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**IMPACT OF DAIRY COOPERATIVES ON MILK PRODUCTION, INCOME AND EMPLOYMENT  
GENERATION IN SEMI ARID RAJASTHAN**

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*Study was conducted to find out the impact of dairy cooperatives on milk production, income and employment generated among member and non-member households in Jaipur district of Rajasthan. Data were collected from 240 households (120 households from member and 120 from non-member) by personal interview method. Analysis of data revealed that annual milk production and annual net income per milch animal was significantly higher in member households as compare to non-member households. It was due to rearing of better quality animal, adoption of better management practices resulting higher milk production and sale of milk at remunerative price to the dairy cooperatives. Family labour and farm business income was also found higher in member households. Overall labour utilization per household per annum was significantly higher (142.49 man days) in member families than their counter part non-member families (93.74 man days). Female labour utilization was higher than male both the households. Higher employment per milch animal was provided (0.89 hrs/ day) in member households in comparison to in non-member households (0.78hrs / day). Average annual employment generated by per mich animal was higher (40.59 man days) in member households as against (35.77 man days) in non-members. Feeding to the animals was recorded highest labour consuming activity in member as well as in non-member groups. The study noticeably indicated a positive impact of dairy cooperatives on the milk production, income and employment generation of milk producer in the study area.*

**Key words:** Dairy cooperatives, Employment, Households, Member, Net income, Non-member.

## INTRODUCTION

Dairying is an ancient activity in rural setting of India. The need of dairy development in India arise due to several considerations such as low per capita availability of milk, prevalence of unemployment, increasing living condition of rural people and achieving self sufficiency in milk production. Dairying plays a vital role not only in providing income and employment for rural poorer particularly among landless labour, small and marginal farmers, but also it provides nutritional, social security and valuable organic manure for agriculture production. Dairy sector is the major source of income for an estimate 27.6 million people. Among these 65 to 70 percent are small, marginal farmer and landless labour ( Subharama Naidu and Kondaiah, 2004, pp. 91-105). The operation flood programme, which was launched during 1970, organizing dairy farmer's cooperatives in rural area and linking them with urban consumers created a strong net work for procurement, processing and distribution of milk over a lakh village in rural India. The dairy sector supports around 10 million members/ farmers through one lakh cooperative society existing in the country. According to Central Statistics Organization (CSO), the contribution of livestock sector to national gross domestic product (GDP) was 3.26 percent in 2008-09. Jaipur Zila Dugdh Utpadak Sahakari Sangh popularly known as *Jaipur Dairy* procures milk through its strong net work over 1200 village level dairy cooperatives. These village cooperatives provide a ruminative market to milk producers and supply of balance concentrate, mineral mixture, urea molasses mineral block, improved fodder seed, implementing breed improvement programme and also providing skill based training for human resource development. A good number of studies have been reported to highlight the advantages of dairy cooperatives in various part of country and reported significant impact on production, income and employment. The income and employment generation is an important aspect for producer as well as for policy maker for future planning and development of the dairy sector. Therefore the present study was conducted with aim to analyse the impact dairy cooperatives on milk production, income and employment generation in member and non-member households of dairy cooperatives in Jaipur district of Rajasthan.

## REVIW OF LITERATURE

A number of scholar have attempted to study the impact of milk cooperatives on milk production, income and employment generation at international, national and regional level and the impact was found to be positive in almost all the studies.

Singh and Chattaraj (1988) studied the impact of cooperative on production consumption and marketed surplus of milk and observed that dairy cooperatives have positive impact on milk production and marketed surplus milk of member households.

Singh and Roy (1990) studied the income generation through dairy cooperatives and found that dairy cooperatives had a positive influence on the income level of members households.

Kumar, and Murthy (1992) analysed the impact of dairy cooperatives on income and employment in Chittor district of Andhra Pradesh and found that the income earned from dairying was more by members of the societies than non-members.

Kumar and Singh (1993) examined the impact of milk cooperative on rural economy of Rajasthan and found that the formation of cooperative societies and the development programme run by the milk union federation increased the productivity and returns.

Shah and Sharma (1994) studied the annual milk production, marketed surplus and gross income from dairy enterprises and reported that milk production and productivity per milch animal was more in Dugdh Utapadak Sahkari Sangh (DUSS) area than in Non- Dugdh Utapadak Sahkari Sangh (NDSS) area.

Rao and Singh (1995) studied the impact of operation flood programme on income and employment levels of rural households in Guntur district of Andhra Pradesh and observed that net income was positive and higher on all the categories of the beneficiaries' household as compare to that of non-beneficiaries households who had negative net income.

Sharma and Singh (1995) studied the impact of technological changes in milk production on rural income and employment. He observed that the overall labour use per milch animal was higher in member household as compare to non-members.

Shukla et al. (1995) observed that the average annual net income was much higher per milch animal per annum in programme area compare to in the non programme area. He further observed that the level of milk production was higher in village covered by Dugdh Uptapadak Sahkari Sangh (DUSS) than those covered under Non- Dugdh Utapadak Sahkari Sangh (NDUSS).

Devi et al. (1996) examined the role of village milk producers cooperative societies in Gantur district of Andhra Pradesh and observed that the average milk production per milch animal was higher (1277 litres) in case of members than non-members (945 litres).

Kumar (1997) studied the role of cooperatives on income and employment generation on rural households in Nalanda district. He found that average annual income in terms of gross income, net income and family labour income was much higher in the extension area as compare to control area.

Roy (2000) studied the milk marketing under cooperative management in Bangladesh and found that cooperative members are receiving higher milk price compare to non-cooperative milk producers.

Chandra, A. (2002) has studied the economic appraisal of intensive mini dairy project in central plain Zone of Uttar Pradesh. He observed that relatively higher net income across member households as compare to non-member households

Kumar and Singh (2002) analysed the income and employment generation in Meerut district of Uttar Pradesh and observed that overall average gross income per household was about Rs. 27303 on the non-beneficiary household and Rs. 29424 on the beneficiaries households.

Singh et al. (2005) studied the impact assessment of milk cooperatives on dairying status of beneficiaries farmers in Bihar and found that milk production was higher among beneficiary than non-beneficiary farmers.

Singh and Sharma (2006). Studied the extent of income generated through dairy enterprise among members and non-members of dairy cooperative societies in Sothern Rajasthan and concluded that member respondents had more income (Rs. 50374.65) from dairy enterprises than non-member respondents (Rs. 23751.21). This could be possible being attributed to higher size of dairy herd and better animal management practices.

Meena et al. (2009) studied the performance of dairy cooperatives on Income and employment generation of milk producers in Alwar district (Rajasthan) and observed that average net income was significantly higher in the member groups than non-member groups. He further observed that the overall labour utilization per annum per household was also significantly higher (207.36 man days) in member groups than non-member group (181.92 man days).

Ganga et al. (2012) studied the impact of dairy financing through self-help groups on economic and employment generation in Jaipur district of Rajasthan and found relatively higher net income across member households vis –a vis non-member households

Seema et al. (2013) studied the income and employment generation of dairy cooperatives in Sothern Rajasthan and found that labour utilization per household was significantly higher in member groups

than non-member groups in respective study and further observed that dairy cooperatives has positive impact on income and employment generation of milk producers in the study area.

### OBJECTIVES OF THE STUDY

1. To find out the milk production among member and non-member households.
2. To make a comparative analysis of income and employment creation among member and non-member households.
3. To work out the activity wise labour utilization and gender involvement among member and non-member groups.

### METHODOLOGY OF THE STUDY

Jaipur Zila Dugdh Utpadak Sahakari Sangh Ltd. Jaipur (Jaipur Dairy) was selected purposely, because as Jaipur dairy procured maximum milk as compare to other Unions. Out of a total thirteen blocks, Govindgarh block having maximum bovine population in the district was selected. List of functional milk producers co-operative societies was prepared and out of them 10 co-operative societies were selected randomly for the present study. A separate list of milk producing member and non-member (keeping milch animals) households for all the selected societies was prepared on the basis of land holding. Thus, 120 milk producer from member households and 120 milk producer from non-member households were selected for comparison on the basis of probability proportionate to the number of household in each category. The final selection of the cases were made purely on random basis from different categories of members and non-members. The gross income from milk production was calculated by multiplying the quantity of milk with sale price and by adding imputed value of dung. Net income was obtained after deducting gross expenditure from gross income. Family labour income was calculated by adding the imputed value of family labour to net income. Farm business income was estimated by adding the interest on owned fixed capital to family labour income. Data on various aspects of human labour in general and involvement of male, female and children in different dairy activities like cutting of fodders & grasses, bringing of fodder, feeding to the animals, cleaning of shed, watering and bathing to the animals, milking, selling of milk and other activities etc. was collected with the help of pre-tested schedule by personal interview method. To estimate the extent of contribution of male, female and children to total family labour used, actual time spent in different dairy activities were recorded for male, female and children separately in each households during investigation. The total time spent in various activities per day was converted in to man equivalent days by assuming eight working hours. Hence, one day work of female was taken as equivalent to 0.67 man days (3 female = 2 male) and children (girl and boy) was

considered equivalent to 0.5 man days (2 children=1 man) (Ganga and Jain, 2012, pp.337-341). Accordingly the number of per day in various activities were calculated and aggregated to calculate the gender wise labour utilization in dairy activities. The tabular analysis was followed to compare the income and employment generation in member and non-member families through dairy farming.

## FINDINGS

Milk production, gross income, net income, family labour income and farm business income were worked out and as such presented in Table 1, reveals that annual milk production (1936.09 litres) and gross income( Rs. 30687.20) per milch animal was higher in member household in comparison to non-member households( 1645.91 litres and Rs. 23078.23). It was due to rearing of better quality animals, adopted better management practices and selling of milk at remunerative price to the dairy cooperatives by member households. Overall net income per animal in member households also higher (Rs. 9154.39) than non-member households (Rs. 3309.93) in the study area. The higher milk production and higher net income in member groups in present study indicates significant impact of dairy cooperatives on milk production and income. The family labour income and farm business income was found to be higher Rs.12118.99 and Rs. 14102.38, respectively in member households as comparison to Rs. 5929.01 and 7989.33 in non-member households.

**Table 1**

### **Milk Production and income across member and non-member households.**

S.N.	Particular	Member	Non-member
1	Milk production per household per annum (lit.)	6792.49	4307.97
2	Milk production per milch animal per annum(lit.)	1936.09	1645.91
3	Gross income (Rs./ milch animal/ annum)	30687.20	23078.23
4	Gross Expenditure(Rs./ milch animal/ annum)	21532.81	19768.30
5	Net income (Rs./ milch animal/ annum)	9154.39	3309.93
6	Family labour income (Rs./ milch animal/ annum)	12118.99	5929.01
7	Farm business income (Rs./ milch animal/ annum)	14102.38	7689.33

Source: Field Survey

**Labour utilization in dairying**

Labour is an important input in dairy farming for performing different dairy activities. The labour utilization across member and non-member groups presented in Table 2, reveals that the average annual labour utilization in member households was significantly higher (142.49 man days) than non-member households (93.74 man days). This was due to more number of animals reared and devoted much time for management practices to perform in better way by member households. It indicates that dairy cooperative has positive impact

**Table 2****Average family labour utilization in dairy enterprises in member and non-member households**

(Man days / household / annum)

S.N.	Particular	Member	Non-member
1.	Male	27.46	23.20
2.	Female	98.61	52.75
3.	Children	16.42	17.79
4.	Total	142.49	93.74

Source: Field Survey

on providing additional employment opportunity to the member households. Table (2) further revealed that women contributing maximum share (98.61 VS 52.75 days) followed by men (27.46 VS 23.20 days) and children (16.42 VS 17.79 days) in member and non-member households .It revealed that the participation of female was relatively higher followed by male and children in both member and non-member households.It was also observed that female participation was significantly higher, whereas men's participation was marginally higher in member households as compare to non-member households. On other hands, children's participation was marginally higher in non-member household as comparison to member households.

The participation of male, female and children in different activities of dairy enterprise, the labour use per households and per milch animal was analysed across member and non-member groups and presented in Table 3. Data revealed that the family labour engaged in different dairy activities was a total 4.56 work hours/ day(3.12 man hrs/ day) in member households as against 3.02 work hrs/day(2.06 man hrs/ day) in non-member households, higher employment per milch animal was provided (0.89 hrs/ day) in member households in comparison to (0.78hrs / day) non-member households. An overall employment generated by per animal per year was higher (40.59 man days) in member households as against (35.77 man days) in non-member households. The activity of

feeding to the animals was recorded highest labour utilisation in member groups (0.99hrs./day) followed by cutting of fodder from fields (0.73 hrs.), bringing grass (0.56 hrs.), cleaning of shed (0.55 hrs.), watering and bathing of the animals (0.52 hrs.), other activities (0.46 hrs), milking (0.42 hrs.) and selling of milk (0.31hrs.), Similarly in non-member households labour utilization was maximum in feeding to the animals was observed (0.66 hrs./ day), followed by cutting of fodder (0.43 hrs.), other activities (0.38 hrs.), bringing fodder (0.34 hrs.), cleaning of shed (0.32 hrs.), watering and bathing (0.32 hrs.), selling of milk (0.29 hrs.) and milking (0.28 hrs.) per day. Among identified eight activities of dairy farming the involvement of the female was to be observed maximum in both member and non-member households (2.16 and 1.16 man hrs/ day) followed by male (0.60 and 0.51 hrs/ day) and children (0.36 & 0.39 hrs /day), respectively. In case of member households female were spent maximum time in feeding (0.73 hrs./ day ) followed by cutting of fodder (0.60 hrs.), cleaning of shed (0.42 hrs.), bringing of fodder (0.39 hrs.), watering and bathing of the animals (0.38 hrs), milking (0.37 hrs.), other works (0.20 hrs) and selling of milk (0.15 hrs./day), respectively. Male of the family was found more engaged in other activities and selling of milk, whereas children were assisting to their parents in all dairy activities. The participation of female was maximum in feeding activities (0.31 hrs.) and minimum was in selling of milk (0.14 hrs.) in non-members households per day. Childers helped to elder members of the family in performing all the dairy activities.

**Table 3****Average labour utilization in different dairy activities for member and non-member households**

(Hours/ family / day)

S.N.	Operations	Member				Non-member			
		Male	Female	Children	Total	Male	Female	Children	Total
1.	Cutting of fodder and grasses	0.05	0.60	0.08	0.73	0.04	0.31	0.08	0.43
2.	Bringing fodder / grasses	0.07	0.39	0.10	0.56	0.03	0.19	0.12	0.34
3.	Feeding	0.10	0.73	0.16	0.99	0.09	0.14	0.16	0.66
4.	Cleaning of shed	0.05	0.42	0.08	0.55	0.05	0.17	0.10	0.32
5.	Watering and bathing to the animals	0.04	0.38	0.10	0.52	0.05	0.15	0.12	0.32
6.	Milking	0.03	0.37	0.02	0.42	0.04	0.20	0.04	0.28
7.	Selling of milk	0.12	0.15	0.06	0.33	0.09	0.14	0.06	0.29



8.	Other works	0.14	0.20	0.12	0.46	0.12	0.16	0.10	0.38
9.	Total	0.60	3.24	0.72	4.56	0.51	1.73	0.78	3.02
10.	Time spent in man hrs/ per day/house hold	0.60	2.16	0.36	3.12	0.51	1.16	0.39	2.06
11	Time spent in man hrs./day/milch animal	0.17	0.62	0.10	0.89	0.19	0.44	0.15	0.78
12	Annual employment generation man day /milch animal	7.82	28.09	4.68	40.59	8.85	20.13	6.79	35.77

Source: Field Survey

## CONCLUSION

It could be concluded from the present study that milk production, net income and employment generation per household as well as per milch animal was higher in member groups in comparison to non-member households in the study area. It might be due to better care of animals and higher milk production in member households. It clearly indicates that dairy cooperatives have positive impact on milk production, net income and employment of milk producer. Therefore it is suggested to establish new dairy cooperatives in the remote area and to increase the membership of dairy cooperative for getting more income and employment.

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