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## Performance of milk producers' cooperative unions in Tamil Nadu

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### Abstract

Tamil Nadu's dairy industry has historically been strengthened by the network of cooperative milk societies. The dairy industry took a new shape when the Tamil Nadu Dairy Development Department was formed in 1958. The Salem District had larger number of Milk Producers' Cooperatives Social orders to the tune of 776 Numbers while Madurai District had the largest number of 128 numbers in active societies. Tiruchirappalli District Milk cooperation society had the largest number of cattle's. The Salem District Cooperatives Milk Producers' Association had the largest processing capacity of 5 lakh liters of each day. In terms of procurement of milk each day, the Salem District Milk Producers' association has succeeded and accomplished an increase of around 12% over the year 2019-20. The Madurai District Milk Producers' association found to possess the first level in terms of milk sales with an absolute quantity of milk sold during the year 1.77 lakh liters during the year 2019-20 which was found to be increased to the level of 1.81 lakh liters of each day during the year 2021-22. The increased is represented 2.24 percent throughout the year 2019-20. The result revealed that conventional percentage analysis, forecasting of milk production and sales percentage. The Salem District cooperative milk producers union took the first place in terms of procurement of milk while of obtainment of milk and the runner up as far as amount of milk sold each day.

**Keywords:** Salem, milk procurement, co-operative, cattle, sales, forecast

### 1. Introduction

Tamil Nadu's dairy industry has historically been strengthened by the network of cooperative milk societies. Today, around 30 per cent of the primary milk producers' cooperative societies are dormant. Tracing the history behind these dormant societies is important and relevant in the light of the Narendra Modi government's farm laws, to explain the possible impacts of these laws on the agricultural sector, especially on the small and marginal farmers.

Tamil Nadu currently ranks 10th in milk production in India. The value of milk produced annually in Tamil Nadu is more than one and half times of value of Paddy annually produced in the Stock. In Tamil Nadu, milk group contributes More than 43 percent share in the value of output from Livestock sector (Sujatha, N.A, 2015) [7]. It is an important economic activity for small households, small and marginal farmers and landless agricultural labourers across the state. Until 1990s, rearing cows was an essential part of rural life. The households which may not have cattle rearing as their primary source of income also generated a minimal income from milk production. And this was primarily with the women of the family. Women took care of the cattle, and after setting aside the milk needed for the family, sold the remaining to the local community.

The dairy industry took a new shape when the Tamil Nadu Dairy Development Department was formed in 1958. This created a network of cooperative milk societies across the state. It is a three-tier system with the Primary Milk Producers' cooperative society at the village level, District Cooperative Milk Producers' Union at the middle level in the districts. The Tamil Nadu Cooperative Milk Producers' Federation (TNCMPF) was set up as the apex body at the state level. In 1981, the TNCMPF took over the activities such as milk procurement, chilling, processing, packing and sale of milk to the consumers from the Tamil Nadu Dairy Development Corporation.

The primary milk producers at the village level registered themselves with the society. Each society had at least 25 members.

The office bearers of the society at each level were elected by the members. These representatives along with the government officials arrive at the pricing from time to time. The society shared its profit with the milk producers. Even a household that produces just 2 to 5 liters can drop off their produce in the society if they are a member. The volume did not matter. This led to more and smaller farmers and landless agricultural laborers getting into the industry. In turn increasing bovine milk production across the state. There are 12,585 Primary Milk Co-operative Societies at village level, out of which 2,075 are exclusive Women Milk Producers Co-operative Societies.

During 1992, when the Government of India formulated "Milk and Milk Products Order" with a view to permit private dairies to enter into the dairy sector, it was told that this was to increase the availability of milk and milk products through the organized sector. Private dairy companies started setting up their procurement centers in villages. They followed a door to door strategy. They first approached the small and marginal milk producers individually. They were given attractive offers ranging from higher procurement prices to milk and free cattle fodder. Gradually these small milk producers drifted away from the cooperative milk societies and started selling their produce to these private companies.

If you have to sell your produce to the society, you need to personally go and drop your produce there. The produce will be weighed, tested and procured. An entry will be added to your account held with the society. Periodically the account will be settled. But these private companies offered ready cash. They picked up the produce from your doorstep using their own vehicle. This seemed comfortable for the milk producers.

After securing the small milk producers within their network, the companies started bargaining on the price. It is important to note that this bargain was again on an individual basis. The prices offered by different producers in the village were compared. The milk producers, who were partners in a society, now became competitors. They started bidding prices against their neighbors. And the private companies gained through fueling this competition. Then they introduced various systems like quality control etc., and found reasons to reject a produce, thus making the milk producers anxious of procurement. They put the milk producers on a spot where they were forced to follow the guidelines and instructions of these companies in order to get their milk procured. They also started providing loans to set up the infrastructure to follow these guidelines. Thus, these small milk producers became indebted to these companies on a great scale.

Drop-out of milk producers from the societies, many societies lost their membership. A society can be registered with the federation only if it has at least 25 members. If the numbers go below 25, the society automatically loses its legal stance. Further many societies became dormant with no procurement. The Tamil Nadu Government states that presently there are 3,831 dormant societies, which is accounted for 30 per cent of the total milk societies registered. After 15 years, the milk producers are slowly realizing the trap that they have fallen into. Some villages are trying to re-establish their societies and revive the societies that have been dormant. But by then, many small and marginal milk producers are already out of the industry.

Because of the involvement of private milk trading companies, how best the milk producers' union has made its stride in procuring and selling of milk in Tamil Nadu is documented in this paper.

## 2. Methodology

The research paper presented here depend mainly on the secondary data furnished by the District Cooperative Milk Producers' Union and their annual reports that permitted the author to do part of the analysis of Ph.D. Thesis entitled "Risk and Resilience in Milk Production and Supply Chain Management" after placing a request before the concerned authorities of Milk Producers' Unions. The analysis includes the following

- Conventional Percentage Analysis
- Forecasting of Milk Production and Sales Sujatha (2015) <sup>[7]</sup> has also used similar methodology. In addition to this he has trend analysis also but is our study based on the data available for early of milk production and sales was practiced.

## 3. Methodology

Simple percentage analysis included the percentage change in the milk production and sales in a decade of time or in different parts of time because of the impact of Milk Products Order and its implementation in Tamil Nadu. That has permitted the entry of private operators in Tamil Nadu. In this situation, the percentage changes in production and sale will help a researcher to analyze the factors influencing its performance and the forecasting technique is also used to forecast the milk production and sales during the year 2025 by utilizing the time series data for 12 years duration. This will place the cooperative unions in prioritizing their action plans to improve their performance.

## 4. Results and Discussion

To highlight the performance of Milk Producers' Union, the results are divided into different sub heads on the following lines and are discussed suitably.

- Number of Milk Producers' Cooperative Societies in Tamil Nadu.
- Union-wise Milk Handling Capacity in Tamil Nadu.
- Quantity of Milk Procured by Different Milk Unions in Tamil Nadu.
- Quantity of Milk Sold by Different Milk Unions in Tamil Nadu.
- Quantity of Milk Sold by Salem District Milk Producers' Union.
- Forecasting of Milk Sold by Salem District Milk Producers Union by 2025 AD.

### 4.1 Number of Milk Producers' Cooperative Societies in Tamil Nadu

Performance of Milk Producers' Cooperative Union is discussed by its strength of cooperative milk producer societies in Tamil Nadu, their production and sale of milk over a period of time. The strength of Milk Unions mainly depends on the number of active milk producers' cooperative societies available in Tamil Nadu under each Milk Producers' Union and its production and sales is discussed. The details are analyzed and the results are presented in Table 1.

**Table 1:** Number of Milk Producers' Societies in Each Milk Producers Union in Tamil Nadu during 2021-2022

Sl. No	Name of the District Milk Producer Unions	Number of Active Societies	Number of Dormant Societies	Number of Cattles in Cooperative Ambit	Number of Cattles per Active Society
01	Kancheepuram and Thiruvallur	480 (05.12)	108	58000	121 (02.70)
02	Villuppuram	592 (06.32)	021	148000	250 (05.56)
03	Cuddalore	185 (01.98)	040	18000	097 (02.15)
04	Vellore	326 (03.48)	045	128000	393 (08.74)
05	Thiruvannamalai	611 (06.52)	085	178000	291 (06.47)
06	Krishnagiri	234 (02.50)	038	38000	162 (03.60)
07	Dharmapuri	266 (02.83)	026	55000	207 (04.60)
08	Salem	776 (08.27)	018	185000	238 (05.29)
09	Namakkal	510 (05.43)	025	53000	104 (02.31)
10	Erode	514 (05.49)	017	73000	142 (03.15)
11	Tiruppur	439 (04.68)	038	56000	128 (02.84)
12	Coimbatore	348 (03.71)	040	109000	313 (06.96)
13	The Nilgiris	089 (00.95)	005	25000	281 (06.25)
14	Madurai	728 (07.76)	128	50000	069 (01.53)
15	Theni	499 (05.32)	070	24000	048 (01.06)
16	Dindigul	190 (02.02)	043	29000	153 (03.40)
17	Tiruchirappalli	613 (06.53)	069	233000	380 (08.45)
18	Karur	156 (01.66)	020	46000	295 (06.56)
19	Tanjore	387 (04.12)	061	46000	119 (02.64)
20	Pudukottai	346 (03.69)	084	24000	069 (01.53)
21	Sivagangai	504 (05.37)	090	25000	049 (01.90)
22	Virudhunagar	116 (01.23)	024	12000	103 (03.30)
23	Tirunelveli	238 (02.53)	021	37000	155 (03.44)
24	Thoothukkudi	177 (01.88)	046	17000	096 (02.13)
25	Kanyakumari	052 (00.55)	002	12000	231 (05.14)
	Total	9376 (100.00)	1164	1679000	4494 (100.00)
	Mean	375 (89.07)	046 (10.93)	67160	180

Figures in Parentheses indicate Percentage to Total

**Source:** Policy Note on Animal Husbandry, Dairying, Fisheries and Fishermen Welfare Department, Government of Tamil Nadu, Chennai – 2022

In Tamil Nadu, 25 Milk Producers Unions are available. Among the 25 unions, Salem District had higher number of Milk Producers' Cooperative Societies to the tune of 776, which are found to be active followed by Madurai District which is in possession of 728 active societies accounting for 8.27 per cent and 7.76 per cent to the total number of active milk producers' societies. Next to these two districts, Tiruchirappalli, Thiruvannamalai and Villuppuram districts were in possession of active societies which are respectively arrived at 613, 611 and 592 which accounted for 6.53 per cent, 6.52 per cent and 6.32 per cent to the total. While discussing the active societies, one should also care on the inactive or dormant societies in each milk union. On an average, the number of active primary milk cooperative societies per milk union is arrived at 375 in numbers.

Among the 1164 inactive milk producers' cooperative societies in Tamil Nadu, Madurai had the highest share of 128 societies. It indicated that the households who are rearing livestock animals and are members in milk cooperative societies are more cautious in tapping the benefits offered by the private dairy operators. At this juncture, the supply of milk was made to the private operators and hence the membership becomes inactivated in the cooperative milk society for their continuous silence. Such dormant societies are more in Sivagangai, Thiruvannamalai, Pudukottai and Tiruchirappalli which respectively accounted to 90, 85, 84 and 69 in numbers. Dormancy in cooperative societies is observed because of lack of interest to supply the milk to the cooperative societies as they are not offering an attractive price per unit of milk.

Overall scenario states that around 89 per cent of the Primary Milk Cooperative Societies are active and functioning in favour of Milk Unions and only 11 per cent of the milk societies are found to be inactive status. The inactiveness of cooperative milk societies might also be due to the absence of good leadership to the society.

The assets of active cooperative milk producers' society or the backbone of active society relies on the number of cattle per society. Tiruchirappalli District Milk Union had the highest cattle population of 2.33 lakhs followed by Salem District milk union is in possession of 1.85 lakhs of cattle, Thiruvannamalai District Milk Union and Villuppuram District Milk Unions were in possession of 1.78 lakhs of cattle and 1.48 lakhs of cattle respectively. It indicated that these are the five milk unions are capable of generating higher out turn of milk. However, the average number of cattle population per active society of District Milk Union is arrived at only 180 in numbers.

#### 4.2 Union-wise Milk Handling Capacity

With the support of 89 per cent of the active cooperative societies, how best the milk unions are handling the milk in terms of capacity is the need of the hour and hence these are analyzed and the results are presented in Table 2. Among the 25 milk unions in Tamil Nadu at district level, only 17 milk unions are having the processing capacity of dairies. The processing capacity per day is arrived at 30.13 lakh litres in which the chilling capacity is arrived at 21.95 lakh litres per day which is accounted for 72.85 per cent to the total processing capacity of dairies per day (Table 2).

**Table 2:** Union-wise Milk Handling Capacity in Litres per Day

Sl. No	Name of the Milk Union	Processing Capacity of Dairies	Number of Chilling Centres	Chilling Capacity
01	Kancheepuram and Thiruvallur	100000 (03.31)	02	55000
02	Villuppuram	100000 (03.31)	01	77000
03	Cuddalore	NA	01	44000
04	Vellore	150000 (05.00)	02	121500
05	Thiruvannamalai	NA	02	230500
06	Krishnagiri	200000 (06.64)	01	31000
07	Dharmapuri	NA	01	123000
08	Salem	500000 (16.60)	01	287500
09	Namakkal	NA	02	53000
10	Erode	300000 (09.95)	02	249000
11	Tiruppur	NA	02	195000
12	Coimbatore	500000 (16.60)	03	82000
13	The Nilgiris	50000 (01.65)	01	11000
14	Madurai	500000 (16.60)	0	133000
15	Theni	NA	01	7000
16	Dindigul	30000 (00.10)	02	80000
17	Tiruchirappalli	250000 (08.30)	02	194000
18	Karur	NA	01	24500
19	Tanjore	48000 (01.60)	01	51000
20	Pudukottai	55000 (01.82)	00	25000
21	Sivagangai	50000 (01.65)	01	58000
22	Virudhunagar	50000 (01.65)	01	5000
23	Tirunelveli	100000 (03.31)	02	15000
24	Thoothukkudi	NA	02	43000
25	Kanyakumari	30000 (00.10)	00	0
Total		3013000 (100.00)	34	2195000 (72.85)

Figures in Parentheses indicate Percentage to Total; NA: Not Available

**Source:** Policy Note on Animal Husbandry, Dairying, Fisheries and Fishermen Welfare Department, Government of Tamil Nadu, Chennai – 2022

Table 2 outlined that the Salem District Cooperative Milk Producers' Union had the highest processing capacity of 5

lakh litres per day. Similar is the status prevailing in respect of Coimbatore and Madurai District milk unions which are having an equivalent processing capacity as in Salem. At second level, Tiruchirappalli is having only 2.5 lakh litres of processing capacity of milk followed by 1.50 lakh litres in respect of Vellore milk union. Though there were 25 district milk unions, the processing capacity is installed only in 17 milk unions. Among all the 17 milk unions, Kanyakumari District milk union is the least one which is capable of processing only 30000 litres per day. It is mainly due to the poor number of animals which is arrived at only 12000. However, it had considerable animal population per active society. Effort needs to be taken to enhance the breeds and its yielding capacity so that higher unit of milk could be drawn per society.

### 4.3 Quantity of Milk Procured by Milk Unions

As we discussed earlier that Tamil Nadu is blessed with 25 District Milk Producers' Union spread over from Kancheepuram to Kanyakumari. Based on the data availability, two points of time was compared to assess how best the milk unions are committed to procure the milk every day from the Primary Milk Producers' Cooperative Societies. For that purpose, the data on 2019-20 and 2021-22 were taken into account and the results are appropriately analyzed presented in Table 3. All the 25 milk unions are procuring around 29.74 lakh litres of Milk every day during the year 2019-20. But, the quantity of milk procured per day during the year 2021-22 was generally found to be increased to the level of 34.60 lakh litres per day (Table 3).

The average milk procurement made by a single milk union in Tamil Nadu is found to be 1.24 lakh litres per day during the year 2019-20 and the same was found to be increased to the tune of 1.38 lakh litres per day during the year 2021-22 which in accounted for 11.69 per cent increase over the year 2019-20 (Table 3).

**Table 3:** Details of quantity of milk procured by different milk producers' unions in Tamil Nadu

SL. No	Name of the District Milk Producers' Union	Average Milk Procurement per Day		Percentage Change in Procurement During 2021-22 over 2019-20
		2019-20	2021-22	
01	Kancheepuram and Thiruvallur	117000	113037	(-) 03.39
02	Villuppuram	200000	178437	(-) 10.78
03	Cuddalore	51000	42112	(-) 17.42
04	Vellore	145000	128791	(-) 11.17
05	Thiruvannamalai	256000	253141	(-) 01.11
06	Krishnagiri	92000	130870	42.25
07	Dharmapuri	140000	83746	(-) 40.18
08	Salem	459039	513411	11.84
09	Namakkal	159521	144421	(-) 09.46
10	Erode	203084	216488	06.60
11	Tiruppur	224127	166649	(-) 25.64
12	Coimbatore	161029	222436	38.13
13	The Nilgiris	12430	11031	(-) 11.25
14	Madurai	287159	206299	(-) 28.15
15	Theni	112000	104333	(-) 06.85
16	Dindigul	88659	79509	(-) 10.32
17	Tiruchirappalli	535420	481966	(-) 09.98
18	Karur	80400	77199	(-) 03.98
19	Tanjore	47334	83620	76.65
20	Pudukottai	56708	60350	06.42
21	Sivagangai	58929	64782	09.93
22	Virudhunagar	16190	16361	01.06
23	Tirunelveli	66173	44666	(-) 32.50
24	Thoothukkudi	34000	31709	(-) 06.73
25	Kanyakumari	05984	04734	(-) 17.54
Total		2973766	3460098	16.35
Mean		123906.9	138403.9	11.69

**Source:** Policy Note on Animal Husbandry, Dairying, Fisheries and Fishermen Welfare Department, Government of Tamil Nadu, Chennai – 2022

In general, the milk procurement was found to be increased between these years. However, the overall scenario indicates that most of the milk unions are not performing in a better way due to the decrease in the milk procurement between the years 2019-20 and 2021-22. Among the 25 milk producers' union, Tanjore found to generate higher milk procurement during the years considered which is found to be 76.65 per cent increase over the year 2019-20. But its absolute quantity of procurement was comparatively less and it stands between 47334 litres and 83620 litres during 2019-20 and 2021-22. Whereas, the Tiruchirappalli District Milk Union was found to make procurement during the year 2019-20 was arrived at 5.35 lakh litres which was found to be appreciable. Trichy is the single largest milk union able to procure only 4.82 lakh litres during the year 2021-22 and the decrease was accounted to be around 10 per cent over the year 2019-20. Next to Tiruchirappalli milk union, Salem District Milk Union has procured to the tune of 4.59 lakh litres and took the second place during the year 2019-20 and it took the first place during the year 2021-22 by achieving the procurement level of 5.13 lakh litres in a day which is accounted for 11.84 per cent increase in procurement during the year 2021-22 over the year 2019-20. It is an appreciable effort of Salem District Milk Union.

The milk unions at Madurai and Thiruvannamalai have performed better during 2019-20 when compared to the procurement made during 2021-22. The decrease in the procurement during 2021-22 accounted to 28.15 and 1.11 respectively over the year 2019-20. Most of them were

facing a decreasing trend in procurement. The success stories gained by Salem District Milk Union may kindly be explored by other milk unions and the need based effort should be taken to rebuild the milk unions at district level by strengthening its grass-roots. That is the Primary Milk Producers' Cooperative Society at village level. In general, in terms of procurement of milk per day, the Salem District Milk Producers' Union has excelled and achieved a gain of around 12 per cent over the year 2019-20.

#### 4.4. Quantity of milk sold by different milk producers' Unions in Tamil Nadu

In the previous section, we have seen that the milk procurement is on the decreasing side in respect of most of the milk unions and only the Salem District Milk Union could generate an increased level of procurement of milk. In this context, the procured level of milk was either sold or not is to be assessed and hence the data were analyzed and the results are presented in Table 4. The Table 4 indicated that 25 milk unions across Tamil Nadu could effect milk sales to the tune of 11.14 lakh litres per day keeping the mean level at 0.85 lakh litres per union per day. However, the Madurai District Milk Producers' Union found to occupy the first level in terms of milk sales with an absolute quantity of milk sold during the year 1.77 lakh litres during the year 2019-20 which was found to be increased to the level of 1.81 lakh litres per day during the year 2021-22. The increase is accounted for 2.24 per cent over the year 2019-20.

**Table 4:** Details of quantity of milk sold by different milk producers' Unions in Tamil Nadu

Sl. No	Name of the District Milk Union	Average Quantity of Milk Sold per Day		Percentage Change in Sales During 2021-22 Over 2019-20
		2019-20	2021-22	
01	Kancheepuram and Thiruvallur	34215	70356	105.62
02	Villuppuram	16600	9782	41.07
03	Cuddalore	15765	27831	76.53
04	Vellore	68304	65449	(-) 04.17
05	Thiruvannamalai	7502	9846	31.24
06	Krishnagiri	6448	5759	(-) 10.68
07	Dharmapuri	18700	21432	14.60
08	Salem	155402	186059	19.72
09	Namakkal	61349	68790	12.12
10	Erode	63881	62342	(-) 02.40
11	Tiruppur	148498	173197	16.63
12	Coimbatore	13340	20367	52.67
13	The Nilgiris	16542	17515	05.66
14	Madurai	176788	181167	02.47
15	Theni	6023	5712	(-) 05.16
16	Dindigul	16529	22659	37.08
17	Tiruchirappalli	113406	123164	08.60
18	Karur	5562	5977	07.46
19	Tanjore	32492	47866	47.31
20	Pudukottai	17020	24517	44.04
21	Sivagangai	43670	65475	49.93
22	Virudhunagar	6878	9037	31.38
23	Tirunelveli	28695	34545	20.38
24	Thoothukkudi	21921	27454	25.24
25	Kanyakumari	18079	18923	04.66
	Total	1113609	1305221	17.21
	Mean	85662.23	100401.62	17.21

**Source:** Policy Note on Animal Husbandry, Dairying, Fisheries and Fishermen Welfare Department, Government of Tamil Nadu, Chennai – 2022

Second place goes to Salem District Milk Union in terms of sale of milk. The sale quantity was arrived at 1.55 lakh litres

per day during the year 2019-20 and the same was increased to the level of 1.86 lakh litres per day during the year 2021-

22. The increase in the sale quantity between these years is arrived at 19.72 per cent over the year 2019-20. Third place goes to Tiruppur District Milk Producers Union in terms of sale of milk per day. It has sold 1.49 lakh litres of milk during the year 2019-20 and the increment was to the level of 1.73 lakh litres during the year 2021-22 and the increase was accounted to be 16.63 per cent higher over the year 2019-20. Though Tiruchirappalli was in the second place in terms of procurement, it has got the fourth place in terms of Milk sales per day and the sale quantity is arrived at 1.13 lakh litres per day during the year 2019-20 and the same was found to be increased to the level of 1.23 lakh litres per day during the year 2021-22. The increase was accounted to be at 8.60 per cent.

To sum up, the Salem District Cooperative Milk Producers' Union took the first place in terms of procurement of milk and the second place in terms of quantity of milk sold per

day. The most performing milk unions have failed to distribute or sell the milk appreciably during the year 2021-22. It might be due to lack of Branded milk products at the level of cooperative milk unions but the same is prevailing at private operators. For that purpose, the milk unions can conduct a consumer level survey to learn the preferences of consumers of milk for their brands. After the survey, the preferences should be considered and implemented for getting higher consumer acceptance.

#### 4.5 Quantity of Milk Sold by Salem District Milk Union

Salem District Milk Producers' Union was found to be the leader in procurement and sale of milk in Tamil Nadu. In this context, month-wise sale of milk and month-wise procurement of milk was assessed and the results are presented in Table 5.

**Table 5:** Details of quantity of milk sold by salem district co-operative milk producers' union

SL. No	Months	Average quantity of milk procured per month in litres 2021-22	Percentage to total milk procured	Average Quantity of Milk Sold per Month in Litres 2021-22	Percentage of Sales to Total Procurement
01	April	485046	07.87	177067	36.51
02	May	518237	08.41	165944	32.02
03	June	528396	08.58	175825	33.28
04	July	544988	08.85	182820	33.55
05	August	541352	08.79	187493	34.63
06	September	535399	08.69	189439	35.38
07	October	524551	08.51	188094	35.86
08	November	485857	07.89	185896	38.26
09	December	499893	08.11	189473	37.90
10	January	501548	08.14	190511	37.98
11	February	497625	08.08	198257	39.84
12	March	498070	08.08	202896	40.74
	Total	6160962	100.00	2233715	36.26
	Mean	513414	08.33	186143	36.26

**Source:** Salem District Co-operative Milk Producers' Union Ltd. Sithanur, Salem

During the year 2021-22, the month-wise procurement of milk revealed the status that May, June, July, August and September were the favorable months for getting higher quantity of milk from different societies due to the abundance of Green fodder to the animals. The average quantity of milk procured per month was arrived at 5.13 lakh litres and the same is accounted for 8.33 per cent to the total milk procured by Salem Union during the year 2021-22. But the sale of milk found to be generally increased from the month of June to and found to face a steady increase up to the month of March. The average sale quantity per month is arrived at 1.86 lakh litres which are accounted for only 36 per cent of the total procurement of milk. Remaining quantity of milk was converted for generating value added products of milk like Milk Powder,

Milk Cowa, etc.

#### 4.6 Forecasting of Milk Sales by Salem District Milk Union

Since the Salem District Milk Producers' Union is performing in a better manner both in procurement and sales, the time series data available from 2010-11 to 2021-22 were subjected growth analysis and the results are presented in Table 6.

Table 6 revealed that the sales volume of milk during the year 2025 is found to be increased to the level of 23 lakhs from the level of 22.33 lakhs during the year 2021-22 in respect of Salem district milk union. The annual compound growth rate was arrived at 0.745 indicated that the milk sales per annum is growing positively.

**Table 6:** Forecasting of Milk Sold in Salem District

Sl. No	Year of Sale of Milk	Projected Value
01	2021-22	2233715
02	2022-23	2253058
03	2023-24	2271730
04	2024-25	2290401
05	2025-26	2309073
Compound Annual Growth Rate		00.745
Mean Value		2123525
Standard Deviation (SD)		188296

## 5. Conclusions

Hence the Salem District had higher number of Milk Producers' Cooperative Societies to the tune of 776 Numbers while Madurai district had the highest share of 128 numbers in active societies. Tiruchirappalli District Milk Union had the highest number of cattles. The Salem District Cooperative Milk Producers' Union had the highest processing capacity of 5 lakh litres per day. Interms of procurement of milk per day, the Salem District Milk Producers' Union has excelled and achieved a gain of around 12 per cent over the year 2019-20. The Madurai District Milk Producers' Union found to occupy the first level in terms of milk sales with an absolute quantity of milk sold during the year 1.77 lakh litres during the year 2019-20 which was found to be increased to the level of 1.81 lakh litres per day during the year 2021-22. The increase is accounted for 2.24 per cent over the year 2019-20. The Salem District Cooperative Milk Producers' Union took the first place in terms of procurement of milk and the second place in terms of quantity of milk sold per day. The average quantity of milk procured per month was arrived at 5.13 lakh litres and the same is accounted for 8.33 per cent to the total milk procured by Salem Union during the year 2021-22. Sales volume of milk projected to be 23 lakhs during 2025 with a annual compound growth rate of 0.745 per cent in this annexure the milk sales of the year is growing positively.

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