

# Production and Marketed Surplus of Gram in Punjab- A Case Study of Bathinda District

Satvinder Kaur<sup>1</sup> and Dr. Shakuntla Gupta<sup>2</sup>

<sup>1</sup> Assistant Professor, Department of Economics, Sri Guru Granth Sahib World University, Punjab, 140406, India

<sup>2</sup> Professor, Department of Economics, Punjabi University, Punjab, 147001, India.

## Abstract

This study is an empirical analysis of relationship between production and marketed surplus of gram crop in Bathinda district which is situated in southern part of Punjab state. The results shows that higher the level of production, lower is the consumption of crop used for retention purpose and higher is the marketed surplus. More so, improvement in the crop yield increase the level of production which in turn increase the extent of marketed surplus. For all size farm categories, major and significant proportion of gram crop of total retention was for use of feeding animals followed by use for seed requirements of next season. Whereas, out of total retention of gram leaflets, major share is used for home consumption requirements by sampled gram leaflets farmers. Further, it is noted that though the major portion of gram produce is sold in the market by sampled farmers, but the volume of retention of gram crop is quite high as compare to gram leaflets.

**Keywords:** Production, Marketed Surplus, Retention, Yield

## 1. Introduction

The progress made by the agriculture sector in the state of Punjab since adoption of Agriculture Development Model of 1966-67 is so well known that one need not cite any statistics to prove this point. The total foodgrain production in Punjab has significantly increased over the last few decades, especially in the post green revolution period. But the future may not held the production possibilities realised earlier since these achievements are indeed creditable but there is no reason for complacency. Pulses which are an important part of farming household consumption losses its ground since the

introduction of new technology. The production of pulses is not only stagnant but even decreasing in the state. The increase in productivity has been confined to cereals, but there has been declining trends in pulses productivity in the state.

The pace of agricultural development is determined by the rate at which agricultural production expands. However, it is the growth in the marketed surplus that determines the level of economic development. Marketed surplus of a crop not only determining the income level of the producers, but it also ensure food security to the non-farming population. Therefore, without generation of adequate marketed surplus of a crop, it is unlikely to achieve desired level of development. In this context, it is relevant to know the factors operating at producer level, which are affecting the marketed surplus of pulse crops. In this paper an effort is made to estimate the magnitude of marketed surplus and pattern of retention in Bathinda district of Punjab state once which was considered as largely cultivated pulse crop in the state and losses its attention after green revolution under the impact of wheat-paddy cycle.

For the fulfillment of objectives of the study the data is empirically collected from 86 gram farmers from five selected villages named Pakka Kila, Gurthari, MI Wala, Pathrala and Kot Shamir of Bathinda district of the Punjab state, located in the southern part of the state in the heart of Malwa region. The gram crop is further divided into two parts viz, gram leaflets and gram, the forms in which it is sold. Moreover, as there exist differences in the yield rates of the crop, the farming is further divided into two categories i.e., high yielding farming and low yielding farming to find out best results.

## 2. Results and Discussion

The values of marketed surplus and retention by sampled gram leaflets farmers in Bathinda district are given in Table 1. The table exhibits that in case of crop gramleaflets only marginal share of total produce is used for retention purpose by the sampled

farmers. Out of total production of 2729.50 quintals, 2717.79 quintals is marketed and 11.72 quintals is used as retention by the sampled farmers which is 99.57 per cent and 0.43 per cent of the total produce respectively.

### 1. Table .1

#### 2. Size-wise Production and Marketed Surplus of Gram Leaflets in Bathinda District

(Unit: Quintals)

Sl. No	Gramleaflets area Categories	Frequency	Production		Retention		Marketed Surplus	
			Total	Per Farm	Total	Per Farm	Total	Per Farm
<b>A</b>	<b>High Yielding Farming</b>							
1.	Small*	13	655.00	50.38	3.98 (0.61)	0.31	651.02 (99.39)	50.08
2.	Medium**	01	120.00	120.00	0.37 (0.31)	0.37	119.63 (99.69)	119.63
3.	Large***	04	1022.50	255.63	2.08 (0.20)	0.52	1020.42 (99.80)	255.11
	Sub total	18	1797.5		6.43 (0.36)		1791.08 (99.64)	
<b>B</b>	<b>Low Yielding Farming</b>							
1.	Small*	11	372.00	33.82	2.92 (0.78)	0.26	369.08 (99.22)	33.56
2.	Medium**	07	560.00	80.00	2.37 (0.42)	0.34	557.63 (99.58)	79.66
3.	Large***	00	0.00	0.00	0.00 (0.00)	0.00	0.00 (0.00)	0.00
	Sub total	18	932.00		5.29 (0.57)		926.71 (99.43)	
	Total (A+B)	36	2729.50		11.72 (0.43)		2717.79 (99.57)	

Source: Field Survey, 2013-14.

Note : Figures in brackets show percentage values.

\* Less than 2 Acres, \*\*More than 2 Acres, But less than 4 Acres, \*\*\*More than 4 Acres.

Under the category of high yielding farming of gramleaflets, 99.64 per cent is marketed and remaining 0.36 per cent is retained. Moreover, among small farmers 99.39 per cent share of the produce is marketed and 0.61 per cent is used for self purpose. This is 99.69 per cent and 0.31 per cent in case of medium farms respectively. In case of large farmers, the proportion of marketed surplus is 99.80 per cent and remaining 0.20 per cent is retention. The results shows that there exists positive correlation between size of farm and marketed surplus. Category-wise per farm marketed surplus of gramleaflets found highest at 255.11 quintals for large farmers followed by 119.63 quintals by medium farmers and 50.08 quintals by small farmers.

On an average per farm retention is 0.52 quintals, 0.37 quintals and 0.31 quintals for large, medium and small farmers respectively.

In case of low yielding farming of gramleaflets 99.43 per cent is marketed surplus and 0.57 per cent is retention. Among low yielding small farmers, the percentage share of marketed surplus is 99.22 per cent and retention is only 0.78 per cent. This share is 99.58 per cent and 0.42 per cent of medium farmers respectively whereas no any farmer is reported under the category of large farmer of gramleaflets. On an average per farm marketed surplus is highest for medium farmers followed by small farmers. The table clearly reveals that marketed surplus per farm found to be positively related with farm size.

**Table 2 Size-wise Production and Marketed Surplus of Gram in Bathinda District**

(Unit: Quintals)

Sl. No	Gram area Categories	Frequency	Production		Retention		Marketed Surplus	
			Total	Per Farm	Total	Per Farm	Total	Per Farm
<b>A High Yielding Farming</b>								
1.	Small*	08	68.50	8.56	12.82 (18.72)	1.60	55.68 (81.28)	6.96
2.	Medium**	07	144.00	20.57	17.06 (11.85)	2.44	126.94 (88.15)	18.13
3.	Large***	13	565.00	43.46	38.49 (6.81)	2.96	526.51 (93.19)	40.50
	Sub-total	28	777.50		68.37 (8.78)		709.3 (91.22)	
<b>B Low Yielding Farming</b>								
1.	Small*	18	75.75	4.20	19.87 (26.23)	1.10	55.88 (73.77)	3.10
2.	Medium**	04	72.00	18.00	7.76 (10.78)	1.94	64.24 (89.22)	16.06
3.	Large***	00	0.00	0.00	0.00 (0.00)	0.00	0.00 (0.00)	0.00
	Sub-total	22	147.75		27.63 (18.70)		120.12 (81.30)	
	Total (A+B)	50	925.25		96.00 (10.37)		829.42 (89.63)	

Source: Field Survey, 2013-14.

Note : Figures in brackets show percentage values.

\* Less than 2 Acres, \*\*More than 2 Acres, But less than 4 Acres, \*\*\*More than 4 Acres.

The major factor behind the low proportion retention of gramleaflets is the perishability of the crop. The farmers are not able to store the crop for a point of time both for self needs and commercial purpose due to its perishable nature. Moreover, it is not possible to use gramleaflets for seed requirements and cattle feed. Therefore, relatively greater perishability of gramleaflets, taken by itself, reduces the proportion of retention of the producers.

On above basis, it is discovered that the farm size wise correlation of production and marketed surplus depicts that small size of farm means a smaller amount to be disposed of in the market and there is positive relationship between the level of production and marketed surplus. Higher the level of production, lower is the consumption of crop used for retention purpose and higher is the marketable surplus. More so, improvement in the crop yield increase the level of production which in turn increase the extent of marketed surplus.

The information about the production and marketed surplus of gram in Bathinda district is given in Table 2. The table clearly highlights that out of 925.25 quintals by far the largest portion of 829.42 quintals

of gram production is marketed by sampled gram farmers.

Under the category of high yielding gram farming, 91.22 per cent is marketed surplus and remaining 8.78 per cent is meant for retention.

The farm size wise analysis shows that large farmers under the crop account for 93.19 per cent marketed surplus followed by 88.15 per cent of medium farmers and 81.28 per cent of small farmers of the gram crop. The retention is account for 6.81 per cent, 11.85 per cent and 18.72 per cent by large, medium and small farmers respectively. The study verify the fact that a sustained rise in volume of marketed surplus depends on improvements in the level of production which in turn depends on area under the crop and per hectare yield.

On an average per farm marketed surplus is highest on large farms (40.50 quintals) followed medium farms (18.13 quintals) and small farms (6.96 quintals) which shows positive correlation between farm size and marketed surplus.

Moreover, under the category of low yielding gram farming, 18.70 per cent is retained and 81.30 per cent is marketed by sampled farmers. Among small

farmers marketed surplus is 73.77 per cent and retention is 26.23 per cent. Among medium farmers, marketed surplus constitutes 89.22 per cent and retention constitutes 10.78 per cent of the total gram produce in the study area. On an average per farm marketed surplus is 16.06 quintals and retention is 1.94 quintals on medium farms.

It is clear from the table that low yielding gram farmers retained more volume of produce as compare to high yielding gram farmers. As there exist inverse relationship between farm size and proportion of retention of the crop, most of low yielding farmers are reported small farmers of gram which in turn increase the level of retention as small farmers grow the crop primarily for subsistence purpose and self needs and only residual left after is sold out in the market. More so, it is noted that small farmers contributed less than that of medium and large farmers of the total marketed surplus of gram.

Further, it is important to note that though the major portion of gram produce is sold in the market by sampled farmers, but the volume of retention of gram crop is quite high as compare to gramleaflets. There are many factors such as seed requirements, home consumption, feed to livestock and relatively less perishability compare to gramleaflets affect the extent of retention of gram crop.

The proportion of produce available for disposal in the market depends on the level of output and retention. All farmers with different size of holdings may not be expected to have the same proportion of produce as marketed surplus. It depends on the distribution of pulses among various components of retention. For determination of marketed surplus, there is a need to ascertain level of compulsory

retentions from production by producer for different purposes namely self consumption, farm and feed needs, payment in kind and gift to relatives and friends etc. If they retain higher proportion of produce for these purposes, marketed surplus will be lower. Therefore, it is important to investigate the details of retention.

The information about quantity of gramleaflets retained in Bathinda district is presented in Table 3. The table clearly demonstrates that out of total retention 42.56 per cent is used from home consumption requirements followed by 33.94 per cent as payment to permanent and casual labour and 23.50 per cent offered as gifts to relatives and friends by sampled gramleaflets farmers.

Sampled high yielding gram leaflets farmers contributed a quite significant share accounted for more than half of the retained portion. Under the same category, small farmers mainly concentrated to use the volume of retention for meeting the genuine requirements of the family consumption (44.47 per cent) followed by in kind payment to permanent and casual labour (28.39 per cent) and gifts to relatives and friends (27.14 per cent). Among medium farmers, gifts to relatives and friends, i.e., 35.14 per cent, appear to be dominating the retention level of the produce followed by payment to permanent and casual labour and home consumption requirements i.e., 32.43 per cent each. More so, large farmers utilise maximum share of 40.38 per cent as in kind wages given to permanent and casual labour followed by home consumption requirements (34.62 per cent) and gifts to relatives and friends (25.00 per cent).

**Table 3 Purpose-cum-Size-wise Quantity of Gram Leaflets Retained in Bathinda District**

(Unit:Quintals)

Sl. No	Gramleaflets Area Categories	Frequency	Home Consumption	Use as Seed	Gifts to Relatives	Payment to Permanent Labour	Total
<b>A High Yielding Farming</b>							
1.	Small*	13	1.77 (44.47)	0.00 (0.00)	1.08 (27.14)	1.13 (28.39)	3.98 (100.00)
2.	Medium**	01	0.12 (32.43)	0.00 (0.00)	0.13 (35.14)	0.12 (32.43)	0.37 (100.00)
3.	Large***	04	0.72 (34.62)	0.00 (0.00)	0.52 (25.00)	0.84 (40.38)	2.08 (100.00)
	Sub-total	18	2.61 (40.72)	0.00 (0.00)	1.71 (26.68)	2.09 (32.60)	6.41 (100.00)
<b>B Low Yielding Farmer</b>							
1.	Small*	11	1.32 (45.21)	0.00 (0.00)	0.66 (22.60)	0.94 (32.19)	2.92 (100.00)

2.	Medium**	07	1.05 (44.30)	0.00 (0.00)	0.38 (16.03)	0.94 (39.67)	2.37 (100.00)
3.	Large***	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (100.00)
	Sub-total	18	2.37 (44.80)	0.00 (0.00)	1.04 (19.66)	1.88 (35.54)	5.29 (100.00)
	Total (A+B)	36	4.98 (42.56)	0.00 (0.00)	2.75 (23.50)	3.97 (33.94)	11.70 (100.00)

Source: Field Survey, 2013-14.

Note : Figures in brackets show percentage values.

\* Less than 2 Acres, \*\*More than 2 Acres, But less than 4 Acres, \*\*\*More than 4 Acres.

**Table 4 Purpose-cum-Size-wise Quantity of Gram Retained in Bathinda District,**  
(Unit: Quintals)

Sl. No	Gram Area Categories	Frequency	Home Consumption	Use as Seed	Gifts to Relatives	Feed to livestock	Payment to Permanent Labour	Total
<b>A High Yielding Farmers</b>								
1.	Small*	08	1.30 (10.14)	1.47 (11.47)	0.68 (5.30)	8.72 (68.02)	0.65 (5.07)	12.82 (100.00)
2.	Medium**	07	1.12 (6.57)	1.75 (10.26)	0.65 (3.81)	13.05 (76.49)	0.49 (2.87)	17.06 (100.00)
3.	Large***	13	2.15 (5.59)	12.13 (31.51)	1.21 (3.14)	20.25 (52.61)	2.75 (7.15)	38.49 (100.00)
	Sub-total	28	4.57 (6.68)	15.35 (22.45)	2.54 (3.72)	42.02 (61.46)	3.89 (5.69)	68.37 (100.00)
<b>B Low Yielding Farmers</b>								
1.	Small*	18	2.91 (14.65)	3.52 (17.72)	1.65 (8.30)	10.42 (52.44)	1.37 (6.89)	19.87 (100.00)
2.	Medium**	04	0.76 (9.79)	0.84 (10.82)	0.44 (5.67)	5.35 (68.95)	0.37 (4.77)	7.76 (100.00)
3.	Large***	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (100.00)
	Sub-total	22	3.67 (13.28)	4.36 (15.78)	2.09 (7.56)	15.77 (57.08)	1.74 (6.30)	27.63 (100.00)
	Total (A+B)	50	8.24 (8.59)	19.71 (20.53)	4.63 (4.82)	57.79 (60.20)	5.63 (5.86)	96.00 (100.00)

Source: Field Survey, 2013-14.

Note : Figures in brackets show percentage values.

\* Less than 2 Acres, \*\*More than 2 Acres, But less than 4 Acres, \*\*\*More than 4 Acres.

Sampled low yielding gram leaflets farmers comprised 45.22 per cent of the retained part of the produce. Among farm size wise categories small farmers utilise 45.21 per cent for home consumption requirements followed by payment-in-kind to permanent and casual labour and gifts to relatives and friends i.e., 32.19 per cent and 22.60 per cent respectively. Among large farmers, components like home consumption, gifts to relatives and friends and in kind payment to permanent and casual labour contributed in retention portion with 44.30 per cent, 16.03 per cent, and 39.67 per cent respectively.

The values of retention from various sources by the sampled gram farmers in Bathinda district is given in Table 4. The table clearly shows that retention of produce for feed to livestock is the most important component of the retention of sampled gram farmers. This is followed by seed requirements, home consumption, gifts to relatives and friends and payment to permanent and casual labour. Gram is used for consumption but not very often. It is used one or twice a week. Hence proportion of gram quantity retained for self consumption is less.

The share of high yielding farmers is constitute more than 70 per cent of the total retention portion, out of which 61.46 per cent is retained for feed to livestock, 22.45 per cent for seed requirements, 6.68 per cent for home consumption, 5.69 per cent for payment to permanent and casual labour and rest 3.72 per cent for gifts to relatives and friends.

There are considerable variations in the retention under different farm sizes of the sampled high yielding gram farmers. For all size farm categories, major and significant proportion of total retention was for use of feeding animals followed by use for seed requirements of next season. For small, medium and large farmers, the gram quantity retained is 12.82 quintals, 17.06 quintals and 38.49 quintals respectively.

The share of low yielding farmers is 27.63 quintals of the total retention portion, out of which 15.77 quintals, 4.36 quintals, 3.67 quintals, 2.09 quintals and 1.74 quintals kept for use of feeding livestock, seed requirements, home consumption requirements, gifts to relatives and friends and payment in kind to permanent and casual labour respectively. It is discernible from table that the gram quantity retained by small and medium is 19.87 quintals and 7.76 quintals respectively. No respondent is reported under large farm group category.

### 3. Conclusion

On the basis of above analysis, it is concluded that improvement in the crop yield increase the level of production which in turn increase the extent of marketed surplus. Moreover, farm size wise correlation of production and marketed surplus depicts that small size of farm means a smaller amount to be disposed of in the market and there is positive relationship between the level of production and marketed surplus.

### References

- [1] Economic and Statistical Organisation (ESO), Government of Punjab, Statistical Abstract of Punjab, Chandigarh: ESO Publications, Various Issues.
- [2] Nadkarni, M.V.; (1980). Marketable Surplus and Market Dependence: A Study of Millet Region.
- [3] Tuteja, Usha.; (1993), "Impact of the Pulses Development Programme on Yields, Costs and Returns in Haryana", Indian Journal Of Agricultural Economics, Vol.48, No.3.
- [4] Tuteja, Usha.; (2013), "Assessment of Marketable and Marketed Surplus of Major Food-Grains in Haryana", Agricultural Economics Research Centre, University of Delhi, AERC Publications.