

## **Production and Marketed Surplus of Cut Flowers in Punjab- A Case Study of Patiala District**

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### **Abstract**

This study reveals an empirical analysis of the relationship between production and marketed surplus of cut flowers in the winter season in Patiala district of Punjab state. The result shows that total marketed surplus accounts for more than 95 percent of the total produce. The per cent share of retention and wastage reduces with an increase in the size of the holding. Wastage is a significant proportion of total production and retention of cut flowers, followed by utilization in gifts and home consumption for all farm categories. The regression analysis results show that the coefficients of cut flowers against the production, operational area, and proportion of area allocated to crop are statistically significant and positively related to the marketed surplus.

**Keywords: Cut flowers, Production, Retention, Wastage, Marketed surplus.**

Floriculture is presently progressing as one of the essential commercial crops in India's horticultural sector. This crop is getting strengthened due to the enormous demand for flowers in the nation and international markets. As a matter of fact, floriculture is observed as a significant growth industry in our economy. The growth rate of horticulture crops in terms of area and production is shallow compared to floriculture crops (Harisha, 2017). The international floriculture trade of India is US\$ 17 billion, increasing by around 10-15 per cent annually and expected to reach US\$ 25 billion by 2025 (Chawla et al., 2016). There is a tremendous transformation in our floriculture sector, mainly due to corporate entry producing flowers to meet the emerging demand in the developed countries. There are many incentives provided through different Government schemes for setting up floricultural units as Export oriented units (EOUs). Punjab is one of the central agricultural states in India. Punjab has the highest productivity in the case of wheat (4693 kg/hect), basmati (3828 kg/hect), cotton (736 kg/hect), and maize (3414

kg/hect (PAGREXCO). Punjab has the potential to enjoy the benefits of the growing market of floriculture. The cut flowers production was 16058530 sticks in 2008-09, 17574750 sticks in 2012-13 and 41404457 sticks in 2016-17 (Annual Progressive Reports, various years).

#### **Objectives of the study:**

1. To examine the production and marketed surplus of cut flowers at the farm level.
2. To identify the factors that influence marketed surplus.
3. To find out whether there exists an elastic relationship between marketed surplus and production.

#### **Research Methodology:**

In the present study, an effort has been made to study the relationship between production and the marketed surplus of cut flowers in Punjab. To accomplish the study's objectives, primary data has been collected during the winter season (2<sup>nd</sup> half of February to April) from the Patiala district of Punjab state with a well-prepared questionnaire during 2015-16. A sample of 119 farmers who produced loose, cut and seed flowers has been purposively taken from 32 sampled villages/towns/cities of eight blocks, viz Patiala, Rajpura, Nabha, Samana, Bhunerheri, Patran, Ghanour, and Sanour of Patiala district. **Out of 119 flower producing farmers, 25 are involved in the cultivation of cut flowers.** For the calculation of the marketed surplus, farmers are classified into five farm categories, *i.e.* marginal (<1 hect), small (1-2 hect), semi-medium (2-4 hect), medium (4-10 hect) and large (>10 hect) based on standardized classification of Government of India. The calculation of marketed surplus is done by using the following formula:

**Marketed surplus** = Total production - Total retention - wastage/ spoilage.

To estimate whether there is an elastic relationship between marketed surplus and production, the regression coefficient has been computed using the ordinary least square method (OLS).

#### **Results and Discussions:**

The value production, retention, wastage and marketed surplus of cut flowers in the winter season in the Patiala district have been given in Table 1.

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**Table 1****Production and Marketed Surplus of Cut Flowers in Winter Season of Marginal, Small, Semi-medium, Medium and Large Farmers in Patiala District (2015-16)****(Unit: No. of Sticks)**

Farm category	Frequency	Production		Retention		Wastage		Marketed surplus	
		Total	Per farm	Total	Per farm	Total	Per farm	Total	Per farm
Marginal	3	231500	77167	1041.75 (0.45)	347.25	13542.75 (5.85)	4514.25	216915.5 (93.70)	72305.17
Small	4	550000	137500	1155 (0.21)	288.75	30800 (5.60)	7700	518045 (94.20)	129511.25
Semi-medium	7	1456000	208000	2475.20 (0.17)	353.60	63044.80 (4.33)	9006.40	1390480 (95.50)	198640
Medium	7	2237500	319642.85	2237.5 (0.10)	319.64	80550 (3.60)	11507.14	2154713 (96.30)	307816.1
Large	4	4060000	1015000	812 (0.02)	203	121800 (3.00)	30450	3937388 (96.98)	984347
Overall	25	8535000	341400	7721.45 (0.09)	308.86	309737.55 (3.63)	12389.50	8217541.50 (96.28)	328701.66

*Source:* Field Survey, 2015-16

Note: Figures in parentheses are percentage values.

Table 1 depicts that total production and retention of cut flowers in the winter season in the Patiala district during 2015-16 are 8535000 and 7721.45 sticks (0.09 per cent), respectively. The percentage shares of wastage and marketed surplus are 3.63 and 96.28 per cent, respectively. Per farm production, retention, wastage, and marketed surplus are 341400, 308.86, 12389.50 and 328701.66, respectively. It is observed that wastage is a predominant factor that unfavourably affected the cut flowers' marketed surplus. It has also been examined that marketed surplus experienced a positive relationship with the size of holdings. Category-wise, per farm share of

marketed surplus in total production is highest by large farmers, followed by medium farmers, semi-medium farmers, small farmers and marginal farmers.

**Table 2**

**Quantity of Cut Flowers Retained and Their Wastage in Winter Season in  
Patiala District (2015-16)  
(Purpose-cum-farm category-wise)**

(Unit: No. of Sticks)

Area category	Home consumption	Gifts to relatives	Retention	Wastage	Total of retention and wastage
Marginal	386.63 (2.65)	655.12 (4.49)	1041.75 (7.14)	13542.75 (92.86)	14584.50
Small	393.52 (1.23)	761.48 (2.38)	1155 (3.61)	30800 (96.39)	31955
Semi-Medium	910.73 (1.39)	1564.47 (2.39)	2475.20 (3.78)	63044.80 (96.22)	65520
Medium	828.62 (1.00)	1408.88 (1.70)	2237.50 (2.70)	80550 (97.30)	82787.5
Large	270.67 (0.22)	541.33 (0.44)	812 (0.66)	121800 (99.34)	122612
Overall	2790.17 (0.88)	4931.28 (1.55)	7721.45 (2.43)	309737.55 (97.57)	317459

Source: Field Survey, 2015-16

Note: Figures in parentheses are percentage values.

Table 2 shows that total retention and wastage of cut flowers are 317459 sticks in the winter season in Patiala district during the year 2015-16. The retention and wastage of cut flowers are 7721.45 and 309737.55 sticks, i.e., 2.43 and 97.57 percent, respectively, of total retention and wastage. Out of the complete retention and wastage, 0.88 per cent is retained for home consumption and 1.55 per cent for gifts to relatives.

### Marketed Surplus and Production: Regression Analysis

To estimate whether there exists an elastic relationship between marketed surplus and production of cut flowers, the following log-linear relationship between marketed surplus and production has been fitted:

$$\log(\text{marketed surplus}) = a + b \log(\text{production}) + u_{it} \quad \dots (i)$$

**Table 3**

**Degree of Elasticity of Marketed Surplus of Cut Flowers concerning Production, Operational Area and Proportion of Area Allocated to the Crop in Winter Season in Patiala District**

Variables	Cut flowers		
	1	2	3
Production	1.01* (0.00)		
Operational area		0.76* (0.06)	
The proportion of area allocated to crop			1.01* (0.01)
Constant	-0.06	4.85	5.30
R <sup>2</sup>	1.00	0.70	1.00
Degree of Freedom	24	24	24

Source: Sample Survey, 2015-16

Note: Figures in parentheses are the standard errors of the respective parameters.

\*Significant at 1 per cent level of significance.

The estimated value of regression coefficient 'b' for cut flowers is positive and statistically significant. The magnitude of the regression coefficient is above unity, which means as the level of production rises, there is a tendency for marketed surplus to increase at a higher rate than that of increase in production. To capture the relationship between the marketed surplus and the operational holding, the following log-linear relationship has been fitted:

$$\log(\text{marketed surplus}) = a + b \log(\text{operational area}) + u_{it} \quad \dots (ii)$$

The ordinary least square method has been used to estimate the equation's regression coefficients (ii) in Table 3. The coefficients are positive and significant between the marketed surplus and operational area of cut flower in the winter seasons.

To verify the statistical validity of the relationship of marketed surplus and proportion of area allocated to the crop, the following log-linear relationship has been fitted:

$$\log(\text{marketed surplus}) = a + b \log(\text{proportion of area allocated}) + u_{it} \dots (iii)$$

As expected earlier, there is a positive and statistically significant relationship between marketed surplus and the proportion of area allocated to the crop. Infact the marketed surplus increases faster than the increase in the proportion of area allocated.

### Summing up

To sum up, it can be concluded that a significant portion of the total production of cut flowers has been sold in the market by all five categories of farmers. However, the same quantum varies from farmer to farmer depending upon the size of holding, per hectare yield and variability in consumption pattern. It is clear that in the case of cut flowers, wastage is **higher** than retention. Along with this, the share of marketed surplus increases with an increase in area under the cultivation of flowers, which means that the marketed surplus has a positive relationship with production level. Moreover, the massive wastage of flowers is the dominant factor that affects the marketed surplus negatively. The analysis of the degree of elasticity of cut

flowers reveals that the coefficients against the production, operational area, and proportion allocated to crop are statistically significant and positively related to the marketed surplus.

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