Growth of Dairy Cooperatives in Uttarakhand

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ABSTRACT

There are 13dairy cooperative union across the state Uttarakhand. Each district consist one dairy cooperative union and operate its function with the help of village level dairy cooperative societies. There are total 1875 functional dairy societies are working through 164 procurement routeshaving the total 80478 membership across 4563 villages. And do the processing on an average of 195186 litres milk per day whereas approximately 157981 litres of milk sold every day till date. Further it experiences that there is lack of functional dairy cooperative societies and less active members with dairy societies. This study is an effort to analysis the trend of growth of Uttarakhand dairy cooperative since it has been started operation. The trend of growth analysed with the help of trend analysis test and variables evaluated are: total milk procurement, total milk sale and membership over 15 years. The study reveals that all the variables evaluated has depicted positive growth trend with slight fluctuation during study.

Key Words : Growth, Cooperative, Procurement, Sale, Membership, Societies

INTRODUCTION

Dairy farming was not the commercial activity in the ancient era but now it has been turned into the income generating activity it has been commercialised it constitutes about 30% of the country's agricultural output. India has become the largest producer of milk in the world accounting for 18.5 per cent of world production. During 2015-16, milk production peaked at 146.31 mt, thus becoming an important secondary source of income for 70 million rural households engaged in dairying. About 80 per cent of milk produced in the country is in the organised sector and the remaining 20 per cent is shared equally by cooperatives and private dairies. Over 1.33 lakh village level dairy cooperative societies, spread over 265 districts in the country, collect about 25.1 million litres of milk per day and market about 20 million litres.

Cooperative dairies has supported and gave the platform of marketing those people who were exploited by the middlemen or have lack of accessibility of market, by giving direct membership in the dairy cooperative through village level dairy cooperative societies. Cooperative dairies give the platform to those who are from the more or less similar background

having same objective that is making money by selling milk. Cooperative dairies give loads of facilities like subsidized fodder, partial loan for purchasing cattle, free medical facilities for cattle, training programmes to enhance the skill, artificial insemination etc. besides purchasing milk on reasonable price from the member. Dairy cooperative has been doing a fabulous job and increasing its turn over day by day. Its growth may be measured on the basis of employment rate, production and productivity rate, and cost and return. Present study takes three variables to analyse the growth of Uttarakhand dairy cooperative across the state.

Review of literature:

Some of the following existing and relevant literature has been reviewed in order to know about the scope, need and lags of the related study.

Parthsarthi in his desertation "Analyzing the effectiveness of a Dairy cooperative/The cost of Milk Production" examined the effectiveness of Amul by comparing the procurement prices offered by the dairy cooperative to the cost of producing milk.

Ashoke Kumar Ghosh and Keshav Lall Maharjan in his paper "Development of dairy cooperative and its impacts on milk production and household income : A study on Bangladesh milk producers' cooperative union limited" explored the chronological development of BMPCUL; extension of its areas and activities towards dairy development in Bangladesh and analyses some aspects of its performance in milk production and household income.

Srikanth his study "Performance of cooperative dairies and their impact on milk production, income and employment in Kolar district: An economic analysis" was aimed to find the impact of performance of cooperative dairies on milk production, income and employment. The primary data was collected from four milk cooperatives from Kolar District of Karnataka. A trend analysis of physical indicators like total membership, total employees and total milk production showed an increasing trend year on year for the period 1995-96 to 2004-05. And for the same period financial performance was analysed based on financial indicators like share capital, sales value, net profit net worth etc. It was observed that all financial indicators showed a positive trend during the period. The employment generation and income earned by the members of cooperative dairies were higher compared to the non members because the members of cooperative societies received different services from the societies at low cost or free of cost

Objective of the study :

To analyse the trend of growth of average monthly procurement of milk, sale of milk and membership of dairy society over the 15 years of operation of Uttarakhand dairy cooperative.

METHODOLOGY

The secondary data has been collected from the Uttarakhand dairy cooperative federation limited situated at mangalparao in Haldwani (Nainital, Uttarakhnad)) for the financial years 2002-03 to 2016-17 on April 2017. Secondary data consists data of all 13 districts of 15 years as mentioned above of three variables taken for analysing the growth of Uttarakhand dairy cooperative. The growth rate of all three variables have been taken of all 13 districts

collectively in order to determine the growth rate of Uttarakhand dairy cooperative federation. Its products are popular by the name of Aanchal. Broad variables that are assessing the growth of dairy cooperative federation of Uttarakhand : daily average procurement of milk, daily average sale of milk and total membership of the dairy cooperative societies. For this trend analysis has been practiced to determine the trend of growth of concerning variables over 15 years.

Data analysis and interpretation :

Collected data has been analysed with the help of trend analysis to analyse the trend of growth of the three variables taken for the study.

Membership In Dairy Cooperative Societies :

$$Y = 3278 * X - 6E{+}06 \tag{1}$$

$R^2 = 0.974$

where: Y = Total membership

X = Year

Fig. 1 shows the total number of membership per annum and trend of growth of membership over 15 years *i.e.* from 2002-03 till 2016-17. In the above figure black line shows the total number of membership of every year whereas Red line shows the trend of growth of membership since Uttarakhand dairy cooperative has been started working. Value of R^2 is 0.9749 that shows that there is 97% impact of time element on the number of membership of dairy cooperative societies, other effective factors are being constant. This membership depicts the growth of operation of dairy cooperative across the state Uttarakhand. As Table 1 shows, in 2002-03 when dairy cooperative started work separately, total number of members in dairy cooperative societies were 110344, in 2003-04 it increased by 3%, in
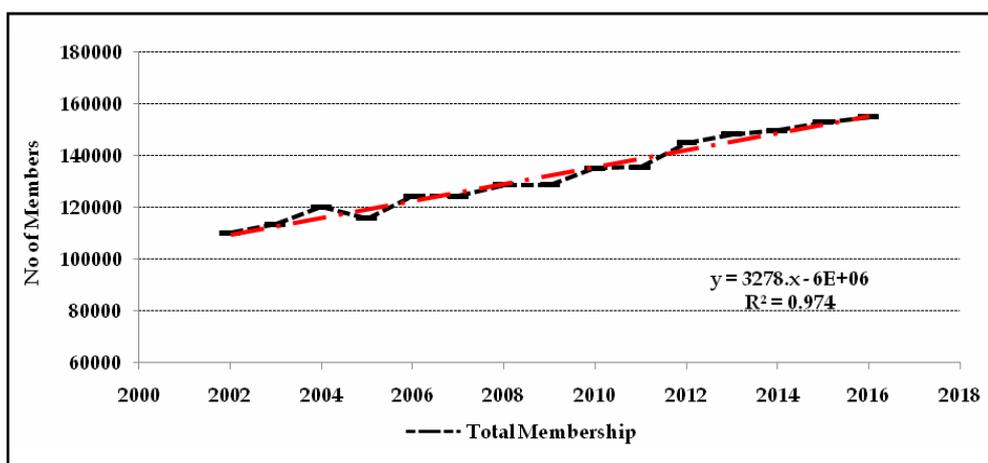

Fig. 1 : Trend line presentation of membership of dairy cooperative societies per year in Uttarakhand

Source: Based on data (2017) provided by Aanchal dairy cooperative federation limited, Nainital, Uttarakhand

Table 1 : Summary of membership of each dairy cooperative union (2002-03 to 2016-17)														
Year / Districts	Nainital	US Nagar	Almora	Bageshwar	pithoragarh	champawat	Dehradun	Haridwar	Uttarkashi	New Tehri	Pauri	Rudraprayag	Chamoli	Uttarakhand	Yearly growth (in %)
2002-03	17866	18418	15645	4460	5093	10110	10110	7600	2079	1928	2887	8949	5199	110344	-
2003-04	19124	20376	15870	2093	5022	5603	10872	4951	4797	8058	9009	1958	5857	113590	3
2004-05	20622	21834	16550	2305	5265	5970	11282	5462	5188	8500	9159	2108	5957	120202	6
2005-06	21439	22494	12683	2365	5520	6270	11872	6640	5215	8789	4750	1740	6057	115834	-4
2006-07	23000	24480	13196	2425	5894	6580	13456	7961	5220	9172	4803	2085	6122	124394	7
2007-08	23000	24480	13196	2425	5894	6580	13530	7961	5220	9172	4803	2085	6122	124468	0
2008-09	23550	24480	13955	2635	5894	7020	13754	8481	5666	8840	5162	2125	7292	128854	4
2009-10	23550	24480	13955	2635	5894	7020	13754	8481	5666	8840	5162	2125	7292	128854	0
2010-11	24065	25310	15013	2965	6250	7470	14062	9836	6019	9281	5423	1900	7652	135246	5
2011-12	24275	25210	15219	3017	6250	7560	11410	10156	6745	9881	5653	2273	7952	135601	0
2012-13	25595	26666	15315	3062	6856	8620	15070	10481	6829	9752	5970	2295	8570	145081	7
2013-14	26005	26790	15532	3292	9037	7875	15104	10481	6910	10099	6050	2455	8645	148275	2
2014-15	26480	26790	15652	3292	9037	7920	15132	11061	7005	10189	6080	2515	8716	149869	1
2015-16	27067	26790	15831	3352	9087	8090	15192	11626	7475	10460	6575	2545	8776	152866	2
2016-17	27520	26761	15936	3534	9287	8736	15252	11778	7519	10532	6681	2625	8956	155117	1

2004-05 membership was 120202 with 6% growth while it decreased by 4% in 2005-06 and total membership fell down to 115834. But just next year it observed increasing growth of 7% in 2006-07 and growth rate went up to 124394 members. Slight fluctuations has been observed every year. It gets 155177 members in 2016-17. It confers the 2.70% cumulative growth over 15 years since 2002-03 to 2016-17. With the help of this equation 2 Membership growth in dairy cooperative societies across Uttarakhand in coming next years can be predicted..

Procurement of milk :

$$Y = 4719*X - 9E+06 \qquad (2)$$
$$R^2 = 0.847$$

where: Y = Procurement of Milk

X = Year

Fig. 2, presents the growth rate and trend of procurement of milk over the 15 years of dairy cooperative of Uttarakhand. In the above figure black line displays the daily average procurement quantity of milk in a certain financial year while Red line shows the trend line of growth of daily average procurement of milk in a particular financial year of operation since dairy cooperative has been started working across the Uttarakhand till the 31st March of 2017. Value of R^2 *i.e.* 0.8477 presents that time element has approximately 85% impact on growth of quantity of procurement of milk if other factors remained controlled. As Table 2 shows, in 2002-03 when dairy cooperative started working across the Uttarakhand, daily
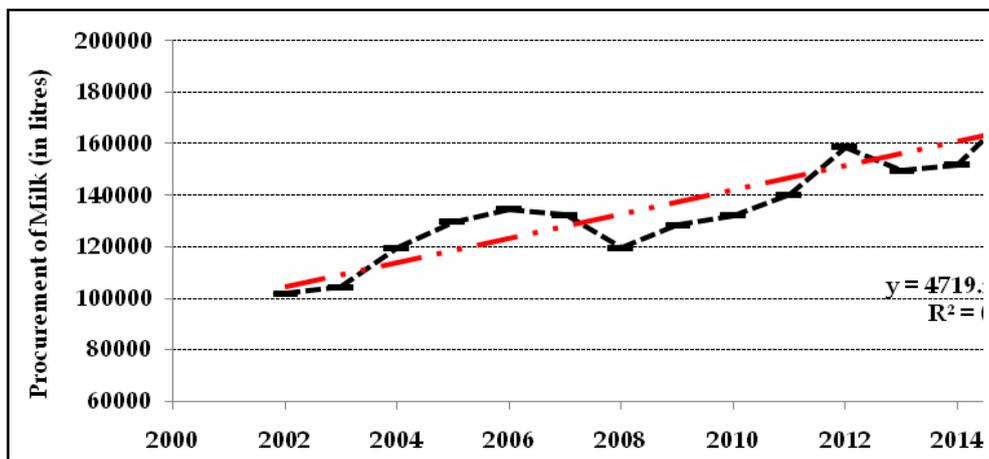
Fig. 2 : **Trend line presentation of daily average procurement of milk per year in Uttarakhand**

Source: Based on data (2017) provided by Aanchal dairy cooperative federation limited, Nainital, Uttarakhand

Year/ Districts	Nainital	US nagar	Almora	Bagesh war	Pithoragarh	Champawat	Dehradoon	Haridwar	Uttarkashi	New Tehri	Pauri	Rudrapryag	Chamoli	Uttarakhand	Yearly growth (In %)
2002-03	35943	39356	8089	310	985	2479	4136	2141	1243	1885	3815	381	1092	101855	-
2003-04	38320	41171	8486	243	896	2459	3663	2550	1060	1477	2356	291	1283	104255	2
2004-05	42837	48944	9634	272	1088	3453	3284	4191	877	1672	1974	309	1142	119677	15
2005-06	49954	51813	9861	292	1268	3858	3679	4453	524	1190	2135	210	366	129603	8
2006-07	52330	53179	9584	197	1944	3872	4228	4569	515	1371	2168	196	322	134475	4
2007-08	48289	52096	9495	171	2622	4839	4434	4570	621	1594	2778	281	572	132362	-2
2008-09	45093	41215	8409	150	2343	5282	4220	5602	721	2499	2725	270	1086	119615	-10
2009-10	46075	42589	9886	235	2482	6234	6208	5845	811	3236	3245	225	1297	128368	7
2010-11	50246	38655	11721	242	2529	7096	6441	6084	821	3077	3548	187	1417	132064	3
2011-12	55453	38969	11728	297	2774	8412	7345	6146	757	2704	3808	212	1601	140206	6
2012-13	60443	44808	11684	435	3450	9496	10761	7438	791	2781	4350	197	2074	158708	13
2013-14	60929	40003	11190	447	3773	9558	8668	6078	588	2566	4002	130	1583	149516	-6
2014-15	65007	40045	9681	375	4213	9156	8543	6827	716	2014	3684	158	1394	151813	2
2015-16	72797	43971	9465	480	5510	10527	11166	11374	727	1889	3649	242	1229	173027	14
2016-17	79679	48124	9867	633	5273	9587	11689	11089	825	2164	2516	167	1320	182933	6

Table 2 : Summary of procurement of milk of each dairy cooperative union and Uttarakhand (2002-03 to 2016-17)

average quantity of procurement of milk was 101855 litres, in 2003-04 it increased by 2% only, while in 2004-05 the average was 119677 litres with 15% growth. In 2004-05 daily average quantity of procurement of milk got increased 129603 from 119677 but the growth

rate decreased by 7%. In the further few years it kept decreasing even though negative growth rate also has been observed in 2007-08 and 2008-09. But in 2009-10 it went positive and increased by 7%. In the next years up and downs has been observed in procurement quantity of milk and the 13% growth rate observed in 2012-13 where daily average procurement quantity of milk was 158708 litres. In 2013-14 it observed negative growth rate of 6% by which quantity of procurement of milk went down 149516 from 158708 (2012-13). In 2014-15 growth rate again found positive with 2% growth rate and it was 14% in 2015-16 with 173027 litres procurement of milk per day. Increasing trend illustrates that dairy cooperative working very well in the way of procurement of milk. With the help of equation 3 future predictions with respect to procurement of milk can be determined.

Sale of milk :

$$Y = 5798*X - 1E+07 \tag{3}$$

$R^2 = 0.703$

where: Y = Sale of Milk

X = Year

Fig. 3 presents the growth rate of daily average milk sale and trend of milk sale for 15 years that ranges from 2002-03 to 2016-17. In the above figure black line shows the daily average milk sale in litres while Red line presents the trend line of growth of milk sale since dairy cooperative has been started working in Uttarakhand. R^2 value shows that there is approximately 70% impact of time element on the sale of milk. As Table 3 shows in 2002-03 daily average sale of milk was 66995 litres, in 2003-04 it increased by 12% and total sale of milk on an average got hiked to 75199 litres per day. In 2006-07 daily average milk sale grown but growth rate decreased by 1% whereas it decreased by 7% in 2007-08. In 2008-09 again growth rate of daily average milk sale boomed up by 5% but in the very next year it observed slow down of 13% in 2009-10. Since 2009-10 growth rate has been remained very low *i.e.* around 2 and 4%. In 2016-17 daily average milk sale is 150752 litres. It can be
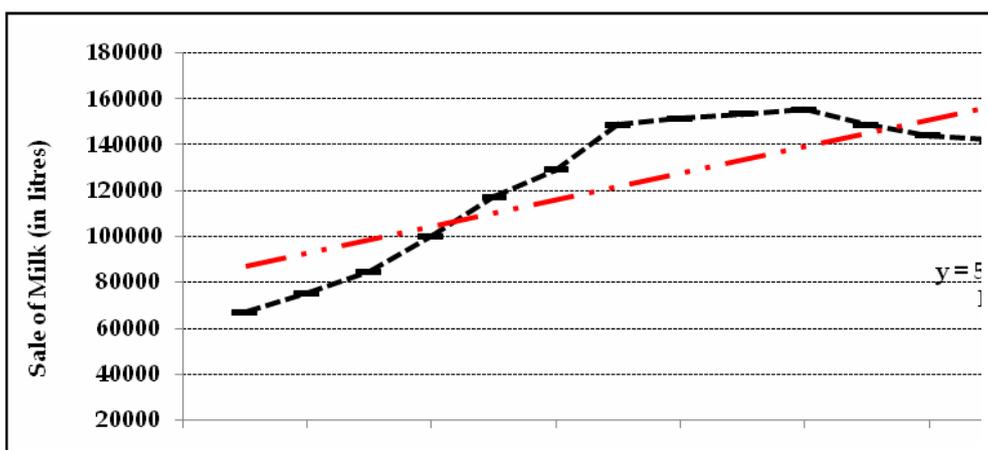

Fig. 3 :   Trend line presentation of daily average sale of milk per year in Uttarakhand
Source: Based on data (2017) provided by Aanchal dairy cooperative federation limited, Nainital, Uttarakhand

Year / districts	Nainital	US Nagar	Almora	Pithoragarh	Champawat	Dehradun	Haridwar	Uttarkashi	New Tehri	Pauri	Chamoli	Uttarakhand	Yearly growth (In %)
Table 3 : Summary of sale of milk of each dairy cooperative union and Uttarakhand (2002-03 to 2016-17)													
2002-03	32128	4379	8337	1402	418	8673	0	1151	1562	6745	2200	66995	-
2003-04	35943	5863	8629	1564	353	10873	0	1153	1636	7187	1998	75199	12
2004-05	39670	9077	9221	1622	164	13482	0	857	1534	7057	1864	84548	12
2005-06	44080	12163	11428	2344	237	18161	0	1165	1739	6948	1764	100029	18
2006-07	49324	19601	12408	2678	787	19996	0	1464	2015	7098	1965	117336	17
2007-08	52834	28380	11761	2882	1374	19854	1106	982	1762	7528	572	129035	10
2008-09	60488	38191	13208	3188	1628	18924	472	947	2319	8217	1036	148618	15
2009-10	64355	36365	12623	3462	1594	15460	3068	1226	2744	9081	1495	151473	2
2010-11	66238	37646	12011	3304	1618	14397	5172	1149	2685	7556	1713	153489	1
2011-12	69083	39345	10240	3473	1693	14210	5082	1015	2259	7249	1813	155463	1
2012-13	70439	34722	7432	3846	1677	14303	4844	795	2116	6383	2024	148581	-4
2013-14	68440	30838	8924	4072	1731	14986	5606	654	1922	5515	1370	144058	-3
2014-15	67344	30168	8521	4326	1831	15863	6060	674	1697	4396	1252	142132	-1
2015-16	67351	30018	9031	4707	2272	16965	7125	703	1902	4289	1144	145509	2
2016-17	75680	27178	9228	5598	3504	18802	8316	891	1763	3838	1134	150752	4

concluded that the daily average sale of milk has increased by 8.33% within 15 years of operation of dairy cooperative in Uttarakhand with increasing and decreasing growth rate over the 15 years of dairy cooperative operation. With the help of equation 3 the daily average milk sale for a particular financial year can be predicted.

RESULTS AND DISCUSSION

Income and employment generation:

In Ancient era dairy farming was not the commercial activity it was just the supplement of the agricultural activity. But now a days it is transforming in the commercial activity of the primary sector. Even it contributes 30% of the country's agricultural output.

Platform to sale milk:

Poor and illiterate people feel ease of doing business through dairy cooperative societies. They get return on the basis of quality of milk without interference of any middleman.

Women empowerment:

Women constitutes 70 % of labour force in livestock sector as various studies tells the marginal condition of women that is that women do work without pay. But village level dairy cooperative societies have given women platform to sale milk on reasonable price. There

are huge number of women membership in village level dairy cooperative societies.

Free from exploitation:

"For people, by people" this is one of the principle of the cooperative unions. By which exploitation gets minimise or vanish from the worksite. Same has happened with the dairy cooperative society in Uttarakhand. Therefore the number of membership has been increasing every year.

Supply:

Dairy cooperative in Uttarakhand has been able to fulfil the demand of consumer for milk and milk products.

Small herd size:

there is on an average 2 to 3 cattle in hill districts and 5 to 6 cattle in the plain districts of the Uttarakhand have been observed. There is total procurement on an average is 173027 litres/ day in 2016-17 whereas it was 101855 litres. It is increased but still it is low just because of small size of herd sizes are found. Dairy cooperative operations and facilities provided could not influence herd sizes. Because they are not that much profitable to the members.

Low productivity:

There are local breed quality of the cattle their productivity is quite low as compared to hybrid breeds of the cattle. Because of low productivity, procurement quantity of milk also low.

Inactive members:

There is huge number of such members who avail all the facilities provided by the dairy cooperative union but do not supply milk. So there is a discrepancy in between membership and procurement quantity of milk.

Inactive and Inadequate accessibility of dairy cooperative societies:

This is also one of the factor that the Uttarakhand dairy cooperative are not performing well as more as it can do. There are lack of cooperative societies and various societies among them are inactive or have lesser number of members. Because of geographical constraints it becomes difficult to members

Illiterate and poor members:

The majority of the members are illiterate and poor. They don't take interest in the training programmes and skill programs arranged by the dairy cooperative unions in the district. Their illiteracy and financial weakness affect productivity of cattle and herd size as well which further affect procurement and returns

Geographical threats:

Challenging geographical location is one of the most big obstacle in the way of elevation

of dairy industry. This hinds the movement of the cattle one place to other place. Land sliding, flood, rock sliding are also some geographical threats for cattle rearing. For instance milk industry got affected very badly a huge number of cattle flown along with people in flood in hills of Garhwal division in Uttarakhand in 2013-14.

Lack of services:

There is lack of services like artificial insemination, health care services, training and skill services in Uttarakhand especially in hill districts of Uttarakhand.

Lack of product variability:

There is very few milk products made by Uttarakhand dairy cooperative. This also one of the hindrance in the growth of the dairy cooperative because it is not able to meet the need or preference of taste of consumer.

No change in composition (quality) and quantity of milk:

There is no change has been found in the composition of milk. Procurement price paid on the basis of snf found in milk. But there is more number of local cattle and cow is in majority of the cattle which produce less and consist less snf. Though fodder and supplements provided by the dairy cooperative union.

Suggestions :
Proper monitoring:

Loan provided by the dairy cooperative unions for increasing herd size and purchasing better breed of cattle, But money of loan used in other works by the members like house building, furniture, marriage etc. It should be taken under monitoring to confirm that loan money should be using for the improving dairy farming activities.

Adequate facilities and training:

Artificial insemination, health care facilities for cattle and various types of training and skill programs should be provided to the members through dairy cooperative unions.

Research and development activities:

Dairy cooperative should be kept engaged in research and development activities in order to elevate the dairy cooperative.

Other facilities:

Other facilities like health, education, insurance, electricity, creche etc. facilities should be given to the members which will attract people for becoming the member of dairy cooperative.

Norms for setting up village level dairy cooperatives:

It has been found that there are dairy farmers who do not supply milk to the society but are members of the society. It creates contradiction between the increasing number of

membership and unchanged quantity of milk procurement. This is happened just due to the norm of setting up dairy cooperative societies that is that there should be 10-15 members to form the village level dairy cooperative society. This kind of fast and hard rule makes the entity improper functioned.

Encouraging and Incentive Programs:

Dairy cooperative unions should organise encouraging and incentive program there by dairy farmers take interest to work with dairy cooperatives.

Reward and Punishment:

The strategy of reward and punishment may be the one of the stimuli in order to growth of dairy cooperative. The societies or member do good job they should be awarded and who do not work satisfactorily should be punished.

Product variation:

This is also one of the important factor which may be lead the dairy cooperative towards the faster growth. Globalisation being changing the taste, preference, choice of the consumers. There is huge varieties of the products made by milk in India and rest of the world. Dairy cooperative union should start taking variation in milk products such as it should be started making milk powder, flavoured milk, khoya, cream and etc.

Conclusion :

Uttarakhand dairy cooperative and its associated dairy cooperative unions and village level dairy cooperative societies working well across Uttarakhand. its membership, procurement and sale of milk increasing day by day but it may work more effectively especially in rural area. Dairy cooperative doing fabulous job in supplying dairy products till the remote area of the hills of Uttarakhand and providing the platform of sale of milk to the poor and small dairy farmers. Despite of all these its growth is not that much satisfactorily. There are huge number of inactive members in dairy societies and inactive dairy cooperative societies as well. These hinds should be controlled and mend in order to enhance the growth of dairy cooperatives.

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