RESEARCH REPORT
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Marketing of Pulses in India

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PREFACE

The impressive growth of Indian Agriculture has helped the county achieving food security at national level. The next challenge would be to sustain this growth and achieve nutritional security. Pulses for its high protein content and being environment friendly will play pivotal role in achieving nutrient security mainly in a pre-dominantly vegetarian society. The performance of pulses over year in terms of area and production has been lukewarm in relation to other crops. The stagnant production has contributed to declining per capita consumption of pulses over last few decades. The domestic pulse prices have also increased in comparison to other food items. The Government has focused on improving pulse production through various programmes and prices support policies but no significant progress in pace with demand has so far been observed leading to rely heavily on imports to bridge the demand-supply gap in pulses.

Some of the factors discouraging pulses sector are stagnation in production, poor area expansion, low yield and relative low profitability, decrease in per capita land availability, increase in demand-supply gap, heavy dependence on imports, inefficient marketing, etc. Keeping in view of above factors and developments like reforms in agricultural marketing, globalization and trade liberalization, it is imperative to study the various aspects of marketing of pulses. Gram and Arhar, the two leading pulse crops in India have been identified for studying various aspects involved in the marketing of pulses through a sample study of different stakeholders. The study has a sample size of 400 including farmers, traders, commission agents, processors and retailers from Uttar Pradesh and Madhya Pradesh.

The study reveals the presence of multi-layered, fragmented supply chain in the movement of pulses from farmer to the ultimate consumer. Information availability may help immensely in integrating farmers with market and enhancing the efficiency of the system. Processing is the most vital link in the marketing of pulses. The producers share in consumer's rupee has been observed to be very low and efforts need to be made to improve the producer's share in consumer's rupee. In addition to processing, transportation is another important component in the marketing of pulses which needs improvement in terms of connectivity and development of cost effective transportation system. The study reinforces the need for adopting innovative approaches like participation of private players under PPP, integrating producers with market through group formation and enhancing the efficiency of the system through efficient processing at farm level. Focus should also be made on providing market information using ICT and to make marketing an integral part of various programme of the Government like pulses promotion programme, extension programme, etc.

Dr Shalendra, Research Officer, NIAM was associated with the research study. It is expected that the study will be helpful for policy makers, planners and researchers.

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(SHALENDRA)

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Brief Summary and Policy Suggestions

(i) *The presence of multi-layers of intermediaries between farmer and consumer provide potential to increase efficiency of marketing of pulses through integration of various functionaries and activities.*

(ii) *Processing is the most vital link in the marketing of pulses. The efficiency in the marketing of pulses may be enhanced with the improvement in the efficiency of processing. Some innovative approaches like participation of private players under PPP, producers through Farmers Company, etc may be explored.*

(iii) *Information availability may help immensely in integrating farmers with market and enhancing the efficiency of the system. Emphasis needs to be given on developing market information system for reliable and timely dissemination of information in user friendly manner.*

(iv) *In addition to production focused approach, efforts need to be made to make pulses more profitable by augmenting producer's share in consumer's price which is very low due to processing and other marketing costs. Innovative marketing channels with higher participation of farmers like processing of dal at village level need to be evolved to achieve the goal.*

(v) *The transportation need to be made more efficient. This may be achieved by providing better road connectivity and achieving higher operation efficiency in transportation through scientific management of product movement.*

(vi) *Some other important aspects involved in marketing of pulses like grade and standards, scientific storage, post-harvest management need to be addressed through proper policy support and capacity building.*

(vii) *Various programmes/ schemes of the Government like pulse promotion programmes, extension programmes, etc should have marketing as an integral component to achieve optimal results.*

CHAPTER 1

INTRODUCTION

The growth of Indian agriculture over last few decades has helped the country in achieving food security at National level. The next big challenge faced by the country in general and Indian agriculture in particular is to sustain this growth and achieve nutritional security as well. Pulses for being environment friendly, major source of protein and complementing cereals both in production and consumption will have a vital role to play under the circumstances. In the production process, pulses improve soil fertility, requires less water than cereals and their rotation with cereals help in controlling diseases and pests. On the consumption side, pulses are relatively cheaper source of protein. (Joshi & Saxena, 2002). Pulses will form a major source of protein for a huge section of India particularly for the poor, backward classes and most of the traditionally vegetarian population (Reddy, 2004). Pulses have double the protein content of wheat and three times that of rice and are valuable for the cropping system in maintaining and improving the productivity of soil due to the nitrogen fixation ability (CACP).

The common pulses grown in Rabi season are chickpea, lentil, field pea, lathyrus (Khesari) and rajmash. The major pulses cultivated during Kharif season are arhar, moong and urd (black gram). About two-third of the pulses are produced during Rabi season with chickpea being the major contributor. The production of Kharif pulses was 4.69 million tonnes during 2008-09 as against a production of 9.88 million tonnes of Rabi pulses during the same year. Arhar is the leading Kharif pulse with a production of 2.27 million tonnes during 2008-09, while the leading pulse crop cultivated during the Rabi season is gram with a production of 7.06 million tonnes. The pulses are mainly cultivated in rainfed conditions as about 96 percent of pigeon pea, 77 percent of chickpea, 94 percent of green gram, 96 percent of black gram and 94 percent of lentil are rainfed (CRIDA). Only 16 percent of the total area of

22 million hectares being utilized for cultivation of pulses was under irrigation during 2008-09.

Performance of Pulses in India

India is the largest producer, consumer and importer of pulses in the world. India accounts for about 33 percent of world area and about 22 percent of world production. About 90 percent of the total global area under pigeonpea, 65 percent under chickpea and 37 percent under lentil is contributed by India, with a corresponding share of production of 93 percent, 68 percent and 32 percent, respectively (Reddy, 2004). The total production of pulses in India was 14.57 million tonnes in 2008-09 from an area of 22.09 million hectares. The state of Madhya Pradesh, Uttar Pradesh, Rajasthan, Maharashtra and Andhra Pradesh were the leading pulse producing states in the same order with more than 70 percent of the production being contributed by these states taken together. Among different pulses, the leading contributors are chickpea and pigeonpea. In 2008-09, more than 7 million tonnes of chickpea was produced from an area of about 8 million hectares with Madhya Pradesh being the highest producer (39.5 percent). During the same year, the production of pigeonpea was 2.27 million tonnes from an area of 3.38 million hectares with Maharashtra being the leading producer (26.7 percent).

An evaluation of the performance of pulses in Indian agriculture in the recent past reveals that the production of pulses has increased marginally by 1.5 million tonnes (MT) during the last decade i.e. from 13.14 MT in 2000-01 (TE) to 14.64 MT in 2009-10 (TE). More than 97 percent of this increase in the production of pulses was on account of increase in production of chickpea which increased from 5.26 MT to 6.72 MT during the same period. The pulses sector has slightly moved in the right direction during the last decade by registering positive growth in area, production and productivity. However, this growth has mainly come through an increase in area and production of Gram and Arhar. Many of the policy interventions made by the government in recent

past may be the factors responsible for this increase, though marginal, in the area and production of pulses. The total area under pulses fluctuating between 20-24 million hectares remained practically stagnant since independence. However, the advance estimates suggest highest acreage under pulses during 2010-11 since independence with an area of 26.28 million hectares.

Availability of Pulses

The share of pulses in the total foodgrain production of the country fell from 17 percent in 1950-51 to about 6 percent in 2008-09. The same has been reflected on the net availability of cereals and pulses. The net availability of pulses during the same period came down from 61 to 37 grams/ person/ day against the ICMR norms of 40 grams/ person/ day. During the same period the consumption of cereals increased from 334 to 407 grams/ person/ day.

The situation has shown some signs of recovery during the last decade. The availability of pulses during last decade i.e. between 1999- 2000 (TE) and 2009-10 (TE) has increased from 14.22 MT to 17.43 MT. During the same period, net availability of pulses increased from 35.47 grams per person per day to 38.10 grams per person per day. Owning to continuous increase in population, an increase of about 23 percent in total availability of pulses could result into an increase of just 7 percent in per capita net availability of pulses. Imports of pulses have played an important role in the increase in net availability of pulses. The contribution of imports in total availability of pulses has increased from 4.27 percent during 1999- 2000 (TE) to 16.75 percent during 2009-10 (TE). More than 72 percent of the increase in availability of pulses is on account of increase in imports and remaining 27 percent is contributed by an increase in production.

These figures indicate that the production has failed to keep pace with the demand for pulses and the respite to some extent has been through heavy imports. It is expected that the situation of sector will continue to be the

same in recent future considering per capita land availability, competition from other crops, lack of technology breakthrough, etc. (CACP).

Promotion of Pulse Production in India

The increase in population, decrease in per-capita land availability and stagnation in pulses production has created a gap in demand and supply of pulses. The government has made various efforts to bridge this gap like launching of Technology Mission in 1986 in order to reduce import and achieve self-sufficiency in production of particular pulse crop covered under the Mission. Pulses were brought within the purview of the Mission with the introduction of National Pulses Development Project in 1990-91. The centrally sponsored National Pulses Development Project was implementation in 30 states/UTs in the country upto the year 2003-2004 covering 356 districts. Implementation of the project helped in increasing the production of pulses from 12.86 million tonnes in 1989-90 to 15.23 million tonnes during 2003-04 with a marginal decline during 1999-2000 to 2002-03 due to occurrence of drought. Various schemes under the technology mission including National Pulses Development Project were merged into one Centrally Sponsored Integrated Scheme of Oilseeds, Pulses, Oil palm and Maize (ISOPOM) during 2004 for providing flexibility to the states in implementation of these schemes.

The Government has introduced the National Food Security Mission in 2007-08, with the mandate among others, to increase production of pulses through area expansion and productivity enhancement in sustainable manner in the identified states. Accelerated Pulses Production Programme (A3P) is another step forward for vigorous implementation of the pulse development under the NFSM – Pulses. A3P has been conceptualized to take up the active propagation of key technologies such as Integrated Nutrient Management (INM) and Integrated Pest Management (IPM) in a manner that creates catalyzing impact by assuring farmers of the higher returns from the identified pulse crops. Initially programme was to benefit about 170 districts selected

from 14 states. As per the guidelines of NFSM-A3P released in 2010, it is going to be the sole centrally sponsored scheme on pulses covering all the districts in 14 states by merging all the pulses components of another centrally sponsored scheme namely Integrated Scheme on Oilseeds, Pulses, Oil palm and Maize (ISOPOM).

Marketing of Pulses

Pulses are important component of diet in Indian, mainly for being one of the leading sources of protein for predominantly vegetarian society. The emphasis of the Government has, accordingly, been on increasing production of pulses through area expansion and adoption of improved technology so as to ensure the availability of pulses to the masses as per quantity recommended by ICMR. Equally important is the marketing of the pulses particularly in a situation created by the introduction of reforms in the sector and existing demand-supply gap in pulses. Shortage of supply of pulses has resulted in increase in prices, thereby pushing pulses out of the reach of poor household leading to a negative effect on their nutritional status (Reddy, 2004). The Indian food economy, since 1970, has also undergone major policy reforms, including trade liberalization leading to opening up of domestic pulse market to international trade. The market is very lucrative and of major significance to the world pulse economy (Agbola & Damoense, 2003) as has been evident by the increased imports of pulses in India in recent past.

The marketing component is important to ensure remunerative prices to the farmers which will eventually work as an incentive for them to bring more area under pulses. The Government has provided price support to the framers through minimum support price of leading pulses. However, the marketing and price policy of the government should be the focus of various government initiatives mainly the extension programmes, so that the awareness may be created among farming community and farmers may

respond more effectively to the various production incentives given by the Government (Savadatti and Narappanavar, 1998).

Marketing can also help in inducing an element of incentive to farmer through participation in processing and distribution of pulses through direct marketing, farmers market or cooperative marketing to get higher share in the consumer's price. Marketing innovations like group marketing will help in improving the bargaining powers of small and marginal farmers.

Statement of the Problem

Pulses have a vital role to play in Indian agriculture and society for various factors like their nutritive value (protein), predominantly vegetarian diet, ability to improve soil fertility, low resource requirement, etc. But, the progress of pulses has always been lukewarm in spite of the overall impressive growth of Indian agriculture. The Government has focused on improving pulse production through various programmes and price support policies but no significant progress in pace with demand has so far been observed leading to rely heavily on imports to bridge the demand-supply gap in pulses. Such an arrangement for an important source of protein in a predominantly vegetarian society will be a major constraint in achieving food and nutritional security of the country. Some of the factors discouraging pulses sector are stagnation in production, poor area expansion, low yield and low relative profitability, decrease in per capita land availability, increase in demand-supply gap, heavy dependence on imports, inefficient marketing, etc. Keeping in view of above factors and developments like reforms in agricultural marketing, globalization and trade liberalization, it is imperative to study the various aspects of marketing of pulses.

Gram and Arhar, the two leading pulse crops in India have been identified for studying various aspects involved in the marketing of pulses. These two crops are cultivated on nearly half of gross cropped area under pulses and contribute more than two-third in the total production of pulses.

Madhya Pradesh and Uttar Pradesh being leading pulse producing states with a contribution of 29 percent and 13 percent, respectively in the total pulse production have been identified to study various issues related to the marketing of Gram and Arhar.

The study focuses mainly on understanding the various merits and demerits of marketing of pulses with an aim to suggest policy recommendations that can in turn incentivise the production of pulses to improve the precarious situation being faced by the sector.

OBJECTIVES - The specific objectives of the study are as under

1. To work out the marketable surplus and disposal pattern on different farm type in the study area
2. To study various channels involved in the marketing of pulses in the study area including arrangements made for implementation of MSP
3. To work out the marketing cost, marketing margin, price spread and producers share in consumers rupee under different marketing channels of pulses
4. To find out the gap between the existing post-harvest practices/ technologies and the prescribed practices in the marketing of pulses in the study area
5. To suggest various measures to improve the marketing of pulses based on the finding of the study

Justification and Importance of the Study

The study of marketing channels, marketing margins and cost will help in estimating the cost incurred in marketing of pulses in relation to the prices received by farmers and the proportion of margin being contributed by other players involved in the movement of pulses from producer to consumer. The study will help in identifying the reasons for buildup of higher costs and margins in marketing of pulses so that possible ways to reduce them could be suggested. This information will also facilitate policy makers in identifying

marketing of pulses as an important component for Government schemes like NFSM. All the measures suggested are expected to help in increasing the pulse production and in turn enhance per capita availability of pulses.

Limitation of the Study

The findings of the study are based on the information collected from a representative sample of 400 farmers, traders, processors and retailers. The information collected pertains to the year 2010-11. Since information for the entire crop season was collected based on memory of the farmers who don't maintain any record, the information received may affect the precision of the data collected. Though, there are a wide variety of pulses cultivated in India, the study focuses only on two leading pulse crops namely Arhar and Gram with more than two-third contribution in the total pulse production in the country. The analysis of post-harvest management is confined only to farm level. The secondary information was also collected on various aspects of pulses but limited secondary information was available on investment made on processing and marketing of pulses and therefore nothing elaborate and conclusive could be analyzed on the impact of reforms on investment in marketing of pulses.

Organization of the Study

The current chapter presents the general introduction on the subject, objectives of the study, importance and limitation of the study. Subsequent to this, chapter two describes the methodology used to satisfy different objectives of the study. The chapter also describes briefly, the various theoretical concepts and tools of analysis used in the present study. The chapter three presents the profile of pulses mainly gram and arhar in India. Chapter four presents the findings of the study. The last chapter i.e. chapter five present the conclusions and suggestions based on the findings of the study.

CHAPTER 2

METHODOLOGY

This chapter deals with the methodology followed to accomplish the objectives of the study. The chapter is divided into two sections. The first section deals with coverage of the study in terms of pulse crops covered, study area, sample size and the collection of information from primary and secondary sources. The second section describes various concepts and techniques utilized in the study like marketing channels, marketing margins, marketing cost, efficiency, etc.

Collection of Information and Coverage of Study

Data Collection

The study is mainly based on the primary data though secondary information has also been used to draw some logical conclusions. The primary information on various aspects of marketing of pulses were collected from different stakeholder like farmers, traders, processors and retailers by addressing the structured survey schedules designed specially for the purpose. The information collected pertains to the year 2010-11. The secondary information on various aspects like area, production, productivity, availability of pulses, etc. was obtained from different published sources like Agricultural Statistics at a Glance, Uttar Pradesh Ke Krishi Ankare, publications of Commission on Cost and Prices (CACP), Directorate of Economics and Statistics, Commissioner Land Records, Madhya Pradesh, FAO and other national and international publications. The additional information has also been retrieved from website of Department of Agricultural and Cooperation, Government of India, Directorate of Agriculture, Madhya Pradesh, FAO, India Stat, etc.

Selection of Study Area and Pulse Crops covered

The study was conducted in Madhya Pradesh and Uttar Pradesh for being two leading pulse producing states and also representing both reform (Madhya Pradesh) and non-reform (Uttar Pradesh) state. The emphasis of the study has been on examining various aspects related to the marketing of two leading pulse crops i.e. Gram and Arhar in the selected states. The share of these two crops taken together

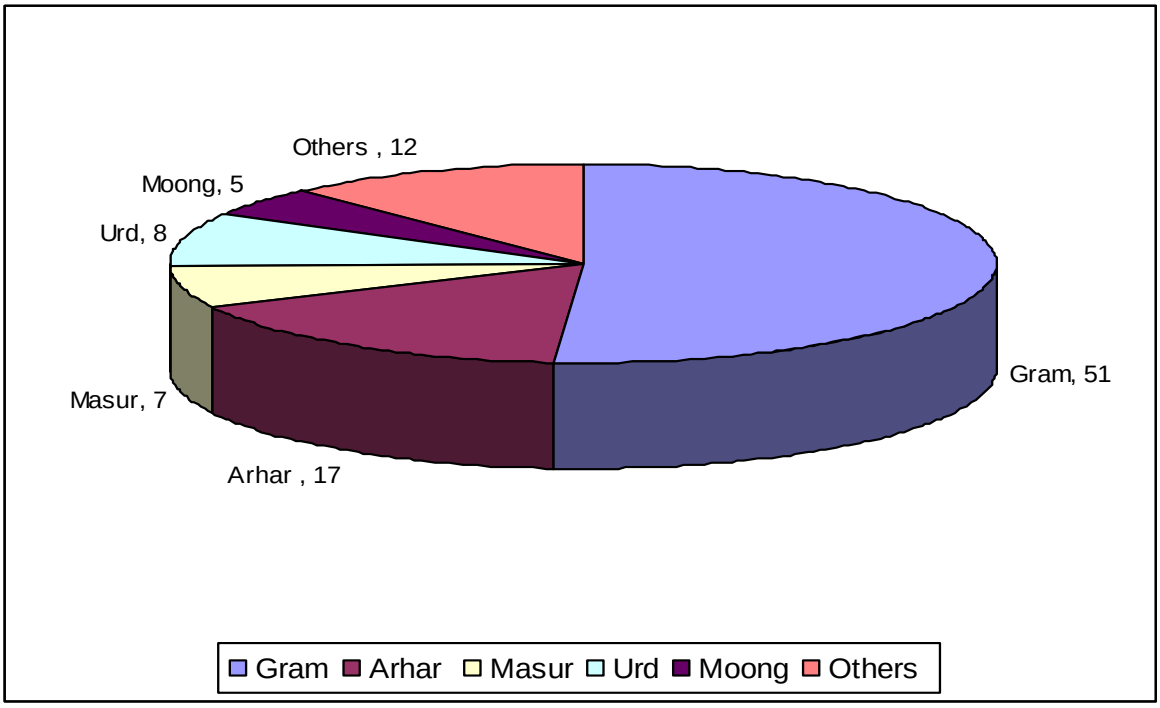
was more than two-third in total pulse production in India during 2009-10 (Table 2.1 and Figure 2.1).

Table 2.1 Shares of Different Pulse Crops in total Pulse Production of India during 2009-10

Pulse Crops	Production (Million Tonnes)	Share (%)
Gram	7.48	51.02
Arhar	2.46	16.78
Masur	1.03	7.03
Urd	1.23	8.39
Moong	0.69	4.71
Pulses	14.66	100.00

Source: http://agricoop.nic.in and http://www.indiastat.com

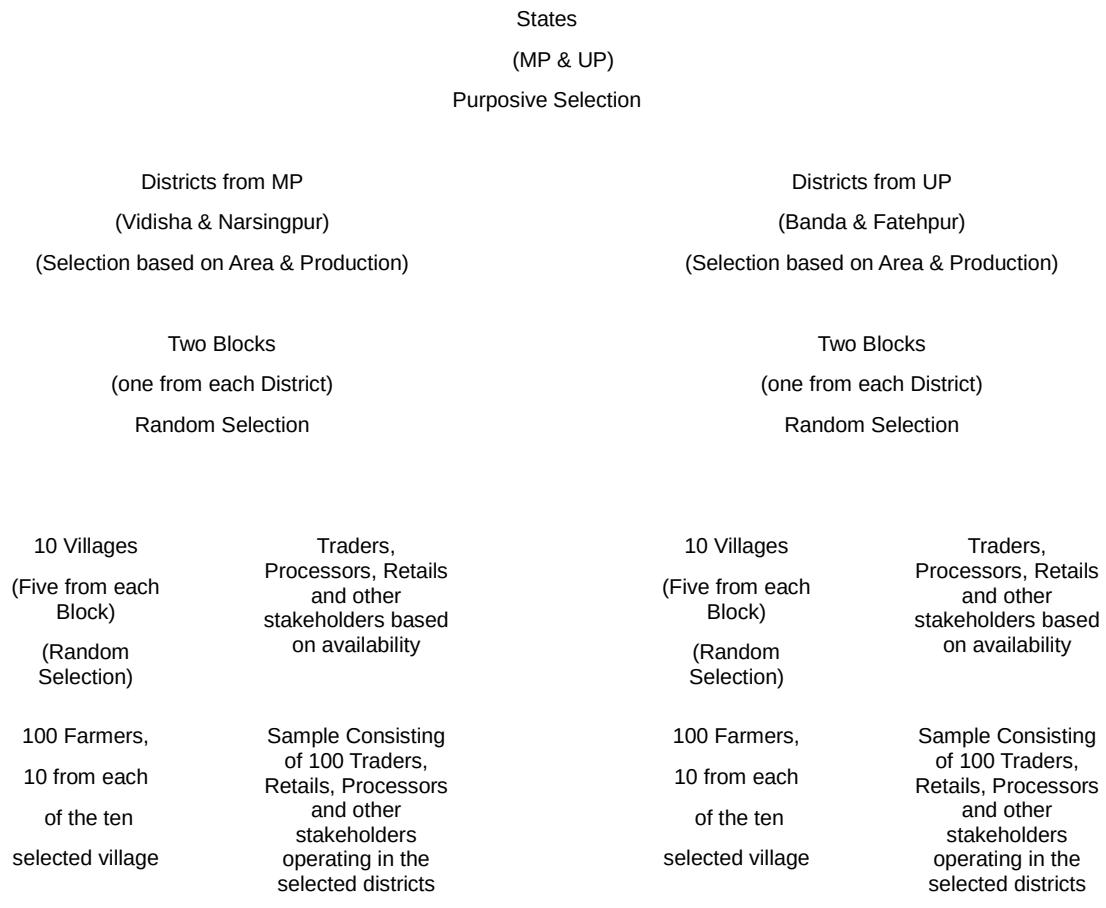
Figure 2.1 Shares of Different Pulse Crops in total Pulse Production of India during 2009-10



Sampling Procedure and Sample Size

A multistage sampling procedure was adopted for this study. At stage one, two states namely Madhya Pradesh and Uttar Pradesh were selected. At the second level two districts from each selected state, i.e. Fatehpur and Banda districts of Uttar Pradesh and; Vidisha and Narsinghpur districts of Madhya Pradesh, were selected based on the area and production of crops considered for the study i.e. Gram and Arhar. In the next stage, one block from each selected district was selected randomly. This stage was followed by the random selection of five villages from each selected block and consequently 10 farmers from each selected village were selected randomly. In addition to farmers, equal numbers of other marketing functionaries like village traders, Mandi traders, processors, retailers, etc were considered for the study. The elaborate sampling design used for the sample selection has been depicted in Figure 2.2.

Figure 2.2 Sample Selection Design



A total of 200 farmers were selected randomly by considering 10 farmers from each of the 20 selected villages (5 Villages from each of the four selected Blocks). In addition to farmers, other players like traders, processors and retailers were also selected based on availability to a maximum of 50 players per selected Block. In total, 400 sample respondents were contacted for the study as per the details given in Table 2.2 and Figure 2.3.

Table 2.2 District-wise break up of the sample selected for the Study

State	Districts	Farmers	Traders	Processors	Retailers	Total
Madhya Pradesh	Vidisha	50	20	20	10	100
Madhya Pradesh	Narsingpur	50	20	20	10	100
Uttar Pradesh	Fatehpur	50	20	20	10	100
Uttar Pradesh	Banda	50	30	10	10	100
Total	**(04)**	**200**	**90**	**70**	**40**	**400**

Figure 2.3 The distribution of the sample selected for the Study

Marketing Concepts utilized in the Study

Marketing Cost

The marketing cost was estimated with the help of the following formula:

$C = C_F + C_{m1} + C_{m2} + C_{m3} + \ldots\ldots\ldots\ldots + C_{mi}$

Where,

C = Total cost of marketing (Rs/Qt)

C_F = Cost paid by the producer (Rs/Qt)

C_{mi} = Cost incurred by the i^{th} middleman in the process of marketing (Rs/Qt)

Producer's Share in Consumer's Rupee

Producer's share in consumer's rupee was worked out by the following method:

$P_S = (P_F / P_r) \times 100$

Where,

P_S = Producer's share in consumer's rupee

P_F = Producer's Price (Rs/ Qt)

P_r = Price paid by the consumers (Rs/Qt)

Marketing Efficiency

The marketing efficiency of different marketing channels considered under the study was estimated by using following approaches.

(i) Acharya and Agrawal's Approach

ME = FP / (MC + MM)

Where,

ME = Index of Marketing Efficiency

FP = Price received by the farmer

MC = Total marketing costs

MM = Net marketing margins

(ii) Shepherd's Approach

ME = P_r / MC

Where,

P_r = Consumer's Price which represents the total value of goods marketed

MC = Marketing Cost

Marketable Surplus

The marketable surplus is the residual left with the producer farmers after meeting his requirements for family consumption, farm needs for seeds and payment to labour in kind. The concept may be expressed as

MS = P – C

Where,

MS = Marketable Surplus

P = Total Production

C = Total consumption requirements

CHAPTER 3

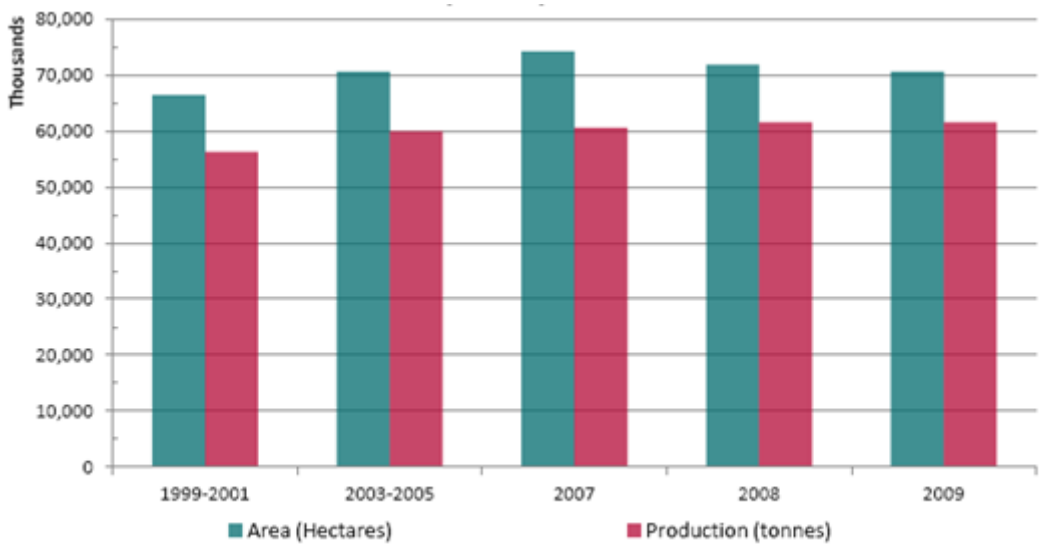
PROFILE OF PULSES IN INDIA

Pulses are important in Indian agriculture especially for ensuring food and nutritional security of the society. Considering the importance of pulses, an attempt has been made under this chapter to present the status of pulses in India. The global scenario and the contribution of India have also been discussed in brief. The chapter also reviews the production and availability of Gram and Arhar, the two important pulses crops considered for this study.

Global Pulse Production

Pulses are important for being a major source of protein for vegetarian society in developing countries. World pulses production during the last decade has been stagnant at around 60 million tonnes figure and has failed to keep pace with the demand created by the increasing population in these countries. The Figure 3.1 presents the global status of pulses in terms of area and production during last decade.

Figure 3.1 World Pulse Production during last Decade



Source: FAOStat, Food and Agriculture Organization, United Nations

The status of world pulses production and the contribution of the leading pulse producing countries is presented in Table 3.1. During 2009, 61.51 million tonnes of pulses were produced from an area of 70.60 million hectares in the world. India is the leading pulses producing country with the contribution of more than 22 percent in the global pulses production. The other leading countries are Canada, China, Brazil, Nigeria and USA in the same order. These six countries together contribute to more than 50 per cent of the global pulses production. In terms of global area under pulses, India again is a leading country with a contribution of nearly 29 percent. The countries, next to India, are Niger, Nigeria, Brazil, China and Canada with coverage of nearly two-third of the global area under pulses.

Table 3.1 Area and Production of Pulses in Major Countries in World (2009)

Country	Area		Production	
	Million Hectares	(%)	Million Tonnes	(%)
India	20.40	28.90	13.73	22.32
Canada	2.61	3.70	5.20	8.45
China	2.87	4.07	4.23	6.88
Brazil	4.19	5.94	3.55	5.77
Nigeria	4.42	6.26	2.97	4.83
USA	1.14	1.61	2.27	3.69
Ethiopia	1.56	2.21	1.92	3.12
Australia	1.45	2.05	1.81	2.94
Niger	5.35	7.58	1.59	2.59
Russia	0.94	1.33	1.55	2.52
Mexico	1.54	2.18	1.34	2.18
Tanzania	1.66	2.35	1.11	1.80
Pakistan	1.59	2.25	1.07	1.74
Turkey	0.91	1.28	1.07	1.73
World	70.60	100.00	61.51	100.00

Source: FAO Production Year Book 2010

India is major country not only in terms of area and production of pulses but also in terms of the variety of pulse-crops grown and consumed. The details of major pulses produced and consumed in Asia-pacific region are given in Table 3.2.

Table 3.2 Major pulses in the Asia-Pacific region with major producing and consuming countries

Pulse	Botanical Name	Major Producing and Consuming Countries
Pigeonpea	Cajanus Cajan	India, Bangladesh
Chickpea	Cicer Arietinum	India, Pakistan, Bangladesh, Nepal, Afghanistan, Iran
Lentil	Lens Culinaris	India, Pakistan, Bangladesh, Nepal, Iran
Mungbean	Vigna Radiata	India, Thailand, Burma, Sri Lanka, Indonesia, Philippines, China
Black gram	Vigna Munga	India, Pakistan, Sri Lanka
Pea	Pisum Sativum	Iran, Pakistan, India, Bangladesh
Cowpea	Vigna Unquiculata	India, Bangladesh, Philippines, China
Lathyrus	Lathyrus Sativus	India, Bangladesh, Nepal

Source: Kyi et al (1997)

Pulses in India

Indian agriculture has made impressive growth since independence. However, pulses have failed to register any significant progress in term of area and production. The production of foodgrains has increased to 231 million tonnes during 2010-11 (from an area of 123 million hectares) from 51 million tonnes during 1950-51 (from an area of 97.32 million hectares). The production of foodgrain increased roughly five times while area under foodgrains increased by 27 percent. During the same period, the production of pulses increased from 8.41 MT to 15.77 MT (nearly double), while the area under pulses remained stagnant at around 23 MH. In term of yield also, foodgrains have excelled over pulses. The yield of foodgrains increased to 19 Qt/ha in 2010-11 from 5 Qt/ha at the time of independence (nearly four times). The pulses could register only 50 percent increase in yield during the same period (Table 3.3)

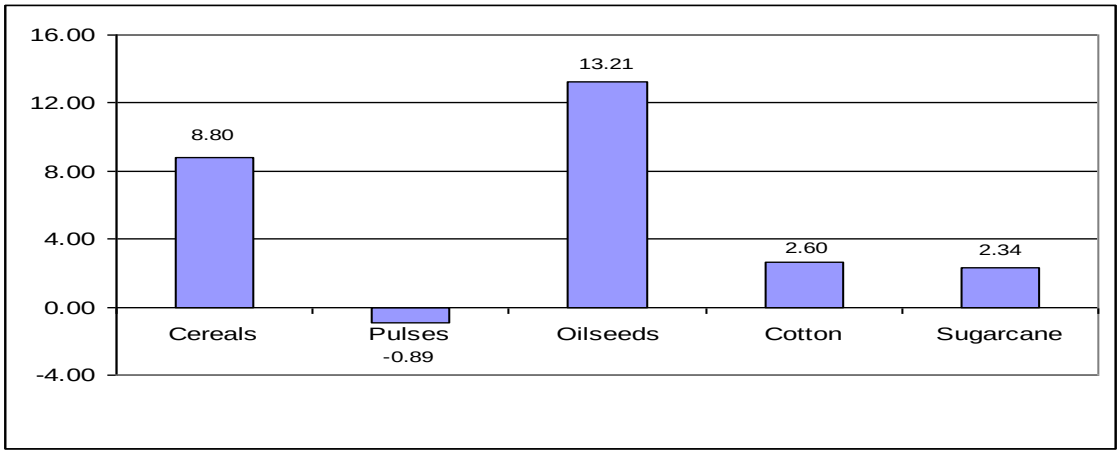
Table 3.3 Growth of pulses vis-à-vis Foodgrains from 1950-51 to 2010-11

Year/ Items		1950-51	1960-61	1970-71	1980-81	1990-91	2000-01	2010-11*
Production (million tonnes)	Foodgrains	50.82	78.61	100.64	123.73	172.45	203.41	231.38
	Index	100.00	154.68	198.04	243.47	339.33	400.25	455.29
	Pulses	8.41	12.55	11.31	10.46	13.66	13.14	15.77
	Index	100.00	149.23	134.48	124.38	162.39	156.20	187.56
Area (million hectares)	Foodgrains	97.32	115.39	122.77	126.96	127.43	123.11	123.30
	Index	100.00	118.56	126.15	130.46	130.94	126.50	126.69
	Pulses	19.09	24.23	21.94	22.79	23.74	21.66	23.88
	Index	100.00	126.94	114.93	119.40	124.36	113.45	125.12
Yield (kg/ha)	Foodgrains	522.19	681.27	819.75	974.53	1353.33	1652.28	1876.62
	Index	100.00	130.46	156.98	186.62	259.16	316.41	359.37
	Pulses	440.54	517.88	515.50	458.91	575.26	606.59	660.43
	Index	100.00	117.55	117.01	104.17	130.58	137.69	149.91

Source: Directorate of Economics and Statistics, DAC, MOA
Note: Progress over years has been worked out by taking 1950-51 as base year
*Estimates

Figure 3.2 presents the change in cropping patter in some of the leading agricultural crops in India during last 50 years (TE 2010-11 over TE 1960-61). The crops considered are cereals, oilseeds, cotton, sugarcane and pulses. These crops together cover more than 84 percent of Gross Cropped Area in India (2008-09). The area under all the crops has increased except pulses, where the area has decreased by nearly 9 lakhs hectares.

Figure 3.2 Change in Cropping Pattern: Absolute Change in Area under various Crops in Million Hectares (TE 2010-11 over TE 1960-61)



Area and Production of Pulses in India

The status of area and production of pulses in India over the years is presented in Table 3.4. The total production of pulses in India was 15.77 million tonnes in 2010-11 from an area of 23.88 million hectares. The area and production of pulses have been hovering in the same range over the years but have shown some sign of progress during the last decade. The production has registered an increase of 2.63 million tonnes (MT) from 13.14 MT in 2000-01 (TE) to 15.77 MT in 2010-11 (TE). The area under pulses has increased from 21.66 MH in 2000-01 (TE) to 23.88 MH in 2010-11 (TE), registering an increase of 2.22 million hectares (MH). The yield has also increased by about 9 percent during the last decade. This has resulted mainly due to focused efforts of the Government through various initiatives like NFSM.

Table 3.4 All India Area, Production and Productivity of Pulses

Year	Area (Million Hectares)	Production (Million Tonnes)	Yield (Kg/Hectare)	Irrigated Area (%)
1950-51	19.09	8.41	441	9.4
TE 1960-61	24.23	12.55	517.88	8.3
TE 1970-71	21.94	11.31	515.50	9.3
TE 1980-81	22.79	10.46	458.91	8.6
TE 1990-91	23.74	13.66	575.26	9.9
TE 2000-01	21.66	13.14	606.59	13.5
*TE 2010-11	23.88	15.77	660.43	NA

* Estimates
Source: Directorate of Economics and Statistics, DAD, MOA

The area, production and yield of pulses in the major pulse producing states of India during 2009-10 are presented in Table 3.5. It is revealed from the table that the state of Madhya Pradesh, Maharashtra, Uttar Pradesh, Andhra Pradesh and Karnataka were the leading pulses producing states with more than 75 percent of the production being contributed together by these states. The leading states in terms of area under pulses are Madhya Pradesh, Rajasthan, Maharashtra, Uttar Pradesh, Karnataka and Andhra Pradesh accounting for more than 80 percent pulses area in the country.

Table 3.5 Area, Production and Productivity in major Pulse Producing States during 2009-10

States	Production (Million Tonnes)	Percent to All India	Area (Million Hectares)	Percent to All India	Yield (Kg/Ha)
Madhya Pradesh	4.30	29.36	4.94	21.22	871
Maharashtra	2.37	16.16	3.38	14.50	702
Uttar Pradesh	1.90	12.97	2.54	10.91	748
Andhra Pradesh	1.43	9.75	1.93	8.30	740
Karnataka	1.12	7.63	2.48	10.65	451
Rajasthan	0.71	4.87	3.50	15.04	204
Gujarat	0.52	3.53	0.73	3.15	705
Chhattisgarh	0.49	3.33	0.81	3.47	604
Bihar	0.47	3.22	0.56	2.43	836
Orissa	0.40	2.72	0.87	3.72	461
Jharkhand	0.22	1.53	0.32	1.36	709
Tamil Nadu	0.20	1.39	0.53	2.30	382
West Bengal	0.15	1.03	0.18	0.78	826
Haryana	0.10	0.68	0.13	0.57	758
Others	0.27	1.84	0.37	1.61	--
All India	**14.66**	**100.00**	**23.28**	**100.00**	**630**

Source: Directorate of Economics and Statistics, DAC, MOA

Major Pulses in India

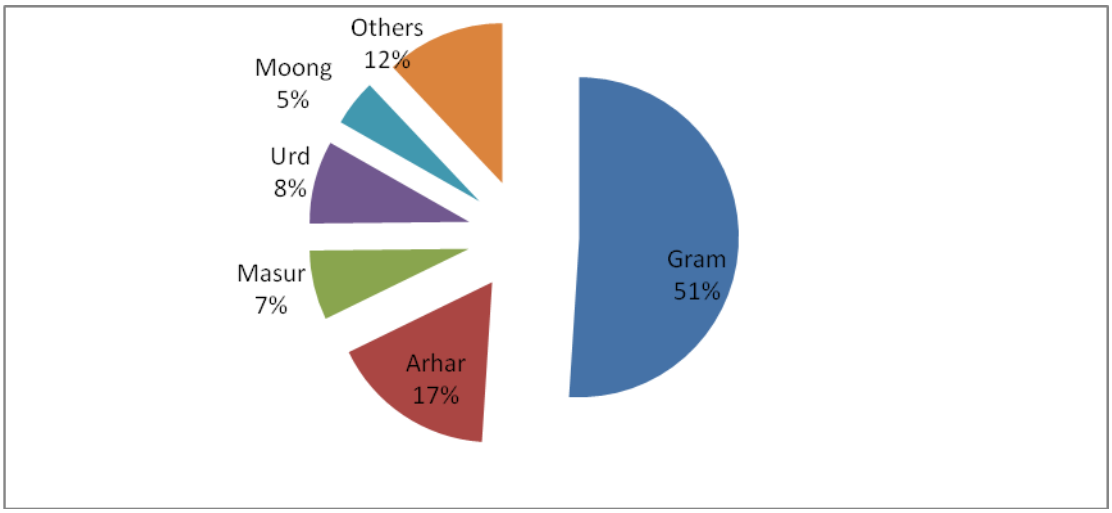
The shares of different pulses cultivated in India are presented in Table 3.6 (and Figure 3.3). The major pulse crops grown in India are Gram and Arhar. Gram, with a production of more than 7 million tonnes, contributes more than 50 percent in the total pulse production of the country. Arhar, with a production of 2.5 million tonnes and a contribution of about 17 percent, is the second major pulse crop. Other leading pulse crops in India are Urd, Masur and Moong.

Table 3.6 Shares of different Pulses during 2009-10

Pulses Crops	Production (Million Tonnes)	Share (%)
Gram	7.48	51.02
Arhar	2.46	16.78
Urd	1.23	8.39
Masur	1.03	7.03
Moong	0.69	4.71
Pulses	14.66	100.00

Source: http://agricoop.nic.in and http://www.indiastat.com

Figure 3.3 Shares of different Pulses in India during 2009-10



Gram in India

Gram is the major pulse crop in India with a production of more than 7 million tonnes from an area of 8.42 million hectares. The production of Gram has increased from 3.65 MT in 1950-51 to 7.59 MT in 2010-11. Though, the progress has not been consistent all through the period under consideration but it has been significant during the last decade. The progress of pulses in India during last decade has been contributed mainly by the increase in production of gram from 5.26 MT in 2000-01 to 7.59 MT in 2010-11. The same has been the case with area and yield. The area under Gram has increased from 6.60 MH to 8.42 MH and yield from about 8 Qt/Ha to over 9 Qt/Ha during the same period.

Table 3.7 Area, Production and Productivity of Gram

Year	Area (Million Hectares)	Production (Million Tonnes)	Yield (Kg/Hectare)	Irrigated Area (%)
1950-51	7.57	3.65	482	12.5
1960-61	9.90	6.30	638.33	12.1
1970-71	7.57	5.02	661.67	17.2
1980-81	7.09	4.48	627.67	18.1
1990-91	6.93	4.90	705.67	19.9
2000-01	6.60	5.26	793.25	26.1
2010-11*	8.42	7.59	901.92	NA

* Estimates
Source: Directorate of Economics and Statistics, DAC, MOA

The area, production and productivity of Gram in major producing states in the country during 2009-10 are presented in Table 3.8. The table revealed that Madhya Pradesh is the largest Gram producer, accounting for more that 44 percent of total Gram production and 38 percent of total area under Gram in the country. Other major Gram producing states are Maharashtra (14.90 percent), Andhra Pradesh (11.32 percent), Karnataka (7.68 percent) and Rajasthan (7.15 percent).

Table 3.8 Area, Production and Productivity in major Gram Producing States during 2009-10

States	Area (Million Hectares)	Percent to All India	Production (Million Tonnes)	Percent to All India	Yield (Kg/Ha)
Madhya Pradesh	3.09	37.77	3.30	44.20	1071
Maharashtra	1.29	15.80	1.11	14.90	863
Andhra Pradesh	0.65	7.92	0.85	11.32	1308
Karnataka	0.97	11.90	0.57	7.68	591
Rajasthan	0.88	10.83	0.53	7.15	604
Uttar Pradesh	0.62	7.57	0.51	6.81	824
Chhattisgarh	0.25	3.09	0.22	2.97	880
Gujarat	0.13	1.62	0.13	1.67	947
Haryana	0.08	1.03	0.06	0.83	738
Bihar	0.06	0.71	0.06	0.78	1014
Orissa	0.05	0.55	0.03	0.45	749
West Bengal	0.02	0.27	0.02	0.32	1110
Others	0.08	0.96	0.07	0.92	--
All India	**8.17**	**100.00**	**7.48**	**100.00**	**915**

Source: Directorate of Economics and Statistics, DAC, MOA

Arhar in India

Arhar is the second largest pulse crop after Gram in India with a production of 2.54 million tonnes from an area of 3.75 million hectares (Table 3.9). The production of Arhar has increased from 1.72 MT in 1950-51 to 2.54 MT in 2010-11. Between 1950-51 and 1980-81, the production of Arhar was stagnant at about 1.8 MT mark while the area under Arhar ranged from 2.18 to 2.74 MH. During 1990-91, the production of

Arhar increased to next level of 2.63 MT and area also increased to 3.56 MH. Since than, the production and area under Arhar has been hovering in that range only. The major concern in Arhar is the yield, which has come down over years.

Table 3.9 All India Area, Production and Productivity of Arhar

Year	Area (Million Hectares)	Production (Million Tonnes)	Yield (Kg/Hectare)	Irrigated Area (%)
1950-51	2.18	1.72	788.00	0.5
TE 1960-61	2.44	1.82	746.25	0.5
TE 1970-71	2.62	1.85	704.83	0.4
TE 1980-81	2.74	1.87	683.31	1.8
TE 1990-91	3.56	2.63	737.83	5.1
TE 2000-01	3.50	2.55	728.57	4.3
TE 2010-11*	3.75	2.54	676.83	NA

* Estimates
Source: Directorate of Economics and Statistics, DAC, MOA

The Table 3.10 presents the details of major Arhar producing states in the country during 2009-10. Maharashtra is the highest Arhar producing states with more than one-third of the total production of Arhar in the country. Next to Maharashtra are Madhya Pradesh (12.50 percent), Karnataka (11.44 percent) and Gujarat (9.78 percent). Leading states after Maharashtra (31.54 percent) in terms of area under Arhar are Karnataka (17.43 percent), Andhra Pradesh (13.36 percent) and Madhya Pradesh (10.45 percent).

Table 3.10 Area, Production and Productivity in major Arhar Producing States during 2009-10

States	Area (Million Hectares)	Percent to All India	Production (Million Tonnes)	Percent to All India	Yield (Kg/Ha)
Maharashtra	1.09	31.54	0.92	37.29	841
Madhya Pradesh	0.36	10.45	0.31	12.50	851
Karnataka	0.60	17.43	0.28	11.44	467
Gujarat	0.27	7.68	0.24	9.78	906
Andhra Pradesh	0.46	13.36	0.20	8.24	438
Uttar Pradesh	0.31	8.80	0.20	8.20	662
Orissa	0.13	3.83	0.11	4.54	841
Jharkhand	0.06	1.77	0.05	2.16	871
Bihar	0.03	0.81	0.04	1.71	1513
Tamil Nadu	0.03	0.76	0.02	0.82	766
Others	0.12	3.58	0.08	3.33	--
All-India	**3.47**	**100.00**	**2.46**	**100.00**	**711**

Source: Directorate of Economics and Statistics, DAC, MOA

Supply of Pulses

The total supply of pulses in India have increased from 14.22 MT to 17.43 MT during the last decade i.e. between TE 1999-2000 and TE 2009-10 (Table 3.11). Though, the production during the same period has increased by 0.87 MT only i.e. from 13.77 MT in 1999-2000 to 14.64 MT in 2009-10. Hence, the imports have played a vital role in the total supply of pulses in the country. It is assumed that the production, imports and exports of the pulses contribute to its total supply. The import have increased from 0.61 MT in 1999-2000 to 2.92 MT in 2009-10 and are responsible for increase in total supply of pulses which increased from 4.27 percent to 16.75 percent of total supply during the same period. The import of pulses during 1990s was less than 1 MT except for the year 1997-98 where it was marginally higher at 1.01 MT. But, during the last decade the imports have consistently been in the range of 2 MT or above and have touched the highest mark of 3.45 MT in 2009-10. The table also reveals that out of the increase of 3.21 MT in the total supply of pulses during the last decade, 2.31 MT has been the contribution of imports. This reveals that mainly imports are responsible for increase in supply which constitutes more than 72 percent of increase in total supply. On the contrary, increase in domestic production contributes only 28 percent for the total increase in supply of pulses.

Table 3.11 Availability of Pulses during 1990s and 2000s

(Million Tonnes)

Year	Production	Import	Export	Total Supply	Imports as Percentage of Total Supply
1990-91	14.26	0.79	1.00	15.05	5.26
1991-92	12.02	0.31	0.30	12.03	2.60
1992-93	12.82	0.38	0.03	13.17	2.91
1993-94	13.30	0.63	0.04	13.88	4.52
1994-95	14.04	0.55	0.05	14.54	3.81
1995-96	12.31	0.49	0.06	12.74	3.85
1996-97	14.24	0.65	0.06	14.84	4.41
1997-98	12.98	1.01	0.17	13.82	7.29
1998-99	14.91	0.56	0.10	15.37	3.67
1999-00	13.42	0.25	0.19	13.48	1.86
2000-01	11.08	0.35	0.24	11.19	3.13
2001-02	13.37	2.22	0.16	15.43	14.38
2002-03	11.13	1.99	0.15	12.97	15.36
2003-04	14.91	1.72	0.15	16.48	10.46
2004-05	13.13	1.34	0.27	14.20	9.43
2005-06	13.39	1.70	0.45	14.64	11.59
2006-07	14.20	2.27	0.25	16.22	14.00
2007-08	14.76	2.84	0.16	17.43	16.26
2008-09	14.57	2.47	0.14	16.90	14.64
2009-10*	14.60	3.45	0.10	17.95	19.21
TE 1999-00	**13.77**	**0.61**	**0.16**	**14.22**	**4.27**
TE 2009-10	**14.64**	**2.92**	**0.13**	**17.43**	**16.75**
Change (MT)	**0.87**	**2.31**	**-0.03**	**3.21**	**12.48**
Change (%)	**27.21**	**72.11**	**-0.68**	**100.00**	**--**

Per Capita Availability of Pulses in India

The net availability of pulses in India has been depicted in Table 3.12. Pulses are an important component of diet for being rich vegetarian source of protein and making diet nutritionally balanced. In spite of this, the net per capita availability of pulses has come down over years from 61 grams per day per person in 1951 to 32 grams per day per person in 2010. During the same period, per capita availability of cereals has increased from 334 grams per day per person in 1951 to 407 grams per day per person in 2010. Owning to continuous increase in population and stagnant production of pulses, the availability of pulses has come down since independence. This indicates that the growth in production and availability of pulses in not in pace with the growth in population of the country. The availability of pulses need to increased to make them available as per the recommendations of ICMR.

Table 3.12 Per Capita Net Availability of Foodgrains (March 2011)

(Grams per Day)

Year	Rice	Wheat	Other Cereals	Total Cereals	Pulses	Foodgrains	Percent Contribution Pulses in total Availability
1951	158.9	65.7	109.6	334.2	60.7	394.9	15.37
1961	201.1	79.1	119.5	399.7	69.0	468.7	14.72
1971	192.6	103.6	121.4	417.6	51.2	468.8	10.92
1981	197.8	129.6	89.9	417.3	37.5	454.8	8.25
1991	221.7	166.8	80.0	468.5	41.6	510.1	8.16
2001	190.5	135.8	56.2	386.2	30.0	416.2	7.21
2009	188.4	154.7	63.9	407.0	37.0	444.0	8.33
2010*	184.8	167.9	54.3	407.0	31.6	438.6	7.20

*Provisional

Source: Directorate of Economics and Statistics, DAC, MOA

CHAPTER 4

RESULT AND DISCUSSION

The results based on the analysis of the information collected for achieving different objectives of the study are presented in the chapter. A total of two crops from two districts i.e. four crop-district combinations namely Gram-Banda, Gram-Vidisha, Arhar-Fatehpur and Arhar-Narsingpur have been analyzed under the study. The chapter has been divided into following sections, each section dealing with one separate aspect involved in the marketing of pulses.

(i) The socio-economic characteristics of the sample farmers;
(ii) Analysis of production, consumption and marketed surplus of the produce;
(iii) Marketing channels followed in the marketing of pulses;
(iv) Analysis of marketing costs, margins, price spread and efficiency of different channels followed in the marketing of pulses;
(v) Status of post harvest management in the study area and
(vi) Some observations from the field

Socio-economic characteristics of sample gram farmers

The socio-economic characteristics of the farmers selected from Banda and Vidisha districts to study various marketing aspects of Gram and from Fatehpur and Narsingpur districts to study various marketing aspects of Arhar are presented in Table 4.1. The table revealed that majority of the farmers belonged to middle age group ranging from 38 – 54 years. The status of education of the respondents is assessed in terms of number of years spent in schooling. According to the analysis, a lot of variation was observed in the level of qualification amongst different categories of farmers across the districts. Within districts, the maximum variation was observed in Vidisha district where marginal and small farmers were found to be educated upto primary level while large farmers have studies till high school level. While minimum variation was observed in Banda and Narsingpur. The family size of the selected farmers varied from 7 to 12 members. Though the main occupation of the sample farmers was agriculture but earning from sources other than agriculture has also

been substantial mainly for small and marginal farmers. A lot of variation was observed in the average land holding size of farmers of different categories across selected districts. Overall, the minimum land holding of 0.69 hectares was found in case of marginal farmers of Fatehpur while the largest holding size was observed on large farmers of Narsingpur.

Table 4.1 Socio-economic characteristics of sample farmers

Particulars	Unit	Marginal	Small	Medium	Large	Overall
Banda						
Age	Years	45	47	45	46	46
Education	Year in School	7	8	9	8	8
Income (main source)	Rs Lakhs	0.26	0.39	0.71	1.35	0.50
Income (sub)	Rs Lakhs	0.33	0.37	0.19	0.37	0.32
Family Size	Number	8	8	8	10	8
NCA	Hectare	0.81	1.62	2.80	4.18	1.82
Fatehpur						
Age	Years	46	51	49	54	50
Education	Year in School	9	5	6	6	6
Income (main source)	Rs Lakhs	0.31	0.50	0.69	1.28	0.65
Income (sub)	Rs Lakhs	0.17	0.24	0.30	0.20	0.25
Family Size	Number	10	12	11	11	11
NCA	Hectare	0.69	1.58	2.81	6.58	2.75
Narsingpur						
Age	Years	41	39	43	49	43
Education	Year in School	10	12	10	11	11
Income (main source)	Rs Lakhs	0.31	0.45	0.63	1.14	0.62
Income (sub)	Rs Lakhs	0.36	0.25	0.28	0.35	0.31
Family Size	Number	7	8	9	10	8
NCA	Hectare	0.72	1.52	3.04	7.72	3.13
Vidisha						
Age		52	45	44	38	45
Education	Year in School	5	5	9	10	7
Income (main source)	Rs Lakhs	0.28	0.43	0.85	1.16	0.65
Income (sub)	Rs Lakhs	0.25	0.75	0.40	0.48	0.56
Family Size	Number	7	8	9	9	8
NCA	Hectare	0.75	1.58	2.77	4.54	2.20

NCA – Net Cropped Area in hectares

Consumption and Marketable Surplus

The quantity produced of a commodity is important in defining the various aspects involved in the marketing of the commodity. Equally important is the information on utilization of the production for various purposes and proportion delivered to the market. The information on production, consumption and marketable surplus of Gram in Banda and Vidisha district has been presented in Table 4.2. The table revealed the direct relationship between land holding and the quantity retained for home consumption. The retention of Gram for home consumption in absolute terms was found to be increasing with increase in size of holding however the percent share of Gram consumed to the total production was found to be decreasing with the increase in land holding size i.e. highest on marginal farms and lowest on large farms. As far as the marketable surplus in district Banda is concern, highest marketable surplus of 84 percent was observed on large farms followed by medium (81 %), small (78 %) and marginal (71 %) farms. In case of Vidisha, highest marketable surplus of 85 percent was observed on large farms. The marketable surplus on medium, small and marginal farmers was observed to be 84 percent, 80 percent and 78 percent, respectively.

Table 4.2 Consumption and Marketable Surplus of Gram (Quintals)

Items/ Farm Categories	Large	Medium	Small	Marginal	Overall
Banda					
Total Production	16.00	12.54	8.65	4.94	8.85
Family Consumption	1.45	1.39	1.18	0.85	1.13
Other uses	0.91	0.93	0.66	0.55	0.71
Physical losses	0.16	0.08	0.06	0.02	0.06
Total Requirement	2.53 (15.78)	2.40 (19.14)	1.90 (22.00)	1.42 (28.78)	6.95 (21.45)
Marketable Surplus	13.48 (84.22)	10.14 (80.86)	6.75 (78.00)	3.51 (71.22)	1.90 (78.55)
Vidisha					
Total Production	28.17	12.86	7.14	5.06	10.68
Family Consumption	2.47	1.10	0.85	0.70	1.04
Other uses	1.78	0.84	0.49	0.31	0.70
Physical losses	0.12	0.10	0.10	0.08	0.10
Total Requirement	4.37 (15.50)	2.04 (15.87)	1.44 (20.24)	1.10 (21.63)	8.84 (17.29)
Marketable Surplus	23.80 (84.50)	10.82 (84.13)	5.69 (79.76)	3.97 (78.37)	1.85 (82.71)

Figures in parenthesis are percentage to total production

The utilization pattern and marketable surplus of Arhar in Fatehpur and Narsingpur district is presented in Table 4.3. The total requirement in absolute terms was found to be increasing with the increase in land holding size but decreasing in terms of proportion of total production. It was observed from the table that the

marketable surplus of farmers of Narsinghpur district was slightly higher then their counterparts in Fatehpur district. This may be attributed to better seed replacement rate and consumption of processed *dal* from market.

It may also be observed from Table 4.2 and Table 4.3 that marketable surplus of Arhar was relatively higher then the marketable surplus of Gram. It may be due to various factors like Arhar is mainly consumed in the form of Dal unlike Gram which may be consumed as grain also. Arhar being high value crop among pulses may enjoy better seed replacement rate and higher proportion of Dal consumed from market due to relatively complex processing of Arhar.

Table 4.3 Consumption and Marketable Surplus of Arhar (Quintals)

Item/ Farm Categories	**Large**	**Medium**	**Small**	**Marginal**	**Overall**
Fatehpur					
Total Production	33.17	12.13	8.93	3.85	12.58
Family Consumption	0.79	0.55	0.73	0.38	0.65
Other uses	0.56	0.30	0.24	0.07	0.29
Physical losses	0.08	0.05	0.05	0.01	0.05
Total Requirement	1.43 (4.30)	0.91 (7.47)	1.02 (11.43)	0.46 (11.82)	0.98 (7.81)
Marketable Surplus	31.74 (95.70)	11.22 (92.53)	7.91 (88.57)	3.40 (88.18)	11.60 (92.19)
Narsingpur					
Total Production	45.95	20.66	7.18	3.40	18.89
Family Consumption	0.44	0.58	0.40	0.15	0.39
Other uses	0.30	0.12	0.09	0.05	0.13
Physical losses	0.05	0.02	0.02	0.01	0.02
Total Requirement	0.79 (1.73)	0.72 (3.47)	0.51 (7.07)	0.21 (6.25)	0.55 (2.90)
Marketable Surplus	45.16 (98.27)	19.94 (96.53)	6.67 (92.93)	3.19 (93.75)	18.34 (97.10)

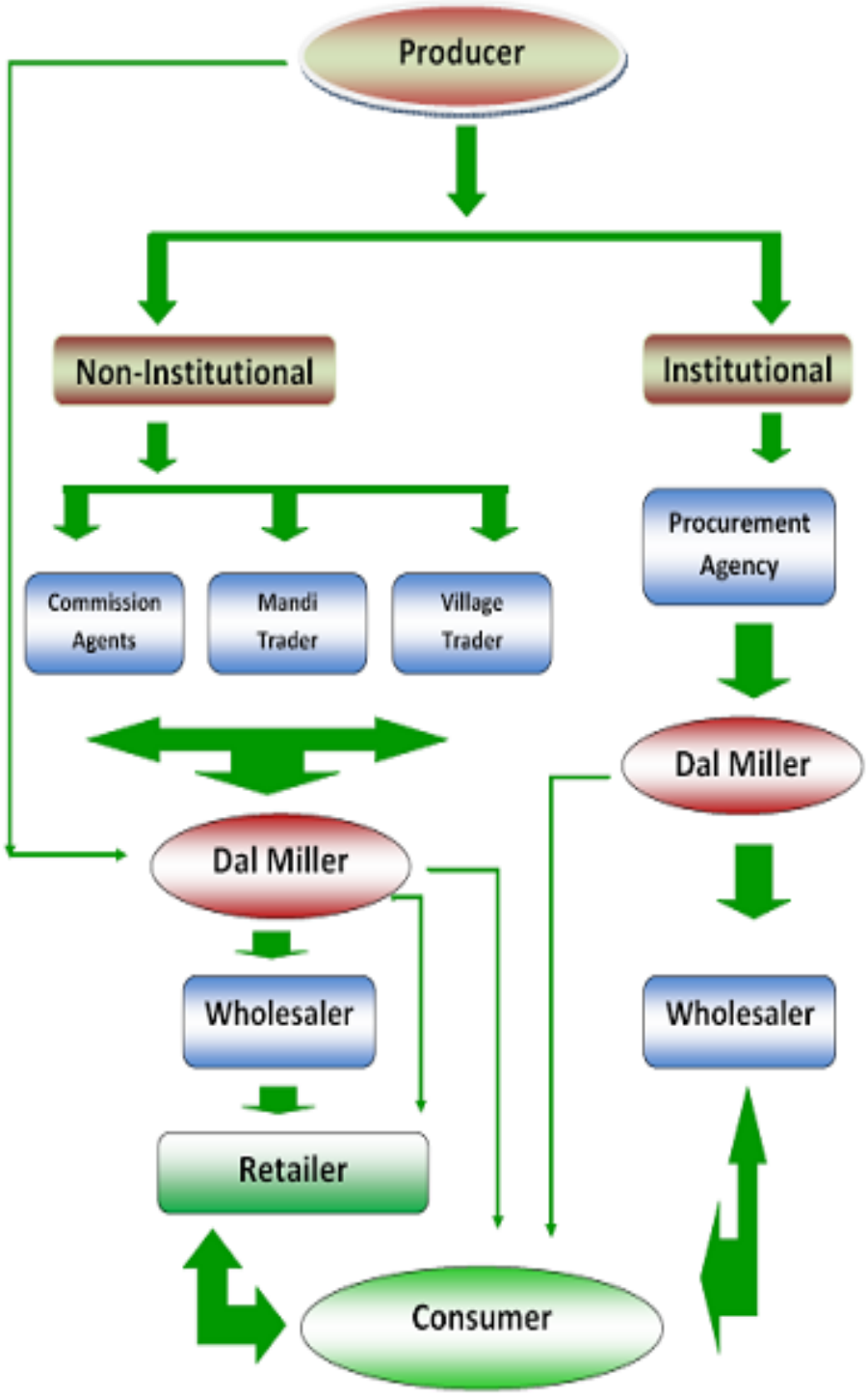
Figures in parenthesis are percentage to total production

Marketing Channels

Marketing channels are the different routes through which agricultural product move from producer to consumer. The channel consists of various agencies which facilitate the movement of product by performing different marketing functions as the produce move from primary producer to the ultimate consumer. The movement of the produce differs based on time and factors like distance involved in completing the process. The marketing channels in terms of length and combination of intermediaries varies with the variety of the pulses, quantity to be marketed, time and degree of regional specialization in production. The channels followed in the marketing of pulses mainly Gram and Arhar, having prominent presence of *dal* millers for processing, are quite similar particularly in the major pulse producing states. The theoretical network of all possible route of product flow in the case of pulses is depicted in Figure 4.1. The figure shows that pulses may move to the ultimate consumer through two separate routes namely institutional and non-institutional. Institutional arrangements are made by the Government to safe guard the interest of the farmers in case of price crash by procuring the product at MSP announced by the Government of India. NAFED is the Central Nodal Agency of the Government of India for undertaking procurement of pulses under Price Support Scheme (PSS). NAFED commences the procurement from the farmers directly through its cooperative network when the market rates of a particular commodity fall below MSP. Though, the channel is not important in terms of the quantity of product moving through this route, but its presence help in safeguarding the interest of farmers in case of price crash and help discovery of price in favour of farmers when product is moving through non-institutional channel.

The institutional route was found to be not operating in the study area. It may be due to the price in both the selected crops i.e. Gram and Arhar prevailed above MSP in both the districts. A few cases were observed, where the price was below the MSP as the product may not be in compliance with FAQ set for procurement.

Figure 4.1 Marketing Channels of Pulses



As far as the movement of product through non-institutional route is concerned, the presence of large number of intermediaries between producer and the consumer was observed in the study area. The various intermediaries involved in the movement of product are village trader, wholesaler, commission agents, millers and retailers. Since, a reasonable amount of Gram and Arhar is consumed in the *Dal* (split) form; the millers have an important presence in the marketing of the pulses. In order to ensure smooth supply of raw material for the *Dal* mill, some of the millers have vertically expanded their operations by participating in the marketing of pulses as traders. Another important link in the marketing of gram is the regulated markets. Most of the product either directly by the farmers or with the help of village trader was observed to be flowing to millers through these markets. Village traders were also found to have a lot of variation in their style of operation. In some cases, they were approaching the farmers while in other they were operating through their collection centres i.e. local private markets.

The analysis of primary information collected from various agencies regarding flow of pulses through different channels revealed that following were the prominent pulse marketing channels in the study area:

Channels from Uttar Pradesh

(i) Farmers – Village Trader – Commission Agent – Mandi Trader – Miller – Wholesaler – Retailer – consumer

(ii) Farmers – Commission Agent – Mandi Trader – Miller – Wholesaler – Retailer – consumer

(iii) Farmers – Commission Agent – Miller – Wholesaler – Retailer – consumer

Channels from Madhya Pradesh

(iv) Farmers – Village Trader – Mandi Trader – Miller – Wholesaler – Retailer consumer

(v) Farmers – Mandi Trader – Miller – Wholesaler – Retailer – consumer

(vi) Farmers – Miller – Wholesaler – Retailer – consumer

Since most of the product was found to be flowing through channel-1 and channel-2 of each state, only these two channels have been considered for the detailed analysis of marketing costs, margins and price spread analysis.

Marketing Cost, Margins and Price Spread in the Marketing of Gram in Districts Banda and Vidisha

The price spread under two prominent channels from each district i.e. Banda and Vidisha in the marketing of Gram has been presented in Table 4.4. The table revealed that the price spread in case of Banda under both the channels was higher than Vidisha, with channel-2 (Banda) having the highest spread (47.65 percent) and channel-1 (Vidisha) having lowest spread (41.85 percent) in all the four channels considered under the study. Since price spread is inversely related to the number of intermediaries involved in the marketing of a produce, the channel-1 in both the districts, where producer was directly approaching the market, was found to have lower price spread. However, producers share in consumer's price was observed to be low in all the four channels ranging from 52.35 percent to 58.15 percent due to involvement of processing.

Table 4.4 Price spread under different marketing channels in the marketing of Gram in District Banda and Vidisha (Rs/Qt)

Sr No	Items	Banda		Vidisha	
		Channel-1	Channel-2	Channel-1	Channel-2
1	Producers Net Price	2023 (54.09)	1958 (52.35)	2140 (58.15)	2095 (56.93)
2	Producers Market Price	2100 (56.15)	1990 (53.21)	2200 (59.78)	2095 (56.93)
3	Village Traders Selling Price	--	2100 (56.15)	--	2200 (59.78)
4	Mandi Trader Selling Price	2388 (63.85)	2388 (63.85)	2428 (65.98)	2428 (65.98)
5	Millers Selling Price	3357 (89.76)	3357 (89.76)	3304 (89.78)	3304 (89.78)
6	Wholesalers Selling Price	3514 (93.96)	3514 (93.96)	3463 (94.10)	3463 (94.10)
7	Retail Selling Price (Consumer's Price)	3740 (100.00)	3740 (100.00)	3680 (100.00)	3680 (100.00)
8	Price Spread	1717 (45.91)	1782 (47.65)	1540 (41.85)	1585 (43.07)

Figures in parentheses indicate the percentage to the retail price (consumer's price)

The table further revealed that farmers under channel-1 in both the districts, who approached the market directly in expectation of higher price, could not improve much over their counterparts who preferred to sell their produce to the village traders. This difference was 1.74 percent in Banda district and 1.22 percent in district Vidisha.

The analysis of marketing costs, margins and cost-buildup at various levels in the marketing of Gram under different marketing channels has been presented in Table 4.5, Table 4.6 and Table 4.7.

It is revealed from the Table 4.5 that the cost incurred in marketing of Gram in Banda district was higher than Vidisha district mainly on account of higher processing cost and operational cost of Mandi traders in Banda district. As far as the cost incurred by different intermediaries in the marketing of Gram is concerned, the highest cost was incurred by the processor followed by Mandi trader, wholesalers and village traders. Nearly half of the total marketing cost was contributed by the processors.

Table 4.5 Analysis of Marketing Costs under different channels in the Marketing of Gram (Rs/Qt)

Sr No	Functionaries	Banda		Vidisha	
		Channel-1	Channel-2	Channel-1	Channel-2
1	Producer-farmer	77 (9.39)	32 (3.81)	60 (7.94)	--
2	Village Trader	--	64 (7.63)	--	69 (9.02)
3	Mandi Trader	192 (23.41)	192 (22.88)	164 (21.69)	164 (21.44)
4	Miller	404 (49.27)	404 (48.15)	370 (48.94)	370 (48.37)
5	Wholesaler	93 (11.34)	93 (11.08)	105 (13.89)	105 (13.73)
6	Retailer	54 (6.59)	54 (6.44)	57 (7.54)	57 (7.45)
7	Total	820 (100.00)	839 (100.00)	756 (100.00)	765 (100.00)

Figures in parentheses indicate the percentage to total cost incurred

The analysis of marketing margins, presented in Table 4.6, revealed that higher margins were retained by various functionaries operating in district Banda in comparison to district Vidisha. Accordingly, margins retained by the various functionaries of a channel involved in the marketing of Gram were found to be highest under channel-2 (Banda). Most of the functionaries involved in the marketing of Gram earned margins in proportions to the cost incurred by them except for processors and retailers. The margin earned by retailers was on higher side due to their small scale of operation while processors have retained margins to cover various costs involved in the processing of produce like marketing cost, distribution cost, processing cost, weight reduction due to processing and the cost incurred on capital investment made to establish the processing plant. Mandi traders might have secured the higher prices due to their better positioning on account of better understanding of various aspects of marketing and easy access to some of the vital facilities like market information, trade environment, storage, grading, finance, etc.

Table 4.6 Analysis of Marketing Margins under different channels in the Marketing of Gram (Rs/Qt)

Sr No	Functionaries	Banda		Vidisha	
		Channel-1	Channel-2	Channel-1	Channel-2
1	Village Trader	--	46 (4.88)	--	36 (4.39)
2	Mandi Trader	96 (10.70)	96 (10.18)	64 (8.16)	64 (7.80)
3	Miller	565 (62.99)	565 (59.92)	506 (64.54)	506 (61.71)
4	Wholesaler	64 (7.13)	64 (6.79)	54 (6.89)	54 (6.59)
5	Retailer	172 (19.18)	172 (18.24)	160 (20.41)	160 (19.51)
6	Total	897 (100.00)	943 (100.00)	784 (100.00)	820 (100.00)

Figures in parentheses indicate the percentage to total margin earned

Table 4.7 shows the proportion of producer-farmers and various other functionaries in the total cost buildup in the marketing of Gram. The cost buildup consists of cost incurred and margin earned by intermediaries at each level of marketing of Gram. The analysis of results, consistent with the information on cost and margin presented in table 4.5 and table 4.6, indicated that highest cost in all the four channels considered under the study, was added by processors followed by Mandi trader, retailers, wholesalers and village traders (where ever applicable) in same order. More than 50 percent of the total cost buildup was observed to be added by the processors.

Table 4.7 Cost-Buildup at different market functionaries levels in the marketing of Gram under different channels (Rs/Qt)

Sr No	Market Functionaries	Banda		Vidisha	
		Channel-1	Channel-2	Channel-1	Channel-2
1	Producer-farmer	77 (4.48)	32 (1.80)	60 (3.90)	--
2	Village Trader	--	110 (6.17)	--	105 (6.62)
3	Mandi Trader	288 (16.77)	288 (16.16)	228 (14.81)	228 (14.38)
4	Miller	969 (56.44)	969 (54.38)	876 (56.88)	876 (55.27)
5	Wholesaler	157 (9.14)	157 (8.81)	159 (10.32)	159 (10.03)
6	Retailer	226 (13.16)	226 (12.68)	217 (14.09)	217 (13.69)
7	Total	1717 (100.00)	1782 (100.00)	1540 (100.00)	1585 (100.00)

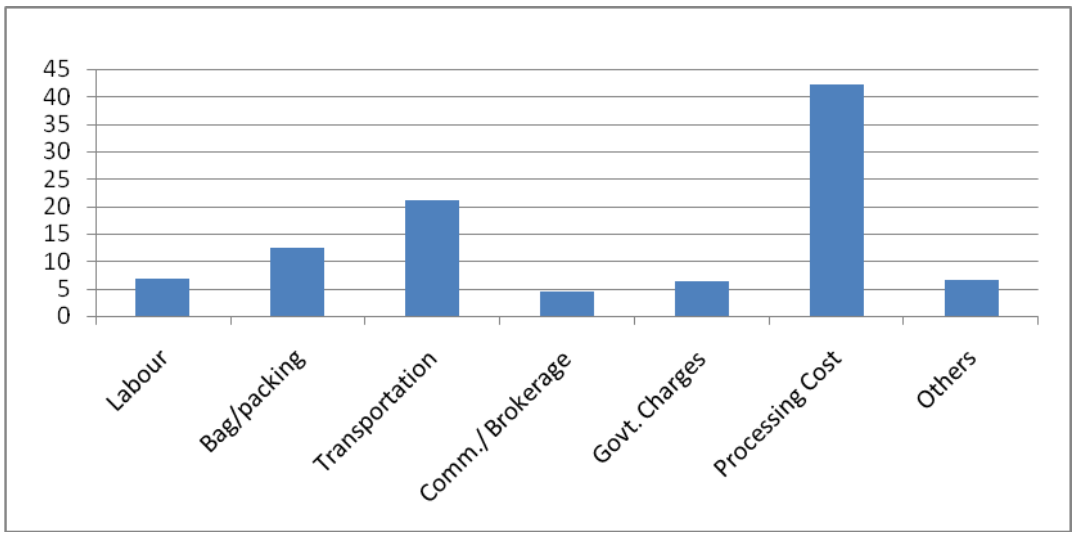
Figures in parentheses indicate the percentage to total cost buildup

The component-wise cost incurred by different intermediaries including farmers is shown in Table 4.8. The cost items like processing and transportation were found to be the major contributor to the total cost incurred in the marketing of Gram. The over all component wise cost scenarios has been presented in Figure 4.2, which revealed that processing alone has added more than 40 percent to the total cost. Next major item of marketing cost was observed to be the transportation (21 percent), bag and packing (12 percent) and labour (7 percent). Six percent of the total marketing cost was added on account of Mandi fee and development cess.

Table 4.8 Component-wise break up of marketing cost incurred in the marketing of Gram by various market functionaries under different channels (Rs/Qt)

Items	Farmer	Village Trader	Trader	Miller	Wholesaler	Retailers	Total
Channel-1 (Banda)							
Labour	17		20	5	6	0	48
Bag/packing	20		24	20	18	15	97
Transportation	40		48		56	20	164
Commission/ Brokerage			26	9	9		44
Mandi Charges			53				53
Processing Cost				354			354
Others			21	16	4	19	60
Channel-2 (Banda)							
Labour	20	17	20	5	6		68
Bag/packing		20	24	20	18	15	97
Transportation	12	27	48		56	20	163
Commission/ Brokerage			26	9	9		44
Mandi Charges			53				53
Processing Cost				354			354
Others			21	16	4	19	60
Channel-1 (Vidisha)							
Labour	8		17	10	10		45
Bag/packing	20		25	20	20	15	100
Transportation	32		57		59	24	172
Commission/ Brokerage			5	10	12		27
Mandi Charges			48				48
Processing Cost				318			318
Others			12	12	4	18	46
Channel-2 (Vidisha)							
Labour		18	17	10	10		55
Bag/packing		20	25	20	20	15	100
Transportation		31	57		59	24	171
Commission/ Brokerage			5	10	12		27
Mandi Charges			48				48
Processing Cost				318			318
Others			12	12	4	18	46

Figure 4.2 Component wise cost breakup (Gram)



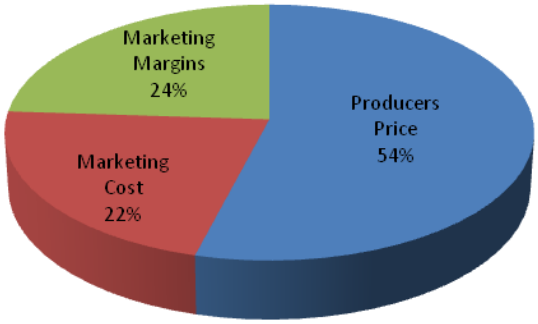
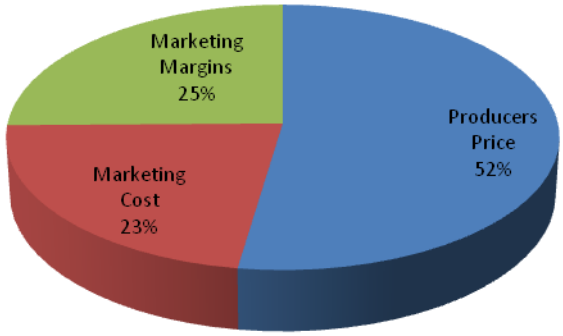
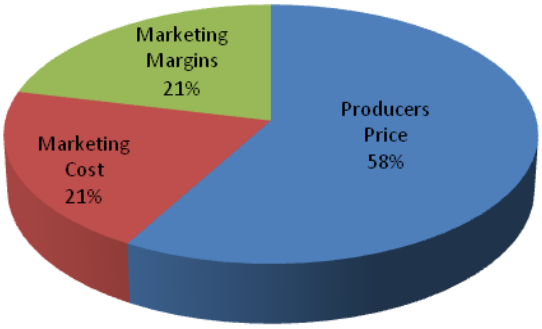
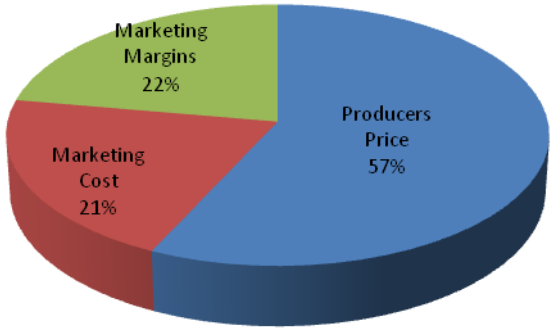
Producer's Share in Consumer's Price

The producer's share in consumer's price under different channels is depicted in Table 4.9. The table revealed that the producer's share in consumer price under different channels ranged from 52 percent to 58 percent. The channel-1 (Vidisha) has performed better in comparison to other channels while channel-2 (Banda) was found to be least efficient in terms of producer's share in consumer's rupee. Profit margins in each channel have been earned in proportion to the cost incurred, though the margin retained are slightly higher to the cost incurred in each channel. This may be due to involvement of processing.

Table 4.9 Producer's Share in Consumer's Price under different channels in the Marketing of Gram (Rs/ Qt)

Items/ Channels	Banda		Vidisha	
	Channel-1	Channel-2	Channel-1	Channel-2
Producers Price	2023 (54.09)	1958 (52.35)	2140 (58.15)	2095 (56.93)
Marketing Cost	820 (21.93)	839 (22.43)	756 (20.54)	765 (20.79)
Marketing Margins	897 (23.98)	943 (25.21)	784 (21.30)	820 (22.28)
Consumer's Price	3740 (100.00)	3740 (100.00)	3680 (100.00)	3680 (100.00

Figure 4.3 Producers Share in Consumers Price (Gram)

Channel-1 (Banda)	Channel-2 (Banda)
	
	
Channel-1 (Vidisha)	**Channel-2 (Vidisha)**

Marketing Efficiency

The marketing efficiency of different channels involved in the movement of Gram from producer to ultimate consumers was estimated using different approaches and results are presented in Table 4.10. The table revealed the channel-1 (Vidisha) as the most efficient channel followed by channel-2 (Vidisha), channel-1 (Banda) and channel-2 (Banda). The marketing efficiency estimated using Acharya and Agarwal approach are based on the ratio of farmer's price to the marketing cost and margin, higher the ratio more efficient is the system. The marketing efficiency index ranged from 1.10 in Channel-2 (Banda) to 1.39 in channel-4 (Vidisha). The shepherd approach is based on the value of produce marketed per unit of cost, higher the value more efficient is the system. The similar results have been observed with Shepherd efficiency, under channel-1 (Vidisha) product of market value of Rs 4.87 was marketed per rupee of cost while in case of least efficient channel i.e. channel-2 (Banda), product of market value of Rs 4.46 was marketed per rupee marketing cost. Similar results were observed in case of producer's share in consumer's price.

Table 4.10 Marketing Efficiency under different channels involved in the Marketing of Gram

Sr No	Channel	Marketing Efficiency	Shepherd Efficiency	Producers Share
1	Channel-1 (Banda)	1.18 (3)	4.56 (3)	54.09 (3)
2	Channel-2 (Banda)	1.10 (4)	4.46 (4)	52.35 (4)
3	Channel-1 (Vidisha)	1.39 (1)	4.87 (1)	58.15 (1)
4	Channel-2 (Vidisha)	1.32 (2)	4.81 (2)	56.93 (2)

Figures in parenthesis indicate the rank of channels in terms of marketing efficiency

Marketing Cost, Margins and Price Spread in the Marketing of Arhar in Districts Fatehpur and Narsinghpur

The price spread in the marketing of Arhar under different channels considered for the study from district Fatehpur and Narsingpur has been depicted in Table 4.11. The price spread i.e. the difference between the price paid by the consumer and price received by the producer, ranged from Rs 2175 per quintal to Rs 2849 per quintal. The highest spread was observed in channel-2 (Fatehpur) and lowest in channel-1 (Narsingpur). The price spread in both the channels of district Fatehpur was more than district Narsingpur. Within districts, in both the cases channel-1 was observed to have lower price spread than channel-2, which was due to shorter length of the channel. Though channel-1 fared better over channel-2, the farmers bringing their produce to the market could receive only marginally higher net price over their counterparts utilizing the services of village traders. The producer's share in consumer's price in all the channels was on lower side due to involvement of processing, the situation was relatively better in district Narsingpur.

Table 4.11 Price spread under different marketing channels in the marketing of Arhar in District Fatehpur and Narsingpur (Rs/Qt)

Sr No	Items	Fatehpur		Narsingpur	
		Channel-1	Channel-2	Channel-1	Channel-2
1	Producers Net Price	3308 (55.05)	3160 (52.59)	3465 (61.44)	3385 (60.02)
2	Producers Market Price	3400 (56.58)	3160 (52.59)	3525 (62.50)	3385 (60.02)
3	Village Traders Selling Price	--	3400 (56.58)	--	3525 (62.50)
4	Mandi Traders Selling Price	3901 (64.92)	3901 (64.92)	3855 (68.35)	3855 (68.35)
5	Millers Selling Price	5327 (88.65)	5327 (88.65)	5091 (90.27)	5091 (90.27)
6	Wholesalers Selling Price	5551 (92.38)	5551 (92.38)	5292 (93.83)	5292 (93.83)
7	Retail Selling Price (Consumer's Price)	6009 (100.00)	6009 (100.00)	5640 (100.00)	5640 (100.00)
8	Price Spread	2701 (44.95)	2849 (47.41)	2175 (38.56)	2255 (39.98)

Figures in parentheses indicate the percentage to the retail price (consumer's price)

The marketing cost incurred and margin earned by different market functionaries are depicted in Table 4.12 and Table 4.13.

The total cost incurred in the marketing of Arhar under different channels as depicted in Table 4.12 ranged from Rs 816 per quintal to Rs 1003 per quintal. As far as the cost incurred by various market functionaries of different channels was concerned, the processors incurred the highest cost followed by cost incurred by Mandi traders and wholesaler. Retailers and producers incurred least cost in marketing of Arhar in both the districts.

Table 4.12 Analysis of Marketing Costs under different channels in the Marketing of Arhar (Rs/Qt)

Sr No	Market Functionaries	Fatehpur		Narsingpur	
		Channel-1	Channel-2	Channel-1	Channel-2
1	Producer-farmer	92 (9.26)	--	60 (7.35)	--
2	Village Trader	--	102 (10.17)	--	73 (8.81)
3	Mandi Trader	261 (26.28)	261 (26.02)	188 (23.04)	188 (22.68)
4	Miller	442 (44.51)	442 (44.07)	396 (48.53)	396 (47.77)
5	Wholesaler	120 (12.08)	120 (11.96)	112 (13.73)	112 (13.51)
6	Retailer	78 (7.85)	78 (7.78)	60 (7.35)	60 (7.24)
7	Total	993 (100.00)	1003 (100.00)	816 (100.00)	829 (100.00)

Figures in parentheses indicate the percentage to total cost incurred

The Table 4.13 showing the margin earned by different market functionaries revealed that the total marketing margins ranged from Rs 1359 per quintal in channel-1 (Narsingpur) to Rs 1846 per quintal in channel-2 (Fatehpur). The information reveals that maximum margin were retained by processors to cover

various costs like procurement cost, processing cost, distribution cost, reduction in weight and capital investment made. Higher margin of retailers is due to their small scale of operations while Mandi traders are better off due to their better understanding of the subject and access to various marketing facilities. The total margins earned by different market intermediaries was higher in Fatehpur district compared to Narsinghpur district mainly on account of higher margin retained by processors, Mandi traders and retailers.

Table 4.13 Analysis of Marketing Margins under different channels in the Marketing of Arhar (Rs/Qt)

Sr No	Functionaries	Fatehpur		Narsingpur	
		Channel-1	Channel-2	Channel-1	Channel-2
1	Village Trader	--	138 (7.48)	--	67 (4.70)
2	Mandi Trader	240 (14.05)	240 (13.00)	142 (10.45)	142 (9.96)
3	Miller	984 (57.61)	984 (53.30)	840 (61.81)	840 (58.91
4	Wholesaler	104 (6.09)	104 (5.63)	89 (6.55)	89 (6.24)
5	Retailer	380 (22.25)	380 (20.59)	288 (21.19)	288 (20.20)
6	Total	1708 (100.00)	1846 (100.00)	1359 (100.00)	1426 (100.00)

Figures in parentheses indicate the percentage to total margin earned

The total cost buildup by different market functionaries including farmers have been presented in Table 4.14. Since the total cost buildup consists of marketing cost and margin, the cost buildup was highest by processors in all the channels followed in the study as has also been suggested by costs presented in Table 4.12 and margins presented in Table 4.13. More than half of the cost buildup was contributed by the processors. Next to the processors, the highest cost buildup was contributed

by Mandi traders followed by retailers in Fatehpur whereas in Narsinghpur district it was contributed by retailers followed by Mandi traders. In case of channel-2 of both the districts, significant cost buildup was also contributed by the village trader. The total cost build up was found to be higher in case of Fatehpur compared to Narsingpur district mainly due to higher cost of processing and marketing costs and margins of Mandi traders and retailers.

Table 4.14 Cost-Buildup at different market functionaries levels in the marketing of Arhar under different channels (Rs/Qt)

Sr No	Market Functionaries	Fatehpur		Narsingpur	
		Channel-1	Channel-2	Channel-1	Channel-2
1	Producer-farmer	92 (3.41)	--	60 (2.76)	--
2	Village Trader	--	240 (8.42)	--	140 (6.21)
3	Mandi Trader	501 (18.55)	501 (17.59)	330 (15.17)	330 (14.63)
4	Miller	1426 (52.80)	1426 (50.05)	1236 (56.83)	1236 (54.81)
5	Wholesaler	224 (8.29)	224 (7.86)	201 (9.24)	201 (8.91)
6	Retailer	458 (16.96)	458 (16.08)	348 (16.00)	348 (15.43)
7	Total	2701 (100.00)	2849 (100.00)	2175 (100.00)	2255 (100.00)

Figures in parentheses indicate the percentage to total cost buildup

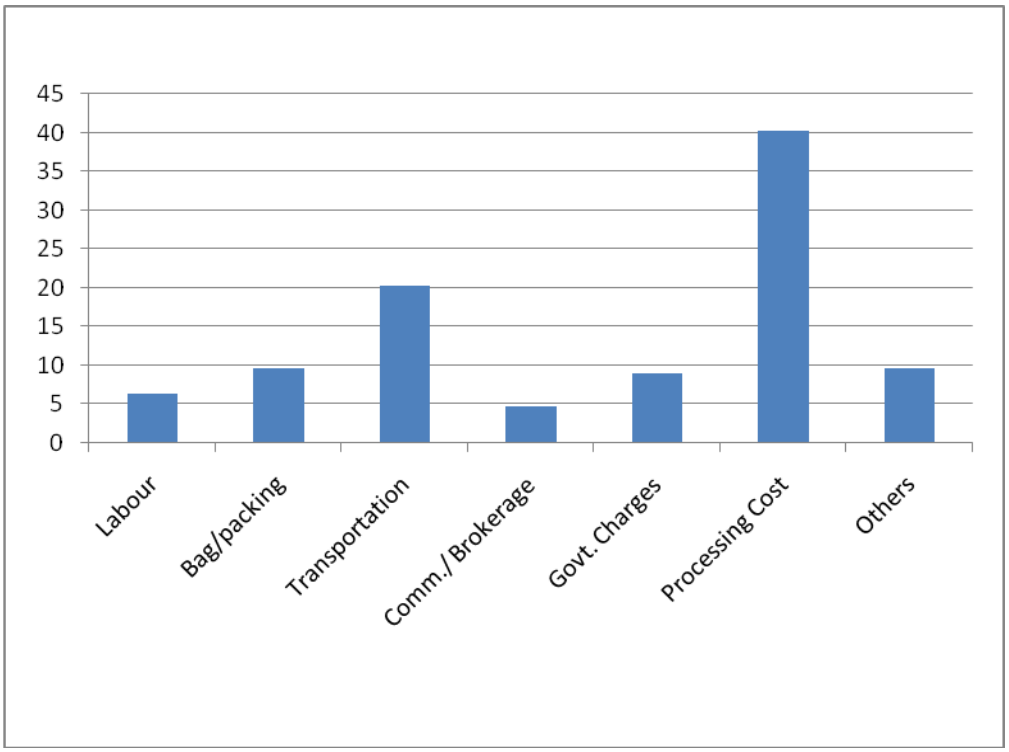
The total cost incurred by different intermediaries in the marketing of Arhar on different components like labour, transport, packing, commission/ brokerage, market fee, processing and other miscellaneous expenses is presented in Table 4.15. The table revealed that the highest cost was incurred in processing and transportation. Mandi charges in the form of fee and cess, bag/ packing and labour were also found to be important cost component in the marketing of pulses.

The Figure 4.14 depicting over all component wise scenarios revealed processing as the biggest cost component with 40 percent contribution, while transportation was next major cost component with 20 percent contribution. Other important cost components were bag/ packing (10 percent), charges towards Mandi fee and development cess (9 percent), labour (6 percent) and commission and brokerage (5 percent).

Table 4.15 Component-wise break up of marketing cost incurred in the marketing of Arhar by various market functionaries under different channels (Rs/Qt)

Items	Farmer	Village Trader	Mandi Trader	Miller	Wholesaler	Retailers	Total
Channel-1 (Fatehpur)							
Labour	27		20	7	8		62
Bag/packing	20		14	20	20	15	89
Transportation	45		52		78	35	210
Commission/ Brokerage			39	9	10		58
Mandi Charges			85				85
Processing Cost				390			390
Others			51	16	4	28	99
Channel-2 (Fatehpur)							
Labour		27	20	7	8		62
Bag/packing		20	14	20	20	15	89
Transportation		55	52		78	35	220
Commission/ Brokerage			39	9	10		58
Mandi Charges			85				85
Processing Cost				390			390
Others			51	16	4	28	99
Channel-1 (Narsingpur)							
Labour	11		17	10	11		49
Bag/packing	20		14	20	20	14	88
Transportation	29		39		65	20	153
Commission/ Brokerage			5	12	12		29
Mandi Charges			78				78
Processing Cost				342			342
Others			35	12	4	26	77
Channel-2 (Narsingpur)							
Labour		21	17	10	11		59
Bag/packing		20	14	20	20	14	88
Transportation		32	39		65	20	156
Commission/ Brokerage			5	12	12		29
Mandi Charges			78				78
Processing Cost				342			342
Others			35	12	4	26	77

Figure 4.4 Component wise cost breakup (Arhar)



Producer's Share in Consumer's Price

The producer's share in consumer's price under different channels involved in the marketing of Arhar has been depicted in Table 4.16. The table revealed that producer's share in consumer's price ranged from 53 percent to 61 percent. The highest net price received by producer was observed in channel-1 (Narsingpur) and lowest in channel-2 (Fatehpur). Both the channels in district Narsingpur fared better over both the channels of Fatehpur district. Within districts, the channel with shorter length i.e. channel-1 has performed better than the lengthy channel i.e. channel-2 involving village trader.

Figure 4.4 Producer's Share in Consumer's Price (Arhar)

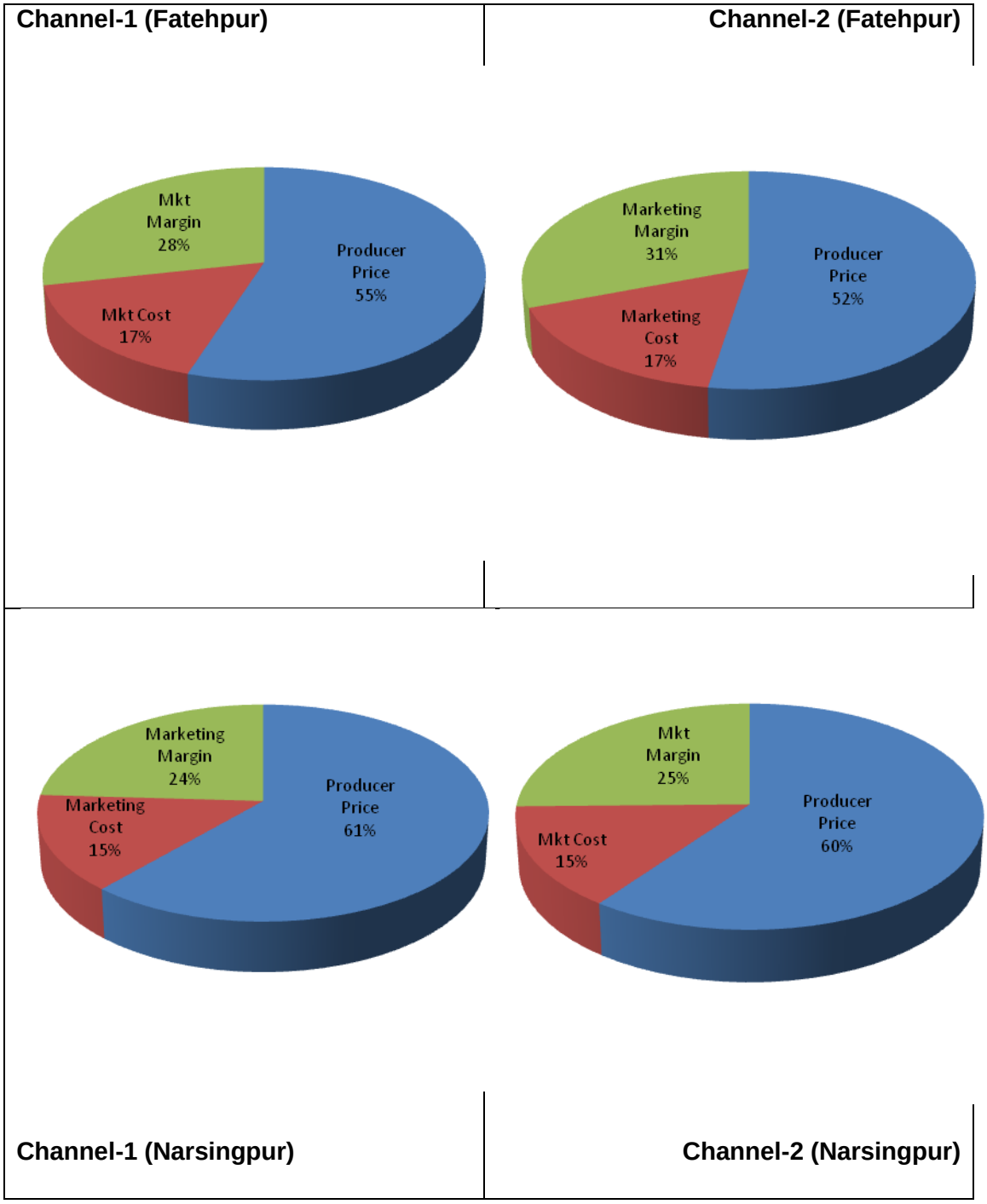


Table 4.16 Producer's Share in Consumer's Price under different channels in the Marketing of Arhar (Rs/Qt)

Sr No	Market Functionaries	Fatehpur		Narsingpur	
		Channel-1	Channel-2	Channel-1	Channel-2
1	Producer Price	3308 (55.05)	3160 (52.59)	3465 (61.44)	3385 (60.02)
32	Marketing Cost	993 (16.53)	1003 (16.69)	816 (14.47)	829 (14.70)
3	Marketing Margin	1708 (28.42)	1846 (30.72)	1359 (24.10)	1426 (25.28)
4	Total	6009 (100.00)	6009 (100.00)	5640 (100.00)	5640 (100.00)

Marketing Efficiency

The marketing efficiency of different channels followed in the marketing of Arhar has been presented in Table 4.17. As per the Acharya and Agarwal approach, the marketing efficiency index ranged from 1.11 to 1.59 with highest in channel-1 (Narsinghpur) and lowest in channel-2 (Fatehpur). The shepherd efficiency which is actually the value marketed per unit of cost and the values of producer's share in consumer's rupee have also provided the similar results.

Table 4.17 Marketing Efficiency under different channels involved in the Marketing of Arhar

Sr No	Channel	Shepherd Efficiency	Marketing Efficiency	Producer's Share
1	Channel-1 (Fatehpur)	6.05 (3)	1.22 (3)	55.05 (3)
2	Channel-2 (Fatehpur)	5.99 (4)	1.11 (4)	52.59 (4)
3	Channel-1 (Narsingpur)	6.91 (1)	1.59 (1)	61.44 (1)
4	Channel-2 (Narsingpur)	6.80 (2)	1.50 (2)	60.02 (2)

Figures in parenthesis indicate the rank of channels in terms of marketing efficiency

Post Harvest Management of Pulses

Post harvest management of crops is an important component in agriculture for its ability to improve the effective availability of a commodity. According to an estimate, the post harvest losses in pulses, from harvesting to milling and storage to transport vary from 25 to 30 per cent (IIPR). If this loss is reduced even by 50 per cent, an additional 1.5 – 2.0 million tonnes of pulse grains will be available. Considering this, an attempt has been made to evaluate the current status of post harvest management of pulses at farm level at various post harvest stages like harvesting, drying, threshing, storage, transportation, etc. The information compiled from selected farmers has been presented in Table 4.18.

The table revealed that the most of the farmers are aware about the importance of threshing in pulses in minimizing the losses. Most of the farmers responded that they assess the moisture level and ensure the maturity of the crops based on the physical characteristics before harvesting the crop at proper time. Majority of the farmers have also reported that they follow proper procedure to protect the crop during drying and threshing in terms of use of proper floor and protection of crop.

Storage is important in pulses as they are relatively difficult to store than cereals and suffer much higher damage for being susceptible to insects and microorganisms. This not only results in quantitative losses, but also in qualitative reduction of the nutritive value because of vitamin loss and deterioration of protein quality. In the absence of availability of scientific storage infrastructure, the pulses are being stored very unscientifically at farm level. The table reveals that less than 9 percent of the farmers have reported using storage bin for storing pulses except Narsingpur, where nearly 40 percent farmers were observed to be using bins to store pulses.

As far as cleaning and grading was concerned, most of the farmers were maintaining the varieties separately but grading was practiced by very few farmers. Situation was some what better in case of grading in district Vidisha.

Transportation is another important activity as it has been observed that 0.67 percent losses are occurred in transporting the produce from the field to threshing floor. Losses are incurred to the tune of 0.19 percent in transporting the produce from threshing floor to store. Only a few farmers were reported to follow transportation according to the requirement of the crop.

Table 4.18 The Status of Post Harvest Management of Pulses (Percent)

Stage	Operation	Gram		Arhar	
		Banda	Vidisha	Fatehpur	Narsingpur
Harvesting	Harvest in morning time	100	100	98	100
	Assessment of moisture level	100	100	84	98
	Ascertain the maturity of crops based on physical characters	100	100	100	96
Drying	Use of proper drying floor	100	100	96	90
	Provision to protect crop from dew and rain	98	100	92	96
	Provision to prevent crop from coming to direct contact of ground	84	56	92	96
Threshing	Use of hard and clean surface for threshing	96	100	96	90
	Disinfestation of the threshing yards	89	98	80	86
Storage	Use of tin bins for storage	9	4	6	37
Cleaning	Maintaining variety separately	80	72	50	27
	Grading of crop	36	68	20	24
Transportation	Crop specific transportation	2	6	4	6

Field Observations

An attempt has also been made to record the observation made during the field visit and interaction with different stakeholders. Following observation were found worth mentioning:

(i) Level of awareness – the level of awareness about various initiatives of the Government to enhance production of pulses like NFSM was found to be very low.

(ii) Innovative marketing practices – the marketable surplus of pulses mainly in case of marginal and small farmers is very low. In the absence of any innovative marketing initiative like group marketing, producers association, farmers mainly end up disposing off their small surplus to the village trader at cheaper rate.

(iii) Market Information - lack of availability of market information on arrivals and prices prevailing in different markets, farmers are in a way compelled to market their produce in the village and nearby market at lower price.

(iv) Immediate post harvest sale – most of produce is being marketed by the farmers immediately after harvest. Such practice leads to glut in the market leading to low realization of price by the farmers.

(v) Infrastructure – most of the storage is done by the farmers at the farm level only. Lack of availability of scientific storage leads to substantial quality and quantity loss to the farmers.

(vi) Power supply – regular supply of electricity is vital for keeping the cost of processing low.

(vii) Transportation – most of the intermediaries have reported about the higher per unit cost of transportation due to unorganized sector and poor road conditions.

CHAPTER 5

CONCLUSION AND SUGGESTIONS

Pulses play an important role in sustaining agriculture through balanced crop mix and in ensuring nutritional security of the masses. Pulses are the cheapest and vital source of protein for vegetarian Indian society. Stagnant production and ever increasing population has lead to declining per capita availability of pulses over the years. Relative increase in domestic prices of pulses due to over dependence of the production on monsoon and dependence of availability on imports has further forced the consumer to switch to other low priced food alternatives. Under such a situation, marketing can play a vital role in consolidating the price behavior and providing the final product at relatively cheaper price mainly in the case of pulses where marketing channels are characterized by high price spread and participation of large number of small and marginal farmers. The present study was conceived with this background to analyze various dimensions involved in the marketing of pulses in India. The study covered two leading pulses namely Gram and Arhar and two leading states i.e. Madhya Pradesh and Uttar Pradesh. The findings of the study based on the analysis of primary as well as secondary information are as given below:

1. The marketing system followed in the study was marked by the presence of multi-layers of intermediaries between farmer and consumer.
2. The various intermediaries present in the marketing chain were operating in isolation connected through facilitators like commission agents or brokers.
3. Most part of pulses considered under the study was moving through a long chain of market functionaries like aggregator, wholesaler, commission agent, processors and retailers operating under the APMR regime.
4. The institutional arrangement devised to implement Minimum Support Price (MSP) with NAFED being the nodal agency for procurement was found to be absent. This may be due to the fact that the price in most of the cases was prevailing above MSP.

5. The quantity retained for home consumption was more in case of Gram than Arhar. It may be due better seed replacement in Arhar and the crop being consumed in dal form while Gram may be consumed in the form of grains as well.

6. Due to the presence of long marketing chain and involvement of processing, the cost buildup in marketing of pulses was observed to be on higher side.

7. Processing was the biggest marketing cost and margin component in the marketing of pulses with about half of the contribution in total price spread.

8. The component wise cost analysis revealed that transportation was the major cost component after processing in marketing of pulses.

9. The producer share in consumer rupee in pulses was reported to be very low due to involvement of processing and long chain of marketing.

10. Most of the channels considered under the study were found to have low marketing efficiency due to high marketing cost and margins.

11. The various intermediaries were retaining higher proportion as profit in comparison to the value added or service provided in the marketing of pulses. This may be due to relatively higher demand supply gap and the higher degree of uncertainty in level of pulses production due to predominant cultivation of crop under rainfed condition.

12. There was absence of any type of grading system in marketing of pulses. In the absence of prescribed grades and standards, pulses were traded on FAQ basis and visual grading system was followed for the purpose.

13. Retailers were found to be taking away relatively substantial part of marketing margin. Most of the pulses were being sold in loose form without any branding. Some studies also suggest that about 10-20 percent of urban consumption and a negligible share of rural consumptions are being marketed in packaged form.

14. Most of the farmers were found to be following the prescribed post harvest management practices to minimize post harvest losses in terms of harvesting, drying, threshing and cleaning. However, some scope for improvement was observed in case of threshing, drying and grading of pulses.

15. Most of the farmers were storing their produce through traditional means and thus were exposed to high physical losses and deterioration in the quality of the produce. Less than 10 percent farmers were found to be using proper bins for storing pulses except farmers of Narsingpur where the proportion was comparatively high i.e. around 40 percent.

16. Lacks of reliable Market Information System - The farmers were unaware about the prevailing prices in nearby markets and other market information due to absence of proper MIS and hence were discouraged to take their produce to the Mandis.

17. Neglect of marketing component in the schemes of the Government of India. The NFSM, which is having quite vast coverage in terms of area and content does not focus on marketing of pulses.

18. Awareness of farmers was found to be low in respect of various schemes of the Government of India which are intended to increase production of pulses.

Suggestions and Recommendations

In order to improve marketing of pulses for increasing producer's share in consumer's price and ensuring availability of pulses to the consumer at reasonable price and bring stability in prices, following recommendations are made based on the findings of the study:

1. There is potential to increase efficiency of marketing of pulses by reducing the long chain of intermediaries through market integration. If the potential efficiency gains are large, future changes in the market structure, conduct and performance could be significantly improved to benefit the domestic producers and consumer prices, as well as competiveness of local varieties with imports.

2. The channels involved in the marketing of pulses should be made more organized and integrated so as to facilitate smooth flow of information and various market signals to all the stakeholders. This initiative will help in higher realization of price by farmers and availability of produce to consumer at reasonable price.

3. The institutional arrangement envisaged for implementing MSP, though not required being operational in case prices prevailing above MSP, should be kept functional in event of prices fall below MSP. Hence, it is imperative to create awareness on support prices and various schemes of the government.

4. Processing activity is the single largest cost component in the marketing of pulses. The efficiency in the system will set in with the enhancement of efficiency of processing and by increasing scale of operation. This may be achieved through some innovative practices like

a. Private participation under PPP – The efficiency of the sector may be increased by enhancing the participation of private players in the sector under Public Private Partnership mode. This will help pulse processing sector evolve in term of organization, professionalization, scale of operation, use of modern efficient technology and consolidation of the sector. This will, however, require creation of conducive trade and legal environment. For example in Uttar Pradesh, the APMR Act has still not been amended as per the provisions prescribed under Model APMR Act of Ministry of Agriculture. This will act as a hindrance for private participation.

b. Vertical Integration – The processors may be integrated vertically in the marketing of pulses to bring in the operational efficiency. The processors may have their own retail store to have efficient distribution of pulses and presence in Mandi to have efficient procurement of the raw product. However, a comprehensive policy may be required at processors level due to various inhibits like fragmentation in business transactions due to multiple layers of agents, family owned business, lack of regional and national firms and small scale nature of pulse processing. Some international examples suggest that a retailing organization with its own mill and purchasing network in the producing area will be able to cut its retail price by 15 percent. Though, it will very with crop, place and level of processing along with other factors.

c. Government support – Processing is the most important cost component in marketing of pulses. Since, most of the processing firms are operating on small scale; the Government may provide them financial support in upgrading their scale and processing technology.

5. Producer's share in consumer's price is going to be relatively low in case of pulses due to involvement of processing. But, innovative practices like processing of dal at village level may help in improving the producer's share in consumer's price by reducing marketing cost, processing cost and the length of marketing chain. Such arrangement may be of great help in integrating the farmers with market and better realization of price mainly by small and marginal farmers.

6. Transportation is the biggest cost builder after processors. The per unit cost may be brought down by providing better road connectivity in rural areas and scientific management of product movement so as to maximize operational efficiency.

7. In case of pulses most of the product is being traded on FAQ bases that too based on visual examination. Such condition creates scope for participation of facilitators like commission agents and brokers in the marketing of a produce. Presence of standard grade and organized system will help in scientific price discovery.

8. Presence of effective and reliable market information system may be of great help for farmers sitting in remote isolated village in reaching at correct marketing decisions. Farmers in the absence of information on prices prevailing in the local markets are left with no choice but to approach the local village trader. The marketing system should not only provide reliable customized information but should have effective delivery mechanism also so that the information is easily accessible by the farmers. In some innovative information dissemination initiatives of the Government, the delivery mechanics is not very effective mainly for Indian conditions. Grass root level reach of information may be increased through proper partnership with agencies like local *Panchayat*, NGOs, farmers group, extensions system, etc.

9. The Government of India has implemented various programmes to enhance the production of pulses in India. The benefit of such programmes may be increased many fold by creating awareness among farmers. The awareness component of such programmes may be integrated with the extension system like state government departments, KVKs, etc for better results from the initiative.

10. The focus of most of the programmes of Government is on the production of pulses while it is the efficient marketing system that will help in making the crop more profitable and thus encouraging the farmer for increasing production and area under the crop. Same is the case with consumers, the production will only ensure availability but it is the efficient marketing that will ensure availability at an affordable price. Thus, marketing should be made an integral component of all programmes designed to enhance the production and availability of a particular crop.

11. The demand supply gap is one of the important factors responsible for high price fluctuation in pulses. In spite of efforts by the Government to increase production of pulses, a major proportion of total availability of pulses is on account of imports. The possibility of imports though production contracts with under developed pulse growing countries may be explored. This will provide not only relatively cheaper imports but help in stabilizing the pulse sector. The private players may be encouraged for such production contracts and may also be encouraged to take up multiple functions in the marketing of pulses like processing and retailing.

12. Innovative marketing channels involving organized private players and farmers group leading to completely integrated supply chain with forward and backward linkages may ensure an efficient system for movement of pulses. This will require a

comprehensive policy support from the government and its various agencies operating at grass root level so that required infrastructure at every level may be created.

13. In the study area most of farmers are using traditional mean to store the pulses. Studies suggest that weight losses due to insect attacks under traditional conditions are about five percent and thus scope for loss reduction through better storage are evident. The Government has schemes like Rural Godown to increase availability of storage capacity in rural areas. In order to increase participation of farmers in the scheme, there is need for some special provisions for farmers in terms of capacity and rate of subsidy. The minimum capacity in case of farmers may be reduced to 25 MT and rate of subsidy may be increased to 50 percent. The provisions of the schemes may further be made more encouraging for marginal and small farmers which are the biggest sufferer due to distress sale.

14. In order to augment the supply of pulses, agricultural marketing should be made as an essential component of agricultural extension programme. The information flow should reach the lowest level in the farming community so that the farmers respond more effectively to the various production incentives given by the Government.

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