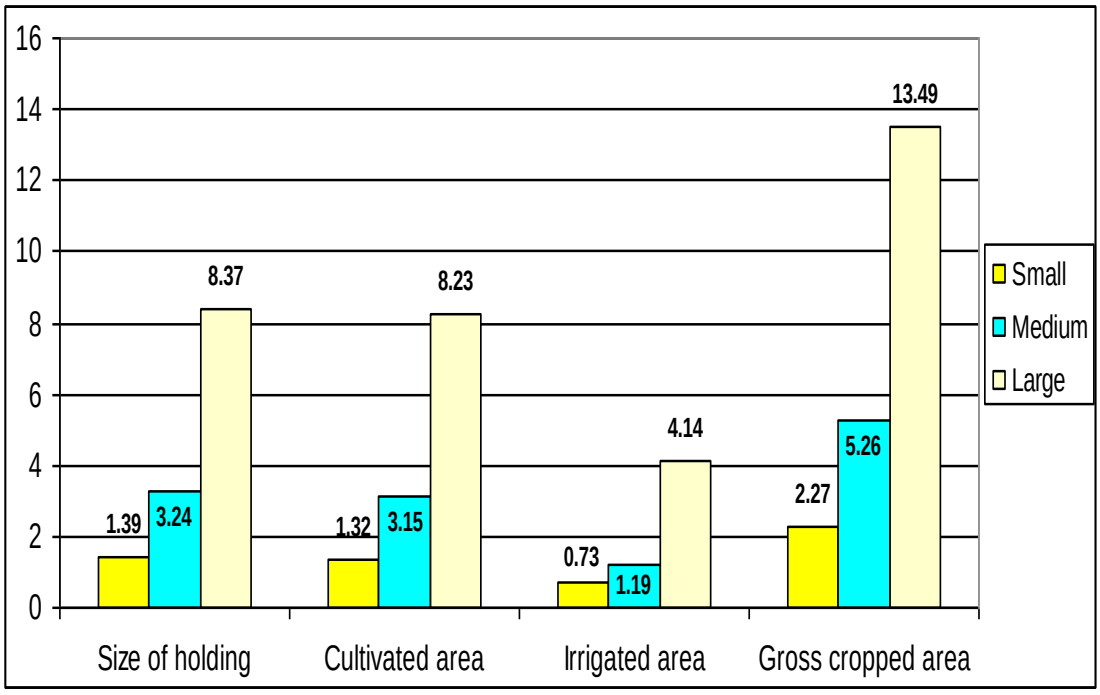


Table: 4.5 Cropping pattern on sample farm: **(ha/farm)**

S.No.	Season/crop	Size group of holding			Average
		Small	Medium	Large	
	Kharif				
(1)	**Soybean**	**0.31**	**0.76**	**1.96**	**1.01 (14.40)**
(2)	**Jowar**	**0.13**	**0.38**	**0.98**	**0.50 (7.13)**
(3)	**Other cereals**	**0.10**	**0.30**	**2.54**	**0.98 (13.98)**
(4)	**Pulses**	**0.19**	**0.61**	**0.78**	**0.53 (7.56)**
(5)	**Cotton**	**0.51**	**0.98**	**1.56**	**1.02 (14.55)**
	Total Kharif	**1.24**	**3.03**	**7.82**	**4.04 (57.63)**
	Rabi				
(1)	**Wheat**	**0.61**	**1.23**	**3.54**	**1.79 (25.53)**
(2)	**Gram**	**0.31**	**0.56**	**1.00**	**0.62 (8.84)**
(3)	**Other**	**0.11**	**0.44**	**1.13**	**0.56 (7.98)**
	Total Rabi	**1.03**	**2.23**	**5.67**	**2.97 (42.37)**

Figures in parenthesis show the percentage to gross cropped area.

The study of cropping pattern clearly shows that kharif crops were predominating in area i.e. 57.63 per cent to gross cropped area. While under rabi crops the area devoted was only 42.37 per cent to gross cropped area. The data also revealed that cereal crops were main kharif crop (21.11%) on all size of sample holdings, followed by cotton (14.55%), soybean (14.40%) and pulses (7.56%) of gross cropped area respectively. In the rabi season, wheat was the major crop and on an average, 25.53 per cent of the gross cropped area is devoted to this crop. The gram was the next important rabi crop grown (8.84%) of gross cropped area followed by other rabi crop (7.98%) of gross cropped area respectively.

(f) Investment on fixed farm assets:

The values of the fixed farm assets in the farming generally determine the absolute farm profitability, which is invested during the past years. The data on present average value of investment on fixed assets per farm is presented in Table 4.6.

Table: 4.6 Value of the total farm crop assets on sample farms.

(Rs. thousand/farm)

S.No.	Assets	Size of holding			Average
		Small	Medium	Large	
1.	**Land**	260.47	713.10	1678.90	**884.16**
2.	**Farm house cum store**	7.18	16.00	23.80	**15.66**
3.	**Bullock**	1.20	4.80	6.10	**4.03**
4.	**Implements**	5.38	15.23	98.30	**39.64**
5.	**Total Value excluding land**	13.76	36.02	128.20	**59.33**
6.	**Total**	**287.99**	**785.15**	**1935.30**	**1002.81**

The data presented in Table 4.6 revealed that the value of the land is by and large the costliest asset among all the farm assets. The investment value on land

increases with the increase in size of the holding. The total value of assets, excluding land in terms of absolute value increases with the increase in size of holding. On an average, total value of farm assets excluding the value of land on the sample cotton growing farms was Rs.59.33 thousand per farm.

The above data showed that the maximum investment after land was on implements i.e. on an average (Rs.39.64 thousand) followed by farm house-cum-store (Rs.15.66 thousand) and bullock (Rs.4.03 thousand) on the sample cotton growing farms respectively.

4.2: Profitability of cotton cultivation:

A study on economics of cotton cultivation, as important kharif crop 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, the farmers will require for cultivating as per size of crop area with different levels of technological adoption. It is a well known fact that profitability of crop production depends upon the level of input utilization, cost of production, yield per unit of area and their relative market prices or gross return. The details of cotton production profitability are presented in different stages as below:

A) Input utilization:

The pattern of utilization of resources by the farmers indicates the degree of resources management, their choice and decision-making. Besides the above it also indicates the level of technology adopted by the farmers in cotton cultivation. Labour (Human, bullock, and machine) utilization, seed, manures, fertilizers plant protection and irrigation measures are the basic type of resources used being considered in the present study. The detailed information regarding input utilization of cotton cultivation and yield level on per farm and on per hectare is presented in Table 4.7.

Table: 4.7 Input utilization and level of yield in Cotton cultivation. (ha.)

S.No.	Input utilization	Unit	Size of holding					
			Small		Medium		Large	
			Per farm	Per hect.	Per farm	Per hect.	Per farm	Per hect.
1.	Cotton area	Hect.	0.51	1.00	0.98	1.00	1.56	1.00
2.	Human labour							
	Hired	Days	5	9.80	9	9.18	21	13.46
	Family	Days	33	64.71	53	54.08	82	52.56
	Total	Days	38	74.51	62	63.27	103	66.03
3.	Bullock pair	Days	5	9.80	7	7.14	14	8.97
4.	Machine	Hrs.	0	0.00	2	2.04	4	2.56
5.	Seed+ treatment	Rs.	1545	3029.41	2939	2998.98	4850	3108.97
6.	Manure+ Fertilizer	Rs.	1180	2313.73	2088	2130.61	3084	1976.92
7.	Plant protection	Rs.	224	439.22	621	633.67	1819	1166.03
8.	Irrigating	Rs.	257	503.92	591	603.06	1173	751.92
9.	Yield	Qut.	9.27	18.18	17.02	17.37	26.61	17.06

The table indicated that the average area under cotton was found to vary according to different categories i.e. 0.51 hectare with small size group followed by 0.98 hectare in the case of medium size group and 1.56 hectare with large farmers respectively. On an overall average area under cotton was found to be 1.02 hectare. The utilization pattern of area and holdings under cotton crop showed that there was much difference between the actual and equal distribution of land. It was observed that human labour utilization on small farms was found to be (74.51 days per hectare) comparatively higher than other size group i.e. 63.27 and 66.03 days per hectare on medium and large size group respectively. This was due to efficient use of labour by medium size group and inefficient labour use by small farmers respectively.

On the other hand, the large farmers used comparatively higher bullock and machine days together on per hectare basis i.e. 8.97 bullock days and 2.56 hours machine per hectare. As per the size group of farms there has not been any specific trend in utilization of labour but it is clear that medium farmers showed economy and efficiency in the use of human, bullock and machine labour days.

Almost, maximum numbers of farmers have adopted cultivation of improved varieties of cotton. The seed rate was found to have variation but the investment on seed was found to be lower in case of medium farmers i.e. Rs.2998.98 per hectare. The

average investment on seed in case of small and large farmer was found to be Rs.3029.41 and Rs.3108.97 per hectare.

Only few farmers in the area applied the farm yard manure. The use of chemical fertilizers was found to be a common practice, but the lacunae lies in using inadequate doses of fertilizers. It is interesting to note that small farmers used the highest dose of fertilizer amounting to Rs.2313.73 per hectare while it was Rs.2130.61 and Rs.1976.92 per hectare on medium and large farmers respectively. The data shows that the use of fertilizer on per hectare basis was found to decrease with the increase in size of holding.

The expenditure on plant protection was found to show increasing trend with the size of holdings. It was Rs.439.22 per hectare on small farm followed by Rs.633.67 per hectare and Rs.1166.03 per hectare on medium and large farm respectively.

The study also revealed that expenditure on irrigation was found to show increasing trend with the size of holding and it was due higher irrigation availability with higher size of farms.

More adoption of high yielding varieties is not enough to raise agricultural production unless, inputs like fertilizers, plant protection measures and irrigation are used at desirable level. The table clearly indicates that though, farmers were using these improved technologies and improved inputs, but it is still quite low as compared to that recommended for cotton crop.

B) Yield level:

The average yield of cotton in the study area was found to be 17.54 quintal per hectare. The maximum yield (18.18 quintal per hectare) was found on small size of farmers and it was due to efficient use of inputs by these groups in fact, the average yield showed to be the lowest with the large farmer that was 17.06 quintal per hectare and it was normally due to inefficient management practices by these sizes of farmers. Thus, it is relevant that the yield per hectare was decreased with the increase of size of holding.

C) Cost of cotton cultivation:

The cost structure of cotton cultivation on different size groups of farms are presented in Table 4.8.

Table: 4.8 Cost of cultivation of cotton crop on sample holding. (Rs/ha)

S.No.	Cost particulars	Size of holding			
		Small	*Medium*	Large	Average
1.	Hired human labour	980	918	1346	1081.33
2.	Bullock labour	2450	1785	2242.50	2159.17
3.	Machine power	0	714	896	536.67
4.	Seed	3029.41	2998.92	3108.97	3045.77
5.	Fertilizer + manure	2313.73	2130.61	1976.92	2140.42
6.	Plant protection	439.22	633.67	1166.03	746.31
7.	Irrigation	503.92	603.06	751.92	619.63
8.	Interest on working capital	161.94	163.05	191.47	172.15
9.	Depreciation	329.97	370.57	510.55	403.70
10.	Land revenue	97	103	157	119.00
	Cost-A_1	10305.19	10419.88	12347.36	11024.14
11.	Interest on fixed capital	41.24	46.32	63.82	50.46
	Cost-B_1	10346.43	10466.2	12411.18	11074.60
12.	Rental value of land	3296	3014	3008	3106.00
	Cost-B_2	13642.43	13480.2	15419.18	14180.60
13.	Imputed value of family Labour	6417	5408	5256	5693.67
	Cost-C_1	16763.43	15874.2	17667.18	16768.27
	Cost-C_2	20059.43	18888.2	20675.18	19874.27
	Cost-C_3	22065.37	20777.02	22742.70	21861.70

The table portrays that on an average cost of cultivation per hectare of cotton crop was found to be Rs.11024.14 (Cost A1), Rs.11074.60 (Cost B1), Rs.14180.60 (Cost B2), Rs.16768.27 (Cost C1), Rs.19874.27 (Cost C2) and Rs.21861.70 (Cost C3) respectively.

It is also revealed that the average operational cost i.e. cost A1 was highest on large size group being Rs.12347.36 per hectare and the lowest on small farms Rs.10305.19 while it was Rs.10419.88 on medium farm respectively. This shows that cost A1 was found in increasing trend with increasing the size group and this trend was also found in case of cost B1 also. This shows that big farmers are more resource full and using higher inputs in production process. In case of cost B2, cost C1, cost C2 and C3 was found minimum in case of medium farmers. This was due to the lower use of human labour and resource efficiency on their farms.

The total cost estimates i.e. cost C1, C2 and C3 based on the imputed values would give an unrealistic and even misleading picture of costs. It is attributable to the fact that farmers try to minimize only out of pocket expenses of cultivation and that by and large, they make maximum use of resources they own, but it is also not justifiable to

take into account only paid out cost. To determine the cost structure cost C1, C2 and C3 were also analyzed in the present study. The minimum cost C3 was found to be Rs.20777.02 per hectare on medium size group followed by Rs.22065.37 and Rs.22742.70 per hectare on small and large size of group respectively.

D) Aggregate profitability

Yield in quintals, gross income, net income and B.C. ratio are the tools employed for estimating the economics of production of crop. For this purpose, the profitability of cotton per hectare at different profitability measures on different size of holding is presented in Table 4.9.

Table: 4.9 Profitability of cotton crop in different size of group. (Rs/ha)

S.No.	Size of holding	Yield (q/ha)		Gross Income	Net farm income	B.C. Ratio
		Main product	By-product			
1.	Small	18.18	30.00	70425	48360	3.19
2.	Medium	17.37	28.00	68124	47347	3.27
3.	Large	17.06	27.50	68233	45491	3.00
	Average	17.54	28.50	68927.33	47066.00	3.15

The average productivity of cotton on sample holding was found to be 17.54 quintal per hectare and it was more or less identical in medium and large size of group i.e. 17.37 and 17.06 quintal per hectare. In case of small farmer the productivity was found to be the highest i.e. 18.18 quintal per hectare. The prices per quintal received by the different size of farmers were found to have variation. It was due to size of marketing cost and time of selling the produce which made differences on total gross return, respectively. The overall gross income (main product + by product) per hectare of this crop was found to be Rs. 68927.33 and it was the highest in small size of holding i.e. Rs.70425 per hectare and likely to be equal in medium and large farmers. The other measurement of farm profit like net farm income was found to on an average Rs.47066 per hectare. The net profit shows decreasing trend in increasing of size group. The average B.C. ratio was observed to be 3.15 and it was the highest in case of medium farmers.

The productivity of cotton was higher on small size farm because of the managerial use of labour and efficient use of inputs by these groups. The lower yield

rate was show by large farmers due to inefficient working and less management with injudicious use of production technology.

4.3: Marketing of cotton:-

The cotton market in Dewas as elsewhere in Madhya Pradesh. is totally dominated by regulated market functionaries with various operational capacities. There are two types of cotton marketing found in the area viz. sale in the village and sale in the mandi. The village cotton traders and agent of mill owners collect cotton from growers' houses and they have the facility to store cotton temporarily in the village. Both the village traders and agent offer loan or advance to needy cotton growers and the loanee growers have to sell their cotton to those from whom they took advance. The village traders and agents of marketing play a significant role by assembling small supplies from the growers and thus, facilitates orderly feeding of markets.

A) Marketing channels of cotton.

Four marketing channels were observed in the study area as following:

Channel I: Producers → Village traders → Retailer → Consumer

Channel II: Producers → Village traders → Wholesalers in regulated market → Mill owner

Channel III: Producers → Wholesalers in regulated market → Mill owner

Channel IV: Producers → Agent of mill owner → Mill owner

B) Marketing pattern of sample farmer of cotton

An attempt is made to identify the internal trade related to marketing pattern of cotton. In this section the information of disposal of cotton in different channels, marketing cost, marketing margin, price spread, producer share's, and marketing efficiency in different marketing channels of cotton are taken into consideration.

C) Dispose of cotton in different marketing channels

The marketing channel wise disposal pattern of cotton is presented in Table 4.10.

Table: 4.10 Disposal pattern of cotton among different functionaries.

S.No.	Marketing Functionaries	Percentage Sale to total produce
1.	Village traders	7.00
2.	Wholesalers in regulated market	74.00
3.	Agent of mill owner	19.00
4.	Total	100.00

Amongst the different marketing channels there are three main functionaries of marketing prevailing in the area i.e. village traders, regulated mandi (whole seller) and agent of mill owner. The study revealed that the village traders were found to be popular among small farmers. Respondents sold their produces only 7.00 per cent of total produce through this channel. Wholesaler is very popular amongst all the farmers. On an average 74.00 per cent of total produce was found to be sold through this channel. In the village selling pattern, there is one middlemen, found to be very popular amongst all the farmers' i.e. so called agent of mill owner. On an average 19.00 per cent produce was sold through this way.

Thus, it is concluded that only marginal, small and poor farmers sold 26.00 per cent of total produce in study area in village level through village traders or through agents. This type of sale is found to be prevalent due to small quantity of produce, costly marketing functions and need of cash before the marketing of cotton.

D) Marketing cost and price spread in different channels:

I. Marketing cost:

Marketing cost includes all the market charges from village assembling on the farm to the final consumer. The chain of marketing cost of cotton from producer to ultimate consumer is divided into following sub heads:

1. Charges paid by the producers

2. Charges paid by the village traders or agent / wholesaler / retailer
3. Total margins of village traders or traders / wholesaler / retailer
4. Price spread with different channels

The Table 4.11 presents the detail of marketing cost and margins at different marketing channels of cotton:

Table: 4.11 Marketing cost and margins at different marketing channels of cotton:

(Rs./Quintal)

S.No.	Particulars	Channels			
		I	II	III	IV
1.	Producers sale price	3482	3482	3932	3800
2.	Producer marketing cost	175	175	281	180
3.	Net amount received by producers	3307	3307	3651	3620
4.	Village traders / Agent marketing cost	300	200	-	297
5.	Village traders / Agent margins	400	250	-	320
6.	Village traders / Agent sale price Or Wholesaler purchase price	4182 -	3932 3932	- 3932	4417 -
7.	Wholesaler marketing cost	-	290	290	-
8.	Wholesaler margins	-	195	195	-
9.	Wholesaler sale price Or Retailer purchase price	- 4182	4417 -	4417 -	- -
10.	Retailer marketing cost	25	-	-	-
11.	Retailer margins	325	-	-	-
12.	Retailer sale price Or Consumer/Mill purchaser price	4532 4532	- 4417	- 4417	- 4417

*Cotton marketing includes number of middlemen / functionaries to reach the product from producers to final consumers. It includes the chain of village traders, agent of mill owner, wholesaler / regulated market and retailers etc. The data revealed that among all these channels on an average in third channel (**Producers→ Wholesalers in regulated market→ Mill owner**) the producer received the highest amount i.e. Rs.3651 per quintal of cotton followed by fourth channel (**Producers→Agent of mill owner→ Mill owner**) i.e. Rs.3620 per quintal and second (**Producers→Village traders→Wholesalers in regulated***

market→ Mill owner*) and first (****Producers→ Village traders → Retailer→ Consumer*** *) channels received equal amount Rs.3307 per quintal respectively.*

It is concluded that highest amount was received by producer through fair market dealing i.e. regulated market. In other words, third channel was found to be more remunerative in which the producers received Rs.3651 per quintal as net saving.

II. Price spread in marketing of cotton in different channels:

The details of price spread in marketing of cotton in different marketing channels are presented in Table 4.12.

Table: 4.12 Price spread in marketing of cotton in different channels.

(percent)

S.No.	Particulars	Channels			
		I	II	III	IV
	Marketing Cost	**14.37**	**19.10**	**14.48**	**12.56**
1.	**Producers**	**5.03**	**5.03**	**7.12**	**4.74**
2.	**Village traders / Agent**	**8.62**	**5.74**	**-**	**7.82**
3.	**Wholesaler**	**-**	**8.33**	**7.36**	**-**
4.	**Retailer**	**0.72**	**-**	**-**	**-**
	Marketing Margins	**20.82**	**12.78**	**4.96**	**8.42**
1.	**Village traders / Agent**	**11.49**	**7.18**	**4.96**	**8.42**
2.	**Wholesaler**	**-**	**5.60**	**-**	**-**
3.	**Retailer**	**9.33**	**-**	**-**	**-**
	Total cost + margin	**35.19**	**31.88**	**19.44**	**20.98**
	Producers Rupees	**64.81**	**68.12**	**80.56**	**79.02**
	Consumer Rupee	**100**	**100**	**100**	**100**
	Price Spread	**64.81**	**68.12**	**80.56**	**79.02**

The data presented in Table 4.12 depicted in percentage of total amount received by farmers as the overall marketing cost involved in cotton marketing process, margin received by various functionaries involved in marketing and producers share in consumer's rupees. The detail of marketing cost and margin of the different market functionaries in different channel revealed that among all the channels on an average the marketing cost + margin was found to be the highest i.e. 35.19 per cent of total amount received by farmers in channel first followed by channel second 31.88 per cent, channel fourth 20.98 per cent and channel third 19.44 per cent, per quintal of cotton marketing.

Thus, it is concluded that in channel third, the marketing cost and marketing margin both together was found to be the lowest. The reason is that this channel provided the highest amount to the producer and it is a fair regulated market.

The data also revealed that the producer's share in consumer's rupee was on an average found to be 73.13 per cent. It varies and the highest producers share in consumer's rupee was found in third channel of marketing i.e. **(Producers→ Wholesalers in regulated market→ Mill owner)** 80.56 per cent, due to the lowest expenditure on marketing cost and marketing margin in channel third. This is the fair regulated market where producer sold their produce with out entertaining the village traders. Next to third channel, fourth channel **(Producers→Agent of mill owner→ Mill owner)**was found to be important for producer in which the agent of mill owner provided advance at the time of standing crop and also provided 79.02 per cent producer's share in consumer's rupee.

Thus, it is concluded that the third channel was found to have highest remunerative net price 80.56 per cent among all channels and fourth channel gave net price i.e. 79.02 per cent.

4.4: Constraints analysis in cotton production and suggestion to overcome it:

A) Constraints:-

The constraints analysis and suggestions was reported based on the opinion survey of the sample farmers. Thus, the generalizations of result are the feedback of the farmers engaged in cotton growing in the region. It is evident from the table (Input utilization and level of yield according to different size group) that farmers of different size group were using different quantity of inputs in cultivation of cotton per unit of area. Thus, utilization of different levels of yield attributing inputs and managerial efficiency might have been caused in yield difference in respective size group.

Several constraints barring the sustainable production of the traditional or local practices of cotton crop in the area are related to resources management, faults and stresses of abiotic and biotic nature.

The farmer's opinion was obtained regarding the factors affecting adversely the adoption of various improved technology and practices with the suggestion to overcome the constraints, some of them are presented in Table 4.13

Table: 4.13 Production constraints identified by the sample farmers.

S. No.	Constraints	Number of respondents				Rank obtained
		Small N=43	Medium N=29	Large N=18	Overall N=90	
A	Natural cause (Average)	20	20	6	46	IVth
1.	Low fertility of soil	13	16	05	34	Iv
2.	Unfavorable climate	19	18	07	44	Iii
3.	Uncertainty of rain	29	20	02	51	Ii
4.	Damage due to insect pest	20	25	09	54	I
B.	Social cause (Average)	24	14	11	49	IIIrd
1.	Unavailability of labour at time	15	10	07	32	Iv
2.	Low working capacity of labour	25	21	15	61	Ii
3.	Family problems	37	19	13	69	I
4.	Not proper management of family labour	19	07	10	36	Iii
C.	Economic cause (Average)	27	20	9	56	IInd
1.	Economic poverty	39	26	09	74	I
2.	Do not purchased recommended inputs	34	21	16	71	Ii
3.	Unavailability of irrigation	17	18	08	43	Iii
4.	Do not done agronomical practices proper and at the time	19	15	04	38	Iv
D.	Technological cause (Average)	32	20	8	60	Ist
1.	Lack of technological knowledge	32	28	03	63	Ii
2.	Unavailability of technical suggestions and guidance	29	16	07	52	Iv
3.	Unavailability of training and demonstrations	32	23	11	66	I
4.	Costly improved technology	35	15	09	59	Iii
E.	Institutional infrastructure cause (Average)	21	21	7	49	IIIrd
1.	Unavailability of inputs at time	19	16	06	41	Iv
2.	Do not performed agricultural practices at time	32	18	12	62	I
3.	Unavailability of proper loaning system	15	24	03	42	Iii
4.	Unavailability of proper distribution system	17	27	07	51	Ii

The constraint confronted by farmers is divided into five parts and each part has it own importance. The most important constraint was technological cause that got rank Ist followed by economic cause (rank IInd), social cause and institutional infrastructure cause both got (rank IIIrd) and natural causes (rank IVth) respectively.

Among the technological cause, the important cause was unavailability of training and demonstrations reported by (66 farmers) followed by lack of technological

knowledge (63 farmers), costly improved technology (59 farmers) and unavailability of technical suggestions and guidance reported by (52 farmers) respectively.

Among the economic cause, the maximum number of farmers (74 farmers) reported economic poverty followed by did not purchase recommended inputs (71 farmers), unavailability of irrigation (43 farmers) and did not perform proper agronomical practices and at the proper time reported by (38 farmers) respectively.

Among the social cause, the important problem was family problems reported by (69 farmers) followed by low working capacity of labour (61 farmers), In proper management of family labour (36 farmers) and unavailability of labour at the proper time reported by (32 farmers) respectively.

Among the institutional infrastructure cause, the most important problem was non performance as agricultural practices at proper time reported by (62 farmers) followed by unavailability of proper distribution system (51 farmers), unavailability of proper loaning system reported by (42 farmers) and unavailability of inputs at the proper time reported by (41 farmers) respectively.

Among the natural cause, the maximum number of farmers (54) reported damage due to insect pest followed by uncertainty of rain (51 farmers), unfavorable climate (44 farmers) and low fertility of soil reported by (34 farmers) respectively.

B) Suggestions to over come the constraints:

Following suggestions have been made by respondents in study area to overcome the main constraints occurring in production process. The details as per the confronting suggestions by respondents are presented in Table 4.14.

Table: 4.14 Suggestions Given by the sample farmers.

S. No.	Suggestions	Percentage of total number				Rank obtained
		Small N=43	Medium N=29	Large N=18	Overall N=90	
1.	The inputs should be cheap	21	12	10	43	Vth
2.	The input should be available at time	29	17	09	55	IInd
3.	There should be knowledge about inputs use.	07	03	02	12	Xth
4.	There should be facilities for credit.	15	10	07	32	VIIIth
5.	There should be facilities for soil testing.	29	11	09	49	IVth
6.	The market price should be fair.	39	23	09	71	Ist
7.	There should be proper marketing system.	17	11	07	35	VIIth
8.	There should be proper transportation.	21	07	09	37	VIth
9.	The training and demonstration should be given.	28	16	09	53	IIIrd
10.	Other suggestions.	13	09	08	30	IXth

The suggestions confronted by farmers are noted into ten main points and each point has its own importance. The most important suggestion was the market price should be fair got rank Ist followed by the input should be available at proper time (rank IInd), the training and demonstration should be given. (rank IIIrd), there should be facilities for soil testing. (rank IVth), the inputs should be cheap (rank Vth), there should be proper transportation. (rank VIth), there should be proper marketing system. (rank VIIth), there should be facilities for credit. (rank VIIIth), Other suggestions." (rank IXth) and there should be knowledge about inputs use. (rank Xth) respectively.

CHAPTER - V

DISCUSSION

In this chapter a detailed description and interpretation is made on the basis of data collected, tabulated and analysis of data as per the stated objectives of the study and result obtained with cause and effected relationship. The present study was undertaken with the main objective; to find out the profitability in production and marketing of cotton. Cotton is an important cash crop of Madhya Pradesh and occupies an area of about 6 lakh hectares in the year of 2009-10. The main cotton growing area of Madhya Pradesh is East and West Nimar (Khandwa, Khargone, Barwani and Dhar district). Dewas is also one of the main cotton-growing district in Malwa Plateau of Madhya Pradesh. The main reason for cotton cultivation in Dewas district is due to the presence of black cotton soil and suitable climatic conditions. The socio economic condition of most of the farmers in the district was found to be very well hence, agricultural development becomes vitally important particularly in case of cotton growers because cotton is a capital intensive crop. The new (Bt.cotton) production strategy calls for the adoption of balanced and efficient use of modern inputs for profitable and increase in production. The use of modern technology needs a careful management of resources before allocating the area under new crop. Farmers should be well aware with different types of costs incurred and returns obtained from cotton crop, for minimizing the risk factor and easy adoption of modern technology for this crop. If farmers will have such valuable information than they can allocate a manageable area under cotton crop and can also achieve a desirable benefit. Hence, the study has eminent importance in this context.

On the other hand, the involvement of intermediaries in marketing system brings the percentage share of producers down in consumer's rupee. Hence, farmers who are interested in this enterprise should be well aware of different types of resource requirement and marketing information about cotton production. Prior to introduction of improved cotton production technology the yield and profit from cultivation of cotton was very marginal. But due to adoption of yield attributing inputs in cotton cultivation and with better management of resources, now, farmers are getting higher remunerative

price. The better price was also received by farmers due to fair marketing systems developed in the area.

There is one problem that is non-availability of suitable agro-climatic condition (scares rainfall changing seasonal situation) and lack of irrigation facilities in the area, due to which the production and productivity of cotton is found to be decreasing. In this condition if farmers have such valuable information i.e. level of cost incurred and profit received with the production of per unit area of cotton cultivation with fair price received by different functionaries involved in marketing process, then they can allocate a manageable area under this crop and can achieve a desirable benefit from this enterprise. In this sense, this study will help the farmers by making available all the information through which they not only increase the cropping intensity of their farms but also improve the socio-economic conditions by earning more per unit of area in cultivation of cotton. After analysis of data in the chapter of result the fact and findings of results are discussed as under:

Level of education of respondent is directly correlated with level of adoption of improved production technology and farm efficiency. The adoption of improved production technology and farm efficiency is also correlated in minimizing the cost of cultivation and enhancing the productivity and income. This is a way of getting desirable farm profit per unit of area. On the basis of above fact, it can be said that education of respondents have its own importance in development of agriculture and the socio economic condition of farmers. In present study it is found that majority of the respondents in the different size groups had an education level between primary (26.67% of total number). It is also apparent that 32.23 per cent of the respondents were illiterate. Hence, it is suggested that the agricultural planner should make efforts to increase the education level of farmers in area for better development of agriculture.

It is evident from the data that the average size of holding represents 4.33 hectare per farm in the area. The area of holding differentiates with the size group i.e. 1.39 hectare with small size group followed by 3.24 and 8.37 hectare with medium and large size group respectively. It is clear from data that the average size of holding was found to be unviable. Because, the viable farmers is one who's annual income from agriculture and allied activities is about the level which is considered necessary to

maintain the farmers and his family at the minimum standard of living. The small and unviable farmers are no less progressive than the large farmers in their willingness to adopt modern inputs and agricultural practices. The problem of small and unviable farmers can be solved by providing the technical guidance, inputs and marketing of agriculture produce at a remunerative price which can be solved with the information of cost of production and marketing of particular crop.

The average irrigated area as a percentage of size of holding was found to be 46.65 per cent. Due to low irrigation facilities in the area only 161.89 per cent area was covered under crops in a year (gross cropped area) when both the kharif and rabi crops were taken into consideration. It is very well known fact that the greatest need of an agriculturist is assured water supply and irrigation is the potent agent for increasing crop yields. It is, therefore, essential to assess the availability of water and also its utilization. The data showed that less than 50 per cent of cultivated area was found to be under irrigation. Hence, development of irrigation is said to be essentially a community enterprise or a public responsibility.

The study of cropping pattern clearly shows that kharif crops were predominating in area i.e. 57.63 per cent to gross cropped area. While under rabi crops the area was devoted to only 42.37 per cent to gross cropped area. The facts, showed that there is only small portion of cultivated area were under double crop and some of the rabi area was kept fallow. The modern technological developments for technique of water conservation are making practicaticable to adding water resources that should be adopted by farmers for increasing area under double cropping system.

A study on economics of cotton cultivation, as important kharif crop 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, the farmers will require 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 level of input utilization, cost of production, yield per unit of area and their relative market prices or gross return. The study revealed that the average operational cost i.e. cost A1 was the highest on large size group being Rs.12347.36 per hectare and the lowest on small farms Rs.10305.19 while it was Rs.10419.88 on

medium farm respectively. This shows that cost A1 was found in increasing trend with increase in the size group and this trend was also found in case of cost B1 also. This shows that big farmers are more resource full and using higher inputs in production process. In case of cost B2, cost C1, cost C2 and C3 was found minimum in case of medium farmers. This was due to the lower use of human labour and resource efficiency on their farms.

The average yield of cotton in the study area was found to be 17.54 quintal per hectare. The maximum yield (18.18 quintal per hectare) was found on small size of farmers and it was due to efficient use of inputs by these groups in fact, the average yield showed to be the lowest with the large farmer that was 17.06 quintal per hectare and it was normally due to inefficient management practices by these sizes of farmers. Thus, it is relevant that the yield per hectare was decreased with the increase of size of holding.

The overall gross income (main product + by product) per hectare of this crop was found to be Rs. 68927.33 and it was the highest in small size of holding i.e. Rs.70425 per hectare and likely to equal in medium and large farmers. The other measurement of farm profit like net farm income found to be on an average Rs.47066 per hectare. The net profit shows decreasing trend with increase of size group. The average B.C. ratio was observed as 3.15 and it was the highest in case of medium farmers.

Four marketing channels were observed in the study area as following:

Channel I: Producers→ Village traders → Retailer→ Consumer

Channel II: Producers→Village traders→Wholesalers in regulated market→ Mill owner

Channel III: Producers→ Wholesalers in regulated market→ Mill owner

Channel IV: Producers→Agent of mill owner→ Mill owner

The data also revealed that the producer's share in consumer's rupee was on an average found to be 73.13 per cent. It varies and the highest producers share in consumer's rupee was found in the third channel of marketing i.e. **(Producers→ Wholesalers in regulated market→ Mill owner)** 80.56 per cent, due to lowest expenditure on marketing cost and marketing margin in channel third. This is the fair regulated market where producer sold their produce without entertaining the village traders. Next to third channel, fourth channel **(Producers→Agent of mill owner→ Mill owner)** was found to be important for producer in which the agent of mill owner provided advance at the time of standing crop and also providing 79.02 per cent producer's share in consumer's rupee. Thus, it is concluded that in third channel was found to have the highest remunerative net price 80.56 per cent among all channels and fourth channels given net price i.e. 79.02 per cent.

The constraints analysis and suggestions was reported based on the opinion survey of the sample farmers. Thus, the generalizations of result are the feedback of the farmers engaged in cotton growing in the region. It is evident from the table (Input utilization and level of yield according to different size group) that farmers of different size group were using different quantity of inputs in cultivation of cotton per unit of area. Thus, utilization of different levels of yield attributing inputs and managerial efficiency might have been the cause as yield difference in respective size group. Hence, the planner of agriculture should be taken care to remove these constraints which are very important for development of cotton production in the area.

CHAPTER –VI

SUMMARY, CONCLUSION AND SUGGESTIONS

Summary: -

Cotton is an important commercial crop of national significance because of its immense influence of Indian economy. Although India ranks first in area, its productivity is lowest among major cotton growing countries. The green revolution in the country was triggered by breakthroughs in developing improved cotton production technology. The improved technology needs a careful management of resources before allocating the area under this crop. Farmers who are interested to go for this enterprise should be well aware with different types of monetary information about this enterprise like total cost of cultivation of this crop, particularly about the operational cost, gross and net returns they will get from this enterprise and what will be the cost – benefit ratio in this enterprise.

On the other hand, beside the cost and return information prices of product have played an important role in economic planning. They determine not only what shall be produced, but also how much to be produced. The market intermediaries play a vital role in price formation which in turn has a great bearing on the sale proceeds received by the producer-sellers. In the light of these facts the attempt should be made to find out various cost items incurred by the farmers and intermediaries with other marketing information under different channel of cotton marketing. On the view of above fact the following objectives was taken into consideration and the specific objectives of the study are.

OBJECTIVES:

1. To analyze the profitability of cotton cultivation.
2. To identify different marketing channels of cotton.
3. To calculate the price spread and marketing cost in different channels.
4. To identify constraints in cotton production and to suggest measures to overcome it

The present study was conducted in Dewas district of Madhya Pradesh because it is one of the important cotton growing area. For this study, the random sampling

technique was used for selection of block, villages and proportionate random sampling for selection of respondents.

At first stage Dewas block in Dewas district was selected purposively because the area is well known to researcher and convenient for data collection. Dewas block comprises many cotton growing villages, out of these, five villages were selected randomly. From the selected villages a list of farmers category wise i.e. small (below 2 hectares), medium (above 2.0 to 4.0 ha.) and large (above 4.0 ha.) as per the size of land holding was prepared. From this list, 90 farmers were selected using proportionate sampling method i.e 43 small, 29 medium and 18 large farmers respectively. For collecting information on marketing cost, marketing margins and producers' share, the equal number of marketing agent and marketing traders i.e. 10 in each channel was selected randomly from the list among who deal with cotton marketing in Dewas market.

The primary and secondary data was required for the study. The primary data was collected from the respondents by using interview schedule and observation, while secondary data was collected from the official records, published data, magazines, journals and other documents.

All the collected primary data was related to the agricultural year 2011-12.

Analytical procedure:

Following economic techniques was used to analyze the collected data:

Cost of cultivation (Rs. /ha.) : Operational cost + Fixed cost

Cost concept : Cost A_1, Cost A_2, Cost B_1, Cost B_2, Cost C_1,Cost C_2, Cost C_3.

Gross income = Quantity of physical product × price + Quantity of byproduct × price

Net farm income = Gross income - Cost C_3

Cost of production = (Total cost - Value of by products)／Quantity of main product (Rs. /qt.)

Benefit – Cost Ratio = Gross income／Total Cost

The information of disposal of cotton through different channels was observed and marketing cost, marketing margin and price spread in different marketing channels was calculated to find out the profitable and suitable channel prevailing in study area.

Marketing cost includes all the marketing charges from local assembling to retailing in the marketing process.

$$P = (C - M) / C \times 100$$

Where,

P= Producer's share in the consumer's rupee

C=Price paid by ultimate consumers

M=Marketing costs and margins

CONCLUSIONS: -

From the foregoing results it could be concluded as under:

- The average size of holding represents 4.33 hectare per farm in the area. The area of holding differentiates with the size group i.e. 1.39 hectare with small size group followed by 3.24 and 8.37 hectare with medium and large size group respectively.
- The average irrigated area as a percentage of size of holding was found to be 46.65 per cent. Due to low irrigation facilities in the area only 161.89 per cent area was covered under crops in a year (gross cropped area) when both the kharif and rabi crops were taken into consideration.
- The study of cropping pattern clearly shows that kharif crops were predominating in area i.e. 57.63 per cent to gross cropped area. While under rabi crops the area devoted was only 42.37 per cent to gross cropped area.
- The average area under cotton was found to vary according to different categories i.e. 0.51 hectare with small size group followed by 0.98 hectare in the case of medium size group and 1.56 hectare with large farmers respectively.
- The study portrays that on an average cost of cultivation per hectare of cotton crop was found to be Rs.11024.14 (Cost A1), Rs.11074.60 (Cost B1), Rs.14180.60 (Cost B2), Rs.16768.27 (Cost C1), Rs.19874.27 (Cost C2) and Rs.21861.70 (Cost C3) respectively.
- The average yield of cotton in the study area was found to be 17.54 quintal per hectare. The maximum yield (18.18 quintal per hectare) was found on small size of farmers. It is relevant that the yield per hectare was decreased with the increase of size of holding.
- The main measurement of farm profit is net farm income was found to be on an average Rs.47066 per hectare. The net profit shows decreasing trend in increasing

of size group. The average B.C. ratio was observed as 3.15 and it was the highest in case of medium farmers.

- Four marketing channels were observed in the study area as following:

Channel I: Producers → Village traders → Retailer → Consumer

Channel II: Producers →Village traders →Wholesalers in regulated market → Mill owner

Channel III: Producers → Wholesalers in regulated market → Mill owner

Channel IV: Producers →Agent of mill owner → Mill owner

- It is concluded that the highest amount was received by producer through fair market dealing i.e. regulated market. In other word, third channel was found to be more remunerative in which the producers received Rs.3651 per quintal as net saving.
- It is concluded that in third channel was found to have the highest remunerative net price 80.56 per cent among all channels and fourth channel given net price i.e. 79.02 per cent.
- The constraint confronted by farmers is divided into five parts and each part has its own importance. The most important constraints was technological cause that got rank Ist followed by economic cause (rank IInd), social cause and institutional infrastructure cause both got (rank IIIrd) and natural causes (rank IVth) respectively.
- The suggestions confronted by farmers are divided into ten main points and each point has its their own importance. The most important suggestion was the market price should be fair got rank Ist followed by the input should be available at time (rank IInd), the training and demonstration should be given. (rank IIIrd), there should be facilities for soil testing (rank IVth), the inputs should be cheap (rank Vth), there should be proper transportation (rank VIth), there should be proper marketing system (rank VIIth), there should be facilities for credit (rank VIIIth), Other suggestions (rank IXth) and there should be knowledge about inputs use (rank Xth) respectively.

Suggestion: -

The critical study has developed many policy implications and suggestions as follows: -

1. The technological development involves a fair balance between welfare and productive services. This feature departs a great deal from the present methods of cultivation and allocation of resources on redrawn priorities. Hence, farmers should be given priority to use their resources on the basis of economic viability with proper management of their farm.
2. Social services with respect to agricultural development such as education, training and other extensive activities have a strong case both on economic and welfare grounds. But if they do not lead to productive efficiency then they are sterile and consume an over increasing recurrent allocation causing depletion of resource for productive purposes. Hence, even in the sphere of education and extension works emphasis needs to be laid on enhancing productive capacity of the population and the agricultural field.
3. In view of the socio-economic urgency and political expediency the agricultural development cannot be postponed any further. If present known means cannot yield the desired results alternative means must be found. We are of the firm view that agricultural development in the areas must be considered a long-range sequential process. The emphasis on quick results reckoned by achievement in the yield to imparting skill to the workers, which is more meaningful and viable but the process is slow. Also the narrow concept of development based on a few crops must yield place to encompass a wider range of alternatives.
4. Adaptive research must be conducted in the areas where research on cotton crop and complementary crops is done. Agricultural research institutions should have varietals improvement and development of suitable agronomic practices for varying soils and geographic situations. Economic study should be conducted suggests optimal cropping pattern and practices including recommendations for varying quantities of fertilizer applications under varying price and output situations. Extensive research on promising varieties and cropping practices by joint teams of research and extension workers to be done.

5. It is concluded that majority of respondents had strong desire for change in use of high yielding variety fertilizers, very much excitement for getting initial information about plant protection measures and they recognized the plant protection measures as a major problem. Most of them needed additional information about plant protection measures, were always considered alternative means for use of fertilizers & considered all the resources available with them. Hence, Government, development agencies and agricultural scientist must gave attention for proper extension exhibition in the area.
6. Some of the farmers follow uneconomic method of cultivation or are not applying adequate inputs and practices, resulting into lower yield. They have lost faith in what is said but they have faith when they see with their own eyes, similarly farmer's following apart from seed and fertilizer, traditional methods of plant protection measures and those who use scientific methods do not follow in proper time and as per recommendations. Hence, result of recommended technology is very necessary to demonstrate to the farmers.

CHAPTER -VII

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Investigator : Ramesh Dudwe

(अ) सामान्य जानकारी

1. कृषक का नाम : श्री .....

.....

2. पिता / पति का नाम : श्री .....

.....

3. जाति : .....(सामान्य / पिछड़ा वर्ग / अ.जाति / अ.जनजाति)

4. पता : ग्राम ..... तहसील .....

जिला ..... प्रदेश .....

5. क्या आप सहकारी समिति के सदस्य हैं ?: हाँ / नहीं

6. व्यवसाय

1. प्राथमिक / मुख्य ..... 2. द्वितीय ..... 3. तृतीय .....

7.परिवारिक जानकारी

क्रमांक	सदस्य का नाम	उम्र	लिंग	शिक्षा	मुखिया से संबंध	व्यवसाय
i						
ii						
iii						
iv						
v						
vi						
vii						

8. जोत का विवरण

(प) खसरा क्रमांक .....

(पप) स्वयं की भूमि ..... एकड़ कुल विखण्डनों की संख्या .....

कुल राजस्व की राशि रूपये .....

(पपप) किराये पर ली गई भूमि ..... एकड़ कुल विखण्डनों की संख्या .....

कुल राजस्व की राषि रूपये .....

(पअ) किराये पर ली गई भूमि ..... एकड़ कुल विखण्डनों की संख्या .....

कुल राजस्व की राषि रूपये .....

(अ) कुल जोता गया क्षेत्रफल ..... एकड़ कुल विखण्डनों की संख्या.....

9. भूमि उपयोग विवरण

क्रमांक	विवरण	क्षेत्रफल (एकड़ में)
i	शुद्ध बोया गया क्षेत्र	
ii	स्थाई पड़त भूमि	
iii	चालू पड़त भूमि	
	(अ) रबी पड़त भूमि	
	(ब) खरीफ पड़त भूमि	
iv	कृषि उत्पादन योग्य बेकार पड़ी भूमि	
v	कृषि अयोग्य भूमि सड़क मार्ग	

10. सिंचाई के साधनों का विवरण

क्रमांक	स्त्रोत	सिंचित क्षेत्रफल	क्रमांक	स्त्रोत	सिंचित क्षेत्रफल
(प)	कुओं द्वारा		(पअ)	नहर द्वारा	
(पप)	नलकूप द्वारा		(अ)	नदी नालों द्वारा	
(पपप)	तालाब द्वारा		(अप)	अन्य	

11. प्रक्षेत्र सम्पत्ति विवरण

क्रमांक	विवरण	क्षेत्र/संख्या	वर्तमान कीमत	अनुमानित वार्षिक किराया	उपयोग के वर्ष
(प)	भूमि				
(पप)	भवन (अ) कच्चा (ब) पक्का (स) अर्द्ध पक्का				
(पपप)	सिंचाई यंत्र/साधन (अ) कुआं (ब) नलकूप (स) विद्युत पम्प (द) डीजल पम्प (इ) जनरेटर (फ) स्प्रिंकलर (य) अन्य				
(पपप)	उपकरण/यंत्र (अ) मुख्य उपकरण (1) हारवेस्टर (2) ट्रेक्टर (3) रीपर (4) थ्रेषर (5) सीडड्रिल				

	(6) चैफकटर (7) गोल्ड बोर्ड (8) कल्टीवेटर (9) हैरों (10) ट्राली (11) बैलगाड़ी (12) ..... (ब) लघु उपकरण (1) देशी हल (2) दुफन (3) तिफन (4) बखर (5) पाटा (6) डोरा (7) बैल चलित सीडड्रिल (8) क्रीम सेफ्रेटर (9) दुग्ध दोहन मषीन (10) अन्य				

12. **फसल पद्धति :**

क्रमांक	विवरण	किस्म	क्षेत्रफल (एकड़ में)		
			सिंचित	असिंचित	अर्द्धसिंचित
(प)	खरीफ (अ) ..... (ब) ..... (स) ..... (द) ..... (इ)				
(पप)	रबी (अ) ..... (ब) ..... (स) ..... (द) ..... (इ)				
(पपप)	जायद (अ) ..... (ब) ..... (स) ..... (द) ..... (इ)				
(पअ)	फल बगीचा (अ) ..... (ब) ..... (स) ..... (द) ..... (इ)				
(अ)	अन्य (अ) ..... (ब)				

	(स) ..... (द) ..... (इ)				

(ब) कपास फसल का आय–व्यय विष्लेषण

अ. मजदूरों पर खर्च :

क्र.	क्रियाऐं	पारिवारिक श्रम संख्या दिन	किराये का श्रम संख्या दिन	बैल श्रम संख्या दिन	मषीन श्रम घंटे
1	भूमि की तैयारी				
(अ)	जुताई				
(ब)	बखरनी				
2	खाद / उर्वरक				
3	बीजोपचार				
4	बुवाई				
5	सिंचाई				
6	पौध संरक्षण				
7	निदाई				
8	अन्य				
9	चुनाई				
10	स्थानांतरण				
11	बाजार व्यवसाय				
12	अन्य				

ब. आगतों पर खर्च :

क्र.	आगत	नाम/जाति	मात्रा	रिमार्क एवं मूल्य
1	बीज			
2	बीजोपचार			
3	कल्चर			
4	गोबर की खाद (1) कम्पोस्ट			
5	उर्वरक (1) नाईट्रोजन (2) फास्फोरस (3) पौटेषियम			
6	सिंचाई (1) बिजली व्यय (2) डीजल (3) नहर का व्यय (4) अन्य			
7	पौध संरक्षण (1) कीटनाषक (2) खरपतवारनाषक (3) फॅफूदनाषक			
8	चुनाई व्यय			
9	अन्य व्यय			
10	**कुल खर्च**			

स. आय (उपज) :

क्र.	उपज	मात्रा (क्विंटल)	चुनाई के समय बिक्री मूल्य (रूपये)	मूल्य (रूप्ये)
1	मुख्य उपज			
2	डप–उपज			

(स) विपणन सम्बंधी जानकारी

1द्ध कपास सम्बंधी बाजार कार्य

क्र.	अव्यव	मात्रा	खर्च
1.	सफाई		
2.	श्रेणी करण		
3.	पैकिंग		
4.	यातायात घर से मण्डी		
5.	अन्य		

2द्ध कपास का बाजार पद्धति

क्र.	माह	मात्रा	मूल्य	किसको बेचा	दूरी	साधन
1.	मार्च					
2.	अप्रेल					
3.	मई					
4.	जून					
5.	जुलाई					
6.	अगस्त					
7.	सिंतबर					
8.	अक्टूंबर					
9.	नवंबर					

10.	दिसंबर					
11.	जनवरी					
12.	फरवरी					

3) किसानो द्वारा वहन किया गया विपणन व्यय

क्र.	विवरण	मात्रा	दर	कुल व्यय
1.	प्रक्षेत्र पर बोरा भराई			
2	प्रक्षेत्र पर हम्माली			
3	परिवहन व्यय			
4	नीलामी शुल्क			
5	बाजार शुल्क			
6	मण्डी में हम्माली शुल्क			
7	तुलाई शुल्क			
8	सफाई शुल्क			
9	कमीशन			
10	धर्मादा			
11	चौकीदारी शुल्क			
12	भंडारण शुल्क			
13	तुलाई में कटौती			
14	करदा			
15	अन्य			

किसानों को उत्पाद की दर प्रति क्विं .....

4) विपणन स्थान

आप अपना उत्पाद कहां बेचतें है।

1. ग्रामीण व्यापारी को : क्यों ?
   विवरण .....
2. बड़े व्यापारी को : क्यो ?
   विवरण .....
3. नियंत्रित बाजार/मण्डी में क्यो ?
   विवरण .....
4. आई.टी.सी. (चौपाल) क्यो ?
   विवरण .....

5. अन्य क्यो ?

विवरण .....

आप जहाँ पर अपना उत्पाद बेचतें है वहाँ पर आपको क्या सुविधाऐं मिलती है।

विवरण देवे .....

5) कपास के विपणन सम्बंधित सामान्य जानकारीः

1. क्या आप फसल विपणन लोन लेतें है : हां/नहीं

यदि हां तो विवरण देवें :– .....

2. क्या आपको बाजार मूल्य की जानकारी है : हां/नहीं

नही तो क्यो नहीं .....

3. क्या आपको मण्डी कर/बाजार के कर/मण्डी शुल्क एवं माप की जानकारी है। हां/नहीं

यदि नही तो क्या कारण है :– .....

4. आपके उत्पाद का भाव कम होनें का क्या कारण है। हां/नहीं

यदि हां तो क्या कारण है .....

5. क्या आप अपनें उत्पाद का मूल्य बढ़ा सकतें है। हां/नहीं

यदि हां तो कैसे .....

यदि नही तो क्यो नहीं .....

6. क्या आपको भण्डार गृह की जानकारी है। हां/नहीं

अ. यदि हां तो विवरण दे .....

ब. आपके पास कैसे भण्डार है .....

स. यदि नहीं तो क्यो नही .....

7. क्या आपको श्रेणीकरण की जानकारी है। हां/नही

यदि नही तो क्या कारण है .....

8. क्या आप विपणन समाचार संबधी पत्र/पत्रिकाऐं पढ़तें है। हां/नही

यदि हां तो पत्रिका का नाम .....

यदि नही तो क्या कारण है .....

9. क्या आप विपणन साख के बारें में जानतें है। हां/नही

नही तो क्यो नही .....

हां तो कैसे .....

10. क्या आपकें यहां फसल कटाई के तुरन्त बाद बेची जाती है।

हां/नही

हां तो क्यों.....

11. क्या आपकों अपनी फसल के मूल्य का भुगतान नगद होता है। हां/नही

यदि नहीं तो क्यो नही .....

12. आपकें यहा यातायात चार्ज क्या है। सामान्य/अधिक

यदि अधिक तो क्यो .....

13. तुलाई के लिए कम्प्यूटर कांटे का प्रयोग होता है। हां/नही

यदि नही तो क्यो नही .....

14. निम्न सुविधओं में से कौन–कौन सी सुविधायें आपको मिलती है।

1) मिट्टी परीक्षण	2) भंडारण	3) मनोरंजन
4) गाड़ी खड़ी करनें का स्थान	5) अतिथिगृह	6) केन्टीन
7) बिजली	8) पानी	9) सुलभ काम्पलेक्स
10) सड़क	11) चौकीदारी	

6) थोक विक्रेता का विवरण (Wholesaler Proforma)

थोक विक्रेता का नाम :

.....

(अ) थोक विक्रेता द्वारा खरीदी के समय भुगतान रुपया प्रति कु० :

1ण कमीशन ..... 2ण तुलाई .....चढाई .....4ण ढुलाई .....

5ण उतराई..... 6ण पूंजी पर ब्याज .....7ण संग्रहण .....

8ण बोरा पर खर्च .....9ण क्षरण (कमी) .....10ण कर .....

(ब) संग्रहण के समय भुगतान रुपया प्रति कु० :

किराया .....

ह्रास कीमत .....

पूंजी पर ब्याज .....

अन्य खर्च .....

7) फुटकर विक्रेता को बेचना .....

फुटकर विक्रेता का विवरण (Retailer Proforma)

फुटकर विक्रेता का नाम : .....

(अ) फुटकर विक्रेता द्वारा खरीदी के समय भुगतान रुपया प्रति कु० :

1ण कमीषन ..... 2ण तुलाई ..... चढाई .....4ण ढुलाई .....

5ण उतराई .....6ण पूंजी पर ब्याज ..... 7ण संग्रहण .....

8ण बोरा पर खर्च .....9ण क्षरण (कमी) .....10ण कर .....

(ब) संग्रहण के समय भुगतान रुपया प्रति कु० :

किराया .....

ह्रास कीमत .....

पूंजी पर ब्याज .....

अन्य खर्च .....

8) मंडी में बेचना ..... *मंडी का विवरण .....*

मंडी का नाम : **.....**

(अ) मंडी द्वारा खरीदी के समय भुगतान रुपया प्रति कु० :

1ण कमीषन ..... 2ण तुलाई .....चढाई ..... 4ण ढुलाई .....

5ण उतराई..... 6ण पूंजी पर ब्याज.....7ण संग्रहण .....

8ण बोरा पर खर्च .....9ण क्षरण (कमी) .....10ण कर .....

(ब) संग्रहण के समय भुगतान रुपया प्रति कु० :

किराया **.....**

ह्रास कीमत **.....**

पूंजी पर ब्याज **.....**

अन्य खर्च **.....**

(स) उत्पादन की समस्याएं एवं निदान

1: उत्पादन में बाधक कारकों का विवरण

A: नैसर्गिक कारण –

1. भूमि की उर्वराषक्ति कम होना हॉ / नही
2. मौसम की खराबी हॉ / नही
3. वर्षा का अनिष्चित होना हॉ / नही
4. कीडो बिमारियों का ज्यादा प्रकोप होना हॉ / नही
5. अन्य (विवरण) .....

B: सामाजिक कारण –

1. समय पर मजदूर नही मिलता हॉ / नही
2. मजदूर में कार्य क्षमता का कमी होना हॉ / नही
3. पारिवारिक कठिनाईयॉ हॉ / नही

4. पारिवारिक श्रम का उचित प्रबन्धक न होना हॉ / नही

5. अन्य (विवरण) .....

C: आर्थिक कारण –

1. आर्थिक तंगी का होना हॉ / नही
2. अनुषंषित आगत खरीद नही पाया हॉ / नही
3. सिंचाई सुविधा उपलब्ध नही हो पाया हॉ / नही
4. शस्य क्रियॉए समय पर एवं उचित हॉ / नही
   सम्भव नही हो पाया।
5. अन्य (विवरण) .....

D: तकनीकी कारण –

1. तकनीकी ज्ञान की कमी हॉ / नही
2. तकनीकी सुझाव एवं मार्ग दर्षन नही मिल सका हॉ / नही
3. तकनीकी प्रषिक्षण एवं प्रदर्षन नही मिला हॉ / नही
4. उन्नत तकनीकी का अधिक खर्चीला होना हॉ / नही
5. अन्य (विवरण) .....

E: संगठनात्मक एवं कार्यात्मक कारण –

1. समय पर आगतो का उपलब्ध न हो पाना हॉ / नही
2. समय पर कृषि कार्यो का सम्पन्न न हो पाना हॉ / नही
3. उचित ऋण की व्यवस्था न होना हॉ / नही
4. उचित विवरण व्यवस्था न होना हॉ / नही

5. अन्य (विवरण) .....

2: उत्पादन में बाधक कारकों का निदान

1	सस्ता आगत होना चाहिए	हॉ / नही
2	समय पर आगत उपलब्ध होना चाहिए	हॉ / नही
3	आगतो का ज्ञान होना चाहिए	हॉ / नही
4	ऋण सुविधा होना चाहिए	हॉ / नही
5	मिट्टी परिक्षण सुविधा होना चाहिए	हॉ / नही
6	उचित मूल्य मिलना चाहिए	हॉ / नही

7	उचित विपणन व्यवस्था होना चाहिए	हॉ / नही
8	उचित यातायात व्यवस्था होना चाहिए	हॉ / नही
9	प्रषीक्षण एवं प्रर्दषन देना चाहिए	हॉ / नही
10	अन्य	हॉ / नही

VITA

The author of this thesis, **Ramesh Dudwe** S/o **Shri.Gulabsingh Dudwe** was born on 8th August 1986 at Dewas district of Madhya Pradesh.

He passed Higher Secondary Examination from M.P. Board of Secondary Education, Bhopal. In 2005 he joined the R.V.S.K.V.V, B. M. College of Agriculture, Khandwa and successfully completed his B.Sc. (Ag.) degree in the year 2010 with 6.67 OGPA out of 10.00-point scale. After graduation he joined M.Sc. (Ag.) to specialize in Agricultural Economics and Farm management at College of Agriculture, Indore. He has completed his course work with an OGPA 6.71 out of 10.00-point scale. For the partial fulfilment of Master's Degree he was allotted need based research problem ,**" An Economic analysis of Production and Marketing of Cotton Crop in Dewas District of Madhya Pradesh"**

Now he is going to complete his master degree program requirement by submission of this thesis.

During his studies he actively participated in sports and cultural activities at the school and college level.

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Place: