



Popular Article

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Pulses in Livestock Nutrition and Integrated Farming Systems: Veterinary Insights and Policy Opportunities

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Abstract

Pulses contribute not only to human nutrition but also to livestock productivity. In mixed farming systems, pulse by-products enhance protein intake in dairy and small ruminants. This article explores veterinary perspectives, feed economics, and policy integration strategies.

Introduction: India has the world's largest livestock population:

- 536 million livestock (20th Livestock Census)
- Largest milk producer globally (220+ million tonnes annually)

Protein deficiency in livestock feed reduces milk yield and growth rates. Pulses provide an affordable protein supplement in integrated farming systems.

Nutritional Composition for Livestock

Pulse grains and by-products contain:

- 20–25% crude protein
- High digestibility
- Essential amino acids

Chickpea chuni and lentil husk are widely used in cattle feed. Incorporation of pulse residues improves:

- Milk yield by 5–12% (varies with ration balance)
- Growth rate in small ruminants

Crop–Livestock Integration Model: Integrated system benefits:

Component	Benefit
Pulse crop	Nitrogen fixation
Livestock	Manure for soil fertility
Crop residue	Animal feed

Reduced fertilizer Lower cost & emissions

Such systems increase net farm income by 15–25% (ICAR studies).

4. Veterinary Concerns

While pulses are beneficial, anti-nutritional factors (tannins, trypsin inhibitors) require:

- Heat treatment
- Soaking
- Balanced ration formulation

Veterinary extension services must educate farmers on safe inclusion levels (15–25% in concentrate mixtures depending on species).

Policy Support for Pulse-Based Livestock Systems

Relevant schemes:

- Rashtriya Gokul Mission
- National Livestock Mission
- NFSM–Pulses
- PM Formalization of Micro Food Processing Enterprises (PM-FME)

Policy Recommendations:

1. Promote pulse-based feed units at village level.
2. Integrate pulses into dairy cooperative supply chains.
3. Provide subsidy for mini dal mills and feed processing units.
4. Encourage SHGs and FPOs in pulse-livestock clusters.

Rural Entrepreneurship & Women Empowerment

Pulse processing generates:

- Dal milling employment
- By-product feed markets
- Women SHG enterprise opportunities

Linking pulses to livestock enhances circular rural economy.

SUMMARY

Pulses are not merely seasonal crops cultivated for dietary purposes; they are strategic biological resources that function as systemic enablers of sustainable agriculture, environmental resilience, and livestock productivity. Their unique capacity for biological nitrogen fixation reduces dependency on chemical fertilizers, improves soil fertility, enhances soil organic carbon, and contributes to long-term agro-ecosystem stability. Simultaneously, their high protein content makes them indispensable in addressing both human nutritional deficiencies and livestock protein gaps.

Integrating pulse cultivation with scientifically balanced veterinary nutrition strategies strengthens crop–livestock farming systems, promotes circular nutrient flows, and reduces external input costs. The use of pulse grains, residues, and by-products in livestock feeding improves milk yield, growth performance, and overall animal health while supporting smallholder farmers through cost-effective protein supplementation. Such integration increases farm income diversification, enhances resilience against climate variability, and contributes to national goals of food and nutritional security.

Therefore, promoting pulse-based integrated farming systems through targeted policies, research investment, extension services, and value-chain development is essential. A holistic approach that connects soil health, crop productivity, animal nutrition, and rural livelihoods can transform pulses

from a traditional crop into a cornerstone of climate-smart and economically sustainable agriculture.

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