ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor: 5.2
IJAR 2017; 3(7): 120-125
www.allresearchjournal.com
Received: 06-05-2017
Accepted: 07-06-2017

YV Revanasiddappa
Research Scholar, Department of Economics, Shivagangotri Campus, Davanagere University, Davanagere, Karnataka, India

Dr. BP Veerabhadrappa
Professor, Department of Economics, Shivagangotri Campus, Davanagere University, Davanagere, Karnataka, India

Dr. Chaya Bagrecha
Prof and Head, MBA Department, Adarsh Institute of Management and Information Technology, Bangalore Karnataka, India

Correspondence
YV Revanasiddappa
Research Scholar, Department of Economics, Shivagangotri Campus, Davanagere University, Davanagere, Karnataka, India

Contribution of dairy income to the total income of farmers: An analytical study conducted in Davanagere district of Karnataka

YV Revanasiddappa, Dr. BP Veerabhadrappa and Dr. Chaya Bagrecha

Abstract
The dairy industry in India has been witnessing rapid growth since liberalization and ranks first in Milk Production in the world. The country's milk supply comes from millions of small producers, who are dispersed throughout the rural areas. All these farmers maintain an average herd of one or two milch animals, comprising cows and/or buffaloes. Ample labour and a small land base encourage farmers to practice dairying as an occupation subsidiary to agriculture.
The current paper is an attempt to understand the socio- economic conditions and income generating activities of rural dairy farmers in six taluks in Davanagere District. Most respondents owned cows and many of them owned buffaloes. The respondents owned more of cross cows and local buffaloes. The respondents did not possess adequate livestock to make enough profits or to commercialize dairy farming. The average yield per buffalo and per cow is very less compared to the international standards. Concerted efforts should henceforth be directed towards the dairy farmers contributing major proportion of our country's milk production to provide necessary input, especially to the landless and marginal farmers, and make them adopt newer technologies in breeding, housing, feeding, rearing and health care to ensure substantial growth in milk output and increase the contribution of dairy income to their total income.

Keywords: Dairy farming, occupational pattern, yield, Labour utilization

1. Introduction
India is the highest milk producer in the entire globe. India is well known as the 'Oyster' of the global dairy industry, with opportunities galore for the entrepreneurs globally. It might be dream for any nation in the world to capitalize on the largest and fastest growing milk and milk products' market. The dairy industry in India has been witnessing rapid growth with liberalization as the economy provides good opportunities for MNCs and foreign investors to release the full potential of this industry. The main objective of the Indian Dairy Industry is to manage the national resources in a manner to enhance milk production and upgrade milk processing using innovative technologies.
India ranks First in Milk Production, Accounting for 18.5 Per Cent of World Production in 2015-16. It achieved an annual output of 146.3 million tonnes during 2014-15 [1]. The Indian Dairy Industry has achieved this strength of a producer-owned and professionally-managed cooperative system, despite the facts that a majority of dairy farmers are illiterate and run small, marginal operations and for many farmers, selling milk is their sole source of income.
Livestock production is the vital sector which action a major source of income to the impoverished rural households throughout the world. Livestock equip people with food, income, draught power and fertilizer and act as the major livelihood means of millions of our country, where crop farming faces challenges of land and finance. Dairying is acknowledged as the major instrument in bringing about socio-economic transformation of rural poor in our country.
The country's milk supply comes from millions of small producers, who are dispersed throughout the rural areas. All these farmers maintain an average herd of one or two milch animals, comprising cows and/or buffaloes. Mostly ample labour and a small land base encourage farmers to practice dairying as an occupation subsidiary to agriculture.

As income from crop production is seasonal instead dairying provides a stable which is a year-round income and also an important economic incentive for the small farmer.
The major advantage of dairy farming is its minimum land dependency and resource flexibility.

Literature review

Though a number of studies have been made so far on the growth of agricultural sector, the studies on impact of dairy on income and employment in rural areas are very limited. Literature available on the impact of dairy development programmes, knowledge and adoption of improved dairy management practices by Landless, Marginal and Large Farmers and problems encountered by the said farmers in adopting improved dairy management practices were reviewed to draw some of the generalizations. The review of literature is presented as under:

Mandeep Singh and Joshi. A. S. (2008) [2] reported the economic analysis of dairy farming for marginal and small farmers in Punjab for the year 2003-04. It was found that a majority of the farm households are not able to meet their requirements from their income from crops. Further dairy farming emerged as a major allied enterprise for supplementing the income of marginal and small farmers in Punjab. Income from off-farm sources has been identified as another important factor contributing significantly to the disposable income of these farm households. The study suggested to further exploit the potential of off-farm sources towards meeting the domestic expenditure. Also, the technical efficiency of crops and dairy farming should be improved to provide more income to farmers

Radha Krishnan, Nigam.S, and Shantanu Kumar (2008) [3] opined that growing human population; rising per capita income and increasing urbanization are fueling rapid growth in the demand for food and animal origin in developing countries. India possesses the largest livestock population in the world. Contrary to the large population of livestock in India productivity of Indian livestock is low compared to many developing countries.

Rawal and Vikas (2001) [4] analysed that the comparison of caste, education and land holding of MS farmers with NMS farmers points to a larger proportion of households belonging to the backward caste, being less educated and holding lower size of land are not able to participate in dairying. A recent study of two dairy co-operatives in Gujarat argued that inequality in land ownership, caste, illiteracy and undemocratic functioning of co-operatives are the barriers to entry. Illiteracy might not be a factor in Kerala but land ownership could be one, as among the lower size class of land owners, smaller proportion seems to be keeping cattle.

Scope of the study

The current study is mainly confined to trained and untrained dairy farmers who have undertaken dairying as one of the subsidiary enterprises which is providing additional income and also employment to the rural people and playing a vital role in improving their socio-economic conditions and providing ample opportunities to improve their standard of living. In view of the difficulties involved in covering the entire country and also the entire farming community as unit of study, and also with an objective to achieve greater accuracy, Davangere district in Karnataka state has been purposefully selected as a unit of study. In short, the study aims at evaluating the impact of dairy on income and employment in rural areas of six taluks in Davangere District-Harihara, Davangere, Honnalli, Channagiri, Harapanahalli and Jagalur.

Objectives of the Study

1) To study the socio-economic conditions of rural dairy farmers.
2) To study the income generating activities of rural dairy farmers.

Sample size and sampling design

This study based on the primary data collected from the rural farm households in Davangere district of Karnataka state. It is proposed to use the stratified random sampling method to select the respondents. Well-designed pre-tested schedule was used for collecting the data.

Hypotheses

1. **H_0:** Type of farmer and Per capita income are independent
   H_1: Type of farmer and Per capita income are not independent
2. **H_0:** Size of the dairy farm and total monthly income are independent
   H_1: Size of the dairy farm and total monthly income are not independent
3. **H_0:** The type of farmer and contribution of income from dairy farming to the total income are independent
   H_1: the type of farmer and contribution of income from dairy farming to the total income are not independent

The data was collected from 350 respondents. But only 289 responses were retained based on completeness of information. MS excel and SPSS was used to analyze the data. The findings relating to the above said objectives are presented in the following pages.

Major findings

1. Per Capita income of the Family members

The majority (40.1%) earn between Rs. 2000 to Rs. 4000 a month. However, 35.3% earn less than Rs.2000. 13.1% earn Rs. 4000 to Rs. 6000, 4.5% earn between Rs. 6000 to Rs. 8000. And, only 6.9% earn income greater than Rs. 8000. (Table 1)

2. Per capita incomes of landless, marginal and large farmers

The per capita income of the family members of the respondents, among the different types of farmers shows that among the landless farmers, the majority earned less than Rs. 4000. None of them earned more than Rs. 6000. Marginal farmers mostly earned Rs.2000-Rs. 4000. Very few of them earned over Rs. 6000. However, among the large farmers, a significant proportion earned over Rs. 6000, with several of them earning Rs. 8000 and above. (Table 2)

A chi-square test of independence was performed to examine the relation between types of farmers and per capita income of the family. The relation between these variables was highly significant, χ^2 (8, N = 289) = 65.893, $p<0.05$. We reject the null hypothesis that the type of farmer and Per capita income are independent and conclude that type of farmer and per capita income are not independent

i.e., that type of farmer is directly linked with the per capita income. (Table 3)

3. Total monthly incomes based on the size of the dairy farm

Table 13 indicates that most (48.4%) of those who earned less than Rs. 15000 a month had less than 2 milch animals, followed by 2-3 milch animals. Only 7.1% had 4 or more milch animals. Among those who earned Rs. 15000-Rs. 30000, 53.3% had 2-3 milch animals, 29.5% had less than 2 milch animals, while 17.1% had 4 or more milch animals. Among those who earned greater than Rs. 30000, half of them owned 2-3 milch animals. 27.6% had less than 2 milch animals, while 22.4% had 4 or more milch animals in their dairy farm. (Table 4)

A chi-square test of independence was performed to examine the relation between the total monthly income of the respondent's family and the size of the dairy farm**.** The relation between these variables was very significant, χ^2 (4, N = 289) = 16.267, p<0.05. We reject the null hypothesis that the size of the dairy farm and total monthly income are independent and conclude that size of the dairy farm and total monthly income are not independent, i.e., size of the dairy farm has a direct association with the total monthly income of the respondent's family.(Table 5)

4. Occupations of respondents

Table 15 shows that for the main occupation of family members of the respondents, the majority were engaged in agriculture, followed by daily labour, and private jobs. In the case of sub occupation of the family members of the respondents, a large majority took up dairy. (Table 6)

5. Cropping pattern of the respondents

The study indicates that paddy as a Kharif crop was cultivated on 441 acres which was the largest, followed by Maize which was cultivated on 332.3 acres. 89 respondents were engaged in cultivation of Paddy and 74 respondents were engaged in cultivation of maize.

There is hardly any area was under cultivation for rabi crops. The maximum were jowar and arecanut on 9 acres each. A majority of the respondents were engaged in cultivation of paddy, followed by those engaged in cultivation of maize.

6. Livestock data of the respondents

218 respondents owned cows and 113 respondents owned buffaloes. The respondents owned more of cross cows (323) and local buffaloes (193). A meagre 15, 6, and 12 respondents owned sheep, goats and poultry.

The average livestock owned by the respondents was just 0.94 buffaloes, 1.32 cows and 0.81 calves, which is not enough to commercialize dairy farming and make enough profits. Most of the respondents owned cross cows. Many also owned calves, which would be milching cows in future. The reality is that many of the respondents do not possess adequate livestock to make adequate profits. (Table 7)

7. Yield of livestock

As the table indicates, the total yield of milk of buffaloes is 732 litres from 273 animals and the total yield of milk of cows is 1875 litres from 381 animals. The average yield per buffalo is just 2.68 litres and the average yield per cow is just 4.92 litres, which is very less compared to the international standards. Also, the average consumption of milk per household is just 1.01 litre, and per family member is 0.23 litres which definitely is insufficient to meet the daily nutritional requirements (Table 8)

8. Occupational pattern of the family members of respondents

From the respondents' data, it is found that an average of 1.6 persons per family are engaged in agriculture and 2.38 persons are engaged in Dairy farming. Around 0.84 person per family is engaged in manual labour work. Expectedly, highest numbers of women are engaged in dairy activities as the dairy animals are kept in the vicinity of their houses and they can balance that work with their household work.

Very few are engaged in business and private jobs. The earnings, however, are the highest from other occupations (Rs. 10625). Sadly the earnings from Dairy farming is the minimum at around Rs. 1800, which may be due to smaller number of animals owned and unscientific methods of rearing. (Table 9)

9. Engagement in dairy farming by family members

As the table indicates, most of dairy related work is done by family members only than taking the services of hired workers. There are more women engaged than men. Children also contribute towards dairy related labour.

These respondents do not rely on hired employees (only 7 out of 1000 respondents hire men labourers), as is obvious from the small number of animals that they rear. It is a long way to go in the direction of dairy development for our farmers to become professional dairy farmers and reap the benefits of large scale dairy farming. (Table 10)

10. Labour utilisation

The total man days of labour utilized was 59.308. The total rate of the labour utilized was Rs.6797.924. Most of the dairy work is done by the female family members of the respondents, followed by the male family members, and even children. Hired help is very less. (Table 11)

11. Contribution of income from dairy farming to total income

The above table indicates that in more than 90% of the cases, dairy contributes to less than 50% of the total earnings, with contribution being less than 25% in around 56% cases. It indicates that Dairy farming is not taken as the primary occupation seriously. It is done as an additional source of earnings. It can also be seen that large farmers depend the least on dairy income with 75 respondents showing income less than 25% from Dairy. (Table 12)

A chi-square test of independence was performed to examine the relation between the type of farmers and the contribution of income from dairy farming to total income. The relation between these variables was highly significant, χ^2 (6, N = 289) = 43.386, p<0.05. We reject the null hypothesis that the type of farmer and contribution of income from dairy farming to the total income are independent and conclude that type of farmer is directly associated with the contribution of income from dairy farming to the total income. (Table 11)

Table 1: Per Capita income of the Family members

Per Capita income	Frequency	Percent	Valid Percent	Cumulative Percent
Less than Rs.2000	102	35.3	35.3	35.3
Rs. 2000 to Rs. 4000	116	40.1	40.1	75.4
Rs. 4000 to Rs. 6000	38	13.1	13.1	88.6
Rs. 6000 to Rs. 8000	13	4.5	4.5	93.1
Greater than Rs. 8000	20	6.9	6.9	100.0
Total	289	100.0	100.0	

Table 2: Per Capita Income * Type of farmer Cross tabulation

	Type of farmer			Total
Per Capita Income	Landless farmers	Marginal farmers	Large farmers	
Less than Rs. 2000	52	34	16	102
Rs.2000-Rs. 4000	41	43	32	116
Rs. 4000-Rs. 6000	4	13	21	38
Rs. 6000-Rs. 8000	0	2	11	13
Rs. 8000 and above	0	5	15	20
Total	97	97	95	289

Table 3: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	65.893[a]	8	.000
Likelihood Ratio	73.407	8	.000
Linear-by-Linear Association	58.479	1	.000
N of Valid Cases	289		

Table 4: Total monthly income of the respondent's family * size of the dairy farm Cross tabulation

Total monthly income of the respondent's family	size of the dairy farm			Total
	Less than 2 milch animals	2-3 Milch animals	4 or more milch animals	
Less than Rs. 15000	61	56	9	126
	48.4%	44.4%	7.1%	100.0%
Rs. 15000-Rs. 30000	31	56	18	105
	29.5%	53.3%	17.1%	100.0%
Greater than Rs. 30000	16	29	13	58
	27.6%	50.0%	22.4%	100.0%
Total	108	141	40	289
	37.4%	48.8%	13.8%	100.0%

Table 5: Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	16.267[a]	4	.003
Likelihood Ratio	16.538	4	.002
Linear-by-Linear Association	14.143	1	.000
N of Valid Cases	289		

Table 6: Occupations

	Agriculture	Dairy	Business	Government job	Private job	Self employed	Daily Labourer
Main occupation (number of family members)	273	2	10	7	64	9	143
Sub occupation (Number of family members)	5	538	2	0	1	1	7

Table 7: Livestock data analysis

Livestock	Number of Animals	Average number of animals for the entire sample	Number of people who do not possess these animals	Number of people possessing livestock	Average number of animals owned
LS-buffalo-local	193.00	0.67	208.00	81.00	2.38
LS-buffalo-cross	83.00	0.29	253.00	36.00	2.31
LS-buffalo-total	273.00	0.94	176.00	113.00	2.42
LS-cow-local	57.00	0.20	245.00	44.00	1.30
LS-cow-cross	323.00	1.12	104.00	185.00	1.75
LS-cow-total	381.00	1.32	71.00	218.00	1.75
LS-helfers cow-local	9.50	0.03	281.00	8.00	1.19
LS-young buffalo-total	10.00	0.03	282.00	7.00	1.43
LS-infertile-cow-buffalo-total	20.00	0.07	277.00	12.00	1.67

LS-Calves-total	234.00	0.81	124.00	165.00	1.42
LS-Buffalo Calves-total	103.50	0.36	226.00	63.00	1.64
LS-bullock-total	34.00	0.12	271.00	18.00	1.89
LS-sheep-total	54.00	0.19	274.00	15.00	3.60
LS-goats-total	22.00	0.08	283.00	6.00	3.67
LS-poultry-total	108.00	0.37	277.00	12.00	9.00

Table 8: Average yield of live stock

Livestock	Sum	Average yield/consumption
LS-buffalo-total (Number of animals)	273	
LS-buffalo-total-yield	732	2.68
LS-cow-total (Number of animals)	381	
LS-cow-total-yield	1875.5	4.92
Average consumption of milk per household		1.01 litres
Average consumption of milk per family member		0.23

Table 9: Occupation pattern of family members

Sl. no	Name of the occupation	Average No of members per family engaged				Average Monthly Income
		Male	Female	Children	Total	
1	Agriculture	1.03	0.56	0.01	1.60	8711.2
2	Dairy	1.03	1.16	0.19	2.38	1814.64
3	Business	0.05	0.01	0.00	0.06	7352.94
4	Labour work	0.56	0.29	0.00	0.84	3186.37
5	Private job	0.17	0.02	0.00	0.17	8010.20
6	Others	0.04	0.02	0.00	0.06	10625.00
7	Overall Per capita income					3298.71

Table 10: Number of persons engaged in dairy farming

Labour utilisation	Average number of persons engaged in dairy farming
Lab_ut_total_family_male	1.010
Lab_ut_total_family_fremale	1.138
Lab_ut_total_family_children	0.190
Lab_ut_total_hired_male	0.007
Lab_ut_total_hired_female	0.003
Lab_ut_total_hired_children	0.003

Table 11: Labour utilization

Lab_ut_total_mandays	59.308
Lab_ut_total_rate	6797.924

Table 12: Contribution of income from dairy farming to total income * Type of farmer Cross tabulation

Count		Type of farmer			Total
		Landless farmers	Marginal farmers	Large farmers	
Contribution of income from dairy farming to total income	Less than 25%	36	55	75	166
	25%-50%	55	32	18	105
	50%-75%	3	9	2	14
	Greater than 75%	3	1	0	4
Total		97	97	95	289

Table 13: Chi-Square Tests

	Value	Df	Asymp. Sig. (2-Sided)
Pearson Chi-Square	43.386[a]	6	.000
Likelihood Ratio	44.091	6	.000
Linear-by-Linear Association	26.666	1	.000
N of Valid Cases	289		

Discussion

The per capita income of the family members of the respondents, among the different types of farmers shows a significant difference among the landless, marginal and large farmers. Paddy as a Kharif crop was cultivated on the largest area, followed by maize. Also, the majority of the respondents were engaged in cultivation of paddy, followed by those engaged in cultivation of maize. When it came to livestock, most respondents owned cows and many of them owned buffaloes. The respondents owned more of cross cows and local buffaloes. Very few respondents owned sheep, goats and poultry. The respondents did not possess

adequate livestock to make enough profits or to commercialise dairy farming. The average yield per buffalo and per cow is very less compared to the international standards. Also, the average consumption of milk per household and per family member was surely not sufficient to meet the daily nutritional requirements. Fewer persons per family are engaged in agriculture than in dairy farming. More women are engaged in dairy activities as the dairy animals are kept adjacent to their houses and they can balance that work with their household work. Very few are engaged in business and private jobs. The earnings, however, are the highest from other occupations. Sadly, the earnings from dairy farming is the least, which may be due to smaller number of animals owned and unscientific methods of rearing. Most of the dairy related activities were done by the female family members of the respondents, followed by the male family members, and even children. The use of hired help was very less. Dairy farming was not considered as the primary occupation seriously. It is done as an additional source of income. It can also be seen that large farmers depend the least on dairy income. An important finding is that the type of farmer is directly associated with the contribution of income from dairy farming to the total income.

Conclusion

Ever growing human population is making scarcely available land still scarcer. Our aim to improve milk output should be by way of improving productivity of the animals rather than increasing the heads of bovine population. Concerted efforts should henceforth be directed towards the dairy farmers contributing major proportion of our country's milk production to provide necessary input, especially to the landless and marginal farmers, and make them adopt newer technologies in breeding, housing, feeding, rearing and health care to ensure substantial growth in milk output and increase the contribution of dairy income to their total income.

References

1. Press Information Bureau, Government of India-Ministry of Finance Website: http://pib.nic.in/newsite/PrintRelease.aspx?relid=136849
2. Mandeep Singha, Joshi AS. Economic Analysis of Crop Production and Dairy Farming on Marginal and Small Farms in Punjab, Agricultural Economics Research Review, 2008, 21:251-257.
3. Radha Krishnan, Nigam S, Shantanu Kumar. Contribution of livestock in Indian Scenario, Agricultural Situation in India. 2008; 66(1):25-28.
4. Rawal, Vikas. Participation of the Rural Poor in Dairy Co-operatives: A Case Study from Gujarat, Indian Journal of Agricultural Economics. 2001, 57.