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Role of Dairy Cooperative Society in Socio-economic Development of Rural Area: A Case Study of Sangamner Tehsil, Ahilyanagar, Maharashtra (India)

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Abstract:

Dairy farming has been most important as a sideline of agriculture since ancient times. Dairy farming is an agricultural practice that involves raising and caring for animals, such as cows and buffaloes, to produce milk and dairy products. Livestock plays a vital role in the socio-economic life of man. India is the world's largest dairy producer, accounting for 25 percent of global milk. India produced around 230.58 million metric tons of milk in 2023-2024 with the majority coming from small-scale dairy farmers in rural areas. Cooperative milk producers' organizations play a major role in milk production in India. India has made significant strides in the cooperative sector. Within this sector are 22 Milk Federations/Apex Bodies, 240 district cooperative milk unions, 28 marketing dairies, and 24 Milk Producer Organizations. These organizations encompass approximately 230,000 villages and include 18 million dairy farmers as members. Considering the global demand for milk and dairy products, the country has a good future in milk production. The main object of the current study is to examine the impact of dairy farming on the socio-economic status of dairy farmers in the study area. Role of cooperative society in the development of dairy farming. The study mainly depended on primary and secondary data in the period of 2000 to 2023 collected from farmer interviews annual reports of cooperative societies and various documents published by the government.

Sangamner tehsil is first in milk production and collects 25 % of milk in the district with the help of a cooperative society. Sangamner tehsil is located in the rain shadow zone of Sahyadri mountain. Agriculture is not so easy in this area because of the scarcity of water for irrigation. However, the farmers change their socio-economic lives with the help of dairy farming and their cooperative societies. The findings of this research paper have proven that dairy farming has brought about significant positive changes in the economic and social status of farmers in the study area. Women's participation in economic activities has increased. The educational level of the family has increased. Fluctuation in Milk Price (21.71%), Increasing Cost of Production (18.43%) and Scarcity of Fodder and Supplementary Feed (12.57%) are major problems that are faced by dairy farmers in the study area.

Key words: - *Dairy farming, Cooperative Society, Socio-economic status.*

Introduction

Dairy farming has been most important as a sideline of agriculture since ancient times. Dairy farming is an agricultural practice that involves raising and caring for animals, such as cows and buffaloes, to produce milk and dairy products. Livestock plays a vital role in the socio-economic life of man. India is the world's largest dairy producer, accounting for 25 percent of global milk production (FAO United Nations report -2022). India produced 230.58 million tons of milk in 2023 with the majority coming from small-scale dairy farmers in rural areas (Dept. of Animal Husbandry and Dairying Ministry Govt. of India report 2023-24). The milk production of India is more than three times the amount produced by China and almost 50 % more than the US. The per capita availability of milk was 459 grams per day in India during the year 2022-23. As against the world average of 322 grams per day in 2023 (Food Outlook June 2023). Global demand for dairy continues to increase in large part due to population growth, rising incomes, urbanization and westernization of diet in countries such as India and China. The global demand for milk was increased by 2.4 % in 2023.

Cooperative milk producer organizations play a major role in milk production in India. India

has made significant strides in the cooperative sector. In this sector, there are 22 Milk Federations/Apex Bodies, 240 district cooperative milk unions, 28 marketing dairies, and 24 Milk Producer Organizations. These organizations encompass approximately 230,000 villages and include 18 million dairy farmers as members (National Dairy Development Board (NDDB) report 2023-24). Considering the global demand for milk and dairy products, the country has a good future in milk production.

Maharashtra is an important state in the country for milk production. Maharashtra ranks fifth in the country in milk production, with the state producing 16.05 million metric tons of milk in 2023. The total number of functional dairy cooperative societies is 11,219. Ahilyanagar has first rank in milk production in the Maharashtra State. In 2023 total production of milk is 239230 thousand liters. In the district 905 cooperative societies and 89450 members are joined in dairy farming (Ahilyanagar Socio-economic Abstract 2023-24).

Sangamner tehsil is first in milk production and collects 25% of milk in the district with the help of a cooperative society. Sangamner tehsil is located in the rain shadow zone of Sahyadri mountain. The agriculture is not so easy in this area because of the scarcity of water for irrigation.

However, the farmers change their socio-economic lives with the help of dairy farming and their cooperative society. The dairy sector is a sustainable, equitable and powerful tool for achieving economic growth, food security and poverty reduction because dairying provides a regular source of income, provides nutritious food, diversifies risk, improves the use of resources, generates on- and off-farm employment, creates opportunities for women, provides financial stability and social standing. (Prakash Kumar Rathod 2023) So, the topic is selected for the research paper.

2. Objectives: The major objectives of the present study are given below:

i. The main object of the current study is to examine the impact of dairy farming on the socio-economic status of dairy farmers in the study area.
ii. Women's participation in the dairy industry and its impact on their economic and social lives.
iii. To study problems facing dairy farmers in the study area.
iv. To suggest various remedies (measures) for development of dairy farming in study area.

3. Data and Methodology:

The cooperative society has been taken as a unit for the spatial-temporal analysis of dairy farming in the study area. The study is based on both primary and secondary data. Primary data was collected through fieldwork (2023) and interviews with 50 farmers using structured questionnaires from 10 circles of Sangamner tehsil. Focused Group Discussions (FGDs) and formal and informal interviews were conducted to gather additional information regarding dairy farming in the study area.

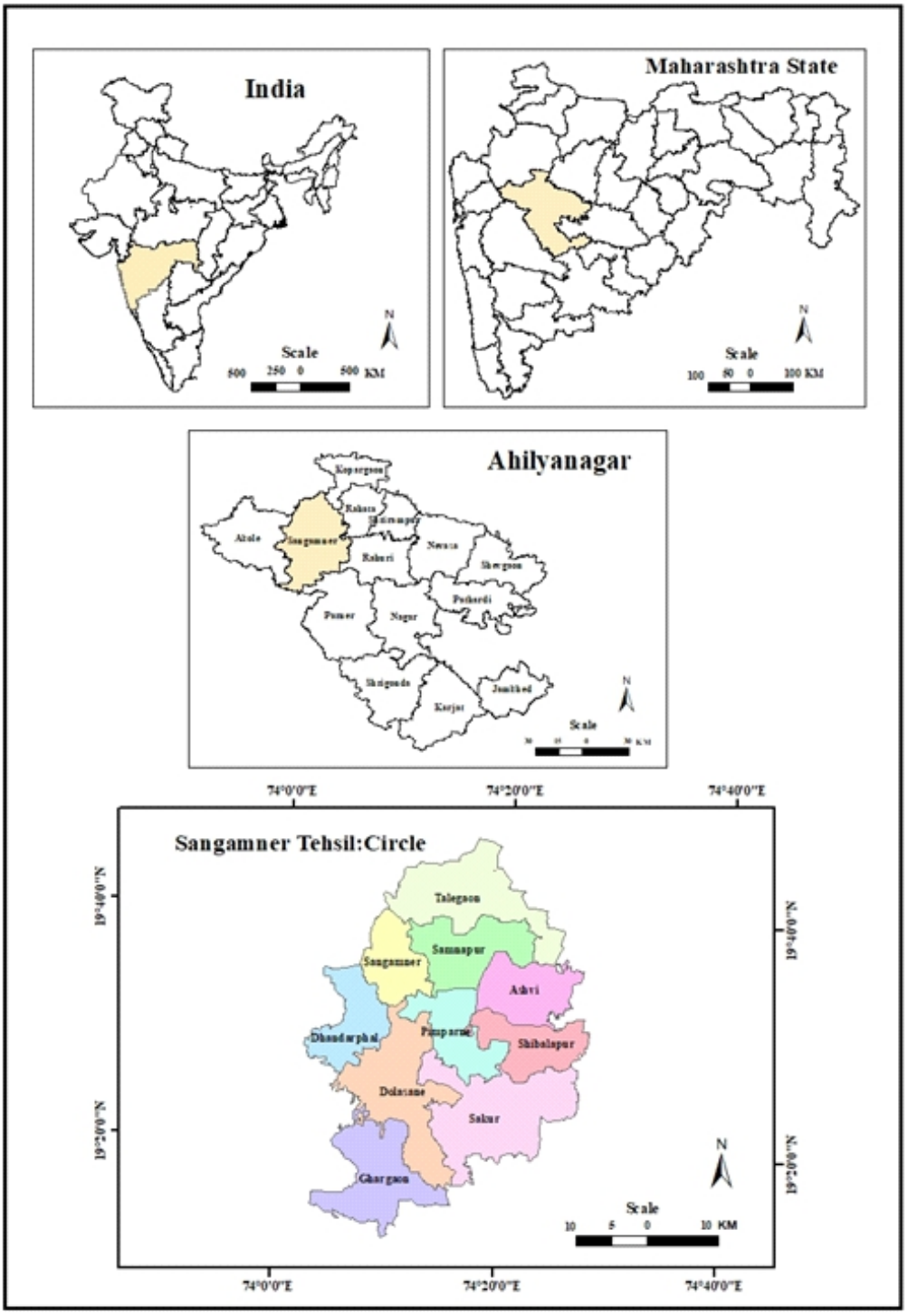
Secondary data has also been used for the present research work. It was collected mainly from the annual report of the Sangamner Taluka Cooperative Society, namely 'Sangamner Taluka Sahakari Dudh Utpadak & Prakriya Sangh Ltd., Sangamner' (Rajhans Dudh), District Abstracts for the years 2001, 2011, 2021, and 2024, and the official website of the Maharashtra State Animal Husbandry Department.

SWOT analysis has been applied in the study to evaluate the current status and future possibilities of dairy farming in the study area. SWOT analysis is a strategic management tool that consists of four components: Strengths (S), Weaknesses (W), Opportunities (O), and Threats (T). Various cartographic techniques and QGIS software were also used for data analysis.

4. Study Area:

Sangamner tehsil is located in the northwestern part of Ahilyanagar district. This tehsil lies between 18°36' to 19°01' north latitude and 74°01' to 74°56' east longitude. It has a total area of 170,506 hectares (1,705.06 sq. km). According to the 2011 Census, Sangamner tehsil had a population of 489,263. There are 10 revenue circles included in Sangamner tehsil: Sangamner, Talegaon,

Samnapur, Pimparne, Ashwi Bk., Shiblapur, Dhandharphal Bk., Dolasne, Sakur, and Ghargaon.



Map No.1: Location Map of Study Area.

Topography of the study area is characterized as low rugged and highly dissected. Pravara River is a main river, which drains through the central part of the study area from west to east. Mula, Adala and Mhalungi are the main tributaries of Pravar. Baleshwar hills are located in the southern part of the tehsil. Most of the study area is covered by murum, barad and black soil.

The climate of Sangamner tahsil is dry and hot except rainy season. The annual average rainfall of the tehsil is 396 mm. The rainfall generally decreases from west to east. The summer season is moderately hot and the temperature varies from 38° to 44° c.

5.Result and Discussion:

Currents Scenario of Dairy Farming:

India is the world's largest milk producer, contributing over 25% of global milk production. In 2023–2024, India produced approximately 230.58 million metric tons of milk. Table No. 1 indicates the top five milk-producing states in India. Uttar Pradesh produced 38.79 million tonnes, accounting for 16.21% of India's total milk production, while Rajasthan contributed 34.72 million tonnes, representing 14.51% of the national output. The shares of other major milk-producing states are as follows: Madhya Pradesh – 8.91%, Gujarat – 7.65%, and Maharashtra – 6.71% of the total national production. Collectively, these five states contributed approximately 62.99% of India's total milk production in 2024.

India's Top 5 Milk Producers States (2024)

Sr. No.	States	Milk Production (million tonnes)	Share (%)
1	Uttar Pradesh	38.79	16.21
2	Rajasthan	34.72	14.51
3	Madhya Pradesh	21.32	8.91
4	Gujarat	18.30	7.65
5	Maharashtra	16.05	6.71

Source: BAHS-2024

In 2023-24, Maharashtra's milk production was estimated at 160.45 lakh tonnes, or 439.59 lakh liters per day, according to the Basic Animal Husbandry Statistics 2024. Ahmednagar district is the rank one district of Maharashtra in milk production. In Ahmednagar district Sangamner is major tahsil in milk production. Table No.2 indicates the per day and total collection of milk of Sangamner Tahsil from the year 1999-00 to 2023-24. During the year 1999-2000 per day collection of milk was only 157174 liters and it increased up to 338264 and the total milk collection also increased from 57368758 liters to 123466360 during the same periods. During the 25 years there is huge development in dairy farming in the study area as results the production of milk is increased.

Table No.2: Sangamner Taluka Cooperative Milk Producers & Processing Union Limited Sangamner 1999-2000 to 2023-24

Sr. No	Year	Per Day Average Milk Collection (In litter)	Total Milk Collection (Litter) In year
1	1999-00	157174	57368758
2	2000-01	177636	64837140
3	2001-02	193166	70505404
4	2002-03	202909	74061795
5	2003-04	187501	68437767
6	2004-05	170639	62283370
7	2005-06	192404	70227525
8	2006-07	188918	68954945
9	2007-08	205467	75209728
10	2008-09	229231	83669542
11	2009-10	264032	90390380
12	2010-11	279335	94258128
13	2011-12	292900	101402219
14	2012-13	303072	107665089
15	2013-14	295988	107676974
16	2014-15	309537	112408282
17	2015-16	323087	117139590
18	2016-17	291022	105063128
19	2017-18	323337	117095284
20	2018-19	334805	121821841
21	2019-20	346273	126548398
22	2020-21	330273	120154426
23	2021-22	314273	113760455
24	2022-23	300798	108561240
25	2023-24	338264	123466360

Source: filed visit and annual report of society, March 2025

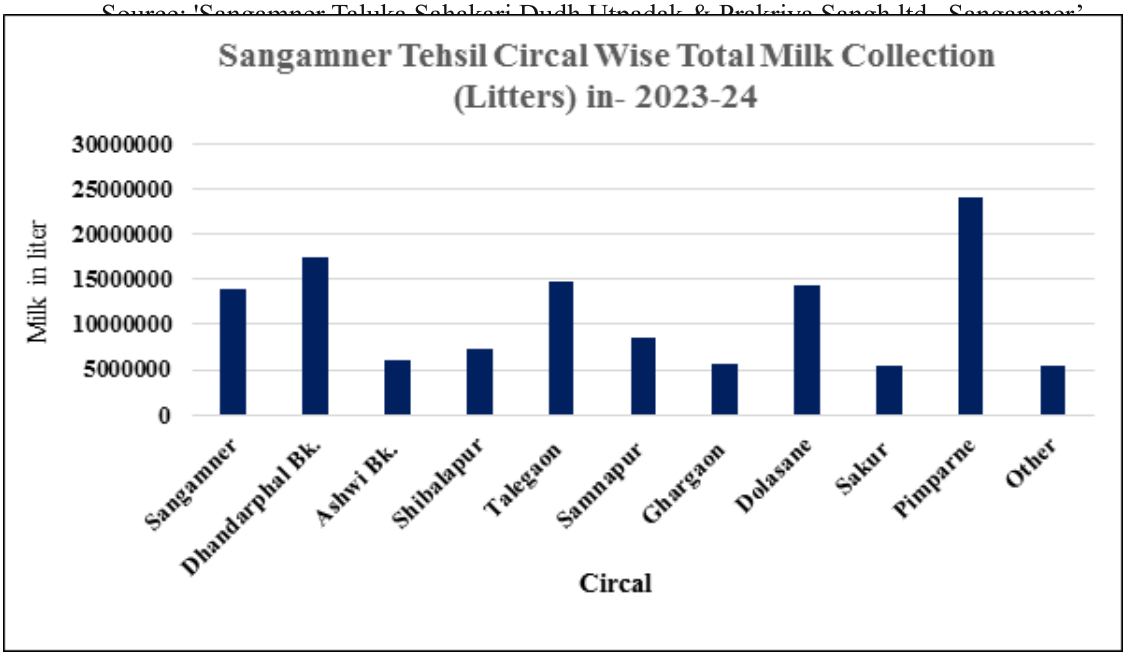
Table No.3 shows the circle wise milk production of Sangamner tahsil of Ahmednagar district for the year 2023-24. Pimparne circle is an important circle of the Sangamner tahsil with 32 societies

and production 24178600 liters of milk.

Table No.3 Circle wise milk production (Liters) in Sangamner Tehsil-2023-24

Sr. No.	Circle	Total Number of Society	Total Farmers engaged in Dairy Farming	Total milk Production (Litters) in 2023-24
1	Sangamner	18	4692	13990494
2	Dhandarphal Bk.	21	5746	17539890
3	Ashwi Bk.	12	2272	6106794
4	Shibalapur	15	2868	7377526
5	Talegaon	21	3652	14864711
6	Samnapur	15	2954	8503569
7	Ghargaon	19	2594	5682549
8	Dolasane	20	4306	14378220
9	Sakur	21	2206	5392355
10	Pimparne	32	7402	24178600
		194	**38692**	**118014708**
11	Other	18	5408	5451652
	Total	212	44100	123466360

Source: 'Sangamner Taluka Sahakari Dudh Utpadak & Prakriya Sangh ltd., Sangamner'



Graph No. 1: Sangamner Tehsil Cercal Wise Total Milk Collection (liters) in 2023-24

Pimparne and Dhandharphal circles are located in the plains of the Pravara basin, near Sangamner city. The availability of water in this area is better compared to other circles, which has a positive impact on agriculture and dairy farming. In the year 2023–24, the milk collection in

Dhandharphal Bk. was 17,539,890 liters. The Talegaon circle is mainly in a dry region, where water scarcity is a major issue. However, with the help of milk cooperative societies, farmers have successfully developed the dairy business in rural areas, leading to a positive impact on their socio-economic status. In comparison, Sakur (5,392,355 liters) and Ghargaon (5,682,549 liters) circles have lower milk production. This is due to the physiographic characteristics of the region, which is located in the Mula river basin and the Baleshwar Mountain range, a sub-branch of the Sahyadri mountains. These conditions have a negative impact on dairy farming. Despite these challenges, farmers are trying to improve dairy farming with the support of cooperative societies.

Empowerment of Women:

The Cooperative Milk Producers Union has played a major role in the development and empowerment of women in Sangamner Taluka. Various schemes are being implemented for women's empowerment through the Sangamner Taluka Cooperative Milk Producers and Processing Union Limited, the apex cooperative organization of milk producers in Sangamner Taluka. The significant contributions of the Cooperative Milk Producers' Organization in Sangamner Taluka toward women's empowerment are as follows:

1. **Accident Insurance:** All female milk producer members are provided with accident insurance coverage of Rs. 1 lakh.
2. Workshops: Detailed information related to modern dairy farming, cow and calf rearing, clean milk production, fodder management, etc., is provided in workshops organized from time to time.
3. Field Visits: Visits are arranged to advanced cowsheds, open-air cowsheds, modern dairy farms, etc., to gather up-to-date information and practical insights into the dairy business.
4. Promotion of Women Self-Help Groups: Women members are encouraged and guided by the milk cooperative society to establish self-help groups (SHGs).
5. Increased Participation in Economic Activities: Many women from rural areas of Sangamner Taluka have increased their involvement in direct economic activities, including the milk business. They have become connected to the banking system and have started managing financial transactions independently.
6. Increased Political Participation: The number of women serving as chairpersons, vice-chairpersons, and board members in many milk producer cooperatives in Sangamner Taluka has increased. As a result, their participation in political decision-making has grown, and their leadership qualities have developed.

Participation in Social and Economic Development:

Milk producers' cooperatives have played an important role in improving the social and economic conditions of milk producers in Sangamner Taluka. Various initiatives have been implemented to enhance the dairy business. These include:

1. **Clean Milk Production Scheme:** Milk is one of the most perishable agricultural products, often leading to losses for farmers. To prevent spoilage and ensure quality, bulk milk coolers have been installed at every cooperative milk collection center to support clean milk production.
2. **Hybrid Cow Breeding Center:** A hybrid breeding center is operated by the organization to produce high-quality, milk-yielding cows. As a result, the number of high-yielding cows in the area is increasing, leading to a significant rise in farmers' milk production.
3. **Mass Deworming and Vaccination Program:** High-yielding cows are vulnerable to various diseases, causing major financial losses and wasted time for farmers. To prevent this, a large-scale deworming and vaccination program is being implemented through cooperative societies.
4. **Modern Dairy Farms and Loose Housing:** The open cowshed (loose housing) concept has

been introduced in Sangamner Taluka to improve animal welfare and farm efficiency.

5. **Fodder Camps and Pasture Allocation:** The study area often faces drought due to its location in a rain shadow region. During such times, dairy farming is severely impacted, and farmers' economic conditions deteriorate. To address this, fodder camps are organized by cooperative societies, and grass is distributed to livestock.
6. **Veterinary Medicine Shop:** With approximately 160,000 livestock in the study area, animal diseases are frequent and lead to significant financial losses for farmers. To address this, the cooperative society has established a veterinary medicine shop that provides essential medicines at affordable prices. This initiative ensures better animal health management and helps farmers reduce veterinary costs and prevent losses.
7. **Milking Machine Distribution Scheme:** To reduce the labor burden on milk producers, cooperative societies have launched a milking machine distribution scheme for dairy farmers.
8. **Dandakaranya Abhiyan (Reforestation Campaign):** In line with its commitment to social responsibility and environmental conservation, a tree plantation campaign has been running since 2006 in collaboration with the Cooperative Milk Producers' Union. Thousands of trees are planted annually. This campaign has gained recognition from the United Nations Organization (UNO) and received the Late Rajiv Gandhi Paryavaran Ratna Award (2012–13) and the Vasantrao Naik Award (2014). The Milk Union has significantly contributed to transforming the region, including greening the Kare Ghat area along the Nashik–Pune Highway and planting 2,080 trees at Devgad Devasthan, Hivargaon Paswa. With the help of cooperative sugar factories and other organizations, around 11 metric tons of seeds have been sown across 28,000 hectares in 170 villages.
9. **Supply of Drinking Water:** During droughts, especially in rain shadow regions, water scarcity for both humans and animals becomes severe. In such situations, the Union provides drinking water at its own expense to affected areas.
10. **Rabies Vaccine Distribution:** The Union has made rabies vaccines available to treat animal bite cases, particularly swan bites, which has greatly benefited farmers in the study area.

SWOT Analysis of Milk Production

A SWOT analysis is a planning tool used to identify the Strengths, Weaknesses, Opportunities, and Threats involved in dairy farming in Sangamner Tehsil. The SWOT framework was developed by Albert Humphrey, who tested the approach in the 1960s and 1970s at the Stanford Research Institute. This analysis helps in understanding both internal and external factors affecting dairy farming in the study area. The following SWOT analysis is based on interviews with dairy farmers and field visits conducted in 2025.

Strengths

In an era of privatization, the cooperative societies operating in rural areas of the tehsil play a crucial role in sustaining and boosting dairy farming. Effective management of these societies has significantly contributed to the development of the sector. The region's favorable climate supports animal husbandry, and the availability of quality fodder further aids milk production. The study area has a high yield of fodder crops, ensuring a consistent supply for livestock. Additionally, transportation facilities have improved in recent years, which has enhanced the distribution of milk and dairy products from farmers to industries and consumers.

Another vital strength is the availability of trained and qualified manpower for dairy farming. Dairy farming is a traditional occupation in the region, and local farmers possess deep-rooted knowledge and experience, along with culturally appropriate methods of milk production.

Weaknesses

Several weaknesses hinder the full potential of dairy farming in the study area. A major issue is the lack of awareness regarding clean milk production. At many locations, milk is not handled

hygienically, affecting its quality and consumer trust. The raw milk collection systems in some areas are outdated and traditional. Seasonal fluctuations in milk prices are another concern. Despite rising input costs, milk prices have remained stagnant for several years, affecting farmer income. Additionally, the productivity of cattle is relatively low compared to developed dairy regions, which limits the scale and profitability of farming operations.

Opportunities

The demand for milk and dairy products is steadily increasing—not only locally but also in external markets. This presents a great opportunity to expand dairy farming in the study area. There is a rising market for both fluid milk and value-added products.

Rajhans, a well-known brand in Maharashtra, has established a strong marketing system for milk and its products, providing a solid platform for local producers. Dairy farming is also creating job opportunities for the younger population, particularly for small-scale farmers and women, thereby promoting rural employment.

The introduction of contract-based data collection through agencies has improved business operations. Additionally, online marketing platforms now allow products to reach consumers quickly, which is a major advantage for expanding the reach of milk products.

Threats

There are several threats to the dairy sector in Sangamner Tehsil. Liberalization of the dairy industry has attracted multinational corporations and competitive domestic companies into the market. This increases competition for local brands like Rajhans, especially in metropolitan markets where consumers have a wide range of choices such as Amul, Anand, and Warana. The introduction of foreign dairy products may adversely impact local dairy farming. Another pressing threat is the overgrazing of marginal and community lands, leading to land degradation. In many parts of the study area, continuous cultivation of fodder crops has reduced soil fertility. Crop rotation is needed to restore soil health, but in the short term, this decreases fodder availability for livestock.

Problems Faced by Dairy Farmers in Sangamner Tehsil

During field surveys, interviews were conducted with various dairy farmers regarding the challenges they face. Their responses are summarized below and presented in Table No. 3 and Figure No. 1.

1. **Fluctuation in Milk Price (21.71%):** Over 21% of respondents identified unstable milk prices as a major issue affecting income stability. This concern was particularly noted by farmers in the Dhandarphal and Sangamner circles.
2. Increasing Cost of Production (18.43%): According to Kota Karuna Sri (2024), the average annual milk production per cow and buffalo in India is low, resulting in higher milk costs. About 18% of farmers reported that rising input costs (feed, labor, medicines) are negatively impacting profitability.
3. Government Policy (7.12%): Around 7% of respondents, mainly from the Sangamner, Ashvi, and Pimparne circles, expressed dissatisfaction with government policies, feeling that they are not supportive of dairy farming.
4. Scarcity of Fodder and Supplementary Feed (12.57%): Nearly 13% of farmers reported difficulty in obtaining sufficient and high-quality feed, which is crucial for livestock health and productivity. Farmers from drought-prone areas and the Dolasne and Sakur circles in the plateau region particularly highlighted this issue, linking it to the rising cost of milk production.

Table No.3: Problems facing by dairy farmers in Sangamner Tahsil

Sr. No.	Problems	Percentage of Respond (%)
1	Fluctuation in Milk Price	21.71
2	Increasing cost of Production	18.43
3	Government Policy	7.12
4	Scarcity of fodder and Supplementary feed	12.57
5	High frequency of drought	8.16
6	Shortage of milk preservation facilities	5.29
7	Lack of access to veterinary services	7.28
8	Inadequate credit facilities	9.21
9	High cost of high-yielding breeds and medicines	5.62
10	Other	4.71
	Total	100

Source: Field Survey 2025

1. **High Frequency of Drought (8.16%):** During the field visit it is observed that 8 % respondents were affected by frequent droughts conditions and therefore there is always shortage of water scarcity fodder availability. Farmers mainly from the drought prone circle in Talegaon expressed their views on the issue.
2. **Shortage of Milk Preservation Facilities (5.29%):** Approximately 5 % lacked adequate facilities to preserve milk, impacting quality and shelf life in the study area.
3. **Lack of Access to Veterinary Services (7.28%):** About 7 % respondents said that they had limited access to veterinary care, crucial for maintaining animal health.
4. **Inadequate Credit Facilities (9.21%):** Nearly 9 % respondents said that they are struggling with insufficient credit options. They don't have sufficient credit facilities.
   High Cost of High-Yielding Breeds and Medicines (5.62%): Over 5 % respondents found it challenging to afford quality breeds and necessary medications regarding their cattle's. Some farmers in Sakur, Dolasne, Pimparne and Talegaon circles which are far from the main city highlighted this problem.

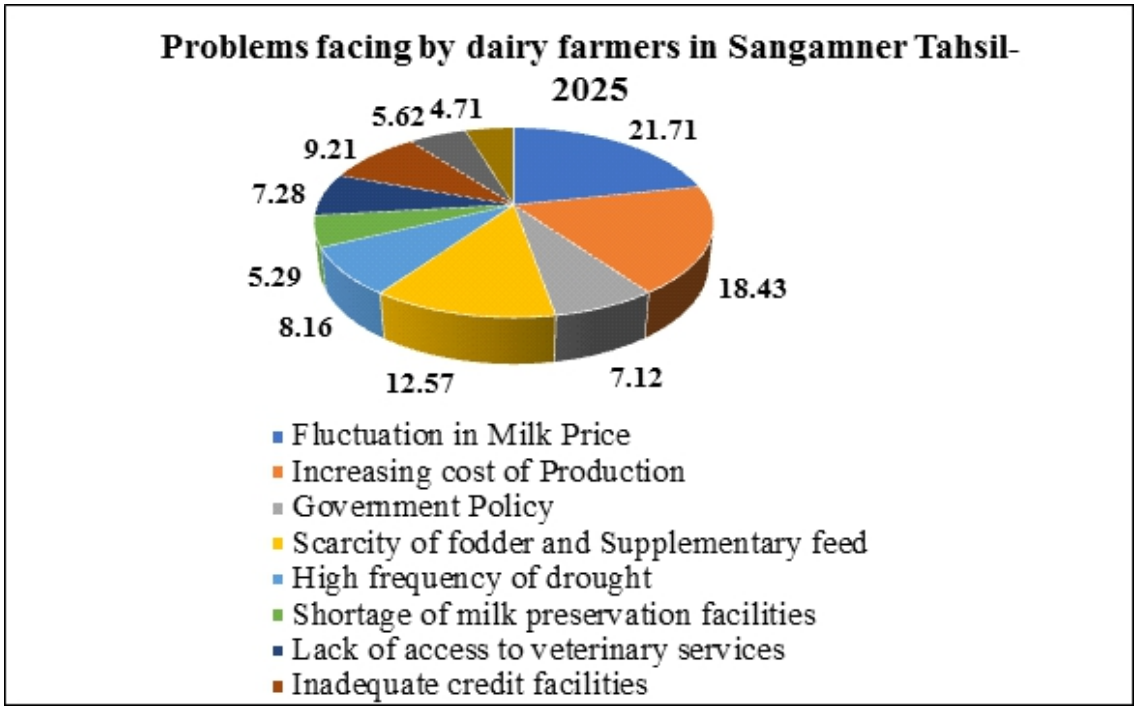


Figure No.1

Conclusion:

Milk cooperative societies play a crucial role in the development of rural areas in Sangamner tehsil. They provide a stable source of income, improve livelihoods, drive infrastructure development, and promote social progress. Dairy farming creates employment, particularly for women in rural areas, and has a direct impact on household economies.

Through dairy farming and milk cooperative societies, women are empowered by gaining access to income and decision-making power within the household. Cooperative societies also help develop leadership qualities in rural communities. They promote women's self-help groups and contribute both directly and indirectly to the socio-economic development of the tehsil.

However, dairy farmers in the study area face several major challenges, including fluctuations in milk prices (21.71%), increasing cost of production (18.43%), and scarcity of fodder and supplementary feed (12.57%).

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