# AN ECONOMIC ANALYSIS ON PRODUCTION AND MARKETING OF PRINCIPAL FLOWERS IN NADIA DISTRICT OF WEST BENGAL – A CASE STUDY



*A thesis*
*submitted to the*
*Bidhan Chandra Krishi Viswavidyalaya*
*in partial fulfilment of the requirements for Degree of Doctor of Philosophy*
*in*
**AGRICULTURAL ECONOMICS**

**by**
**Mrityunjoy Sinha**

**DEPARTMENT OF AGRICULTURAL ECONOMICS**
**FACULTY OF AGRICULTURE**
**BIDHAN CHANDRA KRISHI VISWAVIDYALAYA**
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# APPROVAL OF EXAMINERS FOR THE AWARD OF THE DEGREE OF DOCTOR OF PHILOSOPHY IN AGRICULTURE (AGRICULTURAL ECONOMICS)

We, the undersigned, having been satisfied with the performance of **Shri Mrityunjoy Sinha** in the viva-voce examination conducted today, the 5th May, 2006, and recommended that the thesis be accepted for the award of the Degree of Doctor of Philosophy in Agriculture (Agricultural Economics).

| Name | | Signature |
|---|---|---|
| **Dr. Md. H. Ali.**<br>Lecturer(Sr.), Dept. of Agricultural Economics | Chairman,<br>Advisory Committee | 05-05-06 |
| Dr. D. Naik<br>OUAT, Bhubaneswar | External Examiner | 5.5.2006 |
| **Dr. A.K. Mukherjee**<br>Professor, Dept. of Agricultural Economics | Member,<br>Advisory Committee | 5/5/06 |
| **Dr. B. M. Banerjee**<br>Professor, Dept. of Agricultural Economics | Member,<br>Advisory Committee | 5/5 |
| **Dr. P. K. Sahu**<br>Lecturer (Sr.), Agricultural Statistics | Member,<br>Advisory Committee | 5.5.06 |
| Prof. A. Mitra | Departmental Nominee | 5/5/06 |
| **Dr. K. Bhattacharya**<br>Professor, Dept. of Agricultural Economics | Head | 05/5/06 |

# BIDHAN CHANDRA KRISHI VISWAVIDYALAYA

## FACULTY OF AGRICULTURE

## DEPARTMENT OF AGRICULTURAL ECONOMICS

**From: Dr. Md. H. Ali**
Lecturer (Sr.),
Dept. of Agricultural Economics

*P.O. Krishi Viswavidyalaya*
*Mohanpur, Dist. – Nadia*
*Pin-741252, WestBengal*

*Ref. No... ... ... ... ... ... ...*

Date....16-09-...., 2005

# *Certificate*

*This is to certify that the work recorded in the thesis entitled "**An Economic Analysis on Production and Marketing of Principal Flowers in Nadia District of West Bengal – A Case Study**" submitted by **Mr. Mrityunjoy Sinha** in partial fulfillment of the requirements for the award of the Degree of Doctor of Philosophy in Agriculture (Agricultural Economics) of the Bidhan Chandra Krishi Viswavidyalaya. He is a faithful and bonafide research worker. This research work carried out under my personal guidance and supervision. The results of the investigation recorded in the thesis have not so far been submitted for any other Degree or Diploma.*

*Mr. Sinha worked in the Department of Agricultural Economics, Faculty of Agriculture, as a Research scholar. During the course of studies, association with me as a Research scholar he earned distinction for his pleasing attitudes and amicable behaviour.*

*The assistance and the help received during the course of investigation have been duly acknowledged.*

**(Md. Hasrat Ali)**
CHAIRMAN
Advisory Committee

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Dated: Mohanpur, Nadia
The 16th September, 2005

Mrityunjoy Sinha
**(MRITYUNJOY SINHA)**

DEDICATED TO
MY BELOVED PARENTS
AND
MY SISTER TUKTUKI

# Abstract

**Topic: "An Economic Analysis on Production and Marketing of Principal Flowers In Nadia District of West Bengal – A Case Study".**

Flowers are associated with mankind from the dawn of civilization. Flower and ornamental plants possess the greatest gift for satisfying the basic desire for the establishment of our link with nature. The growing demand for flowers though have induced the flower-growers to cultivate flowers more intensively but scientists have not been induced so far to develop superior technology for cultivation and post-harvest technology. Therefore, keeping these views in mind, the study has been undertaken with the following objectives: - to assess the relative profitability or feasibility of cultivation of flowers with respect to other competitive field crops following local crop sequences in the study area; to identify important marketing channels of flower marketing and to examine the price spread and marketing margin of flowers; to identify and analysis the constraints in the cultivation and production of flowers; to suggest policy for the improvement of production and marketing of flowers in the light of latest agricultural technology with reference to open market situations.

Flowers are not cultivated uniformly throughout the State of West Bengal. Its cultivation is limited within a few districts of West Bengal and also restricted to a few blocks and mouzas of these districts. Among these districts Nadia is purposively selected. Four blocks namely Ranaghat-I, Ranaghat-II, Hanskhali and Haringhata are again selected on the basis of acreage and volume of flower production. Among the selected blocks, clusters of three mouzas from each block i.e. 12 mouzas are selected from four blocks. Finally, a total of 200 flower-growers are selected from the Nadia district for the present study.

One Wholesale Market namely Mullickghat (Kolkata) Flower Market, three Secondary Wholesale Markets, and five Retail Markets are selected. A total of 30 local assemblers, 10 wholesalers from primary wholesale markets, 30 wholesalers from the three secondary wholesale markets and 50 retailers are selected for price spread analysis

Among the flowers Marigold and Tuberose flowers are taken into account as they are cultivated in a large scale in Nadia district though the others such as Gladiolus, Bela, etc. are cultivated but in negligible area. Price spread for both the flowers taken during the month October-November of the year 2004.

To fulfill the various objectives set out, tabular method of analysis is followed. For economic analysis Cost $A_1$ and Cost D concepts are used. For analysing the marketing efficiency of marketing system, Shepherd's method and Composite Ranking method are used. For constraint analysis, Roy and Dutta's suggestion is followed.

The important marketing channels identified for the study are –

Channel – I: Producer - Wholesaler – Retailer – Flower users.

Channel –II: Producer – Commission Agent - Wholesaler – Retailer – Flower users.

The cost of cultivation for both the flowers are very high in comparison to other competitive field crops such as Jute, Boro rice and Mustard. Both the flowers are very much labour intensive. In case of hired labour a direct relation is observed with size groups but in case of family labour a negative relation is observed with operational holding of both the flowers. From Benefit–Cost Ratios point of view it is observed that both the flowers are more profitable than major competing crops and large group of farmers are staying in an advantageous position. After analyzing the two marketing channels of flower marketing, it is identified that Channel-I is the most efficient over Channel-II as producer's share in consumer's rupee is found to be highest in Channel-I. Crucial problem associated with the production and marketing of flowers is the lack of knowledge about post-harvest technology that is observed after conducting the constraint analysis.

# CONTENTS


| Serial No. | Particulars | Page No. |
|---|---|---|
| **INTRODUCTION** | | |
| 1.1 | Importance of Flower | 1-4 |
| 1.2 | Agri-horticultural Aspects of Marigold Flower | 4-6 |
| 1.3 | Agri-horticultural Aspects of Tuberose Flower | 7-10 |
| 1.4 | Objectives of the study | 10 |
| 1.5 | Plan of the study | 11 |
| **REVIEW OF LITERATURE** | | 12-23 |
| **RESEARCH METHODOLOGY** | | |
| 3.1 | Source of Data and Sampling Design | 24 |
| 3.1.1 | Selection of District and Zone | 24 |
| 3.1.2 | Selection of Blocks and Mouzas | 24-25 |
| 3.1.3 | Selection of Marketing Unit, Channels, Wholesale and Retail Markets | 25-26 |
| 3.1.4 | Selection of Flower and Season | 26 |
| 3.2 | Analytical Technique | 27 |
| 3.2.1 | Income Measures | 28 |
| 3.2.2 | Marketing Margins and Costs | 28 |
| 3.2.2.1 | Producer's price | 28 |
| 3.2.2.2 | Producer's share in Consumer's Rupee | 28 |
| 3.2.2.3 | Marketing Margin of Middleman | 29 |
| 3.2.2.4 | Absolute Margin of $i^{th}$ Middleman | 29 |
| 3.2.2.5 | Percentage Margin of $i^{th}$ Middleman | 29 |
| 3.2.2.6 | Total Cost of Marketing | 29 |
| 3.2.2.7 | Marketing Efficiency | 30 |
| 3.2.2.8 | Composite Index Ranking Methods | 30 |
| 3.2.2.9 | Return- Cost Ratio | 30 |
| 3.3 | Constraints Analysis | 31-32 |
| **CHARACTERISTIC FEATURE OF THE SELECTED DISTRICT** | | |
| 4.1 | District profile | 33 |
| 4.2 | Topography | 33 |
| 4.3 | Area, Population and Infrastructural Facilities | 33-35 |
| 4.4 | Climate | 35 |
| 4.5 | Soil | 35 |
| 4.6 | Agriculture | 35 |
| **RESULTS AND DISCUSSION** | | |
| 5.1 | Groupwise Breakup of Cost of Cultivation of Marigold Flower | 36-37 |

| | | |
|---|---|---|
| 5.2 | Groupwise Economics of Cultivation of Marigold Flower | 37-38 |
| 5.3 | Feasibility of Marigold Flower Over Other Major Competing Crops | 40 |
| 5.4 | Groupwise Breakup of Cost of Cultivation of Tuberose Flower in First Year | 40-42 |
| 5.5 | Groupwise Breakup of Cost of Cultivation of Tuberose Flower in 2nd Year | 42-43 |
| 5.6 | Groupwise Economics of Cultivation of Tuberose Flower per Bigha in Consecutive Two Year | 43-44 |
| 5.7 | Feasibility of Tuberose over Other Major Competing Crops | 44-46 |
| 5.8 | Marketing Channel of Flower Marigold | 47 |
| 5.9 | Price Spread and Marketing Margin of Flower Marigold | 47-49 |
| 5.10 | Functional Analysis of Marketing Margin of Flower Marigold | 50 |
| 5.11 | Marketing Efficiency in Marketing of Marigold Flower | 51-53 |
| 5.12 | Marketing Channel of Flower Tuberose | 53 |
| 5.13 | Price Spread and Marketing Margin of Flower Tuberose | 53-58 |
| 5.14 | Functional Analysis of Marketing Margin of Flower Tuberose in Consecutive Two Year | 58-59 |
| 5.15 | Marketing Efficiency in Marketing of Tuberose Flower in Consecutive Two Years | 60-62 |
| 5.16 | Identification of Constraints | 62-65 |
| 5.17 | Constraint Analysis of Four Blocks of Nadia District of Flower Marigold and Tuberose | 66-72 |
| **SUMMARY, CONCLUSION AND SUGGESTIONS** | | |
| | Summary | 73-76 |
| | Conclusion | 77 |
| | Suggestions | 78 |
| **FUTURE SCOPE OF RESEARCH** | | 79 |
| **BIBLIOGRAPHY** | | i-iv |
| **SCHEDULE** | | i-iii |

# LIST OF TABLES


| Serial No. | Particulars | Page No. |
|---|---|---|
| 1.2.1 | Season Wise Sowing and Transplanting Time of Flower Marigold | 5 |
| 4.1.1 | Salient Information about the District of Nadia | 34 |
| 5.1.1 | Groupwise Breakup of Cost of Cultivation of Marigold Flower in Rs. / Bigha | 36 |
| 5.1.1.a | Size Groupwise and Operationwise Human Labour Utilization (days) for Flower Marigold per Bigha | 37 |
| 5.2.1 | Groupwise Cost $A_1$, Cost D, Gross Return, Surpluses over Costs and Benefit-Cost Ratio of Marigold Flower / Bigha | 38 |
| 5.3.1 | Feasibility of Marigold Flower Over Other Major Competing Crop | 39 |
| 5.4.1 | Groupwise Breakup of Cost of Cultivation of Tuberose Flower in 1st Year | 41 |
| 5.4.1.a | Size Groupwise and Operationwise Human Labour Utilization (days) for Flower Tuberose per Bigha | 42 |
| 5.5.1 | Groupwise Breakup of Cost of Cultivation of Tuberose Flower in Rs. per Bigha in the Second Year | 42 |
| 5.6.1 | Groupwise Cost $A_1$, Cost D, Gross Return, Surpluses over Costs and Benefit-Cost Ratio of Tuberose Flower in Rs. / Bigha in First Year | 43 |
| 5.6.2 | Groupwise Cost $A_1$, Cost D, Gross Return, Surpluses over Costs and Benefit-Cost Ratio of Tuberose Flower in Rs./ Bigha in Second Year | 43 |
| 5.7.1 | Feasibility of Tuberose Flower Over Other Major Competing Crops | 45-45a |

| | | |
|---|---|---|
| 5.9.1 | Price Spread and Marketing Margin of Flower Marigold | 48 |
| 5.10.1 | Functional Analysis of Marketing Margin of Flower Marigold | 50 |
| 5.11.1 | Marketing Efficiency in Marketing of Marigold Flower | 52 |
| 5.13.1 | Price Spread and Marketing Margin of Flower Tuberose in the First Year | 54 |
| 5.13.2 | Price Spread and Marketing Margin of Flower Tuberose in the Second Year | 56 |
| 5.14.1 | Functional Analysis of Marketing Margin of Flower Tuberose in the First Year | 58 |
| 5.14.2 | Functional Analysis of Marketing Margin of Flower Tuberose in the Second Year | 59 |
| 5.15.1 | Marketing Efficiency in Marketing of Tuberose Flower in Consecutive Two Years | 61 |
| 5.16.1 | Identification of Constraints in the Flower Cultivation in Four Blocks of Nadia Districts | 64-65 |
| 5.17.1 | Constraint Analysis of Four Blocks of Nadia District of Flower Marigold | 66-67 |
| 5.17.2 | Constraint Analysis of Four Blocks of Nadia District of Flower Tuberose in the First Year | 69 |
| 5.17.3 | Constraint Analysis of Four Blocks of Nadia District of Flower Tuberose in the Second Year | 70-71 |


# MAP


Block map of Nadia District In between 33-34 pages

# CHAPTER-1

# INTRODUCTION

**1.1 Importance of Flower:**

Flowers are associated with mankind from the dawn of civilization. Flower and ornamental plants possess the greatest gift for satisfying the basic human desire for the establishment of our link with nature. It is said that in India man is born with flowers, lives with flowers and finally dies with flowers. For flower lovers, flowers are silent expression feelings. For the grief striken, it is an expression to share sorrow. For religious minded, it is a gift for seeking the divine blessings. Saying it with flowers is very common and different flowers are used to convey the human feelings. Flowers commonly used for such purposes are: Rose for love; Pansy for thoughts; Carnation (White) for women's love; French Marigold for jealousy/ sorrow; African Marigold for vulgar minds; Narcissus for self esteem; Daffodil for regard; Amaryllis for pride; Iris for message; Snap dragon for presumption; Jasmine for amiability; Lily for purity; Stock for luxury; Sweet pea for departure; etc.

Economic floriculture is the aesthetic branch of horticulture which deals with not only cultivation of ornamentals, annuals, biennials, and perennial plants including potted ones, but also marketing and export of cut flowers, live plants and their economic products like scents, oils and medicine, etc. India always was a very promising country for floriculture due to various reasons such as agro-climatic conditions, geographical location, cheap availability of labour, etc. In spite of these, Indian floriculture was lagging far behind and dormant as late as until 1988. But now flowers and floriculture means a multi-billion dollar business proposition. Floriculture trade is one of the most rapidly expanding and dynamic global enterprise in to-day's world. The transformation of the floriculture industry from being domestic into global, has opened up opportunities for multinational collaborations in developing countries in the Third World.

There is a great increase in demand of floricultural products with increasing income and globalization of economy. Netherlands, Italy, Germany and Japan have strong tradition for cultivation and consumption of flowers. However new production centres are developing in Latin America-Columbia, Costa Rica, Chile; Africa- Kenya,

Rhodesia, Morocco, South America, etc. Asia-India, Israel, Sri Lanka, etc. to meet the internal demand as well as export. These countries produce quality product at low cost, off course, with high cost of investment. Total world export of floriculture products in the year 2000 was reported to be of US$ 7,662,924,000. The Netherlands remained world's largest exporter (US$ 3,810,620) of floricultural products with a share of 50% of the total export, other major exporters of floricultural products are Columbia, Italy, Belgium, Denmark, etc. Latin America and Africa are top ten exporters of floricultural products. Netherland is the leading country with an area of 8004 hectare under flower production, more than 50% of which is under green houses/plastics.

Consumption of flowers is rising both in developed and developing countries. Germany was the largest importing country for floricultural products. During the year 2000 it imported floriculture products of worth US$ 1,457,696,000. Second largest importing country was USA followed by UK and France.

Besides beauty and aesthetic values of flowers, they are important for their economic value as sale of flowers (loose as well as cut blooms), extraction of essential oils and making of economic products like gulkland. The present position of India is not as bright and lucrative as it is in European countries and the USA. In India commercial floriculture is a recent development. It is an organized business in metropolitan towns of India but in small towns it is handled by a fewer merchants. Flowers like Rose, Gladiolus and Tuberose as cut flowers are flown to distant markets from their production centres. For example, Gladiolus and Roses from Kashmir to Delhi, Tuberose from Calcutta to Delhi or Bombay. Loose flowers like Marigold, Jasmine are frequently taken to big cities from distant places. Jasmine flowers are regularly exported from South India to gulf countries. It is reported that, in 1988-89, the exports of floricultural products worth Rs.4.67 crores, of which live plants and dried plants contributed a major share. In 1994-95, India exported plants and flowers worth Rs.30.16 crores, in 1995-96 was Rs.57.80 crores and in 2001-02 it is jumped to Rs.127 crores. But the industry in India is not coming up at the desired level and fails to take off because of the lack of speedy transportation, refrigeration facilities, know-how, proper seeds and planting materials and post-harvest technology. Considering the enormous scope of floriculture industry, Govt. of India has to implement various

measures for popularizing flower production, liberation of flower export policy and developing export network and infra-structure.

The state of West Bengal is uniquely and favourably situated for growing a number of floricultural plants like Rose, Marigold, Tuberose, Jasmine, Chrysanthemum, Gladiolus, etc. for commercial purposes. West Bengal is one of the leading flower consuming as well as growing states in India. In the year 1999-2000 from the area allocation point of view, West Bengal ranks 4$^{th}$ (13,227 ha.) and Karnataka occupies 1$^{st}$ position (20,801ha.) in India. The second and third position occupying states in India are Tamil Nadu (18,120ha.) and Andhra Pradesh (18,087ha.).The important regions for flower cultivation in West Bengal are- Kolaghat-Panskura region, Kalimpong- Darjeeling region and Ranaghat region.

In order to study the economics of flower cultivation, adequate knowledge of cost structure and patterns for the cultivation of flowers are essential. This will help in formulating the policies by the government for providing incentives to the flower cultivators and development of floricultural sector in the state. It is well conceived truth that the risk bearing capacity of the Indian farmers being limited, because they are capitally starved, they are generally reluctant to adopt improved technology or expensive technology unless and until they are convinced of their economic feasibility or profitability. Their primary objective is welfare maximization and then profit maximization. The increasing production or supply of flowers reveals their higher profitability in comparison to their competing non- floricultural crops, and this will throw some light on the aspect of proposed changes in cropping pattern of farmers for augmenting their income and employment can be suggested.

Marketing is as critical to better performance as to production itself. A study of the marketing system of a product is necessary to an understanding of the complexities involved and the bottlenecks with a view to providing efficient services in the transfer of products from producers to the ultimate consumers. Marketing of flowers is thus an important aspect. In contrast to agricultural markets, it is believed that the marketing of flowers is critical. Flower markets are poorly organized, unregulated and limited in number. Flower prices are highly related with its durability, fragrance and quality. Furthermore, due to poorly developed post-harvest technology and lack of alternative uses, flowers are more risky enterprise. Inefficient

functioning of the markets adversely affects both producer-sellers and consumers. The study thus intends to analyze the market structure which involves many facets of the market organizations viz. number and nature of existing agencies performing market functions, mode and cost of transportation, seasonal or monthly differences in prices, price spread, cost of processing and differences in consumer prices due to creation of farm utilities. In this context it is very pertinent to study some economic aspects of cultivation and marketing of flowers.

**1.2 Agri-horticultural Aspects of Marigold Flower:**

In India, Marigold is one of the most commonly grown flowers and used extensively on religious and social functions in different forms. It was introduced in India from France during the $16^{th}$ century and since then it has been naturalized in different agro-climatic regions of India in such a way that it now appears to be native of this country. It has gained popularity amongst gardeners and flower dealers on account of its easy culture and wide acceptability. Further its habit of profuse flowering, short duration to produce marketable flowers, wide spectrum of attractive colours, shape, size and good keeping quality attracted the attention of producers and traders most. Therefore, the commercial cultivation of this crop found its way in the vicinity of different cities and towns.

Due to its variable height and colour, Marigold is specially used for decoration and included in landscape plans. Besides it is also ideal for newly planted shrubberies to fill in the spaces with attractive colours. French Marigold because of dwarf ness and profuse flowering is most ideal for rockery, edging, hanging baskets and window boxes.

In the survey carried out in Bombay, Bangalore, Calcutta, Madras and Delhi, the annual production of marigold has been reported to be 1985.7 tonnes. The price of Marigold like any other produce depends upon demand and supply.

There are 33 species of Marigold and numerous varieties. Most of the varieties are planted for garden decoration. The important varieties are *Targetes erecta* (African Marigold) - Climax, Dubloon, Golden Age; *T. patula* (French Marigold)- Rusty Red, Butter Scotch, Vatencia and *T. tenuifolia*-Lulu, Pumila, etc. However, in the market mostly orange coloured varieties are preferred and the variety which is dominating is African Giant Double Orange. Marigold can be successfully cultivated

on a wide variety of soils. However, a soil that is deep fertile, friable having good water holding capacity, well drained and near to neutral in reaction viz. pH 7.0-7.5 is most desirable. Marigold requires mild climate of luxuriant growth and profuse flowering. It ceases to grow at high temperature thereby flower quality and quantity are adversely affected. During severe winter including frost plants and flowers are killed and blackened. However, plants if exposed to over cold, sprout during spring season and produce some flowers. Flowers of Marigold can be had almost throughout the year. Under North Indian conditions in the plains the best flowering has been observed during winter months i.e. from October to April. On the contrary in the hills flowering commences from May onwards which continues up to October. Land should be well prepared by ploughing it 2-3 times and 50 tonnes of well rotten farmyard manure should be well mixed /ha. Seeds and cuttings are the two common methods of propagation of Marigold. Crop raised from seeds is tall, vigorous and heavy bloomer; thus it is preferred over cuttings. Seeds of wide range of varieties of common species i.e. *T. erecta*, *T. patula* are easily available and germinate quickly. Therefore, the propagation through seed is advised. For better seed germination, optimum temperature range is between 18 to 30°C. For raising seedlings for one hectare, about 1.5 kg seed is required. The crop can be raised three times a year i.e. rainy, winter and summer season. Sowing and planting times for each season are as under:

**Table 1.2.1: Season Wise Sowing and Transplanting Time of Flower Marigold.**

| Season | Sowing time | Transplanting time |
|---|---|---|
| Rainy | End of June to 1st week of July | First fortnight of August |
| Winter | Mid of September | Mid of October |
| Summer | First week of January(under glass house or plastic) | First week of February |

Marigold seedlings are easily established after transplanting in the field without much mortality. Fast growing root system present in this species enable seedlings to establish better. Proper spacing between plants is required for growth, development and flower production. Two Marigold species which are commonly

grown for commercial production of flowers require different spacings, for example *Targetes erecta* requires wider spacings than *T. patula*. However, per unit area, highest yield obtained was from 20x10 cm. spacing.

After field trials it is established that with the increase of N from 0 to 40 g/sq. m, the number of flowers per plant and flower yield increased with the increase in dose whereas plant height responded only up to 30 g/sq. m. The response to P was inconsistent on growth and flower production. Therefore, to get highest flower yield, 100 Kg N (4q CAN), 100 kg $P_2O_5$ (6.25 q Single superphosphate) and 100 kg $K_2O$ per hectare should be mixed at the time of preparation of land. Remaining 100 kg N (4q CAN) per hectare should be applied one month after seedlings are transplanted.

Weeds are a problem in Marigold especially in rainy season crop. In India, weeding is done manually. It has been observed that 3-4 times weeding are required during the entire growth period. Marigold is a herbaceous plant and puts up rapid vegetative growth during initial stages. It takes about 55-60 days to complete vegetative growth and to enter into reproductive phase. At this stage terminal flower buds appear which break the apical dominance and encourage secondary branches. Though marigold is relatively free from diseases and insect- pests however, occasionally the following diseases and insect- pests have been observed. The important diseases are Damping Off, Leaf Spots and Blight, Inflorescence Blight, Flower Bud Rot, Powdery Mildew and insect- pests are Red Spider Mite, Hairy Caterpillar.

Marigold flowers should be plucked when they attain the full size depending upon the variety. Plucking of flowers should be done in cool hours of the day i.e. either in the morning or evening. Field should be irrigated before so that flowers keep well of longer period after plucking. Plucking is done by hand because flower stalk is a hollow structure which breaks easily when twisted between thumb and finger. Productivity of plants is increased considerably by regular plucking of flowers. It has been observed that in an acre flowers can be plucked by 6-8 labours in a day. Flowers plucked should be covered with moist gunny bags if kept over night before taking to market. Different means of transportation including rickshaws, buses and trains are used to carry the flowers to market depending upon the distance. Flower yield depends upon season of planting and cultural practices adopted.

### 1.3 Agri-horticultural Aspects of Tuberose Flower:

Among the ornamental bulbous plants which are valued for the beauty and fragrance of their flowers, the Tuberose (*Polianthes tuberosa*) occupies a very selective and special position. Tuberose has gained considerable importance and it is cultivated commercially for its varied uses. The flower remains fresh for pretty long time and stands long distance transportation and fills a useful place in the flower market. The flowers emit a delightful fragrance and are the source of Tuberose oil. The flower oil of Tuberose remains today as an expensive raw material for the perfume industry. The fragrance is also added with stimulants or sedatives to the favourite beverages prepared from chocolate and served either cold or hot as desired. Flower growers and industry will get benefit.

The bulbs are reported to contain an alkaloid Lycorine, which causes vomiting. Two steroidal sapogenins namely, hecogenin and a small amount of tigogenin, a poly fructosan have been isolated from the bulbs. Chandravadana *et. al.* (1994) identified indole in the flowers of four Tuberose cultivars, cultivated in India. The indole content in the absolute varied in the range of 0.36-2.15%. Dried Tuberose bulbs in the powdered form are used as a remedy for gonorrhoea.

Tuberose is a native of Mexico from where it spread to the different parts of the world during the $16^{th}$ century. The Tuberose is derived from tuberosa, this plant being the tuberous hyacinth as distinguished from the bulbous hyacinth. The name, therefore, is tuber-ose, not Tuberose. In India Tuberose is commonly known as gulchari and gulshabbo in Hindi, rajanigandha in Bengali, Sukandaraji in Telegu, nilasampangi in Tamil and as sugandhraja in Kannada.

How and when the Tuberose found its way to India and later to Ceylon and elsewhere in the orient is probably an unanswerable question, but it was apparently taken to Europe towards the end of the $16^{th}$ century. Tuberose is cultivated on large scale in France, Italy, South Africa, USA and in many tropical and subtropical areas, including India. At present the total area under Tuberose cultivation in India is estimated to be about 20000 hectares.

Tuberose is half-hardy, bulbous perennial perpetuating itself through the bulblets. Roots are mainly adventitious and shallow. The leaves are long, narrow, linear, grass-like, light green, and arise in rosette. The flowers have a funnel shaped perianth and

are fragrant, waxy white, about 30-50 mm. long, single or double and borne in a spike. The family of this crop is Amaryllidaceae. Important species of Tuberose are *Polianthes tuberosa*, *P. palustris*, *P. durangensis*, *P. montana*, *P. longiflora*, *P. platyphylla*, *P. graminifolia*, etc. There are three types of Tuberose: single with one row of corolla segments, semi-double bearing flowers with two to three rows of segment and double having more than three rows of corolla segments. Among the three single flowered type is more fragrant and is widely cultivated than the other types. Sometimes cultivar names are given after places like, Calcutta Single and Calcutta Double. Calcutta Single and Mexican Single have been identified as promising ones for large scale cultivation. The double- flowered cultivar, commonly known as Calcutta Double, is an excellent and popular item in cut flower trade.

Tuberose grows in a wide range of soils. Its cultivation can also be extended economically in almost unproductive soils affected by salinity and alkalinity. Loam and sandy loam soils having a pH range from 6.5-7.5 with good aeration and drainage are considered suitable for its cultivation. In India, the commercial cultivation of Tuberose is mainly confined in warm, humid areas with temperature range between 15-35°C. For optimum growth and highly yield of flowers, it is preferable to choose a place having plenty of sunlight. A little shade towards the later part of the afternoon is desirable in hot summer. Land preparation is very important for the cultivation of Tuberose. The field should be worked deep to a good tilth and properly manured. Well-rotten farmyard manure, at the rate of 20-30 tonnes per hectare, should be incorporated with the soil about a month before planting. Selection of good planting material is necessary for obtaining high yield of good quality of flowers. It has been observed that fresh bulbs if planted, lead only to profuse vegetative growth but less flowering, and a storage for few weeks is essential for better growth and flower production. For pot cultivation, 2-3 bulbs are planted in the centre of a 20 cm. pot. The size of bulb plays an important role on growth and flowering of Tuberose. It influences the sprouting of bulbs and the time required is inversely proportional to size of the bulb. Larger bulbs were found to take more time for sprouting. In general, bulbs having diameter between 2.0-3.0 cm. are suitable for planting. Planting depth also markedly influences growth and production of flowers. It may vary from 4.0-7.0

cm. depending on the bulb size, nature of soil as well as the growing region. The bigger is the bulb, the more is the depth. Similarly, in sandy soil, planting is generally deeper as compared to clay soil. In sandy loam soil, planting of bulbs at a depth of 6.0 cm. is recommended. In India Tuberose is generally planted in February-April in the plains and in April-May in the hills. In southern parts of India, however it is suggested to plant the bulb in the month of July-August. Plant density markedly influences the yield and quality of flowers and bulbs obtained per unit area. Higher plant density has been found to produce greater yield of spikes, flower and bulbs. Sadhu and Bose (1973) in West Bengal suggested spacing of 10-15 cm. between the bulbs and 25 cm. between the rows. After conducting an experiment in Nadia, West Bengal Yadav (1983) showed that planting of bulbs at a distance of 20x20cm. with a population of 2, 50,000 plants per hectare gave the highest yield of spikes, flowers and bulbs over a period of 3 years. Soil moisture is an important factor effecting growth and flowering in Tuberose. It is suggested to irrigate before planting to provide optimum moisture for sprouting and further irrigation should be avoided until the bulbs have sprouted. The Tuberose fields should be irrigated at an interval of 10-15 days, if the weather is dry. The requirements of manures and fertilizers for Tuberose vary with climatic conditions and soil types. Nitrogen, phosphorus and potassium greatly influence growth and flower production. Nitrogen and phosphorus markedly promoted leaf and bulb formation in Tuberose. These treatments also improved flowering. The effect of potassium was less pronounced than N and P in these respects. The plants treated with low dose of N and P showed growth inhibition and failed to flower. Micronutrient deficiencies have serious effects such as Calcium deficiency causes cracking of the spike and acute deficiency results in bud rot, Magnesium and Iron causes intervenial chlorosis. In India, Singh (1971) recommended N and $P_2O_5$ at 40 and 60 kg/ha. respectively in alkaline soil of Uttar Pradesh whereas Sadhu and Bose (1973) from West Bengal suggested 10 gram urea, 10 gram superphosphate and 8 gram muriate of potash per $m^2$ in two split doses.

Weeds become a serious problem in the cultivation of Tuberose as fertilizer and irrigation requirements of this crop create conducive condition for the growth of

various types of weeds. Manual weeding is effective if done frequently. Generally, after each irrigation, weeding is done. Tuberose is quite hardy and there are no serious diseases and pests posting problems for the cultivation of this crop. However, it is attacked by some diseases such as Stem rot, Leaf spot, and Flower bud rot and also some pests are Grasshopper, Weevil and Aphids, etc. Tuberose is harvested by cutting the spikes from the base for the table decoration or the individual flower is picked from the spike for making garlands and other floral ornaments. Harvesting of flowers, on the previous evening and marketing in the next morning leads to a weight loss of about 40 per cent. Four to Five persons can harvest about 60 kg flowers in 2-2.5 hours. Loose flowers are transported in polythene bags to the nearby wholesale market where they are sold by weight. Low temperature (10°C) storage was found to be effective in the opening of florets in unopened spikes as well as in those with lower florets opened.

**1.4 Objectives of the Study:**

Keeping in view the importance of Tuberose and Marigold flower the present study has been designed with the broad objectives of examining the different problems of marketing of Tuberose and Marigold in Nadia district, West Bengal. The main objectives of the study are set for as follows:-

1) To assess the relative profitability or feasibility of cultivation of flowers with respect to other competitive field crops following local crop sequences in the study area.
2) To identify important marketing channels of flower marketing and to examine the price spread and marketing margin of flowers.
3) To identify and analysis the constraints in the cultivation and marketing of flowers.
4) To suggest policy for the improvement of production and marketing of flower in the light of latest agricultural technology with reference to open market situations.

**1.5 Plan of the Study:**

The research work "An Economic Analysis on Production and Marketing of Principal Flowers in Nadia District of West Bengal- A Case Study" is presented in seven chapters. The First Chapter focuses on the importance of flower cultivation, flower marketing and objectives of the present study. Chapter-II provides the review of earlier works done in India and abroad related to the present work. Chapter-III discusses the research methods adopted in selecting the area under study, the sample flower grower, market intermediaries and different concepts used for analyzing the data to achieve objectives of the study. Characteristic features of the study area and socio-economic profile of the sample farmers are presented in Chapter IV. Chapter V presents the result and discussions- cost of cultivation, price spread of different channels in flower marketing and marketing efficiency, constraint analysis. Chapter VI presents a summary of the entire work and tries to draw some suggestions on the basis of the findings of the study. Lastly, Chapter VII suggests some future scope of research related with the subject. This will highlight some important aspects which can be taken up as a future pilot projects or for further research study. Besides, literatures cited for this work are presented in Bibliography.

# CHAPTER-II

# REVIEW OF LITERATURE

# REVIEW OF LITERATURE

Review of literature is indispensable for any scientific investigation. This enables the research worker to go deep into the works done in the past, formulate and specify the objectives of his own study. This chapter tries to review critically the studies conducted in the related field.

Subrahmanyam (1986) has found that cost of cultivation of Rose which includes marketing costs besides cost of inputs and fixed costs on an average was Rs. 21,500 / ha. showing the high capital outlay. The crops are opined to be labour intensive one. He further opined that the higher proportion of marketing costs in total cost of cultivation and the huge differences in returns realized between channel-I and channel-II shows the need for encouraging self-marketing by cultivators instead of selling to pre-harvest contractors.

Patil-JD, Patil-BA, Chougule-BB, Bhat-NR (1987) reported the effects of bulb size and spacing on stalk and flower yield in Tuberose. They showed that if rhizomes 1.5-2.5 or 2.6-3.0 cm. in diameter were planted at 15 x 20, 20 x 20 or 25 x 20 cm. spacing and the plants were grown for 3 years for cut flowers then the highest yield of top quality flowers was obtained from the small rhizomes planted at 15 x 20 cm.

Banker-GJ (1988) observed nutritional studies in Tuberose. He opined that N improved vegetative growth, flowering and bulb production in the first year. P and K increased spike number, rachis length and duration of flowering only in the second year (the ratoon crop). The optimum fertilizer application rate was determined as (15 g N + 40 g $K_2O$ + 40 g $P_2O_5$) / $m^2$.

Das-TK, Mitra-AK, Sarkar-SC (1988) estimates the economic of Tuberose of tuberose cultivation in Nadia district (West Bengal). They identified the factors which are responsible for the successful growth of Tuberose production in Nadia district, that are higher profits per acre, year round regular cash flow, avoidance of risk of pilferage, minimization of risk due to crop failure and price falls through crop diversification, year round employment to disadvantaged persons such as widows, children and the handicapped. They opined that through initial investment for raising the crop is high, return per acre is much higher than other crops.

Pertwee (1988) has stated that floriculture has a good export market in the global context. Different agricultural countries of the world are to take advantages of the expanding global market in floriculture to enhance their foreign exchange earnings.

Rajindra-Bhati, Chitkara-SD, Bhati-R (1988) made a note on comparative performance of three cultivars of Marigold at Hisar. The comparisons were made between two *Tergetes erecta* cultivars and *T. patula* cultivar. Data are tabulated on plant height and spread, number of branches and leaves per plant, flower size and flower yield. Cut flower yields in African Giant Yellow, African Giant Orange and French Dwarf Red were 227.39, 216.09 and 139.05 q/ha, respectively.

Singh- KP (1988) analyzed the response of graded levels of nitrogen in double petalled cultivars of Tuberose. In a 2- year field trial at Bangalore, effects of 6 N rates (100,150,200,250,300 and 350 kg/ha.) on 2 double petalled Tuberose cultivars, Double and Suvasini, were assessed. No vegetative or floral parameters were significantly influenced by N application rate.

Mitra *et. al.* (1989) have found that in case Tuberose cut flower marketing, producer's get about 55 per cent of consumer's rupee irrespective of channels studied. But in case of sticks, producer's share of consumer's rupee has declined to about 48 % in Channel –I and 52 % in Channel –II. They also have observed that the producers are highly influenced by the seasonal variation of prices in both trades. The variations in prices are found to be relatively high in case of marketing of cut flowers than sticks trade.

Naidu-SN, Reid-MS (1989) gave the view of post harvest handling of Tuberose. The rapid respiration and growth of Tuberose inflorescences indicate the importance of temperature management and carbohydrate supply to long vase life. Under normal display conditions, many buds aborted, probably because of carbohydrate stress. A sugar containing vase preservative (1.5%) and / or pre-treatment with sugar (20% sucrose for 15-20 hrs.) improved display life of the stems before or after storage. There was a very high correlation between vase life and stem size. The presence of open flowers on the spike increased solution uptake and the response to the sucrose pulse. Tuberose florets produce very little ethylene and were not affected by exposure to exogenous ethylene.

Anuradha-K, Pampapathy-K, Narayana-N (1990) conducted a field trial and plants received N and $P_2O_5$, each at 0, 30, or 90 kg/ha., in all possible combinations plus $K_2O$ at 60 kg/ha. The number of days required for 50% flowering was reduced by increasing N and P rates. The number of flowers / plant and the individual weight of a single flower increased with increasing N and P rates. Flower vase life decreased with increasing N rates, whereas P had no significant effect. The best flower colour intensity (carotenoid content) was obtained with N at 60 and P at 90 kg/ha. This also the most economically viable treatment.

Banker-GJ, Mukhopadhyay-A (1990) after conducted a field trials with *Polianthes tuberosa* cultivar gave their valuable information about the effect of NPK on growth and flowering in Tuberose. They suggested that N application advanced flowering and improved growth. The highest number of flower spikes/$m^2$ (20.09) was obtained with the highest N rate. Fertilization of Tuberose with N: $P_2O_5$:$K_2O$ at 20: 20:20 g/$m^2$ is recommended.

Singh-KP, Sujatha-K (1990) studied on different methods of planting on growth, flowering and bulb production in tuberose. They conducted a trials and planted Tuberose at a spacing of 25 X 25 cm on flat beds, or on medium (12 cm.) or high (18cm.) ridges. Data are tabulated on days to first flowering, duration, spike length, rachis length, number of florets / spike, yield of spikes / plot, number of bulbs / clump, number of bulb lets / clump, bulb diameter, and weight of clump. The best results were obtained on flat beds.

Syamal-MM, Rajput-CBS, Upadhyay-RK, Singh-JN (1990) analyzed the effects of $GA_3$ and MH on growth, flowering and seed yield of Marigold. They identified the seedlings of *Targetes erecta* and *Callistephus chinensis*, transplanted on 3rd Nov., were sprayed with $GA_3$ at 100 or 200 p.p.m. or maleic hydrazide (MH) at 200 or 400 p.p.m. 15 days after transplanting and twice more at 10-day intervals. In both species, the best results with regard to the number of flowers / plant and seed yield obtained with $GA_3$ at 200 p.p.m. Treatment with at 400 p.p.m. suppressed vegetative growth, flowering and seed yield.

Mandal (1991) in his study has found that total marketing margin is worked out to be Rs. 8.52 which is 47.36 % of consumer's rupee in Tuberose and trader's profit has ranged between 58% to 64% of marketing margin. But in case of sticks

marketing margins have ranged between Rs. 10.79 i.e. 49.31 per cent of consumer's rupee and trader's profit between 79 % to 82% of the marketing margin. He further has observed that retail prices of cut flowers, consumer's prices price are lower in Kanchrapara market in comparison to Calcutta market but the converse is true for flower sticks.

Medina- AL, Be Miller-JN, Simon- JE (1991) opined that the ground flower petals of Marigold, used as a source of pigment poultry feed, also contain a water soluble gum (Marigold Flower Polysaccharide, MFP). MFP has emulsifying and emulsion- stabilizing properties equivalent to those of gum arabic towards limonene and slightly less than those of gum Arabic towards olive and castor oils. It is, however, not possible to prepare concentrated emulsions with MFP, due to the high viscosity of its solutions at concentrations above about 5 %.

Rao-DVR, Reddy-KB, Naidu-LN, Suryanarayana-V (1991) experimented with tubers 0.5-1.5, 1.5-2.5 or 2.5-3.5 cm. in diameter were planted 2,4 or 6 cm. deep. Large tubers significantly increased flower yield, but generally planting depth had no marked effects on other growth and flower indicates. Shallow planting of large tubers is recommended.

Das-TK, Mitra-A (1992) discovered some dimensions of Marigold marketing in Nadia District of West Bengal. They estimates the cost of cultivation and farm business income per acre per season from growing Marigolds, studies different marketing channels and estimates marketing costs and margins and highlights the important problems of marketing Marigolds.

Mohanty-CR, Behera-TK, Samantaray-D (1993) analyzed the effect of planting time and density on growth and flowering in African Marigold. Planting in May produced a great no. of secondary branches and increased plant height and spread. Planting in Sept. produced a great no. of larger flowers per plant and per plot. The widest spacing encouraged the greatest vegetative growth. Spacing had no effect on flower size. The most profitable crop was obtained from a September planting at 40 X 30 cm. spacing.

Bandyopadhyay-P, Das-DK (1994) identified the effect of micronutrients on the growth and yield of *T. erecta*. Compare with the control, micronutrient treatments significantly increased flower number /plant, flower weight, length of flower stalk,

girth of flower stalk, seed number / flower, average seed yield / plot and average seed yield /ha. The highest yield of seeds was obtained from plants treated with a foliar application of 0.1 % $CuSO_4$.

Dijk-N-van, Borm-GEL, Van-Dijk-N (1994) studied on crop management of Calendula officinalis. The crop was sown on 23 Apr.or 14 th May at 2 locations using 5, 10 or 15 kg seed /ha at row spacing of 25 or 50 cm. The best sowing rate was 10 kg /ha which gave about 40 plants /$m^2$. Yields of oil and calendulic acid were affected by row spacing or sowing date.

Attavar and Bhatt (1995) have opined that developing country like India has immense potentialities for developing commercial floriculture. But till now this potentialities remain largely unutilized.

Attavar (1995) states that Indian domestic floriculture market is worth Rs. 250 crores and is expected to grow at an annual rate of 20- 30 %.

Chakraborty-S, Maity-TK, Ghosh-DC, Bhattacharya-D (1995) conducted an experiment at Moundri in West Bengal. *P. tuberosa* plants were treated with rice straw soaked in solutions containing 0, 20, 40, 60 or 80 g / urea. It alone or together with 0, 50 or 100 g single superphosphate / lt. The straw was incorporated in trenches 20 cm. from the plant rows at 2 Kg per linear metre. Straw bio degradation warmed the soil and stimulated plant growth. Cut flower yields were highest with straw soaked in 80 g urea and 50 g single superphosphate / lt.

Kumar (1995) stated that India ranks first in Asia in production export of flower. Mullickghat in Calcutta of West Bengal is the biggest wholesale flower market of India. In West Bengal itself the per year transaction of flower amount to Rs. 15 to 17 crores. From this market flowers are destined to Bhubaneswar, Tata, Patna, Lucknow and Allahbad. Besides flowers are also exported to different places of Bangladesh, Pakistan, and Singapore and Middle East countries.

Mehta-SH, Nadkarni-HR (1995) showed the performance of African Marigold in Konkan region of Maharastra. During Kharif 1989, 8 cultivars were grown and data on flowering, growth and cumulative yield were recorded at 15 day intervals. Flower colour was also noted. Giant Double African Orange had the tallest plants and recorded the greatest plant spread, no. of branches, stem girth and leaf area. Snow White was the least vigorous of the cultivars tested. Duration of flowering was

greatest in Honeycomb but least in Snow White. The varieties with more spread and branches produced the greatest number of flowers. Mean flower weight was highest in Giant Double African Orange followed by Giant Double African Lemon.

Singh-KP (1995) gave the improved production technologies for Tuberose: *P. tuberosa* is one of the most important commercial flower crops both in India and abroad. It is also grown for its essential oils. The most important production technologies for *P. tuberosa*, developed in India, including suitable cultivars, time of planting, nutritional requirement, intercropping, plant growth regulators, micro propagation, use of saline-alkaline soils, herbicides, storage of bulbs and rationing are described.

Vasavada (1995) has stated that in spite of our abundant scope and varied production base, our performance in export of floricultural products has not been increased because of the presence of some operational constraints. He also pointed out that flowers and plants have a potential of energizing an economic engine of responsible size for the nation with added attractions such as handsome foreign exchange income and substantial rural employment.

Considine-JA, Gibbs-J (1996) surveyed the production area of tuberose in East-Java. Survey results showed that farmers still used traditional practices. Fertilizer application was carried out only after planting, using inorganic fertilizer. There was no irrigation after planting, nor pest and disease control. Flowers of preferred quality were obtained only from the first and covered with thick paper of banana leaves in groups of 500 stems. Three-year-old plants were rejuvenated. Measures to improve tuberose cut flower production and quality are discussed.

Zhukova-LA, Grosheva-NP (1996) identified the morphological and physiological characteristics of ontogenesis in pot Marigold plants grown at various densities. The morphological and physiological characteristics of *Calendula officinalis* plants at different ontogenesis stages were examined at different population densities. The great intensity of intrapopulational interactions in dense populations delayed the development of plants, reduced their size, and decreased their vigour. Decrease in peroxidase and catalase activities compared with those in sparse *C. officinalis* populations were also noted.

Bandyopadhyay-P, Das-DK (1997) invented the correlation and path analysis in seed production of Marigold as affected by micronutrient application. Simple correlation and path coefficient analysis were used to assess the relative contribution of different yield attributing characters to the seed yield of Marigold. The number of seeds per flower and Zn uptake by the flower was found to have the greatest positive effects on seed yield. Leaf area constant and average flower weight had the greatest negative effects on seed yield.

Ghosh(1997) has analysed the impact of new market yards or marketing pattern and has observed there has been significant gain in improving the marketing system of agricultural produce. He has observed that the market yards constructed under the scheme of market construction project have adequate market infrastructure facilities which could have significant impact on improving agricultural marketing system in Bihar. The farmers of different categories have been affected directly in the present network of new regulated market centre. The large farmers are joining more for better market access compared to small farmers as majority of them do not have adequate resources and transport facilities to come to the market yard.

Barman-D, De-LC, Singh-LP (1997) asserted the efficiency of split application of nitrogen on growth and yield of Tuberose. During March-November in 1994-95, the effects of split applications (of a total of 200 kg /ha) of N on the growth and yield of Tuberose were investigated in Tripura, India. At planting 100, 75, 50 or 25% of the N was applied with the remainder at 30, 60 or 90 days later. The tallest plants were obtained when 25% of the N was applied at per hectare planting and 75 % was applied 60 days later. Split application of nitrogen did not affect bulb production or flowering.

Patel-BM, Patel-BN, Patel-RL (1997) in trial conducted in Navsari, Gujarat compared with three spacing and 4 fertilizer rates with *P. tuberosa* grown for cut flowers. Neither plant height nor leaf width was affected by the different spacing or fertilizer treatments. Leaf number was highest with the widest spacing and highest NPK fertilizer rate. The yield of flower spikes / plant was similar in all treatments but the yield / ha was highest with organic manure or the highest NPK fertilizer rate. The highest Benefit: Cost Ratios were obtained with the closest spacing (45 cm X 15 cm) and the highest NPK rate or organic manure.

Akbar-MA, Hassan-M (1998) assessed the profitability of Tuberose cultivation in some selected areas of Bangladesh. The economic viability of Tuberose cultivation in Godkhali and Panishar Unions of Jessore district, Bangladesh, is assessed using data collected from 40 farms in 1995. Costs, yields and returns are reported and a Cobb- Douglas production function is used to measure the input-output relationships. The results indicate that Tuberose cultivation has wider potential scope as a profitable crop.

Das-DK, Chattopadhyay-TK, Bandopadhyay-P (1998) analyzed the effect of foliar application of micronutrients on yield and zinc nutrition of Marigold after conducting a 2 year field experiment on new alluvial soil. Foliar application of $ZnSO_4$, 7 $H_2O$ and mobomin showed a significant influence on flower. Micronutrients, especially Zn and mobomin, increased the yield of flowers and seeds. Flower and seed yield exhibited a highly positive and significant correlation with Zn uptake by flowers. The correlation between flower and seed yield was positive and significant.

Mahanta-P, Paswan-L (1998) analyzed the effect of bulb size of *P. tuberosa* on growth and flowering was studied at Assam Agricultural University, Jorhat, India during 1993-95. Shoot emergence was delayed with increasing bulb size. Other characters (height of plant, number of leaves and shoots per clump, days to flowering, length of spike and rachis and number of florets per spike) were enhanced with increasing bulb size.

Raj Kishor *et. al* (1998) have concluded that marketing efficiency can be improved by provision of cheaper and efficient transport and storage facilities, extension services, credit facilities, provision of grading and standardization and means of communication in the study as well as in the distant markets.

Bhanu-Pratap, Pratap-B (1999) studied correlation analysis for 13 characters related to growth and flowering was carried out among 10 diverse genotypes of African marigold and 10 genotypes of French Marigold, grown at Faizabad. Analysis of variance in African Marigold revealed that plant height had a positive and significant relationship at the genotypic and phenotypic levels with spread of plant and number of lateral branches. In French Marigold, plant height showed positive and

significant correlations with number of lateral branches, days to bud visibility, and first and last picking of flowers.

Gupta-NS, Sadavarte-KT, Dorak-SV (1999) analyzed the effect of graded levels of nitrogen and bioinoculants on growth and yield of Marigold. One month old *T. erecta* seedlings were transplanted in pots and received various combinations of Azotobactor, phosphorus solubilising bacteria and nitrogen in experiments in 1996-97. Treatments were applied to the soil or to seedlings. In general, growth and flower yields were highest after treatment with Azotobactor + phosphorus solubilising bacteria in combination with 75 or 100 % nitrogen application.

Vita-M-de, Lauro-P (1999) analyzed the alternative protocols for outdoor production of tuberose flowers. Flower production was compared in bulbs planted in April with bulbs which had been left in the field at the end of the production cycle in January. The bulbs left in the field for bulb enlargement flowered earlier than April-planted bulbs, particularly if the foliage had been removed. All bulbs produced commercial quality cut flowers but foliage removal decreased cut flower quality. Flower yield per $m^2$ was lowest in bulbs left in the field but production costs were also lower with this method.

Vaze-SV, Singh-AK (1999) gave their assertion on Indian essential oil industry present and future. During the last 50 years, the Indian essential oil industry has made excellent progress. India is the largest producer of Mentha oil in the world. Likewise Indian flower extracts from Jasmine, Jasmine Sambac and Tuberose have also become internationally established. The Indian oleoresins and spice oils have also become internationally established. With combined plant efforts from the industry, research and development agencies and farmers, India should aim at becoming a prominent producer in the world for natural products.

Yadav-PK, Singh-S (1999) conducted an experiment in a sandy loam soil in Hisar, to determine the effect of N and FYM on leaf chlorophyll and nutrient contents of winter season African Marigolds at the flower bud stage. Total leaf chlorophyll content increased with N application up to 180 ppm N and remained almost constant beyond this level. Leaf N content consistently with N rate but other nutrient concentrations (P, K, Ca and Mg) were highest at the 180 ppm N application rate.

Leaf chlorophyll decreased and nutrient content increased with increasing application of FYM.

Banerjee-B, Ali-H (2000) studied to analyze the economic importance of cultivation of Chinese Rose which is grown widely in Bagnan-II Block of Howrah district. About 81 man-days, 111 Kgs of oilcake and 44 Kgs of chemical fertilizers are required to cultivate one bigha of area for block plantation as main crop. The magnitude of output- input ratio clearly reveals its economic feasibility. The flower has potential to provide gainful employment to family labour and can be taken up by the farmers to augment their income.

Banerjee-B, Ali-H (2000) identified some economic aspects of Tuberose cultivation in West Bengal. They calculated the cost of cultivation per bigha of this flower is about Rs. 3927.00 at Cost $A_1$ and Rs. 5696.00 at Cost D. The output- input ratios are worked out to be more than 2.5. This clearly demonstrates its remunerative ness and economic feasibility. They also opined that Tuberose is a good source of employment for the family labour.

Nair-SA, Sharma-TVRS (2000) conducted a field experiment at Port Blair to identify the effect of N and P on growth and flowering of tuberose. Treatment with 30: 30:15 $gm^{-2}$ of NPK recorded the highest vegetative growth of plants and resulted to high yield of loose flowers. For cut flowers, 15: 90:15 $gm^{-2}$ of NPK was suitable. The yield of bulbs was maximum with 30: 60:15 $gm^{-2}$ of NPK treatment. A significant positive correlation was recorded between single flower weight and yield of loose flowers.

Sanap-PB, Patil-BA (2000) showed the effect of growth regulators on quality and yield of flowers in Tuberose. They conducted a trial at Pune and Tuberose plants were sprayed with 100, 150 or 200 ppm $GA_3$ or 100, 200 or 300 ppm CCC (chlormequat) 40, 55 and 70 days after planting. Flower yield was highest (27.5 t /ha) when 150 ppm $GA_3$ was used.

Shamasundaran-KS, Singh-KP, Singh-AK (2000) gave their view on optimum size and shape of plots for Tuberose. In order to determine it a uniformity trial was laid out in Bangalore, Karnataka. It revealed that a plot size of 0.96 $m^2$ corresponding to a plant stand of 16, arranged in a rectangular shape, is ideal for conducting field experiment on Tuberose. It was also noticed that the competition between plants was

negligible and less soil heterogeneity was found. Rectangular plots were more efficient over square plots.

Willoughby-RA, Whitney-RW (2000) gave a design and construction of a mechanical harvester for Marigold flowers. Marigold flowers are harvested for the xanthophyll pigments found in petals. These yellow gold pigments are present in the petals at a concentration of 10-100 times that found in other sources. The pigments are used as an additive for poultry rations, natural food colouring in dairy products, dog food, and multi-vitamins used to help prevent macular degeneration. The development of a mechanical harvester is important because the primary mode of harvest is by hand, in Mexico and Third World countries where labour is cheap.

Munnu-Singh, Singh-M (2001) conducted a field experiments on South American Marigold during 1998-2000 on red sandy loam soil in the semi-arid tropical climate of South India to identify the effect of nitrogen, irrigation and season of planting on herbage, oil yield and quality of South American Marigold grown on alfisol. The application of nitrogen at 200 kg /ha, irrigation at 0.5 IW: CPE ratio (irrigation water: cumulative pan evaporation) and autumn planting produced significantly higher herbage and oil yields. Oil content was not influenced by nitrogen, irrigation or by season of planting.

Waithka-K, Reid-MS, Dodge-LL (2001) opined on the usefulness of cold storage and flower keeping quality of cut tuberose. They also suggested that the vase life and floret opening of cut Tuberose inflorescences were significantly decreased by cold storage. The ideal storage temperatures was found to be $0^0$C for short durations because even storage at $2^0$C for only 3 days significantly decreased floret opening and vase life of stored inflorescences. Cold storage resulted in a pronounced increase in ethylene production by the florets, particularly by immature buds. Ethylene treatment of fresh cut Tuberose spikes reduced floret opening. There was no significant difference between wet storage in a preservative solution and dry storage.

Banerjee-B, Ali-H (2002) had done an economic analysis of income and employment in the cultivation of Chrysanthemum flower in West Bengal. The study summaries that cultivation of Chrysanthemum flower is highly labour intensive. Family labour contributes broader share to the total labour requirement. Higher level of family labour utilization is possible through the cultivation of this flower. FYM and

oilcake are mainly used in the cultivation of the flower. Chemical fertilizer is also used to some extent. Costs of labour and planting materials share a considerable portion of the total cost. Seventy-five per cent of the total labour comprises family labour. Size class and productivity relationship breaks the traditional trend.

From a critical study of review of works done by different economists it is noted that consumers have to pay higher prices for agricultural commodities while producers have received lower prices as well as lower share in the consumer's rupee. It is important therefore, to examine the reasons for such observations. The reviews also highlight that a lion's share of consumer's price is consumed by intermediaries as their profit. It is further opined that there is inverse relation between producer's share in consumer's price and length of marketing channel and positive relation between length of marketing channel and marketing cost. Among the marketing cost, transportation is reported to the most expensive one. These findings need an in depth study to examine the reasons or factors associated with such observations. Hence, the present work has been undertaken to throw some light on these aspects.

# CHAPTER-III

# RESEARCH METHODOLOGY

# RESEARCH METHODOLOGY

This chapter presents a brief description of selection of sample units, design and methods of analysis adopted to fulfill the objectives of the study. Concepts used and there estimation procedures are also furnished in this chapter.

**3.1 Source of Data and Sampling Design:**

The present study is based primarily on micro level farm survey analysis. With a view to examine the components, a well structured and pre-tested survey schedule is utilized for collection of data from flower growers, wholesalers, commission agents and retailers. Cross sectional data regarding name and address of sample farmers, socio-economic characteristics of the households, area under flower cultivation, name of the market, mode of transportation, distance of market, transportation cost, mode of sale, agency, quantity and value of sale, marketing expenses, marketing channels followed, etc. are collected from the farmers and sample market intermediaries by Survey Method for the agricultural year 2003-2004. For the purpose of the present study, purposive sampling method is followed.

**3.1.1 Selection of District and Zone:**

The present work proposes to critically analyze the production and marketing of principal flowers. For the selection of ultimate samples i.e. flower growers on cultivation aspect and retailers on marketing sector, multi-stage sampling technique is followed. For analyzing cost of cultivation of principal flowers district Nadia, the first stage, is selected purposively. Ranaghat region is renowned for flower cultivation. This region falls under the jurisdiction of Nadia district. The reasons behind the selection of Ranaghat region are i) The region is recently flourishing for flower cultivation,

ii) Due to easy accessibility of research scholar.

**3.1.2 Selection of Blocks and Mouzas:**

Second stage of sampling is the selection of blocks. As the flowers are not cultivated in all the blocks, four blocks namely Ranaghat-I, Ranaghat-II, Hanskhali

and Haringhata are selected purposively for the study as because these four blocks are on the upper ladder in terms of acreage and volume of flower production. The next stage is the selection of mouza. In each block a nuclear mouza is selected on the basis of acreage, volume of flower production, and number of flower growers. Then adjacent to each nuclear mouza, two mouzas cultivating flowers are selected purposively. Thus from each block a cluster of 3 mouzas are selected for the study. Thus, a total of twelve mouzas are selected for the study. The ultimate stage of sampling is the selection of flower growers. A list of flower growers for each cluster is prepared. Then all the flower growers are classified into three groups based on the operational holding. Fifty farmers are selected from each block on the basis of Probability Proportional to Number. Thus a total of two hundred sample flower growers are selected from the Ranaghat and surrounding region of flower producing belt.

**3.1.3 Selection of Marketing Unit, Channels, Wholesale and Retail Markets:**

On the marketing side, the selection of ultimate unit is also be multi-stage purposive sampling. The purpose of selection of each unit are-

i) The scattered ness of each unit,

ii) Unregistered unit and

iii) Accessibility of research scholar.

To examine the variation in wholesale price, price spread and functional analysis, it is essential to select different markets and market intermediaries. A lion's share of total production of flower is directly marketed to Mullickghat wholesale market, Kolkata. Mullickghat is the largest wholesale market in the state. Therefore, Mullickghat wholesale market is purposively selected as primary wholesale market.

Beside this the local flower growers and local assemblers avail the flower markets situated in Dhantala, Purnagar and Naukari markets. These are wholesale as well as the retail markets. Therefore, Dhantala, Purnagar and Naukari markets are also selected as secondary wholesale as well as retail markets for the study. Besides these three retail markets Birnagar and Badkulla retail markets falling in the Nadia district are also selected.

List of marketing channels used by sample flower growers are identified and prepared from the schedule of sample producers. Among the market intermediaries thirty (30) local assemblers, ten (10) wholesalers from primary wholesale market, thirty (30) wholesalers from secondary wholesale markets i.e. ten (10) from each market and ten (10) retailers from each of the other two retail markets i.e. fifty (50) retailers are selected for the study.

**3.1.4 Selection of Flower and Season:**

As there is the dominance of the flowers Tuberose and Marigold in the study area, so the two flowers are taken into consideration. Other flowers are cultivated in a negligible scale. There are few varieties of Marigold flower but only the variety cultivated in winter season are taken for better work. The life span of Tuberose in the area is noted to be of two years. In order to avoid complexity, the Tuberose growers are categorized into two sub-groups, i.e., one who have initiated the cultivation and others who are cultivating for the second year. However, it is interestingly noted that majority of the Tuberose growers have both type of practices. This has reduced the burden of complexity.

**3.2 Analytical Technique:**

In order to fulfill the various objectives set-out, tabular method of analysis is followed. However, statistical tools are also used as and when required. In farm management studies and other cost studies conducted in India, mainly six cost concepts namely Cost $A_1$, Cost $A_2$, Cost B, Cost C and Cost D are widely used. But in the present study only Cost $A_1$ and Cost D concepts are considered. In case of annual flowers, initial cost of flower production is worked out and taken as fixed cost.

The following items constitute Cost $A_1$:

a) value of seed or planting material,

b) value of manures,

c) value of oilcakes and bone meal,

d) value of chemical fertilizers,

e) value of plant protection chemicals,

f) irrigation charges,

g) value of hired human labour,

h) value of bullock labour,

i) value of hired machineries,

j) land revenue, taxes and cesses,

k) depreciation of farm assets,

l) interest on working capital, etc.

Cost D = Cost $A_1$ + Imputed value of family labour – land revenue, tax, cess.

### 3.2.1 Income Measures:

The following farm income measures are considered in the present study:

a) Surplus over Cost $A_1$ = Gross return - Cost $A_1$,

b) Surplus over Cost D = Gross return - Cost D.

c) Benefit- Cost ratio = Benefit / Cost $A_1$ or Cost D.

### 3.2.2 Marketing Margins and Costs:

The difference between the price spread by consumers and the price received by the producers for an equivalent quantity of a product represents the price spread and marketing margin for that particular product. Whereas marketing cost refers to the cost of performing the various marketing functions and of operating various agencies. The concept of "Concurring margin" which refers to the difference between the prices prevailing at successive stages of marketing at a given point of time is used to work out the marketing margins in the present study. The concepts used in this study are explained below.

#### 3.2.2.1 Producer's price:

This is the term used for the net price received by the producer at the time of first sale i.e. in the assembling market and denoted by

$$P_F = P_A - C_F$$

#### 3.2.2.2 Producer's share in Consumer's Rupee:

It is the price received by the farmer expressed as a percentage of the retail price and expressed as

$$P_S = (P_F \div P_R) \times 100$$

### 3.2.2.3 Marketing Margin of Middleman:

This is the difference between the total payments (costs ÷ purchase price) and receipts (sale price) of the middleman ($i^{th}$ agency). The concepts used in this study are:

### 3.2.2.4 Absolute Margin of $i^{th}$ Middleman:

$$A_{mi} = P_{Ri} - (P_{pi} \div C_{mi})$$

### 3.2.2.5 Percentage Margin of $i^{th}$ Middleman:

$$P_{mi} = [P_{Ri} - (P_{pi} \div C_{mi})] \text{ X } 100 / P_{Ri}$$

### 3.2.2.6 Total Cost of Marketing:

This is computed as

$$C = C_{Fi} + C_{m1} + C_{m2} + \ldots\ldots\ldots + C_{mn}$$

The abbreviations used as:

$P_F$ = Producer's price,

$P_A$= Wholesale price in the primary assembling market,

$C_F$= Marketing cost incurred by producer,

$P_S$= Producer's share in Consumer's rupee,

$P_R$= Retail price,

$P_{Ri}$= Total value of receipts per unit,

$P_{pi}$= Purchase value of produce per unit,

$C_{mi}$= Cost incurred on marketing per unit,

C= Total cost of marketing of flower,

$C_{Fi}$= Cost paid by the producer from the time produce leaves the farm till he sells it.

### 3.2.2.7 Marketing Efficiency:

In this study Shepherd's method of computing Marketing Efficiency is used. Shepherd has suggested that ratio of the total value of goods marketed to the marketing cost may be used as a measure of efficiency. The higher the ratio, the higher the efficiency and vice- versa. Shepherd's method of computing marketing efficiency can be expressed as in a better way as follow: ME = (V-I) / I

Where, ME = Index of marketing efficiency,

V = value of goods sold (consumer's price),

I = Total marketing cost.

### 3.2.2.8 Composite Index Ranking Methods:

The three performance indicators in the two marketing channels reflecting economic efficiency are-

i) Producer's share-$I_1$

ii) Marketing cost-$I_2$

iii) Middlemen margin-$I_3$

The final ranking of all the three indicators for the two channels are computed by the Composite Index Ranking formula.

$$R = (R_i / N_i)^*$$

Where, $R_i$ = total value of ranks of all indicators ($I_1 \ldots I_3$) all channels.

$N_i$ = number of indicators.

* Rajagopal (1986) "Economic Efficiency of Paddy Marketing System", *IJAE.*

### 3.2.2.9 Return- Cost Ratio:

The concept is important as it shows how much profitable the farming business is. It is given by Gross Return / Total Cost.

### 3.3 Constraints Analysis:

There is no single best method for identifying client constraints and research needs. A review of annual reports of the research organizations helps to identify some constraints. Many research programmes have already collected tremendous amount of information on the needs of these clients. Unfortunately, these informations are rarely pooled. Even more rarely it is synthesized into a usable form. Therefore, the most important step in identifying client constraints is to review the existing sources of information and gather fresh information from the clients and as well as the concerned researchers working in that region. The most commonly used techniques to obtain additional information on client constraints are Rapid Rural Appraisal (RRA), Participatory Rural Appraisal (PRA) and Focused Group Meeting (FGM). In this study RRA is undertaken in 12 mouzas of Nadia district. The constraints include technical and socio-economic factors that limit Tuberose and Marigold yields and marketing. Technical constraints are categorized as

1) Diseases 2) Insects and pests 3) Weeds 4) Water related problems 5) Soil related problems 6) Socio-economic constraints. The procedure for calculating production loss is given as: $\Phi = n.p.l$ **

Where, $\Phi$ = average yield loss attributed to each constraint (kg / ha)

n = proportion of area affected (per cent),

p = probability of occurrence of a particular constraint (per cent),

l = absolute yield loss attributed to each constraint (Kg / ha).

Again, $m = \Phi . N$

Where, m = total production loss ('000 tonnes),

N = area under individual crop in study area (million ha.),

$\Phi$ = as explained above.

Again, $Z = m.p$

Where, Z = Value of production loss (Rs.Million),

P = price of output (Rs. per kg).

** Roy and Dutta (2000) "Rice-Wheat System in Haryana: Prioritizing Production Constraints and Implication for Future Research," *IJAE*.

Prioritizing socio-economic constraints is more difficult. Therefore, cardinal measurement of their impact on yield gap is not been tried but the farmers are asked to rank the constraints as per their severity. A comprehensive list of socio-economic constraints is given to them and they are asked to assign the value 1 to the most limiting constraint, value 2 to the next important one, and so on. Then the rank values are averaged across the villages and a composite score thus obtained on the basis of which top ten socio-economic constraints are prioritized.

# CHAPTER-IV

# CHARACTERISTIC FEATURE OF THE SELECTED DISTRICT

# CHARACTERISTIC FEATURE OF THE SELECTED DISTRICT

**4.1 District Profile:**

Before analyzing and presenting primary data, it is essential to examine critically the agro-ecological conditions of the sample district which may throw some light in the final analysis and interpretation. Therefore this chapter is devoted to critically examine the agro-ecological characteristics of the sample area.

The state West Bengal comprises with nineteen districts and throughout the whole district only three regions are popular for flower cultivation. The regions are –

i) Kolaghat-Panskura region,

ii) Ranaghat region,

iii) Darjeeling-Kalimpong region.

The present study is confined to Ranaghat region which falls under the Nadia district of West Bengal.

**4.2 Topography:**

The district Nadia with reference to "District Census Hand Book- 2001" in West Bengal is situated between $22^0$ 53′ South and $24^0$ 12 North latitude and $88^0$ 48′West and $88^0$ 09′East longitude. The district is bounded by Murshidabad district in the North, North 24- Parganas in the South, Bangladesh in the East and Bardhaman and Hoogly in the West. The land of the district is a vast alluvial plain. The head quarter of the district is Krishnanagar.

**4.3 Area, Population and Infrastructural Facilities:**

Table 4.1.1 presents some characteristic features about the selected district. The total geographical area of Nadia district is 3927 sq. km. While the population is 4,603,756 with a population density of 1172 per sq. km. Sex ratio of this district is 1: 0.947. Male and female population of this district is 51.37 per cent and 48.63 per cent respectively. Literacy rate of this district is 72.67 per cent. Numbers of small and marginal farmers are 1, 07,911 and 3, 50,048 respectively. Land less labours of this district are numbered to 387235.

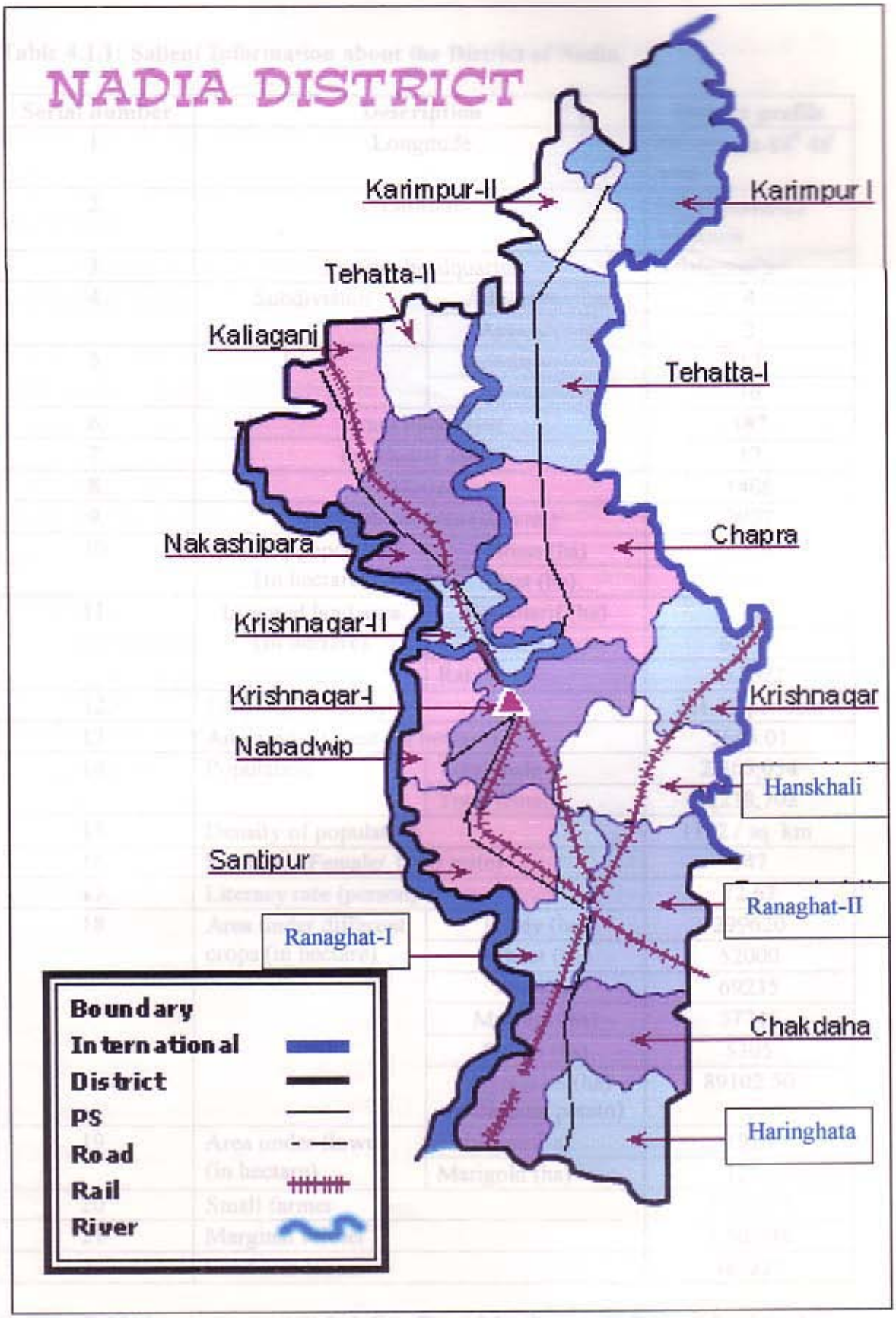
NADIA DISTRICT
Karimpur-II
Karimpur I
Tehatta-II
Kaliaganj
Tehatta-I
Nakashipara
Chapra
Krishnagar-II
Krishnagar-I
Krishnagar
Nabadwip
Hanskhali
Santipur
Ranaghat-II
Ranaghat-I
Chakdaha
Haringhata
Boundary
International
District
PS
Road
Rail
River

**Table 4.1.1: Salient Information about the District of Nadia.**

| Serial number | Description | | District profile |
|---|---|---|---|
| 1. | Longitude | | $88^0$ 09/east-$88^0$ 48/ west |
| 2. | Latitude | | $24^0$ 12/north-$22^0$ 53/ south |
| 3. | District headquarter | | Krishnanagar |
| 4. | Subdivision | Administrative | 4 |
| | | Agricultural | 3 |
| 5. | Block | Administrative | 17 |
| | | Agricultural | 16 |
| 6. | Gram Panchayat | | 187 |
| 7. | Panchayat samiti | | 17 |
| 8. | Mouza | | 1406 |
| 9. | Geographical area (sq. km.) | | 3927 |
| 10. | Total cropped area (In hectare) | Gross (ha) | 712140 |
| | | Net (ha) | 272135 |
| 11. | Irrigated land area (In hectare) | Pre-kharif (ha) | 122800 |
| | | Kharif (ha) | 62790 |
| | | Rabi (ha) | 212622 |
| 12. | Cropping intensity | | 261.69 per cent |
| 13. | Area under forest (In hectare) | | 3645.01 |
| 14. | Population | Total male | 2,365,054 |
| | | Total female | 2,238,702 |
| 15. | Density of population | | 1172 / sq. km. |
| 16. | Sex ratio (Female/ 1000 male) | | 947 |
| 17. | Literacy rate (person) | | 72.67 |
| 18. | Area under different crops (in hectare) | Paddy (ha) | 299620 |
| | | Wheat (ha) | 52000 |
| | | Jute (ha) | 69235 |
| | | Mustard (ha) | 57746 |
| | | Potato (ha) | 5305 |
| | | Vegetables (ha) (excluding potato) | 89102.50 |
| 19. | Area under flower (in hectare) | Tuberose (ha) | 1910 |
| | | Marigold (ha) | 1250 |
| 20. | Small farmer | | 1,07,911 |
| 21. | Marginal farmer | | 3,50,048 |
| 22. | Land less labour | | 387235 |

**Source:** i) 2001 census report ii) P.A.O. office of the district iii) District Statistical Hand Book.

The district consists of subdivision- Administrative (4) and Agricultural (3), blocks- Administrative (17) and Agricultural (16), 187 gram panchayats and 1406 mouzas. All the big and small towns are connected by metalled road and railway lines.

**4.4 Climate:**

Climate of Nadia district is erratic and to some extent irregular. Summer is very hot and humid. Sometimes heavy intensive precipitation occurs and sometimes there is no precipitation for long time. Generally maximum precipitation occurs in the month of July, August and September. Annual average rainfall varies from 1500 mm to 1600 mm. with some deviation in some years resulting in drought or flood. The temperature of Nadia district varies between 10° C in winter and 41° C in summer season and the relative humidity between 50 per cent in March and 90 per cent in July.

**4.5 Soil:**

The district Nadia falls within Gangetic Alluvium Zone, which is considered to be most fertile for crop production. Soil types vary from sandy to clay loam. Sandy loam being the predominant.

**4.6 Agriculture:**

Table 4.1.1 exhibits that total net cropped area of Nadia district is 272135 hectares which is approximately 38.21 per cent of the total gross cropped area. Net irrigated area of the district under pre-kharif, kharif and Rabi seasons are 122800 ha, 62790 ha and 212622 ha respectively. The major source of irrigation in the district is ground water which is being exploited by shallow tube-wells and deep tube-wells. Area under forest is 3645.01 hectares. Major crops grown in this district are paddy (299620 ha), wheat (52000 ha), mustard (57746 ha), jute (69235 ha), potato (5305 ha) and vegetables excluding potato (89103.50 ha). Areas under Tuberose flower are 1910 hectares and Marigold flowers are 1250 hectares. The cropping intensity of this district is 261.69.

# CHAPTER-V

# RESULTS AND DISCUSSION

# RESULTS AND DISCUSSION

This section has been devoted to deal with the results of detailed investigations concerning the economic problem of various strata collected during the course of field survey. The objective wise results have been discussed in the following paragraphs.

**5.1: Groupwise Breakup of Cost of Cultivation of Marigold Flower in Rs. per Bigha = 33 decimal.**

The present section deals with the group wise breakup of cost of cultivation of marigold flower in Rs. per bigha.

**Table 5.1.1: Groupwise Breakup of Cost of Cultivation of Marigold Flower in Rs. / Bigha.**

| Operations | | Group-I | Group-II | Group-III | Overall |
|---|---|---|---|---|---|
| Land preparation | | 505.55 (8.41) | 585.35 (8.74) | 613.88 (8.55) | 559.14 (8.57) |
| Planting material | | 220.00 (3.66) | 220.00 (3.28) | 220.00 (3.06) | 220.00 (3.37) |
| Manures and fertilizers | | 632.75 (10.56) | 703.60 (10.59) | 735.00 (9.97) | 681.54 (10.45) |
| Plant protection chemicals | | 635.25 (10.56) | 709.40 (10.59) | 715.50 (10.17) | 680.96 (10.44) |
| Irrigation | | 595.60 (9.90) | 615.38 (9.19) | 622.78 (8.68) | 608.95 (9.34) |
| Transport | | 435.60 (7.24) | 460.75 (6.88) | 482.24 (6.72) | 454.99 (6.98) |
| Human labour | Hired | 1900.20 (31.60) | 2503.22 (37.37) | 2917.63 (40.65) | 2344.89 (35.96) |
| | Family | 885.65 (14.73) | 669.92 (10.00) | 622.88 (8.67) | 746.76 (11.45) |
| Miscellaneous | | 202.36 (3.36) | 230.24 (3.44) | 247.86 (3.45) | 222.61 (3.39) |
| Total | | 6012.96 (100.00) | 6697.86 (100.00) | 7177.57 (100.00) | 6519.84 (100.00) |

Figures in the parentheses represent the percentage to the total.

Table 5.1.1 exhibits the breakup of cost of cultivation of Marigold flower according to the size groups. On an average, it is observed that total cost of cultivation per bigha (33 decimal) of Marigold flower is worked out to be Rs 6519.84. Among the items of expenditures human labour shared the maximum percentage that is 47.41 per cent of the total cost of cultivation. Beside this, manures and fertilizers and plant protection chemicals are the important expenditures noted for Marigold cultivation constituting the percentage 10.45 and 10.44 respectively of total cost of cultivation.

It is observed from the table that cost of cultivation has increased with the increase in size of holding which ranges for Rs. 6013.00 to Rs. 7178.00. Expenditure on wage bill is noted to be the most expensive item consuming more than 46 per cent of total cost.It is observed that in case of hired labour a direct relationship between total hired labour use and farm sizes do exist. But in case of family labour an inverse relationship with size group is being noticed. It is because of less economic capacity of the smallest farmers which insists them on employing less number of hired labourer. Though they are economically poor but to complete the various operations within a short period of time they also have to employ a major number of hired labour. In case of other productive inputs, except planting material, a direct relationship with size group is observed. In other words, expenses on productive inputs have increased with the increase in operational holding.

So, it may be concluded that cultivation of Marigold flower is quite labour intensive. The same finding has been confirmed by Subhramanyam (1986). It is expensive too.

**Table 5.1.1.a: Size Groupwise and Operationwise Human Labour Utilization (days) for Flower Marigold per Bigha.**

| Operations | Group-I | | Group-II | | Group-III | | Overall | |
|---|---|---|---|---|---|---|---|---|
| | Hired | Family | Hired | Family | Hired | Family | Hired | Family |
| Manuring & spraying | 9.37 | 5.50 | 10.68 | 4.32 | 13.97 | 4.02 | 10.81 | 4.03 |
| Irrigation | 6.25 | 1.95 | 8.39 | 1.79 | 8.73 | 1.35 | 7.60 | 1.37 |
| Interculture | 14.06 | 5.59 | 19.69 | 5.01 | 18.36 | 4.61 | 17.17 | 5.16 |
| Harvesting | 20.32 | | 27.11 | 6.51 | 35.72 | 6.41 | 26.12 | 9.10 |
| Total | 50.00 | 23.31 | 65.87 | 17.63 | 76.78 | 16.39 | 61.70 | 19.66 |

Table 5.1.1.a reveals that 19.66 family and human labour days are utilized for the cultivation of one bigha of Marigold flower. Harvesting is noted to be the most labour-intensive operation followed by interculture operation. Labour requirements for irrigation noted to be minimum among all the operations.

### 5.2: Groupwise Economics of Cultivation of Marigold Flower per Bigha.

This section deals with the groupwise cultivation of Marigold per bigha at Cost $A_1$, at Cost D, Gross Return, Surpluses over Costs and Benefit- Cost ratio.

**Table 5.2.1: Groupwise Cost $A_1$, Cost D, Gross Return, Surpluses over Costs and Benefit-Cost Ratio of Marigold Flower / Bigha.**

| Particulars | | Group-I | Group-II | Group-III | Overall |
|---|---|---|---|---|---|
| Cost $A_1$ | | 5127.31 | 6027.94 | 6554.89 | 5773.08 |
| Cost D | | 6012.96 | 6697.86 | 7177.57 | 6519.84 |
| Gross Return | | 9944.63 | 11903.06 | 13664.46 | 11471.97 |
| Surpluses Over at | Cost $A_1$ | 4817.32 | 5875.12 | 7109.57 | 5698.89 |
| | Cost D | 3931.67 | 5205.20 | 6486.89 | 4952.13 |
| Benefit-Cost Ratio at | Cost $A_1$ | 1.94 | 1.97 | 2.08 | 1.98 |
| | Cost D | 1.65 | 1.78 | 1.90 | 1.75 |

It is observed from the Table 5.2.1that per bigha cost of cultivation on an average, at Cost $A_1$ is worked out to be Rs. 5773.08 and at Cost D it is Rs. 6519.84. The gross return on an average is amounted to Rs. 11471.97 per bigha. An inter group comparison clearly reveals that costs as well as returns have direct relationship with the operational holding. Cost of cultivation per bigha based on Cost $A_1$ and Cost D are noted to be much lower for Group-I than Group-III. This clearly depicts that the stable economic condition of the large peasants enable them to utilize their capital optimally which in turns reflects their gross return while the smaller farmers can not derive the full benefit due to inadequacy of capital and depends on their own labour for most of the operation.

After analyzing the cost of cultivation for the three groups of farms, it is essential to examine the corresponding profitability of the crop in question which is measured in terms of surplus over costs and benefit-cost ratio. These two measures have also been worked out on the bases of Cost $A_1$ as well as Cost D. Table 5.2.1 shows that surpluses over Cost $A_1$ and Cost D amount to Rs. 5698.89 and Rs. 4952.13 respectively, on an average. The table also shows the benefit- cost ratios at Cost $A_1$ and Cost D as worked out to be 1.98 and 1.75 respectively on an average. This clearly reflects the profitability of this flower. There is also a direct relationship between surpluses over costs as well as benefit-cost ratios at both the costs and size groups i.e. they increases with the increase in operational holding. So, the above result clearly reveals that irrespective of cost concepts and economic indicators large farmers stay on a higher ladder. From the table it is clear that farmers belonging to higher size group are always in an advantageous position over the two farm groups from the economic point of view. However, benefit-cost ratio which is found to be more or less at par between the first two groups. The smaller size groups, in spite of their capital starveness, utilize their scarce resources efficiently but unable to fetch higher returns as earned by the farmers belonging to the large group.

Table 5.3.1: Feasibility of Marigold Flower Over Other Major Competing Crop.

| Particulars | | | Marigold | Mustard |
|---|---|---|---|---|
| Cost $A_1$(Rs.) | | Overall | 5773.08 | 1786.28 |
| | | Group III | 6554.89 | 1859.22 |
| | | Group II | 6027.94 | 1805.87 |
| | | Group I | 5127.31 | 1730.22 |
| Cost D(Rs.) | | Overall | 6519.84 | 1983.04 |
| | | Group III | 7177.57 | 2047.18 |
| | | Group II | 6697.86 | 2003.48 |
| | | Group I | 6012.96 | 1930.53 |
| Gross Return(Rs.) | | Overall | 11471.97 | 2359.20 |
| | | Group III | 13664.46 | 2640.00 |
| | | Group II | 11903.06 | 2448.00 |
| | | Group I | 9944.63 | 2130.00 |
| Benefit-Cost ratio | At cost $A_1$ | Overall | 1.98 | 1.31 |
| | | Group III | 2.08 | 1.42 |
| | | Group II | 1.97 | 1.35 |
| | | Group I | 1.94 | 1.21 |
| | At cost D | Overall | 1.75 | 1.19 |
| | | Group III | 1.90 | 1.29 |
| | | Group II | 1.78 | 1.22 |
| | | Group I | 1.65 | 1.10 |
| Labour utilization(days) | | Overall | 81.36 | 24.49 |
| | | Group III | 93.17 | 26.51 |
| | | Group II | 83.50 | 25.17 |
| | | Group I | 73.31 | 22.80 |

**5.3: Feasibility of Marigold Flower Over Other Major Competing Crops.**

The present section deals with the feasibility of Marigold flower over other major competing crop, i.e., Mustard. It is noted during the survey that in the locality, Mustard is the only crop which competes with respect to resource utilization with Marigold flower. It is clear from Table 5.3.1 that Cost $A_1$ for Marigold flower is worked out to be, on an average, Rs. 5773.08 and in case of Mustard crop it is Rs. 1786.28 i.e. far below from the cost of cultivation of flower Marigold. Similarly Cost D and gross return show the same result i.e. Rs. 6519.84, Rs. 11471.97 for Marigold and Rs. 1983.04, Rs. 2359.20 for Mustard. Inter group analysis also confirms the same result and a positive relationship between size group and cost. Benefit-Cost ratio in case of Marigold flower at Cost $A_1$ and Cost D are 1.98 and 1.75 respectively on an average whereas for Mustard crop they are 1.31 and 1.19 respectively. However, the ratio is found to increase with the increase in size group for both the crops under study at both the cost concepts used. The analysis clearly advocates the cultivation of Marigold flower though the flower is expensive than the crop Mustard but lucrative too.

In case of labour utilization, i.e. family as well as hired, 81.36 days in Marigold flower and 24.49 days in Mustard crop, on an average, per bigha is required. It is clear from these data that Marigold flower is very much labour intensive crop than Mustard. So, the crop Marigold on the other side generates employment and resembles the findings of Banerjee and Ali (2000).

After analyzing the group wise cost of cultivation at Cost $A_1$, Cost D, gross return and benefit-cost ratio, it can clearly be stated that the cultivation of Marigold flower is more than three times expensive over the crop Mustard. But on the contrary, it also fetches higher returns which is about five times than the return accrued from Mustard cultivation which is clearly reflected from its respective benefit-cost ratio.

**5.4: Groupwise Breakup of Cost of Cultivation of Tuberose Flower in Rs. per Bigha (33 decimal) in First Year.**

The present section deals with the group wise breakup of cost of cultivation of Tuberose flower in rupees per bigha in the first year. Tuberose is originally a perennial crop but farmers allow it for cultivation of consecutive two years only in the survey area that means it is treated as a biennial crop.

**Table 5.4.1: Groupwise Breakup of Cost of Cultivation of Tuberose Flower in 1st Year.**

| Operations | | Group-I | Group-II | Group-III | Overall |
|---|---|---|---|---|---|
| Land preparation | | 1528.75 (17.77) | 1609.00 (17.64) | 1630.75 (17.07) | 1581.25 (17.57) |
| Planting material | | 800.00 (9.30) | 800.00 (8.77) | 800.00 (8.37) | 800.00 (8.89) |
| Manures and fertilizers | | 1177.85 (13.69) | 1368.75 (15.01) | 1371.50 (14.35) | 1292.94 14.37) |
| Plant protection chemicals | | 203.35 (2.36) | 285.25 (3.13) | 323.75 (3.39) | 260.15 (2.89) |
| Irrigation | | 777.50 (9.04) | 837.50 (9.18) | 967.50 (10.13) | 839.40 (9.33) |
| Transport | | 432.75 (5.03) | 447.12 (4.90) | 473.50 (4.96) | 446.65 (4.96) |
| Human labour | Hired | 1917.11 (22.29) | 2430.25 (26.65) | 2765.75 (28.95) | 2292.09 (25.47) |
| | Family | 1433.75 (16.69) | 975.87 (10.70) | 812.50 (8.50) | 1126.35 (12.51) |
| Miscellaneous | | 330.35 (3.84) | 366.66 (4.02) | 408.75 (4.28) | 360.55 (4.01) |
| Total | | 8601.31 (100.00) | 9120.15 (100.00) | 9554.00 (100.00) | 8999.38 (100.00) |

Figures in the parentheses represent the percentage to the total.

Table 5.4.1 exhibits the breakup of cost of cultivation of Tuberose according to the size groups in the first year. On an average, it is observed that cost of cultivation per bigha of Tuberose flower is worked out to be Rs. 8999.38. Human labour (hired and family labour) consumes the maximum percentage i.e. 37.98 per cent of total cost of cultivation. Beside this expenditure input labour, land preparation and manures and fertilizers are the important expenditures noted for Tuberose cultivation constituting the percentage 17.57 and 14.37 respectively of total cost of cultivation.

It is observed from the table that cost of cultivation shows a positive relation with size groups which ranges for Rs. 8602.00 to Rs. 9554.00. Expenditure on wage bill is noted to the most expensive item consuming more than 37 per cent of total cost.

So, cultivation of Tuberose is very much labour intensive. It is observed that hired labour shows a positive relation with size group but in case of family labour it shows a negative relation with the size group which implies that poor economic profile of the smallest farmers which compels them on employing less numbered of hired labours. In otherwise they employ family labour as much as they can. Having poor economic profile farmers belonging to Group-I employ hired labour as maximum percentage of their cost of cultivation due to complete the various operations within a short period of time. Except planting material other productive inputs shows a direct relation with size groups.

**Table5.4.1.a: Size Groupwise and Operationwise Human Labour Utilization (days) for Flower Tuberose per Bigha.**

| Operations | Group-I | | Group-II | | Group-III | | Overall | |
|---|---|---|---|---|---|---|---|---|
| | Hired | Family | Hired | Family | Hired | Family | Hired | Family |
| Manuring & spraying | 8.98 | 8.46 | 11.52 | 3.58 | 12.48 | 3.12 | 10.69 | 5.44 |
| Irrigation | 5.99 | 3.00 | 6.32 | 2.09 | 6.89 | 2.09 | 6.30 | 2.45 |
| Interculture | 13.48 | 8.59 | 17.92 | 6.71 | 18.97 | 5.98 | 16.35 | 14.39 |
| Harvesting | 19.48 | 15.79 | 25.00 | 12.01 | 30.80 | 9.02 | 23.96 | 5.88 |
| Total | 47.93 | 35.84 | 60.76 | 24.39 | 69.14 | 20.21 | 57.30 | 28.16 |

Table 5.4.1.a reveals that 28.16 family and 57.30 hired human labour days are utilized for the cultivation of one bigha of Tuberose flower. Harvesting is noted to be the most labour-intensive operation followed by interculture operation. Total family labour utilization is found to decrease with the increase in operational holding.

**5.5: Groupwise Breakup of Cost of Cultivation of Tuberose Flower in 2nd Year.**

This section deals with the group wise breakup of cost of cultivation of Tuberose flower in rupees per bigha in the second year.

**Table 5.5.1: Groupwise Breakup of Cost of Cultivation of Tuberose Flower in Rs. per Bigha in the Second Year.**

| Operations | | Group-I | Group-II | Group-III | Overall |
|---|---|---|---|---|---|
| **Manures and Fertilizers** | | 634.75 (14.09) | 688.12 (13.97) | 783.50 (14.23) | 685.85 (14.08) |
| **Plant protection chemicals** | | 188.00 (4.17) | 255.00 (5.18) | 293.50 (5.33) | 235.90 (4.84) |
| **Irrigation** | | 751.75 (16.68) | 751.25 (15.25) | 892.50 (16.20) | 779.70 (15.99) |
| **Transport** | | 412.25 (9.15) | 421.62 (8.56) | 521.25 (9.46) | 437.80 (8.98) |
| **Human labour** | **Hired** | 1415.15 (31.41) | 1809.37 (36.73) | 2018.21 (36.64) | 1693.45 (34.74) |
| | **Family** | 826.88 (18.35) | 702.50 (14.26) | 665.00 (12.07) | 744.75 (15.28) |
| **Miscellaneous** | | 272.22 (6.15) | 297.96 (6.05) | 334.19 (6.07) | 296.91 (6.09) |
| **Total** | | 4506.00 (100.00) | 4925.82 (100.00) | 5508.15 (100.00) | 4874.36 (100.00) |

Figures in the parentheses represent the percentage to the total.

Table 5.5.1 exhibits the breakup of cost of cultivation of Tuberose flower in rupees per bigha in the second year. On an average, the cost of cultivation is worked out to be Rs. 4874.36. Among all the items of expenditure human labour consumes more than 50 per cent of total cost of cultivation. When we enter into the strata wise

breakup it is noted that hired labour varies directly with size groups whereas family labour shows negative approach i.e. it decreases with the increase in operational holding. Due to capital starveness of Group-I farmers bound to employ their family labour as much as possible. Beside this, manures and fertilizers consume a handsome percentage of total cost of cultivation. All the productive inputs vary directly with the increase in operational holding.

From the Table 5.4.1 and Table 5.5.1, it is quite clear that the cultivation of Tuberose requires extensive labour. But the labour requirement is high enough in first year in comparison to second year whereas in second year no cost is incurred on land preparation and for planting materials. The cost of cultivation is higher in the first year in comparison to second year due to exclusion of these factors.

**5.6: Groupwise Economics of Cultivation of Tuberose Flower per Bigha in Consecutive Two Year.**

This section deals with the group wise cultivation of Tuberose per bigha at Cost $A_1$, at Cost D, Gross Retum, Surpluses over Costs and Benefit - Cost Ratios in consecutive two year.

**Table 5.6.1: Groupwise Cost $A_1$, Cost D, Gross Return, Surpluses over Costs and Benefit-Cost Ratio of Tuberose Flower in Rs. / Bigha in First Year.**

| Particulars | | Group-I | Group-II | Group-III | Overall |
|---|---|---|---|---|---|
| Cost $A_1$ | | 7167.56 | 8144.28 | 8741.50 | 7873.03 |
| Cost D | | 8601.31 | 9120.15 | 9554.00 | 8999.38 |
| Gross Return | | 11972.06 | 13754.89 | 15459.15 | 13382.61 |
| Surpluses over at | Cost $A_1$ | 4804.50 | 5610.61 | 6717.65 | 5509.57 |
| | Cost D | 3370.75 | 4634.74 | 5905.15 | 4383.23 |
| Benefit-Cost Ratio at | Cost $A_1$ | 1.67 | 1.69 | 1.77 | 1.70 |
| | Cost D | 1.39 | 1.51 | 1.62 | 1.48 |

**Table 5.6.2: Groupwise Cost $A_1$, Cost D, Gross Return, Surpluses over Costs and Benefit-Cost Ratio of Tuberose Flower in Rs./ Bigha in Second Year.**

| Particulars | | Group-I | Group-II | Group-III | Overall |
|---|---|---|---|---|---|
| Cost $A_1$ | | 3679.12 | 4223.32 | 4843.15 | 4129.61 |
| Cost D | | 4506.00 | 4925.82 | 5508.15 | 4874.36 |
| Gross Return | | 8822.76 | 10245.96 | 12408.75 | 10108.85 |
| Surpluses over at | Cost $A_1$ | 5143.64 | 6022.64 | 7565.60 | 5979.63 |
| | Cost D | 4316.76 | 5320.14 | 6900.60 | 5234.88 |
| Benefit-Cost Ratio at | Cost $A_1$ | 1.71 | 2.43 | 2.56 | 2.17 |
| | Cost D | 2.04 | 2.08 | 2.25 | 2.09 |

It is observed from the Table 5.6.1 that per bigha cost of cultivation on an average, at Cost $A_1$ and Cost D are Rs. 7873.03 and Rs. 8999.38 respectively for the first year of Tuberose cultivation and they are Rs. 4129.61 and 4874.36 respectively in the second year observed from Table 5.6.2. Cost of cultivation per bigha based on Cost $A_1$ and Cost D are noted to be much lower on the size class Group-I than those of Group-III in both the years. This clearly depicts that the stable economic condition of the large peasants enable them to utilize their capital optimally which in turn reflects their gross return. It is observed that in first year benefit-cost ratios at Cost $A_1$ is 1.70 and at Cost D is 1.48 which have increased to the second year of cultivation, 2.17 and 2.09 respectively. This clearly reflects the profitability of this flower.

Though it is noted that gross return has markedly declined during the second year but costs have also declined due to non-requirement of three items, i.e. land preparation, planting material and sowing operation (the labour required for sowing has been included in the human labour in the first year). Decline in cost is noted to be higher than decline in gross return resulting higher benefit-cost ratio in the second year.

**5.7: Feasibility of Tuberose over Other Major Competing Crops.**

The present section deals with the feasibility of Tuberose flower over other major competing crops such as Jute, Boro Rice and Mustard. It is noted during the survey that in locality Jute, Boro Rice and Mustard competes with respect to resource utilization with Tuberose flower.

**Table 5.7.1: Feasibility of Tuberose Over Other Major Competing Crops (Rs/Bigha).**

| Particulars | | Cost $A_1$ | | | | Cost D | | | | Gross return | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Gr-I | Gr-II | Gr-III | Overall | Gr-I | Gr-II | Gr-III | Overall | Gr-I | Gr-II | Gr-III | Overall |
| Tuberose | 1st year | 7167.56 | 8144.28 | 8741.50 | 7873.03 | 8601.31 | 9120.15 | 9554.00 | 8999.38 | 11972.06 | 13754.89 | 15459.15 | 13382.61 |
| | 2nd year | 3679.12 | 4223.32 | 4843.15 | 4129.61 | 4506.00 | 4925.82 | 5508.15 | 4874.36 | 8822.76 | 10245.96 | 12408.75 | 10108.85 |
| Crop Jute | | 1897.16 | 2030.06 | 2140.20 | 2022.47 | 2107.91 | 2226.95 | 2313.93 | 2216.26 | 2380.00 | 2400.00 | 2755.00 | 2511.67 |
| Crop Boro rice | | 3338.65 | 3435.38 | 3655.35 | 3476.46 | 3738.65 | 3735.38 | 3952.35 | 3808.79 | 3970.00 | 4070.00 | 4515.50 | 4185.17 |
| Crop Mustard | | 1730.22 | 1805.87 | 1859.22 | 1798.44 | 1930.53 | 2003.48 | 2047.18 | 1993.73 | 2130.00 | 2448.00 | 2640.00 | 2406.00 |
| Crop rotation | | | | | | | | | | | | | |
| Jute & Boro rice | | 5235.81 | 5465.44 | 5795.55 | 5498.93 | 5846.56 | 5962.33 | 6266.28 | 6025.05 | 6350.00 | 6470.00 | 7270.50 | 6696.84 |
| Jute & Mustard | | 3627.38 | 3835.93 | 3999.42 | 3820.91 | 4038.44 | 4230.43 | 4361.11 | 4209.99 | 4510.00 | 4848.00 | 5395.00 | 4917.67 |
| Boro & Mustard | | 5068.87 | 5241.25 | 5514.57 | 5274.90 | 5669.18 | 5738.86 | 5999.53 | 5802.52 | 6100.00 | 6518.00 | 7155.50 | 6591.17 |

Contd.

| Particulars | | Benefit-Cost ratio at | | | | | | | | Labour utilisation (days) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Cost $A_1$ | | | | Cost D | | | | | | | |
| | | Gr-I | Gr-II | Gr-III | overall | Gr-I | Gr-II | Gr-III | overall | Gr-I | Gr-II | Gr-III | overall |
| Tuberose | 1st year | 1.67 | 1.69 | 1.77 | 1.70 | 1.39 | 1.51 | 1.62 | 1.48 | 83.77 | 85.15 | 89.45 | 85.46 |
| | 2nd year | 1.71 | 2.43 | 2.56 | 2.17 | 2.04 | 2.08 | 2.25 | 2.09 | 56.05 | 62.79 | 67.08 | 60.95 |
| Crop Jute | | 1.25 | 1.18 | 1.28 | 1.24 | 1.23 | 1.08 | 1.19 | 1.13 | 23.52 | 25.18 | 26.35 | 24.75 |
| Crop Boro rice | | 1.19 | 1.18 | 1.20 | 1.20 | 1.06 | 1.09 | 1.09 | 1.09 | 31.58 | 31.46 | 34.71 | 32.16 |
| Crop Mustard | | 1.23 | 1.35 | 1.41 | 1.34 | 1.10 | 1.22 | 1.28 | 1.20 | 22.80 | 25.17 | 26.51 | 24.49 |
| Crop rotation | | | | | | | | | | | | | |
| Jute & Boro rice | | 1.21 | 1.18 | 1.25 | 1.21 | 1.09 | 1.08 | 1.16 | 1.10 | 55.10 | 56.64 | 61.06 | 56.91 |
| Jute & Mustard | | 1.24 | 1.26 | 1.35 | 1.27 | 1.12 | 1.14 | 1.24 | 1.15 | 46.32 | 50.35 | 52.86 | 49.24 |
| Boro & Mustard | | 1.20 | 1.24 | 1.29 | 1.23 | 1.07 | 1.13 | 1.19 | 1.12 | 54.38 | 56.63 | 61.22 | 56.65 |

It is clear from Table 5.7.1 that Cost $A_1$ for Tuberose flower in the first year, on an average, is worked out to be Rs. 7873.03 and Rs. 4129.61 in the second year. Whereas Jute (Rs. 2216.26), Boro rice (Rs. 3808.79) and Mustard (Rs. 1993.73) shows Cost $A_1$ far below than Tuberose while comparing with both the years on an average. Cost D and gross return also shows same trend. Inter group analysis also confirms the same result and a positive relationship between size group and cost is noted for all the crops. The benefit-cost ratio is found to increase with the increase in size group for all the crops under study at both the cost concepts used. For Tuberose in the first year at Cost $A_1$ the ratio is 1.70 and 2.17 in the second year on an average. While the ratios for competing crops ranges from1.20 to 1.34. So, the ratios of competing crops are much lower than Tuberose in both the years. The analysis clearly advocates in favour of Tuberose flower though the flower is very much expensive than the other major competing crops.

While considering labour utilization, for Tuberose it is much higher than any one of the competing crop in both years. So, the flower Tuberose generates employment opportunity and has confirmed the findings of Banerjee and Ali (2000).

After comparing the benefit-cost ratio of Tuberose flower with Jute, Boro rice and Mustard crop it can be clearly stated that the cultivation of Tuberose is economically beneficial. Farmers can take two crops in a year in the same field instead of Tuberose. When we calculate the benefit-cost ratio of two crops such as Jute and Boro rice or Jute and Mustard or Boro rice and Mustard then also it seems far below than benefit-cost ratio of Tuberose regardless of first and second year of its sole cultivation.

Among the three competing crops, Boro rice shows the highest cost of cultivation. Tuberose in the first year is more than two times expensive over crop Boro rice while it also fetches higher returns which is about three and half times than the return accrued from Boro rice cultivation which is clearly reflected from its respective benefit-cost ratio.

The small farmers are reluctant on indulging themselves on the cultivation of Tuberose because the cost of cultivation of tuberose as a sole crop exceeds the total cost of cultivation of the above mentioned three major competing crops.

**5.8: Marketing Channel of Flower Marigold.**

Marigold is marketed in unit of kg. All the produces are not sold through one channel. Two main channels are found to exist the in marketing of Marigold in the selected area at village levels.

Channel- I: Producer - wholesaler - retailer - flower user.

Channel- II: Producer - Commission agent - wholesaler - retailer - flower user.

In the first channel producers carry their produce to the market (wholesaler) and sale after bidding operation is completed. But in Channel-II Commission Agents are the persons who contact the farmers and assures him a fair price for his produce in lieu of certain percentage of commission.

**5.9: Price Spread and Marketing Margin of Flower Marigold.**

It is opined and believed that marketing cost varies with the volume of transaction as it is observed earlier that output varies in category of farm i.e. operational holding, hence it is deemed essential to analyze marketing cost at farmer's level according to the size group. Costs involved at various marketing stages and profit reaped by different intermediaries are presented in Table5.9.1.

Table 5.9.1 demonstrates the price spread and marketing margin of flower Marigold by size of farms. Out of two channels studied, 65 to 70 per cent of total flower transacted through Channel-I and 30 to 35 per cent through Channel-II. The figures presented in the table are in terms of Rs. per kg. of flower.

Transportation cost is noted to be the most expensive item met by the flower producer which consumes more than 50 per cent of total marketing cost incurred by the producer. Inter group variation in transportation cost is noted to be absent which signifies the absence of scale economy. At producer's level, it is noted that the profit reaped by the flower producers have increased with the increase in farm size which may be due to higher production and higher bargaining power. It is noted that the large group has to incur minimum cost (loss) due to spoilage which may be due to their knowledge of bulk handling.

**Table 5.9.1: Price Spread and Marketing Margin of Flower Marigold.**

(Rs. per kg)

| Seri-al no. | Particulars | Group I | | Group II | | Group III | |
|---|---|---|---|---|---|---|---|
| | | Channel-I | Channel-II | Channel-I | Channel-II | Channel-I | Channel-II |
| 1. | At producer's level | | | | | | |
| a) | Cost of production | 18.84 | 18.84 | 20.25 | 20.25 | 21.89 | 21.89 |
| b) | **Cost of marketing** | 2.76 | 0.64 | 2.85 | 0.61 | 2.88 | 0.58 |
| i) | Packing | 0.35 | 0.35 | 0.36 | 0.36 | 0.38 | 0.38 |
| ii) | Loading and unloading | 0.32 | - | 0.34 | - | 0.34 | - |
| iii) | Spoilage | 0.29 | 0.29 | 0.25 | 0.25 | 0.20 | 0.20 |
| iv) | Transportation | 1.42 | - | 1.45 | - | 1.48 | - |
| v) | Market fee | 0.20 | - | 0.20 | - | 0.20 | - |
| vi) | Miscellaneous | 0.18 | - | 0.25 | - | 0.28 | - |
| c) | Producer's profit | 8.85 | 6.00 | 9.30 | 6.32 | 10.10 | 6.70 |
| d) | Price received by producer | 30.45 | 25.48 | 32.40 | 27.18 | 34.87 | 29.17 |
| 2. | At Commission agent's level | | | | | | |
| a) | **Cost of marketing** | - | 3.83 | - | 4.02 | - | 4.03 |
| i) | Packing | - | 0.40 | - | 0.42 | - | 0.42 |
| ii) | Loading and unloading | - | 0.56 | - | 0.60 | - | 0.60 |
| iii) | Spoilage | - | 0.30 | - | 0.33 | - | 0.34 |
| iv) | Transportation | - | 2.02 | - | 2.09 | - | 2.12 |
| v) | Market fee | - | 0.20 | - | 0.20 | - | 0.20 |
| vi) | Miscellaneous | - | 0.18 | - | 0.18 | - | 0.18 |
| b) | Commission agent's profit | - | 3.09 | - | 3.30 | - | 3.89 |
| c) | Price received by Commission agent | - | 32.23 | - | 34.30 | - | 36.92 |
| 3. | At wholesaler's level | | | | | | |
| a) | **Cost of marketing** | 1.68 | 1.74 | 1.79 | 1.87 | 1.83 | 1.92 |
| i) | Storage | 0.45 | 0.48 | 0.44 | 0.49 | 0.45 | 0.50 |
| ii) | Packing | 0.28 | 0.28 | 0.27 | 0.28 | 0.28 | 0.28 |
| iii) | Spoilage | 0.32 | 0.35 | 0.38 | 0.40 | 0.40 | 0.44 |
| iv) | Helping hands | 0.28 | 0.28 | 0.30 | 0.30 | 0.30 | 0.30 |
| v) | Octroi | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| vi) | Miscellaneous | 0.15 | 0.15 | 0.20 | 0.20 | 0.20 | 0.20 |
| b) | Wholesaler's profit | 1.80 | 1.80 | 1.72 | 1.72 | 1.65 | 1.65 |
| c) | Price received by wholesaler | 33.93 | 35.77 | 35.91 | 37.89 | 38.35s | 40.49 |
| 4. | At retailer's level | | | | | | |
| a) | **Cost of marketing** | 2.49 | 2.49 | 2.55 | 2.55 | 2.52 | 2.52 |
| i) | Packing | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 | 0.30 |
| ii) | Transport | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 | 0.85 |
| iii) | Loading and unloading | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 | 0.48 |
| iv) | Spoilage | 0.32 | 0.32 | 0.30 | 0.30 | 0.30 | 0.30 |
| v) | Storage | 0.19 | 0.19 | 0.24 | 0.24 | 0.21 | 0.21 |
| vi) | Octroi | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| vii) | Miscellaneous | 0.15 | 0.15 | 0.18 | 0.18 | 0.18 | 0.18 |
| b) | Retailer's profit | 0.95 | 0.95 | 0.98 | 0.98 | 1.04 | 1.04 |
| c) | Price received by retailer | 37.37 | 39.21 | 39.44 | 41.42 | 41.91 | 44.05 |
| 5. | **Marketing margin** | 18.53 | 20.37 | 19.19 | 21.17 | 20.04 | 22.16 |

It is observed from the table that introduction of Commission Agent has increased the cost of marketing of the flower. The increase in cost is mainly due to increase in cost of transportation, spoilage and profit reaped by the Commission Agent.

The operations comprising the cost of marketing at wholesaler's level are packaging, storage, spoilage, helping hands, octroi, etc. Storage keeps his position first out of total marketing cost incurred by wholesaler. It is noted from the table that wholesalers profit is minimum in case of large group due to their higher bargaining power and is maximum in case of small group of farms.

Unlike wholesaler, retailer also pay maximum of his marketing cost through transportation. Though there is a positive relation between size group and retailers profit, it shows a least variation as he is not so influenced by the marketing channels exists.

After analyzing the price spread and marketing margin of flower Marigold it is very clear that producer's have reaped higher profit per kg. in Channel-I at all the farm levels. Though all the farmers opined that almost of their produce enrouted through Channel-I, some farmers belonging to the large group opined that 60 per cent of their produce transacted through Channel-I and rest 40 per cent through Channel-II. However, in case of Channel-I, producer has not taken into account his labour offered in selling his produce to the wholesaler. If this part has been taken into consideration, his profit margin would have been a bit less then the actually earned.

It may be concluded that majority of farmers of the sample and major portion of produce are enrouted through Channel-I, i.e. producer himself performs a function of middleman. However, large farmers give more or less equal preference to both the channels. In spite of lower profit, producer enroute their produce through channel-II because of want of time, illness or having some other business. It is also clear from the table that the producer of channel-II have received lower percentage of consumer's price which is mainly due to longer marketing chain and large number of intermediaries. Similar conclusion have also drawn by subhramanyam (1986).

### 5.10: Functional Analysis of Marketing Margin of Flower Marigold.

Functional analysis of marketing margin of flower Marigold of the selected channels are presented in Table5.10.1.

**Table 5.10.1: Functional Analysis of Marketing Margin of Flower Marigold.**

(Rs. per kg)

| Serial no. | Particulars | Group I | | Group II | | Group III | |
|---|---|---|---|---|---|---|---|
| | | Channel-I | Channel-II | Channel-I | Channel-II | Channel-I | Channel-II |
| 1. | Packaging | 0.93 | 1.33 | 0.93 | 1.36 | 0.96 | 1.38 |
| 2. | Loading& unloading | 0.80 | 1.04 | 0.82 | 1.08 | 0.82 | 1.08 |
| 3. | Helping hands | 0.28 | 0.28 | 0.30 | 0.30 | 0.30 | 0.30 |
| 4. | Storage | 0.64 | 0.67 | 0.68 | 0.73 | 0.66 | 0.71 |
| 5. | Transportation | 2.27 | 2.87 | 2.30 | 2.94 | 2.35 | 2.97 |
| 6. | Market fee/ Octroi | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 | 0.60 |
| 7. | Spoilage | 0.93 | 1.26 | 0.93 | 1.28 | 0.90 | 1.28 |
| 8. | Miscellaneous | 0.48 | 0.48 | 0.63 | 0.56 | 0.66 | 0.56 |
| 9. | Trader's profit | 11.60 | 11.84 | 12.00 | 12.32 | 12.79 | 13.28 |
| 10. | Total | 18.53 | 20.37 | 19.19 | 21.17 | 20.04 | 22.16 |

It is observed from Table 5.10.I that irrespective of channels used, marketing margin and traders profit shows the positive relation according to size groups. Traders profit in Channel-I ranges between 30 to 32 per cent of the consumer's rupee including the producer and in Channel-II it is 29 to 30 per cent. Table shows that transportation charge is an expensive item of marketing in all the two channels selected and found to be maximum in Channel-II accounting for about 6.74 to 7.32 per cent of price spread by the consumer's price and about 13.40 to 14.09 per cent of marketing margin. The higher transportation cost in Channel-II is mainly due to coverage of longer distance between production and user points. Similar conclusion has been drawn by Sikder and Banerjee (1983). They found that transport cost is major item of expenditure of Jute marketing in West Bengal and Bangladesh which is the increasing function of distance and mode of transportation. The next marketing input is spoilage followed by packaging. As flower is perishable in nature and need careful packing. Labour charge for loading and unloading in Channel-II is calculated to be much higher than Channel-I irrespective of farm size. This is because of passage of product through number of intermediaries and markets. The higher storage cost in Channel-II in comparison to Channel-I is due to number of times the flower stored by different intermediaries.

**5.11: Marketing Efficiency in Marketing of Marigold Flower.**

The present section deals with the marketing efficiency of flower Marigold

Table 5.11.1 reveals the marketing efficiency in the marketing of Marigold flower The marketing efficiency is measured by Shepherd's and Composite Ranking Methods - suggested by Rajagopal (1986). Efficiency is denoted in terms of ratio which suggests that higher the ratio; the higher the marketing efficiency and vice-versa. The higher marketing efficiency indicates better marketing system. It is observed from table marketing efficiency - using Shepherd's method - is noted to be much higher in Channel-I than Channel-II irrespective of size group. In case of Channel-I it ranges from 4.39 to 4.78 and is found to increase with the increase in size of operational holding. Whereas, in case of Channel-II it ranges from 3.59 to 3.96 and is also found to increase with the increase in size of operational holding. The higher marketing efficiency of Channel-I is due to lower marketing cost, higher producer's price and lower margin of intermediaries. The lower efficiency ratio of Channel-II in comparison to Channel-I may be because of lower quantum of transaction as well as lesser number of users of this channel. It is also observed that the producers of group-I and group-II are more or less equally efficient in both the channels. Similar picture is also observed in case of Composite Ranking Method. Performance indicator $I_1$ increases irrespective of channels according to size group and it is higher in Channel-I than Channel-II as because producers have reaped the higher price for their bargaining power in Channel-I. $I_2$ increases irrespective of channels according to operational

**Table 5.11.1: Marketing Efficiency in Marketing of Marigold Flower.**

| Marketing channel | Shepherd's method | | | Performance indicators | | | | | | | | | Composite ranking | | | Final ranking | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | $I_1$ | | | $I_2$ | | | $I_3$ | | | | | | | | |
| | GrI | GrII | GrIII | GrI | GrII | GrIII | GrI | GrII | GrIII | GrI | GrII | GrIII | GrI | GrII | GrIII | GrI | GrII | GrIII |
| **Channel-I** | 4.39 (1) | 4.48 (1) | 4.78 (1) | 27.69 (1) | 29.55 (1) | 31.99 (1) | 6.93 (1) | 7.19 (1) | 7.25 (1) | 2.75 (1) | 2.70 (1) | 2.69 (1) | 1.00 | 1.00 | 1.00 | 1 | 1 | 1 |
| **Channel-II** | 3.59 (2) | 3.68 (2) | 3.96 (2) | 24.54 (2) | 26.57 (2) | 28.59 (2) | 8.53 (2) | 8.85 (2) | 8.88 (2) | 5.74 (2) | 6.00 (2) | 6.58 (2) | 2.00 | 2.00 | 2.00 | 2 | 2 | 2 |

Figures in the parentheses represent the corresponding ranking.

holding and it is higher in Channel-II than Channel-I as commission agent increases the length of the marketing Channel-II as well as increases the marketing cost. Irrespective of channels the performance indicator $I_3$ also increases according to land holding but it is higher in Channel-II due to more number of middleman than Channel-I. So, with the increase in margin of intermediaries marketing efficiency decreases.

It is noted from Table 5.11.1 that whatever measure is used to reflect the economic efficiency of marketing system, Channel-I is identified to be the most efficient channel which is supported by the composite as well as by the final ranking.

**5.12: Marketing Channel of Flower Tuberose.**

Tuberose is marketed in unit of kg. All the produces are not sold through one channel. Two main channels are found to exist in marketing of Tuberose in the selected area at village levels.

Channel- I: Producer – wholesaler – retailer - flower user.

Channel- II: Producer - Commission agent – wholesaler – retailer - flower user.

In the first channel producers carry their produce to the market (wholesaler) and sale their produce after bidding operation is completed. But in Channel- II Commission Agents are the persons who contact the farmers and assures him a fair price for his produce in lieu of certain percentage of commission.

**5.13: Price Spread and Marketing Margin of Flower Tuberose.**

It is opined and believed that marketing cost varies with the volume of transaction as it is observed that output varies in category of farm i.e. operational holding, it is very much essential to analyze marketing cost at farmer's level according to the size class. Costs involved at various marketing stages and profit reaped by different intermediaries are presented in Table 5.13.1and in Table 5.13.2 during first year and second year respectively.

**Table 5.13.1: Price Spread and Marketing Margin of Flower Tuberose in the First Year.** (Rs. per kg)

| Serial No. | Particulars | Group I | | Group II | | Group III | |
|---|---|---|---|---|---|---|---|
| | | Channel-I | Channel-II | Channel-I | Channel-II | Channel-I | Channel-II |
| 1. | At producer's level | | | | | | |
| a) | Cost of production | 22.58 | 22.58 | 23.95 | 23.95 | 24.80 | 24.80 |
| b) | **Cost of marketing** | 2.73 | 0.66 | 2.81 | 0.65 | 2.87 | 0.61 |
| i) | Packing | 0.38 | 0.38 | 0.40 | 0.40 | 0.41 | 0.41 |
| ii) | Loading and unloading | 0.30 | - | 0.32 | - | 0.33 | - |
| iii) | Spoilage | 0.28 | 0.28 | 0.25 | 0.25 | 0.21 | 0.21 |
| iv) | Transportation | 1.45 | - | 1.49 | - | 1.52 | - |
| v) | Market fee | 0.15 | - | 0.15 | - | 0.15 | - |
| vi) | Miscellaneous | 0.17 | - | 0.20 | - | 0.25 | - |
| c) | Producer's profit | 7.75 | 5.25 | 8.25 | 5.60 | 9.10 | 6.00 |
| d) | Price received by producer | 33.06 | 28.49 | 35.01 | 30.20 | 36.77 | 31.41 |
| 2. | At Commission agent's level | | | | | | |
| a) | **Cost of marketing** | | 3.45 | | 3.54 | | 3.59 |
| i) | Packing | | 0.40 | | 0.41 | | 0.42 |
| ii) | Loading and unloading | | 0.45 | | 0.48 | | 0.50 |
| iii) | Spoilage | | 0.25 | | 0.25 | | 0.25 |
| iv) | Transportation | | 2.05 | | 2.10 | | 2.12 |
| v) | Market fee | | 0.15 | | 0.15 | | 0.15 |
| vi) | Miscellaneous | | 0.15 | | 0.15 | | 0.15 |
| b) | Commission agent's profit | | 3.15 | | 3.35 | | 3.65 |
| c) | Price received by Commission agent | | 35.09 | | 37.09 | | 38.65 |
| 3. | At wholesaler's level | | | | | | |
| a) | **Cost of marketing** | 1.62 | 1.68 | 1.67 | 1.74 | 1.74 | 1.81 |
| i) | Storage | 0.42 | 0.45 | 0.40 | 0.45 | 0.45 | 0.45 |
| ii) | Packing | 0.28 | 0.28 | 0.27 | 0.28 | 0.28 | 0.28 |
| iii) | Spoilage | 0.32 | 0.35 | 0.37 | 0.40 | 0.38 | 0.45 |
| iv) | Helping hands | 0.25 | 0.25 | 0.28 | 0.28 | 0.28 | 0.28 |
| v) | Octroi | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| vi) | Miscellaneous | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| b) | Wholesaler's profit | 2.08 | 2.08 | 1.92 | 1.92 | 2.00 | 2.00 |
| c) | Price received by wholesaler | 36.76 | 38.85 | 38.60 | 40.75 | 40.51 | 42.46 |
| 4. | At retailer's level | | | | | | |
| a) | **Cost of marketing** | 2.45 | 2.45 | 2.53 | 2.53 | 2.57 | 2.57 |
| i) | Packing | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 |
| ii) | Transport | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| iii) | Loading and unloading | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 |
| iv) | Spoilage | 0.30 | 0.30 | 0.28 | 0.28 | 0.28 | 0.28 |
| v) | Storage | 0.15 | 0.15 | 0.20 | 0.20 | 0.20 | 0.20 |
| vi) | Octroi | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| vii) | Miscellaneous | 0.15 | 0.15 | 0.20 | 0.20 | 0.24 | 0.24 |
| b) | Retailer's profit | 1.15 | 1.15 | 1.10 | 1.10 | 1.12 | 1.12 |
| c) | Price received by retailer | 40.36 | 42.45 | 42.23 | 44.38 | 44.20 | 46.15 |
| 5. | **Marketing margin** | 17.78 | 19.87 | 18.28 | 20.45 | 19.40 | 21.36 |

Table 5.13.1 demonstrates the price spread and marketing margin of flower Tuberose in the first year by size of farms. Out of two channels studied, 60-70 per cent of total flower transacted through Channel-I and 30-40 per cent through Channel-II. The figures presented in the table are in terms of Rs. per kg. of cut flower. The table shows that the cost of production of Tuberose flower, irrespective of channel, is found to increase with the increase in farm size.

Transportation cost is noted to be the most expensive one met by the flower producer consuming more than fifty per cent of total marketing cost incurred by the producer at all farm levels. It is observed that the large group has to incur minimum cost (loss) due to spoilage which may be due to their knowledge of bulk handling. At producer's level, it is noted that the profit reaped by the producers have increased with the increase in farm size which may be due to their higher bargaining power.

Commission agent has increased the cost of marketing of flower tuberose in Channel-II observed from the Table 5.13.1. The increase in cost is mainly due to transportation, spoilage and profit reaped by the commission agent at Commission Agent's level existing in Channel-II. At commission agents level transportation cost is maximum among all the expenditure inputs of marketing in Channel-II. This is due to coverage of longer distance. At wholesaler's level, it is noted that marketing cost varies according to size groups irrespective of channels. Packaging, storage, spoilage, helping hands, octroi, etc. are the item of marketing cost at wholesaler's level. Among the all marketing cost inputs performs by the wholesaler storage ranks the position first. Wholesaler has reaped higher profit in group-I than group-III as due to less bargaining power of small group of farmers.

Retailer pay maximum of his marketing cost through transportation. There is a positive relation between size group and retailer's profit, irrespective of channels used, is also noted.

**Table 5.13.2: Price Spread and Marketing Margin of Flower Tuberose in the Second Year.**

(Rs. per kg)

| Serial No. | Particulars | Group I | | Group II | | Group III | |
|---|---|---|---|---|---|---|---|
| | | Channel-I | Channel-II | Channel-I | Channel-II | Channel-I | Channel-II |
| 1. | At producer's level | | | | | | |
| a) | Cost of production | 14.72 | 14.72 | 16.24 | 16.24 | 17.71 | 17.71 |
| b) | Cost of marketing | 2.75 | 0.68 | 2.85 | 0.69 | 2.92 | 0.67 |
| i) | Packing | 0.38 | 0.38 | 0.40 | 0.40 | 0.41 | 0.41 |
| ii) | Loading and unloading | 0.30 | - | 0.32 | - | 0.33 | - |
| iii) | Spoilage | 0.30 | 0.30 | 0.29 | 0.29 | 0.26 | 0.26 |
| iv) | Transportation | 1.45 | - | 1.49 | - | 1.52 | - |
| v) | Market fee | 0.15 | - | 0.15 | - | 0.15 | - |
| vi) | Miscellaneous | 0.17 | - | 0.20 | - | 0.25 | - |
| c) | Producer's profit | 15.59 | 13.09 | 15.92 | 13.27 | 16.14 | 13.03 |
| d) | Price received by producer | 33.06 | 28.49 | 35.01 | 30.20 | 36.77 | 31.41 |
| 2. | At Commission agent's level | | | | | | |
| a) | Cost of marketing | | 3.45 | | 3.54 | | 3.59 |
| i) | Packing | | 0.40 | | 0.41 | | 0.42 |
| ii) | Loading and unloading | | 0.45 | | 0.48 | | 0.50 |
| iii) | Spoilage | | 0.25 | | 0.25 | | 0.25 |
| iv) | Transportation | | 2.05 | | 2.10 | | 2.12 |
| v) | Market fee | | 0.15 | | 0.15 | | 0.15 |
| vi) | Miscellaneous | | 0.15 | | 0.15 | | 0.15 |
| b) | Commission agent's profit | | 3.15 | | 3.35 | | 3.65 |
| c) | Price received by Commission agent | | 35.09 | | 37.09 | | 38.65 |
| 3. | At wholesaler's level | | | | | | |
| a) | Cost of marketing | 1.62 | 1.68 | 1.67 | 1.74 | 1.74 | 1.81 |
| i) | Storage | 0.42 | 0.45 | 0.40 | 0.45 | 0.45 | 0.45 |
| ii) | Packing | 0.28 | 0.28 | 0.27 | 0.28 | 0.28 | 0.28 |
| iii) | Spoilage | 0.32 | 0.35 | 0.37 | 0.40 | 0.38 | 0.45 |
| iv) | Helping hands | 0.25 | 0.25 | 0.28 | 0.28 | 0.28 | 0.28 |
| v) | Octroi | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| vi) | Miscellaneous | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 | 0.20 |
| b) | Wholesaler's profit | 2.08 | 2.08 | 1.92 | 1.92 | 2.00 | 2.00 |
| c) | Price received by wholesaler | 36.76 | 38.85 | 38.60 | 40.75 | 40.51 | 42.46 |
| 4. | At retailer's level | | | | | | |
| a) | Cost of marketing | 2.45 | 2.45 | 2.53 | 2.53 | 2.57 | 2.57 |
| i) | Packing | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 | 0.35 |
| ii) | Transport | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 | 0.90 |
| iii) | Loading and unloading | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 |
| iv) | Spoilage | 0.30 | 0.30 | 0.28 | 0.28 | 0.28 | 0.28 |
| v) | Storage | 0.15 | 0.15 | 0.20 | 0.20 | 0.20 | 0.20 |
| vi) | Octroi | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 | 0.15 |
| vii) | Miscellaneous | 0.15 | 0.15 | 0.20 | 0.20 | 0.24 | 0.24 |
| b) | Retailer's profit | 1.15 | 1.15 | 1.10 | 1.10 | 1.12 | 1.12 |
| c) | Price received by retailer | 40.36 | 42.45 | 42.23 | 44.38 | 44.20 | 46.15 |
| 5. | Marketing margin | 25.64 | 26.73 | 25.99 | 28.16 | 26.49 | 28.34 |

Table 5.13.2 demonstrates the price spread and marketing margin of flower Tuberose in second year by size of farms. The figures presented in the table are in terms of Rs. per Kg. of cut flower.

At producer's level, it is noted that cost of production is increasing with the size groups in the second year. But it is bit less than the first year of production due to exclusion of three factors of cost of cultivation of Tuberose flower. It is observed that cost of marketing increases with size groups in case of Channel-I as well as Channel-II, as in the second year more spoilage occurs. The profit earned by the producer is very higher and it ranges between 43.89 to 47.15 per cent in Channel-I of the price received by the producer for his produce. It is possible due to lower production cost in the second year of Tuberose flower marketing.

Among the marketing expenditures at producer's level transportation cost is noted to be higher at Channel-I irrespective of farm groups. At commission agent's level it is observed that the profit of commission agent increases with the increase in operational holding at Channel-II. Transportation, here also consumes the highest share among the all marketing expenditures incurred by the commission agent.

At wholesaler's level cost of marketing shows the positive relation with farm size at Channel-I and it is also true for Channel-II. After getting the product from the various sources wholesaler need a secured storage for the flower Tuberose. That is why storage consumes highest marketing expenses over the others at wholesaler's level.

At retailer's level highest marketing expenditures consumes by the input transportation. Retailer's profit is also increasing along with the increase in farm size is noted from the table.

While comparing in both the years of price spread and marketing margin of Tuberose flower it is observed that profit reaped by the producer in the second year is much higher than it is earned in first year as because the cost of production of Tuberose flower is lower in the second year in comparison to the first year.

After analyzing the price spread and marketing margin of Tuberose flower in both the year it is very clear that producers have reaped higher profit per kg. of flower sold in Channel-I at all farm levels.

However, in case of Channel-I, producer had not taken into account his own labour offered in selling his produce to the wholesaler. If this part is taken into consideration, his profit margin would have been a bit less than he actually earned in both the years.

It may be concluded that majority of the farmers of the sample and major portion of the produce are enrouted through Channel-I. However, large farmers give more or less equal preference to both the existing channels. In spite of lower profit, producer also enrouted his produce through Channel-II because of want of time, illness or having some other business. In Channel-II lower percentage of consumer's price earned by the producer due to involvement of commission agent as an intermediary of the marketing chain.

**5.14: Functional Analysis of Marketing Margin of Flower Tuberose in Consecutive Two Year.**

Functional analysis of marketing margin of flower Tuberose in the first year and second year of the selected channels are presented in Table 5.14.1 and Table 5.14.2 respectively.

**Table 5.14.1: Functional Analysis of Marketing Margin of Flower Tuberose in the First Year.**

(Rs. per kg)

| Serial no. | Particulars | Group I | | Group II | | Group III | |
|---|---|---|---|---|---|---|---|
| | | Channel-I | Channel-II | Channel-I | Channel-II | Channel-I | Channel-II |
| 1. | Packaging | 1.01 | 1.41 | 1.02 | 1.44 | 1.04 | 1.46 |
| 2. | Loading& unloading | 0.75 | 0.90 | 0.77 | 0.93 | 0.78 | 0.95 |
| 3. | Helping hands | 0.25 | 0.25 | 0.28 | 0.28 | 0.28 | 0.28 |
| 4. | Storage | 0.57 | 0.60 | 0.60 | 0.65 | 0.65 | 0.65 |
| 5. | Transport ation | 2.35 | 2.95 | 2.39 | 3.00 | 2.42 | 3.02 |
| 6. | Market fee/ Octroi | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 |
| 7. | Spoilage | 0.90 | 1.18 | 0.90 | 1.18 | 0.87 | 1.19 |
| 8. | Miscellan eous | 0.52 | 0.50 | 0.60 | 0.55 | 0.69 | 0.59 |
| 9. | Trader's profit | 10.98 | 11.63 | 11.27 | 11.97 | 12.22 | 12.77 |
| 10. | Total | 17.78 | 19.87 | 18.28 | 20.45 | 19.40 | 21.36 |

**Table 5.14.2: Functional Analysis of Marketing Margin of Flower Tuberose in the Second Year.**

(Rs. per kg)

| Serial no. | Particulars | Group I | | Group II | | Group III | |
|---|---|---|---|---|---|---|---|
| | | Channel-I | Channel-II | Channel-I | Channel-II | Channel-I | Channel-II |
| 1. | Packaging | 1.01 | 1.41 | 1.02 | 1.43 | 1.04 | 1.46 |
| 2. | Loading& unloading | 0.75 | 0.90 | 0.77 | 0.93 | 0.78 | 0.95 |
| 3. | Helping hands | 0.25 | 0.25 | 0.28 | 0.28 | 0.28 | 0.28 |
| 4. | Storage | 0.57 | 0.60 | 0.60 | 0.65 | 0.65 | 0.65 |
| 5. | Transport-ation | 2.35 | 2.95 | 2.39 | 3.00 | 2.42 | 3.02 |
| 6. | Market fee/ Octroi | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 | 0.45 |
| 7. | Spoilage | 0.92 | 1.20 | 0.94 | 1.22 | 0.92 | 1.24 |
| 8. | Miscella-neous | 0.52 | 0.50 | 0.60 | 0.55 | 0.69 | 0.59 |
| 9. | Trader's profit | 18.82 | 19.47 | 18.94 | 19.64 | 19.26 | 19.70 |
| 10. | Total | 25.64 | 26.73 | 25.99 | 28.16 | 26.49 | 28.34 |

It is observed from the two tables that irrespective of channels used, marketing margin and traders profit shows the positive relation according to size groups in both the years. Traders profit in both the channel is higher in second year in comparison to the first year. Tables show that transportation charge is an expansive item of marketing for both the years. The higher transportation cost in Channel-II is mainly due to the coverage of longer distance between production and user points. The next marketing input in the first year and second year is packaging as flower is perishable in nature and need careful packing. Labour charge for loading and unloading in Channel-II is higher than Channel-I for both the years irrespective of farm size. This is because of passage of product through number of intermediaries and markets in Channel-II. The higher storage cost in Channel-II over Channel-I is due to number of times the flower stored by different intermediaries for both the years.

**5.15: Marketing Efficiency in Marketing of Tuberose Flower in Consecutive Two Years.**

Table 5.15.1 exhibits the marketing efficiency in the marketing of Tuberose flower in the consecutive two years. The marketing efficiency is measured by Shepherd's and Composite Ranking methods – suggested by Rajagopal (1986). Efficiency is denoted in terms of ratio which suggests that higher the ratio, the higher is the marketing efficiency and vice-versa.

The higher marketing efficiency indicates better marketing system. It is observed from table, the marketing efficiency- using Shepherd's method is noted to be much higher in Channel-I than Channel-II irrespective of farm size in both the years. In case of Channel-I it ranges from 4.93 to 5.15 and for Channel-II it ranges from 4.15 to 4.38 and is found to increase with the increase in size of operational holding in the first year. Same trend have also followed by the second year results. The higher marketing efficiency of both the year of Channel-I is due to lower marketing cost, higher producer's price and lower margin of intermediaries. The lower efficiency ratio of Channel-II in comparison to Channel-I may be because of lower quantum of transaction as well as lesser number of users of this channel for both the years. It is also observed from the table that the producers of Group-I and Group-II are more or less equally efficient in both the channel studied for both the years. Similar picture is also observed in case of Composite Ranking Method. Performance indicator $I_1$ in consecutive two year increases irrespective of channel according to size group and it is higher in channel-I than Channel-II as because producers have reaped the better price for their better bargaining power in Channel-I. $I_2$ increases irrespective of channel according to size groups and it is higher in Channel-II as commission agent increases the length of the marketing channel as well as increases the marketing cost at Channel-II. $I_3$ is higher in group-I than the other two size group in Channel-I as they have less bargaining power compared to others and it

**Table 5.15.1: Marketing Efficiency in Marketing of Tuberose Flower in Consecutive Two Year**

| Year | Marketing channel | Shepherd's method | | | Performance indicators | | | | | | | | | Composite ranking | | | Final ranking | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | $I_1$ | | | $I_2$ | | | $I_3$ | | | | | | | | |
| | | GrI | GrII | GrIII | GrI | GrII | GrIII | GrI | GrII | GrIII | GrI | GrII | GrIII | GrI | GrII | GrIII | GrI | GrII | GrIII |
| 1st year | Channel-I | 4.93 (1) | 5.02 (1) | 5.15 (1) | 30.33 (1) | 32.20 (1) | 33.90 (1) | 6.80 (1) | 7.01 (1) | 7.18 (1) | 3.23 (1) | 3.02 (1) | 3.12 (1) | 1.00 | 1.00 | 1.00 | 1 | 1 | 1 |
| | Channel-II | 4.15 (2) | 4.24 (2) | 4.38 (2) | 27.83 (2) | 29.55 (2) | 30.80 (2) | 8.24 (2) | 8.46 (2) | 8.58 (2) | 6.38 (2) | 6.37 (2) | 6.77 (2) | 2.00 | 2.00 | 2.00 | 2 | 2 | 2 |
| 2nd year | Channel-I | 4.92 (1) | 4.99 (1) | 5.11 (1) | 30.31 (1) | 32.16 (1) | 33.85 (1) | 6.82 (1) | 7.05 (1) | 7.23 (1) | 3.23 (1) | 3.02 (1) | 3.12 (1) | 1.00 | 1.00 | 1.00 | 1 | 1 | 1 |
| | Channel-II | 4.14 (2) | 4.22 (2) | 4.34 (2) | 27.81 (2) | 29.51 (2) | 30.74 (2) | 8.26 (2) | 8.50 (2) | 8.64 (2) | 6.38 (2) | 6.37 (2) | 6.77 (2) | 2.00 | 2.00 | 2.00 | 2 | 2 | 2 |

Figures in the parentheses represent the corresponding ranking

is higher in Channel-II due to more number of middlemen, than Channel-I. So, with the increase in margin of the intermediaries marketing efficiency decreases.

It is noted from Table 5.15.1 that whatever measure is used to reflect the economic efficiency of marketing system, Channel-I is identified to be the most efficient channel which is supported by the composite as well as by the final ranking for both the year taken into consideration.

## CONSTRAINTS ANALYSIS

### 5.16: Identification of Constraints

It is observed from Table 5.16.1 that constraints faced by the flower growers in the production and marketing of flower, in general, vary from farm group to farm group and block to block in the selected area.

Availability of quality seeds and planting materials are the key pre-requisites. In the production of standard flowers, quality and certified seeds or planting materials play a crucial role. All the sample growers of the four blocks have opined that the quality and certified seeds and planting materials are costly. This increases the cost of production of concerned flowers. Besides, a few of the growers have also opined about the non availability of quality and certified seeds and planting materials.
Assured irrigation water is another important input for better and higher production of flowers. It is observed from the table that irrigation is not any serious problem in the study area. However, about fifty per cent of the sample growers of four blocks do feel a partial problem that is too much in the summer months.

Another important input in the production of flowers is the plant nutrients. Regular and adequate availability of plant nutrients have a direct impact on decision making, and its efficient use can also reduces the cost of production by increasing volume of output. Therefore, the regular availability of plant nutrients and plant protection chemicals at reasonable price is very crucial. It is found that majority of the flower growers of the four blocks have opined that cost of plant nutrients is high and availability is not regular and ensured.

Extension network is an important aspect for increasing productivity and augmenting income. A good network should provide necessary information, disseminate the technologies developed and solutions of problems faced in production and marketing. A few information are also supplied by the Government agencies. Flowers are perishable products. With the passage of time after plucking, their quality and fragrance losses quickly which reduces their market value. Market information is essential organ of marketing system. Majority of flower producer-sellers have opined that source and marketing information system are not quite satisfactory. Existence of more than desired number of market intermediaries in the marketing channel is another constraint which reduces the producers' share in consumers' rupee. Regarding transportation, majority of the flower sellers have opined that in transporting their flowers they face many problems as the produce is transported through by matador, van, local train, etc. Due to poor road condition, especially in rainy season, they face problems to bring their produce to the nearest railway station. During the other seasons, they face relatively lesser problems compared to the rainy season.

From the beginning of cultivation till its disposal, at every stage capital plays a crucial role. Majority of producers and intermediaries are capitally starved. Hence, credit is supposed to play a crucial role. All the flower growers of the four blocks have opined that private money lenders are the major source in supplying their credit.

Due to perishable nature flowers looses their quality and aroma after plucking which ultimately diminishes their market price. All the flowers plucked in a day are not sold on that very day. So, if storage facilities become available, then the loss due to spoilage may be reduced to some extent. So, storage is a major constraint in production as well as marketing of flowers. All the farmers of the four blocks have opined that lack of opportunity for storage increases the loss as spoilage occurs. A few of them has opined that lack of information about storage also prevails in the sample area.

**Table 5.16.1: Identification of Constraints in the Flower Cultivation in Four Blocks of Nadia District.**

(Per cent)

| SL. No. | Constraints | Ranaghat-I | | | | Ranaghat-II | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Group-I | Group-II | Group-III | Average | Group-I | Group-II | Group-III | Average |
| 1. | Quality seed | | | | | | | | |
| i) | High price | 70.93 | 80.21 | 69.88 | 74.43 | 70.00 | 85.00 | 81.98 | 78.39 |
| ii) | Non availability | 7.93 | 3.24 | 0.00 | 4.47 | 2.92 | 7.03 | 3.95 | 4.77 |
| 2. | Irrigation | | | | | | | | |
| i) | Severe | 3.91 | 3.57 | 8.32 | 4.66 | 4.97 | 3.91 | 7.23 | 4.99 |
| ii) | Partial | 50.26 | 50.28 | 53.58 | 50.93 | 56.00 | 53.23 | 51.09 | 53.91 |
| iii) | Negligible | 10.29 | 12.21 | 18.23 | 12.66 | 12.18 | 14.23 | 9.33 | 12.43 |
| 3. | Plant nutrients | | | | | | | | |
| i) | High price | 81.23 | 85.28 | 71.21 | 80.85 | 79.24 | 81.11 | 84.00 | 80.94 |
| ii) | Non availability | 18.77 | 14.72 | 18.79 | 17.15 | 20.76 | 18.89 | 16.00 | 19.06 |
| 4. | Source of information | | | | | | | | |
| i) | Government | 7.37 | 10.29 | 10.12 | 9.09 | 7.91 | 9.99 | 11.26 | 9.44 |
| ii) | Private | 18.21 | 11.86 | 14.11 | 14.85 | 19.12 | 21.00 | 20.02 | 20.05 |
| 5. | Transportation | | | | | | | | |
| i) | Excellent | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ii) | Normal | 12.11 | 11.26 | 12.34 | 11.82 | 10.98 | 12.34 | 15.23 | 12.37 |
| iii) | Poor | 29.46 | 29.00 | 19.98 | 27.38 | 12.00 | 14.38 | 16.13 | 13.59 |
| 5. | Marketing information | | | | | | | | |
| i) | Excellent | 12.50 | 4.55 | 0.00 | 6.82 | 6.32 | 9.76 | 7.14 | 7.86 |
| ii) | Moderate | 50.00 | 66.04 | 91.67 | 71.57 | 63.12 | 52.94 | 64.29 | 59.28 |
| iii) | insufficient | 37.50 | 29.41 | 8.33 | 28.43 | 30.52 | 37.30 | 28.57 | 32.84 |
| 6. | problem | | | | | | | | |
| i) | Non remunerative price | 21.00 | 21.00 | 42.00 | 25.20 | 20.00 | 19.29 | 15.00 | 18.72 |
| ii) | More middleman | 89.00 | 79.21 | 82.32 | 83.75 | 80.00 | 85.21 | 88.12 | 83.71 |
| 7. | Post-harvest technlogy | | | | | | | | |
| i) | Lack of oppurtuity | 88.00 | 96.00 | 88.00 | 91.20 | 92.73 | 90.91 | 74.29 | 88.31 |
| ii) | Lack of information | 12.00 | 4.00 | 12.00 | 8.80 | 7.27 | 9.09 | 25.71 | 11.69 |
| 8. | Credit | | | | | | | | |
| i) | Nationalised bank | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ii) | Cooperative | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| iii) | Private | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

Contd.

(Per cent)

| SL. No. | Constraints | Hanskhali | | | | Haringhata | | | |
|---|---|---|---|---|---|---|---|---|---|
| | | Group-I | Group-II | Group-III | Average | Group-I | Group-II | Group-III | Average |
| 1. | Quality seed | | | | | | | | |
| i) | High price | 75.00 | 82.92 | 75.89 | 78.35 | 80.26 | 70.92 | 81.04 | 76.68 |
| ii) | Non availability | 2.75 | 3.00 | 3.50 | 3.00 | 2.85 | 2.75 | 3.04 | 2.85 |
| 2. | Irrigation | | | | | | | | |
| i) | Severe | 7.93 | 7.81 | 3.92 | 7.08 | 8.25 | 3.28 | 4.93 | 5.59 |
| ii) | Partial | 55.00 | 51.00 | 50.00 | 52.40 | 53.25 | 53.27 | 49.31 | 52.47 |
| iii) | Negligible | 18.00 | 21.00 | 17.00 | 17.00 | 17.29 | 17.21 | 11.37 | 16.07 |
| 3. | Plant nutrients | | | | | | | | |
| i) | High price | 75.00 | 85.21 | 86.13 | 81.31 | 82.27 | 86.00 | 85.19 | 89.35 |
| ii) | Non availability | 25.00 | 14.79 | 13.87 | 18.69 | 17.73 | 14.00 | 14.81 | 15.65 |
| 4. | Source of information | | | | | | | | |
| i) | Government | 8.26 | 11.00 | 12.11 | 10.13 | 42.97 | 11.68 | 10.33 | 11.93 |
| ii) | Private | 18.00 | 19.09 | 17.11 | 18.26 | 16.66 | 15.21 | 18.00 | 16.35 |
| 5. | Transportation | | | | | | | | |
| i) | Excellent | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ii) | Normal | 12.04 | 13.06 | 14.23 | 12.89 | 14.38 | 11.03 | 12.00 | 10.36 |
| iii) | Poor | 21.32 | 20.09 | 19.23 | 20.41 | 21.96 | 23.53 | 24.00 | 22.99 |
| 5. | Marketing information | | | | | | | | |
| i) | Excellent | 12.00 | 10.00 | 2.03 | 9.20 | 14.50 | 5.35 | 5.60 | 9.06 |
| ii) | Moderate | 63.00 | 65.00 | 90.37 | 69.27 | 52.00 | 65.65 | 85.40 | 64.14 |
| iii) | insufficient | 25.00 | 25.00 | 7.60 | 21.52 | 33.50 | 29.00 | 9.00 | 26.80 |
| 6. | problem | | | | | | | | |
| i) | Non remunerative price | 18.29 | 22.00 | 25.00 | 21.12 | 25.21 | 20.00 | 23.00 | 22.68 |
| ii) | More middleman | 81.29 | 80.00 | 77.00 | 79.92 | 83.00 | 81.29 | 80.00 | 81.72 |
| 7. | Post-harvest technlogy | | | | | | | | |
| i) | Lack of oppurtuity | 69.21 | 86.24 | 88.92 | 79.96 | 79.92 | 85.21 | 82.00 | 82.45 |
| ii) | Lack of information | 30.79 | 13.76 | 11.08 | 20.57 | 20.08 | 14.79 | 18.00 | 17.55 |
| 8 | Credit | | | | | | | | |
| i) | Nationalised bank | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| ii) | Cooperative | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| iii) | Private | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 | 100.00 |

## 5.17: Constraint Analysis of Four Blocks of Nadia District of Flower Marigold and Tuberose.

After conducting the survey about constraints it is found that the major constraints of flower cultivation are quality seeds or planting materials, irrigation, plant nutrients, extension work, marketing, transportation, storage and finance in the selected area which are presented in Table 5.16.1 It is deemed essential to workout the loss in production due to these constraints - also suggested by Roy and Dutta (2000). So, after analyzing the production loss due to these constraints it will be clear that these constraints are playing vital role or not in the selected area of flower cultivation.

**Table 5.17.1: Constraint Analysis of Four Blocks of Nadia District of Flower Marigold.**

| Serial. no. | Constraints | Ranaghat-I | | Ranaghat-II | |
|---|---|---|---|---|---|
| | | Total production loss (kg.) | Value of production loss (Rs.) | Total production loss (kg.) | Value of production loss (Rs.) |
| 1. | Information | 62037.75 (4) | 1550943.80 | 60081.35 (4) | 1502033.80 |
| 2. | Plant nutrients | 61000.30 (5) | 1525007.50 | 58210.50 (5) | 1455262.50 |
| 3. | Storage | 77929.75 (1) | 1948243.80 | 74228.60 (1) | 1855715.00 |
| 4. | Irrigation | 40657025 (6) | 1016431.30 | 39323.65 (6) | 983091.25 |
| 5. | Finance | 63098.85 (3) | 1577471.30 | 71910.63 (2) | 1797765.80 |
| 6. | Quality seed | 38631.73 (7) | 966543.25 | 36292.85 (7) | 907321.25 |
| 7 | Transport | 74910.28 | 1872757.00 | 66883.35 | 1672083.80 |
| Total | | 418265.91 | 10457398.00 | 406930.93 | 10173273.00 |

**Contd.**

| Serial. no. | Constraints | Hanskhali | | Haringhata | |
|---|---|---|---|---|---|
| | | Total production loss (kg.) | Value of production loss (Rs.) | Total production loss (kg.) | Value of production loss (Rs.) |
| 1. | Information | 65003.29 (3) | 1625082.30 | 68005.00 (3) | 1700125.00 |
| 2. | Plant nutrients | 53754.38 (5) | 1343859.50 | 49857.90 (5) | 1246447.50 |
| 3. | Storage | 77001.20 (1) | 1925030.00 | 74811.00 (1) | 1870275.00 |
| 4. | Irrigation | 50787.86 (6) | 1269696.50 | 31997.00 (6) | 799925.00 |
| 5. | Finance | 73217.00 (2) | 1830425.00 | 71286.20 (2) | 1782155.00 |
| 6. | Quality seed | 31006.32 (7) | 775158.00 | 22337.10 (7) | 558427.50 |
| 7. | Transport | 59035.65 | 1475891.30 | 62637.60 | 1565940.00 |
| Total | | 409805.70 | 10245143.00 | 380931.80 | 9523295.00 |

Figures in the parentheses represent the corresponding rank.

Table 5.17.1 exhibits the constraint analysis of four blocks of Nadia district of flower Marigold. The analysis done on the basis of total production loss which is measured in the unit of kilogram (kg.) and its value in rupees. Total production loss due to these seven major constraints is highest in Ranaghat-I and lowest in Haringhata block and value of production loss shows the results accordingly.

It is observed from the table that highest production loss is due to the storage problem in all the four blocks. Farmers of all the four blocks have opined that due to lack of information and lack of opportunity for storage made their loss in production as well as profit. As the flower is perishable in nature, unavoidable handlings made at each successive steps of marketing are considered as the key factor of spoilage.

It is observed from the table that in Ranaghat-I production loss is due to its ill-storage is amount to 77929.75 Kg. which is about 18.63 per cent of the total loss occurred in this block followed by the constraint transportation which is affected 17.91 per cent of the total production loss.

In Ranaghat-II storage makes the rank first while analyzing the constraints which have done 18.24 per cent of the total production loss of this block. The constraint credit facility next to storage, except in block Ranaghat-I, is dominant among the blocks studied. Farmers of all the blocks, except Ranaghat-I, have opined that if they were financially stabilized then their production loss would be minimized to some extent. As the flower is most expensive over the major competing crops they have to depend on their local money lenders who fetches the high rate of interest in lieu of his credit which makes enable the poor farmers to cultivate flowers on a large scale of area.

From the table, it is observed that availability of quality seed and irrigation are the minor constraints of the four blocks in the production as well as marketing of flower Marigold. Though farmers of all the blocks have opined that the planting material is costly but the result shows that it has a least effect on production loss. In case of irrigation, fifty per cent of the farmers of all the blocks feel a partial problem which is also confirmed by the corresponding production loss due to this constraint.

So, it may conclude that ill-storage and lack of credit facility are the major constraints and availability of quality seed and irrigation are the minor constraints in the production and marketing of flower Marigold in the selected district Nadia.

**Table 5.17.2: Constraint Analysis of Four Blocks of Nadia District of Flower Tuberose in the First Year.**

| Serial. no. | Constraints | Ranaghat -I | | Ranaghat-II | |
|---|---|---|---|---|---|
| | | Total production loss (kg.) | Value of production loss (Rs.) | Total production loss (kg.) | Value of production loss (Rs.) |
| 1. | Information | 70021.25 (4) | 1750531.30 | 63901.25 (4) | 1597531.30 |
| 2. | Plant nutrients | 62929.50 (5) | 1573237.50 | 53914.75 (5) | 1347868.80 |
| 3. | Storage | 93270.25 (1) | 2331756.30 | 90011.00 (1) | 2250275.00 |
| 4. | Irrigation | 23929.75 (7) | 598243.75 | 22270.50 (7) | 556762.50 |
| 5. | Finance | 84215.00 (2) | 2105375.00 | 74512.50 (3) | 1862812.50 |
| 6. | Quality seed | 40011.85 (6) | 1000296.30 | 42113.00 (6) | 1052855.00 |
| 7. | Transport | 82210.00 (3) | 2055250.00 | 85325.00 (2) | 2133125.00 |
| Total | | 456587.60 | 11414690.00 | 432048.00 | 10801200.00 |

**Contd.**

| Serial. no. | Constraints | Hanskhali | | Haringhata | |
|---|---|---|---|---|---|
| | | Total production loss (kg.) | Value of production loss (Rs.) | Total production loss (kg.) | Value of production loss (Rs.) |
| 1. | Information | 75000.00 (4) | 187500.00 | 73210.00 (4) | 1830250.00 |
| 2. | Plant nutrients | 60293.00 (5) | 1507325.00 | 63310.00 (5) | 1582750.00 |
| 3. | Storage | 94127.75 (1) | 2353193.80 | 93145.00 (1) | 2328625.00 |
| 4. | Irrigation | 24722.00 (7) | 618050.00 | 23279.00 (7) | 581975.00 |
| 5. | Finance | 85321.00 (2) | 2133025.00 | 82105.00 (2) | 2052625.00 |
| 6. | Quality seed | 41021.00 (6) | 1025525.00 | 43244.00 (6) | 1081100.00 |
| 7. | Transport | 79210.00 (3) | 1980250.00 | 75842.00 (3) | 1896050.00 |
| Total | | 459694.75 | 11492369.00 | 454135.00 | 11353375.00 |

Figures in the parentheses represent the corresponding rank.

Table 5.17.2 represents the constraint analysis of four blocks of Nadia district of flower Tuberose in the first year. Total production loss in kilogram and its value in rupees are the basis of the analysis.

It is observed from the table that production loss of block Ranaghat-I due to seven major constraints is worked out to be 456587.60 kg. Among all the constraints storage ranks first and affected 20.43 per cent of the total production loss. The item transport facility is acting as a barrier of Tuberose production next to storage.

Haringhata and Hanskhali block show that their major production loss is done by the factors ill-storage, lack of credit facility, poor transport condition, etc. All the farmers of the four blocks have opined that storage is the dominant problem in Tuberose cultivation as it bearing the character of perishability and need more handling at each steps of marketing, causes spoilage, ultimately affected in their production loss and as well as their profit loss. Quality seed and irrigation have no such effect on production loss which exhibited by the table.

It is observed from the table that total production loss in Ranaghat-II block is less than the other three blocks which implies that farmers of the block Ranaghat-II have their ability to manage efficiently along with the constraints than the others.

**Table 5.17.3: Constraint Analysis of Four Blocks of Nadia District of Flower Tuberose in the Second Year.**

| Serial. no. | Constraints | Ranaghat -I | | Ranaghat-II | |
|---|---|---|---|---|---|
| | | Total production loss (kg.) | Value of production loss (Rs.) | Total production loss (kg.) | Value of production loss (Rs.) |
| 1. | Information | 50015.00 (3) | 1000300.00 | 49329.00 (3) | 986580.00 |
| 2. | Plant nutrients | 22397.00 (5) | 447940.00 | 21004.00 (5) | 420080.00 |
| 3. | Storage | 75210.00 (1) | 1504200.00 | 70032.00 (1) | 1400640.00 |
| 4. | Irrigation | 19377.00 (6) | 387540.00 | 15372.00 (6) | 307440.00 |
| 5. | Finance | 42139.00 (4) | 842780.00 | 43000.00 (4) | 860000.00 |
| 6. | Transport | 63110.00 (2) | 1262200.00 | 64005.00 (2) | 1280100.00 |
| Total | | 272248.00 | 5444960.00 | 262742.00 | 5254840.00 |

Contd.

| Serial no. | Constraints | Hanskhali | | Haringhata | |
|---|---|---|---|---|---|
| | | Total production loss (kg.) | Value of production loss (Rs.) | Total production loss (kg.) | Value of production loss (Rs.) |
| 1. | Information | 48773.00 (3) | 975460.00 | 50111.00 (3) | 100222.00 |
| 2. | Plant nutrients | 22279.00 (5) | 445580.00 | 19717.00 (6) | 394340.00 |
| 3. | Storage | 71230.00 (1) | 1424600.00 | 69930.00 (1) | 1398600.00 |
| 4. | Irrigation | 18730.00 (6) | 374600.00 | 20210.00 (5) | 404200.00 |
| 5. | Finance | 41235.00 (4) | 824700.00 | 43233.00 (4) | 864660.00 |
| 6. | Transport | 60005.00 (2) | 1200100.00 | 64000.00 (2) | 1280000.00 |
| Total | | 262252.00 | 5245040.00 | 267201.00 | 5344020.00 |

Figures in the parentheses represent the corresponding rank.

Table 5.17.3 represents the constraint analysis of four blocks of Nadia district of flower Tuberose in the second year. The analysis done on the basis of six major constraints affected in the Tuberose cultivation.

Total production loss is highest in terms of kg. in Ranaghat-I block and lowest in Hanskhali block observed from the table. Like the previous year of cultivation storage ranks first and its percentage of the total production loss ranges 26.17 to 27.62 between the four blocks. All the farmers of the four blocks have opined that if transport facility and information about marketing were better then their production loss would be minimized. They also opined that irrigation and plant nutrients are not creating too much problem in the cultivation of Tuberose which is also confirmed by the results.

From the observations of first year and second year constraint analysis, it may conclude that total production loss (kg.) is higher in first year than the second year of cultivation. As the constraint of quality seed is excluded from second year analysis and also due to lower cost of cultivation in second year comparison to the first year a less finance is required to meet the demand of various cost utilizing inputs in the second year.

However, it may be concluded from the constraint analysis of flowers in Nadia district that storage is a burning problem followed by finance and transport. If storage facility is provided in Nadia district, the production loss of flowers will be minimized to a greater extent.

# CHAPTER-VI

# SUMMARY, CONCLUSION AND SUGGESTIONS

# SUMMARY

Flowers are associated with mankind from the dawn of civilization. It is said that in India man is born with flowers, lives with flowers and finally dies with flowers. Multipurpose uses and growing demand in domestic as well as international markets have induced farmers of all over the country to allocate more area under flowers. It is reported that, in 1988-89, the export of floricultural products worth Rs. 4.67 crores, in 1995-96 it was Rs. 57.80 crores and in 2001-02 jumped to Rs. 127 crores. This clearly reveals the importance and potentiality of flowers. West Bengal is one of the leading flower producing and flower using states of India. The state is uniquely and favourably situated for growing a number of floricultural plants like Rose, Marigold, Tuberose, Jasmine, Chrysanthemum, Gladiolus, Orchids, Cactus, etc. The important regions for flower cultivation in West Bengal are - Kolaghat-Panskura region, Ranaghat region and Kalimpong- Darjeeling region. The growing demand for flowers though have induced the flower- growers to cultivate flowers more intensively but scientists have not been induced so far to develop superior technology for cultivation and post-harvest technology. As such flower growers are faced with number of constraints which restrain them to allocate more area under flowers and cultivate flowers commercially. Therefore, keeping these views in mind, the present study is initiated to study the various economic aspects of flower cultivation in the selected region of the state.

The present study is envisaged with the broad objectives of examining the feasibility of flower production and constraints faced by flower growers in production and marketing. The major objectives framed for undertaking this work are:

i) to assess the relative profitability or feasibility of cultivation of flowers with respect to other competitive field crops following local crop sequences in the study area;

ii) to identify important marketing channels of flower marketing and to examine the price spread and marketing margin of flowers;

iii) to identify and analysis the constraints in the cultivation and production of flowers;

iv) to suggest policy for the improvement of production and marketing of flowers in the light of latest agricultural technology with reference to open market situations.

To fulfill the various objectives set out, Ranaghat region- one of the most flower producing and prospective region of the state - is selected for the study which falls under the jurisdiction of Nadia district. Four blocks namely Ranaghat-I, Ranaghat-II, Hanskhali and Haringhata are again purposively selected on the basis of volume of flower production. From each block three mouzas including a nuclear mouza is selected randomly, thus a total of twelve mouzas selected. All the farmers of twelve mouzas are then arranged in ascending order of their operational holdings and stratified into three size groups -small, medium and large, i.e. upto 0.50 ha, 0.51 ha to 1.00 ha. and 1.01 ha and above respectively. Fifty farmers are selected from each block on the basis of Probability Proportion to Number. Thus a total of two hundred sample flower growers are selected from the Ranaghat region of flower producing belt.

For studying the price spread, Mullickghat wholesale market (Kolkata) - being the largest wholesale flower market of the state - is selected purposively. It is noted that local flower growers and local assemblers avail the flower markets situated in Dhantala, Purnanagar and Naukari markets. Therefore, these markets are also selected as secondary wholesale as well as retail markets for the study. Besides these three retail markets Birnagar and Badkulla retail markets falling in the Nadia district are also selected.

Among the market intermediaries thirty (30) local assemblers, ten (10) wholesalers from primary wholesale market, thirty(30) wholesalers from the three secondary wholesale markets i.e. ten (10) from each market and ten (10) retailers from each five retail markets i.e. fifty (50) retailers are selected for the study. The marketing channels selected for the study are:

Channel- I: Producer - wholesaler - retailer - flower users.

Channel- II: Producer - commission agent - wholesaler - retailer - flower users.

To fulfill the various objectives set out, tabular method of analysis is followed. For economic analysis Cost$A_1$ and Cost D concepts are used. For

analyzing the marketing efficiency of marketing system, Shepherd's method and Composite Ranking methods are used. For constraint analysis, Roy and Dutta's (2000) suggestion is followed to work out the total loss in the selected blocks.

The salient findings of the present study are summarized below:

1) After conducting the survey it is observed that there is the dominance of marginal and small farmers in the study area.
2) The area allocated under flowers, on an average, is below 0.50 hectare and ranges between 15 to 20% of operational holding.
3) In the study area it is observed that Marigold and Tuberose flowers are dominating though a few flowers like Gladiolus, Bela are also practiced but occupy very negligible area.
4) Either at Cost $A_1$ or Cost D, cultivation of Marigold flower per bigha (33 decimal) is maximum for large group of farmers and a direct relationship between costs and size group are noticed.
5) The similar observation is noticed in case of Tuberose flower in two consecutive years of cultivation.
6) In general Cost $A_1$ between farm groups is associated with expenditure incurred for hired labours, plant protection chemicals and fertilizer uses.
7) The similar observation is noticed in case of Cost D for both the flowers as Cost D includes imputed value of family labour over Cost$A_1$.
8) For Marigold and Tuberose flower a similar picture is noticed while considering hired labours. It is increasing with the increase in farm size.
9) In case of family labour utilization, a negative relation with size groups i.e. decreases with the increase in farm size for both the flowers is noticed, which indicates that less privileged group of farmers depends on their own labour.
10) Gross return, surpluses over both the costs are increasing with the increase in farm size for flowers Tuberose as well as Marigold.
11) Flower cultivation is noted to be more expensive than the major competing crops as Mustard, Jute, Boro rice, etc.
12) Flower cultivation is found to be a good source for gainful employment of family labour and a regular source of income to family.

13) From Benefit- Cost Ratio's point of view, it is observed that large farmers are in an advantageous position for both the flowers studied.

14) Marigold and Tuberose flowers are found to be more profitable than their major competing crops such as Mustard, Jute and Boro rice.

15) Two marketing channels, involving commission agents and other intermediaries are found to exist for both the flowers.

16) For Tuberose and Marigold flowers the study clearly indicates that most of the farmers irrespective of their size class follow Channel-I as the profit obtained is higher in channel-I in comparison to Channel-II.

17) It is observed for both the flowers that the producer's share in consumer's rupee is found to be highest in case of channel-I as compared to channel-II which is due to lower marketing cost and absence of commission agent.

18) It is observed that among the cost components incurred by producers and other intermediaries, transportation, irrespective of channels, is the major constituent of marketing cost.

19) For both the flowers, marketing margin is noted to be maximum in channel-II which is mainly due to involvement of an additional intermediary.

20) Channel-I, irrespective of criteria considered, is found to be the most efficient channel in flower marketing for both the flowers under study.

21) Mode of transport and lack of credit facility are the major constraints of flower marketing as well as production as opined by the farmers and calculated for the study area.

22) Crucial problem associated with the production and marketing of flowers is the lack of knowledge about post- harvest technology.

23) Absence of processing industry like preparation of scent, scented oil and dye is very much felt in the sample area. Such an industry could have protected the flower growers from incurring losses. The farmers have also opined in this lines. Even large farmers are willing to start with processing units if proper knowledge is disseminated and Government comes forward with subsidies as provided in case of main field crops.

# CONCLUSION

Vasavada (1995) and few other researchers have opined that in spite of our abundant scope, favourable production conditions like climate, soil and labour, and varietal production base, our performance in export of floricultural products has not been encouraging because of some operational constraints. These observations may be true when the question of export of floricultural products arises. For entering into the world flower market, we have to produce quality and standard flowers at comparatively cheaper cost of production. Demand for flowers in domestic market is also increasing at a faster rate. So, for entering in the world flower market and competing with other countries, we have to think for increasing the production of flowers following the international norms or standard of flowers. But there may be existing a number of constraints in the production of flowers.

The present study clearly highlights the feasibility and remunerativeness of the flower production in the sample area. So, there is ample scope for increasing the flower production as agro-ecological factors are favourable for flower production. Inter- group analysis of cost of cultivation clearly indicates the possibility of reducing the cost which is very important for marketing- domestic as well as international. The study indicates that expenditure on fertilizer constitutes a major share of cost. Hence, subsidies for fertilizer will reduce the cost. It is also observed that flower cultivation is expensive in nature. And if the Government arranges to provide with credit through cooperatives and commercial banks which do not recognize the flower cultivation as a part of agriculture, the cost of cultivation can further be reduced. Reduction in cost of production will certainly increase the competitiveness of the flower growers. It is also observed that some of the flower growers are interested in setting up processing units. But lack of technical knowledge and credit support restrain them to undertake such an industry.

# SUGGESTIONS

Many studies have come with the conclusion that India possesses immense potentiality for developing commercial floriculture and is fast emerging as a exporter to the world market. It is true, but till date these potentialities remain largely unexplored. So, for developing the floriculture sector and motivating the Indian flower producers and entrepreneurs, following steps may be undertaken by the Scientists and Government-

1) To evolve new high yielding varieties for increasing the yield and quality in order to keep pace with international standard.
2) Government should set up institutions like National Seed Corporation for producing and distributing certified quality seeds and planting materials.
3) Floriculture should be given a due recognition to that of agriculture. This will help the producer to get fertilizer subsidies and credit from nationalized banks. Till now there is no provision for financing the floriculture sector.
4) Post- harvest technologies for flower should be developed so that durability and quality of flowers can be improved.
5) Steps should be initiated to set up processing units for preparing scent, scented oil, dye, perfumes, medicine, etc.
6) In every flower growing region at least one "Regulated Flower Market" should be set up to protect the flower producers.

These steps will not only help the flower producer but will also help the nation to earn considerable amount of foreign exchange through export earnings.

# CHAPTER-VII

# FUTURE SCOPE OF RESEARCH

# FUTURE SCOPE OF RESEARCH

The present study establishes beyond any doubt, some important and useful guidelines, which have practical implications for policy measures. However, because of time and resource constraints of the researcher, the study has been confined to only one district of West Bengal. The result of this study may not, therefore, be truly representative of the State or the Country as a whole. Moreover, the study investigates only the economics of production and marketing aspects. Marketing is confined to only two existing channels, thus overall generalization is beyond the purview of the present study. Therefore, there is immense scope to undertake various studies to highlight the importance of flower production and marketing which are as follows-

1) To work out the economic optima and optimum resource combination in flower cultivation.
2) Labour absorption and labour productivity in the cultivation of flower in different flower growing areas of West Bengal.
3) Role of flower production in augmenting income and generating employment of rural mass.
4) Seasonal price fluctuation in different flower markets.
5) To work out the feasibility of application of post-harvest technology, i.e. processing, scented oil, dye, bouquet, etc.

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SCHEDULE

# DEPARTMENT OF AGRICULTURAL ECONOMICS
# FACULTY OF AGRICULTURE
# BIDHAN CHANDRA KRISHI VISWAVIDYALAYA

## PROFORMA

1. Identification :
Name of the farmer :
Name of the father :
Address of the farmer :
Village :
Mouza :
Gram Panchayat :
Block :
Police Station :
District :

2. Demographic details:

| Serial no. | Name of the member | Age | Sex | Relation with head | Educational Qualification | Primary occupation | Secondary occupation | Holding responsible position if any |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |

3. i) Owned land area(ha)_____
ii) Area leased in (ha) _____
iii) Area leased out (ha) _____
iv) Total operational holding (ha) _____

4. Area under flower:

| Flower | Tuberose | Marigold | Other |
|---|---|---|---|
| Area(ha) | | | |

5. Cropping pattern :

6. Cropping sequences :

7. Topography wise land distribution (in ha):
High _____Medium_____Low_____

8. Distribution of land on the basis of soil types:
High _____Medium_____Low_____

## 9. Cost and Return from Other Crops:

| Crop | Area | Cost | Return |
|---|---|---|---|
| 1.Paddy | | | |
| 2.Mustard | | | |
| 3.Jute | | | |

## 10. Crop wise Physical Requirement of Different Inputs (Units):

| Farmers code | Area (ha) | Planting materials | | Ploughing | | Irrigation charge | | Manures & fertilizers | | Plant protection chemicals | | Hired labour | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Q | V | No. | V | Hrs. | V | Q | V | Q | V | No. | V |
| Small | | | | | | | | | | | | | |
| Medium | | | | | | | | | | | | | |
| Large | | | | | | | | | | | | | |

## 11. Operation-wise Human Labour Utilization:

| Oper-ation | Ploughing /levelling | Sowing /transpla-nting | Manur -ing & spraying | Irriga-tion | Inter-culture | Plant protect -tion | Harvest -ing | Trasportfrom field to store |
|---|---|---|---|---|---|---|---|---|
| | | | | | | | | |
| | | | | | | | | |

## 12. Price Spread & Marketing Margin of the Flower:

| Serial no. | Particulars | Size Group | |
|---|---|---|---|
| | | Channel-I | Channel-II |
| 1. | **At producer's level** | | |
| a) | Cost of production | | |
| b) | Cost of marketing | | |
| i) | Packing | | |
| ii) | Loading and unloading | | |
| iii) | Spoilage | | |
| iv) | Transportation | | |
| v) | Market fee | | |
| vi) | Miscellaneous | | |
| c) | Producer's profit | | |
| d) | Price received by producer | | |
| 2. | **At Commission agent's level** | | |
| a) | Cost of marketing | | |
| i) | Packing | | |
| ii) | Loading and unloading | | |
| iii) | Spoilage | | |
| iv) | Transportation | | |
| v) | Market fee | | |
| vi) | Miscellaneous | | |
| b) | Commission agent's profit | | |
| c) | Price received by Commission agent | | |

.....continued

| | | | |
|---|---|---|---|
| 3. | **At wholesaler's level** | | |
| a) | Cost of marketing | | |
| i) | Storage | | |
| ii) | Packing | | |
| iii) | Spoilage | | |
| iv) | Helping hands | | |
| v) | Octroi | | |
| vi) | Miscellaneous | | |
| b) | Wholesaler's profit | | |
| c) | Price received by wholesaler | | |
| 4. | **At retailer's level** | | |
| a) | Cost of marketing | | |
| i) | Packing | | |
| ii) | Transport | | |
| iii) | Loading and unloading | | |
| iv) | Spoilage | | |
| v) | Storage | | |
| vi) | Octroi | | |
| vii) | Miscellaneous | | |
| b) | Retailer's profit | | |
| c) | Price received by retailer | | |
| 5. | Marketing margin | | |

## 13. Functional Analysis of Marketing Margin of the Flower:

| Serial no. | Particulars | Size Group | |
|---|---|---|---|
| | | Channel-I | Channel-II |
| 1. | Packaging | | |
| 2. | Loading& unloading | | |
| 3. | Helping hands | | |
| 4. | Storage | | |
| 5. | Transportation | | |
| 6. | Market fee/ Octroi | | |
| 7. | Spoilage | | |
| 8. | Miscellaneous | | |
| 9. | Trader's profit | | |
| 10. | Total | | |