MARKETING SYSTEM OF CHILLI IN SOME SELECTED AREAS OF BOGRA DISTRICT

MOST. IFFAT ARA ILA

DEPARTMENT OF AGRIBUSINESS AND MARKETING
SHER-E-BANGLA AGRICULTURAL UNIVERSITY
DHAKA-1207

JUNE 2014

A THESIS

BY

MOST. IFFAT ARA ILA

Registration No: 07-02288

Session: 2006-2007

Semester: Jan-Jun, 2014

Submitted to the Department of Agribusiness & Marketing

Sher-e-Bangla Agricultural University, Dhaka

in partial fulfillment of the requirements

for the degree

of

MASTER OF SCIENCE (MS)

IN

AGRIBUSINESS AND MARKETING

SHER-E-BANGLA AGRICULTURAL UNIVERSITY

DHAKA-1207

A THESIS

BY

MOST. IFFAT ARA ILA

Registration No: 07-02288

Session: 2006-2007

Semester: Jan-Jun, 2014

APPROVED BY:

_____	_____
Supervisor **Sajeeb Saha** **Assistant Professor** **Dept. of Agribusiness & Marketing** **SAU, Dhaka**	**Co-Supervisor** **Md. Ghulam Rabbany** **Assistant Professor** **Dept. of Agribusiness & Marketing** **SAU, Dhaka**

_____

Chairman
Md. Ghulam Rabbany
Assistant Professor
Dept. of Agribusiness & Marketing
SAU, Dhaka

SHER-E-BANGLA AGRICULTURAL UNIVERSITY

DHAKA-1207

DEPARTMENT OF AGRIBUSINESS AND MARKETING

Sher-e-Bangla Agricultural University

Sher-e-Bangla Nagar, Dhaka-1207

Certificate

This is to certify that thesis entitled "Marketing System of Chilli in Some selected Areas of Bogra District" submitted to the faculty of Agribusiness Management, Sher-e-Bangla Agricultural University, Dhaka, in partial fulfillment of the requirements for the degree of MASTER OF SCIENCE in Agribusiness & Marketing, embodies the result of a piece of a bona fide research work carried out by Most. Iffat Ara Ila, Registration no: 07-02288 under my supervision and guidance. No part of the thesis has been submitted for any other degree or diploma.

I further certify that such help or source of information as has been availed of during the course of this investigation has duly been acknowledged.

Dated:

.....

Sajeeb Saha
Assistant Professor
Supervisor

ACKNOWLEDGEMENTS

All praises are due to the omnipotent, omnipresent and omniscient God, who enabled the author to pursue her higher studies in Agribusiness and Marketing and to complete the research work and this thesis successfully for the degree of Master of Science in Agribusiness and Marketing.

The authoress likes to express her sincere appreciation, sense of gratitude and immense indebtedness to her respected supervisor, Sajeeb Saha, Assistant Professor, Department of Agribusiness and Marketing, Sher-e-Bangla Agricultural University, Dhaka for his active, sincere, ingenious and untiring guidance, unfailing interest, constructive criticism, valuable suggestions, helpful comments, continuous supervision throughout the period of this research.

The authoress wishes to express her profound respect, deep sense of gratitude, grateful appreciation to his co-supervisor Ghulam Rabbani, Assistant Professor and Chairman, Department of Agribusiness and Marketing, Sher-e-Bangla Agricultural University, Dhaka for his valuable suggestions, pedagogic supervision and guidance, constructive direction, affectionate encouragement and kind co-operation at every step throughout the research and generous help in the successful preparation of this manuscript.

The author also humbly desires to acknowledge her heartiest appreciation and cordial thanks to Airin Rahman, Assistant Professor of the Department of Agribusiness and Marketing and all other respected teachers of the Department of Agribusiness and Marketing, Sher-e-Bangla Agricultural University, Dhaka for their cordial help and valuable suggestions during the entire study period.

Special thanks to all the staffs of the Department of Agribusiness & Marketing, Sher-e-Bangla Agricultural University for their assistance during the study.

The authoress thankfully acknowledges the contribution of the producers and various market participants of chilli in Bogra district for their kind help and co-operation, without willingness to provide information this study would not have been possible.

The authoress expresses her profound thanks to all of her friends Moni, Tania, Pavel, Reya, Tithi, Suborna and all her well-wishers for their kind co-operation and inspiration throughout the work.

The authoress feels proud to express her sincere appreciation and indebtedness to her parents, brothers and Husband A K Azad Shohag who always blessed, inspired and sacrificed a lot in buildings her academic carrier which can never repaid.

The Authoress

Abstract

The specific objectives of the study were to examine costs and returns, marketing system, marketing costs and margin, seasonal price variation and to identify the constraints and measures in chilli cultivation. Fifty farmers and fifty intermediaries were selected through purposive sampling procedure. The study was done on the basis of both primary and secondary data in three upazilas of Bogra district. The period of primary data collection for the present study covered 2 months from November to December 2014. Data were collected during the period through face to face interview with chilli growers, chilli traders, and processors using structured survey schedule. Secondary data were collected from various publications of the Ministry of Planning and Government of the Peoples Republic of Bangladesh, Department of Agricultural Marketing (DAM), and different articles published in internet, various books, journals and newspapers. Both green and dry chilli production in the study areas was profitable. Per hectare yield of green chilli was 7.523 metric ton in the study area. The net return per hectare was Tk. 112852.87 for green chilli. Per hectare yield of dry chilli was 2.15 metric ton in the study area. The net return per hectare was Tk. 132100.87for dry chilli. The intermediaries involved in chilli marketing were *faria, bepari, paikar, arathdar, retailer, miller* etc. In the study area, about 35% farmer sold dry chilli and the rest of the farmers sold both green and dry chilli. Percentages of profit or net marketing margin of farmer was 49.17% and different intermediaries were 13.64% for *farias,* 11.57% for *beparis*, 7.48% for *paikars*, 5.5% for *Aratdars* and 12.64% for retailers. Seasonal price variation of green chilli was the highest in September (171.85) and lowest in May (39.18) and the seasonal price index of dry chilli was the highest in September (110.45) and lowest in January (91.93). Prices of green chilli began to increase by June and reached the peak in September and prices of dry chilli increase by April and reached the peak in September. There were three types of problems found in the study areas for farmers – production, socio-economic and marketing. Some of the problems were lack of capital, lack of agricultural farmer's association, lack of transportation and communication, inadequate market information etc. Intermediaries also faced problem like- import of chilli, price fluctuation, lack of market information etc. The farmers and the intermediaries also gave suggestions like - increasing credit facilities, formation of farmer's association, providing market information, imposing market monitoring authority, improvement of transportation and communication facilities etc.

CONTENTS

CONTENTS(contd.)

LIST OF TABLES

LIST OF FIGURES

ABBREVIATION

BBS- Bangladesh Bureau of Statistics
GDP- Gross Domestic Product
FY- Fiscal Year
BER- Bangladesh Economic Review
MoA- Ministry of Agriculture
g- Gram
mg- Milligram
FAO- Food and Agriculture Organization
Tk. - Taka
Rs. - Rupee
DAM - Department of Agricultural Marketing
FAOSTAT - Food and Agriculture Organization of the United Nations Statistics Division
etc. – et cetera
Fig- Figure
MS- Master of Science
No- Number
pp- Page
SPI- Seasonal Price Index

DEDICATED
TO
MY BELOVED PARENTS
AND HUSBAND

CHAPTER I

INTRODUCTION

1.1 Introduction

Bangladesh is predominantly an agricultural country. Agriculture being the engine of growth of the economy, there is no other alternative but to develop agriculture sector for alleviation of poverty. Since provision of food security, improvement of the living standard and generation of employment opportunity of our population are directly linked to the development of agriculture, there have been continued efforts by the government for the overall development of this sector.

Agriculture is the key driver of the growth of Bangladesh economy. According to the estimates of BBS, the contribution of agriculture sector to GDP stood at 12.65 percent in FY 2013-14.The overall contribution of the broad agriculture sector was 16.50 percent of GDP during the same period (BER,2015).

Of the total area of Bangladesh, about 58% land are cultivable (MoA, 2015).So, there is little scope left to increase agricultural output by bringing new land under cultivation. Increase in agricultural output could be attained by using high yielding varieties, adopting improved cultural and management practices and efficient market structures for proper distribution.

Bangladesh's agriculture is mainly rice-based. Massive increase in rice production led to decline in area of spices, pulses and other minor crops (Baset, 2003). In order to explore the potentials and possibilities of expansion in the acreage and production of minor crops like spices, pulses it is, therefore , important to examine the performance of the crops, to analyze the profitability, observing marketing and processing system of those crops. By these activities, necessary information would be reveal before farmers, market intermediaries, researchers, planners and so on who can take further initiative to increase both the acreage and production of minor crops like-chilli.

1.2 Importance of Chilli:

Bangladesh by birth possesses very fertile land in which diversified crops grow very easily. Various types of crops are produced in this country .Chilli is a valuable spice and also one of the most important cash crops grown in Bangladesh. It is available and used in the form of green, dried and powdered. It has become an essential ingredient in Bangladeshi meals.

It has diversified uses. Red chillies contain large amounts of vitamin-C and small amounts of carotene (pro-vitamin-A). Green chillies (unripe fruit) contain a considerably lower amount of both substances. In addition, peppers are a good source of most vitamin-B and vitamin-B_6 in particular. They are very high in potassium, magnesium and iron.

The production of chilli largely depends on the use of fertilizers, irrigation, pesticide etc. The Government of Bangladesh has, therefore, provided priority to the agriculture sector to increase the production of chilli by giving subsidy to the farmers on different inputs such as seeds, fertilizer, irrigation etc. to achieve self-sufficiency in chilli production.

Table 1.1: Nutritive value of green and dry chillies per 100 grams of edible portion

Nutrient constituents	Green chilli	Dry Chilli
Water (g)	73.5	10.0
Total Mineral (g)	1.0	6.1
Fibre (g)	6.8	30.2
Energy (g)	103.0	245.0
Protein (g)	1.6	15.9
Fat (g)	0.1	6.2
Carbohydrate (g)	23.7	31.6
Calcium (mg)	11.0	160.0
Iron (mg)	1.2	2.3
Carotene (microgram)	2340.0	345.0
Vitamin-B_1 (mg)	0.17	0.93
Vitamin-B_2 (mg)	0.16	0.43
Vitamin-C (mg)	125.0	50.0

Source: Quasem and Bhuyan, 2000

Chilli is labor intensive as so many people are needed to harvest chilli, and thus it is creating more employment opportunity for the rural poor and generating rural as well as national income. The chilli production also ensures the maximum utilization of scarce land of the country, because it can be grown in fallow land such as road side and homestead area.

1.3 Uses of chilli:

Chilli has numerous culinary uses. Some of them are given below (Pruthi, 1998, p.57):

As food flavoring and coloring agent:

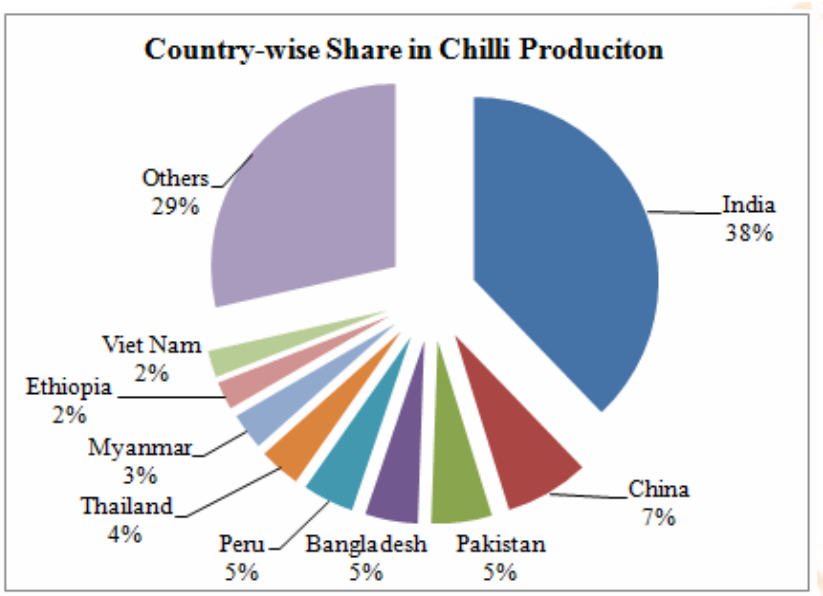
Green chilli is used for flavoring and garnishing agent in different food items as well as in salad. Dry chillies and chilli powder are used as spices in all types of curried dishes in the tropical and sub-tropical countries.

Medicinal Properties:

Used as a food, a spice and an herbal medicine for over 9,000 years, chillies are said to be good for the kidneys, spleen, pancreas, lungs and heart. In Victorian England, chillies were prized for their warming properties in treating arthritis, chills, rheumatism, sprains and depression. Over 3,000 scientific studies are listed in the US National Library of Medicine, supporting the use of chillies in preventing and reversing many common health ailments. About 12% of chilli is comprised of capsaicin, the compound that makes it taste hot — this is where most of chilli's medicinal properties come from. Capsaicin (an active ingredient in many commercial pain medications) is a natural painkiller that provides pain relief from arthritis and diabetes, and can alleviate headaches.Chillies may prevent: cancer, heart disease, stroke, blood clots, obesity, high blood pressure, high cholesterol, bronchitis, emphysema, coughs and colds and stomach ulcer.Chillies also act as an internal disinfectant — it can detoxify the colon and help with eliminative functions

1.4 World chilli Production scenario:

World chilli production is primarily concentrated in South Asian countries to an extent of about 55% of total world production. India is the single largest producer contributing for about 38% followed by neighbors China with 7%, Pakistan, Peru and Bangladesh contributing for about 5% each. Rest of the output is spread across South American countries and African countries.



Source: FAOSTAT

Figure 1.1: Country-wise share in chilli production

Further, India is the largest exporter of chillies, meeting nearly half of the world's consumption demand. Apart from India, China also exports to an extent of about 19% of total exports chilli exports in the world. Peru contributes for nearly 9%, while Spain is the fourth largest exporter in the world as per the data provided by the FAO. Rest of exports are scattered across a number of countries each contributing in minor quantities.

Table 1.2: Top five trading countries in the world

Importers	%	Exporters	%
U.S.	24	India	50
Malaysia	12	China	19
Sri Lanka	9	Peru	9
Spain	8	Spain	7
Germany	4	Mexico	2

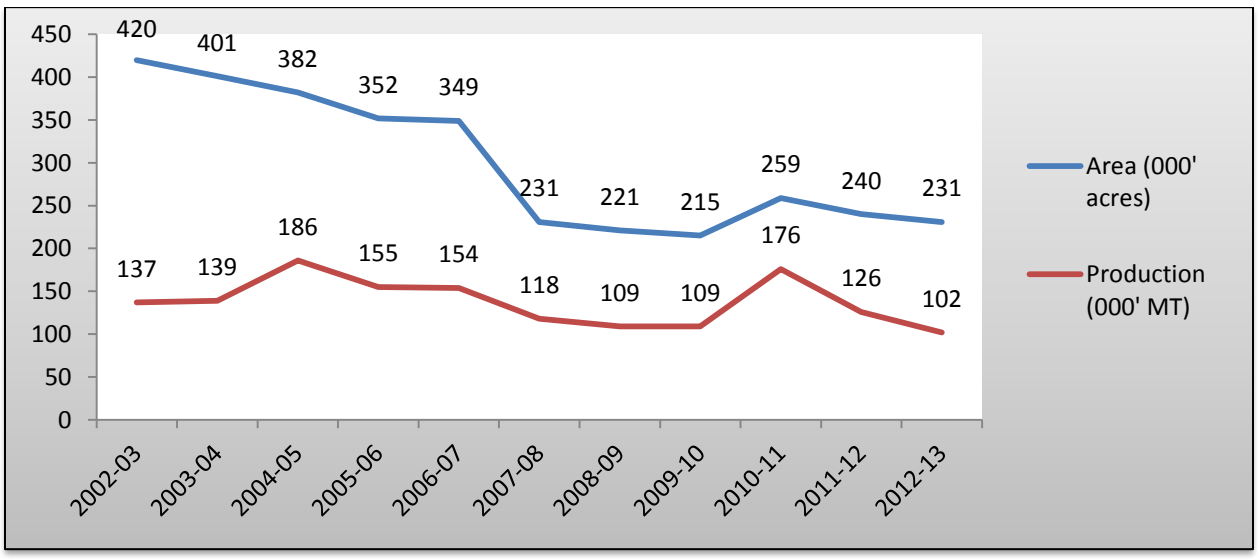
Source: FAOSTAT

Major importers include the U.S. with about 24% followed by Malaysia with 12% and Sri Lanka with 9% of total imports in the world. Interestingly, Spain is not only fourth largest exporter but also the fourth largest importer as well.

1.5 The overall scenario of chilli in Bangladesh:

The top chilli producing districts in Bangladesh are Bogra, Pabna, Barishal, Comilla, Jamalpur, Noakhali etc. Income generation from chilli is the main source of revenue for many farmers in these areas. The percentage of yield of green chilli is about .44 metric tons per acre of land (BBS, 2013) in Bangladesh which is low compared to that of other countries. As a result, the domestic production cannot meet the domestic demand. Hence, Bangladesh has to import chilli from other countries, mainly from India.

In Bangladesh, area under chilli production gradually decreased up to 2009-10 and after that 2010-11 showed a slight increase. But after that the decrease of chilli growing area continued. But the production scenario is very different. Though there was decrease of land, some years like 2004-05 and 2010-11 showed tremendous production. After 2010-11, the production decreased. Total area under chilli cultivation was 420000 acres in 2002-03 which became 231000 acres after ten years. Production was 137000 metric tons in 2002-03 while it was 102000 metric tons in 2012-13.



Source: Statistical Yearbook 2013

Figure 1.2: Area & Production of Chilli in Bangladesh

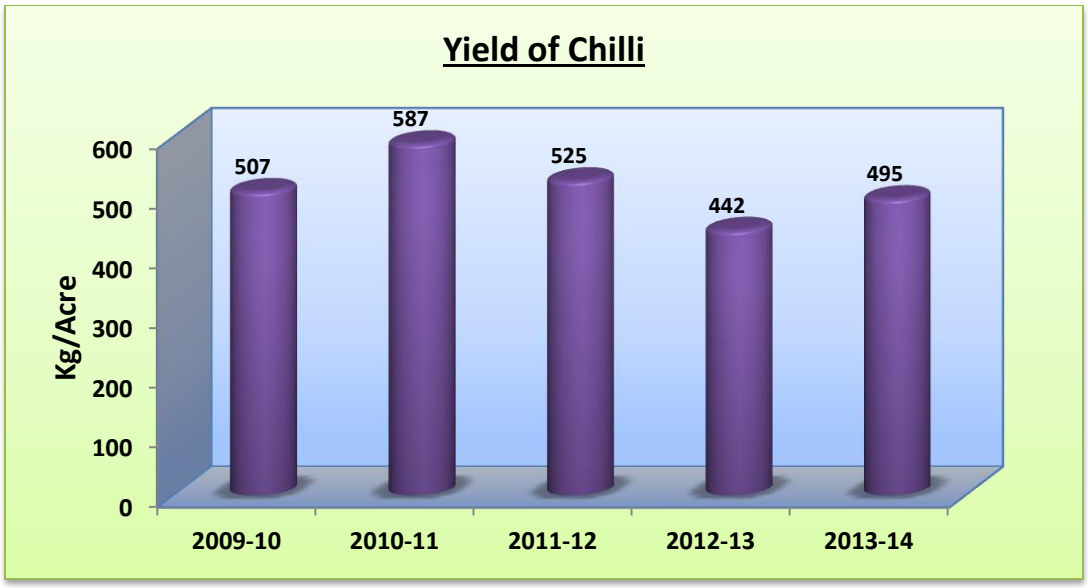


Figure 1.3: Yield of Chilli in Bangladesh

Bangladesh has a prospect of export chillies as there is a huge world chilli market. The Table 1.4 shows that The export of chilli has increased over last some years. In the year 2003-04, the export quantity of chilli was only 11.12 metric tons but in 2012-13, the quantity increased to 187.24 metric tons.

Table 1.3: Export of chilli from Bangladesh during 2003-04 to 2012-13

	Export	
	Quantity (metric tons)	Value ('000 tk.)
2003-04	11.12	964
2004-05	25.62	3751
2005-06	22.34	3353
2006-07	62.29	15183
2007-08	38.6	6210
2008-09	100.08	23870
2009-10	164.24	35149
2010-11	161.97	330358
2011-12	43.01	87164
2012-13	187.24	43486

Source: Yearbook of Agricultural Statistics-2013, 2010, 2008

Bangladesh has to import a large amount of chilli every year at the cost of hard earned foreign currency too. It indicates that there is a scope of increasing the production of chilli either by increasing the area under cultivation, which is quite difficult because of limitation of land or by improving the existing production practices.

Table 1.4: Import value of chilli in Bangladesh during 2006-07 to 2012-13

	Import
	Value ('000 tk.)
2006-07	1654041
2007-08	695665
2008-09	130681
2009-10	388330
2010-11	1098506
2011-12	632944

Source: Statistical Yearbook of Bangladesh-2012, 2011

1.6 Present situation of chilli production in Bogra District:

Bogra is a northern district of the Rajshahi Division of Bangladesh with about 2698.68 sq. km (District statistics, Bogra-2011) area and with about 3401000 people. It is called the gateway to the north Bengal. It is a major chilli producing region in Bangladesh. Presently about 5115 hectares of land are cultivated under chilli in the district. It occupies about 5% of total chilli cultivated area. Last several years have witnessed considerable increase in chilli acreage and production. Chilli has now become an important and profitable cash crop in the area. In Bogra, chillies are grown in two season-Kharif and Rabi.

After the year 2008-09, the area and production of both kharif and rabi chillies has remained more or less same over the years. Total area under chilli production in kharif and rabi season in 2006-07 were 625 and 13065 acres and the production were 160 and 5930 metric tons respectively. In 2012-13, area under kharif and rabi chillies became 611 and 10715 acres and the production became 275 and 5445 metric tons. Kharif chilli occupied highest production in the year 2010-11 while rabi chillies occupied in 2006-07 (Table-1.5).

Table 1.5: Area and production of chilli in Bogra District in 2006-07 to 2012-13

Year	Kharif		Rabi		Total	
	Area (acres)	Production (MT)	Area (acres)	Production (MT)	Area (acres)	Production (MT)
2006-07	625	160	13065	5930	18995	24925
2007-08	555	150	12686	5703	18389	24092
2008-09	559	151	11063	5108	16171	21279
2009-10	562	264	11238	5267	16505	21772
2010-11	608	282	12244	5887	18131	24018
2011-12	601	270	12039	5919	17958	23877
2012-13	611	275	10715	5445	16160	21605

Source: Yearbook of Agricultural Statistics-2011, 2012 & 2013

1.7 Justification of the study:

The economic growth of an agro based country like Bangladesh mainly depends on the development of the agriculture sector. The agro-climatic conditions of Bangladesh are suitable for cultivation of a wide variety of crops but 80% of the gross cropped areas are at present under rice cultivation (Meoya, 2011).

The area of cultivable land for crop production as well as for chilli production is decreasing day by day. The demand for chilli is increasing but production cannot meet the existing demand. For meeting the deficit, Bangladesh Government has to import a huge amount chilli every year at the cost of hard earned foreign currency. To increase the production of chilli thus this study will be very fruitful.

Studies regarding the chilli production have already been done but studies regarding marketing system of chilli in the selected areas have very small number. So, this study may open the scope of visualizing the organizations and channels of chilli marketing.

This study will help in providing a picture of benefits and cost of chilli enterprises which will be generating useful information for the producer to take a plan of production.

This study will generate useful information for the intermediaries about chilli marketing system, year wise price and chilli processors to adopt a plan of efficient marketing system.

Price of chilli is more fluctuating than that of other crops (Wahid, 1995). So by this study it is possible to inform the farmers and intermediaries about the future trend in price of chilli before production.

This study will also help individual researcher who will conduct further studies of the similar nature and encourage in conducting more comprehensive and detail investigation in this particular field of the study.

1.8 Objectives of the study:

The overall objective of the study is to study the marketing system of chilli in the selected areas. The specific objectives of the study are as follows.

- To estimate the costs and returns of chilli production.
- To examine the marketing system of chilli.
- To determine the marketing costs and margin of the farmers and green chilli intermediaries.
- To assess the price variability of chilli according to season.
- To identify some constraints of chilli production & marketing and suggest some measures for the improvement of chilli marketing system in the selected area.

1.9 Limitations of the study:

Generally all research works have some limitations. The present study is not an exception to those. Some limitations were involved in collecting the necessary information of the study.
Some of them are as follows:
Firstly, this study was restricted to a limited area, the area where more quantity of chilli is grown.

Secondly, there were the limitation of time and financial resources, all data and other necessary information were collected within the shortest possible time and could not cover all the markets of the upazilla. So, the findings may not generalize for the entire chilli production, marketing and processing system in the district.

Thirdly, Producers, intermediaries and processors generally did not keep records of their daily works. So, the researcher had to solely on the memory of the respondent. So, the collected information might not be free from errors.

Fourthly, the secondary data were collected from different sources as there was unavailability of one particular source. So, there might be a limitation due to measurement and conceptual variation, if any, among the others.

Moreover, during data collection some difficulties were faced in eliciting answers from a number of both chilli traders and farmers. They hesitated in providing actual information thinking it might create problem to their business. However, they were ultimately convinced to report the facts.

The various limitations were handled paying consciously attention to minimize all vocal errors.

1.10 Organization of the study:

With the above brief introduction, the remaining part of the thesis is organized as follows. Chapter One presents review of literature of the related studies. Subsequently, description of the study area and methodologies are presented in chapter Three. In Chapter Four the cost and returns of the chilli production is found out, Chapter Five deals with marketing system of chilli, Chapter Six represents the marketing costs and margins of green chilli marketing, Chapter Seven is devoted to analysis of seasonal price variation of chilli and Chapter Eight focuses on the Production and Marketing problems of chilli. The last section, chapter Nine, presents the summary, conclusion and recommendation of the study.

CHAPTER II

REVIEW OF LITERATURE

Review of literature is an attempt to search works related to the proposed research for reviewing the findings which give proper instruction in designing the future research problem and validating the new findings. It also help conduct the research work successfully by providing various knowledge and information related to the proposed study.

With a view to evaluate the objectives of the study, it was considered desirable to have an idea of the findings of some earlier researches and the methods adopted for arriving at the same. Though the researcher faced difficulties to find specific study on Marketing System of Chilli in Some Selected Areas of Bogra District, some review of literatures connected with the main objectives of the study **are** reviewed here in brief.

Singh and Chahal (2008) conducted a study namely an Economic Analysis of Green Chilli Marketing in Punjab. They collected data from a sample of 80 chilli growers, 5 wholesalers, and 10 retailers from two district of Punjab. It was found that farmers were forced to sell their product during the post harvest season itself in spite of well anticipated decline in prices consequent upon increased market arrivals. They also indicated that large number of intermediaries leads to lower producer share in the consumer's ruppe.

Wahid (1995) analyzed price fluctuation and growth of rabi crops in Bangladesh. She found that during the period of 1972-93, prices of all selected crops fluctuated to a great extent. In the study, potato, onion, garlic and chilli were observed to have highest price fluctuation relative to cereal crops. She revealed that the range of fluctuation of chilli price occupied the top position (-72 to 142 percent), followed by garlic (-55 to 369 percent), onion (-45 to 198 percent),wheat (-60 to 142 percent) and potato (-51 to 144 percent) during the period 1972/73 to 1992/1993.

Meoya (2011) studied on An Economic Analysis of Chilli Production in some selected areas of Bangladesh. She conducted the study on Sariakandi Upazilla of Bogra district, Kazipur upazilla of Sirajgonj district & Sadar upazilla of Sherpur district. On her study, she found that chilli

farming is a profitable business. Per hectare total cost of chilli production for small, medium & large farmers were tk. 119909, 134222 &123626 respectively. Net return per hectare tk. 88718 for medium farmers, tk. 62491 for small farmers & tk. 56014 for large farmers.

Monalisa (2011) conducted An Agribusiness Study of Chilli in Islampur Upazilla of Jamalpur District. She found that green chilli production is not so much profitable in the study area. Per hectare yield of green chilli was 7.06 metric ton in the study area. The net return per hectare on full cost basis & cash cost basis were tk. 9155.22 & tk. 30247.62 respectively for green chilli.

Sarkhel (1995) conducted a study on chilli & other competitive crops. He found that per hectare cost and net return of chilli production were tk. 29662 & tk. 13821. He suggested to expand chilli cultivation.

Mou (2012) examine Profitability of Flower Production & Marketing System of Bangladesh. This study examined the production and profitability of some selected flowers in comparison with their competing crops. The study also attempted to identify the value chains and channels of flower marketing in Bangladesh. Stratified random sampling method was used to collect Primary data collected from the 32 farmers of Guptergaon under Phulpur Upazila in Mymensingh district and from the 21flower traders, retailers and wholesalers of different flower trading zones in Dhaka city. The study reveals that gross margins of flower and vegetables per hectare were Tk.1,359,824.20 and Tk.46,362.14, respectively. The average marketing margin of three intermediaries i.e., BRAC, wholesaler-cum-retailer and retailer in Dhaka city, were Tk. 187.56, Tk. 638.39 and Tk. 689.72 per 100 flowers, respectively.

Matin et al. (2008) carried out a study named Mango Marketing System In some selected areas of Bangladesh to identify the most efficient and suitable marketing channels of mango by using primary data collected randomly from 90 farmers and 55 traders. Out of 55 traders, 15 were Bairals, 15 were Beparis, 9 Aratdar (local), 6 Aratdar (urban), 10 Retailers (both local and urban).According to the volume of mango handled and longevity or participation of the intermediaries in the channel, five major channels were identified as dominant in the study areas. The channel Farmer-Bairal- Bepari-Aratdar (Dhaka) - Retailer (Dhaka) - Consumer ranked first. The results showed that channel V, Farmer-Retailer Consumer, possesses the highest marketing efficiency followed by channel IV, III, and II. The performance indicators revealed that the

channel I and channel II were not relatively efficient in the mango producing regions. Unstable price of mango was the first rank problem in the study area.

Hoq et al. (2014) researched on Production and Marketing of Green Chilli in Two Copious District of Bangladesh. The study was conducted in two chilli growing districts Jamalpur and Bogra to examine the financial profitability, marketing cost and margin, post harvest loss and seasonal price variation of green chilli. It was observed from the study that green chili cultivation is profitable and per hectare net return is Tk.92,250 and BCR is 1.64. The farm level net marketing margin per quintal of green chilli was Tk.1105.25 after post-harvest losses. At intermediaries' level highest net margin was Tk.333 for retailer (Dhaka) and lowest was Tk.120.5 for Arathdar. Marketing chain-I is more efficient in terms of producer share, price spread and marketing efficiency in compare of marketing chain-II. Seasonal price variation showed that price of green chilli was minimum in the month of April because of late harvesting period and supply of low qualities green chilli and maximum in the month of August which might be due to non-availability of green chilli.

Jagtap et al. (2012) conducted a study on Economics of Chilli Production in India. The study was conducted in Achalpur tahsil of Amravati district of Maharashtra in India. Total four villages and twenty farmers from each village i.e. total 80 farmers were selected randomly as sample size. Data used were pertaining to the period 2009-10. Economic analysis of data indicated that Cost 'C' was found to Rs. 40541.72, Rs. 42811.07 and Rs. 53421.29 per acre for small, medium and large farmers respectively. Net returns over cost 'C' was Rs. 19329.52, Rs. 24114.79 and Rs. 21400.51 per acre and input-output ratio at cost 'C' was 1:1.48, 1:1.56 and 1:1.40 for small, medium and large farmers respectively.

Rajur (2007) carried out a study on Production & Marketing Performance of Chilli in Karnataka – An Economic Analysis. The mean productivity of chilli in Karnataka was (1.57 t/ha). The coefficient of variation was found to be higher for the state (69.18%) than for the sample districts namely Raichur (48.07%) followed by Gulbarga (42.16%) and Bijapur (32.49 %) district. In case of production, it was higher for Raichur district (90.55%) compared to Bijapur (81.36%) and Gulbarga district (76.96%). As far as the productivity of chilli is concerned, the coefficient of variation was little higher in Raichur district (73.12%) as compared to Bijapur (61.24%),

Gulbarga (53.08%) and even Karnataka state as a whole (68.18%). The marketing costs incurred by the producers/farmers were found to be highest in Raichur market (Rs. 112.65/quintal) followed by Bijapur market (Rs. 110.02/quintal) and Rs.103.80 per quintal in Gulbarga district. On an average, marketing cost incurred by farmers in this channel was about Rs. 108.82 per quintal.

Shivashankar (2007) conducted a study on Marketing of Chillies in Karnataka-A Management Appraisal. There was direct relationship between the total capital investment and the size of the unit in all the selected units, working capital was more because of heavy amount required on procurement of raw materials and the finished products marketed through two channels. Retailers share was higher in total marketing margin as compared to other intermediaries in the chain. The co-integration analysis indicated that the selected markets are integrated at different orders The USA and Malaysia were found to be highly loyal markets for Indian chilli as indicated by the retention of their previous share of dry chillies exports from India.

Shivaraja (2012) conducted a study on Production & Value Addition to Chilli in Northern Karnataka- An Economic Analysis. The present study was conducted in Haveri district of Karnataka during 2011- 2012. The results revealed that area under chilli in Haveri district was showing a decreasing trend over the years. The total cost of cultivation of chilli per hectare was worked out to be Rs.39343.92. The net return per hectare obtained by farmers was Rs. 19589.86. Total cost per quintal of dry chilli processed was more in large units (Rs.7095.23/q) as compared to medium (Rs.7034.27/q) and small (Rs.7021.64/q). The net returns per quintal of dry chilli processed was higher in case of large (Rs. 1829.77/q) units compared to medium (Rs. 1785.73/q) and small (Rs. 1693.36/q).

The above reviewed literature indicated that very few study on Marketing System of Chilli in Selected Areas had been conducted. But this study is of great importance for market participants and policy makers. Considering the perspectives the present study has been undertaken to fill up the knowledge gap. It is expected that the present study will serve as the base for further studies in this almost untapped but profitable and potential areas of the business.

CHAPTER III

METHODOLOGY OF THE STUDY

3.1 Introduction

This chapter presents a detail description of the methods adopted at different stages of the study. Methodology is an indispensable and integral part of any research. This chapter presents the methodology followed in the study, which included the selection of the study area, selection of samples, preparation of survey schedule, method of data collection, period of survey, editing and tabulation of data and analytical techniques.

The tools and methods used and followed for the study with considering the specific objectives of the study are given below.

3.2 Selection of Study Area

As the selection of the study area is an important step and it largely depends upon the objectives of the study. Therefore, careful thought was placed on the selection of the study area. In order to make an assessment of marketing system of chilli, the study was conducted in selected areas of Bogra district. Bogra district is one of the leading zones in respect of chilli production in Bangladesh. Sariakandi upazilla especially is the leading chilli producing area of Bogra district. Two other upazillas are Shibganj and Bogra Sadar. The study area has some favorable characteristics like topography, soil and climate condition for producing chilli.

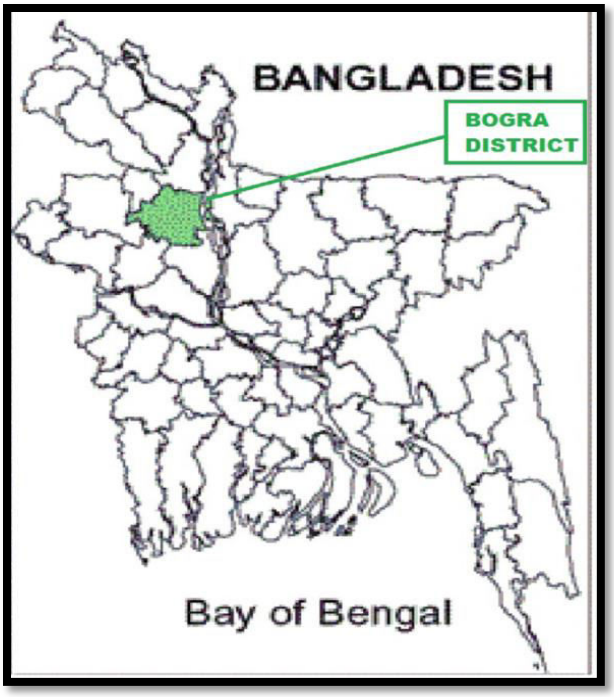


Figure 3.1: Bangladesh

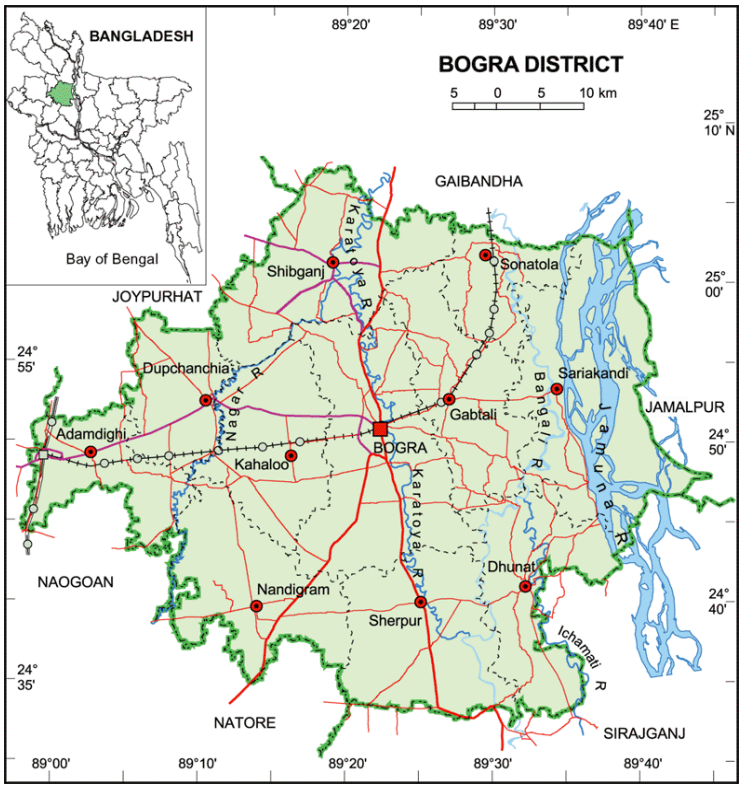


Figure 3.2: Bogra District

The following factors were considered in selecting the study area:

- Bogra is one of the high yielding and widely chilli producing district of the country. Here, all kinds of market actors needed for the study were available.
- The high expectation to get cooperation from the farmers & intermediaries.
- The study areas were easily accessible to the researcher and she was familiar with the local language and socio-economic characteristics of the farmers.

Therefore, the availability of chilli growers and traders in the district of Bogra were the main criteria for selecting as the study area for the present study.

3.3 Period of data collection

The period of primary data collection for the present study covered 2 months from November to December 2014. Data were collected during the period through face to face interview with chilli growers, chilli traders, and processors using structured survey schedule.

3.4 Selection of Samples and Sample Technique

Larger the sample size, greater is the likelihood to get of accuracy and usefulness of the results, inclusion of all the farms was not possible to due to time and resource constraints. So, selection of representative sample is one of the crucial aspects for the study. A total of 100 respondents who cultivate and trade chilli were selected through purposive or judgmental sampling technique. Among the selected respondents 50 were farmers, 5 *beparis*, 5 *farias*, 5 *paikers*, 15 *Aratdars*, 15 retailers & 5 processors.

3.5 Preparation of the Survey Schedule

In order to collect data, 3 sets of interview schedule were followed for this study. One set for the farmers, one for the intermediaries and another for the processors in the selected area. Attention was given to the general form of the schedule to see that the questions followed a logical and appropriate sequence. Interview schedules were prepared on the basis of specific objectives of this study. Care was taken in wording questions to ensure that they were unambiguous and easily understood to ensure cooperation by the respondents. After testing the draft schedule, final survey schedules were prepared for the collection of necessary data for the study.

3.6 Data Collection method

Reliable data are directly related to the success and validity of the study. Keeping this in mind most of the data were collected by the researcher herself. The data for the study were collected both from primary and secondary sources. To obtain reasonable and accurate primary data the researcher visited the study area several times. The respondents were interviewed during their leisure time so that they could respond easily. At the time of interview, the researcher asked questions systematically and explained the question whenever it was felt necessary. Farmers were requested to provide correct information as far as possible. Many did not any records of their businesses and activities. This problem was confronted by memory recalling technique. Secondary data were collected from various publications of the Ministry of Planning & Govt. of the Peoples Republic of Bangladesh, Department of Agricultural Marketing (DAM), and different articles published in internet, various books, journals etc.

3.7 Tabulation and Analysis of Data

The first step was taken to scrutinize the data of each and every schedule to find out any inconsistency or omission in the data collection and to avoid irrelevant information. The data were edited carefully to eliminate possible errors contained in the schedules while recording information. Processed data were transferred to excel spread sheet and compiled with a view to facilitating tabulation. Necessary tables were prepared by summarizing the data. The collected data were analyzed according to the objectives of the study. Inconsistencies in the data were removed. Analysis was done using the concerned software Microsoft Excel version.

3.8 Analytical Technique

An agribusiness study could be judged by the appropriate analytical technique. Data were analyzed with the purpose of achieving the objectives of the study. The techniques used were as follows:

Marketing system:

Marketing is crux of sound agriculture. In countries where agriculture is the principal activity, the marketing system is more important. Three components of chilli marketing system were examined in this study.

- Marketing Channels
- Marketing intermediaries
- Marketing functions

Cost and Return for chilli production:

Gross Return= Total Production × per unit price
Gross Margin=Total return - Variable cost
Net Return=Gross Return –Total cost
Benefit Cost Ratio=Gross Return/ Total cost

Cost and margin for marketing actors:

Gross Marketing Margin=Selling Price – Purchase Price
Net Marketing Margin= Gross Marketing Margin – Marketing Cost

Seasonal Price variation:

Seasonal variation means short term variation. The important methods of measuring seasonal movements are:

- Method of simple average;
- Ratio to trend method;
- Ratio to moving average method; and
- Link relative method.

In the present study ratio to moving average method was applied to examine the price fluctuation of chilli considering the following factors.

a. It is an improvement over the ratio to trend method.
b. It is the most satisfactory and popular method and is widely used for estimating the seasonal variations because it eliminates both trend and cyclical components from the indices of seasonal variations.

Therefore Ratio to Moving Average provided an index of seasonal and irregular components combined because **(Acharya & Agarwal, 1994, p-129)**

$$P_t / MA_t = \frac{T \times C \times S \times I}{T \times C} \times 100$$
$$= (S \times I) \times 100$$

Where, S×I = Seasonal Index

P_t=Annual price of green chilli

MA_t = Moving Average at time t

Averaging this over years and adjustment through correction factor provided better estimate of seasonal index. The correction factor worked out as follows:

$$k=1200/s$$

where, k=correction factor, s=sum of average indices for 12-months

The steps of the method are summarized as follows:

- Generating a series of 12 months moving totals.
- Generating a series of 12 months moving averages.
- Generating a series of centered 12-months moving averages.
- Expressing each original value as a percentage of corresponding centered moving average.
- Arranging the percentages of moving averages in the form of monthly arrays. Next, the average index for each month is calculated.
- These averages are to be adjusted in such a way that their sum becomes 1200. This can be done by working out a correction factor and multiplying the average for each month by this correction factor.

3.9 Problems Encountered in Collecting Data

Though the respondent chilli growers were available in the villages, collection of required data was not an easy task. The researcher of the study had to face certain problems during data collections, which are noted below:

- Education of the respondents was a pre-requisite factor for having accurate data. Since most of the respondents were not well educated they were suspicious of outsiders and therefore, they were likely to be less co-operative;

- Some respondents did not keep any written records of the faring activities. Therefore, the researcher had to depend upon their memory;
- Respondents from all categories were often unable to recall the exact information, like-income, sales volume, cost, total production etc. Reliability of data therefore, posed some confuting;
- There was the limitation of time and personnel and inadequate information about chilli production and marketing aspects and for this reasons data and other necessary information had to be collected within the shortest possible time;
- Sometimes the respondents did not cooperate willingly with the researcher as they had no direct benefit from supplying so much personal information.

CHAPTER IV

COSTS AND RETURNS OF CHILLI PRODUCTION

4.1 Introduction

The main purpose of this chapter is to estimate the costs and returns of chilli production. For calculating the costs and returns of chilli production, the cost items were classified into two groups, (i) variable cost and (ii) Fixed Cost. Variable cost included the cost of all variable factors like human labor, land preparation, seed, fertilizer, irrigation water, insecticides and pesticides. On the other hand, fixed cost was calculated for interest on operating capital and land use cost. On the return side, gross return, gross margin, net return, BCR (Benefit Cost Ratio) were determined in this chapter.

4.2 Variable Cost

Variable cost refers to the costs which vary directly with variations in the volume of output. The major variable costs involved have been those of labor and material costs. It is also known as Prime cost. The variable costs incurred in chilli production are given below:

4.2.1 Cost of human labor

The most essential input in all kinds of production is human labor. It was mentioned that chilli production is labor intensive. It shared a large portion of total cost of chilli production. It was required for different operations such as land preparation, seed sowing, planting, nirani, weeding, fertilizing, harvesting etc and was computed in terms of person days. Both women and men laborer worked in the chilli production. In pricing the labor no discrimination was made between the family and the hired labor. In the study area, the average wage rate was determined Tk. 200 per man-day. In the study area, women labors were used during the harvesting period. Per hectare cost of human labor was calculated in the present study was Tk. 61700 which was 48.2 percent of the total cost (Table 4.2).

4.2.2 Cost of land preparation

Power is the time and labor saving modern technology. In the study area, most of the sample farmers used power tiller for land preparation. Per hectare cost of land preparation was estimated Tk. 5430 which was 4.24 percent of the total cost (Table 4.2).

4.2.3 Cost of seeds

In the selected study area, the farmers used both home supplied and purchased seed of chilli. Family supplied seeds were priced at the prevailing market price and the cost of purchased seed was priced on the basis of actual price paid by the farmers in the study area. The average price of chilli seed was found Tk. 200 per kg. Per hectare cost of seeds for chilli production was calculated at Tk. 2962 which constituted 2.31 percent of the total production cost (Table 4.2).

4.2.4 Cost of Organic fertilizer

Usually farmers used cowdung as organic fertilizer in their chilli production. A large quantity of manure was supplied from the farmer's home. While some of the farmers bought cowdung from the milk producers. The average market price of cowdung was estimated at Tk. 0.33 per kg. Per hectare cost of organic fertilizer was Tk. 3048 which represents 2.38 percent of the total cost (Table 4.2).

4.2.5 Cost of Inorganic fertilizer

In the study area, different kinds of inorganic fertilizers were used to increase for higher yield of chilli. They normally used Urea, Triple Super Phosphate (TSP), Muriate of Potash (MP), Diammonium Phosphate (*DAP*) and small quantity of some other fertilizers like Zinc and Boron. Fertilizer cost represented the actual price paid by the farmers. The average prices that had to pay by the farmers for per kg of Urea, TSP, MP, DAP, Zinc and Boron were Tk. 16, 22, 15, 25, 30 and 70 respectively. The Table 5.1 shows per unit price, per hectare total cost and percentage of the total cost of inorganic fertilizer. Per hectare total cost of inorganic fertilizer for the farmers was Tk. 18056.73 which shared 14.11 percent of total cost.

Table 4.1: Per hectare cost of inorganic fertilizer

Name	Quantity (Kg)	Per Unit Price (Tk.)	Cost (Tk.)	% of total cost of inorganic fertilizer
Urea	302.33	16	4837.28	26.79
TSP	268.395	22	5904.69	32.7
MP	70.96	15	1064.4	5.89
DAP	197.44	25	4936	27.34
Zinc	22.212	30	666.36	3.69
Boron	9.257	70	648	3.59
Total	870.594		18056.73	100

Source: Field Survey 2014

4.2.6 Cost of irrigation

Irrigation to chilli field is important as it is considered as the leading input of production. In the study area, most of the farmers used irrigation water for their chilli production. The cost of irrigation water was estimated as the actual amount of money paid by the farmers in cash. Per hectare cost of irrigation for chilli production was Tk. 7527 which constituted 5.88 percent of the total cost (Table 4.2).

4.2.7 Cost of Insecticides & Pesticides

Chilli growers used different kinds of insecticides and pesticides to keep their crop free from diseases. Commonly used insecticides and pesticides were Thiovit, Heptachlor, Furadan, Dimecrone, Nogos etc. Cost of insecticides per hectare was Tk. 4442.4 which covered 3.47 percent of total cost (Table 4.2).

4.3 Fixed Cost

Fixed cost refers to the production costs which tend to be unaffected by variations in the volume of output. Fixed costs incurred in chilli production are given below:

4.3.1 Interest on operating capital

Interest on operating capital was determined by taking all cost incurred on various operations in the process of cultivation of chilli excluding those for which interest was already calculated. As regards the production of chilli, the interest on operating capital was calculated at Tk. 3250 which constituted 2.54 percent of the total cost (Table 4.2).

4.3.2 Land use cost

Land use cost was calculated on the basis of cash rental value of per hectare land. Land use cost was estimated for the cropping period of one year as per the prevailing rate in the study area. This amount was Tk. 21595 which covered 16.87 percent of the total cost (Table 4.2).

Table 4.2: Total cost of green chilli production per hectare

Cost Items	Cost (Tk.)	% of total cost
A. Variable cost		
Human Labor	61700	48.2
Land preparation	5430	4.24
Seed	2962	2.31
Organic fertilizer	3048	2.38
Inorganic fertilizer	18056.73	14.11
Irrigation	7527	5.88
Insecticides & Pesticides	4442.4	3.47
Total Variable cost	103166.13	80.59
B. Fixed cost		
Interest on operating capital	3250	2.54
Land use cost	21595	16.87
Total Fixed Cost	24845	19.41
Total Cost (A+B)	**128011.13**	**100**

Source: Field Survey 2014

4.4 Total cost of chilli production

Total cost of chilli production for the present study was calculated by combining both variable and fixed cost. Too get the average per hectare cost of all the resources used in the production process of chilli by the farmers the previous mentioned costs have been summed up in the Table 5.2. The total cost of chilli production per hectare was calculated at Tk. 128011.13.

4.5. Gross return of chilli production

Per hectare gross return was calculated by multiplying the total amount of chilli per hectare by average farm gate price. The average yield of chilli per hectare was 7527 kg and its respective value was calculated at Tk. 240864. It may be noted here that the price of chilli was reported to be Tk. 32 per kg which was the average farm gate price in the study area (Table 54.3).

Table 4.3: Costs and returns of green chilli production

Particulars	Unit/ Hectare
Yield (kg)	7527
Price (Tk./kg)	32
Gross return	240864
Total variable cost	103166.13
Total Cost	128011.13
Gross margin	137698
Net return	112852.87
BCR	1.88
Cost of green chilli (Tk./kg)	17.01

Source: Field Survey 2014

4.6 Gross margin

Gross margin is the return over variable cost. Gross margin was obtained by deducting total variable cost from gross return. Per hectare gross margin was estimated Tk. 137698 for the green chilli farmers.

4.7 Net return

In the present study, net return was estimated by deducting total cost from Gross return. Per hectare net return was calculated at Tk. 112852.87 for green chilli farmers. From Table 4.3 it was clear that green chilli production is profitable for the farmers of the study area.

4.8 Benefit cost ratio

Benefit cost ratio (BCR) is a relative measure which is used to compare benefit per unit of cost. Average per hectare benefit cost ratio of producing green chilli was calculated at 1.88 which indicated that green chilli production is profitable in the study area (Table 4.3). And per kg cost became Tk. 17.01 for green chilli.

4.9 Cost of Production of dry chilli

Cost of dry chilli production was calculated by adding ripe chilli drying cost with the green chilli production cost. Ripe chilli drying cost per hectare was calculated at Tk. 8638. It includes all that costs which was carried out by the farmers for drying the ripe chilli. So, total cost of dry chilli production constituted at Tk. 136649.13 in the study area (Table 4.4).

Table 4.4: Cost of dry chilli production

Cost Item	Cost (Tk.)
Green chilli production cost	128011.13
Ripe chilli drying cost	8638
Total cost of dry chilli production	**136649.13**

Source: Field Survey 2014

4.10 Gross return of dry chilli production

Gross return of dry chilli production was estimated by multiplying average yield of dry chilli with the average farm gate price. The average yield of dry chilli per hectare was 2150.57 kg and its respective value was calculated at Tk. 2668750. It may be noted here that the price of dry chilli was reported to be Tk. 125 per kg which was the average farm gate price in the study area (Table 4.5). The ratio of dry chilli conversion from green chilli was estimated at 1:3.5

Table 4.5: Costs and returns of dry chilli production

Particulars	Unit/ Hectare
Yield (kg)	2150.57
Price (Tk./kg)	125
Gross return	268750
Total Cost	136649.13
Net return	132100.87
BCR	1.96
Cost of Dry chilli (Tk./kg)	63.56

Source: Field Survey 2014

4.11 Net return of dry chilli

In the present study, net return of dry chilli was estimated by deducting total cost from Gross return. Per hectare net return was calculated at Tk. 132100.87 for dry chilli farmers. From Table 5.5 it was clear that dry chilli production is very profitable for the farmers of the study area.

4.12 Benefit cost ratio of dry chilli

Benefit cost ratio (BCR) is done to compare benefit per unit of cost. Average per hectare benefit cost ratio of producing dry chilli was calculated at 1.96 which indicated that dry chilli production is profitable in the study area more than green chilli (Table 5.5). Per kg cost of dry chilli was estimated at Tk. 63.56.

CHAPTER V

MARKETING SYSTEM

5.1 Introduction

Marketing of any product is essential to transfer it to the final consumers from widely, scattered production points. Agricultural marketing can be defined as comprising of all activities involved in supply of farm inputs to the farmers and movement of agricultural products from the farmers to the consumers (Acharya and Agarwal, 2000). It is both a physical distribution and an economic bridge designed to facilitate the movement and exchange of commodities from farm to the fork. In countries where agriculture is the principal economic activity, the marketing system becomes more important. Marketing system composed of alternative product flows; marketing channels, a variety firm (intermediaries) and numerous business activities (marketing function). The components of chilli marketing system are discussed below:

5.2 Marketing Channel

Marketing channels are set of interdependent organizations involved in the process of marketing a product or service available for use of consumption (Monalisa, 2011, p. 42).

In the channel of green and dry chilli marketing in Bangladesh, the products move from the producer sellers to ultimate consumers through a number of market intermediaries. The marketing channel of green and dry chilli as found in the study areas of Bogra district are shown in Figure 5.1 and 5.2.

The marketing channels of green chilli existed in the study area are as follows:

i. Farmer → *Faria* → *Bepari* → *Paikar* → Retailer → Consumer

ii. Farmer → *Bepari* → *Aratdar* → Retailer → Consumer

iii. Farmer → Consumer

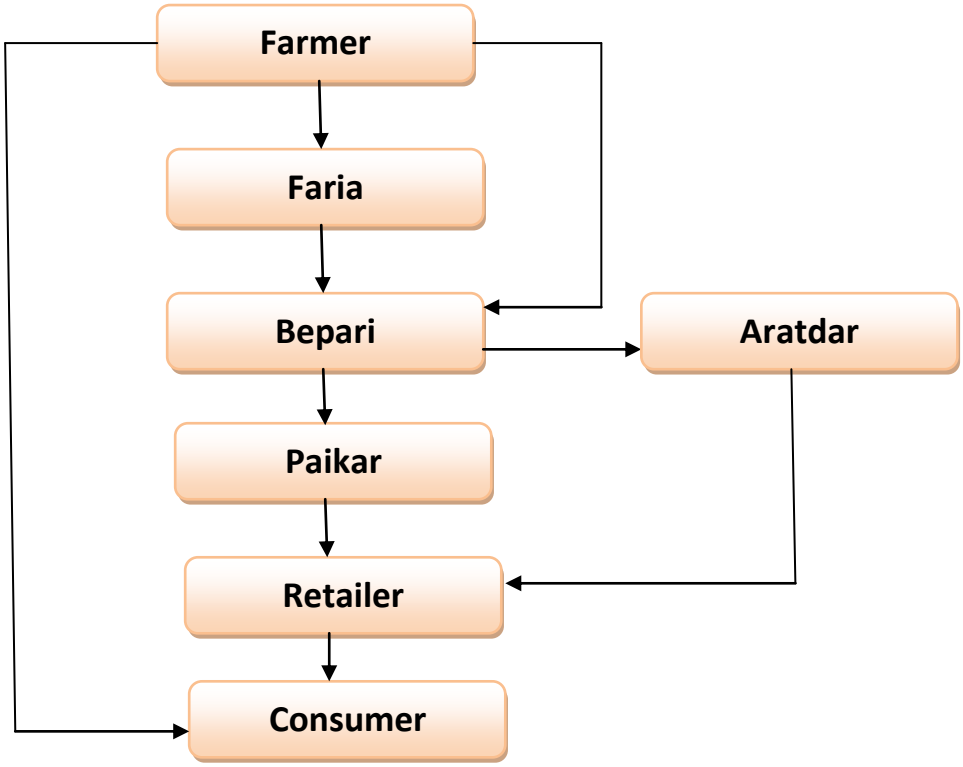


Fig 5.1: Marketing channels of green chilli

The marketing channels of dry chillies and processed chilli existed in the study area are as follows:

i. Farmer > Aratdar > Company agent > Agro processing industry >Dealer > Retailer > Consumer
ii. Farmer > *Bepari* > *Paikar* > Local Processor > Retailer (Powder) > Consumer
iii. Farmer > *Faria* > *Paikar* > *Aratdar* > Retailer (Dry) > Consumer
iv. Farmer > *Paikar* > Local processor > Consumer
v. Farmer > Local processor > Consumer
vi. Farmer > Consumer

All of the marketing channels were detected according to the info provided by the green and dry chillies farmers and the other intermediaries.

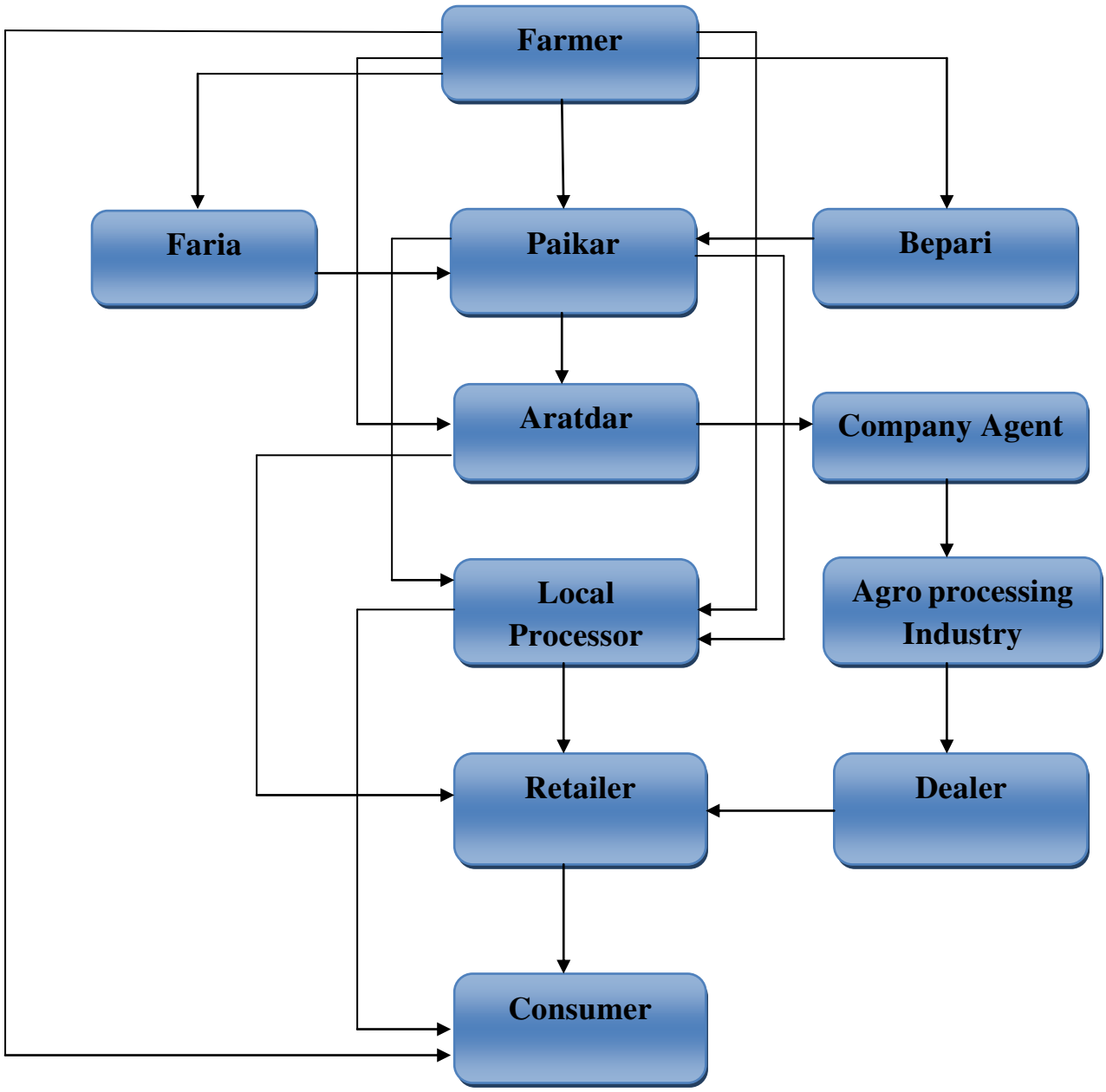


Fig 5.2: Marketing channels of dry chilli and chilli powder

5.3 Market intermediaries

The main market intermediaries involved in chilli (both green and dry) marketing are briefly discussed below:

5.3.1 Farmers

Green and dry chilli marketing channel started from farmers which are producer-sellers. Farmers sell their products in a small quantity to the rural consumers in the local primary market. In the study area, about 35% farmer sold dry chilli and the rest of the farmers found sell both green and dry chilli. Usually farmers sold their products to the bepari or faria in the study area.

5.3.2 *Faria*

Faria is a petty trader who purchases produces from the farmers in the village or in the local markets and offer the same to the *bepari* or *paikar*. In the study area, *faria* was seen to buy both green and dry chilli from the farmers.

5.3.3 *Bepari*

In the study area *bepari* was a professional wholesale trader who used to make his purchase from producer in the local market, bring their consignment to the urban wholesale market and sell them to the *paikar* and *arathdar*. Sometimes he bought chilli from the *faria* in local market

5.3.4 *Paikar*

The *paikars* handle a large volume and posses more capital. All of the *paikars* are seasonal traders who mainly enter into the business during the rabi season. It may be mentioned here that the *paikers* usually buy green and dry chilli from *farias, beparis* and *arathdars* at local market and take chilli to the markets outside the study area and sell it to the retailers or processors doing business there.

5.3.5 *Aratdar*

Arathdars play a significant role in chilli marketing. They serve as a commission agent who have fixed establishment in the market. They take commission from both the parties in which

he exists but generally they do not follow any standard rule to take commission. Their volume of business is larger.

5.3.6 Local Processor

Local processors of chilli were most common in the study areas in the dry chilli marketing system. They generally bought dry chilli from the farmers or *paikars,* processed them and then sell to the consumers or retailers. Their product was sold normally in local market. They were the owner of the dry chilli mill. Sometimes they acted as wholesaler of the powder and also milling the dry chilli of the farmers and other intermediaries. They took a milling charge from the respective people.

5.3.7 Retailer

The Retailers, the last link in the chilli marketing channel, purchased products from *aratdar* or *paikar* and sold their products to the consumers. Some retailers were found to sell green chilli, some were green and dry and some others were found to sell dry and powder chilli. Most of them were independently organized and had permanent shop in the market.

5.4 Marketing Function

Neither the producers nor the consumers of farm products are located at one place. They are spread all over the country. For this reason, some marketing functions are needed to make products available to consumers. It creates time, place, form and possession utilities.

In the study areas, the various marketing functions of chillies were performed by the different market participants. These marketing functions of chillies are described below:

5.4.1 Harvesting and its method

Majority of the farmers of the study area harvested their chilli both ripe and green stage. The percentage of the producers who made the harvest only in ripe stage was zero. 20 percent of the chilli producers mentioned that, they harvest the chilli at green stage and majority 80 percent of the farmers harvest chilli both the green and ripe stage. Cent percent farmers of the study areas harvested chilli by hand.

5.4.2 Buying and Selling

Buying and selling are the function of exchange. Both have their primary objectives of

negotiating terms of exchange. The purchased chillies from the farmyard or primary market and sold these to the consumers or other intermediaries. Percentages of chilli transacted by farmers and intermediaries are shown in Table 5.1 and Table 5.2.

Table 5.1 Buying of chilli (Percentage)

Sellers / **Buyers**	**Farmers**	***Farias***	***Bepari***	***Paikar***	***Aratdars***	**Local processor**	**Total**
Farias	100	-	-	-	-	-	100
Bepari	82	12	-	-	-	-	100
Paikar	10	36	54	-	-	-	100
Aratdars	26	-	12	62	-	-	100
Local processor	32	-	-	68	-	-	100
Retailer	-	-	-	44	32	24	100

Source: Field Survey, 2014.

Table 5.2 Selling of chilli (Percentage)

Buyers / **Sellers**	***Farias***	***Bepari***	***Aratdars***	***Paikar***	**Local processor/ Company agent**	**Retailer**	**Consumer**	**Total**
Farmers	30	22	15	15	10	-	8	100
Farias	-	60	-	40	-	-	-	100
Bepari	-	-	44	56	-	-	-	100
Paikar	-	-	36	46	18	-	-	100
Local processor	-	-	-	-	-	78	22	100
Aratdars	-	-	-		34	66	-	100

Source: Field Survey, 2014.

5.4.3 Pricing

The price of the products depends on the supply of and demands for the same product at the market. It also depends on volume and mobilization of the products to the consumers present at the market. In the study area, farmers and all the intermediaries involved in the buying and selling of chillies followed the open bargaining or individual negotiation or the current market price of their product. These methods are still the most common methods of pricing farm products over much of the world.

5.4.4 Grading and cleaning

Grading is the basic function of sales and transaction and is defined as the classification of products according to some standards and measures. Cent percent farmers in the study areas sorted their chilli on the basis of ripe, green and disease infected. On the other hand, grading practices was more common among the intermediaries level. On an average 90 percent farmers in the study area cleaned their chilli by separating stem and leaf. As a cleaning material 100 percent farmer used their hand.

5.4.5 Transportation

Transportation is primarily concerned with making goods available at proper places. It creates place utility. In this study, the intermediaries used various modes of transportation like head load, rickshaw, van, boat, bicycle etc for carrying chilli to the market. Farmers transported their chilli by using *Van*, by-cycle, rickshaw, boat. The *Farias* used *Van, R*ickshaw and boat for marketing their chilli. Chilli was produced scattered in different *Char* areas. In these areas, for carrying chilli from scattered areas to the local markets the farmers used boat. *Paikar* used pick-up, van and boat for carrying chilli. *Aratdars* used van, rickshaw and pick-up for carrying chilli. Local processor carried their chilli by van, rickshaw and pick–up as the main roads to the mills were developed enough. Retailer used loading on head, van and rickshaw.

Table 5.3 Mode of transportation used by farmers and intermediaries

Mode of transportation	**Farmers**	***Farias***	***Bepari***	***Paikar***	***Aratdars***	**Local Processor**	**Retailer**
Head load	8	-	-	-	-	-	5
Van	70	76	8	66	30	26	70
By-cycle	4	-	-	-	-	-	-
Pick-up	-	-	80	20	60	60	-
Rickshaw	8	10	-		10	14	25
Boat	10	14	12	14	-	-	-

Source: Field survey, 2014

5.4.6 Storage

Storage is an important function in marketing system because it creates place utility. Proper storage facilities are essential in order to minimize qualitative and quantitative losses in agricultural commodities. Green chilli is perishable but the dry chilli can be kept in storage for a period of 9-12 months. In the study area, dry chilli was stored for few days depending on the price increase and decrease.

5.4.7 Drying

Drying were most common practices in farmers level. They dried ripe chilli in the sunlight for storage. The arathdar and company agent also dried chilli as per the requirement.

5.4.8 Packaging

95 percent of the farmers and the traders of the study area packaged their chilli. The most common type of packaging in the study area is gunny bag, sack, plastic bag or polythene bag.

5.4.9 Market information

Information is one of the keys of marketing functions. "Accurate and timely market information facilitates producers in deciding about the price, time and place of sale of their produce" (Kohls and Uhl 2005). In the study area, visit to market and personal observation, fellow farmers and traders and mobile phone were the main sources of market information. Mobile phone was the common mode for collecting market information. It was more or less available to all types of

intermediaries and farmers. Although the directorate of Agricultural Marketing, Govt. of Bangladesh is engaged in the task of regularly disseminating the market price of agricultural product, but unfortunately the traders did not take benefit of it. Farmers and intermediaries collected all information through visit to market and personal observation and to fellow farmers and traders. Fifty four percent of the intermediaries reported to use mobile phone for getting market information.

CHAPTER VI

COST AND MARGIN OF CHILLI INTERMEDIARIES

6.1 Introduction

This chapter deals with the assessment and analysis of the marketing costs and margins of different intermediaries involved in chilli marketing. At the same time net margin was estimated to understand the level and extent of profit earned by the market intermediaries in performing essential marketing functions.

6.2 Marketing Cost

Marketing cost of any product represents the cost of performing various kinds of marketing functions from the point of production to the point of consumption. According to Kohls (1961), the cost of marketing represents the cost of performing the various marketing functions and operation by the various agencies involved in the marketing process. In the study area, chilli farmers and traders had to bear various costs for marketing of chilli. The cost components of farmers and intermediaries in green chili marketing are discussed briefly in different Tables.

6.2.1 Marketing Cost of Farmers

The marketing cost of farmers included all cost items i.e. transportation, market toll/tax, market toll, packaging (sack), weighing and sewing, load/unload and personal expenditure involved in selling of chilli. The average marketing cost incurred by the farmers for 100 kg chilli was calculated at Tk. 109 (Table 6.1). The cost of transportation accounted for 34.86 percent which was highest among all costs. It was mentioned earlier that the roads from farmers' house to the village market were not good and charged high cost. Loading unloading cost of green chilli remained lowest. Processing cost was absent in case of farmers because they did not get involved in processing activities. Weighing and packaging costs were also high in the study area. Those were 20.18 and 18.35 percent respectively.

Table 6.1 Marketing Cost of Farmers

Cost items	Average cost (Tk. per quintal)	Percentage of total cost
Transportation	38	34.86
Market toll/tax	15	13.76
Weighing	22	20.18
Packaging (Sack)	20	18.35
Load/Unload	6	5.51
Personal expenses	8	7.34
Total	109	100

Source: Field Survey, 2014.

6.2.2 Marketing Cost of *Farias*

The marketing cost incurred by the *Farias* for 100 kg chilli was calculated at Tk. 170. Transportation cost was highest (34.12%) while the lowest was personal expenses (8.82%) (Table 6.2). Market toll/tax had to be bore by *Farias* for placing chilli in the market place. Packaging cost depended on medium of sack it was either jute sack or plastic sack. For jute sack the cost was high and low for plastic sack. The market functionaries were more intended to use jute sack because chilli became well moisture than those of plastic sack. *Farias* did not have permanent shop or business premise and they did not engage in processing activities.

Table 6.2 Marketing Cost of *Farias*

Cost items	Average cost (Tk. per quintal)	Percentage of total cost
Transportation	58	34.12
Market toll/tax	22	12.94
Weighing	20	11.76
Packaging (Sack)	25	14.71
Load/Unload	30	17.65
Personal expenses	15	8.82
Total	170	100

Source: Field Survey, 2014.

6.2.3 Marketing Cost of *Bepari*

The marketing cost incurred by the *bepari* for 100 kg chilli was calculated at Tk. 420 (Table 6.3). Like other traders, transportation cost was highest (40.48 %) and lowest for personal expenses (4.76%). In the study area the *beparis* had to give commission or khajna which is next highest cost (28.57%).

Table 6.3 Marketing Cost of *Bepari*

Cost items	Average cost (Tk. per quintal)	Percentage of total cost
Transportation	170	40.48
Market toll/tax	0	0
Weighing	25	5.95
Packaging (Sack)	30	7.14
Load/Unload	55	13.09
Commission & Khajna	120	28.57
Personal expenses	20	4.76
Total	420	100

Source: Field Survey, 2014.

6.2.4 Marketing Cost of *Paikar*

The marketing cost incurred by the *paikar* for 100 kg chilli was calculated at Tk. 219 (Table 6.4). Like other traders, transportation cost was highest (37.44 %) and lowest for personal expenses (4.57%). Loading and unloading cost was in second highest position (20.55%).

Table 6.4 Marketing Cost of *paikar*

Cost items	Average cost (Tk. per quintal)	Percentage of total cost
Transportation	82	37.44
Market toll/tax	22	10.05
Weighing	25	11.42
Packaging (Sack)	35	15.98
Load/Unload	45	20.55
Personal expenses	10	4.57
Total	219	100

Source: Field Survey, 2014.

6.2.5 Marketing Cost of *Aratdars*

The marketing cost incurred by the *Aratdars* for 100 kg chilli was estimated at Tk. 167 (Table 6.5). Wages and salaries cost was highest(31.14%). Transportation cost was (25.15%) and lowest was electricity bill and labor cost each (4.19%) . In this case they had to incure one such cost which others did not bear. That was rent for the shop which was (4.79%) of total cost of aratdars.

Table 6.5 Marketing Cost of *Aratdars*

Cost items	**Average cost (Tk. per quintal)**	**Percentage of total cost**
Wages and salaries	52	31.14
Transportation	42	25.15
Electricity bill	7	4.19
Rent for shop	8	4.79
Weighing	21	12.57
Labor	7	4.19
Load/Unload	15	8.98
Personal expense	15	8.98
Total	167	100

Source: Field Survey, 2014

6.2.6 Marketing Cost of Retailers

Table 6.6 Marketing Cost of Retailers

Cost items	**Average cost (Tk. per quintal)**	**Percentage of total cost**
Transportation	21	22.34
Electricity bill	5	5.32
Rent for shop	35	37.23
Shopping bag	8	8.51
Load/Unload	15	15.96
Personal expense	10	10.64
Total	94	100

Source: Field Survey, 2014

The marketing cost incurred by the *retailers* for 100 kg chilli was estimated at Tk. 94 (Table 6.6). The cost for taking the shop on rent was highest (37.23%). Transportation cost was (22.34%) and lowest was electricity bill and shopping bag cost each (5.32%) and (8.51%).

6.2.7 Total Marketing Cost of all Chilli Intermediaries

Table 6.7: Marketing Cost of Chilli for Different Intermediaries

Tk. per quintal

Cost items	***Farias***	***Bepari***	***Paikar***	***Aratdars***	**Retailer**	**Total**	
						Cost	**%**
Transportation	58	170	82	42	21	373	34.86
Market toll/tax	22	0	22	0	0	44	4.11
Weighing	20	25	25	21	0	91	8.51
Packaging (Sack)	25	30	35	0	8	98	9.16
Load/Unload	30	55	45	15	15	160	14.96
Personal expenses	15	20	10	15	10	70	6.54
Commission and khajna	0	120	0	0	0	120	11.21
Wages and salaries	0	0	0	52	0	52	4.86
Electricity bill	0	0	0	7	5	12	1.12
Rent for shop	0	0	0	8	35	43	4.02
Labor	0	0	0	7	0	7	.65
Total	170	420	219	167	94	1070	100

Source: Field Survey 2014

Total cost of marketing of all intermediaries included all costs incurred by different types of intermediaries operating in chilli marketing. Nature and extent of marketing cost varied from intermediary to intermediary. Average cost of chilli marketing per 100 kg of *Farias*, *bepari, paikar* , *Aratdars* and retailers were Tk. 170, Tk. 420, Tk. 219, Tk. 167 and Tk. 94 respectively. Cost of marketing for *beparis* was the highest among all intermediaries and the lowest for *retailers*. Total marketing cost of all intermediaries has been shown in Table 6.7. The total marketing cost incurred by all intermediaries was calculated at Tk. 1070 per 100 kg of chilli. Transportation cost was highest cost, which was 34.86 % of the total marketing cost.

6.3 Marketing Margin

The total marketing margin usually consists of margins at different stages of marketing and in each case the margin is the difference between the buying and selling prices of each intermediary. According to Tomek and Robinson , margin has been defined as (i) the difference between the price paid by the consumers and that obtained by producers or as (ii) the prices of collection of marketing which is the outcome of the demand for and the supply of such services.

The Table 6.8 shows that marketing margin of *farmers, faria, bepari, paikar, aratdar and retailers* were 36.09% , 13.89%, 19.45%, 11.11% ,8.34% and 11.11% respectively. The marketing margin of farmers was the highest for big volume of buying and selling and lowest for *aratdars*.

Table 6.8 Gross Marketing Margin of farmer and Different Intermediaries

Intermediaries	**Purchase price (Tk./100 kg)**	**Sale price (Tk./100 kg)**	**Marketing Margin (Tk./100 kg)**	**Percentage**
Farmers	*1701	3000	1299	36.09
Faria	3000	3500	500	13.89
Bepari	3500	4200	700	19.45
Paikar	4200	4600	400	11.11
Arathdar	4600	4900	300	8.34
Retailer	4900	5300	400	11.11
Total			3599	100

Source: Field Survey, 2014

*Here, the cost of production of farmers was considered as purchase price of chilli of the farmers.

6.4 Net Marketing Margin

Net marketing margin or profit is found by the difference between gross margin and marketing cost. In this section net marketing margin of chilli was calculated for farmers and different intermediaries. The following Table 6.9 indicates that percentages of profit or net marketing margin of farmer was 49.17% and different intermediaries were 13.64% for *farias,* 11.57% for *beparis*, 7.48% for *paikars*, 5.5% for *Aratdars and* 12.64% for retailers. Here farmers got the highest margin but the production problem had to take them.

Table 6.9 Net Marketing Margin of farmer and Different Intermediaries

Intermediaries	**Gross margin (Tk./100 kg)**	**Marketing cost (Tk./100 kg)**	**Net marketing margin (Tk./100 kg)**	**Percentage of net marketing margin**
Farmer	1299	109	1190	49.17
Faria	500	170	330	13.64
Bepari	700	420	280	11.57
Paikar	400	219	181	7.48
Aratdars	300	167	133	5.5
Retailers	400	94	306	12.64
Total			2420	100

Source: Field Survey, 2014.

CHAPTER VII

SEASONAL PRICE VARIATION OF CHILLI

7.1 Introduction

Price is the key component in guiding production, consumption, government policies and it governs production decision of producers and buying decision of consumers to a large extent. Agricultural commodity price are much volatile than those of most non-farm goods and services. The biological nature of agriculture production is the principal cause of price instability (Tomek and Robinson, 1990). So, stability of price is an important factor in taking economic decisions in agriculture.

7.2 Seasonal Price Variation

Prices of agricultural commodities varied over time are the result of complex mixture of changes associated with seasonal, cyclical and irregular factors. The most common in agricultural prices is a seasonal pattern of change. Seasonal price behavior is regularly repeating price pattern that is completed once in every twelve months. Such a regular pattern might arise from seasonality in demand, seasonality in supply and marketing pattern or a combination of both. Most agricultural products are characterized by some seasonality in production arising from climatic factors and the biological growth of the plant (Tomek and Robinson, 1990, pp.157-159).

The seasonal price fluctuation in prices arises from seasonal production, poor storage facilities and lack of retention power of the producers. Seasonal price fluctuation is an important element of the time series data. So, seasonal price fluctuation is examined in this study.

Average monthly wholesale prices of chilli in selected Bogra market was collected from the report of weekly wholesale price published by the Department of Agricultural marketing (DAM).

7.3 Importance of Measuring Seasonal Price Variation

The measurement of seasonal price variation is required to measure the short-time fluctuations in the time series data. Because, seasonal variations are short time fluctuations that occur within a year, which are presented in the data recorded on daily, weekly, monthly or quarterly basis. It is usually seen in business and economic data. Their measurements are necessary to isolate them to

determine the effect of seasons on the size of variable. It helps a business or sales manager or farmer for planning future production and in scheduling purchase, inventory control, selling and advertising programs. The determination of the seasonal fluctuation is also necessary for increasing business efficiency and for a smooth production program.

Chilli is grown in both kharif and rabi season of the year. It is perishable goods but available in the market throughout the year in both green and dry form. Many factors influence the seasonal price of chilli. And these prices vary seasonally. Availability, storage cost, weight loss, transportation costs, unfavorable weather are the main factors of seasonal price variation of chilli. It is important for the farmers as well as traders to know the amount of prices of chilli that can prevail in the different months of a year so that they can take proper decision of selling (or buying) their chillies.

7.4 Price Variation of chilli

Table 7.1 Seasonal price Indices of green chilli

	2010	2011	2012	2013	2014	Total	Mean	SPI
Jan		95.6	87.89	184.8	53.86	422.15	105.54	105.98
Feb		94.18	81.68	196.66	65.41	437.93	109.48	109.94
Mar		62.88	84.16	110.7	105.19	362.93	90.73	91.11
Apr		40.44	28.78	34.34	54.74	158.3	39.58	39.74
May		18.87	32.27	27.49	77.43	156.06	39.02	39.18
Jun		26.45	76.41	34.86	72.61	210.33	52.58	52.80
July	102.16	70.59	135.34	110.63		418.72	104.68	105.12
Aug	219.72	189.69	66.2	115.26		590.87	147.72	148.34
Sep	231.8	256.16	112.92	83.64		684.52	171.13	171.85
Oct	61.85	133.43	114.79	248		558.07	139.52	140.10
Nov	80.8	138.61	97.08	132.49		448.98	112.25	112.72
Dec	70.81	102.47	89.1	68.69		331.07	82.77	83.12
							1194.98	**1200.00**

Source: Own calculation

Monthly wholesale price of chilli in Bogra market during the period from 2010 to 2014 was used for examining seasonal price variation. It is evident from Table 7.2 that seasonal price index of green chilli was the highest in September (171.85) and lowest in May (39.18). It was because of availability or period of supply. Rabi chillis became highly available in April-May months. Prices of green chilli began to increase by June and reached the peak in September.

Table 7.2 Seasonal price variation of green chilli

Month	Seasonal price index of Green chilli
January	105.98
February	109.94
March	91.11
April	39.74
May	**39.18**
June	52.80
July	105.12
August	148.34
September	**171.85**
October	140.10
November	112.72
December	83.12
Maximum value	**171.85**
Minimum value	**39.18**
Range	132.67
Coefficient of Variation (%)	41.94

Source: Own calculation

Table 7.4 reveals that the seasonal price index of dry chilli was the highest in September (110.45) and lowest in January (91.93). Prices of dry chilli increase by April and reached the peak in September.

Table 7.3 Seasonal price Indices of dry chilli

	2010	2011	2012	2013	2014	Total	Mean	SPI
Jan		89.53	100.28	85.68	92.71	368.2	92.05	91.93
Feb		122.07	106.79	101.2	96.27	426.33	106.58	106.45
Mar		97.21	98.42	116.79	100.32	412.74	103.19	103.06
Apr		87.76	89.27	98.63	102.14	377.8	94.45	94.33
May		92.69	85.21	99.69	100.56	378.15	94.54	94.42
Jun		91.4	87.07	101.25	99.02	378.74	94.69	94.57
July	102.18	88.57	91.18	104.15		386.08	96.52	96.40
Aug	113.21	96.05	93.85	105.91		409.02	102.26	102.13
Sep	125.83	117.74	97.59	101.18		442.34	110.59	110.45
Oct	89.52	120.03	100.39	92.84		402.78	100.70	100.57
Nov	92.31	117.8	110.79	92.84		413.74	103.44	103.31
Dec	90.87	117.01	109.38	92.84		410.1	102.53	102.40
							1201.51	**1199.995**

Source: Own calculation

Table 7.4 Seasonal price variation of Dry chilli

Month	Seasonal price index of Dry chilli
January	**91.93**
February	106.45
March	103.06
April	94.33
May	94.42
June	94.57
July	96.40
August	102.13
September	**110.45**
October	100.57
November	103.31
December	102.40
Maximum value	**110.45**
Minimum value	**91.93**
Range	18.52
Coefficient of Variation (%)	5.66

Source of Table 7.1 & 7.2: Own calculation by using data from DAM. For detail calculation, see appendix (**Table II** and **III**).

A figure 7.1 shows that seasonal price variation of green chilli by months are heavily fluctuated over the period of time and dry chilli by months are slightly fluctuated over the period of time.

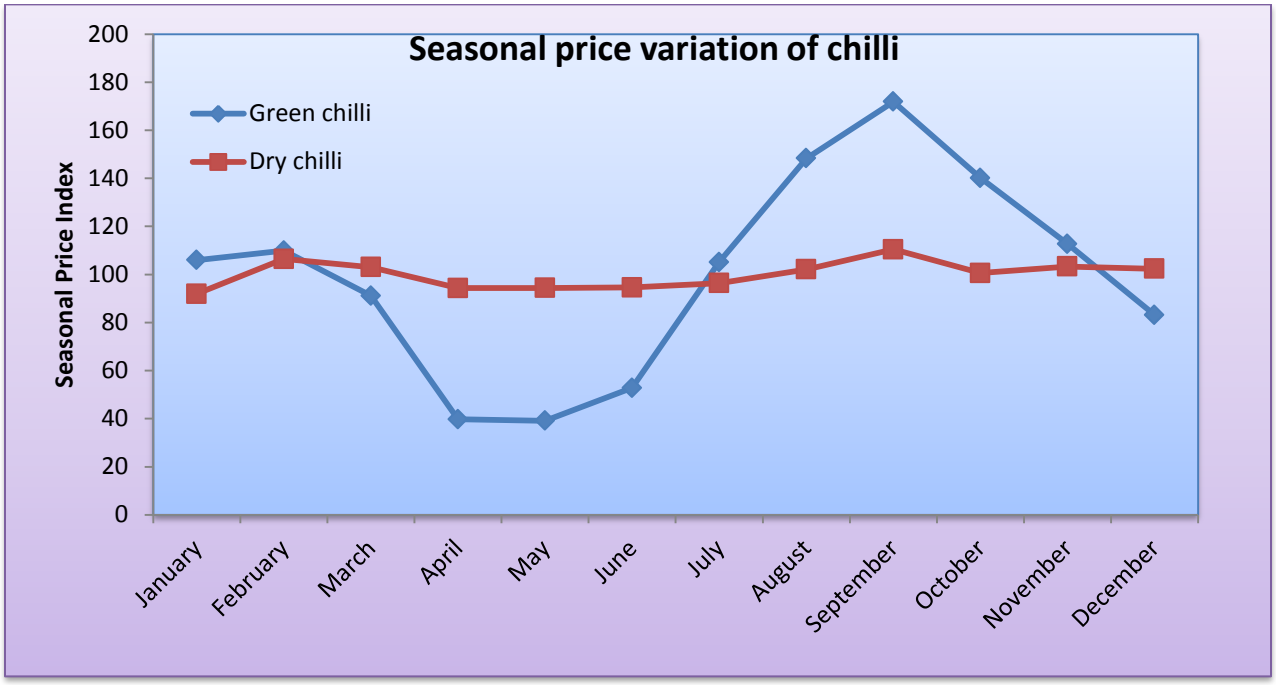


Figure 7.1: Seasonal price variation of chilli in Bogra District

CHAPTER VIII

PRODUCTION AND MARKETING PROBLEMS OF CHILLI

8.1 Introduction

In Bangladesh, agricultural production and marketing system is not free from problems. From production to selling all the channel members including growers are facing with different problems at different stage of marketing. Farmers of Bangladesh have been cultivating chilli for a long period following the age old method. Very few studies have yet been conducted on chilli production and accordingly problems and constraints faced by the farmers and intermediaries. The problems that are described in below are only the case of the researchers study area but it was assumed that across the whole country, the problems are faced by the farmers as well as the intermediaries. The constraints discussed below were identified while the data collection process.

8.2 Problems faced by the farmers:

For the sake of convenience the constraints faced by the selected chilli farmers in the study area have been categorized under three general groups such as- Production, socio-economic & marketing (Table 8.1).

8.2.1 Production Problems

8.2.1.1 Lack of High yielding Varieties: A few number of farmer felt necessity for HYV seed of chilli. Most of the farmers in the study area cultivated local seed of chilli for long times. About 70 percent of all farmers claimed that they felt the need for HYV seed of chilli for better production.

8.2.1.2 Lack of labor availability: In the district most of the farmers felt lack of labor during harvesting season. The farmers had to hire village women or use family labor for harvesting chillies. About 64 percent of all farmers expressed the problem of lack of labor availability.

8.2.1.3 Extreme Weather or flood: Some of the study areas of Bogra district are very much prone to flood and extreme weather. About 56 percent of farmers claimed that their production is getting hampered because of flood or extreme weather in kharif season.

8.2.1.4 Pest & Disease problem: The problem of attack of pest and diseases of chilli in the study area were also severe. Many diseases caused by various pathogen attack chilli crop such as anthracnose, little leaf, damping off etc. They had to spend a handsome amount of money to protect the crop. It was evident from the Table 8.1: that about 60 percent of all the farmers claimed the attack of pest and diseases as a major problem of chilli production. They also reported that if the disease attack in the chilli field, the yield of chilli decreases heavily and farmers then face a very risky position and lost a huge amount of money invested.

8.2.2 Socio-Economic Problems

8.2.2.1 Lack of operating capital/Agricultural Credit: Cash money is required for purchasing required amount of various inputs like- seed, fertilizer, pesticides, human labor etc. But most of the farmers did not have enough money to purchase the required inputs. They didn't even have any credit facilities there. For this, they weren't able to meet the production costs timely and properly during the production period of chilli. About 80 percent of all farmers reported about the problem lack of operating capital and not getting any credit support during the production period of chilli. They also reported that they had to borrow money from neighbors, banks or moneylenders at exorbitant rate of interest.

8.2.2.2 Lack of crop insurance: Several districts of Bogra are surrounded by the river Jamuna and chilli mostly grown in char areas of those upazillas. As a result in rainy season the chilli fields get damaged by heavy shower. In this case the farmers fell in heavy loss losing the crop. About 76 percent of all farmers claimed that there is lack of crop insurance to reduce their loss in the study areas and as a result they fell in a huge amount of loan.

8.2.2.3 Lack of farmer's association: About 78 percent of all farmers of the study reported that there is lack of any farmer's association in the areas. They claimed that farmer's association is very essential in those areas where they can share their problems, any ideas, market related information with each other. By this nobody can cheat them.

8.2.2.4 Import of chilli: A huge amount of chilli is imported every year mainly from India. About 52 percent of farmers complained that this imported chilli is one of the reasons for not getting fair price of their produce.

8.2.2.5 Lack of Public and private sector extension services in the remote areas like chars: During the field survey, most of the farmers reported that they do not have any extension services regarding unproved method of chilli cultivation from the relevant officials of the Department of Agriculture Extension (DAE). About 66 percent of all farmers told that they do not get extension services. Chilli is such a crop which can be cultivate with inter-cropping. But most of the farmers do not know how to cultivate in this process. Hence extension workers need to be informed about the cultivation of the spice with intercropping and farmer could earn more return than single production of chilli.

8.2.2.6 Theft of chilli: The respondents of the study area reported that theft of chilli was another problem and 42 percent chilli growers cited this as a notable problem. During the harvesting period, stealing of chilli from the crop field and from the farmer's premises was also a limiting factor of chilli production in the study area.

8.2.3 Marketing Problems

8.2.3.1 Lack of market monitoring authority: Chilli is a day to day necessary item without which one day is impossible. But the supply of this daily necessary item can be in a great problem because of lack of proper market monitoring authority. About 72 percent of farmers reported that as they are facing lack of market monitoring authority, the profit is going on the pocket of some profiteer traders.

8.2.3.2 Lack of market information: Chilli is a perishable product so it requires quick disposal which depends on proper market information but 62 percent of farmers reported that they failed to get timely necessary market information.

8.2.3.3 Poor transportation & communication system: Transportation is the life blood of modern marketing system. The communication network in the study areas were not properly developed for the movement of the produce from the producer's field to the local market. During the field survey, about 74 percent of farmers reported that due to lack of proper transportation and communication system, they had to offer and sell their product at home or local market at lower prices.

8.2.3.4 Dominance of local intermediaries: In the local market, intermediaries were small in number but they were organized. On the other hand, farmers were scattered and large in number. So, traders are better position in determining price than the farmers. About 46 percent of farmers reported on the dominance of intermediaries in the market.

8.2.3.5 Profiteer traders: Profiteer traders are those who buy chilli from the farmers at a lower price but sell the produce to the consumers at a higher price by increasing the price without any proper reason. About 50 percent of farmers claimed that they are suffering problem because of some profiteer traders.

Table 8.1: Problems faced by the farmers

Reported problem	Percentage
Production Problems	
Lack of High Yielding Varieties	70
Lack of labor availability	64
Extreme Weather or flood	56
Disease problem	60
Socio-Economic Problems	
Lack of crop insurance	76
Lack of operating capital/Agricultural Credit	80
Lack of farmer's association	78
Import of chilli	52
Lack of Public and private sector extension services in the remote areas like chars	66
Theft of chilli	42
Marketing Problems	
Lack of market monitoring authority	72
Lack of market information	62
Poor transportation & communication system	74
Dominance of local intermediaries	46
Profiteer traders	50

Source: Field survey, 2014

8.3 Possible Solutions to the problem as mentioned by the chilli farmers:

During the field survey, the farmers were asked to suggest some solution to the above mentioned problems. They pointed out some suggestions to solve the constraints, which are given below:

8.3.1 Ensure credit facilities: The farmers need more cash for carrying production on their farming. Government should provide such facilities through commercial banks. NGOs can also help the farmers by ensuring adequate financial support. About 80 percent of producers suggested this measure.

8.3.2 Formation of farmer's association: Farmer's cooperative societies or association may be formed by the government or private organizations which would help to eliminate middleman and ensure better bargaining power and hence higher returns to the chilli farmers. About 78 percent of producers suggested this measure.

8.3.3 Improvement of transportation and communication facilities: Transportation and communication facilities should be improved to facilitate the marketing process. On the basis of priority, village roads should be developed so that the rickshaw, van or motor vehicles could ply easily. This measure was suggested by 74 percent of farmers.

8.3.4 Provide market information: Dissemination of market information by government may enable the farmers to get fair price for their produce. 62 percent of farmers suggested dissemination of market information by the government as a measure for solution of the marketing problems.

8.3.5 Impose market monitoring authority: Proper market monitoring authority is essential for maintaining fare price in every level of marketing. About 72 percent of farmers suggested that if market monitoring authority works properly then they could get fair price and the market will run stable condition.

8.3.6 Increase extension services: Increasing dissemination of public and private sector extension services may enable the farmers in reducing production cost. This can increase their profit. About 66 percent of farmers suggested this measure.

Table 8.2: Possible solution of the problems mentioned by the chilli farmers

Reported solutions	Percentage
Ensure credit facilities	80
Formation of farmer's association	78
Improvement of transportation and communication facilities	74
Provide market information	62
Impose market monitoring authority	72
Increase extension services	66

Source: Field survey, 2014

8.4 Problems faced by the intermediaries:

In the study areas the chilli traders faced various problems. The problems as reported by them are represented in Table 8.3 and discussed below.

8.4.1 Inadequate capital: About 70 percent of the intermediaries reported that they face problem of adequate capital. Most of the traders had to borrow money.

8.4.2 Price fluctuation: Price fluctuation was one of the major problems of intermediaries. About 60 percent of intermediaries reported it as a problem. This caused lower profit for the intermediaries.

8.4.3 Lack of adequate market information: Although market information was available to the intermediaries, they did not receive accurate and up to date information. So, there were some risks and uncertainties for receiving reasonable price due to lack of market information. About 58 percent of intermediaries considered lack of market information problem.

8.4.4 Political instability: Political instability like- strike, hartal caused serious problem to run the chilli business. About 48 percent traders reported this problem. Chilli could not move to the market in right time. So, chilli becomes damage.

8.4.5 Import of chilli: A huge amount of chilli is imported every year mainly from India. About 56 percent of traders complained that this imported chilli is one of the reasons for not getting fare price of their produce. Because imported chilli reduce the deshi chilli price.

Table 8.3: Problems faced by the intermediaries

Reported problem	Percentage
Inadequate capital	70
Price fluctuation	60
Lack of adequate market information	58
Political instability	48
Import of chilli	56

Source: Field survey, 2014

8.5 Possible Solutions to the problem mentioned by the chilli intermediaries:

8.5.1 Ensure socio-political stability: Socio-political stability is essential to conduct any business. In order to ensure the socio-political stabilities I the country, the government needs to strengthen the law enforcing agencies and eradicate the terrorists from the society. This would help to create a business environment congenial to the chilli traders as well as chilli producers. About 50 percent traders suggested this measure.

8.5.2 Increase credit facilities: The intermediaries need much more cash for conducting their business. That suggested that provision should be made to supply adequate and easy loans from institutional sources against the security of the produce. About 76 percent intermediaries suggested this measure.

8.5.3 Provide market information: Market information should be well-circulated to the intermediaries through mass media such as radio, television, newspaper etc. An efficient market information system should be developed for primary agricultural commodities like-chilli. About 58 percent intermediaries suggested this measure.

Table 8.4: Possible solution of the problems mentioned by the chilli intermediaries

Reported solutions	Percentage
Ensure socio-political stability	50
Increase credit facilities	76
Provide market information	58

Source: Field survey, 2014

CHAPTER-IX

SUMMARY, CONCLUSION AND POLICY RECOMMENDATIONS

9.1 Introduction

This chapter attempts to summarize the major findings of the study. Section 9.2 presents a summary of the major findings, section 9.3 represents concluding remarks of the study and section 9.4 focus on some policy recommendation which can improve the chilli production and marketing system.

9.2 Summary

Bangladesh is predominantly an agricultural country. Agriculture plays a very important role in the economy of Bangladesh. It contributes about 16.33 percent of the GDP and 47.4 percent employment for its total labor force. Bangladesh's agriculture is mainly rice-based and this massive increase in rice production led to decline in area of spices, pulses and other minor crops.

Of the total area, about 58% land of Bangladesh is cultivable. So, there is little scope left to increase agricultural output by bringing new land under cultivation. Thus increase in agricultural output could be attained by using high yielding varieties, adopting improved cultural and management practices and efficient market structures for proper distribution. These activities can increase both the acreage and production of minor crops like-chilli.

Chilli is a valuable spice and also one of the most important cash crops grown in Bangladesh. Chilies are said to be good for the kidneys, spleen, pancreas, lungs and heart. It may prevent: cancer, heart disease, stroke, blood clots, obesity, high blood pressure, high cholesterol, bronchitis, emphysema, coughs and colds and stomach ulcer.

Chilli is labor intensive, so it is creating more employment opportunity for the rural poor and generating rural as well as national income. The production of chilli also ensures the maximum utilization of scarce land of the country, because it can be grown in fallow land such as road side and homestead area.

Realizing the increasing importance of chilli as spice, the present study was undertaken with the following objectives to achieve.

- To estimate the costs and returns of chilli production.
- To examine the marketing system of chilli.
- To determine the marketing costs and margin of the chilli farmers and intermediaries.
- To assess the price variability of chilli according to season.
- To identify some constraints of chilli production & marketing and suggest some measures for the improvement of chilli marketing system in the selected area.

For the present study, three upazilla of Bogra district was selected as the study area. Both primary and secondary data were used. Primary data were collected from 50 farmers and 50 intermediaries and secondary data were collected from various publications of the Ministry of Planning & Govt. of the Peoples Republic of Bangladesh, Department of Agricultural Marketing (DAM), and different articles published in internet, various books, journals etc. An interview schedule was prepared to record the relevant information in accordance with the objectives set for the study. Different descriptive and statistical methods were used for the analysis of data.

In chapter 4, cost and returns were assessed to find out net returns of the chilli farmers. Cost items were identified as human labor, land preparation, seed, fertilizer, irrigation, insecticides and pesticides, interest on operating capital and land use cost. All of these costs were accounted for one production period of green chilli. Per hectare gross return Tk. 240864 and net return Tk. 112852.87 were calculated respectively for green chilli and per hectare gross return Tk. 268750 and net return Tk. 132100.87 were calculated respectively for dry chilli. The calculated BCR for green and dry chilli was 1.88 and 1.96 respectively which indicates that both green and dry chilli cultivation is profitable in the study area. But dry chilli is more profitable than green chilli.

The process of chilli marketing started from the farmer and continued through the channel till the produce reached to the consumers. The intermediaries involved in chilli marketing were- *faria, bepari, paikar, arathdar, miller, retailer.* In the study areas, various marketing functions of chilli were performed by the different market participants such as harvesting, buying and selling, pricing, grading, transportation, storage, packaging, market information etc.

Chapter 6, marketing cost and margin of farmers and different intermediaries were calculated for green chilli marketing. The largest margin was for the farmers as overall marketing process (49.17%). Among the intermediaries the largest margin was for the farias (13.64 %).

In the present study, Ratio to moving average method was used for measuring the seasonal price variation. 12-months centered moving average was used to estimate the seasonal price variation. From this study it was found that the seasonal price variation of green chilli was higher in Bogra district. The seasonal price index of green chilli was the highest in September (171.85) and lowest in May (39.18) and the seasonal price index of dry chilli was the highest in September (110.45) and lowest in January (91.93).

The chilli farmers faced various socio-economic, production and marketing problem in the study areas such as Lack of High yielding Varieties, Lack of labor availability, Extreme Weather or flood, Pest & Disease problem, Lack of operating capital/Agricultural Credit, Lack of crop insurance, Lack of farmer's agricultural association, Import of chilli, Lack of Public and private sector extension services in the remote areas like chars, Theft of chilli, Lack of market monitoring authority, Lack of market knowledge/information, Poor transportation & communication system, Dominance of local intermediaries, Profiteer traders.

Considering the problems faced by the farmers, the following measures were advocated by them.

i. Ensure proper credit or other financial support from Government and non-government authorities.
ii. Farmer's cooperative societies or associations should be organized
iii. Proper marketing facilities including transportation should be provided.
iv. Market information should be made available to the farmers through the national mass media such as radio, television, newspaper etc.
v. Market monitoring system should be enforced and performed properly.
vi. Public and private sector extension facilities should be make available in the remote areas.

The chilli intermediaries also faced a number of problems such as inadequate capital, price fluctuation, lack of adequate market information, political instability, and import of chilli.

In order to solve the problems faced by the intermediaries the following measures were suggested.

i. Government should take step in reducing socio-political instability.
ii. Institutional credit should be made available to the intermediaries on easy terms and at a lower rate of interest.
iii. Accurate market related information should be available to the intermediaries through different source of mass media.

9.3 Conclusion

Most of the farmers in the study areas produce local deshi variety of chilli. On the basis of the findings of the study it can be concluded that production of both green and dry chilli is very much profitable for the farmers. But dry chilli is more profitable. So, if the farmers dry their chilli and after that sell that then it will be very profitable. The Department of agricultural extension can create awareness among the farmers and the traders and can provide different suggestions during the pre production and production period to increase further production.

The price of the chillies is not stable. It fluctuates throughout the year. The seasonality is the main factor. By knowing the best selling period, farmers would be more benefited if they supply the crop in peak period rather than the harvesting period.

9.4 Recommendations

On the basis of the findings of the study the following recommendations are made for the improvement of production and marketing system of chilli.

i. Government should provide financial assistance and others necessary facilities for production and marketing of chilli.
ii. Bangladesh has to import huge quantity of chilli to meet mass consumption. Therefore, the deficits should be met through increasing local production and improving marketing system.
iii. Market information should be made available to the farmers and intermediaries regularly. If they get the market information about their produce, they would be able to know the real situation of chilli markets and could decide what to do at that time.
iv. Existing market monitoring mechanism should be strengthened.
v. Chilli market is controlled by some dominant traders and the consumers have to pay higher price for it. Steps should be taken against those traders so that market price can be fixed according to supply and demand. Middlemen should be reduced for enhancing efficient marketing system by making direct linkage with the farmers.
vi. Transportation facilities should be improved in the rural areas so that the rickshaw, van, truck and other vehicles could move easily. Boat, cargo should be initiated in the river way as it would helpful to reduce transportation cost largely.

References

Acharya, S.S. and N.L. Agarwal (1994). Agricultural Price Analysis & Policy. Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi, India.

Acharya, S.S. and N.L. Agarwal (2004). Agricultural Marketing in India (Fourth Edition). Oxford & IBH Publishing Co. Pvt. Ltd., New Delhi, India.

Acharya, S. S. and Agarwal, N. L. (2000). "Agricultural Marketing in India", 4th Edition, Oxford and IBH Publishing Co. Pvt. Ltd., New Delhi.

Bangladesh Bureau of Statistics (2011). Statistical Yearbook of Bangladesh. Statistics Division, Ministry of Planning, Government of the Peoples's Republic of Bangladesh, Dhaka, Bangladesh.

Bangladesh Bureau of Statistics (2012). Statistical Yearbook of Bangladesh. Statistics Division, Ministry of Planning, Government of the Peoples's Republic of Bangladesh, Dhaka, Bangladesh.

Bangladesh Bureau of Statistics (2013). Statistical Yearbook of Bangladesh. Statistics Division, Ministry of Planning, Government of the Peoples's Republic of Bangladesh, Dhaka, Bangladesh.

Bangladesh Bureau of Statistics (2008). Yearbook of Agricultural Statistics. Statistics Division, Ministry of Planning, Government of the Peoples's Republic of Bangladesh, Dhaka, Bangladesh.

Bangladesh Bureau of Statistics (2010). Yearbook of Agricultural Statistics. Statistics Division, Ministry of Planning, Government of the Peoples's Republic of Bangladesh, Dhaka, Bangladesh.

Bangladesh Bureau of Statistics (2011). Yearbook of Agricultural Statistics. Statistics Division, Ministry of Planning, Government of the Peoples's Republic of Bangladesh, Dhaka, Bangladesh.

Bangladesh Bureau of Statistics (2012). Yearbook of Agricultural Statistics. Statistics Division, Ministry of Planning, Government of the Peoples's Republic of Bangladesh, Dhaka, Bangladesh.

Bangladesh Bureau of Statistics (2013). Yearbook of Agricultural Statistics. Statistics Division, Ministry of Planning, Government of the Peoples's Republic of Bangladesh, Dhaka, Bangladesh.

Bangladesh Economic Review (2015), Financial Advisory Subdivision, Finance Division, Ministry of Finance, Government of the People's Republic of Bangladesh, Dhaka

Baset, M.A. (2003). Returns to Investment in Potato Research and Extension in Bangladesh. Ph.D. thesis, Bangladesh Agricultural University, Mymensingh.

Clark, Fred E., Principles of Marketing, 1954, p-777.

Department of Agricultural Marketing, (2001-2011). District Wise Weekly Wholesale Price of Different Commodity of Bangladesh, Ministry of Agriculture, Government of the People's Republic of Bangladesh. Dhaka.

Hoq et al.(2014). Production and Marketing of Green Chilli in Two Copious District of Bangladesh., Asian Academic Research Journal of Multidisciplinary, volume-1, issue 18, 785-799.

http://www.commoditiescontrol.com/eagritrader/commodityknowledge/chilli/chilli.htm

http://www.consumer.org.my/index.php/food/medicinal/164-chillies-hot-healer-for-many-illnesses

http://sonoranspiceco.weebly.com/encyclopedia-of-chilli-peppers.html.

http://my.safaribooksonline.com/book/statistics/9788131775059/11dot7-measurement-of-seasonal-effects/ch011_sub11_7_4_xhtml

http://fao.org/wairdocs/ilri/x5547e/x5547e18.htm

http://faostat3.fao.org/home/E

Jagtap et al. (2012). Economics of Chilli Production in India, African Journal of Basic & Applied Sciences 4 (5): 161-164

Kohls, R.L. and Uhls, J.N. (1980). *Marketing of Agricultural Products*, 5th ed. Macmillan Co, New York.

Kohls, R.L. and Uhls, J.N. (2005). *Marketing of Agricultural Products*, 9th ed. Macmillan Co, New York.

Meoya, Jannatul.(2011). An Economic Analysis of Chilli Production in some selected areas of Bangladesh, M.S. Thesis, Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.

MoA, (2015). Ministry of Agriculture, Government of People's Republic of Bangladesh, Dhaka

Monalisa, N. (2011). An Agribusiness Study of Chilli in IslampurUpazilla of Jamalpur District, M.S. Thesis, Department of Agribusiness and Marketing, Bangladesh Agricultural University, Mymensingh

Mou, N.H. (2012). Profitability of Flower Production and Marketing System of Bangladesh. Bangladesh Journal of Agricultural Research, 37(1): 77-95, p.p-77-95

Pruthi, J.S. (1998) . Spices and Condiments, National Book Trust, India.

Quasem, A. and A.J. Bhuyan (2000).Concept Paper on Potentialities of Hot Chillies ,Workshop Proceedings Year Round Chilli Production for Export, p . p -17-28.

Rajur, B.C. (2007). Production and Marketing Performance of Chilli in Karnataka-An Economic Analysis, Ph.D. Thesis, Department of Plant Biotechnology, College of Agriculture, Dharwad, University of Agricultural Sciences, Dharwad , India

Sarkhel, S.K.(1995) Relative Profitability of Chilli & its Competiting Crops in some selected areas of Kurigram District, M.S. Thesis, Department of Agricultural Economics, Bangladesh Agricultural University, Mymensingh.

Shivashankar, K (2007). Marketing of Dry Chillies in Karnataka-A Management Appraisal, Ph.D. Thesis, Department of Agricultural Marketing, Cooperation and Agribusiness Management, College of Agriculture, Dharwad, University of Agricultural Sciences, Dharwad , India

Shivaraja, M.B. (2012). Production and Value Addition to Chilli in Northern Karnataka-An Economic Analysis, M.Sc. Thesis, Department of Agricultural Economics, College of Agriculture, Dharwad, University of Agricultural Sciences, Dharwad , India

Singh, G. and S.S. Chahal (2008). An Economic Analysis of Green Chilli Marketing in Punjab, *Indian Journal of Agriculture Marketing*, vol.1.22(3) :pp 1-10

Tomek, W.G. and Robinson, K.L. (1990). *Agricultural Product Prices*, 3rd ed., Cornell University Press. Ithaca and London.

Wahid D.A.(1995). An Analysis of Price Fluctuation and Growth of Some Major Rabi Crops in Bangladesh. M.S. thesis, Department of Cooperation and Marketing, Bangladesh Agricultural University, Mymensingh.

APPENDIX TABLE

Appendix Table I. Year wise monthly average wholesale prices of green chilli in Bogra district (Tk. / quintal).

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
2008	1250	1070	913	533	1200	1100	1983	4200	4533	4413	4325	2000
2009	1533	1200	1450	1900	2200	2600	2800	4831	2800	2300	1317	1167
2010	1060	1867	2338	2075	1400*	1750*	2650*	5853*	6150*	1600	2033	1733
2011	2300	2300	1650	1175	600	900	2500	6875	9500	5000	5200	3917
2012	3467	3117	2855*	900	975	2233	4092	2200	4000	4143	3525	3209*
2013	6600	7175	4060	1300	1100	1400	4200	3938	2720	8250	4600	2500
2014	2030	2625	4660	2492	3400	3125	5575	8420	8250	5650	3325	1683

***Indicates value estimated by simple mean average method**

Appendix Table II. Year wise monthly average wholesale prices of dry chilli in Bogra district (Tk. / quintal).

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
2008	12000	12875	10250	8767	8300	8500	8833	8625	8500	7938	6688	6500
2009	6500	7500	8000	8000	8000	8000	8750	10250	10500	10500	11250	11250
2010	10500	9667	8719	8188	10084*	10250*	10625*	12000*	13750*	10000	10500	10500
2011	10500	14500	11750	11000	12167	12500	12500	13750	17000	17500	17200	17000
2012	14500	15333	13875*	12250	11438	11500	11833	12000	12500	13000	14500	14500*
2013	11500	13750	16000	13500	13500	13500	13800	14000	13200	12000	12000	12000
2014	12000	12500	13100	13500	13500	13500	14250	14500	14500	14500	14500	14500

***Indicates value estimated by simple mean average method**