COST BENEFIT RATIO OF GERBERA GREENHOUSE FLOWER CULTIVATION IN
KOLHAPUR DISTRICT (MAHARASHTRA)

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ABSTRACT

Flowers play an important role in people's celebrations and everyday lives Weddings, Graduations, Funerals, Mother's Day, St. Valentine's Day and Christmas are all peak periods of demand for flowers and plant. Gerbera is the important flower. Now Day in Kolhapur district gerbera flower cultivation in greenhouse has been increased. Kolhapur district in Maharashtra has emerged in flower cultivation in greenhouse, therefore here the Kolhapur district has been selected for the present investigation. The main objective of present paper is to study of distribution of gerbera greenhouse unit and cost benefit ratio of gerbera flower. It is primarily based on primary as well as secondary sources of data. Primary data collected through intensive field work and secondary sources of data collected from agricultural census, socio- economic abstract. The distribution of gerbera in greenhouse farming and cost benefit ratio of gerbera has been calculated. It is found that Kolhapur district 1075 unit of gerbera greenhouse. The Hatkanangale tahsil identified with highest gerbera unit (482) and the Radhangaritahsil (04) identified with lowest gerbera unit in Kolhapur district. The tahsils like Shahuwadi, Gaganbavada and Bhudargad has no gerbera greenhouse unit. The average market price is Rs. 5.00/- of greenhouse production per flowers. The cost benefit ratio of gerbera is 1:1.38.

KEY WORDS: Greenhouse, Floriculture, Horticulture, Cut flowers, Net Return, Benefit Cost Ratio.

INTRODUCTION

In Kolhapur district gerbera greenhouses increasing continuously because of gerbera flowers used in Mahalaxami temple and decoration. People paid Rs. 8 to 10 forgerbera flower before going to worship of Goddesses Mahalaxmi. In local market, selling price is Rs. 8 to 10 per flower. Gerbera greenhouse is more profitable as compare to open field. A greenhouse also extends the growing season and used for year round production of this high value plants. Greenhouse farming gives more income with less effort. It means the greenhouse technology is very useful technology in adverse condition for the economic development of farmers. Adoption of greenhouse technology can improve yield and productivity. Cultivation of Gerbera flowers inside greenhouse also helps in improving the economic conditions of the farmers in the Kolhapur district. The water requirement also reduces inside the greenhouse. Therefore, this technology will also be useful in the water scarcity area and hence study is therefore undertaken to find out the economic analysis of greenhouse for gerbera cultivation and calculated the cost benefit ratio.

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investigation. The main objective of present paper is to study of distribution of gerbera greenhouse unit, economic status of gerbera and cost benefit ratio analysis of gerbera flower. Recently Kolhapur district of South Maharashtra has emerged out as the progressive district for use of greenhouse technology in farming. It would be pertinent to examine and to assess the distributional patterns of greenhouse in the study area. Besides, it is also proposed to examine the input output analysis regarding crops grown. An economic analysis is dealing with crop productivity in the greenhouse.

OBJECTIVES

1) To study the distribution pattern of gerbera flower in greenhouse farming in Kolhapur district.
2) To examine the cost benefit ratio of gerbera flower.

STUDY AREA

Kolhapur district is one of the most agriculturally developed districts in the country. The location of Kolhapur district is 15^0 43 North to 17^0 17 North latitudes and 73^0 40 East 42^0 14 East longitude. The total Geographical area of Kolhapur district is 7,685 Sq. Kms. The maximum temperature of Kolhapur district is 35^0 c and the minimum is $14.^0$an average rainfall of the district is 1138.5 mm. According to census 2011 the total population of the Kolhapur district is 38, 76,001 out of them 19, 80,658 is male population and female population is 1,895,343. The area under irrigation is Kolhapur district is 1, 21,831 hectares. The main river in the district is Panchganga. Kolhapur

district population constituted 3.64 percent of the total Maharashtra Population

DATA BASE

The present research paper is based on primary and secondary sources of data. The primary data is collected through intensive field work with the help of interviews and discussions with the farmers and relevant persons and authorities. The secondary sources of data were collected from the district agriculture office and Census of India, Socio-economic abstract of Kolhapur district.

METHODOLOGY

The collected data from different sources were processed and represented by employing different statistical techniques. The uses of statistical and quantitative techniques have been made wherever necessary. The investigator has also attempted frequent discussions with the gerbera greenhouse
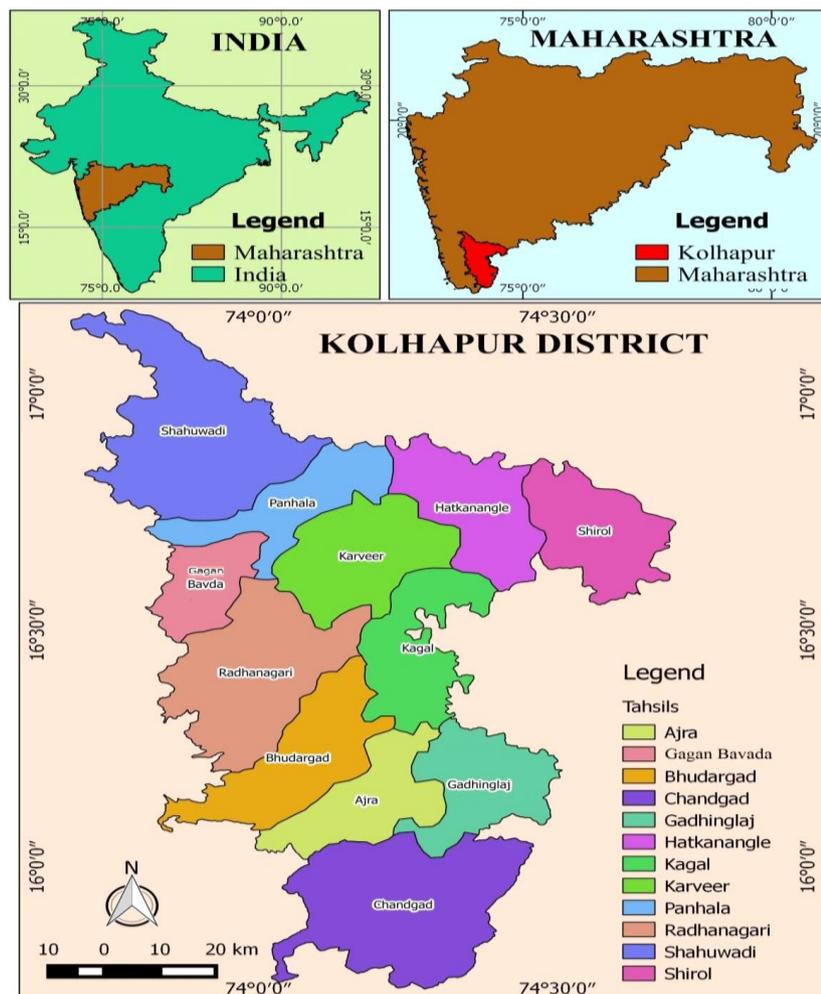
farmers and relevant authorities. This method too, proved the best in strengthening and confirming the collected information.

Benefit Cost Ratio.

Cost Benefit ratio of Gerbera production has been calculated. It is calculated by dividing total input (present worth) by Total output (Present worth of cost).

$$CBR = NR/ TC$$

Where

NR = Net Return (Total Input)

TC = Total cost of Production (Total Output)

CONCEPT OF GREENHOUSE

Modern science and technology have created a number of options, which are beneficial, a large number of populations. Maharashtra State is known for the adoption of modern technologies where the number of greenhouses has been established, especially in Western Maharashtra by innovative farmers. Greenhouses have been established by the rich and forward looking farmers of Kolhapur district which are mainly used for floriculture and selected vegetables. Recently, with the changing nature of agricultural market and the demand from local farmers for the preservation of fruits ,vegetables and flowers, Cold storage facilities have also important. The technology of greenhouse need huge capital out lay which is not affordable by small farmers. Agriculture of the present decades is different in many respects, from the agriculture of pre-independence period. The last three successive decades have been characterized by the adoption of many technologies and new experiments the augment production. There has been shift from merely 'food production' to multiplication of Earrings, which has become common phenomena in most of the parts of our country. There is growing awareness among the farmers to employ modern farm technology with heavy capital outlay. Recent introduction of greenhouse technology in farming is an important step of modern agriculture. Thus, greenhouse has become an important tool for increasing agricultural productivity on limited land resources.

Greenhouse farming refers to new farm technology in the form of greenhouse wherein crops are grown in the controlled environment such farming is contributing with growing share to the economy of the region. According to Paul Nelson (1985) "the greenhouse refers to a structure covered with a transport material for the purpose of admitting natural light for plant growth " (These structures are usually different from other growing structures in that they are sufficiently high to permits a person to work from within. The European definition of greenhouse differs in that the structure receives little or no artificial heat. Greenhouse is usually as framed structure covered with transparent or translucent material large enough for a person to walk inside and carryout cultural operations and in which crops are grown under conditions of partially or fully controlled environment. The plastic film acts like a selective radiation filter, which allows solar radiation emitted by the object within thus contributing to the greenhouse effect (Jadhav andPatil,1998)

Greenhouse technology has been used in India for the last five decades, which was used for research purpose in the research institute. Greenhouse technology is becoming popular among the farmers to grow high valued flowers, off season vegetables, ornamental plants and good quality samplings. Rising of seedlings and plant propagation are important commercial aspects of greenhouse technology. At present in India approximately 10,000 hectares of area are under greenhouse whereas in other countries like Japan, China, Spain Holland, Netherlands, Israel and Italy, the area ranges from 10,000 to 1,00,000 hectares.

Main purpose of greenhouse farming is to enhance agricultural production from the limited space. Maharashtra State is not exception to this technology where the number of greenhouses has been increased substantially, especially in the western Maharashtra. Recently Kolhapur district has emerged out as a progressive district regarding greenhouse technology.

Table-1
Kolhapur District : Area under Greenhouses

Sr. No.	Year	NHM/ NHB subsidy Area under greenhouses (ha.)	Private Greenhouse Area (ha.)	Total
1	2005-2006	1.50	91.05	92.55
2	2006-2007	0.30	-	0.30
3	2007-2008	1.50	10.00	11.50
4	2008-2009	0.56	4.00	4.56
5	2009-2010	1.71	-	1.71
6	2010-2011	1.52	-	1.52
7	2011-2012	3.50	-	3.50
8	2012-2013	5.85	-	5.85
9	2013-2014	6.61	-	6.61
10	2014-2015	13.45	-	13.45
	Total	**36.50**	**105.05**	**141.55**

Source: Department of Agriculture, Government of Maharashtra, Kolhapur District.

Table 1.1reveals the trends of the area under NMH/NHB and private greenhouses in Kolhapur district. The area under greenhouses calculate only subsidy given to greenhouses by National Horticulture Mission (NHM) and National Horticulture Board (NHB). It is observed that the construction of greenhouses continuously increasing. It is noticed that highest area was 13.45ha under the NHM/NHB greenhouses in the year 2014-15. The lowest area was 0.30ha.in the year 2006-2007. The total area under NHM/NHB greenhouse was 36.50ha. The private greenhouse total area was 141.55ha in the Kolhapur district.

PHOTO PLATE -I

Greenhouse Unit

Greenhouse,Vandur,Kagal

Packing of Gerbera Flowers

Labour, Kerli, Karveer

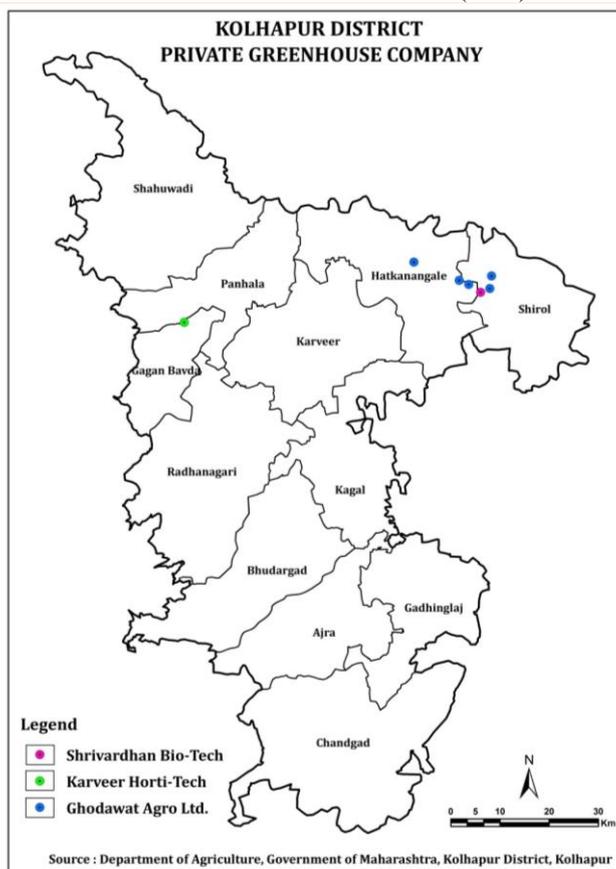**White Gerbera Flower**

Pot Gerbera Cultivation, Vandur, Kagal

Fig.2

Table-2
Kolhapur District
GerberaUnit Distribution of Greenhouses
2005 – 2015

Sr. No.	Agriculture Sub -division	Tahsil	Gerbera Crop Units
A	**Kolhapur**		
1		Shahuwadi	-
2		Panhala	9
3		Hatkanangale	482
4		Shirol	367
		Total	**858**
B	**Karveer**		
5		Karveer	72
6		Kagal	39
7		Radhanagari	4
8		Gaganbavda	-
		Total	**115**
C	**Gadhinglaj**		
9		Gadhinglaj	89
10		Ajara	7
11		Bhudargad	-
12		Chandgad	6
		Total	**102**
		Sub – Total	**1,075**

Source: Field Work 2015-2016   # 1 Unit=500 Sq.Meters

Table 1.2 shows that the distribution of gerbera units in Kolhapur district. The Hatkanangale tahsil has highest 482 units of gerbera. The Radhanagari tahsil has lowest 4 units of gerbera. The Kolhapur agriculture sub- division has highest 858 units of gerbera. Gadhinglaj agriculture sub-division has lowest 102 units of gerbera.

ECONOMY OF GERBERA CROPS

Greenhouses Case Study

It is clear from the fact that all the crops cannot be grown in the greenhouses due to the high cost incurred for the creation of controlled climatic conditions. However, greenhouses have provided suitable form of technology to the specific crops. In order to assess the returns received to farmers in and outside the greenhouses, gerbera a popular flower item has been selected in the present analysis. For this, sample study is attempted which may give the representative picture of the study area. The selection is based on random sampling technique. The greenhouse, owned by **Sou. PadamajaNandkumarSalokhe at Kerlital. Karveer**, occupies 0.20 ha (20 guntha) cultivated area under gerbera. An assessment of cost of production, consisting of various aspects of inputs is attempted.

1)   **Labour Cost**

The cost of human labour in greenhouse is Rs. 1,10,000/-. The farmer with a few labours can arrange different operations. For every item of controlled system labourers in increasing number are required. This leads to the increase in the labour cost. Beside this, daily wages paid to labours in greenhouse are higher than the open field.

2)   **Material Cost**

Material cost refers to the Cost required for different inputs like plants, fertilizers and pesticides in and outside the greenhouse. Table1.3reveals that the cost for plants in the greenhouse is Rs. 5,08,400 (11,200 plants, per plant Rs. 32/-) the tissues plants are used in the greenhouse. A single tissues cultured plants costs Rs. 32/-.

The cost for fertilizers and pesticides, accounts for Rs. 1,50,000. The cost of fertilizers and pesticide in greenhouse significantly. In order to maintain healthy climatic conditions and to control diseases of plants pesticide are used frequently in the greenhouse. This leads to increasing cost for crop in greenhouse.

3)   **Electricity Charges**

During growing season, energy charges for greenhouse are Rs. 6,000/-.(Table1.3) Especially in greenhouse where use fogger, mister and drip irrigation system with give to plants water soluble fertilizer the energy charges are further increased the open field.

4)   **Transportation cost**

Production of gerbera for greenhouse requires special markets located at far distance viz. Mumbai, Hyderabad, Pune, etc. Table 1.3 shows that Rs. 6,000 is required for transporting greenhouse product.

5)   **Maintenance and Repairing Charges**

The charges required for maintenances and repairing equipment like pumps, sprayers and others, in greenhouse are Rs. 5,000 in one year.

6)   **Net Returns**

It is clear from the above analysis that the cost of production of Gerbera is higher in greenhouse. The unit production is Rs.4,70,400lakh flowers. The market price of greenhouse production is average Rs. 6.00 per flowers. Each plant offer nearly flowers production in greenhouse. The total output cost for greenhouse produce goes up to Rs. 9,84,966/-. The net returns received from greenhouse are Rs.13,67,040/-during the year 2015 – 2016. But owing to certain limitations greenhouse technology cannot adopted for all the crops.

Table -3
Kolhapur District
A comparative analysis of input/output cost
(Rs.) for Gerbera greenhouse in sample studies - 2016.

Sr. No.	Type of Farm	Type of crops	Area under crop	Cost for plantation	Fertilizer pestiside	Labour Cost	Energy Charges	Transportation cost	Routine Maintaince cost	Interest on Laoan	Other charges	Net Return Total Input	Total cost of production	Net profit
1	**Green house**	**Gerbera**	0.20 ha	11200/**Plants Rs 32 358400**	150000	110000	6000	1176 **Rs.60 per Box 70560**	5000	280000	5000	2352000 **Average per flower Rs.5.00 (470400)**	984960	1367040

Source: Based on Field Work - 2016

COST BENEFIT RATIO

Benefit cost ratio of Gerbera production has been calculated. It is calculated by dividing total input (present worth) by Total output (Present worth of cost).

CBR: NR   / TC

Where,

NR = Net Return (Total Input)

TC = Total cost of Production (Total Output)

Benefit cost ratio of gerbera has been calculated as under,

Greenhouse =

CBR = NR/ TC

CBR = 2352000/984960

CBR = 1.38

The Cost Benefit Ratio of Gerberagreenhouse is1.38. When Benefit Cost Ratio is high, plants were grown inside the greenhouse because of its high production and high market price.

CONCLUSIONS

In Kolhapur district greenhouses concentrated only on the production of flowers and vegetables. Greenhouse farming technology gives an opportunity for the economic development of farmers. In view of this green house farming is important. Gerbera is the important flower. Now Day in Kolhapur district gerbera flower cultivation in greenhouse has been increased. It is observed that Kolhapur district 1075 unit of gerbera greenhouse. The Hatkanangale tahsil identified with highest gerbera unit (482) and the Radhangari tahsil (04) identified with lowest gerbera unit in Kolhapur district. The tahsils viz. Shahuwadi, Gaganbavada and Bhudargad has no gerbera greenhouse unit. The average market price is Rs. 5.00/- of greenhouse production per flowers. The cost benefit ratio of gerbera is 1:1.38. The Greenhouse is expensive to build and operate. As a result, potential profits are high, but so is the risk involved. Greenhouse growing is an intensive form of plant production and has the potential for high returns, but crops grown in greenhouses are exacting requirements and the market has very high quality demand. Greenhouse technology helps to increase quality, yield, and optimum use

of farm inputs and some crops reduce yield duration. Government should have provided training facilities compulsory for construction of greenhouses and its management.

ACKNOWLEDGEMENT

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