FARM FACTORS DETERMINING MARKETED SURPLUS OF PADDY*

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The term marketed surplus of an agricultural produce represents that part of the year's production which the farmer disposes off directly or through intermediaries. It is very important to examine the pattern of marketed surplus of Agricultural produce and the factors which determines its extent and flow. The study attempts to examine the influence of the various farm factors on the marketed surplus of paddy.

The objeive of the study is to examine the behavior of marketed surplus in terms of the different farm factors namely size of the family, gross cropped area, total production, gross income and total consumption.

Materials and Methods

The study was conducted at Kannadi Village in Palghat District, as the village occupied the first position in area and production of paddy in the district. (Nearly 2500 acres, that is 70% of the total area of the village is covered with paddy crop). The total number of cultivators in the village were listed from relevant records maintained by the revenue authorites. These cultivators (444-Nos.) wrer stratified in to four strata based on their size of the holding as under:

Stratum I	Holdings of size upto 2 Acres.
Stratum II	Holdings of size 2 to 5 Acres.
Stratum III	Holdings of size 5 to 10 Acres.
Stratum IV	Holdings of size iO Acres and above.

The sample size was determined on the criteria of the variance with respect to the average size of the family. The average size of the family being 5.7 (Report *on* rural areas 65-67) and the estimated variance with respect to the average size of the family being '6' (estimated by analysing representative samples) the sample size was fixed to be 70. The 70 farm units were allocated among the four different strata giving proper weightage to the higher sized groups in the proportion of 1:1:5:2:2:5 to the first, second, third and fourth stratum respectively, on the presumption that the marketed surplus will be more pronounced on higher sized holdings. In this way the size of sample stratum wise was worked out to be

15, 22, 18 and 15 respectively. From each stratum, the required number of holdings were selected on the basis of the probability proportion to the size of the holdings.

The necessary data were collected by personal interview, with the cultivators. Regression analysis was used as the analytical tool for determining the relationship between the different factors and the marketed surplus, This realationship was mathematically expressed as;

$Y = f (X_1, X_2, X_3, X_4,$ and X_5)where

$Y =$ the marketed surplus of paddy in tonnes.

$X_1 ==$ the size of the family in adult units.

$X_2 =$ the gross cropped areas in acres/year

$X_3 —$ tctai production of paddy in tonnes/year.

$X_4 =$ gross income in Rs.

$X_5 =$ the total consumption of paddy in tonnes/year.

Before fitting functions the extent of multicollenearity between the different independent variables was tested by finding out the simple correlation coefficient (r) between the dependent and independent variables as well as between the independent variables themselves with respect to each stratum and aggregate. This was done with a view to eliminate the variables showing very high inter-correlation. As a result in the first stratum. two independent variables viz. gross croj ped area X_2 and total sonsumption $X.$ were dropped. In the second stratum only gross cropped area was dropped and in the third stratum gross cropped area and gross income were dropped. In the top stratum and aggregate level three independent variables namely gross cropped area, gross income and total consumption were dropped before proceeding to further analysis

The ralationship between the marketed surplus Y and the independent variables (X_1) was studied with two forms of hypothetical models namely Linear and Cobb-douglas models. The two types of functions were fitted with respect to each stratum separately and in the aggregate level. The results were analysed and interpreted.

Results and Dicussion

The results of Linear regression analysis was given in Table 1. In all strata as well as in aggregate level it can be noted that the major percentage of marketed surplus was explained by the three significant factors namely size of the family, total production and total consumption. Tn stratum I 97% of marketed surplus was explained by the two factors size of the famiy and total production. $(R^2 := 0.970)$. In stratum 11 99% of marketed surplus was explained by size of the family, total production and total consumption $(R^2 = 0.999)$ In third stratum 99% of matketed surplus was explained by total

Table I

Results of **linear** regression analysis

	Size groups	Intercept (bO)	Size of family (X_1)	Total production (X_3)	Total consumption (X_5)
Regression coefficients	Stratum I	0.15108 R^2 =	—0.29128** 0.970	0.68778**	
	Stratum II	0.02474 R^2	—0.00756* 0.999	0.99268**	—0.98118**
	Stratum III	0.01456 R^2 —	0.999	0.99185**	—0.9983 **
	Stratum IV	0.0462 R-	—0.2870 ** 0.993	0.6788 **	
	Aggregate	0.1879 R- =	—0.3232 ** 0.996	0.6757 **	

** Significant at 1% level.   * Significant at 5% level.

Table 2

Results of regression analysis by cobb-douglas model

	Size group	Intercept (bO)	Size of family (X_1)	Total production (X_3)	Total consumption (X_5)
Regression coefficient	Stratum I	—1.08114** R- =	—0.93324** 0.944	200558* *	
	Stratum II	—1.75404** R^2 =	0.98!	2.21682**	—1.08413**
	Stratum III	—1.2709** R^2 =	0.991	1.8714**	—0.8903 **
	Stratum IV	- -0.6466** R^2 ==	-..0.1017** 0.991	1.1014**	
	Aggregate	—0.8360** R- ==	-..0.4866** 0.974	1.3831**	

** Significant at 1% level

production and total consumption. (R = 0.999) In the top stratum as well as in the aggregated level 99% of marketed surplus was explained by size of family and total production. In all cases it was noted that the regression coefficients with respect to the size of the family and total consumption were negative and that of total production was positive there by indicating a negative relationship with family sizes and consumption and positive relationship with production. This means that as the family size and total consumption increased, the marketed surplus got restricted, where as it inreased, with increase in production. The negative relationship of total consumption has shown that the domestic retentions were at the cost of marketed surplus.

The results obtained by Linear regression analysis were compared with that of the Cobb-douglas model. The results obtained were given in Table 2.

From the table it can be seen that the nature of relationships exhibited by the farm factors were similar to tht of the Linear model. The negative relationship exhibited by the factor size of family (X_1) and total consumption (X_2) and the positive relationship shown by the factor total production (X_3) strenthened the view that the marketed surplus was negatively associated with size of the family and total eonsumption and positively associated with total production. In every stratum regression coefficient was found to be significant even at 1% level; and the factors studied in each stratum fully explained the behaviour of marketed surplus which was evident form the R^2 values obtained·

Summary

The study revealed that the vital factors affecting marketed surpls of paddy were (1) size of the family, t2> gross cropped area (3) total production and (4) total consumption. The relationship between marketed surplus and size of the family was found to be negative. The same type of negative relationship was obtained with respect to total consumption also. The total production and marketed surplus was found to be positively correlated. This means that marketed surplus can be very well augmented by increasing production.

സംഗ്രഹം

നെല്ലിന്റെ വിപണനമിച്ചും ഏതൊെല്ലാം കാർഷിക ഘടകങ്ങളെ raT3)'^.Qa)1j(j1oT<&acTTO എന്നറി യന്നതിന് ഒരുപാനം പാലക്കാട്ടജില്ലയിൽ കണ്ണാടിദേശം ആസ്പദമാക്കി നടത്തുകയുണ്ടായി. കർഷകന്റെ കുടുംബത്തിന്റെ വലിപ്പം, മൊത്തംകൃഷിയിലാകന്ന സ്ഥലത്തിന്റെ വിസ്തീർണ്ണം, മൊത്തം ഉൽപാദനം, മൊത്തം ഉപഭോഗം എന്നീ സുപ്രധാന ഘടകങ്ങളാണ് വിപണനമിച്ച raroilaobo rawgoj" നിണ്ണയിക്കുന്നതെന്ന് പ്രസ്തുത പാനം തെളിയിച്ചു. മൊത്തം ഉപാഭോഗം കുടുംബത്തിന്റെ വലിപ്പം എന്നീഘടകങ്ങളുടെ വർദ്ധനവനുസരിച്ച് വിപണനമിച്ചും കുറയുകയും, ഉൽപാflsicr) വർദ്ധനവിന് ആനുപാതികമായി വിപണനമിച്ചം വർദ്ധിക്കുന്നതായും പഠനത്തിൽ കൂടി കാണുകയുണ്ടായി, വിപണനമിച്ചം വർദ്ധിപ്പിക്കുന്നതിനുള്ള ഏറ്റവും സുപ്രധാനമായ ഉപാധി ഉൽപാദന വർദ്ധനവാണെന്ന് ഈ പാനം തെളിയിച്ചു.