



E-ISSN: 2278-4136

P-ISSN: 2349-8234

[www.phytojournal.com](http://www.phytojournal.com)

JPP 2020; Sp 9(5): 506-511

Received: 18-09-2020

Accepted: 24-10-2020

**Priyanka Govekar**

M.Sc. Student, Department of  
Agriculture Economics and  
Statistics, Post Graduate  
Institute, Dr. PDKV, Akola  
Maharashtra, India

**Vanita Khobarakar**

Assistant Professor, Department  
of Agriculture Economics and  
Statistics, Dr. PDKV, Akola,  
Maharashtra, India

**Mayuri Raut**

M.Sc. Student, Department of  
Agriculture Economics and  
Statistics, Post Graduate  
Institute, Dr. PDKV, Akola  
Maharashtra, India

**Aishwarya Patil**

M.Sc. Student, Department of  
Agriculture Economics and  
Statistics, Post Graduate  
Institute, Dr. PDKV, Akola  
Maharashtra, India

**Dipali Khope**

M.Sc. Student, Department of  
Agriculture Economics and  
Statistics, Post Graduate  
Institute, Dr. PDKV, Akola  
Maharashtra, India

**Corresponding Author:****Priyanka Govekar**

M.Sc. Student, Department of  
Agriculture Economics and  
Statistics, Post Graduate  
Institute, Dr. PDKV, Akola  
Maharashtra, India

## Economics of production of gaillardia in Akola district

**Priyanka Govekar, Vanita Khobarakar, Mayuri Raut, Aishwarya Patil and Dipali Khope**

**Abstract**

The present study was carried out to study cost structure and returns during the year 2018-2019 based on primary data. The study was conducted in Akola, Patur and Barshitakali tahsils based on purposive sampling. A sample of 90 gaillardia growers was selected based on random sampling. It was observed that, Per hectare cost of cultivation of gaillardia at cost "C<sub>3</sub>" was highest in the large farmers i.e. Rs. 1,68,385.61 followed by medium farmer Rs. 1,56,641.69 and small farmer Rs. 1,48,042.51 and at overall level Rs. 1,57,794.66. The average yield and gross returns per hectare increased with the increase in size of farms. The average yield of gaillardia crop was 300.33 q/ha. The benefit cost ratio of gaillardia at cost 'C<sub>3</sub>' was 2.02 in small farmer, 2.12 in medium farmer, 2, 31 in large farmer and 2.16 in overall farmer which indicating economical profitability of gaillardia cultivation in the concerned areas.

**Keywords:** Gaillardia, cost, returns, profit, benefit cost ratio

**Introduction**

Flower is a loveliest object of the earth. A single flower is a reason of a million smiles and happiness. Government of India has identified floriculture as a sunrise industry and accorded it 100 percent export oriented status. Owing to steady increase in demand of floriculture has become one of the important commercial trades in Agriculture. Gaillardia is a seasonal flower and can be grown around the years. The generic name *Gaillardia* was proposed in honour of Mr. Gaillard de Marentonneau, an 18<sup>th</sup> century French patron of Botany, who cultivated first. The Central and Western United states are considered to be its origin. *Gaillardia* is a member of the family Asteraceae. It is frequently known by the common names Blanket Flower or Indian Blanket. Other common names includes firewheel and sundance. The genus *Gaillardia* includes 30 species, among them *Gaillardia aristata* (perennial) and *Gaillardia pulchella* (annual) is used as ornamental flower and also used as medicinal plant.

*Gaillardia* propagated by seeds. Seed should be planted into a firm, weed-free seedbed. *Gaillardia* plants are bushy with spreading branches. *Gaillardia* flourishes in well drained soil and can withstand high light intensities, high temperature and drought better than the most of the flowering plants. They are grown in herbaceous borders and bed. It is one of the hardiest annual can be grown in a wide range of tropical to temperate climate. It is also tolerant to salinity. It is also useful in reducing erosion in coastal dune areas. Panchaude (1990) reported the nematicidal property of *gaillardia*, when grown as catch crop and green manure. In India it is mostly used as a loose flower, for making garlands and for worship in temple. Maharashtra is also a leading state in flower production and the area under floriculture in Maharashtra during year 2017-18 is 5485 ha with production of loose flowers 29,080 MT and cut flowers 56,990 MT.

**Materials and Methods**

The standard cost concept i.e. Cost A<sub>1</sub>, Cost A<sub>2</sub>, Cost B<sub>1</sub>, Cost B<sub>2</sub>, Cost C<sub>1</sub>, Cost C<sub>2</sub> and Cost C<sub>3</sub> was used in present analysis.

**Cost A<sub>1</sub>:** All variable cost excluding family labour cost and including depreciation

**Cost A<sub>2</sub>:** Cost A<sub>1</sub>+ Rent paid for leased-in land.

**Cost B<sub>1</sub>:** Cost A<sub>1</sub> + interest value of owned fixed capital assets (excluding land).

**Cost B<sub>2</sub>:** Cost B<sub>1</sub> + Rental value of owned land (net of land revenue) and rent paid for leased-in land.

**Cost C<sub>1</sub>:** Cost B<sub>1</sub> + imputed value of family labour.

**Cost C<sub>2</sub>:** Cost B<sub>2</sub> + Imputed value of family labour.

**Cost C<sub>3</sub>:** Cost C<sub>2</sub> + marketing costs and transportation report.

## Gross and net returns

### Gross returns

Gross return of the farmers under the present study was estimated from returns obtained from sale of main produce.

### Net returns

Net returns was computed at different costs i.e. Cost A<sub>1</sub>, Cost A<sub>2</sub>, Cost B<sub>1</sub>, Cost B<sub>2</sub>, Cost C<sub>1</sub>, Cost C<sub>2</sub> and Cost C<sub>3</sub> by deducting respective costs from the gross returns.

### Benefit-cost ratio

It was calculated at cost A<sub>1</sub>, cost A<sub>2</sub>, cost B<sub>1</sub>, cost B<sub>2</sub>, cost C<sub>1</sub>, cost C<sub>2</sub> and cost C<sub>3</sub> by dividing gross income by respective cost.

## Result and Discussion

**Table 1:** Distribution of gaillardia growers according to size of land holding

Sr. No.	Land holding group	Area in hectare	No. of cultivators
1.	Small	Up to 2.00 ha	48
2.	Medium	2.01 to 4.00 ha	29
3.	Large	4.01 ha and above	13
	Total		90

**Table 2:** Average size of holding of selected farmers (ha)

Sr. No.	Size of holding	No. of farmer selected	Average size of holdings
1	Small (less than 2 ha.)	48 (53.33)	1.27
2	Medium (2.01 to 4.00 ha.)	29 (32.22)	3.02
3	Large (4.01 & above)	13 (14.44)	6.00
	Overall	90 (100.00)	3.43

(Figures in parentheses indicate percentage to the total farmers)

From the Table 2. it is revealed that, number of the selected farmer was 90 out of which 48 farmers belongs to small holding, 29 farmers belong to medium and 13 farmers to large size holding with average size of holding 1.27, 3.02 and 6.00 hectare respectively.

### Cost of cultivation of selected Gaillardia growers

The cost of cultivation is helpful for crop planning therefore in order to know the cost and profitability, the cost of cultivation of gaillardia for small, medium, large and overall farmer was workout.

### Per hectare cost of cultivation of gaillardia for Small farmer

The per hectare cost of cultivation of gaillardia for small farmers was workout and presented in Table 3.

**Table 3:** Per hectare cost of cultivation of Gaillardia for Small farmer

Sr. No.	Item	Unit	Input/ha.	Cost / Unit of input	Total Cost Per Ha.	Per cent to Cost "C <sub>3</sub> "	
1	2	3	3	5	6	7	
		Female	Days	72.18	151.02	10900.62	3.44
							7.36
		<b>Subtotal</b>			15993.54	10.80	
2	Bullock Labour	(Pair days)	6.29	499.23	3140.16	2.12	
3	Machine charges	Hours	0.88	600.10	528.09	0.36	
4	Seedling	No.	10125.35	1.00	10125.35	6.84	
5	Manures	QTLS.	17.23	200.23	3449.96	2.33	
6	Fertilizer	N	Kg.	102.73	20.76	2132.67	1.44
		P	Kg.	62.65	32.08	2009.81	1.36
		K	Kg.	50.72	23.25	1179.24	0.80
		<b>Subtotal</b>			5321.73	3.59	
7	Irrigation charges	(Rs.)			10463.92	7.07	
8	Insecticide (Plant Protection)	(Rs.)			7273.20	4.91	
9	Incidental charges	(Rs.)			57.37	0.04	
10	Repairing Charges	(Rs.)			250.26	0.17	
11	Working Capital (1 to 10)	(Rs.)			56603.58	38.23	
12	Interest on working Capital				3396.21	2.29	
13	Depreciation	(Rs.)			275.77	0.19	
14	Land Revenue	(Rs.)			176.80	0.12	
15	COST "A1" (11 to 14)	(Rs.)			60452.36	40.83	
16	Rental Value Leased in land				0.00	0.00	
17	COST "A2" (15 to 16)				60452.36	40.83	
18	Int. on Fix. Cap. @ 10%				1626.29	1.10	
19	COST "B1" (15+ 18)				62078.65	41.93	
20	Rental Value of Land	(Rs.)			49650.67	33.54	
21	COST "B2" (19 to 20)				111729.32	75.47	
22	Family Human Labour	Male	Days	38.04	205.11	7802.38	5.27
		Female	Days	100.49	149.79	15052.40	10.17
		<b>Subtotal</b>			22854.78	15.44	
23	Cost " C1 " (19+22)	(Rs.)			84933.43	57.37	
24	Cost " C2 " (21+22)	(Rs.)			134584.10	90.91	
25	Cost " C2* " (24)				134584.10	90.91	
26	10% Cost C2*				13458.41	9.09	
27	Cost " C3 " (25+ 26)				148042.51	100.00	
28	Main Produce	(Rs.)	295.00	1013.44	298964.80		
29	Per quintal cost of production	(Rs.)			456.22		

Table 3 revealed that in small farmer, the per hectare cost of cultivation of gaillardia was Rs.1,48,042.51/-. Among the different items of expenditure, the rental value of land accounted highest share of the total cost i.e. 33.54 percent followed by family labour, hired labour, irrigation and seedlings which contributes 15.44, 10.80, 7.07 and 6.84 per

cent of the total cost, respectively. The per hectare yield was 295.00 quintals.

**Per hectare cost of cultivation of gaillardia for Medium farmers:** The per hectare cost of cultivation of gaillardia for Medium farmers was worked out and presented in Table 4.

**Table 4:** Per hectare cost of cultivation of Gaillardia for Medium farmers

Sr. No.	Item	Unit		Input/ha.	Cost / Unit of input	Total Cost Per Ha.	Per cent to Cost "C <sub>3</sub> "
1	2	3		4	5	6	7
1	Hired Human Labour	Male	Days	26.22	215.23	5643.33	3.60
		Female	Days	83.11	150.02	12468.16	7.96
<b>Subtotal</b>						18111.49	11.56
2	Bullock Labour		(Pair days)	5.61	500.87	2809.88	1.79
3	Machine charges		Hours	0.92	600.07	552.06	0.35
4	Seedling		No.	10355.22	1.00	10355.22	6.61
5	Manures		QTLS.	19.34	200.40	3875.74	2.47
6	Fertilizer	N	Kg.	105.80	20.45	2163.61	1.38
		P	Kg.	62.97	32.15	2024.49	1.29
		K	Kg.	54.28	23.78	1290.78	0.82
<b>Subtotal</b>						5478.87	3.50
7	Irrigation charges	(Rs.)				11570.90	7.39
8	Insecticide (Plant Protection)	(Rs.)				7527.78	4.81
9	Incidental charges	(Rs.)				67.28	0.04
10	Repairing Charges	(Rs.)				270.78	0.17
11	Working Capital (1 to 10)	(Rs.)				60620.01	38.70
12	Interest on working Capital					3637.20	2.32
13	Depreciation	(Rs.)				382.88	0.24
14	Land Revenue	(Rs.)				178.89	0.11
15	COST "A1" (11 to 14)	(Rs.)				64818.98	41.38
16	Rental Value Leased in land					0.00	0.00
17	COST "A2" (15 to 16)					64818.98	41.38
18	Int. on Fix.Cap. @ 10%					1904.89	1.22
19	COST "B1" (15 + 18)					66723.87	42.60
20	Rental Value of Land	(Rs.)				55217.48	35.25
21	COST "B2" (19 to 20)					121941.35	77.85
22	Family Human Labour	Male	Days	33.12	211.03	6989.31	4.46
		Female	Days	89.74	150.11	13470.87	8.60
<b>Subtotal</b>						20460.19	13.06
23	Cost " C1 " (19+22)	(Rs.)				87184.05	55.66
24	Cost " C2 " (21+22)	(Rs.)				142401.54	90.91
25	Cost " C2* " (24)					142401.54	90.91
26	10% Cost C2*					14240.15	9.09
27	Cost " C3 " (25+26)					156641.69	100.00
28	Main Produce	(Rs.)		300.55	1105.90	332378.25	
29	Per quintal cost of production	(Rs.)				473.80	

It is seen from the Table 4 that, per hectare expenditure of Rs. 1,56,641.69/- was incurred in the cultivation of Gaillardia as a cost C<sub>3</sub> by the cultivators. The major share of cost among different cost item where found in rental value of own land which is 35.25 per cent to the total cost of cultivation followed family human labour of 13.06, hired human labour 11.56, irrigation 7.39, seedlings 6.61 per cent, plant protection

4.81 per cent, fertilizer 3.50 per cent and manures 2.47 per cent. The per hectare yield was 300.55 quintals.

**Per hectare cost of cultivation of gaillardia for Large farmers**

The per hectare cost of cultivation of gaillardia for Large farmers was worked out and presented in Table 5.

**Table 5:** Per hectare cost of cultivation of Gaillardia for Large farmers (Rs)

Sr. No.	Item	Unit		Input/ha.	Cost / Unit of input	Total Cost Per Ha.	Per cent to Cost "C <sub>3</sub> "
1	2	3		4	5	6	7
1	Hired Human Labour	Male	Days	30.06	216.41	6505.28	3.86
		Female	Days	110.71	152.98	16936.42	10.06
<b>Subtotal</b>						23441.70	13.92
2	Bullock Labour		(Pair days)	2.76	501.09	1383.01	0.82
3	Machine charges		Hours	1.63	600.31	978.51	0.58
4	Seedlings		No.	10523.90	1.00	10523.90	6.25
5	Manures		QTLS.	21.45	200.57	4302.23	2.55
6	Fertilizer	N	Kg.	107.13	20.27	2171.53	1.29
		P	Kg.	63.01	32.90	2073.03	1.23

		K	Kg.	55.87	23.89	1334.73	0.79
	<b>Subtotal</b>					5579.29	3.31
7	Irrigation charges	(Rs.)				12040.82	7.15
8	Insecticide (Plant Protection)	(Rs.)				7755.10	4.61
9	Incidental charges	(Rs.)				72.04	0.04
10	Repairing Charges	(Rs.)				277.08	0.16
11	Working Capital (1 to 10)	(Rs.)				66353.67	39.41
12	Interest on working Capital					3981.22	2.36
13	Depreciation	(Rs.)				370.04	0.22
14	Land Revenue	(Rs.)				182.14	0.11
15	COST "A1" (11 to 14)	(Rs.)				70887.07	42.10
16	Rental Value Leased in land					0.00	0.00
17	COST "A2" (15 to 16)					70887.07	42.10
18	Int. on Fix.Cap. @ 10%					2027.55	1.20
19	COST "B1" (15 + 18)					72914.62	43.30
20	Rental Value of Land	(Rs.)				64675.08	38.41
21	COST "B2" (19 to 20)					137589.70	81.71
22	Family Human Labour	Male	Days	22.80	212.01	4833.83	2.87
		Female	Days	70.68	150.74	10654.30	6.33
	<b>Subtotal</b>					15488.13	9.20
23	Cost " C1 " (19+22)	(Rs.)				88402.75	52.50
24	Cost " C2 " (21+22)	(Rs.)				153077.83	90.91
25	Cost " C2* " (24)					153077.83	90.91
26	10% Cost C2*					15307.78	9.09
27	Cost " C3 " (25+ 26)					168385.61	100.00
28	Main Produce	(Rs.)		305.45	1274.00	389143.30	
29	Per quintal cost of production	(Rs.)				501.16	

The Table 5 revealed that per hectare Cost of cultivation at Cost 'C<sub>3</sub>' for gaillardia was Rs. 1,68,385.61/-. In the cultivation of gaillardia the major item of cost were rental value of land, hired human labour, family labour, irrigation, seedlings, plant protection and fertilizer which accounted 38.41, 13.92, 9.20, 7.15, 6.25, 4.61 and 3.31 per cent share to

total cost respectively. The per hectare yield was 305.45 quintals.

**Per hectare cost of cultivation of Gaillardia for Overall farmers:** The per hectare cost of cultivation of Gaillardia for Overall level was workout and presented in Table 6.

**Table 6:** Per hectare cost of cultivation of Gaillardia for overall farmer

Sr. No.	Item	Unit		Input/ha.	Cost / Unit of input	Total Cost Per Ha.	Per cent to Cost "C <sub>3</sub> "
1	2	3		4	5	6	7
1	Hired Human Labour	Male	Days	26.71	215.03	5743.45	3.64
		Female	Days	88.67	151.34	13418.81	8.50
	<b>Subtotal</b>					19162.26	12.14
2	Bullock Labour		(Pair days)	4.89	500.40	2446.96	1.55
3	Machine charges		Hours	1.14	600.16	684.18	0.43
4	Seedlings		No.	10334.82	1.00	10334.82	6.55
5	Manures		QTLS.	19.34	200.40	3875.74	2.46
6	Fertilizer	N	Kg.	105.22	20.50	2157.01	1.37
		P	Kg.	62.88	32.38	2036.05	1.29
		K	Kg.	53.62	23.64	1267.58	0.80
	<b>Subtotal</b>					5460.64	3.46
7	Irrigation charges	(Rs.)				11447.88	7.25
8	Insecticide (Plant Protection)	(Rs.)				7518.69	4.76
9	Incidental charges	(Rs.)				65.56	0.04
10	Repairing Charges	(Rs.)				266.04	0.17
11	Working Capital (1 to 10)	(Rs.)				61262.77	38.82
12	Interest on working Capital					3675.77	2.33
13	Depreciation	(Rs.)				342.90	0.22
14	Land Revenue	(Rs.)				179.28	0.11
15	COST "A1" (11 to 14)	(Rs.)				65460.72	41.48
16	Rental Value Leased in land					0.00	0.00
17	COST "A2" (15 to 16)					65460.72	41.48
18	Int. on Fix.Cap. @ 10%					1852.91	1.17
19	COST "B1" (15 + 18)					67313.63	42.66
20	Rental Value of Land	(Rs.)				56514.51	35.82
21	COST "B2" (19 to 20)					123828.14	78.47
22	Family Human Labour	Male	Days	31.32	209.38	6557.78	4.16
		Female	Days	86.97	150.21	13063.76	8.28
	<b>Subtotal</b>					19621.55	12.43
23	Cost " C1 " (19+22)	(Rs.)				86935.17	55.09

24	Cost " C2 " (21+22)	(Rs.)			143449.69	90.91
25	Cost " C2* " (24)				143449.69	90.91
26	10% Cost C2*				14344.97	9.09
27	Cost " C3 " (25+ 26)				157794.66	100.00
28	Main Produce	(Rs.)	300.33	1132.63	340162.77	
29	Per quintal cost of production	(Rs.)			477.64	

It is revealed from the Table 6 that per hectare cost of cultivation (Cost C<sub>3</sub>) of gaillardia at overall level was Rs. 1, 57, 794.66/- It is also observed from the table that cost A<sub>1</sub> and cost A<sub>2</sub> are same among all the farm categories because none of the respondents was found cultivating lease in land. On an average Cost A<sub>1</sub>, A<sub>2</sub> and Cost B<sub>1</sub>, Cost B<sub>2</sub>, Cost C<sub>1</sub>, and cost C<sub>2</sub> was found Rs. 65,460.72/-, 65,460.72/-, 67,313.63/-,

1,23,828.14/-, 86,935.17/- and 1,43,449.69/- respectively. The average yield of gaillardia crop was 300.33 q/ha.

#### Per hectare cost and returns from Gaillardia

The per hectare cost and return of the gaillardia was worked out for small, medium and large farmers were presented in Table 7.

**Table 7:** Per hectare cost and returns from Gaillardia (Rs/ha)

Sr. No.	Particulars	Small	Medium	Large	Overall
1	Value of Main Produce	298964.80	332378.25	389143.30	340162.77
2	Gross Return	298964.80	332378.25	389143.30	340162.77
3	<b>Cost of Cultivation at</b>				
	Cost "A1"	60452.36	64818.98	70887.07	65460.72
	Cost "A2"	60452.36	64818.98	70887.07	65460.72
	Cost "B1"	62078.65	66723.87	72914.62	67313.63
	Cost "B2"	111729.32	121941.35	137589.70	123828.14
	Cost "C1"	84933.43	87184.05	88402.75	86935.17
	Cost "C2"	134584.10	142401.54	153077.83	143449.69
	Cost "C2*"	134584.10	142401.54	153077.83	143449.69
	Cost "C3*"	148042.51	156641.69	168385.61	157794.66
4	<b>Net Return at</b>				
	Cost "A1"	238512.44	267559.27	318256.23	274702.05
	Cost "A2"	238512.44	267559.27	318256.23	274702.05
	Cost "B1"	236886.15	265654.38	316228.68	272849.14
	Cost "B2"	187235.48	210436.89	251553.60	216334.63
	Cost "C1"	214031.37	245194.19	300740.55	253227.60
	Cost "C2"	164380.70	189976.71	236065.47	196713.08
	Cost "C2*"	164380.70	189976.71	236065.47	196713.08
	Cost "C3*"	150922.29	175736.55	220757.69	182368.11
5	<b>Benefit-Cost ratio at</b>				
	Cost "A1"	4.95	5.13	5.49	5.20
	Cost "A2"	4.95	5.13	5.49	5.20
	Cost "B1"	4.82	4.98	5.34	5.05
	Cost "B2"	2.68	2.73	2.83	2.75
	Cost "C1"	3.52	3.81	4.40	3.91
	Cost "C2"	2.22	2.33	2.54	2.37
	Cost "C2*"	2.22	2.33	2.54	2.37
	Cost "C3*"	2.02	2.12	2.31	2.16

It is seen from the Table 7 that per hectare production of gaillardia for small, medium and large farmer was 295.00, 300.55 and 305.45 q/ha, respectively. The gross returns from gaillardia was Rs. 2,98,964.80/-, Rs. 3,32,378.25/- and Rs. 3,89,143.30 /- for small, medium and large group. The overall level gross returns was Rs. 3,40,162.77/- . Whereas the cost of cultivation of these groups have been estimated to be Rs. 1,48,042.51/-, Rs.1,56,641.69/- and Rs. 1,68,385.61/- respectively, The overall cost required for cultivation of gaillardia was Rs. 1,57,794.66/- . The per hectare net returns at cost C<sub>3</sub> obtained by the grower was Rs. 1,50,922.29/-, 1,75,736.55/- and 2,20,757.69/- for small, medium and large group of grower and 1,82,368.11/- for overall level. The benefit-cost ratio at Cost C<sub>3</sub> for small, medium and large group of grower was 2.02, 2.12 and 2.31 respectively. The overall ratio was 2.16.

#### Conclusions

Per hectare cost of cultivation of gaillardia at cost "C<sub>3</sub>" was highest in the large farmers i.e. Rs. 1,68,385.61 followed by

medium farmer Rs. 1,56,641.69 and small farmer Rs. 1,48,042.51 and at overall level Rs. 1,57,794.66. The average yield and gross returns per hectare increased with the increase in size of farms. The benefit cost ratio of gaillardia at cost 'C<sub>3</sub>' was 2.02 in small farmer, 2.12 in medium farmer and 2.31 in large farmer. This indicates that, Cultivation of gaillardia crop was economically profitable.

#### References

- Bhosale MY, Shelke RD, Aher VK, Shenewad BA. Production and marketing of gerbera cut-flowers. International Research Journal of Agricultural Economics and Statistics 2011;2(2):328-331.
- Gurg Ritu, Sharma JL. Economics of Marigold cultivation in Punjab. Floriculture Today 2000;4(1):39.
- Gunabhagya. Production and Marketing of Chrysanthemum Flower in Tumkur District- An Economic Analysis. M.Sc. (Agri.) Thesis (Unpublished) Submitted to University of Agricultural Sciences, Dharwad 2014.

4. Khade PK. Economic Analysis of Production and Marketing of Marigold in Pune District. M.Sc. (Agri.) Thesis (Unpublished) Submitted to Mahatma Phule Krishi Vidyapeeth, Rahuri, Maharashtra 2004.
5. Kumar Arun, Varma SC, Shilpi Chaurasia, Saxena SB. Production and Marketing of Marigold Flowers in Uttar Pradesh With Special Reference to Kannauj District. Hort Flora Research Spectrum 2013;2(3):220-224 ref.3.
6. Oliyarsan S, Shivkumar SD, Mahendran K. Production and Marketing Constraints of Hi-Tech Cut Flower Growers in Tamil Nadu. International Journal of Agricultural Science and Research 2018;8(3):113-118.
7. Sudhagar S. Production and Marketing of Cut-flower in Hosur Taluk. International Journal of Business and Management Invention 2013;2(5):15-25.
8. Tiwari R, Tomar DS, Dixit AK, Saxena AK. Cultivation of Pusa Narangi Variety of Marigold for Crop Diversification and Empowering Farm Women in Malwa Plateau of Madhya Pradesh. Journal of Krishi Vigyan 2015;3:14-18.
9. Tupe SB, Perke DS, Korade VC. Costs, Returns and Profitability of Chrysanthemum in Ahmednagar District of Maharashtra State. Agriculture Update 2017;12:389-392.