

Introduction to Dairy Farming

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Key concepts, basic terminology, and essential practices for anyone starting in dairy production.

1. What Is Dairy Farming?

- **Definition:** The agricultural enterprise of raising livestock (mainly cattle, but also goats, sheep, and buffalo) for the purpose of producing milk and milk-derived products.
 - **Primary Goals**
 1. Generate a consistent, high-quality milk supply.
 2. Optimize animal health and welfare.
 3. Achieve economic profitability while maintaining environmental stewardship.
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2. Types of Dairy Operations

Operation Type	Typical Herd Size	Housing System	Typical Market
Small-scale / Family farm	< 50 cows	Pasture-based or tie-stall	Local direct-sale, farmers' markets
Medium-scale commercial	50–250 cows	Free-stall or compost-bed barns	Regional processors
Large-scale industrial	> 250 cows	Confined-space, automated milking parlors	National/international processors

Choice of system depends on land availability, capital, labor, and market goals.

3. Core Components of a Dairy Farm

3.1. Herd Management

- **Breed selection** – e.g., Holstein (high yield), Jersey (high butterfat), Brown Swiss (robust health).
- **Reproductive cycle** – Estrus detection, artificial insemination (AI), pregnancy testing.

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- **Lactation management** – Dry period (~60 days), calving interval (~12–13 months), milk yield monitoring.

3.2. Nutrition

Nutrient	Function	Main Sources
Energy (carbohydrates, fats)	Milk synthesis	Corn, barley, soybean meal, fats
Protein (rumen-degradable & undegradable)	Tissue repair, milk protein	Soybean meal, canola meal, alfalfa
Fiber (NDF)	Rumen health, chewing activity	Forage, silage, hay
Minerals & Vitamins	Metabolic processes	Salt blocks, mineral mixes, fortified premixes

- **Feeding systems** – Total Mixed Ration (TMR), pasture-first, partial TMR.
- **Feed testing** – Regular analysis of dry matter (DM), crude protein (CP), fiber, and mineral content.

3.3. Housing & Environment

- **Ventilation** – Prevent heat stress and respiratory disease; use fans, side-wall curtains, or natural airflow.
- **Bedding** – Sand, rubber mats, straw; keep dry to reduce mastitis risk.
- **Milking parlor** – Herringbone, parallel, or rotary; equipped with automatic milking systems (AMS) for larger herds.

3.4. Milking Management

Step	Key Practices
Pre-milking	Clean udder, apply pre-milking disinfectant, check for abnormalities.
Milking	Use proper suction pressure (~40 kPa), maintain milking time 5–7 min per cow.
Post-milking	Apply post-milking teat dip, ensure proper udder health records.
Milk handling	Rapid cooling to ~4°C, filtration, storage in sanitary tanks.

3.5. Health & Welfare

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- **Common diseases** – Mastitis, metritis, lameness, ketosis, milk fever.
- **Preventive programs** – Vaccination schedules, parasite control, biosecurity (quarantine