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An economic analysis of Sunandini calf rearing scheme in Y.S.R. Kadapa district of Andhra Pradesh, India

Indira D ^{1,*}, Suresh J ², Ravindra Reddy Y ³, Ravi A ⁴ and Sharma GRK ⁵

¹ Assistant professor, Department of LPM, C.V.Sc, Proddatur – 516360 (A.P).

² Professor (LPM) and Coordinator, Centre for continuing veterinary education and communication S.V. Veterinary University, Tirupati (A.P).

³ Professor and Head, Department of Livestock Production Management, C.V.Sc, Tirupati. (A.P).

⁴ Professor and University Head, Dept. of Animal Nutrition College of Veterinary Science Tirupati (A.P).

⁵ Professor and University Head, Dept. of Veterinary & Animal Husbandry Extension, College of Veterinary Science Tirupati (A.P).

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Abstract

This paper addresses the economic analysis of Sunandini calf rearing scheme which was implemented by the Government of Andhra Pradesh to improve the economic and nutritional status of farmers in rural area. A total of 100 respondents were selected randomly of Y.S.R. Kadapa district. Out of which 50 were beneficiaries and 50 were non-beneficiaries who were selected for comparative assessment of cost and returns, calorie intake and factors influencing the per capita income. A structured interview schedule was designed to elicit required information from the sample farmers. The total costs of the Sunandini calf rearing scheme were Rs. 34,432 for beneficiaries and Rs.35,351 for non-beneficiaries. For Sunandini calf rearing, the total returns, net returns, gross margin and returns per rupee of expenditure were found to be Rs. 89,290, Rs. 54,858, Rs. 59,911 and Rs. 2.6 for beneficiaries and for non-beneficiaries, they were of the order of Rs. 74,075, Rs. 38,724, Rs. 44,069 and Rs. 2.01 respectively. The beneficiaries received better nutrition in respect of quantity as well as calorie intake. The factors influencing per capita income of sample respondents with the help of multiple regression analysis for Sunandini calf rearing stood at 0.35 and 0.36 revealing that the variables included in the function influenced variation in the per capita income to an extent of 35% and 36%, respectively for beneficiaries and non-beneficiaries.

Keywords: Sunandini calf rearing scheme; Economic analysis; Per capita income; Returns

1. Introduction

With the advent of industrialization and globalization, agriculture, livestock rearing and its allied activities have become more commercial and is bracing for a crucial place in the economic development of our country. Livestock rearing are the only livelihood option available to the landless farmers. Rural poverty is mostly concentrated among the landless and the marginal households comprising about 70 percent of rural population. Dairy farming is an important component of small farmers' livelihood to meet their needs of milk, food security, employment and daily cash incomes. It provides a good opportunity for self-employment of unemployed youth. It is also an important source of income generation to small/marginal farmers and agricultural laborers. Especially pregnant animals and calves if we provide balanced diet we could get a healthy calf and increased milk production. Because of this the Government of Andhra Pradesh implemented Sunandini calf rearing scheme in Kadapa district of Andhra Pradesh.

* Corresponding author: Indira D

2. Material and methods

The study was conducted in Y.S.R. Kadapa district of Andhra Pradesh as the district comes under scarce rainfall zone where most of the livestock farmers thrive on A.H. activities. In this study, the list of 50 beneficiaries under each programme were prepared from the agencies and 50 non-beneficiaries for each programme were also selected randomly throughout the district. The data pertaining to cost and returns, calorie intake and factors influencing the per capita income of beneficiaries and non-beneficiaries were collected through personal interview using pre tested interview schedule. Secondary data pertaining to the study were collected from various published reports and also from district Animal Husbandry department. The data were collected during the year 2016- 17 for the units grounded from 2012 – 13 onwards. In this scheme Government supplied by providing inputs like calf feed, healthcare and insurance coverage to crossbred female calves enrolled on subsidy. Thus the collected data were tabulated and analyzed using different statistical tools like tabular analysis, linear regression model.

3. Results and discussion

3.1. The cost structure of Sunandini scheme for beneficiaries and non-beneficiaries

The total costs of the Sunandini scheme were Rs. 34,432 for beneficiaries and Rs. 35,351 for non- beneficiaries. The total variable costs were Rs. 29,379 and Rs. 30,006 for the corresponding groups of the respondents. Of the total costs of the scheme, family labour wages and concentrate feed cost were the major items occupying 29.49% and 29.93%, respectively for beneficiaries. The trend was almost similar in respect of non- beneficiaries for these two items of cost. In respect of beneficiaries Government contributed Rs. 2,925 (8.50 %) towards concentrate feed cost and remaining was the beneficiaries' share. Dry fodder was the next item of total costs on which Rs. 3,140 (9.12 %) and Rs. 3,580 (10.13 %) was incurred by the beneficiaries and non- beneficiaries. Other costs were green fodder and veterinary expenditure for both the groups. Fixed costs were interest on investment and depreciation. The percentage of fixed costs in the costs structure of Sunandini scheme was 14.68 % in respect of beneficiaries and 15.12% in the case of non- beneficiaries. The present findings were in agreement with Mondal *et al.* [1] who stated that yield increased with the increase of concentrate feed cost for both local and crossbred dairy cows. Fixed cost remained more or less closer on beneficiaries and non-beneficiaries farms. Cost structure of Sunandini scheme beneficiaries for and non- beneficiaries is presented in Table 1.

Table 1 Cost structure of Sunandini scheme (Rs)

S.No	Particulars	Beneficiaries		Non -beneficiaries	
		Per unit	%	Per unit	%
	Variable costs				
1	Notional family labour	13650	39.64	12580	35.59
2	Concentrate feed cost	10155	29.49	10580	29.93
	a. Government contribution	2925	8.50	0	0
	b. Beneficiaries' contribution	7230	21.00	10580	29.93
3	Green fodder cost	1210	3.51	1280	3.62
4	Dry fodder cost	3140	9.12	3580	10.13
5	Veterinary expenditure	1000	2.90	1000	2.83
	a. Government contribution	500	1.45	0	0
	b. Beneficiaries contribution	500	1.45	1000	2.83
6	Interest on working capital	724	2.10	986	2.79
	Total variable costs	29379	85.32	30006	84.88
	Fixed costs				
1	Interest on investment	4508	13.09	4785	13.54
2	Depreciation	545	1.58	560	1.58
	Total fixed costs	5053	14.68	5345	15.12
	Total costs (T.V.C + T.F.C)	34432	100	35351	100

3.2. Returns from Sunandini scheme

The total returns from Sunandini scheme which included appreciation on the value of animal, returns from sale of milk, farm yard manure and calf value. For one animal the total returns, net returns and gross margin were found to be Rs.89,290, Rs.54,858 and Rs.59,911 for beneficiaries, respectively and for non-beneficiaries they were of the order of Rs.74,075, Rs. 38,724 and Rs.44,069, respectively as presented in Table 2.

When individual components were considered, the share of appreciation on the value of animals was Rs. 4,550 (5.10 %) for beneficiaries, for non-beneficiaries it was Rs. 4,600 (6.21%). The returns from sale of milk, farm yard manure and the value of calves were Rs. 76,000 (85.12 %), Rs. 2,850 (3.19 %) and Rs. 5,890 (6.59 %); and Rs. 62,280 (84.08 %), Rs. 2,110 (2.85%) and Rs. 5,085 (6.86 %) for the beneficiaries and non-beneficiaries, respectively. The returns per rupee of expenditure were found to be Rs. 2.6 for beneficiaries and 2.0 for non-beneficiaries, respectively. Current findings are supported by Ghulamet al. [2] who concluded from a study that the sale of young stock contributed to total revenue of about 36, 19 and 17 percent on large, medium and small dairy farms, respectively.

Table 2 Returns from Sunandini scheme (Rs)

S.No	Particulars	Beneficiaries		Non-beneficiaries	
		Per unit	%	Per unit	%
1	Appreciation on the value of animal	4550	5.10	4600	6.21
2	Returns from sale of milk	76000	85.12	62280	84.08
3	Returns from sale of farm yard manure	2850	3.19	2110	2.85
4	Calf value	5890	6.59	5085	6.86
5	Total returns	89290	100	74075	100
6	Net returns	54858		38724	
7	Gross margin	59911		44069	
8	Returns per rupee of expenditure	2.6		2.0	

3.3. Nutritional security of sample respondents of Sunandini scheme

Table 3 Nutritional security of sample respondents of Sunandini scheme

Name of the scheme	Nutritional security (kg/year)		Calorie intake (k.cal/day)				Nutritional security (Rs /year)	
	beneficiaries	non-beneficiaries	beneficiaries	%	Non-beneficiaries	%	beneficiaries	non-beneficiaries
Sunandini								
Cereals	137.0	120.0	482.0	24.07	458.0	26.38	3230.0	2980.0
Pulses	9.5	6.5	262.0	13.08	236.0	13.59	570.0	390.0
Oil	3.9	3.5	148.0	7.39	140.0	8.06	280.0	272.0
Milk	46.0	42.0	464.0	23.17	346.0	19.93	1840.0	1680.0
Meat	9.0	6.5	126.0	6.29	112.0	6.45	1800.0	1300.0
Eggs (No)	76.0	66.0	118.0	5.89	98.0	5.64	304.0	264.0
Fish	0.67	0.54	109.0	5.44	99.0	5.70	100.0	81.0
Vegetables	26.0	17.0	199.0	9.94	162.0	9.33	780.0	510.0
Fruits	4.1	3.2	94.0	4.69	85.0	4.89	225.0	176.0
Total			2002.0	100.0	1736.0	100.0	9129.0	7653.0

Nutritional security of Sunandini scheme sample respondents were presented in Table 3. The consumption of pattern of beneficiaries was relatively encouraging compared to non-beneficiaries. Cereals consumption by the beneficiaries

stood at 137.0 kg / annum against 120.0 kg / annum by the non-beneficiaries. Pulses were consumed to an extent of 9.5 kg for beneficiaries only and it was 6.5 kg by non-beneficiaries. Oils were consumed to an extent 3.9 kg / annum by beneficiaries and 3.5 kg by non-beneficiaries. Milk consumption was to an extent of 46.0 kg by the beneficiaries, while only 42.0 kg for non-beneficiaries. Meat was again consumed in higher amounts by beneficiaries compared to non-beneficiaries. The no of eggs consumed were 76.0 for beneficiaries and 66.0 for non-beneficiaries. The consumption of fish, vegetables and fruits was higher for beneficiaries compared to non-beneficiaries.

The total caloric intake of the beneficiaries was 2002 k.cal which was less by 400 k.cal / day while that of non-beneficiaries it was 1736 k.cal. Which the amount spend for the calories obtained from various food items was Rs. 9,129 by the beneficiaries and Rs7,653 by the non-beneficiaries. Relatively, beneficiaries had spent higher amounts on all the items compared to non-beneficiaries. The calorie intake of beneficiaries and non-beneficiaries was less than the ICMR recommendation. It is clear that the Sunandini scheme helped the beneficiaries of the households in terms of relatively higher caloric intake over non-beneficiaries. While making necessary refinements in the implementation of the scheme for beneficiaries it's a case of considering the condition of non-beneficiaries as well by providing some sort of incentives. From the reports of National Council of Applied Economic Research New Delhi [3], India today [4] and NSSO [5].

3.4. Factors influencing per capita income of sample respondents

Table 4 Factors influencing per capita income of sample respondents of Sunandini scheme

Explanatory variables	Beneficiaries			Non-beneficiaries		
	Regression coefficients	Standard errors	't' value	Regression coefficients	Standard errors	't' value
S.No Intercept	1030.78	110.23	2.35	20133.49	7776.94	2.58
1 Agriculture	0.24	5.47	0.04	67.56	99.94	0.67
2 Livestock farming	7.16	8.26	0.86	8.26	9.26	0.89
3 Farm labour	6.31	5.43	1.16	11.93 *	10.02	1.91
4 Non-farm occupation	9.98 *	8.05	1.93	28.95 *	27.14	1.81
5 Age of the head of the family	0.05 *	0.28	1.87	0.31	5.84	0.05
6 Gender of the head of the family	1.35	5.37	0.25	3.75	114.78	0.032
7 Literacy	0.15	4.69	0.03	78.38	97.72	0.80
8 Primary education	1.92 *	0.09	1.82	95.29	112.25	0.84
9 Secondary education	5.98 *	4.12	1.86	100.99	183.67	0.54
10 Family size	2.94 *	1.02	1.92	65.98 *	64.04	1.94
11 Land holding in acres	1.60	1.95	0.81	60.96	59.04	1.92
12 Value of assets	0.00010	0.00034	0.30	0.0035	0.014	0.24
13 Employment(man days)	0.19	0.36	0.53	81.13 **	32.37	2.50
	R ² = 0.35 **			R ² = 0.36 **		

For beneficiaries the coefficient of multiple determination (R²) was observed to be 0.35 duly revealing that the variables in the function influenced the per capita income to an extent of 35 %. The results of the analysis showed that non-farm occupation, age of the head of the family, primary education, secondary education and family size influenced the per capita income positively and significantly. Other variables in the function had no significant influence on the per capita income (Table 4). Non-beneficiaries the results of the study showed that the variables included in the function explained variation in the per capita income to an extent of 36 % as revealed by 0.36 the value of coefficient of multiple determination (R²). Those variables which exhibited positive sign and being significant were farm labour, non-farm occupation, family size and employment. Other variables were not significant in making impact on the per capita income of the sample respondents (Table 4). In Sunandini scheme, the positive and significant factor influencing the calorie

intake were value of assets, household employment level, gender of the head of the family and age of the head of family, family dependency ratio was influencing significantly but negatively the per capita calorie intake for non – beneficiaries. These significant variables influencing the caloric intake were landholding, value of assets and non-farm occupation.

4. Conclusion

Pregnant animal management and Calf rearing are the two important aspects which every farmer should keep in mind for running a profitable Dairy farming. Dairy farming is the best economic and sustainable livelihood source in drought prone rural areas. Dairying has also been considered as one of the key role playing root in employment and nutritional development of rural people through income generation via milk, manure and vermi compost etc. for achieving these advantages it needs little support in terms of inputs and awareness programmes to get these results the A.P. government implemented this Sunandini Calf rearing scheme to improve the milk production and health of calf , it showed marked difference between the beneficiaries and non- beneficiaries in terms of improvement in nutritional security and returns.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors do not disclose any conflict of interest.

Statement of informed consent

“Informed consent was obtained from all individual participants included in the study.”

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