

**ECONOMIC ANALYSIS OF ROSE CULTIVATION IN SOME
SELECTED AREAS OF JESSORE DISTRICT IN BANGLADESH**

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**ECONOMIC ANALYSIS OF ROSE CULTIVATION IN SOME
SELECTED AREAS OF JESSORE DISTRICT IN BANGLADESH**

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CERTIFICATE

*This is to certify that thesis entitled, “ECONOMIC ANALYSIS OF ROSE CULTIVATION IN SOME SELECTED AREA OF JESSORE DISTRICT IN BANGLADESH.” 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 AGRICULTURAL ECONOMICS**, embodies the result of a piece of bona fide research work carried out by **DINARA ZAMAN**, Registration No. **08-02992** 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.

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*DEDICATED
TO
MY BELOVED
PARENTS*

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ABSTRACT

Rose cultivation is now a profitable enterprise to the farmers, but the socioeconomic data and information of this flower are very scarce in Bangladesh. So, the present study is conducted to identify and analyze the profitability of rose relative profitability, potentialities and constraints during December 2014. Two villages (Sayedpara and Potuapara) of Jhikargachha Upazila under Jessore District were selected as study area. Purposive and simple random sampling techniques were taken into consideration. A total of 100 rose growing farmers were randomly selected for this study. In this study, both descriptive and statistical tools is used to analyze the data. The average cost of rose cultivation is Tk.383561 and Tk.252734 per hectare on total cost and variable cost basis, respectively. The major share of total cost is for human labor (22%), land use (21%) fertilizer (22%) irrigation (6%) insecticide (12%).The yield of rose is 55,85,02 flowers per hectare. The net return from rose cultivation is Tk. 454192 per hectare. The benefit cost ratios are 3.31 and 2.18 on variable cost and full cost basis, respectively. The highest profit is obtained from rose cultivation compared to its competitive flowers like gladiolus, marigold and others for rose. Human labor, land preparation cost, seedling, urea, TSP, MoP and irrigation has positive effect on the yield of rose. Lack of technical knowledge, non-availability of HYV seedling, and infestation of insects and diseases are major problems found in rose cultivation. Government should take necessary steps to overcome these problems.

CONTENTS

TABLE OF CONTENTS

CHAPTER	TITLE	PAGE NO.
	ACKNOWLEDGEMENT	i
	ABSTRACT	ii
	TABLE OF CONTENTS	iii-v
	LIST OF TABLES	vi
	LIST OF FIGURES	vii
	LIST OF APPENDIX	vii
	LIST OF ABBREVIATED TABLE	viii
CHAPTER I	INTRODUCTION	1-8
1.1	Background	1-5
1.2	History of Flower Cultivation in Bangladesh	5-6
1.3	International Scenario of Rose Cultivation	6
1.4	Objectives of the Study	7
1.5	Justification of the Study	7-8
CHAPTER II	REVIEW OF LITERATURE	9-13
CHAPTER III	METHODOLOGY	14-17
3.1	Selection of the Study Area	14
3.2	Sample Size	14
3.3	Data Collection	15
3.4	Data Processing and Analysis	15
3.5	Analytical Techniques	15-17
CHAPTER IV	DESCRIPTION OF THE STUDY AREA	18-23

TABLE OF CONTENTS (Contd.)

CHAPTER	TITLE	PAGE NO.
CHAPTER V	RESULTS AND DISCUSSION SOCIO-ECONOMIC CHARACTERISTICS OF THE ROSE FARMERS	24-29
5.1	Age and Sex Distribution of the Sample Farmers	24
5.2	Level of Education of the Respondents	25
5.3	Family Size	25
5.4	Distribution of Family Member by Literacy and Sex	26
5.5	Occupational Status of Rose Farmers by Sex	26
5.6	Amount of Land Ownership of Rose Cultivation	27
5.7	Land Ownership Patterns of Rose Farmers by Sex	28
5.8	Farm Ownership Pattern	28
5.9	Capability to Take Desired Food	29
5.10	Condition of Sanitation	29
5.11	Economic Situation of the Farmers	29
CHAPTER VI	PROFITABILITY ANALYSIS OF ROSE CULTIVATION	30-38
6.1	Input Use Pattern	30
6.2	Costs and Return from Rose Cultivation	31
6.3	Factors Affecting the Yield of Rose	33-36
6.4	Relative Economic Performance of Rose Cultivation with Other Competitive Flowers in Study Area	36
6.5	Sources of Fund	37
6.6	Credit Facilities	38

TABLE OF CONTENTS (Contd.)

CHAPTER	TITLE	PAGE NO.
CHAPTER VII	POTENTIAL FACTORS FOR ROSE CULTIVATION	39-40
7.1	<u>Advantageous Factors for Rose Cultivation</u>	39
CHAPTER VIII	PROBLEMS FACED BY THE FARMERS	41-44
CHAPTER IX	SUMMARY, CONCLUSION AND RECOMMENDATIONS	45-49
	REFERENCES	50-53
	APPENDICES	54-59

LIST OF TABLES

TABLE NO.	TITLE	PAGE NO.
Table 1.1	Production of Rose in Bangladesh	04
Table 5.3	Family Size	26
Table 5.4	Distribution of Family Member by Literacy and Sex	26
Table 5.5	Occupational Status of Rose Farmers by Sex	27
Table 5.6	Amount of Land Ownership Before and After Cultivation	27
Table 5.7	Land Ownership Patterns of Rose Farmers by Sex	28
Table 5.8	Cultivation Ownership Pattern	28
Table 5.9	Capability to Take Desired Food	29
Table5.10	Condition of Sanitation	29
Table5.11	Economic Situation of the Farmers	29
Table 6.1	Input Use Pattern of Rose Cultivation in Study Area	30
Table 6.2	Cost and Return of Rose Cultivation in Study Area	32
Table 6.3	Estimated Coefficient and Their Related Statistics of Production Function for Rose	34
Table 6.4	Relative Economic Performance of Rose Cultivation With Other Competitive Flowers in Study Area	36
Table 6.7	Credit Borrowings	38
<u>Table 7.1</u>	<u>Advantageous Factors for</u> Rose Cultivation	40
Table 8.1	Problems Confrontation of the Farmers in Rose Cultivation	44

LIST OF FIGURES

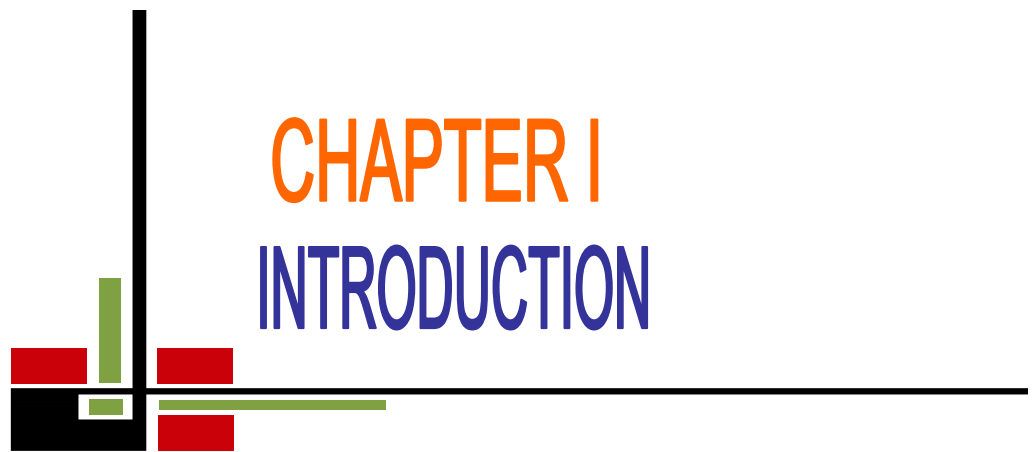
FIGURE NO.	TITLE	PAGE NO.
<u>Figure 5.1</u>	Age and Sex Wise Categorization of Rose Farmers	<u>24</u>
<u>Figure5.2</u>	Level of Education of the Respondents	<u>25</u>
Figure 6.5	Sources of Fund	<u>37</u>

LIST OF APPENDIX

APPENDIX	TITLE	PAGE NO.
APPENDIX I	QUESTIONNAIRE	54-58
APPENDIX II	LIST OF SOME COST ITEMS FOR DIFFERENT FLOWER	59

LIST OF ABBREVIATED TABLE

BBS	Bangladesh Bureau of Statistics
BCR	Benefit Cost Ratio
BFA	Bangladesh Flower Growers & Exporter Association
BRAC	Bangladesh Rural Advancement Committee
CNG	Compressed Natural Gas
Contd.	Continued
EPB	Export Promotion Bureau
<i>et al.</i>	et alia (for others)
etc.	et cetra
EU	European Union
GDP	Gross Domestic Product
GSP	Generalized System of Preference
m/f	Male/Female
MIS	Market Information System
MS	Master of Science
NGO	Non-Government Organization
NO	Number
SAU	Sher-e-Bangla Agricultural University
SCDC	Supply Chain Development Component
SPSS	Statistical Package for the Social Sciences
Tk	Taka, Bangladeshi currency
USA	United States of America
USAID	United States Agency for International Development
\$	Dollar
%	Percentage
Π	Profit per hectare
>	Greater Than
<	Less Than



CHAPTER I
INTRODUCTION

CHAPTER I INTRODUCTION

1.1 Background

Rose is known as flower of friendship and king of flower. It is associated with mankind since time immemorial. In India, several species of wild rose are mostly grown in the Himalayan ranges. The Mughal Samrat Nasir Uddin Mohammad Babar introduced the Persian or Damask rose (*Rosa damascena*) in India in 1526. The scented rose (*Rosa barbouniana*) was introduced in 1840 during the British rule. These two species of rose are scented and are cultivated in India to a large extent. Rose, botanically identified as *Rosa* spp., is indigenous to Europe and is widely distributed in Europe. Also, disseminated in the Middle East countries, especially Iran, Afghanistan and Turkey. It is also grown in Bulgaria, Russia, Egypt, France, Morocco and India. There are several varieties of rose classified according to color, size, type, use etc. The following varieties as per colour are light pink- confidence, navneet, pink- first prize, pink peace, surekha, red or crimson -gladiator, red masterpiece, lavender- blue moon, multicolours-candy strips, sultana. The varieties as per the types are bush first prize, superstar, tree rose hybrid Tea, floribunda, rambler and climber-casino, golden shower, crimson glory, hedges- edges: - queen, magic, cutflowers- superstar, gladiator, arjun, pot plants -cinderella. The varieties as per use are Oil- *Rosa damascena*, gulkand-*Rosa damascena*, *Rosa chinensis*.

Rose has become a part and parcel of the life. It is connected with all phases of life of the human beings. Rose are grown on a large scale for cutflowers and on small scale for planting shrubs, bushes, standard rose, climbers ramblers, edges, rockeries in the garden and pot plants for decorating the houses. There is a considerable demand for loose flowers for making garlands, bouquets and floral decoration. Rose is a perennial erect shrub with beautiful sweet scented flowers valued for worship, making garlands and preparation of rose oil, rose water, rose attar and rose otto. Rose oil is one of the oldest and most valuable perfumery raw materials. It imparts characteristic fragrant top notes to perfumes. The extracted absolute adds lasting notes. A mixture of distilled oil and extracted absolute combines the advantages of both the products. Also vitamin C, A, B2, K and E are extracted from rose. Bulgarian rose oil is being used for flavouring certain types of tobacco, particularly snuff and chewing tobacco and in number of fruit flavours. Limited quantities of otto are employed in flavouring

soft drinks and alcoholic liquors. Rose water has been valued for use in making syrups and medicinal preparation from ancient time. At marriages and other social functions rose water is sprinkled on the guests. Rose jam of unani medicine is used as a mild laxative and tonic. With the availability of cheap or synthetic substitutes like geraniol , the use of rose for perfumery purpose has declined.

Flowers are inseparable from the social fabric of human life. Flowers being adorable creation of God, befits all occasions, be it at birth, marriage or death. In the past, flowers were not of much economic importance. One would grow flowers to fulfill his or her aesthetic desire. At times, flowers were offered for sale to meet the special requirements of people. With the passage of time drastic changes have come about in the life style of people leading to commercialized cultivation of flowers. Today, flower plants are no longer meant for only window garden but play an important role in the decoration of the living houses and office establishments. The science and art of commercial floriculture has been recognized as an economic activity with the potential for generating employment and earning valuable foreign exchange. In several countries of the world, floricultural products are amongst the main export items of agricultural origin. For any country to diversify its agricultural base geared towards export, the ornamental crop industry presents one of the most interesting and viable options. The aesthetic value of flowers and ornamental plants, their use in social events, overall satisfaction in working with them and high income generating power are attracting modern entrepreneurs to invest money in the floriculture industry. The demand for flowers and ornamental plants for different needs like religious, official ceremonies, parties, house decoration, weddings, funerals, etc, is on the rise. This demand for fresh flowers and plants is increasing world-wide over the coming years.

Commercial floriculture in Bangladesh is a new dimension in farming culture. Evidences from all civilizations reveal that mankind has historical interest in gardening and culturing flowers to satisfy aesthetic need. But, in the present world, flower becomes important not only for its aesthetic social values, but also for its economic contribution (Aditya, 1998; Dadlani, 2013). People usually use flowers in all their ceremonies like wedding, birthday and marriage day greetings, religious offerings and sometimes in social, political and historical occasions. The universal

usage has created a real trend of producing flower on a commercial basis to meet increasing demand in the market. The area under rose cultivation was 111 ha producing about 2423 tonnes with an average yield of 21.92 t/ha (BFS, 2009). The annual growth rate of area, production and yield of marigold for considering the market value, some farmers in association with some entrepreneurs have started cultivation of gladiolus, tuberose, marigold, rose, gerbera and orchid flowers. But the socio-economic data and information regarding rose cultivation is very much scarce in Bangladesh. Nevertheless, rose cultivating farmers are depriving from higher production and fair prices due to various farm level constraints that need to be explored (Hossain, 2004). Flower is the symbol of beauty and Bangladesh is the country of natural beauty. Many flowers are available locally. It has a pious place in the minds of human beings all over the world and it is linked with human civilization and social-fabric everywhere. Without flowers, the world would not have been so beautiful, as charming and as cherishing today. For its beauty, demand for flowers is increasing day by day. To meet this rising demand, flower cultivation becomes popular and in recent days it has emerged as one of the most lucrative professions in all over the world. Flower cultivation relates to cultivation of flowers or flowering plants. Unlike other agricultural commodities, flower cultivation encompasses thousand of different plant species and a number of unique cultivars. Flowers have been associated with mankind since time immemorial. All over the world, flowers have been used for religious offerings and other social ceremonies. In the past, these requirements were met from home grown flower plants, but with increasing urbanization and accelerated income level, demand for flower cultivation products has increased. This has resulted in flower cultivation being recognized as an important segment in agribusiness. With increasing demand and consumption, production has increased and nontraditional areas have emerged as important players in flower cultivation. We use flower in most of our daily events like religious festival, political activities, birthday party, marriage and death ceremony.

Commercial flower cultivation is one of the most profitable, important and innovative ventures at the national and international scene. Bangladesh has its own tradition of flower cultivation since long past. According to Bangladesh Flower Growers & Exporter Association (BFA), now it has emerged as one of the most important and lucrative professions in Bangladesh. Some of the progressive farmers in the country

have been cultivating flower commercially as a viable alternative to traditional cash crops. Many kinds of cut-flowers, orchids and other ornamental plants are grown for the domestic and international trade in various developed and developing countries of the world. Flower cultivation has emerged as a profitable agribusiness option in the world in recent years, particularly in the developing nations like Bangladesh. In the present world, flowers are not only important for their aesthetic and social values but also for their economic contributions. According to World Trade Organization and export promotion bureau (EPB, 2012), cut-flowers constitute 45 percent share of the total world trade in flower products. However, commercial flower cultivation in Bangladesh is in its budding stage. The varieties of flowers that Bangladesh can supply include rose, tuberose, gladiolus, carnation, gerbera, gypsophila, limonium, anthurium, philodendron, leather fern, orchid-dendrobium, mokkara, oncidium, lily and foliage. In fact, these are wholly originated agricultural products of Bangladesh which enable the importers to enjoy preferential tariff treatment under the Generalized System of Preference (GSP). This has widened the scope of export development of Bangladeshi flowers. Developed countries like the European Union (EU), the United States of America (USA) and Japan find the shopping of flowers from Bangladesh highly attractive. They said investment in flower cultivation is extremely profitable in Bangladesh because of the cultivation friendly environment and cheap labor. The ethnic markets of the Middle East and the South East Asia also hold up high prospects for investment and export (Mou, 2006).

Table 1.1 Production of rose in Bangladesh

Year	Area(ha)	Production(mt)	Yield
2008-2009	91	2353	25.95
2009-2010	106	2400	22.71
2010-2011	111	2423	21.92
2011-2012	114	2526	23.67
2012-2013	119	2762	26.67
2013-2014	121	2815	28.52
Mean	96	2332	25.62
CV%	11.9	16.5	16.1
Growth rate(%)	6.30	8.8	1.59

Source : BBS , 2014

Bangladesh is striving for the future and the Government policy is one of the inducement and facilitation for promotion of investment and export. In response to this policy, entrepreneurs have already started investing in commercial farming of flowers and exporters are getting increasingly involved in channeling the produce to all potential market destinations. Some Non-Government Organization (NGOs) and private entrepreneurs such as Bangladesh Rural Advancement Committee (BRAC), Proshika, Dipta Orchids Limited have already taken initiative for large-scale production and marketing of flowers. Though Bangladesh is a new participant in export market, it has a bright prospect in future to earn foreign currency as like as garment industries by exporting flowers and pot plants.

1.2 History of Flower Cultivation in Bangladesh

In Bangladesh, flower cultivation has developed commercially in the mid eighties in Jhikargachha Upazila under Jessore district. At that time the agricultural crop production was going on in traditional manner. An initiator, Sher Ali, from Jhikargachha Upazila under Jessore district brought the tradition of flower cultivation in this region. It can be said, that was the beginning of commercial flower cultivation, for the very first time in Bangladesh. Sher Ali had his inspiration seeing of flower cultivation success in different regions of India, whilst the flower market was being captured at that time by India, Thailand and other countries including China. Flower had a poor demand back at that period. During the eighties, flower cultivation started awakening here and there. After Jhikorgacha Upazila, flower cultivation spreaded gradually in Sharsha, Chougacha, Monirampur, Keshabpur in a limited extent. Some of them succeeded, but some went back to their traditional cultivation, after being frustrated. Amid the hope and despair, a complete revolution took place in Jhikorgacha Upazila. At the very beginning, Marigold, Rose and Tuberose started making place at the farmers' cultivable fields. The general farmers started realizing the benefits and the hurdles of the flower cultivation. Meanwhile, the surrounding districts had started becoming successful in this cultivation. At the beginning, the farmers started importing the necessary ingredients for flower cultivation including flower-plant and insecticide through many different ways from India. The government and non-government organizations had no exact knowledge on flower cultivation during that time. In the interim, a flower bazaar was formed in Gadkhali village under Jhikargachha Upazila (JCF, 2012). From all around Jessore, the flowers were being

gathered at Gadkhali market. From this market, through the wholesalers, flowers were being sent to all over the country. Due to relevant necessity, the Gadkhali bazaar had shifted at the place beside the main road. According to Bangladesh Flower Growers & Exporter Association (BFA), the Gadkhali market is now Bangladesh's largest flower bazaar. Recently, flower cultivation has adopted commercially in 19 Zillas of our country (Mitul, 2011). The districts are Jhenidah, Chuadanga, Bogra, Rangpur, Dhaka, Manikganj, Narayanganj, Gazipur, Mymensingh, Chittagong and Sylhet. Flower cultivation has emerged as a profitable business which ensures higher potential to return compared to other agricultural crops (Khan, 2012). According to Ministry of Agriculture, about 70% of the total country's demand of flowers is supplied from different upazilas under Jessore district. The Dhaka Ful Baboshayee Kalyan Samity, a flower traders body, estimates that the industry is growing at a rate of 10% per annum.

Bangladesh is a poor country. According to Bangladesh Bureau of Statistics (BBS, 2014) 31.5% people live below poverty line. But flower cultivation may lead better life to this people.

1.3 International Scenario of flower cultivation

About 305,105 ha area was under flower production in different countries of the world, of which the total area in Europe was 44,444 ha, North America 22,388 ha, Asia and Pacific 215,386 ha, the middle East and Africa 2,282 ha and central and South Africa 17,605 ha for rose cultivation. Flowers grown under protected greenhouses in different countries around the world total 46,008 ha. India has the maximum area under ornamental crops (88,600 ha) followed by China (59,527 ha), Indonesia (34,000 ha), Japan (21,218 ha), USA (16400 ha), Brazil (10285 ha), Taiwan (9.661 ha), The Netherlands (8,017 ha), Italy (7.654 ha), the united Kingdom (6,804 ha), Germany (6,621 ha) and Colombia (4,757 ha). Globally more than 145 countries are involved in the cultivation of ornamental crops and the area under these crops is increasing steadily. The production of flower crops has increased significantly and there is a huge demand for floricultural products in the world, resulting in growing International Flower Trade. The world consumption of rose flowers and plants is increasing and there is a steady annual increase of 10 to 15 per cent in all importing countries. Due to globalization and its effect on income, there is growing per capita

floriculture consumption in most of the countries .In case of developed countries, the consumption of flowers is closely linked with GNP per capita income and urban population.

1.4 Objectives of the Study

The objectives of the study are as:

1. To find out the socio-economic status of the rose cultivators.
2. To estimate the profitability of rose cultivation.
3. To measure the relative profitability of rose with major competing flowers.
4. To find out the potentialities and constraints to its higher production.

1.5 Justification of the Study

Agricultural land is gradually converting to homestead and other uses to meet the demand of the vast and fast population growth. At this situation, we have to ensure maximum of the production from limited land area. For doing this, we should change our traditional agricultural practices.

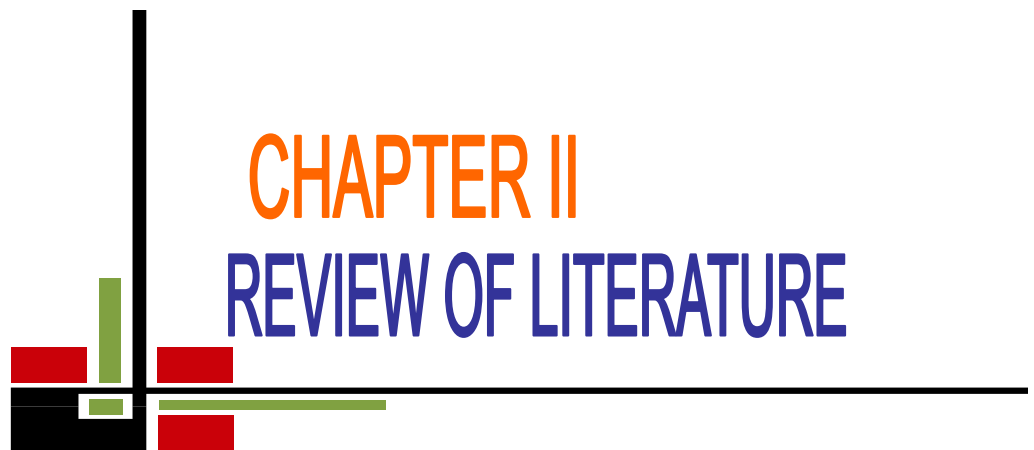
As far as the productivity is concerned there is a lot of scope for increasing the productivity and profit through adoption of the latest improved production and marketing technologies. There is a need to generate information regarding production and marketing aspects, the profile of cut flower growers and the constraints in production and marketing of rose.

Commercial flower cultivation may be an important income generating sector for many developing countries like Bangladesh to ensure food security. Bangladesh has a tremendous potential for flower both for export and domestic market. Different agro climatic conditions are capable of producing variety of flowers round the year. There is a great opportunity for Bangladesh to earn a lot of foreign currency from the international market if the production and marketing of flowers are well developed. Commercial production of flower in Bangladesh started since 1983 as some of the innovative farmers in the country adopted flower cultivation as viable alternatives to traditional cash crops and field crops. According to (BBS, 2014) at present, approximately 12000 farmers are engaged in flower cultivation and 4000 to 5000 farmers' produces ornamental plants on commercial basis. The area coverage under commercial cultivation is approximately 5000 to 6000 hectares of land while

commercial nurseries of rose have covered approximately 2000 to 2500 hectares of land. Bangladesh has to spend roughly TK 2-3 million in importing flower and ornamental plants to meet the market demand in every year (Sayla, 2010). But we have 4,66,607.57 hectares of fallow land in Bangladesh and this fallow land may be used to meet up the domestic demand and also for exporting (BBS, 2011). It is a matter of hope that if flower cultivation could have been developed with necessary support from government then the efficiency in marketing might be achieved within a short span of time. Beside this, rose flower cultivation can make a potential contribution to our Gross Domestic Product (GDP) and can create employment opportunity.

The study is justified on the following grounds:

- It would add new knowledge in the field of rose cultivation and build a foundation for further research.
- Rose producers and traders at different levels will be benefited from the information generated through the study.
- The study might provide valuable information for the policy makers of Government and Non Government Organizations to formulate policy in order to increase production and improvement of socio-economic status of the rose cultivators.
- The study might provide ideas about the potential factors for rose cultivation.
- The study might provide ideas about profitability of rose cultivation in Bangladesh.



CHAPTER II
REVIEW OF LITERATURE

CHAPTER II

REVIEW OF LITERATURE

Review of literature in any research is essential because it provides a scope for reviewing the stock of knowledge and information relevant to the proposed research. But there is little information regarding knowledge and information relevant to the present research. Literature and research of the major past works in connection with the present study were searched because this knowledge and information provide guideline in designing the future research problem and validation of the new findings. Some studies relating to floriculture along with rose are reviewed here.

Hossain and Rahman (1994) conducted a study on the potential of rose marketing in Dhaka city. They analyzed the existing marketing system of flowers in Dhaka city from the view point of demand and supply and also examined its future prospect. The findings of the study indicate some important characteristics of flower business. The capital investment in flower business has been increasing, the total number of shop exhibits an increasing trend, merchandizing pattern have been diversified, the scale of flower made products is rising and all sales are for cash.

Sultana (1995) completed a study on rose marketing in Dhaka city. She analyzed the marketing systems, buyer's acceptability; problems involved and offered suggestions for improving the present marketing system of flowers in Dhaka City with 30 shops and 30 flower users. She identified monthly Gross Margin of large, medium and small traders. The author also identified major problems of flower traders and mentioned some measures for solution of the problems.

Mou (2006) completed a study on commercial production and marketing of flower in Bangladesh. She attempted to examine the profitability and gross margin of flower vis-a-vis its competing crops. Per hectare gross margins of flower combination like orchid, gerbera + rose, gerbera + rose + gladiolus and for gerbera were TK 428988, TK 1927626, TK 801332.88 and TK 2533078, respectively. She also identified problems and constraints associated with production and marketing of flower and made some recommendations on the basis of constraints, which may help develop flower industry and strengthen its marketing system.

Quinto and Wittstock (2008) discussed the status of flower cultivation in Bangladesh. For quick returns and good market prospects, a vast area of agricultural land has been turned into flower growing areas. This study also shows the level of women's involvement in different stages of flower cultivation.

Seraj (2008) reported the history of commercial rose cultivation which took place in Jhikorgacha upazila of Jessore during Mid-80s. Gradually it has spread other upazilas of Jessore and now Gadkhali bazaar of Jessore district is the largest flower bazaar of Bangladesh. Approximately thirty thousand flower-farmers of Jessore region are now engaged with this bazaar. Each day, flowers of Tk.10, 00,000- Tk.15, 00,000 are being bought and sold over here.

Qamruzzaman (2009) made a research that the exports flowers and floral products of Bangladesh to Pakistan, Italy, Portugal, Saudi Arabia, India, the United States, South Korea, Philippines, Singapore, Japan, Germany, Britain, Denmark and France was now take a good position and day by day. It enlarges and adds a new dimension in the export item of Bangladesh. The country earned over 166.1 million taka (about 2.56 million US dollars) in FY 2004-05. But due to lack of proper steps Bangladesh cannot utilize the opportunity.

Rahman (2009) observed the role of flower cultivation in poverty reduction and employment generation in Trilochonpur union of Jhenidah area, where around 2,300 bighas are now under flower cultivation. Farmers have shifted from traditional cultivation to flower cultivation as it proves more profitable for them. It also provides opportunities for women to generate income and contribute to bear their children's educational expenses. This study revealed the urgency of government initiatives to solve the problems such as a lack of preservation facilities, absence of cool transportation systems, scarcity of fertilizer and irrigation for the development of the business.

Haque and Hossain (2010) showed producers, marketing intermediaries and traders secure significant profit from flower production and marketing.

Chowdhury and Islam (2010) studied that conducted to estimate the post harvest losses of Rose and other flowers its impact on farmer's net profit, marketing margin and marketing efficiency and also estimate producer's share in consumer's price at different level of marketing such as producer, local trader, wholesaler and retailer.

Sayla (2010) conducted an analysis of commercial production of rose in Dhaka and Narayanganj district. The author attempted to examine the profitability of three selected crops. Per hectare net return of producing rose, marigold and gladiolus were TK 319372.01, TK 146080.91 and TK 631428.9, respectively. She also identified problems and constraints associated with production of these flowers and made some recommendations on the basis of constraints, which may help to develop flower industry and strengthen its production.

Sohel (2010) observed that the rose market is expanding day by day. Countries like Columbia, Israel, Kenya and Italy have made an entry and have created a good position. But the world floriculture trade is still controlled by Holland. The international floriculture market trade is estimated to be 40 billion US dollars of which cut-flowers account for nearly 25 billion US dollars. So Bangladesh has huge potential to capture the market. Through taking proper steps this opportunity can be utilized.

FAO (2011) represented the floriculture situation in Bangladesh among the countries of Asia. Commercial production of flowers is adopted on about 10,000 hectares where approximately 95% is being practiced under open field conditions, mainly for the local markets. The stage of commercial development is still at a very early stage. There exist some serious problems such as, poor extension and consultancy services, lack of knowledge and infrastructure of post-harvest management, lack of quality certification of flowers and government support is very limited.

Bhairat and Jadav (2012) observed the study was undertaken to examine the economics of rose cultivation, backward and forward linkages in rose production and identify the constraints to rose production and marketing using primary data collected from the Krishnagiri district of Tamil Nadu. The results showed that there was an impressive growth of rose.

Khan (2012) found that Bangladesh is well suited for commercial flower cultivation due to its favorable climate, cheap labor and relatively low capital investment. Now about 1, 50,000 people are directly or indirectly involved in floriculture business in Bangladesh. During FY 2010-2011, flowers worth US dollar 127,488 was exported. Though there exist some problems, it can be a profitable agro-economic sector which has a good prospect for exports.

Sudhagar (2013) argued that the commercial development of rose industry in India is still at a very early stage. The major problems in the development are unorganized marketing, weak research, lack of support infrastructure and lack of educational base. Besides observing these problems, the author gave some positive news regarding floriculture development

Alam and Monayem (2013) conducted a analysis that the profitability of rose cultivation in some area of jessore is a profitable enterprise . The highest profit was obtained from rose cultivation compared to its competitive crops like potato+jute, lentil+til and mustard+mungbean for rose. Human labor, land preparation cost, seedling, urea, TSP, MoP and irrigation had positive effect on the yield of rose.

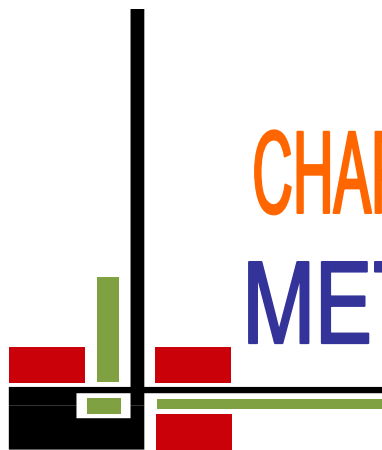
Sharifuzzaman (2013) described the potentialities of flower cultivation. It is emerged as attractive business because many farmers shifted to floriculture from vegetables for higher profitability. The flower business has also formed other areas of trade including nurseries, transport service providers etc. As a result, it not only creates jobs for many, especially poor women, but also enlarges the opportunity to export. But due to the problems in production, harvesting, packaging, transportation and lack of government support, traders face losses which can reduce the prospects of flower exports, although Bangladesh has the potential to gain from floriculture due to its favorable agro-climate.

Kavirashna and Singh (2014) the study was undertaken to examine the economics of rose cultivation, backward and forward linkages in rose production and identify the constraints to rose production and marketing using primary data collected from the

Krishnagiri district of Tamil Nadu. The results showed that there was an impressive growth alongwith high investment.

Abid and Usman (2014) stated that the flowers are used for expressing or exhibiting the innermost feelings to the beloved ones or complementing any one or versifying any conceivable emotions. The export of flower from Pakistan is very negligible as compared to other countries like Holland, USA, Columbia, Kenya, Zimbabwe, Japan and Israel. This paper examined the cost and return of rose cut flower along with Cobb Douglass production function to determine factors affecting rose cut flower productivity

The above review indicates that a few studies have been conducted on floriculture along with rose. The result of these studies varies widely in different reasons. Most of these studies dealt with marketing system of flower, but there is hardly any study related to profitability analysis and potential factors of rose cultivation. So, the present study aims to gather information on profitability and potential factors of rose cultivation in Jessore district of Bangladesh.



CHAPTER III
METHODOLOGY

CHAPTER III

METHODOLOGY

Methodology is an indispensable and integral part of any study. The reliability of a specific study finding depends to a greater extent on the appropriate methodology used in the study. Improper methodology very often leads to misleading result. So careful consideration are needed by an author to follow a scientific and logical methodology for carrying out the study. The author has great responsibility in describing clearly what sorts of method and procedure is to be followed in selecting the study area, the source of data and the analysis as well as interpretation to arrive the conclusion.

3.1 Selection of the Study Area

There are seventy five villages of five upazilas where flower is cultivated in Jessore district. Among them, Jhikargachha upazila is the most important area for flower cultivation. Two villages (Sayedpara and Potuapara) of Jhikargachha Upazila under Jessore District were selected purposively as study area. Purposive and multi-stage sampling techniques were taken into consideration. Firstly, Jessore district of the Southwest region of Bangladesh was deliberately selected. There are eight upazillas under Jessore district. Among these upazillas, Jhikargachha upazilla was selected purposively. Then Gadkhali union was purposively selected among 11 unions of this upazilla. Gadkhali union is familiar for biggest flower market of the Bangladesh. It is consists of 16 villages. Finally, two villages namely Sayedpara and Potuapara were selected randomly.

3.2 Sample Size and Sampling procedure

The total sample sizes from two villages were 100 flower cultivators. The number of sample from each village was 50 flower cultivators. A simple random sampling procedure was used to select the farmer who cultivate rose in these area for collecting the data.

3.3 Data Collection

Primary data were collected through structured interview schedule which were filled up by the researcher. A simple random sampling technique was used to collect data from respondent farmer. Data was collected July to December 2014.

Additionally, secondary data were also collected from various sources like Bangladesh Flower Growers & Exporter Association (BFA), Bangladesh Bureau of Statistics (BBS) and Ministry of Agriculture.

3.4 Data Processing and Analysis

In this study, a statistical tool and technique both descriptive and inferential was used to analyze the data. Besides, a descriptive tool and technique tabulation was also used in the study. Primary data were recorded into Statistical Package for Social Science (SPSS) and economic analysis was carried out for determining costs and returns. In this study, cost and return analysis were done on both variable and total cost basis. To achieve the objective of the study a simple tabular analysis was completed. The following profit equation was developed to assess the profitability of rose cultivation.

3.5 Analytical Technique

In this study, a statistical tool and technique both descriptive and inferential was used to analyze the data specially analysis the Cob-Douglas production function. Besides, a descriptive tool and technique tabulation was also used in the study.

Both tabular and functional methods of analysis were employed in this study. At first, the collected data were edited and summarized for analysis. The tabular method of analysis involved different descriptive statistics like mean, percentage, ratio, etc. Land use cost was calculated on the basis of per year lease value of land. The profitability of rose cultivation was estimated by using gross margin, net return, and benefit cost analysis.

Cob-Douglas production function analysis was used to estimate the productivity and resource use efficiency of rose cultivation.

To determine the contribution of the most important variables in the production process, the following specification of the model was applied:

$$Y = aX_1^{b_1} X_2^{b_2} X_3^{b_3} X_4^{b_4} X_5^{b_5} X_6^{b_6} X_7^{b_7} X_8^{b_8} X_9^{b_9} e^{u_i}$$

The empirical production function was the following:

$$\ln Y = a + b_1 \ln X_1 + b_2 \ln X_2 + b_3 \ln X_3 + b_4 \ln X_4 + b_5 \ln X_5 + b_6 \ln X_6 + b_7 \ln X_7 + b_8 \ln X_8 + b_9 \ln X_9 + U_i$$

Where,

Y = Yield (Stick/ha); X₁ = Human Labor (Man-day/ha); X₂ = Land preparation cost (Tk/ha); X₃ = Seedling (Tk/ha); X₄ = Manure (kg/ha); X₅ = Urea (kg/ha); X₆ = TSP (kg/ha); X₇ = MOP (kg/ha); X₈ = Insecticide cost (Tk/ha); X₉ = Irrigation cost (Tk/ha); a = Intercept; b₁, b₂ ----- b₉ coefficients of the respective variables to be estimated. U_i = Error term.

Net value of the produce and cost involved were estimated. Cost of variables inputs such as land preparation, labor, seed, fertilizer, manure, irrigation, and insecticides were calculated. The tabular method of analysis involved different descriptive statistics like mean, percentage, ratio, etc. Land use cost was calculated on the basis of per year lease value of land.

Variable costs

- i. Cost of seedling or plantlet
- ii. Cost of hired labour
- iii. Cost of organic manure
- iv. Cost of land preparation
- v. Cost of chemical fertilizer
- vi. Cost of irrigation
- vii. Cost of insecticide

Fixed costs

- i. Interest on operating capital
- ii. Land use cost

Gross Margin

$$GM = TR - VC$$

Where as,

GM = Gross Margin

TR = Total Revenue

VC = Variable Cost

Net Income

$$NI = TR - TC$$

Where as,

NI = Net Income

TR = Total Revenue

TC = Total Cost

For estimating net income total cost was subtracted from total revenue. Total cost includes variable cost plus fixed cost.

Benefit Cost Ratio: The BCR was computed by this method.

$$BCR = \frac{\sum_{t=1}^r \frac{B_t}{(1+r)^t}}{\sum_{t=1}^r \frac{C_t}{(1+r)^t}}$$

where B_t is the benefit in time t and C_t is the cost in time t . If the BCR exceeds one, then the project might be a good candidate for acceptance.

$$BCR = TR/TC$$

Whereas

BCR = Benefit Cost Ratio

TR = Total Revenue

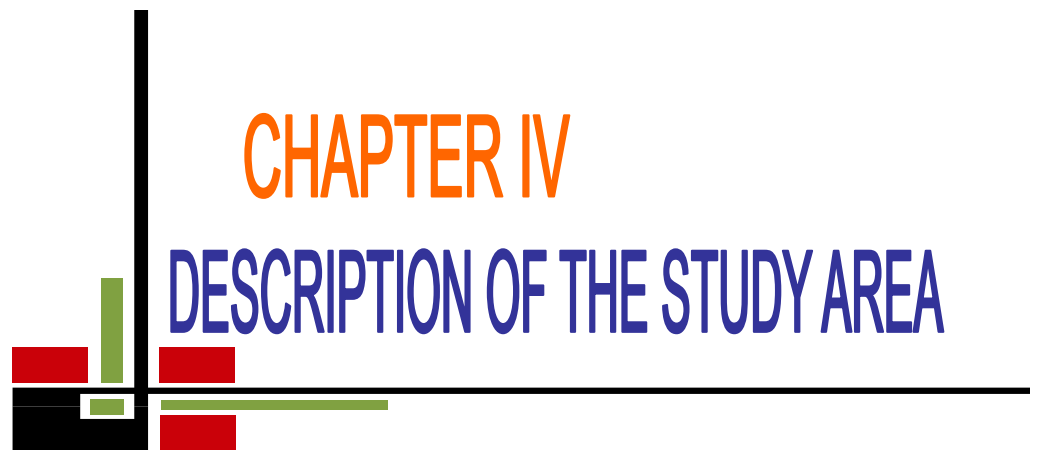
TC = Total Cost

Π = Gross return – (Variable cost + Fixed cost)

Here, Π = Profit per hectare

Gross return = Total production \times per unit price

The separate activity analyses of farm producing different combination of flowers were also performed by tabular analysis. Per hectare profitability of rose cultivation from the view point of individual farmers were measured in terms of gross return, gross margin, net return and benefit cost ratio.



CHAPTER IV

DESCRIPTION OF THE STUDY AREA

CHAPTER IV

DESCRIPTION OF THE STUDY AREA

Study area is very important for any study. This chapter focuses on the demography geography, location climate and economy of this area. It indicates the reliability of the study. Climate, land and soil condition are important factors of any study area because the production depends on these.

Khulna Division

History

Khulna Division is one of the seven divisions of Bangladesh and is located in the south-west of the country. It has an area of 22,285 km² and a population of 15,563,000 at the 2011 Census (preliminary returns). Its headquarters is Khulna city in Khulna District.

Geography

The Khulna division borders the Indian state of West Bengal to the west, the Rajshahi Division to the north, the Dhaka and Barisal Divisions to the east, and has a coastline on the Bay of Bengal to the south. It is part of the Ganges River delta or Greater Bengal Delta. Other rivers include the Madhumati River, the Bhairab River and the Kopotokkho River. The region also includes several islands in the Bay of Bengal.

Administrative District.

Administrative districts are.....

- | | |
|----------------------|-----------------------|
| 1. Bagerhat District | 2. Chuadanga District |
| 3. Jessore District | 4. Jhenaidah District |
| 5. Khulna District | 6. Kushtia District |
| 7. Magura District | 8. Meherpur District |
| 9. Narail District | 10. Satkhira District |

Jessore district

Jessore district was established in 1781. It consists of 4 municipalities, 36 wards, 8 upazilas, 92 unions, 1329 mouzas, 1434 villages and 120 mahallas. Upazilas are Abhaynagar Upazila, Bagherpara Upazila, Chaugachha Upazila, Jessore Sadar Upazila, Jhikargachha Upazila, Jessore District encompasses 2606.98 km². It is

bounded by Jhenaidaha and Magura districts at the north, Satkhira and Khulna districts at the south, Narail and Khulna districts at the east, and Assam of India at the northeast. Major rivers that flow through this region are the Bhairab, Chitra, Betna, Kobadak, and the Mukteshwari.

Geography

Jessore is a district in the southwestern region of Bangladesh. It is bordered by India to the west, Khulna District and Satkhira District to the south, Magura and Narail to the east, and Jhenaidah District to the north. The district produces a variety of crops year-round. Date-sugar, called patali, is made from the sap of locally grown date trees. It is cooked, thickened and crystallised using a traditional method. Patali is mainly produced in Khajura, but many date trees are cultivated in the Keshabpur Upazila and Manirampur Upazila areas.

Jessore is known as center for flower production in Bangladesh. Variety of flowers are produced in each season. Jessore's rare geographical figure is suitable to grow flowers. 85% of flowers in Bangladesh is produced in Jessore. Traditionally, usage of flower was not a mainstream in Bangladesh. However, nowadays, quite a few flowers are used in occasions such as festivals and weddings. Many people are using flowers as gift. Change of lifestyle has create the demand and number of flower shops in urban cities has increased. We found many roses in the market. Flesh cut roses are beautiful. It sold at Tk. 20 for 100 roses. It sells 50 times higher in Dhaka. Investment in storage warehouse, transportation and R&D for new production are some of the priorities to improve the quality of production. The flower production cluster in Jessore has 4000 producers in the area, mostly small and poor. These investment will enhance their living standards. Most of all, it will provide quality flowers with low cost.

It is not known much but 15% of all the roses sold in Japan is imported from Kenya. Kenya gained its competitiveness by investment and technological support from Western companies. With proper investment, Bangladesh may also gain international competitiveness.



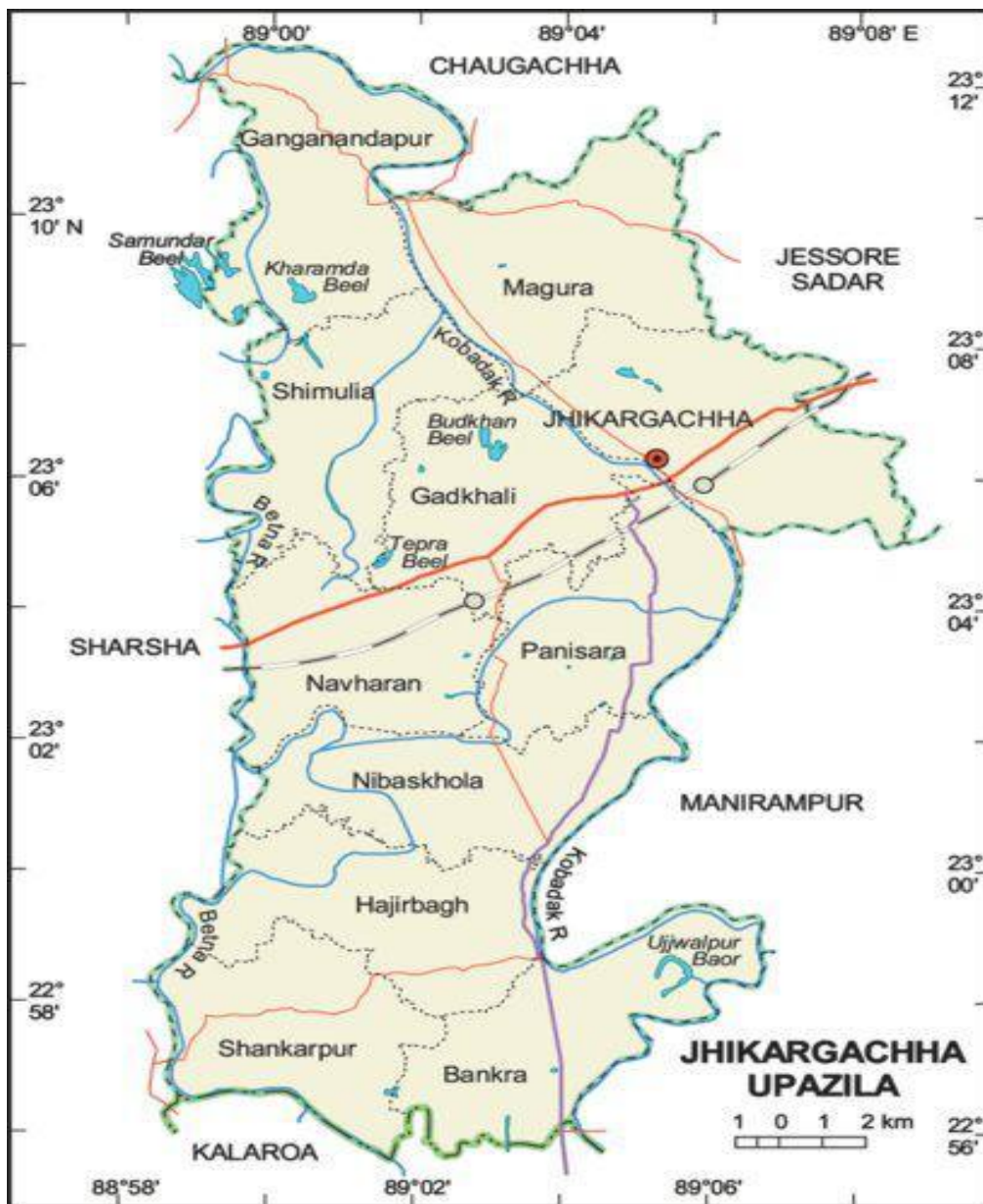
Demography

Jessore District had a population of 2,764,547 at the 2011 Census. 85.5% of the population are Muslims, 14.21% are Hindus and the remaining 0.29% practise another religion. Religious institutions included 3928 mosques, 463 temples, 86 churches and 17 Buddhist temples. The average literacy rate is 45.2% very low compared to the rest of the world, but average in Bengal. 41% of males are literate, while only 25.1% of females are.

It consists of the following eight Upazilas.

Upazila	Area in km ²	2011 Census population	Upazila	Area in km ²	2011 Census population
Abhaynagar Upazila	247.21	262,434	Keshabpur Upazila	258.44	253,291
Bagherpara Upazila	308.29	216,897	JessoreSadar Upazila	435.22	742,898
Chaugachha Upazila	269.31	231,370	Manirampur Upazila	444.20	417,421
Jhikargachha Upazila	307.96	298,908	Sharsha Upazila	336.28	341,328

The upazilas are further divided into 9 municipalities, 36 wards, 92 unions, 1329 mouzas, 1434 villages and 120 mahallas.



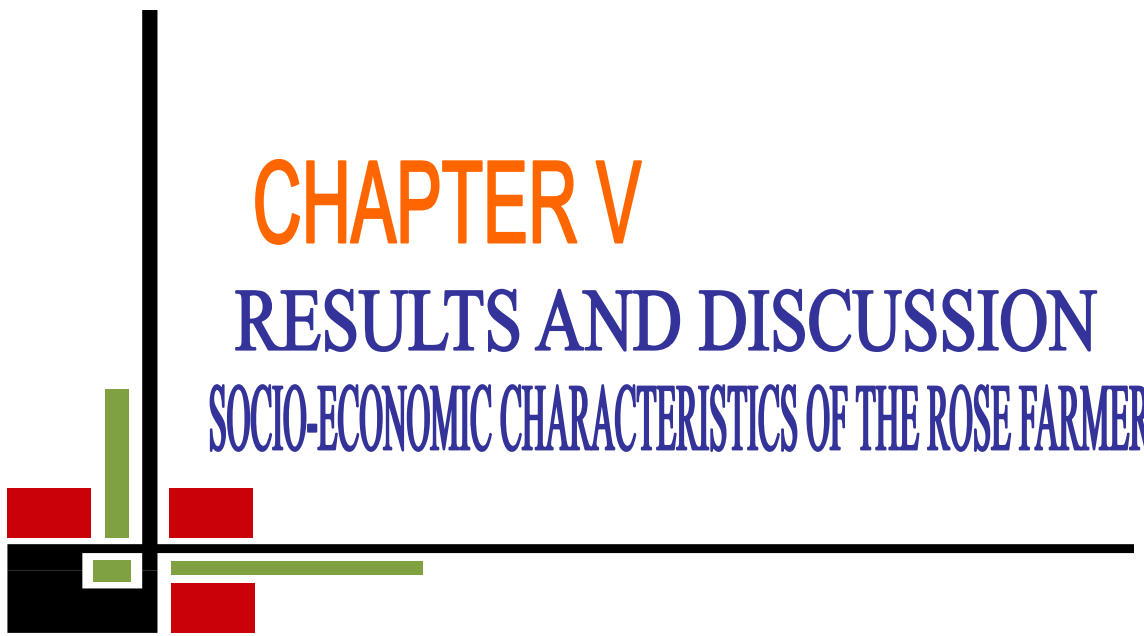
Climate

Annual average temperature range from 9 to 41 °C (48 to 106 °F). The annual rainfall is 1,537 millimetres (60.5 in).

Economy

The main occupations are agriculture 39.84%, agricultural labourer 24.13%, wage labourer 2.68%, commerce 11.99%, service 8.66%, industry 1.41%, transport 3.11% and others 8.18%. The main crops are paddy, jute, sugarcane, flower, vegetables. Main fruits are date, jackfruit, papaya, banana, litchi and coconut. Main exports are cotton, jute leather, jackfruit, banana, comb and date molasses, and vegetables. Gadkhali Union in Jessore is a place for growing flowers.

Growth of commercial flower production can be traced back to the early 70s that got impetus in the mid 80s when large-scale commercial production started in Jhikargacha upazila of Jessore district. Later it speeded largely in Jessore, Savar, Chuandanga, Mymensingh and Gazipur which turned to be the major flower production belt in Bangladesh. Presently, Jessore is home to 70% of Bangladesh's flower production and engages 4,500 growers in a small, but dynamic industry. Presently, according to the assistant general secretary of Dhaka Flower Traders Kallyan Bohumukhi Somobay Samity in Jessore district about 25000 families are directly engaged in flower production while around 0.2 million people are directly or indirectly dependent on this sub-sector.). At present, 10,000 hectares of land covers flower cultivation taking the lead by Jessore district. More than 5,000 resilient farmers are growing flower and foliage in the country and about 150,000 people are directly or indirectly involved in floriculture business as their sole livelihood. Approximately 8,000 farmers are involved in flower cultivation and 2000 to 3000 farmers in ornamental plants on commercial basis (BBS, 2008). About 100,000 to 120,000 people are directly or indirectly involved in floriculture industry for their livelihoods. The area coverage under commercial flower cultivation is approximately 10,000 hectares of land while commercial nurseries have covered approximately 2,000 to 2,500 hectares of land.



CHAPTER V

RESULTS AND DISCUSSION

SOCIO-ECONOMIC CHARACTERISTICS OF THE ROSE FARMERS

CHAPTER V
SOCIO-ECONOMIC CHARACTERISTICS OF THE ROSE FARMERS

Socio-economic condition of the sample farmers is very important in use of research planning because there are numerous interrelated and constituent attributes characterizes an individual and profoundly influences development of his/her behaviors and personality. People differ from one another for the variation of socio-economic aspects. However for the present research a few of the socio-economic characteristics have been taken into consideration for discussion.

5.1 Age and Sex Distribution of the Sample Farmers

The age structure of the sample farmers was examined by classifying into three age groups that were Young age (<35 years), Middle age (35-50 years), and Old age (>50 years). The different age groups of the farmer are shown in Figure 5.1. There are three groups because almost all respondent cover these three categories. It was found that the highest number of the respondents (40%) belongs to the Young age (<35 years) followed by the Old age (>50 years) (32%) and 28% respondents are in the Middle age (35-50 years). It is evident from the table that 95 percent male and 5 percent female were rose farmers in the study area.

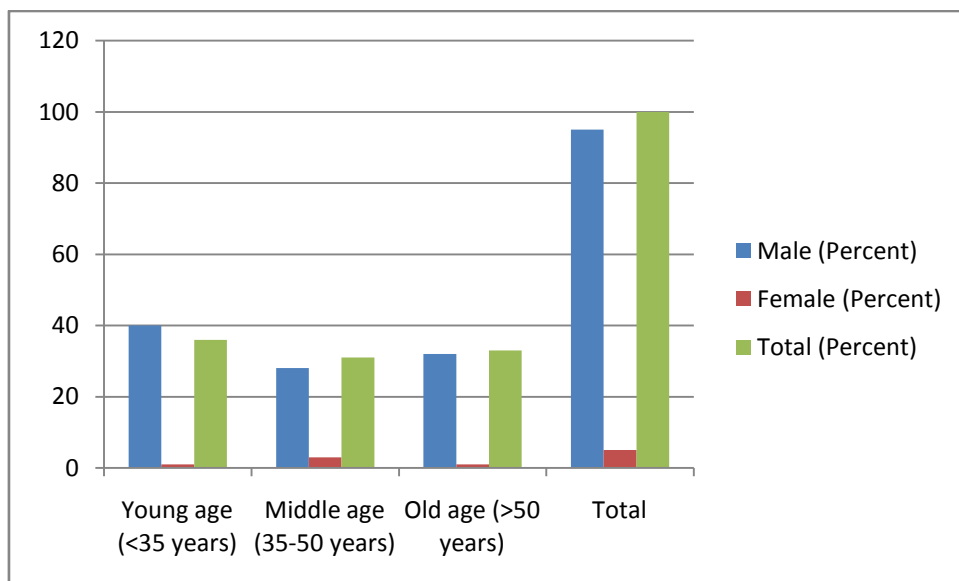


Figure 5.1 : Age and Sex Wise Categorization of Rose Farmers

Source: Field survey, 2014.

5.2 Level of Education of the Respondents

On the basis of education the respondents were classified into five categories as shown in Figure 5.2. It was revealed that highest portion of the respondents (34%) has achieved primary level of education followed by illiterate (25%), secondary level (24%) and higher secondary level (16%). Only two respondent was graduate and above. It is clear from the study that all the respondents who are involved in rose cultivation were more or less educated.

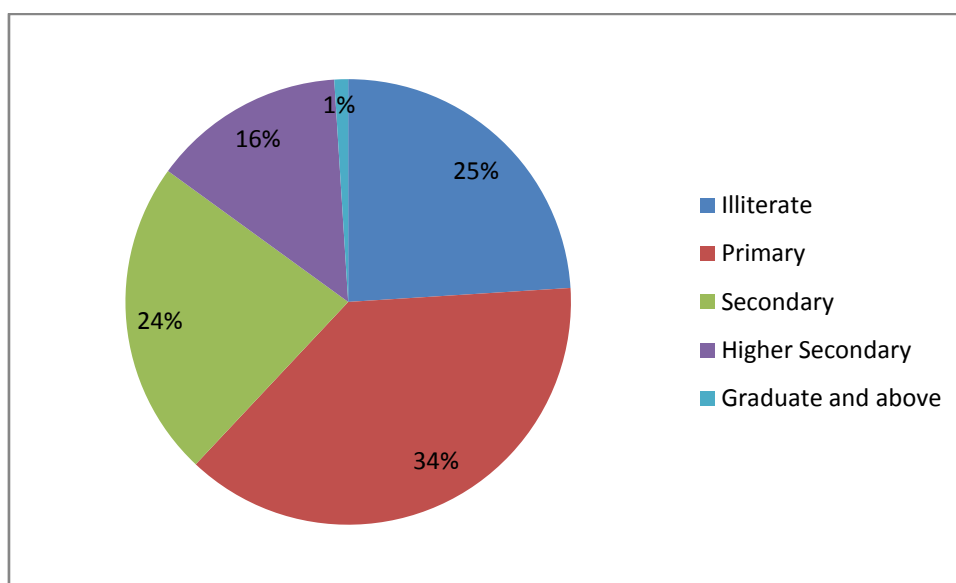


Figure 5.2: Level of Education of the Respondents

Source: Field survey, 2014.

5.3 Family Size

Data presented in Table 5.3 indicate that most of the respondents family (62%) belonged to small size family categories followed by medium size family (31%) while only about 7% of the respondents belonged to large family size category. On the basis of the report of national household survey average family size in total is 4.35 where in rural it is 4.36 and urban is 4.29. In this study most of the respondent hold small family belonging to the members of 1 to 5.

Table 5.3 : Family Size

Family Size	Frequency (%)
Small Sized Family (1-5 Members)	62
Medium Sized Family (6-8 Members)	31
Large Sized Family (>8 Members)	7
Total	100

Source: Field survey, 2014.

5.4 Distribution of Family Member by Literacy and Sex

The literacy levels of the farm family members of the rose cultivators are given in Table 5.4. It appears from the table that 14 percent family members were not enrolled of which 8 percent were male and 6 percent were female. It also reveals that 39, 20, 17 and 10 percent of the family members had primary, secondary, higher secondary and graduate and above respectively.

Table 5.4 : Distribution of Family Member by Literacy and Sex

Level of education	Male (%) (Number)	Female (%) (Number)	Total (%) (Number)
Not Enrolled	8 (36)	6 (27)	14 (63)
Primary	16 (73)	23 (105)	39 (178)
Secondary	9 (41)	11 (50)	20 (91)
Higher Secondary	10 (45)	7 (32)	17 (77)
Graduate and above	6 (27)	4 (18)	10 (45)
Total	49 (222)	51 (232)	100 (454)

Source: Field survey, 2014.

5.5 Occupational Status of Rose Farmers by Sex

The work in which a man is engaged for more or less throughout the year is known as the occupation of that person. Selected farmers of the study area were engaged in various other occupations along with rose cultivation. The main and subsidiary occupations of selected farmers are presented in Table 5.5. Female workers contribution is very low in all types of occupation for religious view. It is not acceptable in rural society of female to work in open field.

Table 5.5 : Occupational Status of Rose Farmers by Sex

Occupation	Male (%)	Female (%)
Only Flower farming	35	2
Flower farming + crop farming	34	0
Flower farming + crop farming + business	9	0
Flower farming + business	11	0
Flower farming + service	5	1
Flower farming +crop production+ service	1	0
Flower farming + business+ service	0	0
Flower farming + housekeeping	3	1
Flower farming + others	2	1
Total	95	5

Source: Field survey, 2014.

5.6 Amount of Land Ownership of Rose Cultivation

On the basis of farm size the respondents were classified into four categories as shown in Table 5.6. From the table we can notice that the amount of land ownership of rose cultivation. Only 3% of the respondents was medium farmer but now after flower cultivation it is now 38%. Marginal farmers condition has also improved. Before rose cultivation 85% were marginal farmers but now only 29% are marginal farmers.

Table 5.6 : Amount of Land Ownership Before and After Cultivation

Amount of land ownership	Amount of land ownership before cultivation (%)	Amount of land ownership after cultivation (%)
Marginal sized farm (0-0.5 ha)	85	29
Small sized farm (>0.5-1 ha)	14	33
Medium sized farm (>1-2.5 ha)	3	38
Large sized farm (>2.5 ha)	0	0
Total	100	100

Source: Field survey, 2014.

5.7 Land Ownership Patterns of Rose Farmers by Sex

In this study, the land holding of the sample farmers was defined as the sum total of all types of land possessed by the farmers and having legal right on it. Land size is measured by the entire land area operated by the farmers. The land ownership patterns of rose cultivators were self-land holdings, only lease and both. Distribution of land per farmer is presented in Table 5.7.

Table 5.7 : Land Ownership Patterns of Rose Farmers by Sex

Land ownership pattern	Male (%)	Female (%)	Total(%)
Owner cultivator	56	2	58
Only lease	5	0	5
Both	34	3	37
Total	95	5	100

Source: Field survey, 2014.

5.8 Farm Ownership Pattern

From the present study it is revealed that most of the respondents (92 %) have single farm ownership pattern. Only 8% of the respondents have joint farm ownership pattern.

Table 5.8 : Cultivation Ownership Pattern

Farm ownership pattern	Respondents (%)
Single	92
Joint	8
Total	100

Source: Field survey, 2014

5.9 Capability to Take Desired Food

It is revealed from the present study that capability to take desired food has changed positively due to their better income after rose cultivation.

Table 5.9 : Capability to Take Desired Food

Capability	Farmers (%)
Not capable	2
Moderately capable	59
Highly capable	39
Total	100

Source: Field survey, 2014.

5.10 Condition of Sanitation

Data presented in Table 5.10 indicate that most of the respondents' families (79%) have good sanitation while 21% have modern sanitation. None of these families use open space on this purpose.

Table 5.10 : Condition of Sanitation

Condition of sanitation:	Respondents (%)
Open space	0
Modern	21
Good	79
Total	100

Source: Field survey, 2014.

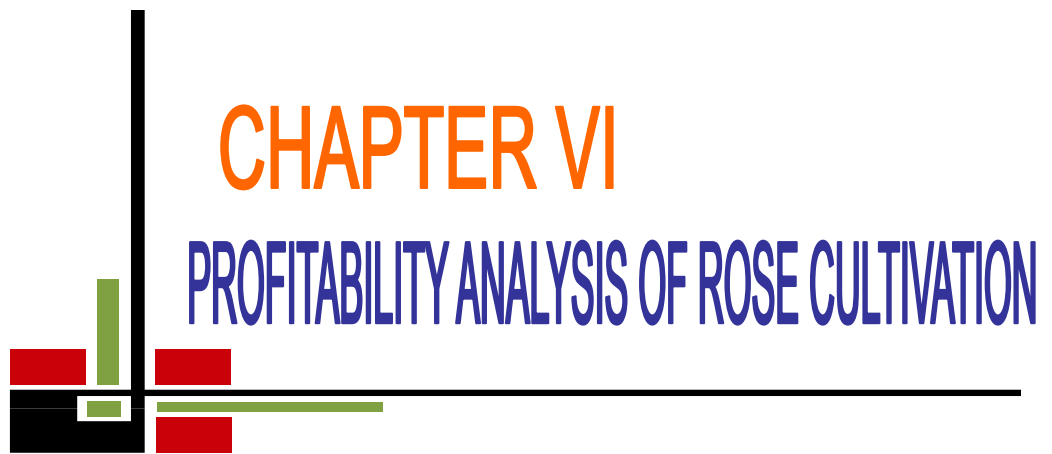
5.11 Economic Situation of the Farmers

Yearly income has increased greatly after rose cultivation. Only 17% farmers' yearly income was less than Tk. 2 lac. 69% farmers' yearly income was between TK. 2 lac to TK. 5 lac. 14% farmers' yearly income was greater than TK. 5 lac.

Table 5.11 : Economic Situation of the Farmers

Yearly income	Cultivators (%)
Less than TK. 2 Lac	17
TK. 2 Lac to TK. 5 Lac	69
Greater than TK. 5 Lac	14
Total	100

Source: Field survey, 2014.



CHAPTER VI
PROFITABILITY ANALYSIS OF ROSE CULTIVATION

CHAPTER VI
PROFITABILITY ANALYSIS OF ROSE CULTIVATION

6.1 Input Use Pattern

The number of human labor used for growing rose was 811 man-days per hectare. The cost of land preparation was tk.2250 per hectare. The average number of seedling was 6225 per hectare. The respondent farmers used 1646 kg of manures per hectare. Rose farmers also used chemical fertilizers like urea, TSP, MOP, Zipsum , Zinc sulphate and Boron at the rate of 1645kg, 1156kg, 560kg, 408 kg,45 kg and 1.5 kg per hectare respectively. The use of urea, TSP and MOP were found higher than the recommended doses (Urea 1450 kg/ha, TSP 1000kg/ha, and MOP 400kg/ha).The cost of irrigation was 18352 tk/ha. (Table 6.1).

Table 6.1 : Input Use Pattern of Rose Cultivation in Study Area

Items	Amount
Human labour(man days/ha)	811
Family(man days/ha)	396
Haired (man days/ha)	415
Land preparation cost(tk/ha)	2220
Seedling(no/ha)	6225
Manures(kg/ha)	1664
Fertilizers(kg/ha)	
Urea	1645
TSP	1156
MOP	560
Zipsum	408
Zinc sulphate	45
Bron	1.5
Insecticides(tk/ha)	47200
Irrigation(tk/ha)	32650

Source: Field survey , 2014.

6.2 Cost and Return from Rose Cultivation

All variable cost incurred for human labor, land preparation, seedling, organic manure, fertilizers, insecticides, and irrigation were considered for calculating the cost of rose cultivation. The cost of land use calculated on the basis of prevailing local lease value of land.

6.2.1 Variable cost

Variable cost is an important part for any economic analysis. To compute the profitability we need to calculate variable cost. The items include in variable cost are land preparation is tk.2020 per hectare haired labor is tk.45674 which contribute 12 percent of total cost. Seedling cost is tk.50153 which contributes 13 percent of total cost. Total cost contribution of fertilizer is 22 percent. Urea cost is tk.22562, TSP cost is tk.28650, MOP cost is tk.15760, Zipsum cost is tk.2560, Zinc sulphate cost is tk.4002 (Table 6.2). The cost of insecticides is tk.47200 which contribute 12 percent of total cost. Irrigation cost is tk. 32650 which contribute 6 percent of total cost. Total variable cost is 66 percent of total cost.

6.2.2 Fixed cost

Fixed cost is also an important part for economic analysis. Here land use cost is tk.70650 which contributes 21 percent of total cost. Family labor cost is tk.40780 which contributes 10 percent of total cost. Interest on capital is tk.19390 which contributes 3 percent of total cost (Table 6.2).

6.2.3 Total cost

Total cost is calculated on the basis of variable cost and fixed cost. Total variable cost is tk.252734 per hectare and total fixed cost is tk. 130827 per hectare. So the total cost is tk.383561 per hectare (Table 6.2).

Table 6.2 : Cost and Return of Rose Cultivation in Study Area

Item	cost of cultivation(tk/ha)
A. Variable cost	252734 (66%)
Land preparation	2020 (1%)
Hired labour	45674 (12%)
Seedling/cutting	50153 (13%)
Organic manure	1203 (0.25%)
Chemical fertilizer	(22%)
Urea	22562
TSP	28650
MOP	15760
Zypsum	2560
Zinc sulphate	4002
Boron	300
Insecticides	47200 (12%)
Irrigation	32650 (6%)
B. Fixed cost	130827(34%)
Interest on operating capital	19390 (3%)
Family labour	40787 (10%)
Land use	70650 (21%)
C. Total cost(A+B)	383561 (100%)
Yield(Flower/ha)	558502
Price(tk/flower)	1.5
D. Gross return (yield* price)	837753
Gross margin(D-A)	585019
Net return(D-C)	454192
E. Benefit cost ratio	
Full cost basis	2.18
Variable cost basis	3.31

Source: Field survey, 2014.

6.2.4 Gross return

Gross return is calculated on the multiplication of yield per hectare and price of per rose. The yield of rose per hectare is 558502 and price of per flower in local level is tk.1.5. So the gross return is tk.837753 per hectare (Table 6.2).

6.2.5 Gross margin

Gross margin is calculated by the subtraction from gross return to variable cost. Gross return is tk.837753 and the variable cost is tk.252734 in per hectare. So the gross margin is tk.585019 (Table 6.2).

6.2.6 Net return

Net return is calculated by the subtraction from gross return to total cost. Gross return is tk.837753 and total cost is tk.383561. So the net return is tk.454192.

6.2.7 Benefit cost ratio (undiscounted)

Benefit cost ratio is calculated from the table 6.2 by the division of gross return and total cost on the full cost basis. Gross return is tk.837753 and total cost is tk.383561 per hectare. So the Benefit cost ratio (BCR) on full cost basis is 2.18. Here variable cost is tk.252734 per hectare. So the benefit cost ratio on variable cost basis is 3.31 (Table 6.2)

6.3 Factors Affecting the Yield of Rose

Here an attempt has been made to identify and measure the effects of different factors on yield of rose in the framework of production function analysis. Nine explanatory variables were taken into consideration for production function analysis. The effects of each of the variables on the yield of rose are interpreted below.

6.3.1 Effect of Human labor (X1):

From the table it can be seen that the value of the coefficient was positive and significant at 1 percent level of significance. One percent level of significant indicates that the 1 percent increase in the use of human labor keeping others factor remaining constant would increase the yield of rose by 0.01 percent.

6.3.2 Effect of land preparation(X2):

It was observed from the regression that the coefficient of land preparation was positive and significant at five percent level of significance. Five percent level of significant indicates that the one percent increase in the cost of land preparation keeping others factor remaining constant would increase the yield of rose by 0.001 percent

Table 6.3 : Estimated coefficients and their Related Statistics of Production Function for Rose

Explanatory variable	Co-efficient	t-values
Intercept	12.62	3.38
Human labour(x ₁)	0.01***	4.05
Land preparation(x ₂)	0.001**	0.65
Seedling(x ₃)	0.043***	2.62
Manure(x ₄)	0.354ns	1.01
Urea(x ₅)	0.054***	2.36
TSP(X ₆)	0.057**	2.61
MOP(X ₇)	0.036***	3.58
Insecticides(x ₈)	0.001**	0.85
Irrigation(x ₉)	0.028***	4.20
R ²	0.69	
F value	19.76***	

Note: *and ** indicate significant at 1% and 5% level respectively**

6.3.3Effect of seedling (X3)

From the table the value of coefficient of seedling was positive and significant at one percent level of significance. One percent level of significant indicates that the one percent increase in the cost of seedling keeping other factor remaining constant would increase the yield of rose by 0.043 percent.

6.3.4 Effect of manure (X4)

From the value of coefficient of the use of manures is not significant.

6.3.5 Effect of urea (X5)

It was observed from the regression that the coefficient of the use of urea was positive and significant at one percent level of significance. One percent level of significant indicates that the one percent increase in the use of urea keeping others factor remaining constant would increase the yield of rose by 0.054 percent. Here statistical t -value is 2.36

6.3.6 Effect of TSP (X6)

From the table the value of coefficient of the use of TSP was positive and significant at five percent level of significance. Five percent level of significant indicates that the one percent increase in the use of TSP keeping other factor remaining constant would increase the yield of rose by 0.057percent.

6.3.7 Effect of MOP (X7)

It was observed from the regression that the coefficient of the use of MOP was positive and significant at one percent level of significance. One percent level of significant indicates that the one percent increase in the use of urea keeping others factor remaining constant would increase the yield of rose by 0.036 percent.

6.3.8 Effect of insecticides (X8)

From the table it can be seen that the value of the coefficient was positive and significant at five percent level of significance. Five percent level of significant indicates that the one percent increase in the use of insecticides keeping others factor remaining constant would increase the yield of rose by 0.01 percent.

6.3.9 Effect of irrigation (X9)

It was observed from the regression that the coefficient of the irrigation was positive and significant at one percent level of significance. One percent level of significant indicates that the one percent increase in the use of urea keeping others factor remaining constant would increase the yield of rose by 0.028 percent.

6.3.10 Value of R square

The multiple co-efficient of determination (R^2) is a summary measure which tells how the sample regression line fits with the data (Gujarati, 1995). In this table the value of R^2 was 0.69, that means the variables considered in the models can explain 69 percent of the variation in yield explained by independent variables include in the model.

6.3.11 Value of F

In the table the F value was found 19.76 which is significant at one percent level implying that the variation of yield mainly depends on the explanatory variables include in the model.

6.4 Relative Economic Performance of Rose Cultivation with other Competitive Flowers in Study Area

The cost of production of rose was 36% and 65% higher than its competitive flowers gladiolus and marigold respectively (Table 6.4). The gross return and gross margin of rose is estimated at tk. 837753 and tk. 565629 per hectare respectively. The net return of rose cultivation is tk.454192 per hectare. The net returns from rose cultivation is 52% ,63% and 74% higher than gladiolus, marigold and other flowers respectively (Table 6.4). The benefit cost ratio is 2.18 for rose. On the other hand benefit cost ratio is 2.08, 1.69, and 1.52 for gladiolus, marigold and other flowers respectively.

Table 6.4 : Relative Economic Performance of Rose Cultivation with other Competitive Flowers in Study Area

Parameters	Rose	Gladiolus	Percentage higher than gladiolus	Marigold	Percentage higher than marigold	Others	Percentage higher than others
A. Gross return	837753	517573	38	487956	42	115694	53
B. Total variable cost	272124	184234	32	165689	39	35276	86
C. Total cost	383561	247885	36	288121	65	71438	87
Gross margin(A-B)	565629	33339	41	322267	43	78418	86
Net return(A-C)	454192	214546	52	40678	63	44256	74
Benefit cost ratio	2.18	2.08		1.69		1.52	

Source: Field survey, 2014.

6.5 Sources of Fund

According to field survey, 57% of the cultivators have their own fund as well as they also take loan. 40% of the cultivators have their own fund. Only 3% cultivators uses others fund like friends, kith and kin. No cultivators started their cultivation by only loan. They take loan from local NGOs (BRAC, Grameen Bank).

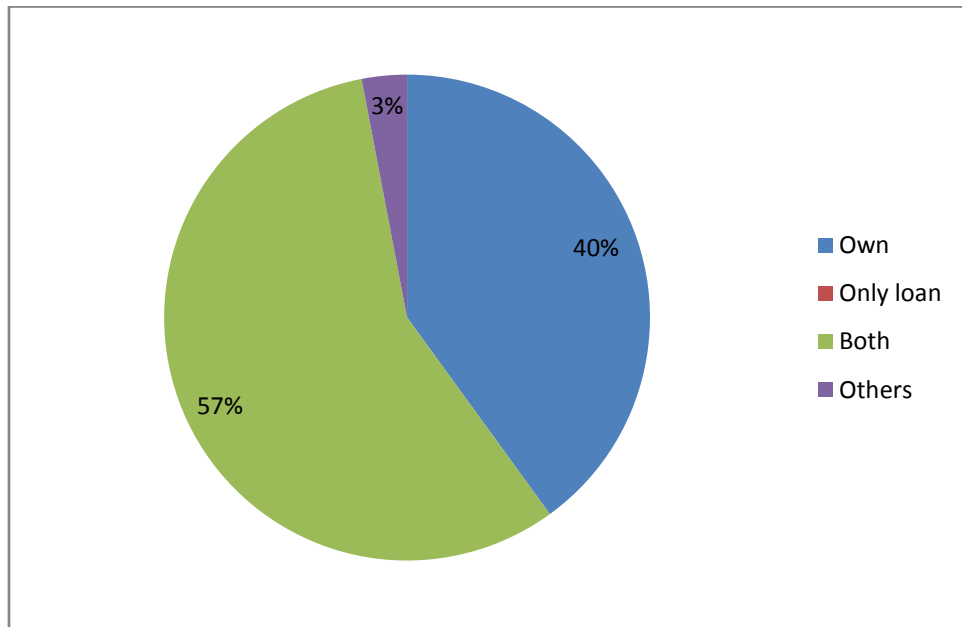


Figure 6.5 : Sources of Fund

Source: Field survey, 2014.

6.6 Credit Facilities

About 60% of the flower cultivators said they have credit facilities and they took it. 24% said they have no credit facilities. The rest 16% said they need not to take credit.

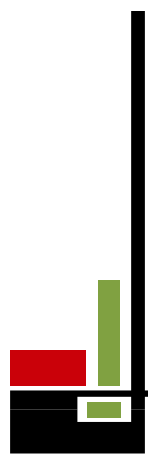
6.7 Credit Borrowings

Among 40% of the no credit borrowers, 23% said they have no credit facilities and other 17% said they have credit facilities but they did not take it. 28%, 24% and 3% male respondents were low credit borrowers, medium credit borrowers and high credit borrowers respectively. Four percent women take medium credit and only one percent woman takes low credit.

Table 6.7 : Credit Borrowings

Credit borrowings	Male (%)	Female (%)
No credit borrower	40	0
Low credit borrower (<TK. 50000)	28	1
Medium credit borrower (TK. 50000-TK. 1 Lakh)	24	4
High credit borrower (>1 Lakh)	3	0
Total	95	5

Source: Field survey, 2014.



CHAPTER VII

POTENTIAL FACTORS FOR ROSE CULTIVATION

CHAPTER VII

POTENTIALITIES FOR ROSE CULTIVATION

The potential factors for rose cultivation are the factors that encourage farmers to cultivate flower like cultivation friendly environment, high profit, availability of raw materials etc. These potential factors attract new farmers to cultivate rose and facilitate the existing flower to carry on cultivating flower. So, potential factors of rose cultivation are crucial for this sector.

7.1 Advantageous Factors for Rose Cultivation

The perception of the rose cultivators regarding the advantageous factors for rose cultivation at Jhikargachha upazila in Jessore district is shown in Table 7.1. The rose cultivators' responses were found very spontaneous on the advantageous factors for rose cultivation in the region. Three-quarters or more cultivators mentioned the advantageous factors for rose cultivation as investment friendly climate (fertile soil structure, free from extortion, harmony among local people, positive attitude to support one-another) and availability of local funds. Further, availability of raw materials and other resources were mentioned as advantageous factors for investment by about three-quarters of the respondents. Over two-fifths of them ranked investment friendly climate and availability of plenty of local funds as the topmost advantageous factors for investment in flower cultivation in Jessore region.

Table 7.1: Advantageous Factors for Rose Cultivation

Advantageous Factor	Percentage of responses
Cultivation friendly environment	78%
Availability of raw materials	75%
Availability of land	69%
Easy cultivation technology and high yield	63%
High profit	52%
Availability of local fund	43%
Well set-up transportation and communication facilities	38%
Export potentials	19%
others	11%

Source: Field survey , 2014.

The rose cultivators' perceptions regarding advantageous Factors for rose cultivation are shown in the Table 7.1. According to respondents, the advantageous factors for rose cultivation are cultivation friendly environment (78%), availability of raw materials (75%), availability of land (69%), easy cultivation technology and high yield (63%), high profit (52%), availability of local fund (43%), well set-up transportation and communication facilities (38%), export potentials (19%) and others (11%).



CHAPTER VIII

PROBLEMS FACED BY THE FARMERS

CHAPTER VIII

PROBLEMS FACED BY THE FARMERS

The problems of production and marketing arise when the objectives of production and marketing are constrained to be achieved. For the sake of convenience, the constraints faced by the selected farmers in the study area have been categorized under four general groups such as economic, technical, marketing, and social and others that are shown in Table 8.1

8.1 Economic Problems

In the survey, farmers were asked to identify some economic problems related to growing flowers. The problems that were identified and faced by them are discussed below.

8.1.1 High Input Price

The cultivation mostly depends on some important inputs. Seedling or plantlet, fertilizer, insecticide and irrigation are some of them. In every week some of these inputs must be needed for rose cultivation. But high price of input affect floriculture negatively. According to the field survey, seventy six percent of the rose producers had to face this problem.

8.1.2 Insufficient Credit Facilities

Insufficient credit is a big problem for farmers. Rose cultivation needs a lot of credit. In the study area farmers do not get sufficient loan from the banks. Banks are reluctant to give loan to farmers. As a result they take loan from different NGOs and money lender at high interest rate. Twenty three percent of the producers had to face this problem.

8.1.3 Low Selling Price

Low selling price is a great problem for farmers because they do not get their anticipated price. Thirty three percent of the flower producers had to face this problem.

8.2 Technical Problems

Technical problems are related to production techniques and technology such as lack of scientific knowledge, lack of quality seeds or plants, attack by pest and diseases, lack of storage facilities and lack of extension work.

8.2.1 Lack of Scientific Knowledge and Training

Commercial rose farming is a new practice in Bangladesh. There is a shortage of trained manpower to handle commercial floriculture activities such as production, post harvest handling, product development and biotechnology. Most of the farmers keep a little knowledge about modern technology. It is evident from the table that forty two percent of farmers faced the problem of proper knowledge and training.

8.2.2 Attack by Pests and Diseases

In the survey, the producers mentioned that considerable amount of loss in yield of their flowers was caused by the attack of pest and diseases. During the present investigation, sixty eight percent of flower producers faced this problem.

8.2.3 Lack of Extension Services

Farmers need to introduce new information and technologies about rose cultivation because of new practice of commercial flower farming. Nine percent of producers claimed that there is lack of extension contact with any organization.

8.3 Marketing Problems

In the survey area, the rose cultivators face several marketing problems which are discussed below

8.3.1 Inadequate and Underdeveloped Market

Inadequate and underdeveloped market is a big problem for the rose cultivators. Thirty eight percent of flower producers claimed that they faced this problem.

8.3.2 Transportation and Communication Problems

Transportation is the life blood of modern marketing system. The communication network in the study areas was not properly developed for the movement of

agricultural products from the producer's field to different markets. Gadkhali market is the center of flower market. Some villages are far from the market. About sixty one percent of rose cultivators stated that inadequate communication were a problem in transporting their flowers from different flower markets.

8.3.3 Lack of Market Information

Proper market information is essential for quick disposal because rose is a highly perishable product so it requires proper market information but twelve percent of farmers reported that they failed to get necessary market information in time.

8.4 Social and Other Problems

In the survey area, the flower farmers face some social and other problem like loss of production due to theft, flower damage by animals and spoilage that are discussed below.

8.4.1 Loss of Production Due to Theft

In the month of February, March and December the flower farmers' face this problem due to International Valentine's Day, International Mother Language Day, National day and the Victory Day. Thirty three percent of flower producers claimed that they faced this problem.

8.4.2 Flower Damage by Animals

Flower damage by animals is also a social problem. Seventeen percent of flower producers claimed that they faced this problem.


8.4.3 Spoilage

Spoilage of flower affect negatively to the rose cultivators. In the survey area, eighty five percent of flower producers claimed that they faced this problem.

Table 8.1: Problems Confrontation of the Farmers in Flower Cultivation

Problems	No. of respondent	Ranking
Economic problems		
High input price	76	1
Low selling price	33	2
Insufficient credit facilities	23	3
Others	2	4
Technical problems		
Attack by pest and disease	68	1
Lack of scientific knowledge and training	42	2
Lack of extension services	9	3
Others	2	4
Marketing problems		
Transportation and communication system	61	1
Inadequate and underdeveloped	38	2
Lack of market information	12	3
Others	2	4
Social and other problems		
Spoilage	85	1
Loss of production due to thief	33	2
Flower damage by animals	17	3
Others	4	4

Source: Field survey, 2014.



CHAPTER IX

SUMMARY, CONCLUSION AND RECOMMENDATION

CHAPTER IX

SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter focuses on the summary in the light of the discussion made in the earlier chapters. Conclusion has been made on the basis of empirical result. Policy recommendations are drawn for improvement of the existing inefficiency of rose production in Jessore district.

9.1 SUMMARY

The economic performance of rose cultivation in selected areas of Bangladesh has been evaluated in this study. The results revealed that rose cultivation is highly profitable at farm level. Its cultivation is also profitable compared to its competitive flowers. Human labor, seedling, and irrigation had positive effect on the yield of rose cultivation. The study also revealed that due to various socio-economic constraints, the rose farmers cannot receive expected yield and price of their produces.

Specifically findings from the study are as below:

The highest portion of the farmers was Young aged having small sized family (60%). 38% of the respondents possessed with primary level of education and 33% do only flower farming. 92% have single farm ownership pattern.

The rose cultivators face several economic, technical, marketing and social problems. The major problems found in the study area regarding rose cultivation were spoilage due to lack of cooling facilities (85%), high input price (76%), attack by pest and disease (68%), inadequate transportation and communication system (61%), lack of scientific knowledge and training (42%), low selling price (33%), insufficient credit facilities (23%).

The results indicated that 100% farmers cultivated Lincoln variety of rose. The average cost of rose cultivation were Tk.383561 and Tk.252734 per hectare on total cost and variable cost basis respectively. The major share of total cost was for human labour (21%), land use (21%) fertilizer (22%) irrigation (6%) insecticide (12%). The yield of rose was 55,85,02 flowers per hectare. The net return from rose cultivation was Tk. 454192 per hectare. The benefit cost ratios were 3.31 and 2.18 on

variable cost and full cost basis, respectively. The highest profit was obtained from rose cultivation compared to its competitive flowers like gladiolus, marigold and others for rose. Human labor, land preparation cost, seedling, urea, TSP, Mop and irrigation had positive effect on the yield of rose. Lack of technical knowledge, non-availability of HYV seedling, and infestation of insects and diseases were major problems found in rose cultivation. Government should take necessary steps to overcome these problems.

This study found that rose-farming shows encouraging results to improve farmer's socioeconomic condition, increases self-employment opportunity, promotes entrepreneurship in both urban and rural areas and boosts export-trade to earn foreign currency, it proves to be a potential tool for poverty alleviation and sustainable growth in the economy of Bangladesh.

Rose Farmers under "Centralized Full Management Contract" farming system of Bangladesh Rural Advancement Committee produce good quality flowers for both local and international market, Rose farming generates more revenue almost double than is cultivation of other flower per hectare, Marketing margin is higher for retailer than wholesaler-cum-retailer than BRAC and Return on investment of wholesaler-cum-retailer was higher than other traders, Lack of mother stock and their high price, price of fertilizer and insecticides, lack of scientific knowledge & training, attack by pest and disease, lack of extension work came out as major financial and technical problems of the flower farmer, Inadequate and underdeveloped transportation and communication system, low market price, lack of market information, unstructured market are among major market and marketing related problem, Marketing intermediaries specified price instability, lack of adequate market information, lacking storage facilities, unsold flower, inadequate shop-space, demand fluctuation, strikes as their problems and constraints.

For our country, accelerated agricultural growth through crop diversification offers considerable opportunity for expanding income and employment of rural people. Flower cultivation is being considered as the best option for crop diversification, employment generation and improvement of socio-economic conditions of people. This study shows that rose cultivation is a prospective business which ensures higher profit. Bangladesh has a very favorable climate to turn the flower business into

booming industry. Jessore is regarded as commercial zone of flower cultivation. It can not only play a vital role in employment generation but also can contribute in the national economy through earning valuable foreign currency. But the commercial development of the business is still at very early stage. The present rose cultivators are facing several economic, technical, marketing and social problems mentioned above. If we can solve it, this industry must play a great role to economic growth because it has a great prospects like favorable condition, need lower investment, development partners are keen on this area and development assistance suppose to be available, growing concern over skill requirements among the traders, farmers, and other stakeholders and increasing demand of export.

The findings of the present study indicate that production of rose is a profitable business for farmers. The return over cost is almost double, which indicates high profitability. Also, trading of rose is a profitable venture for different intermediaries. It can be said that flower cultivation and marketing has wider scope in Bangladesh, so the farmers and intermediaries could certainly be benefited financially if performance of marketing system of flower becomes well developed. The growing demand of rose in the domestic as well as in the export market requires a concerted effort on the part of the government as well as the private entrepreneurs to develop industry on scientific lines.

9.2 CONCLUSION

The results revealed that rose cultivation is highly profitable at farm level. Its cultivation is also profitable compared to its competitive flowers. Human labor, seedling, and irrigation had positive effect on the yield of rose cultivation. Lack of technical knowledge, non-availability of HYV seedling, and infestation of insects and diseases were major problems found in rose cultivation. Government should take necessary steps to overcome these problems. Jessore is regarded as commercial zone of flower cultivation. It can not only play a vital role in employment generation but also can contribute in the national economy through earning valuable foreign currency. But the commercial development of the business is still at very early stage.

9.3 RECOMMENDATIONS

Based on the findings of the study, the following recommendations were put forward for the improvement of rose cultivation at farm level.

Farmers training should be conducted by the BARI scientists to develop technical knowledge about improved cultivation practices of rose. High yielding varieties rose seedling/cutting should be made locally available to the farmers at proper time. For this reason, government should encourage researcher and private seed companies for producing HYV seedling/cutting of rose. More intensive research should be undertaken by BARI scientists to develop disease and insect-pest resistant HYV varieties of rose in the near future. Market infrastructure should be developed in terms of quick transportation, proper storage and other physical facilities to reduce spoilage and damage.

- Cultivators should provide proper cooling facilities at market place. When they can't sell their flowers, it spoiled. So, if they get cooling facility, they will be able to sell it in the next day.
- Input price should be reduced or subsidized for lowering the cost of production.
- Pure pesticide and pest management knowledge should supply to the flower cultivators.
- Proper transportation and communication system should be ensured.
- Flower cultivators need to be trained in the scientific production practices and technology related to this new enterprise.
- Fair selling price should be ensured.
- Skill development training on Post Harvest Management of flowers and ornamental plants is required for the farmers and traders as well.

9.3 Limitation of the Study

1. Most of the data collected through interview of the farmers. so sometimes they were not well co-operated with the interviewer.
2. The information gathered mostly through the memories of farmers which are not always correct.
3. It is not grown without much care practice, profit are not remember by the farmers.
4. Sometimes respondents are not interested to gave information to the authors.
5. For the resource and time constraints broad and in depth study got hamper to some extent.



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APPENDIX

Appendix I

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INTERVIEW SCHEDULE ON
ECONOMIC ANALYSIS OF ROSE CULTIVATION IN SOME
SELECTED AREAS OF JESSORE DISTRICT IN BANGLADESH

Name of farmer:.....

Village:..... post:.....

Thana:..... District:.....

(Please Answer the following Question)

1.How old are you?..... Years

2.What is your level of education?

primary	secondary	Up to secondary	No education

3.How many members are in your family?.....

Type	No. of member
Male	
Female	
child	

4.Please indicate the area about your farm size:

Land Description	Local unit	Hactor
Homestead land		
Own iand under own cultivation		
Land given to other on barga		
Land taken from other on barga		
Land taken from other on lease		
Total		

5.Please indicate your annual income from different sources during last Year(2014)

Agriculture	Area	Production	Income	Total amount in Tk
Rice				
Vegetable				
Fisheries				
Business				
Othrer				

6. Which type of input use by farmer

Name of input	Source of input	Rose	Gladelious	Marigold	others
labour	Home labours				
	Local labours				
	Hired labours				
Seed	Authorised delar				
	Local trader				
	Private seed company				
	BRAC				
	DAE				
	Owned seed				
	others				
Fertilizer	Organic				
	Chemical				
	Manure				
Irrigation	DTW				
	LLP				
	STW				
Mechaniary use	Hired				
	Owned				

7. Cost of inputs for flower cultivation

	Type of rice	Name of input	Use of total amount	Cost of input
	Rose	Seed		
	Glandulous			
	Others			
	Rose	Fertilizer		
	Glandulous			

	Others			
	Rose	Irrigation		
	Gladiolus			
	Others			
	Rose	pesticide		
	Gladiolus			
	Others			
	Rose	Labour		
	Gladiolus			
	Others			
	rose	Mechaniary use in cultivation		
	Gladiolus			
	Others			
rose	Miscellaneous			
Gladiolus				
Others				

8. Please indicate your produced flower and sold flower amount and their price in 2014

Name of flower	Total cultivated area	Total yield (UNIT)	Production		Sold		Total price in TK
			Total market price (tk/unit)	Total price of produced crop in (tk)	Quantity sold in (unit)	Market price per unit	
Rose							
Gladelious							
Marigold							
Other							

1) Problem faced by farmers

a) Economic problems

- High input price
- Insufficient credit facilities
- Low selling price
- Others.....

b) Technical problems

- Lack of scientific knowledge and training
- Bad environment
- Attack by pest and disease
- Lack of extension work
- Others.....

c) Marketing problems

- Inadequate and underdeveloped
- Transportation and communication system
- Low market price
- Lack of market information
- Others.....

d) Social and other problems

- Loss of production due to thief
- Flower damage by animals
- Spoilage
- Others.....

2) Types of flower produced & why:

.....

3) Occupational distribution of flower farmer

- Only Flower farming
- Flower farming + crop farming
- Flower farming + crop farming + business
- Flower farming + business
- Flower farming + service
- Flower farming + crop production +service
- Flower farming + business +service
- Flower farming + housekeeping
- Flower farming + others

4) Why did you come in flower cultivation and who encouraged you?
.....

5) Have you the accessibility to desired food item?

- Yes
- No
- Not always or irregular or seasonal

6) Condition of sanitation:

- Open space
- Moderate
- Good

7) Which factor influences you to cultivate flower?

- Favorable environment
- Availability of raw materials
- Availability of land
- Easy cultivation technology and high yield
- High profit
- Availability of local fund
- Well set-up transportation and communication facilities
- Export potentials
- Others.....

Date:00/00/2014

**THANK YOU FOR YOUR
KIND CO- OPERATION**

***INTERVIEWED BY
DINARA ZAMAN***

Appendix II

Cost and return from other competitive flowers

Parameters	Gladiolus	Marigold	others
Variable cost	184234	165689	35276
Haired labour	6630	21393	9880
Land preparation	3225	5420	5740
Seed	1050	69277	1202
Manures	830	3692	1582
Fertilizers	4576	43966	14515
Pesticides	820	10148	438
Irrigation	1345	4463	2851
Fixed cost	20316	46494	34162
Family labor	3000	20000	6400
Land use	17316	26494	27762
Interest on operating capital	370	5575	1068
Gross return	517573	487956	115694
Total cost	247885	288121	71438
Gross margin	33339	322267	78418
Net return	214546	406786	44256
Benefit cost ratio	2.08	1.69	1.52