



Determinants of Farm Income Among Small Holders in Guntur District of Andhra Pradesh

**R Saidhar¹ K Umadevi² D V S Rao³ and V Srinivasarao⁴
1saidharronanki32@gmail.com**

Department of Agricultural Economics, Agricultural College, Bapatla 522 101

ABSTRACT

The farm study was mainly meant to understand the determinants of income of small rural households in Guntur district of Andhra Pradesh. Multiple linear regression analysis was applied to study the determinants. It was observed that 94 per cent of variability in gross income from farm was explained by the selected independent variables namely age, education, household size, farm size, off farm income, farm expenditure and maintenance cost of dairy. It was found that farm expenditure and dairy maintenance cost showed positive significant influence on farm income at 5 percent level of significance.

Key words: Farm expenditure, farm size, off farm income and small farmers

Received 28.07.2017

Revised 04.08.2017

Accepted 26.08.2017

INTRODUCTION

Small holdings (marginal and small holdings) agriculture is important for raising agriculture growth, food security and livelihoods in India. It may be noted that Indian agriculture is the home of small and marginal farmers (80%). Therefore, the future of sustainable agriculture growth and food security in India depends on the performance of those small and marginal farmers (Dev, 2012). At times, small holdings have higher productivity than medium and large farms. But, it is not enough to compensate for the disadvantage of the small area of holdings. The cost of cultivation per hectare is also high on small and marginal farmers than medium and large farms. The fundamental problem Indian farmers are faced with today is the reducing incomes and there is an urgent need to assure income security to them.

At all India level, net farm income per hectare for small holdings found to be higher than large holdings. However, the monthly income and consumption figures across different size class of land holdings show that marginal and small farmers have dis-savings compared to medium and large farmers. The average monthly income of farmer households comprises of income from wages, net receipts from cultivation, net receipts from farming of animals and income from non-farm business and the average monthly consumption of farmer households is comprised of total food and non-food expenditure (Dev, 2012). Guntur district of Andhra Pradesh covers about 150845 agricultural small farmers (*agriculture census 2010-11, agcensus.nic.in*) and they face several problems like high crop expenditure, few off-farm income sources etc. All these problems may fully or partly affect the viability of small farmers in agriculture. The most appropriate measure of farmers' welfare is the level of farm income and there is not much research in the diversification and determinants of small farm household income. In this context "Determinants of Gross Income from Farm (Crop and Dairy) in Guntur district of Andhra Pradesh" assumes greater significance.

This paper aims at understanding the factors which influence the farm income. The main factors are age, education, household size, farm size, off farm income, farm expenditure and maintenance cost of dairy.

MATERIAL AND METHODS

Multi stage sampling technique was followed for the purpose of selection of primary sampling units. Small holdings technically mean land holdings of less than or equal to two ha which includes marginal (<1ha) and small farmers (1-2 ha). However for the present research, small farmer (1-2 ha) category of farmers were only considered for the study.

Guntur district was purposively selected for the study due to the availability of more number of small farmers i.e., approximately 150845, who are cultivating different crops under varied agro climatic conditions. Out of fifty seven mandals in Guntur district based on CPO (Chief Planning Office) data, two mandals with highest number of small farmers were selected from each revenue division. From each mandal, two villages with maximum number of small farmers were selected. Ten small farmers from each village were selected randomly making a total sample of 120 farmers for the study. Three years primary data on various aspects of small farmers from 2012-13 to 2014-15 agricultural years was collected through field survey by the interview and recall memory method with the help of a pre-tested and well-structured schedule.

Both primary and secondary data were collected to fulfill the objective of the study. Data collected were analyzed using Multiple linear regression model of the following form was employed for analyzing the factors influencing farm income (crop and dairy) of small holdings agriculture.

$$Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_7X_7 + e$$

Where Y = Total farm income (crop and dairy) (Rs.)

X₁ = Age (no.)

X₂ = Education (no.)

X₃ = Household size (no.)

X₄ = Farm size (ha.)

X₅ = Off- farm income (Rs.)

X₆ = Farm (crop related) expenditure (Rs.)

X₇ = Maintenance cost of dairy (Rs.)

a = Intercept

b₁, b₂, b₃, b₄, b₅, b₆, b₇ are the regression coefficients

e = Error term

For testing the regression coefficients t' value was calculated by using the formula

$$t = \frac{b_i}{S.E \text{ of } b_i}$$

Where, b_i = Regression coefficient or production elasticity coefficient

S.E of b_i = Standard error of b_i

RESULTS AND DISCUSSION

1. Investment Pattern Profitability of Small Farms

Below described results are represented the income from both crops and milch animals. Table 1 depicts the values of investment on crops, gross income and net income obtained by sample farmers in Guntur district of Andhra Pradesh.

Table 1. Average Investment, Gross income and Net income of small holdings on farm from 2012 to 2014 (Rs./ha.)

S. No.	Crop	Average investment (Rs./ha.)	Average gross income (Rs./ha.)	Average Net income (Rs./ha.)
1	Paddy	56887 (7.68)	84566(8.05)	27678 (8.93)
2	Cotton	81891 (11.06)	98919(9.41)	17028 (5.5)
3	Chilli	227529 (30.73)	315094(30.00)	87565 (28.26)
4	Jute	32327 (4.36)	65040(6.20)	32713 (10.55)
5	Red gram	37474 (5.06)	76013(7.23)	38539 (12.43)
6	Tomato	25000 (3.37)	0(0)	-25000 (-8.07)
7	Maize	45305 (6.11)	71416(6.8)	26211 (8.46)
8	Bengal gram	51215 (6.92)	74354(7.08)	23139 (7.47)
9	Sun hemp	11859 (1.61)	12491(1.19)	632 (0.21)
10	Black gram	38253 (5.17)	58592(5.58)	20339 (6.57)
11	Green gram	33288 (4.5)	43691(4.17)	10403 (3.36)
12	Tobacco	94384 (12.75)	140788(13.41)	46404 (14.98)
13	Sorghum	5000 (0.68)	9167(0.88)	4166 (1.35)
	Total	740412 (100.00)	1050131(100.00)	309817 (100.00)

Note : Figures in parentheses indicated percentages to the total

On an average, chilli occupied highest investment share by farmers than other crops, due to high input costs observed in this crop. Labour charges also increased year by year in the sample area and chilli crop occupied major share in gross income and net income also. In 2013, a single tomato grower found in the

sample did not harvest the produce and he left it in the field due to lack of remunerative prices. Therefore sample tomato grower got negative income.

2. Maintenance Costs, Gross Income and Net Income of the Milch Animals

Out of 120 sample small farmers, only 47 farmers owned cattle in 2012 and 46 farmers in 2013 and 2014. They reported that the maintenance cost of milch animals was Rs.23,036 in 2014, Rs.22,753 in 2013 and Rs.21,598 in 2012 earning total income of Rs.33,168 in 2014, Rs.32,120 in 2013 and Rs.29,934 in 2012. Average maintenance cost of milch animals was found to be Rs.22,462 earning total income of Rs.31,741 (Table 2).

Table 2. Maintenance costs, gross income and net income of the milch animals (Rs./milch animal)

Particulars	2014	2013	2012	Average
No. of farmers owned	46	46	47	46
No. of milch animals	85	85	87	86
Maintenance costs	23036	22753	21598	22462
Gross income	33168	32120	29934	31741
Net income	10132	9367	8336	9278

Regarding investment, gross income and profitability, chilli crop occupied major share in comparison to the other crops grown in the district profile under study. Profitability from dairy also increased year by year from 2012 to 2014.

3. Average Household Income of Small Farmers from 2012 To 2014

Table 3 depicts the total family income of small holdings. In Guntur district except Tenali division, remaining two revenue divisions have got lower income.

In Tenali division, farm expenditure found to be low while gross income was more. Small farmers in the division obtained most of their off-farm income from earned income (salaries and wages). Income from dairy is low in Tenali division compared to Guntur and Narsaraopet divisions. But due to decreased farm expenses and increased off farm income sources, they could get more income than the other two divisions. In Guntur and Narsaraopet divisions, income from dairy is more than in Tenali division.

Table 3. Average Household income of Small Farmers from 2012 to 2014 in Rs.

A	Particulars	Revenue Divisions			Overall District
		Guntur	Tenali	Narsaraopet	
	Gross income	219554	228978	194702	214412
	Farm expenditure	185994	167392	152213	168533
	Net income	33560	61586	42489	45879
B	Dairy				
	Gross income	29401	15192	23463	22686
	Maintenance cost	21283	10941	16275	16167
	Net income	8118	4251	7188	6519
C	Off Farm income				
	Salary	12625	24433	14900	17320
	Farm wages	7733	1883	4233	4617
	Non - Farm wages	8428	0	1850	3426
	Business	0	0	1083	361
	Total Off Farm income	28786	26316	22066	25724
D(A+B+C)	Household income	70464	92153	71743	78120

Average house hold income found to be low in the two divisions compared to Tenali because of high farm expenditure. Average off-farm income for Guntur division is the highest of the three divisions in Guntur district.

Thus diversification helps in supplementing their income by not only undertaking seasonal crop farming but also animal husbandry, fishing, horticulture etc and also participating in industrial and other non-farm economic activities as either self-employed or wage earners.

4. Determinants of Gross Income from Farm (Crop and Dairy)

Table 4 depicts the factors influencing farm income (crop and dairy) of small holders.

Table 4 Determinants of gross income from farm (crop and dairy)

S. No	Particulars	Regression coefficients	Standard Errors
1	Intercept	19847	24346.43
2	Age (years)	324.88	419.22
3	Education (years)	-96.46	407.01
4	House hold size (no.)	-4096.01	2906.43
6	Farm size (no.)	12353.34	9895.84
7	Off farm income (Rs.)	0.013	0.075
8	Farm expenditure (Rs.)	1.054**	0.077
9	Maintenance cost of dairy (Rs.)	1.053**	0.18
	R ²	0.94**	

** denotes significant at 5% level

Source: Field Survey data

The co-efficient of multiple determination (R^2) was 0.94 (significant at 5% level) which indicates that 94 per cent of variability in gross income from farm was explained by the selected independent variables namely age, education, household size, farm size, off farm income, farm expenditure and maintenance cost of dairy.

It was observed from table 4 that farm expenditure and dairy maintenance cost showed positive significant influence on farm income at 5 percent level of significance.

Ibekwe et al. (2010) showed that farm size, age, education, occupation and hours spent on farm are important explanatory variables that influenced both farm and off farm incomes. Farm size, age, education, occupation and hours spent on farm influenced positively to the farm income at 5% significant level. As expected, age, farm size and off farm income though non-significant showed positive influence on farm income.

CONCLUSIONS

Farm expenditure on chilli is more than the other crops. Gross income and net income also more in chilli. Income from milch animals increased year by year. But number of farmers owned milch animals is very low. Farm expenditure showed significant influence on farm income followed by maintenance cost of dairy. Whereas age, education, household size, farm size and off farm income were non-significant to the farm income. This revealed that by adding each one unit of farm expenditure will increase the farm income by 1.054 units and the same way by adding each one unit of maintenance cost of dairy will increase the farm income by 1.053 units. Diversification and off farm income sources can only help the farmers to become viable.

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CITATION OF THIS ARTICLE

R Saidhar, K Umadevi, D V S Rao, and V Srinivasarao. Determinants Of Farm Income Among Small Holders In Guntur District Of Andhra Pradesh. *Bull. Env. Pharmacol. Life Sci.*, Vol 6 Special issue [3] 2017: 572-575