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## LIVELIHOOD PATTERNS AND SOCIO-ECONOMIC CONDITIONS OF DAIRY FARMING HOUSEHOLDS IN NAGPUR DISTRICT

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### **Abstract :**

*Dairy farming remains a **primary livelihood strategy** for rural households across India, blending traditional agrarian practices with income-generating activity and supporting food and employment security. In Nagpur district of Maharashtra, where agricultural activities dominate rural life, dairy farming plays a significant socio-economic role. This study examines the **livelihood patterns** of dairy farming households and assesses their **socio-economic conditions**, including demographic characteristics, income levels, asset ownership, educational background, farming practices, market participation, and challenges faced in dairy production and marketing. Primary data were collected through structured interviews with randomly selected dairy farmers across major dairy-producing blocks of Nagpur, combined with secondary data from district-level agricultural profiles.*

*Findings reveal that a large proportion of dairy households depend significantly on dairying as a **supplementary or principal source of livelihood**, generating steady cash flows and employment across seasons. Socio-economic factors such as **education, herd size, landholding, and extension contact** influence dairy productivity and adoption of scientific practices. Constraints such as market accessibility, infrastructure gaps (fodder, milk cooling), and limited access to credit and veterinary services persist, affecting profitability and livelihood security. The study discusses policy implications for enhancing dairy value chains, strengthening cooperatives, and improving rural incomes.*

**Keywords :** Dairy farming, livelihood patterns, socio-economic conditions, rural households, Nagpur district, dairy productivity, income generation, farm assets, marketing challenges

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### **Introduction :**

### **Background :**

India is the world's largest milk producer, with dairy farming forming a central part of the rural economy. In the state of Maharashtra, and specifically in Nagpur district, dairy farming sustains a large portion of the rural population. The enterprise not only provides milk and dairy products for consumption and sale but also supports employment, asset formation, and risk management for smallholder households.



### **Objectives of the Study :**

This paper aims to:

1. Describe **livelihood patterns** of dairy farming households in Nagpur district.
2. Analyze the **socio-economic conditions** of these households.
3. Identify the **challenges and constraints** in dairy production.
4. Suggest **policy interventions** to strengthen dairy livelihoods.

### **Literature Review :**

Livelihood studies on dairy farming in India emphasize the sector's role in poverty reduction, gender equity, and rural development (Singh & Sirohi, 2018; Patel et al., 2020). Dairy incomes often cushion agricultural households against crop failures and seasonal risk (BIRTHAL, 2015). Furthermore, research underscores the importance of cooperative structures and market access in improving profitability (Dev & Rao, 2017).

Within Maharashtra, several studies have reported the dominance of crossbred cattle and buffaloes in milk production, accompanied by pressing issues such as high feeding costs and inadequate animal health services (Kulkarni & Patil, 2019). This study builds on these frameworks, focusing specifically on Nagpur district—a region with diverse agro-ecological zones and emerging dairy markets.

### **Methodology :**

#### **1. Study Area :**

Nagpur district, located in eastern Maharashtra, comprises a predominantly agrarian population. Dairy farming is widespread across both irrigated and rainfed zones, with distinct livelihood dynamics shaped by resource availability and market proximity.

#### **2. Sampling and Data Collection :**

A **mixed-methods approach** was employed. A total of **120 dairy farming households** were selected using stratified random sampling across four talukas—**Nagpur, Kamptee, Hingna, and Mohadi**. Data were collected through:

- **Structured household interviews** (socio-economic data, income sources, dairy practices).
- **Key informant interviews** with cooperative leaders, veterinarians, and local officials.
- **Focus group discussions** to capture community perspectives.
- **Field observations** on farm practices and animal housing.

#### **3. Data Analysis :**

Quantitative data were analyzed using descriptive statistics. Qualitative insights were



thematically organized to explain trends in livelihood strategies, institutional participation, and challenges.

## **Profile of Dairy Farming Households :**

### **1. Demographic Characteristics :**

Households engaged in dairy farming in Nagpur district show diverse demographic profiles:

- **Average household size:** ~5.6 members.
- **Age of household head:** Mean 48 years.
- **Education levels:** Majority have schooling up to secondary level, with limited formal agricultural training.

### **2. Landholding and Asset Base :**

Land ownership varied significantly :

- **Smallholders ( $\leq 2$  ha):** ~58%
- **Medium (2–5 ha):** ~30%
- **Large ( $> 5$  ha):** ~12%

Most dairy farmers also cultivate crops such as soybean, cotton, and pulses. Livestock assets included crossbred cows, buffaloes, goats, and oxen for draft.

### **3. Herd Composition :**

- **Crossbred cattle:** 54%
- **Native cattle:** 26%
- **Buffaloes:** 20%

Crossbred animals were preferred for higher milk yield, although buffaloes were valued for fat-rich milk marketed at premium prices.

## **Livelihood Patterns :**

Dairy farming in Nagpur district is intertwined with other income streams, forming diversified rural livelihoods.

### **1. Income Sources and Contribution from Dairy :**

Household income comprised :

- **Crop cultivation:** ~42%
- **Dairy sales:** ~33%
- **Wage labor and off-farm activities:** ~18%
- **Remittances and others:** ~7%

Dairy income contributed nearly one-third of total household earnings, proving



especially crucial for smallholders and landless families.

## **2. Daily and Seasonal Workflows :**

Daily farm routines involved:

- Morning milking (5–7 AM)
- Feeding and fodder preparation
- Evening milking
- Manure collection and biogas maintenance

Seasonal rhythms influenced dairy chores, with peak labor during crop harvesting when fodder availability was high.

## **3. Gender Roles :**

Women played central roles in:

- Milking operations.
- Feeding and calf care.
- Milk marketing in local markets.

Men were more active in financial decisions, livestock purchases, and mechanical operations such as chaff cutting.

## **Marketing and Value Chains :**

### **1. Milk Collection and Pricing :**

Households primarily sold milk through:

- Dairy cooperatives
- Private agents
- Direct sales to neighbours

Milk prices varied by fat content and distance to collection centers. Cooperative participation often ensured more stable payments and access to inputs.

### **2. Value-Added Products :**

Some farmers engaged in producing:

- Dahi (curd)
- Ghee
- Paneer

However, lack of cold chain infrastructure limited efforts to process and expand sales beyond local markets.

## **Socio-Economic Conditions :**



### **1. Access to Services :**

Veterinary services were reported to be :

- Irregular
- Distance-dependent
- Costly for private interventions

This affected animal health outcomes, especially during disease outbreaks. Extension services provided by the district agricultural office were perceived as insufficient in both frequency and topical relevance (e.g., breeding, feeding).

### **2. Financial Inclusion :**

Most households accessed credit from:

- Local cooperatives
- Self-Help Groups (SHGs)
- Informal lenders

Interest rates from informal sources were reported as high, increasing financial vulnerability.

### **3. Education and Skills :**

While basic education levels were moderate, specific **dairy farming skills** (such as fodder cultivation, herd management, and record-keeping) were limited, constraining productivity gains.

### **Challenges in Dairy Livelihoods :**

#### **1. Feed and Fodder Scarcity :**

High feed costs and seasonal fodder shortages were consistently mentioned as key constraints. Farmers depended on purchased concentrates during lean seasons, eroding profit margins.

#### **2. Animal Health Risks :**

Common health challenges included :

- Mastitis
- Foot and mouth disease
- Reproductive disorders

Preventive vaccination coverage was inconsistent.

#### **3. Market Volatility :**

Milk prices fluctuated, influenced by seasonal demand, cooperative procurement policies, and competition from bulk buyers.



#### **4. Infrastructure Gaps :**

##### **Limited access to:**

- Cold storage
- Milk testing facilities
- Transport services

Reduced market possibilities and product quality.

#### **Adaptations and Coping Strategies :**

Households employed various strategies to enhance resilience:

##### **1. Diversification :**

Many households diversified into:

- Poultry
- Goat rearing
- Rental tractor services
- Small shops or tailoring

This diversification reduced dependency on a single income source.

##### **2. Collective Action :**

Participation in **dairy cooperatives** and **SHGs** facilitated:

- Better milk prices
- Group access to credit
- Shared training opportunities

##### **3. Technological Adoption :**

Some farmers adopted:

- Artificial insemination (AI)
- Improved feeding regimes
- Biogas units using dung

These technologies improved productivity and provided energy savings.

#### **Case Studies :**

##### **1. Smallholder Success Story :**

A smallholder farmer in Hingna taluka transformed household income by:

- Joining a cooperative.
- Planting fodder crops on marginal land.



- Using AI services to improve herd quality.

Milk sales rose by 35% over three years, enabling investment in children's education and housing improvements.

## **2. Women-Led Enterprise :**

In Kamptee taluka, a women's self-help group initiated a **dahi and ghee production unit**. With basic training and cooperative marketing support, the group expanded sales into urban Nagpur, increasing group members' incomes and community recognition.

### **Discussion :**

#### **1. Dairy as a Livelihood Buffer :**

Dairy farming plays a significant role in mitigating rural risks and stabilizing household incomes, aligning with broader findings across India that link livestock to rural resilience.

#### **2. Structural Constraints :**

Despite its benefits, dairy farming in Nagpur district is constrained by systemic issues:

- Limited access to quality services.
- Inequitable market linkages.
- Seasonal feed shortages.

Addressing these requires coordinated policy action, financial innovations, and targeted extension services.

#### **3. Gender Dynamics :**

Women's involvement in daily dairy operations highlights both their contributions and the gendered constraints in decision-making and asset ownership. Empowering women through training and credit access can enhance overall productivity.

### **Policy Recommendations :**

Based on the findings, the following recommendations are proposed:

1. **Strengthen Cooperative Networks :** Improve milk procurement, cold chain facilities, and value-added processing units within dairy cooperatives.
2. **Enhance Extension Services :** Provide regular, demand-driven dairy extension focused on herd management, fodder cultivation, and business skills.
3. **Expand Veterinary Outreach :** Increase mobile veterinary units and subsidized health camps, particularly in remote villages.
4. **Promote Fodder Systems :** Support fodder banks, drought-tolerant forage crops, and



community grazing management.

5. **Facilitate Financial Access** : Innovate credit products tailored to dairy cycles, including micro-insurance to mitigate disease and price risks.
6. **Gender-Inclusive Programs** : Design schemes that specifically empower women in dairy value chains.

### **Conclusion :**

Dairy farming in Nagpur district remains a cornerstone of rural livelihoods, contributing substantially to household economies, employment, and food security. While dairy income enhances resilience, persistent challenges in services, markets, and infrastructure constrain its full potential. Strategic interventions targeted at institutional support, capacity building, and market development are essential to strengthen dairy livelihoods. Investing in dairy value chains not only benefits individual households but also fosters inclusive rural development in Nagpur and beyond.

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