

Understanding Livestock Nutrition

Understanding Livestock Nutrition Requirements

Key concepts, practical guidelines, and reference tables for effective feeding management.

1. Why Nutrition Matters

Reason	Impact on the Herd
Growth & Development	Faster weight gain, optimal body conformation
Reproduction	Higher conception rates, shorter calving intervals, better milk production
Health & Immunity	Reduced disease incidence, stronger response to vaccines
Economic Efficiency	Lower feed costs per unit of product (meat, milk, wool, eggs)
Environmental Stewardship	Minimized nitrogen/phosphorus excretion, lower greenhouse gas emissions

2. Basic Nutrient Classes

Nutrient	Primary Function	Typical Sources
Energy (carbohydrates, fats)	Fuel for maintenance, growth, lactation, work	Grains, oilseeds, forages with high soluble carbohydrate
Protein (Crude Protein, Amino Acids)	Tissue synthesis, enzymes, immune proteins	Soybean meal, canola meal, alfalfa, fish meal
Minerals	Bone formation, enzyme cofactors, osmotic balance	Calcium, phosphorus, magnesium, Na, K, trace minerals (Cu, Zn, Se, I)
Vitamins	Metabolic pathways, vision, reproduction	Vitamin A (??carotene), D, E, K, B? complex, C (ruminants synthesize C)
Water	Thermoregulation, digestion, nutrient transport	Clean, fresh water – 2–12?L/?day depending on species & climate

3. Species?Specific Requirements (average adult, maintenance)

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Species	Energy (Mcal/ kg DM)	Crude Protein (% of DM)	Calcium (g/kg DM)	Phosphorus (g/kg DM)
Cattle – Beef (moderate activity)	0.8–1.2	8–12	0.5–0.8	0.3–0.5
Cattle – Dairy (lactating 30%L)	2.5–3.5	12–16	0.9–1.2	0.6–0.8
Sheep – Ewe (late gestation)	0.6–0.9	12–14	0.8–1.0	0.5–0.7
Goats – Dairy (2%L milk)	1.5–2.0	13–15	0.9–1.1	0.6–0.8
Swine – Market weight	2.5–3.0	16–18	0.6–0.8	0.4–0.6
Poultry – Broiler (6 wk)	3.0–3.5	20–22	0.8–1.0	0.5–0.7

Values are guidelines; adjust for breed, climate, production stage, and health status.

4. Determining the Nutrient Requirement

1. Identify the Production Stage

- Maintenance, growth, gestation, lactation, feather/coat production, work.

2.