

# Profitability of Marigold Cultivation in Patua Village of Hanskhali Community Development Block, Nadia District, West Bengal: A Cost-Benefit Analysis

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**Abstract :** Importance of flowers is no doubt significant in human society both from an aesthetic and socio-economic point of view. Beside traditional crops cultivation, farmers are now cultivating flowers in arable land for alternative financial support within a short period of time. Patua village of Hanskhali Community Development Block in Nadia District, West Bengal is one of the leading villages where different types of flowers are being cultivated successfully. An attempt has been made in this paper to analyze the scale of profitability of marigold cultivation in the study area for the agricultural years 2009-2010 and 2023-2024. In this study, marigold is being cultivated as a principal flower. Benefit Cost Ratio after Usman et al. (2014) has been used to find out profitability of Marigold and other principal crops for the agricultural year 2009-2010 and 2023-2024. Variable and fixed cost of different variables consisting of marigold and other principal crops cultivation has been considered for computing Benefit Cost Ratio (BCR). The Benefit Cost Ratio for Marigold has been increased more positively in respect of other principal crops in 2023-2024 comparing 2009-2010. BCR has been calculated as 2.46:1 in 2009-2010 and 2.87:1 in 2023-2024 for Marigold. Scientific way of input utilization in the field of marigold cultivation prefers to preserve the agro-ecological environment in the study area. Favourable agro-ecological conditions, goodness in accessibility of transport networks, proximity to flower markets, increasing demand of flowers are responsible for positive change in the scenario of marigold cultivation in the study area.

**Key words:** Benefit Cost Ratio, Variable Cost, Fixed Cost, Floriculture

## Introduction

Floriculture is an important facet of modern agriculture, implies the cultivation and nurture of flower and ornamental plants in a garden or arable land in an intensive way. Datta (2019) opined that 'Today, floriculture is recognised as the most remunerative profession with a much higher potential for returns per unit area than most fields and even some other horticultural crops' (Datta, 2019). Kumar *et al.* (2023) opined that 'Lack of awareness about high-yield plant varieties, soil testing, and the correct application of pesticides and fertilizers poses obstacles to the successful cultivation of flowers' (Kumar *et al.* 2023). Bhattacharyya (2013) stated that paddy cultivation in small plots of land is not easy whereas flowers can be cultivated in small sizes of land without

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a lot of difficulties. He opined that 'Flowers assure farmers of continuity in revenue' (Bhattacharyya, 2013). Patua is a small village in Nadia District in West Bengal where the field of floriculture has witnessed a remarkable progress. Impact of floriculture in the agro-economic profile and rural economy of this village is very significant. Beside the traditional system of agriculture, farmers are choosing this sub system of agriculture as an alternative way of earning liquid money. This field is generating so much employment directly and indirectly. Many women of the study area are engaged with floriculture. In this regard, the profitability of marigold cultivation plays an important role in the economy of Patua Village.

### **Literature Review**

Here some literature related to different facets of floriculture has been reviewed to identify different aspects of floriculture. Some literature has been mentioned here.

Das (2012) pointed out that cost benefit analysis reveals net profit from rose, seasonal flowers, tuberose, marigold, and jasmine are more positive. The author also concluded that all round development of floriculture can change socio economic profile of rural areas as well as economic condition of farmers positively.

Randhwa and Mukhopadhyay (1986) opined that floriculture may give more opportunities to poor farmers for economic gain. In less fertile land, practice of floriculture is possible. They said that flower based industries like perfume and oil extraction can be developed.

Mhatre (2009) opined that floriculture takes a significant role for the development of socio economic profile in India. For optimistic development in the field of floriculture, Pune District in Maharashtra, India has been acknowledged as 'Corporate floriculture' (p.16). Status of floriculture in India is changing positively with advance exercise of suitable modern technologies and scientific methods. Pal et al. (2014) tried to inquire about the status of women who are engaged in floriculture directly or indirectly in some area in West Bengal. This field is helping women to be self-dependent. The field of floriculture is generating huge employment opportunities. Rural women get a satisfactory level of income from this field which helps them to back up their family financially. As a result positive changes come in the daily life style of those families who are involved in floriculture in the study area. They further commented that rural women are not trained about the scientific way of flower cultivation. As a result, the expected outcome from the field of floriculture remains covered up.

Sarkar et al. (1997) examined the present scenario of flower cultivation, economic importance of flowers, marketing channels, problems in the way of cultivation, and situation of domestic and international trade, characteristics of flower cultivation in West Bengal. They opined that floriculture is economically more profitable in India as well as in West Bengal. Sarker and Chakravorty (2011) stated that there is ample scope of earning money from the field of floriculture in West Bengal. The agro ecological environment of West Bengal assists this field for better

development. In the age of globalization, floriculture may take an important role for economic growth in West Bengal. Flower cultivation has higher economic returns than any other traditional crops. In some cases floriculture with mixed farming creates more economic return. Well developed 'marketing system' is a push factor for growth of floriculture. It is noted that sometimes middlemen in the flower market earn more profit than producers. Application of modern technologies in the field of floriculture helps farmers to produce good quality flowers. Maji (2015) examined that in 'primary sector' participation of floriculturists is no doubt significant in Bagnan I and II C.D Blocks of Howrah District in West Bengal. Favourable agro ecological environment, increasing rate of demand, well developed market facilities are helpful factors for positive growth of floriculture in the study area. Here, different traditional and hybrid varieties of flowers are being cultivated simultaneously. Socio economic set up are progressively changing with surplus economic return from the field of floriculture. He opined that 'This floriculture practice also helps to enhance Gender Empowerment in villages. By making flower garland and picking flowers the village women can earn a satisfactory level of money' (Maji, 2015). Author identified some important interfaces in the way of development of floriculture i.e. lack of cold storage facilities, lack of assistance concerning government authority, increasing rate of inputs, etc.

### **Study Area**

Patua is a small village of Hanskhali Community Development Block in Nadia District, West Bengal, India. The area is a part of Gangetic alluvial plain. The village extends from 23° 18' 38" N to 23° 19' 33" N latitude and 88° 30' 52" E to 88° 31' 39" E longitude. It is a developed village in respect of agriculture and floriculture where farmers cultivate flowers for a long period of time. (Table.No.1) The Village is under Hanskhali Police Station. It is situated 7.6 km from Hanskhali and 12 km from Krishnagar. Ranaghat- Krishnagar railway passes through this village. Nearest railway station is Badkulla about the distance of 1km. Nearest big market is Badkulla. Flowers are being sold in Badkulla, Kalinarayanpur and Nokari flower market. Total geographical area is 137.69 Hectares whereas Net Cropped Area is 34.09 Hectares (2009-2010) and Gross Cropped Area is 83.65 Hectares (2009-2010). This area is under a tropical monsoon climate. Average annual rainfall is recorded at 1369.68 mm at SARF firm station in Hanskhali (Deputy Director of Agriculture office, Krishnagar, Nadia district). Entire Village is under clay, loam, clay loam and sandy loam soil texture class. Soil pH status is slightly acidic. Soil pH in Block level was 6.36 (Soil Testing Office at Berhampore, Murshidabad District). Total population of this village was 2333 persons (Census of India, 2011) whereas 51.30 percent male and 48.69 percent female. Literacy rate of Patua Village was 76.83 percent while male literacy rate was 82.49 percent. Total workers in this Village was 993 persons (Census of India, 2011). Out of total worker cultivators 8.45 per cent, agricultural labourers 19.03 per cent, household industry 13.69 per cent and workers under other categories were 58.81 per cent. Main occupation of the population in this Village was cultivation and allied sectors.

- Source: Census of India, 1991 and 2001*

- (iii) To explore the variables which are favourable for the field of floriculture in Patua Village of Hanskhali Community Development Block, Nadia District, West Bengal.

### **Database and Methodology**

Present study has been accomplished based on both primary and secondary data.

#### ***Source of Primary Data***

Primary data have been collected through extensive household surveys and in-depth interviews with farmers. Households involved in floriculture have been surveyed for collecting data and information to establish the fact and relevance of Marigold cultivation in Patua village under Hanskhali Community Development Block, Nadia, West Bengal.

#### ***Source of Secondary Data***

Secondary data and information have been collected from Deputy Director of Agriculture office, Krishnagar, Nadia, West Bengal, Assistant Directorate of Agriculture Office at Community Development Block in Nadia District, West Bengal, Soil Testing Office at Berhampore, Murshidabad District, West Bengal, Office of the Registrar General & Census Commissioner, Government of India.etc.

### **Sample Size and Sampling Method**

Based on the concentration index (Bhatia, 1965) of floriculture in Nadia District in 2009-2010, the entire district has been categorized into three floriculture concentration zones i.e. low, moderate and high. Here Hanskhali Community Development Block falls into the high concentration zone (Concentration index of flowers after Bhatia, 1965 is  $>1.30$ ) from where one enriched village in the field of floriculture namely Patua has been selected for household survey. According to Census of India (2011) total number of households of Patua village was 605. Out of 605 households 64 households were involved in floriculture. Out of 64 households involved in floriculture, a total of 47(73.43 per cent) households were surveyed in the year 2009-2010. Later to examine the spatio-temporal changes of floriculture of that particular village, a total of 50(64.93 per cent) households out of 77 households who are involved in floriculture have been surveyed in the year 2023-2024. Here a random method of sampling has been used to choose households for survey.

### **Method and Technique**

Following technique has been used to analyze the profitability of marigold cultivation and other principal crops of the study area.

#### ***Benefit Cost Ratio (After Usman et al., 2014)***

$$BCR = TR/TC$$

where:

BCR = Benefit Cost Ratio

TR = Total Revenue

TC = Total Cost

## Results and Discussions

**Table 1: Area, Yield Rate and Production of Principal Crops in Patua Village (2009-2010 and 2023-2024)**

| Sl. Nos. | Name of Crops | Area in Hectares |           | Yield Rate (Metric Tonnes / Hectare) |           | Total Production in Metric Tonnes |           |
|----------|---------------|------------------|-----------|--------------------------------------|-----------|-----------------------------------|-----------|
|          |               | 2009-2010        | 2023-2024 | 2009-2010                            | 2023-2024 | 2009-2010                         | 2023-2024 |
| 1        | Aus Paddy     | 8.10             | 8.5       | 4.20                                 | 4.25      | 34.02                             | 36.125    |
| 2        | Aman Paddy    | 9.10             | 9.52      | 3.80                                 | 3.90      | 34.58                             | 37.128    |
| 3        | Boro Paddy    | 12.06            | 12.35     | 6.30                                 | 6.30      | 75.97                             | 77.805    |
| 4        | Jute          | 11.65            | 11.85     | 3.75                                 | 3.78      | 43.68                             | 44.793    |
| 5        | Mustard       | 10.67            | 11.50     | 3.75                                 | 3.90      | 40.01                             | 44.85     |
| 7        | Marigold      | 7.55             | 9.06      | 18.75                                | 18.85     | 141.6                             | 169.87    |

*Source: Household Survey and computed by the Author, 2010 and 2024*

Here, for analysis of comparative economic return from major crops and Marigold cultivation, the technique Benefit Cost Ratio has been used. As major crops, Aus Paddy, Aman Paddy, Boro Paddy, Mustard and Jute are taken into consideration to compare economic return with Marigold cultivation. Variable cost for major crops and Marigold has been calculated from the concern of labour, seedling, cow dung, calcium carbonate, muster cake, neem cake, chemical fertilizer, irrigation, pesticides, insecticides, herbicides, nutrient, ploughing, transport cost. On the contrary land use cost has been calculated for major crops and Marigold as Fixed cost. (Table.2)

### Returns from Major Crops in the Study Area

BCR for major crops have been computed for the agricultural year 2009-2010 and 2023-2024. The Benefit Cost Ratio for major crops shows significant changes.

Benefit Cost Ratio for Aus Paddy is calculated 1.03:1 and 1.08:1 for the agricultural year 2009-10 and 2023-24 respectively. Here it is clear that investing Rs. 1.00 in the field of an Aus Paddy cultivation farmer gets a net return of Rs.0.03 and Rs.0.08 respectively. The change of profitability is only Rs.0.05. It is so insignificant.

**Table 2: Cost and Return of Various Crops under Cultivation in Patua Village**

| Unit                              | Aus Paddy    |               | Aman Paddy   |              | Boro Paddy    |               | Mustard      |               | Jute         |               | Marigold      |               |
|-----------------------------------|--------------|---------------|--------------|--------------|---------------|---------------|--------------|---------------|--------------|---------------|---------------|---------------|
|                                   | 2009<br>-10  | 2023<br>-24   | 2009<br>-10  | 2023<br>-24  | 2009<br>-10   | 2023<br>-24   | 2009<br>-10  | 2023<br>-24   | 2009<br>-10  | 2023<br>-24   | 2009<br>-10   | 2023<br>-24   |
| A. Variable Cost (Rupee/ Hectare) | 62287        | 84682         | 45157        | 56421        | 88922         | 129564        | 54525        | 89824         | 62251        | 79765         | 102251        | 126923        |
| Labour (Family and Hired)         | 28125        | 30937         | 18750        | 20625        | 33750         | 37125         | 28125        | 30937         | 37500        | 44500         | 42000         | 50820         |
| Seedling                          | 2362         | 2598          | 2362         | 2598         | 3375          | 3712          | 1125         | 1237          | 1875         | 2250          | 9488          | 1897          |
| Cow dung                          | 1200         | 1320          | -            | -            | 1200          | 1320          | -            | -             | -            | -             | 10500         | 12075         |
| Calcium Carbonate                 | -            | -             | -            | -            | -             | -             | -            | -             | 458          | 550           | Nil           | 850           |
| Mustard Cake                      | -            | -             | -            | -            | -             | -             | -            | -             | -            | -             | 1050          | 1500          |
| Neem cake                         | -            | -             | -            | -            | -             | -             | -            | -             | -            | -             | 850           | 1350          |
| Fertilizer (Chemical)             | 8633         | 15539         | 7500         | 13500        | 17985         | 32373         | 6750         | 12150         | 6500         | 11200         | 8175          | 14715         |
| Irrigation                        | 11250        | 22500         | 7500         | 9750         | 20625         | 41250         | 6000         | 11750         | 5700         | 9120          | 7875          | 15750         |
| Pesticides                        | 720          | 792           | 630          | 693          | 900           | 1035          | 900          | 1050          | 1125         | 1650          | 1125          | 1710          |
| Insecticides                      | 660          | 726           | 578          | 635          | 825           | 948           | 1875         | 2100          | 937          | 1245          | 950           | 1425          |
| Herbicides                        | -            | -             | -            | -            | -             | -             | -            | -             | -            | -             | Nil           | 546           |
| Nutrient                          | 1500         | 1650          | -            | -            | 1500          | 1725          | -            | 20200         | -            | -             | 1788          | 2145          |
| Ploughing                         | 5962         | 6558          | 5962         | 6558         | 5962          | 6856          | 7875         | 8100          | 5906         | 6500          | 7200          | 8640          |
| Transport                         | 1875         | 2062          | 1875         | 2062         | 2800          | 3220          | 1875         | 2300          | 2250         | 2750          | 11250         | 13500         |
| B. Fixed Cost (Rupee/ Hectare)    | 22500        | 24750         | 22500        | 24750        | 22500         | 24750         | 22500        | 24750         | 22500        | 24750         | 33750         | 42187         |
| Land Use                          | 22500        | 24750         | 22500        | 24750        | 22500         | 24750         | 22500        | 24750         | 22500        | 24750         | 33750         | 42187         |
| Total Cost (A+B)                  | <b>84787</b> | <b>109432</b> | <b>67657</b> | <b>81171</b> | <b>111422</b> | <b>154314</b> | <b>77025</b> | <b>114574</b> | <b>84751</b> | <b>104515</b> | <b>136001</b> | <b>169110</b> |
| Gross Return                      | 87500        | 119105        | 70800        | 89120        | 123565        | 188392        | 112500       | 173859        | 110177       | 148727        | 335548        | 486213        |
| Net Return                        | 2713         | 9673          | 3143         | 7949         | 12143         | 34078         | 54525        | 74670         | 25426        | 44212         | 194447        | 267103        |
| Benefit Cost Ratio                | <b>1.03</b>  | <b>1.08</b>   | <b>1.04</b>  | <b>1.09</b>  | <b>1.10</b>   | <b>1.22</b>   | <b>1.46</b>  | <b>1.51</b>   | <b>1.30</b>  | <b>1.42</b>   | <b>2.46</b>   | <b>2.87</b>   |

Source: Household Survey and computed by the Author, 2010 and 2024

As like as BCR for Aman Paddy was 1.04:1 in the year 2009-2010 and 1.09:1 for the agricultural year 2023-2024. Here, investing Rs. 1.00 farmer gets net return of Rs.0.040 and Rs. 0.09 for the year 2009-2010 and 2023-24 respectively from the field of Aman Paddy cultivation. It is also very much negligible.

BCR of Boro Paddy is calculated 1.10:1 for the agricultural year 2009-2010 and 1.22:1 for the agricultural year 2023-2024. Here farmers get a net return of Rs.0.10 and Rs.0.22 for the agricultural year 2009-2010 and 2023-24 respectively from the field of Boro Paddy cultivation. Here the economic return of Boro paddy is positive but not at satisfactory level.

BCR of mustard is calculated 1.46:1 for the agricultural year 2009-2010 and 1.51:1 for the agricultural year 2023-2024. Here farmers get a net return of Rs.0.46 and Rs.0.51 for the agricultural year 2009-2010 and 2023-24 respectively from the field of mustard cultivation. Here the economic return of mustard is quite positive but not at a satisfactory level.

BCR of Jute is calculated 1.30:1 for the agricultural year 2009-2010 and 1.42:1 for the agricultural year 2023-2024. Here farmers get a net return of Rs.0.30 and Rs.0.42 for the agricultural year 2009-2010 and 2023-24 respectively from the field of jute cultivation. Jute cultivation is also indicating that economic return from jute cultivation is quite positive. (Table.2). Here it can be said that the economic return from the field of traditional agriculture is very much insignificant. As a result so many farmers have no interest in agriculture and are seeking alternative ways of occupation.

### **Return from Marigold Cultivation in the Study Area**

BCR for Marigold cultivation has been calculated in the years 2009-2010 and 2023-2024. Benefit Cost Ratio for Marigold cultivation has been calculated as 2.46:1 for the year 2009-2010 and 2.87:1 for the agricultural year 2023-2024. Here farmers gain net profit of Rs.1.46 investing Rs.1.00 in 2009-2010 and Rs.1.87 investing of Rs.1:00 in 2023-2024. So, it is clear that return from the field of Marigold cultivation is more profitable than cultivation of other principal crops in the study area. So, the results of Benefit Cost Ratio for Marigold cultivation confirm the relevance of Marigold selection by farmers. They choose it as an alternative to traditional crops cultivation for financial consistency. Here the scenario is clear that economic return from marigold cultivation is no doubt optimistic and hopeful. (Table. No.3)

### **Factors Responsible for Profitability of Marigold cultivation**

There are some key factors which play an imperative role for this positive return from the field of Marigold cultivation. Here some important factors have been mentioned.

- (i) Surplus economic return, satisfactory yield rate and production from the field of marigold cultivation inspire farmers to cultivate Marigold in an intensive way.
- (ii) Farmers always follow scientific methods of marigold cultivation. They take advice from the Assistant Directorate of Agriculture at block level for selection of plants, species,



types of chemical fertilizer, insecticides, pesticides, herbicides, neem cake, mustard cake, nutrient powder and other inputs. As a result, from time to time farmers are able to manage the adverse situation in the field of Marigold cultivation. This helps farmers to gain more profit from marigold cultivation.

- (iii) Due to socio economic as well as cultural development of the society, there is a continuous demand for Marigold in the market all over the year. Due to this demand farmers get extra eagerness to cultivate Marigold as an alternative to traditional crops cultivation.
- (iv) Farmers use some environment friendly inputs i.e. cow dung, mustard cake, neem cake, calcium carbonate etc in the field of marigold cultivation which protects the soil health as well as agricultural ecosystem. These inputs preserve the status of soil NPK (Nitrogen, Phosphorus and Potassium) properly. As a result farmers can practice this field repeatedly with surplus production and positive economic return.
- (v) In the study area, there are so many farmers who have been cultivating flowers for more than 20 years. This experience helps farmers to make decisions in different stages of Marigold cultivation properly.
- (vi) Primarily a cultivator can easily plant Marigold with minimum cost of investment i.e. Rs.5, 000 to 10,000 per bigha (0.250 hectare). Where to cultivate Boro Paddy, Rs.6000 is needed only for irrigation purposes. This farmer shows positive interest in the cultivation of Marigold.
- (vii) After plantation, farmers can pluck flowers after 2 months. This flower can be cultivated throughout the year following rainy, winter and summer seasons. Apart from this, farmers can earn liquid surplus money selling flowers daily. This regular income assists farmers to purchase required essential commodities, child education, medication etc. and further investment in the field of flower cultivation.
- (viii) Sealdaha-Krishnagar railway passes through this village. Nearest railway station is Badkulla. Farmers can easily avail the railway transport to sell their flowers in the nearest flower market and outside market with minimum transport cost. It is a positive factor of farmer's interest to cultivate flowers.
- (ix) 'Bangla Fasal Bima Yojna (BFBY)' (Saha, 2024, p-213) of West Bengal government and Pradhan 'Mantri Fasal Bima Yojna (PMFBY)' (Roy *et al*, 2018, p-9), government of India helps farmer to overcome the negative situation comes in the field of floriculture due to adverse agro climatic condition.
- (x) In the study area maximum are marginal farmers. They practice flowers in a small size of land in an intensive way. This intensive way of cultivation helps farmers to produce more

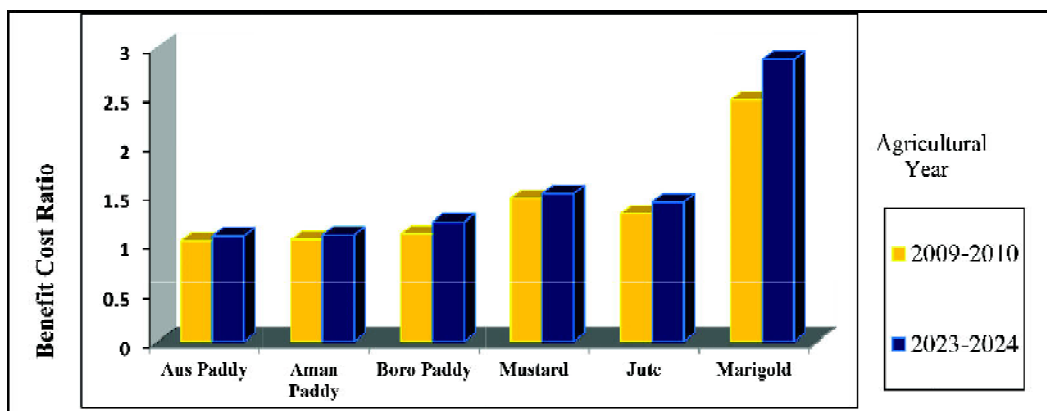
production per unit area. As a result farmers gain surplus economic return from the field of Marigold cultivation. (Table. No.3)

Apart from this low risk, inter linkage between farmers and middlemen give extra advantage for the improvement of this field in the study area.

**Table 3: Benefit Cost Ratio of Different Crops under Cultivation in Patua Village**

| Name of Crops | Aus Paddy | Aman Paddy | Boro Paddy | Mustard | Jute | Marigold |
|---------------|-----------|------------|------------|---------|------|----------|
| 2009-2010     | 1.03      | 1.04       | 1.10       | 1.46    | 1.30 | 2.46     |
| 2023-2024     | 1.08      | 1.09       | 1.22       | 1.51    | 1.42 | 2.87     |

*Source: Computed by Author Using Data collected through Household Survey*



**Fig.2: Benefit Cost Ratio of Different Crops under Cultivation in Patua Village**

*Source: Prepared by author using surveyed data*

### **Environment Friendly Inputs Used in the Field of Marigold Cultivation**

In the study area, farmers use environment-friendly inputs to cultivate Marigold. Farmers use different types of inputs in the field taking two goals. One is to gain more economic return and another is an effort to travel toward the goal of sustainability. They use Cow dung, Mustard Cake, Calcium Carbonate Neem Cake, to preserve the status of soil NPK, productivity and ecosystem of the field of marigold cultivation. Beside this they use modern techniques of agriculture which helps them to increase the yield rate, production and the quality of flowers. They take advice from agriculture expertise at block level and expert floriculturists who come to the flower market. Farmers use environmentally friendly seeds and plants of Marigold cultivation. (Table.No.2)

### Problems and Remedies

There are some crucial factors which play an interface in the way of development of marigold cultivation.

- i) Farmers in the study reported that the cost of inputs like chemical fertilizer, pesticides, insecticides, plants, nutrient powder etc have been increased almost 80 to 100 percent in 2023-202 compared 2009-2010. But economic return has not increased at the same scale. As a result farmers who have no sufficient money in their hand show negative attitudes to cultivate flowers.
- ii) Flowers are perishable goods. Due to different issues i.e. bad weather, low scale of demand sometimes flowers are being left unsold. Due to unavailability of cold storage facilities in the study area those unsold flowers are being wasted.
- iii) There are so many farmers who cultivate flowers taking land in a lease system from the owner of land. Having no self-documentation of land, different government banks and cooperative banks also never allow them to recommend loans for flower cultivation. Apart from this those farmers also never get government schemes facilities i.e. Bangla Fasal Bima Yojna (BFBY) and Pradhan Mantri Fasal Bima Yojna (PMFBY) etc.
- iv) There is no arrangement of workshop, organized training system in favour of the competent government authority i.e. C.D Block level for farmers to know the proper way of flower cultivation. As a result some time they remain unaware about the updated modern way and technology of flower cultivation.

To overcome these interfaces for positive development of this field some constructive measures are to be taken by the competent authority.

- (i) 'Local government administration, Department of Horticulture, Self Help Group(SHG)' (Allarakha *et al.* 2023, p-16) should arrange a special training system at block level for farmers with expertise. In this regard, the Assistant Directorate at C.D Block can easily take necessary steps to arrange training facilities for farmers. If it is possible then farmers shall be well trained about proper ways of cultivation and they will be able to pick up maximum surplus return from the field of marigold cultivation.
- (ii) To share updated knowledge and information about flower cultivation among farmers, agriculture expertise at block level can launch mobile apps with the help of computer technology. There is a Krishi Projukti Sahayak (KPS) in every C.D block who collects information at field level from farmers and provides it to the Assistant Directorate of Agriculture of that particular C.D block. So concerned authorities can easily share government schemes, information and updated technology to farmers.
- (iii) Different NGO like 'NABARD' (Biswas, 2013, p-23) can play a vital role for all round development of this field ensuring the easiest way of offering loan facilities. They should

think about those farmers who cultivate flowers taking the land leases and have no self-documents of land. If they get loans from financial organizations then the field of flower cultivation may be developed more optimistically.

- (iv) Organized flower markets to be set up at local level for selling flowers and storage of unsold flowers. Government should take initiatives to build up an organized flower market where their minimum facilities will be arranged. Small scale cold storage can be built up to store unsold flowers for further uses.
- (v) Industrialists should take care about the preparation of organic aabir (Colour dust), colour, essence etc from marigolds. For this purpose they can build up industrial units at district level. As a result farmers can provide their produced flowers as raw materials for making organic aabir, colour, essence etc. Apart from this due to excess production, sometimes flowers remain unsold. In that situation they can easily provide flowers to industrial units as raw materials to get the expected price.
- (vi) Lastly, the interlink age between local and outside flower markets is very much important for sharing knowledge and information about marketing , new systems of farming, new varieties of flowers and global trading of flowers.

## Conclusion

Present study reveals that the development of marigold cultivation in Patua village in Nadia District, West Bengal is no doubt lucrative. Economic profitability of marigold cultivation is more optimistic than other principal crops under cultivation in the study Area. Area, Yield rate, total production, economic return has been changed optimistically. But due to increasing the cost of inputs farmers are not getting a more satisfactory return from the flower cultivation than the previous time. Farmers are using different types of environment friendly inputs in the field of flower cultivation which preserve the soil properties and other associated parameters. Industrial set up at district level can be a key factor for employment generation through flower cultivation in the study area. Some constraints are there in the field of marigold cultivation. In spite of this farmers are cultivating flowers for a positive economic return. With more scientific ways of cultivation, application of modern technologies, well development of market systems, global trading of flowers, selection and uses of eco friendly inputs in the field of marigold cultivation, a surprising development may come in the study area. So, it is obvious that all round advancement of marigold cultivation will be a key factor for socio-economic development of Patua Village.

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## References

- Allarakha, S.K., Ghosh, S., Shao, K.P. and Siddique, G. (2023): Prospects of Floriculture Development in Purba Medinipur District, West Bengal: A Model Based Planning Strategy using SWOT-QSPM Analysis, *International Journal of Humanities and Social Science Invention (IJHSSI)*, 12(9), 9-18.
- Bhatia, S. S. (1965): Patterns of Crop Concentration and Diversification in India, *Economic Geography*, 41(1), 39-56.
- Bhattacharyya, R. (2013): Cut flower production: A source of incremental income for the marginal farmers of the state of West Bengal in India. *International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering*, 7(6), 1398-1406.
- Biswas, N. K. (2013): Floriculture in Chapra village in Ranaghat-II block, Nadia district, West Bengal. *IOSR Journal of Humanities and Social Science (IOSR-JHSS)*, 7(1), 17-23.
- Census of India (1991, 2001 and 2011): Office of the Registrar General & Census Commissioner, Government of India.
- Das, S. K. (2012). Commercial prospects of Floriculture: A study on Purba Medinipur District of West Bengal. *Business Spectrum*, 2 (2), 44-55.
- Das, S.K. (2012): Prospects of Floriculture: A Study on Purba Medinipur District of West Bengal, *Business spectrum*, 2(2), 44-55.
- Datta, S.K. (2019): Present Status of Research on Floriculture in India, *LS - An International Journal of Life Sciences*, 8(2), 71-93.
- Kumar, A., Pathania, S., Kashyap, B., Dhiman, S.R. and Gupta, Y.C. (2023): Indian Floriculture: Current Issues and Initiatives-A Review Paper, *Journal of Ornamental Horticulture*, 26(1&2), 1-9.
- Maji, S. (2015): Changing Scenario of Present Floriculture System & Associate Problems In Bagnan Blocks I And II, Howrah District, *IOSR Journal of Humanities And Social Science*, 20(11), 07-12.
- Mhatre, R. (2009): Increasing Floriculture Production a Step Towards Green and Clean India, *Renewable Research Journal*, 3(2), 7-20.
- Pal, M., Dey, L. and Das, N. (2014): An Analysis on Productivity, Growth and Export-Potential of Indian Floricultural Sector: 1997-98 to 2013-14, *International Journal of Innovative Research & Studies*, 13(8), 412-418.
- Randhwa G.S. and Mukhopadhyay, A. (1986): *Floriculture in India* Allied Publisher Private Limited, New Delhi.
- Roy, B. C., Mondal, B., Ojha, S., Biswas, R. K. and Datta, V. (2018): Performance Evaluation of Pradhan Mantri Fasal Bima Yojana (PMFBY) in West Bengal; Study No.- 188, *Agro-Economic Research*

Centre (For the States of West Bengal, Sikkim and Andaman & Nicobar Islands), Visva-Bharati, Santiniketan, West Bengal, pp.-xii+83

- Saha, S. (2024): International Journal of Advanced Multidisciplinary Research and Studies,4(3),213-218.
- Sarkar, D; Rahim, K.M.B and Misra, S. (1997): Floriculture In West Bengal: Problems And Potentials, New Academic Publishers, New Delhi.
- Sarker, D. and Chakravorty, S. (2011): Flower Farming and Flower Marketing in West Bengal: A Study of Efficiency and Sustainability, MPRA, 33776, 1-36.
- Usman, M., Ashfaq, M., Taj, S. and Abid, M. (2014): An economic Analysis of Cut-Rose Flower in Punjab, Pakistan, The Journal of Animal and Plant Sciences, 24(2), 651-655.