An economic analysis of Ksheera sagar scheme in Y.S.R . Kadapa district of Andhra Pradesh, India

Indira D. Suresh J. Ravindra reddy Y. Ravi A. and Sharma G.R.K

Abstract

This paper addresses the economic analysis of Ksheera sagar scheme which was implemented by the Government of Andhra Pradesh to improve the economic and nutritional status of farmers in rural area of Andhra Pradesh. 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 Ksheera sagar scheme were Rs.43,842 for beneficiaries and Rs. 46,269 for non- beneficiaries. For two animals unit, the total returns, net returns, gross margin and returns per rupee of expenditure were found to be Rs. 1,07,277 , Rs. 63,435, Rs. 1,02,129 and Rs. 2.50 for beneficiaries and for non beneficiaries, they were of the order of Rs. 71,127 , Rs. 25,888, Rs.31,480 and Rs. 1.53 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 Ksheera sagar stood at 0.40 and 0.31 revealing that the variables included in the function influenced variation in the per capita income to an extent of 40% and 31%, respectively for beneficiaries and non-beneficiaries.

Key words : Kkasheera sagar scheme ,milk economic analysis, per capita milk income , milk returns

Introduction

Rural area livelihood mainly depends on agriculture but due to uncertainty in agriculture rural farmers now a days mostly depending on livestock rearing one of the important livelihood security is through milk production. With the advent of industrialization and globalization made livestock rearing difficult and poverty mostly seeing in small and marginal farmers. To alleviate poverty in rural areas Government of Andhra Pradesh implemented Ksheera sagar scheme in Kadapa district. The main aim of this scheme is to improve the milk production in rural area. 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.

Materials 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. The scheme entitled Ksheera sagar has been designed to take care of pregnant and lactating milch animals to achieve reduced calving intervals and consequently increase the lifetime milk production of milch animals . Ksheera sagar is a prophylactic initiative with input support during last trimester of pregnancy as well as first trimester of lactation which many help to reduce the calving intervals. Thus the collected data were tabulated and analyzed using different statistical tools like tabular analysis, linear regression model.

Results and Discussion

The cost structure of Ksheera sagar scheme for beneficiaries and non-beneficiaries

Cost structure of Ksheera sagar scheme beneficiaries and non-beneficiaries is presented in Table1. The total costs comprised two components viz. variable costs and fixed costs. Variable costs include family labour, concentrate feed cost, green fodder cost, dry fodder cost, veterinary aid and interest on working capital. The fixed costs included were interest on investment, depreciation on animal shed.

The mean total costs of the Ksheera sagar were Rs. 43,842 for beneficiaries and Rs. 46,269 for non- beneficiaries. The mean total variable costs were Rs. 38,599 and Rs. 40,677 for the corresponding groups of the respondents. Of the total costs of the enterprise, family labour wages and cost of concentrate feed were the major items occupying 39.16 % and 29.34 %, respectively. The trend was almost similar in respect of non- beneficiaries also. Dry fodder was the next item of total costs on which Rs. 9,382 (12.45 %) and Rs. 9,496 (11.58 %) was incurred by the beneficiaries and non-beneficiaries respectively. Other costs were green fodder and veterinary expenditure for both the groups of the respondents. In respect of beneficiaries, the Government contributed Rs. 1000 towards veterinary expenditure. Fixed costs were interest on investment and depreciation. The percentage of fixed costs in the costs structure of Mini dairy scheme was 7.01 in respect of beneficiaries and 10.18 in the case of non- beneficiaries.

The total expenditure on beneficiaries farms were Rs. 43,842 against Rs.46,269 on non-beneficiaries' farms. Beneficiaries as well as non -beneficiaries incurred more or less the same amount on concentrates but the beneficiaries had the advantage of government contributing roughly 40 % of the expenditure towards concentrates. Beneficiaries were supported by the government which provision was not there in the case of non-beneficiaries. However overall non-beneficiaries spent little more than the beneficiaries regarding feed and fodders. Again

beneficiaries enjoyed government contribution towards veterinary expenditure to the extent of Rs. 1,528. Over all there was a difference of about Rs. 2,000 towards total costs between beneficiaries and non-beneficiaries with non-beneficiaries incurring that additional expenditure. These results corroborated with the findings of Ghulam *et al.* (2009) who reported that, on an average, revenue from sale of milk was Rs. 3,63,388 on large farms, Rs.90,831 on medium farms and Rs.38,487 on small farms. From sale of young stock it was Rs. 2,04,703 on large farms, Rs. 21,827 on medium farms and Rs.7,934 on small farms. They further opined that, the total revenue from livestock mainly comprised sale of milk, wool, farm yard manure and young stock per annum. The revenue from livestock mainly comprised of sale milk and young stock. Milk contribution towards revenue on small, medium and large farm was 81, 78 and 63 per cent respectively. Similar findings were reported by Mondal *et al.* (2010). According to them gross return per cow per day stood at Rs.58.27 for local breed cows while it amounted to Rs.224.76 for cross breed cows where the share of milk was 87.94 per cent and 93.43 per cent of total return respectively. The average milk production per local breed cow was about 2 litres per day and it was 7.5 litres per cross breed cow per day. Daily returns from cow dung were Rs. 2.22 and Rs.2.89, respectively. Returns from other uses included gains from ploughing, threshing and draft power shared 0.69 per cent and 0.04 per cent of their respective total return. Daily return per calf was Rs.4.41 and Rs.11.77 for local breed and cross breed cows, respectively. Net returns per local breed cow per day was Rs.25.42 where as it was Rs.153.53 for a cross breed dairy cow per day.

Table 1: Cost structure of Ksheera sagar scheme (Rs)

S.No	Particulars	Beneficiaries		Non –beneficiaries	
	Variable costs	**Per unit**	**%**	**Per unit**	**%**
1	Notional family labour	17100	39.00	18120	39.16
2	Concentrate feed cost	13240	30.20	13574	29.34
	a. Government contribution	5148	11.74	0	0
	b. Beneficiaries contribution	8092	18.46	13574	29.34
3	Green fodder cost	1397	3.19	1489	3.22
4	Dry fodder cost	4409	10.06	4638	10.02
5	Veterinary expenditure	1528	3.49	1580	0
	a. Government contribution	1528	3.49	0	0
	b. Beneficiaries contribution	0	0	1580	3.41
6	Interest on working capital	925	2.11	1276	2.76
	Total variable costs	38599	88.05	40677	87.91
	Fixed costs	**Per unit**	%	**Per unit**	%
1	Interest on investments	4693	10.70	4996	10.80
2	Depreciation	550	1.25	596	1.29
	Total fixed costs	5243	11.95	5592	12.09
	Total costs (T.V.C + T.F.C)	43842	100	46269	100

Returns from Ksheera sagar scheme

The total returns from Ksheera sagar 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.1,07,277 , Rs 63,435 and Rs.1,02,129 for beneficiaries, and for non-beneficiaries they were of the order of Rs.71,127, Rs. 25,888 and Rs.31,480, respectively as presented in Table 2.

When individual components were considered, the share of appreciation on the value of animals was Rs. 4,500 (4.20 %) for beneficiaries, for non beneficiaries it was Rs 4,400 (6.19%). The returns from sale of milk, farm yard manure and the value of calves were Rs. 94,500 (88.09 %), Rs. 3,027 (2.82 %) and Rs. 5,250 (4.89 %) and Rs. 60,120(84.52 %), Rs. 2,487 (3.50 %) and Rs. 4,120 (5.79 %) for the beneficiaries and non-beneficiaries, respectively. The returns per rupee of expenditure were noted to be Rs. 2.50 for beneficiaries and 1.53 for non beneficiaries.

Ksheera sagar scheme too benefitted the beneficiaries immensely with the emphasis being on feed management . The efficient feed management really put the beneficiaries on the rewarding plane of farmers receiving

a gross income of Rs. 1,07,277 against Rs.71,127 by the non-beneficiaries. In the process they have netted an amount of Rs 63,435 compared to Rs 25, 888 obtained by the non-beneficiaries. The returns per rupee of expenditure too was on the higher side in respect of beneficiaries compared with the non-beneficiaries . The returns pattern did suggest that the beneficiaries could able to manage the dairy animals efficiently given by the support of government during critical period of pregnancy and calving. Such an advantage since was not there with non-beneficiaries, they had to content with a net income of Rs 25,888. Tanwar *et al*. (2012) in their study observed that overall average net income per animal, per year was Rs. 9,154.39 in co-operative members families. Category wise net income was Rs. 10,799.70 in small, Rs. 8,468.51 in marginal and Rs. 6,624.43 in landless families. It indicates that net income was maximum on small families and minimum on landless families. In the case of non-members families, overall average net income per animal per year was Rs. 3,309.93. It was Rs. 4,065.24, Rs. 3,300.90 and 1,904.59 in small, marginal and landless families respectively. Overall net profit per liter of milk was Rs. 4.73 in member families, while it was Rs. 2.01 in non-members families.

Table 2: Returns from Ksheera sagar scheme (Rs)

S.No	Particulars	Beneficiaries		Non –beneficiaries	
		Per unit	%	Per unit	%
1	Appreciation on the value of animal	4500	4.20	4400	6.19
2	Returns from sale of milk	94500	88.09	60120	84.52
3	Returns from sale of farm yard manure	3027	2.82	2487	3.50
4	Calf value	5250	4.89	4120	5.79
5	Total returns	107277	100	71127	100
6	Net returns	63435		25888	
7	Gross margin	102129		31480	
8	Returns per rupee of expenditure	2.50		1.53	

Nutritional security of sample respondents of Kheera sagar scheme

Nutritional security of Ksheera sagar scheme sample respondents were presented in Table 26. The consumption of pattern of beneficiaries was relatively encouraging for beneficiaries compared to non-beneficiaries. Cereals consumption by the beneficiaries stood at 139.1 kg / annum against 119.9 kg / annum by the non-beneficiaries. Pulses were consumed to the extent of 10 kg for beneficiaries only 7.7 kg by non-beneficiaries. Oils

were consumed to an extent of 4.0 kg / annum by beneficiaries and only 3.2 kg by non-beneficiaries. Milk consumption to the extent of 48 kg by the beneficiaries while only 43 kg for non-beneficiaries. Meat was again consumed in higher amounts by beneficiaries compared to non-beneficiaries. The number of eggs consumed were 79 for beneficiaries and 68.0 for non-beneficiaries. The consumption of fish, vegetables, fruits as well has higher for beneficiaries compared to non -beneficiaries.

The total caloric intake of the beneficiaries was 2021 k.cal their consumption which was less by 380 k.cal / day in meeting the standards while that of non – beneficiaries was 1780 k.cal, which was quiet lesser than the ICMR recommendations. The amount spent for the calorie obtained for various food items was Rs. 9,830 by the beneficiaries and Rs 7,986 by the non-beneficiaries. Relatively, beneficiaries had spent higher amounts and all the items compared to non-beneficiaries.

The pattern of consumption of the food items by the beneficiaries was higher when compared to non-beneficiaries. The consumption of cereals were highest 139kg / annum followed by pulses10 kg/ annum , edible oil 4 kg / annum, milk 48 kg/ annum, meat 10 kg / annum, eggs 79 no/ annum and others. The scheme too had it's role in improving the caloric reception for the beneficiaries but not to the extent recommended by the ICMR as the beneficiaries received 2021 k. cal / day for their consumption which was less by 380 k.cal / day in meeting the standards however these were better when compared to non-beneficiaries who could able to receive 1780 k.cal / day which was quiet lesser than the ICMR recommendations as found in the earlier schemes. The calories received by the beneficiaries from all the items of consumption were higher except pulses. But there is a marginal difference in favour of non-beneficiaries. Scope does exist to improve the nutritional security of the beneficiaries. The current level of caloric intake needs to be improved by the government through appropriate welfare measures. These results somewhat deviated from the reports of National Council of Applied Economic Research New Delhi (2014), India today (2011) and NSSO (2013).

Table 3 : Nutritional security of sample respondents of Ksheera sagar scheme

S.No	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
1.	Ksheera sager								
	a. Cereals	139.0	119.0	490.0	24.24	469.0	26.34	3460.0	3006.0
	b. Pulses	10.0	7.7	278.0	13.75	283.0	15.89	600.0	462.0
	c. Oil	4.0	3.2	149.0	7.37	141.0	7.92	320.0	256.0
Livestock products									
	d.Milk	48.0	43.0	466.0	23.05	324.0	18.20	1920.0	1720.0
	e. Meat	10.0	7.0	120.0	5.93	111.0	6.23	2000.0	1400.0
	f. Eggs (No)	79.0	68.0	119.0	5.88	104.0	5.84	316.0	272.0
	g. Fish	0.70	0.57	105.0	5.19	99.0	5.56	105.0	85.5
	h. Vegetables	28.0	19.0	198.0	9.79	165.0	9.26	840.0	570.0
	i. Fruits	4.9	3.9	96.0	4.75	84.0	4.71	269.0	214.5
	Total			2021.0	100.0	1780.0	100.0	9830.0	7986.0

Factors influencing per capita income of sample respondents of Ksheera sagar scheme

The estimated coefficient of multiple determination (R^2) for beneficiaries was 0.40 indicating that variables chosen in the function influenced the variation in the per capita income to an extent of 40 % for beneficiaries. Non-farm occupation, age of the head of the family, gender of the head of the family, primary education, family size, value of assets and employment were the variables with positive signs influencing the per capita income significantly. Others were non-significant to exert influence and per capita income earned by the beneficiaries

For these respondents the estimated coefficient of multiple determination (R^2) for non-beneficiaries was found to be 0.31 thereby showing that these variables brought in variation to an extent of 31% in the per capita income of the sample respondents the positive and significant factor were age of the head of the family, literacy, primary education, secondary education and employment. Other variables were non-significant in influencing the per capita income of the non - beneficiaries

The estimated coefficient of multiple determination (R^2) was 0.40 indicating that variables chosen in the function influenced the variation in the per capita income to an extent of 40 % for beneficiaries. (Table 4). Non-farm occupation, age of the head of the family, gender of the head of the family, primary education, family size, value of assets and employment were the variables with positive signs influencing the per capita income significantly. Others were non - significant to exert influence and per capita income earned by the beneficiaries. For non-beneficiaries respondents, the estimated coefficient of multiple determination (R^2) was found to be 0.31 thereby showing that these variables brought in variation to an extent of 31 % in the per capita income of the sample respondents. The positive and significant factors were age of the head of the family, literacy, primary education, secondary education and employment. Other variables were non - significant in influencing the per capita income of the non - beneficiaries. The present findings were similar to the findings of Birthal and Taneja (2006) who opined that demand for animal food products in India is also rising owing to population increase; urbanization and sustained rise in per capita income.

Table 4: Factors influencing per capita income of sample respondents of Ksheera sagar scheme

Explanatory variables		Beneficiaries			Non beneficiaries		
		Regression coefficients	Standard errors	't' value	Regression coefficients	Standard errors	't' value
S. No	Intercept	5184.06	1562.68	3.31	2597.45	1740.14	2.49
1	Agriculture	57.03	54.58	1.04	17.02	105.19	0.16
2	Livestock farming	14.12	16.23	0.86	15.66	18.79	0.83
3	Farm labour	15.21	51.96	0.29	3.58	104.55	0.034
4	Non -farm occupation	77.73*	76.01	1.88	16.96	112.32	0.15
5	Age of the head of the family	6.98 *	5.06	1.92	9.97 *	8.06	1.91
6	Gender of the head of the family	176.64 **	58.53	3.01	10.49	114.48	0.09
7	Literacy	49.52	47.30	1.04	90.97 *	89.08	1.89
8	Primary education	54.11 *	53.04	1.92	199.82 *	198.06	1.83
9	Secondary education	18.58	72.76	0.25	107.01 *	106.05	1.90
10	Family size	17.19 *	16.03	1.91	63.37	43.26	1.46
11	Land holding in acres	2.26	20.27	0.11	52.18	56.50	0.92
12	Value of assets	0.008 ***	0.005	1.55	0.0062	0.022	0.77
13	Employment (man days)	9.99 *	3.93	2.54	6.39 *	3.41	1.87
		$R^2 = 0.40$ **			$R^2 = 0.31$*		

** Significant at 1% level

* Significant at 5% level

***Significant at 10% level

Summary

Dairy farming is a major source of livelihood in rural areas. Dairying has been considered as one of the activity in economic and nutritional development of rural people through income generation via milk . Because of these advantages the A.P. government implemented this scheme and it showed marked difference between the beneficiaries and non - beneficiaries in terms of improvement in calorie intake and returns.

References

1. Birthal P S and Taneja V K 2006 Livestock sector in India: Opportunities and Challenges, presented at the ICAR-ILRI workshop on 'Smallholder livestock production in India' held during January 24-25, 2006 at NCAP, New Delhi 110 012.

2. Ghulam Sadiq Afridi M Ishaq and Sarfraz Ahmad 2009 Estimation of Costs and Returns and Factor Productivity in Livestock Enterprise in Northern Areas Pakistan. *Pak j life soc sci* 7(1):43-51.

3. Indiatoday.in/india/north/story/poverty-malnutrition-india-hunger-index-143926-2011-10-22. Calorie intake of the rural poor has drastically fallen, says Planning Commission report.

4. Mondal R K Sen S and Rayhan S J A2010 comparative economic analysis of local breed and cross breed milk cow in a selected area of *Bangladesh J Sci Foundation* 8(1&2): 23-29.

5. NSSO 70th Round 2013 Income, Expenditure, Productive Assets and Indebtedness of Agricultural Households in India Government of India Ministry of Statistics and Programme Implementation National Sample Survey Office Report No. 576 (70/33/3).

6. Tanwar P S 2012 Economics of Milk Production Among Member and Non-member Families of Dairy Co-operatives in Jaipur (Rajasthan) *Indian Journal of Dairy Science*, Vol.65(5) 408.

Indira D. Assistant professor, Department of LPM, C.V.Sc, Proddatur – 516360 (A.P).
indiradandolu@yahoo.co.in

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

Ravindra reddy Y. Professor and Head, Department of Livestock Production Management, C.V.Sc , Tirupati.

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

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