UNIVERSITY OF LIFE SCIENCES "KING MIHAI I" FROM TIMISOARA
"YOUNG PEOPLE AND MULTIDISCIPLINARY RESEARCH IN APPLIED LIFE SCIENCES"

05-06 November 2026



ADAPTING FEED RATIONS FOR INTENSIVELY LACTATING GOATS

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Abstract: *This paper examines the main reproductive biotechnologies applied in sheep breeding between 1998 and 2025, highlighting their performance, practical relevance, and principles. Artificial insemination and oestrus synchronization emerge as the most widely used techniques, ensuring efficient herd management and rapid genetic dissemination. Cryopreservation, embryo transfer, and in vitro fertilization support the conservation and multiplication of valuable genetic resources. Advanced methods, though primarily used in research, offer strategic potential for genetic improvement and specialized production. The analysis emphasizes species specific constraints, including the anatomical and physiological particularities of sheep reproduction. Comparative data show variable success rates depending on hormonal protocols, management quality, and technical expertise. In Romania, reproductive biotechnologies are increasingly integrated into breeding programs, supported by national conservation initiatives. These technologies clearly enhance productivity, genetic progress, and sanitary veterinary control in modern sheep husbandry.*

• Introduction

Adapting feed rations for intensively lactating goats means matching their sharply increased energy, protein, mineral, and vitamin needs while keeping the rumen stable and preventing metabolic disorders.

Feed rations are of paramount importance because of the main health problems in intensely lactating goats:

- Circling disease / Listeria), caused by the bacteria Listeria monocytogenes present in mouldy and spoiled fermented feeds, with symptoms such as decreased appetite, depression, facial paralysis on one side, fever, leaning, and stumbling;
- Enterotoxaemia, caused by a sudden change in feed or overeating by very hungry animals, that show depression, incoordination, and intoxication; solutions: regular feeding and vaccinating against the Clostridium perfringens bacteria;
- Foot rot, caused by a bacteria thriving in wet muddy areas; solutions: housing goats in a clean, dry environment; trimming away the rotten area and treating the infected area with 10-30% copper sulphate solution as prescribed by a veterinarian; using antibiotics;
- Ketosis, i.e. a metabolic state that occurs when the body burns fat for energy instead of glucose;
- Lactic acidosis, i.e. fat and chronic laminitis, depressed milk, going off feed, and variable appetite; solutions: feeding forages prior to feeding grain and feed grain 3 times/day; stepping grain up gradually; feeding rolled or whole grain instead of finely ground grain; using slow degrading grains (e.g. corn instead of fast degrading grains – barley or wheat);
- Milk fever, generally seen in high producing goats 1-3 weeks prior to and after kidding; solution: feeding a diet prior to kidding with a Ca:P ratio greater than 1.5 to 1 to help reduce the incidence of milk fever, and avoiding feeding legume hay;
- Poor fertility, i.e. difficulties in conceiving or maintaining a pregnancy;
- Udder oedema, most commonly observed in high producing goats during the late dry period and after parturition, characterized by the swelling of the udder; solution: limiting the amount of sodium (salt) and potassium (alfalfa hay), i.e. a total ration dry matter containing 0.2-0.3% sodium and 0.7% potassium.

• Material and method

The material used by the authors of this paper consist in articles published in the last 15 years on the adaptation of feed rations for intensively lactating goats. The research method used is the bibliographic one. It aims at identifying the main trends of research in the field.

• Results and discussion

TA well-adapted ration blends concentrates, high-quality forage (which anchors rumen health given that goats are browsers), and targeted supplements. Thus:

- Agro-industrial by-products (e.g. brewer's grain, chickpea flour, cotton seed meal, crude glycerine, flax seed meal, forage palm, kernel cake, noug seed cake, palm fiber, rape seed meal, soybean meal.
- Dietary additives and plant secondary metabolites (e.g. ionophore monensin, tannins;
- Energy-rich concentrates, which:
  • Must be introduced gradually to avoid rumen upset;
  • Must include energy-dense commercial dairy goat feeds and grains (barley, corn, oats);
  • Must meet the high energy demand of milk production.
- Fats and oils (e.g. fish oil, linseed, sunflower seed oil).
- High-quality forage as the base:
  • Include alfalfa hay or other legume-rich forages for natural protein and calcium;
  • Maintain long fiber to prevent acidosis and stabilize rumen pH;
  • Should make up at least half of the diet.
- High-quality protein sources:
  • Must include commercial dairy concentrates, soybean meal, or sunflower meal to help meet protein needs;
  • Support milk composition and volume, especially in early lactation.
- Mineral and vitamin supplementation, which must consider that:
  • Calcium and phosphorus must be balanced to support milk synthesis;
  • Mineral-rich supplements are emphasized in lactation-specific feeding guides;
  • Salt and trace minerals (copper, selenium, zinc) are essential;
  • Vitamin A, D, and E support immunity and metabolic stability.
- Water availability:
  • Which must be clean, fresh, and available at all times;
  • Whose intake rises dramatically with milk yield.

• Conclusions

Total mixed ration (i.e. 60-70% forage, 30-40% concentrates) seems to be most beneficial in goat farming due to its benefits: better carcass and meat quality, enhanced growth performance, enhanced nutrient digestibility, improved feed intake, increased income / animal / day, increased labour efficiency, increased milk yield and quality, optimized rumen health, reduced feed cost (due to the use of agro-byproducts), and reduced feed sorting.