

Introduction to Dairy Farming

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Key concepts, terminology, and practical considerations for anyone starting out in dairy production.

1. What Is Dairy Farming?

- **Definition:** Commercial or subsistence raising of cattle (or other milk-producing mammals) primarily for milk and milk-derived products.
- **Primary Species:**
 - **Cattle:** Holstein, Jersey, Brown Swiss, Guernsey, Ayrshire, etc.
 - **Other mammals (less common):** Goats, sheep, buffalo, camels.
- **Production Goals:**
 - **Milk volume** (liters per cow per day)
 - **Milk quality** (fat, protein, somatic cell count)
 - **Reproductive efficiency** (calving interval, conception rate)

2. Basic Farm Layout & Infrastructure

Component	Purpose	Typical Features
Milking Parlor	Efficient, hygienic milk extraction	Tie-stall, herringbone, rotary, or robot (AMS)
Barns / Housing	Shelter, comfort, disease control	Free-stall, tie-stall, deep-litter, compost barns
Feed Storage	Preserve forage & concentrates	Silos, bunkers, hay barns, grain bins
Water System	Clean, ample water for cows	Automatic troughs, waterers, regular testing
Manure Management	Environmental compliance, nutrient recycling	Lagoon, pit, composting, anaerobic digester
Pasture / Rangeland	Forage production, grazing	Rotational paddocks, fencing, water points
Utilities	Power, ventilation, lighting	Backup generators, fans, heat lamps (cold climates)

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3. Cow Lifecycle & Production Stages

1. Calving (Day 0)

- Initiates lactation.
- Colostrum (first milk) rich in antibodies—critical for calf immunity.

2. Early Lactation (0-100 days)

- Peak milk yield.
- High energy demand → concentrate-rich diet.

3. Mid-Lactation (100-200 days)

- Yield stabilizes, slowly declines.
- Diet balanced for maintenance & milk components.

4. Late Lactation (200-305 days)

- Production declines sharply.
- Transition to **dry period** (~60 days) to allow udder involution and body condition recovery.

5. Dry Period (~60 days)

- No milking; focus on nutrition for the next lactation.
- Proper dry-cow management reduces mastitis risk.

4. Nutrition Fundamentals

Nutrient	Role	Common Sources
Energy (TDN/ME)	Supports milk synthesis	Corn, barley, wheat, high-energy forages
Protein (CP/RDP)	Milk protein, tissue repair	Soybean meal, canola meal, alfalfa

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Nutrient	Role	Common Sources
Fiber (NDF/ADF)	Rumen health, chewing activity	Silage, hay, pasture
Minerals	Bone, enzyme function, milk composition	Salt blocks, mineral mixes (Ca, P, Mg, Se, Zn)
Vitamins	Metabolism, immunity	Vitamin A (carotene), D (sunlight), E (seed oils)
Water	30-50 L/day per cow; essential for milk volume	Clean, fresh supply

- **Ration Formulation:** Use NRC (National Research Council) guidelines or software (e.g.,