

FUNCTIONAL SUPPLEMENTS IN GOATS

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Abstract: This paper highlights the critical role of functional supplements in sustaining and enhancing goat health, productivity, and reproductive efficiency, emphasizing that natural forage alone is often insufficient to meet the full spectrum of micronutrient requirements. While grazing provides the primary nutritional base, deficiencies in essential minerals and vitamins can limit animal performance and increase susceptibility to disease. The review identifies key minerals—particularly calcium (Ca), copper (Cu), selenium (Se), and zinc (Zn)—alongside essential vitamins as the foundational components of supplementation programs necessary to maintain physiological balance and metabolic function. Beyond these basics, the study examines the growing importance of functional additives, including probiotics, prebiotics, plant-derived extracts, antioxidants, omega-3 fatty acid sources, and herbal supplements. These components offer targeted benefits, such as improved immune response, enhanced milk production, better growth rates, and increased resilience to environmental and physiological stressors. The integration of such supplements reflects a broader shift in animal nutrition toward more natural and health-oriented strategies that align with sustainable and welfare-conscious farming practices. The reviewed literature also reveals a clear trend toward precision supplementation, where nutritional interventions are tailored to specific herd conditions rather than applied uniformly. Factors such as forage composition, regional soil and mineral deficiencies, breed characteristics, and production objectives must be carefully considered when designing supplementation programs. The authors stress that a context-specific approach is essential to maximize efficiency, avoid imbalances or toxicity, and ensure optimal outcomes in both productivity and animal well-being.

• Introduction

Functional supplements for goats support growth, immunity, overall herd performance, and reproduction. The most important takeaway is that goats need targeted mineral and vitamin supplementation – especially Ca, Cu, Se, and Zn – to prevent deficiencies that can seriously affect health and productivity.

Functional supplements (Figure 1), especially important because forage alone often does not meet all micronutrient needs, go beyond basic goat nutrition – they are added to improve specific physiological functions such as:

- Coat and hoof quality (e.g. Cu, Zn);
- Growth and muscle development (e.g. B-vitamins, protein boosters);
- Immune strength (e.g. Se, vitamin E, Zn);
- Milk production and udder health (e.g. Ca, herbal lactation boosters);
- Reproductive efficiency (e.g. Cu, SE, vitamin A).

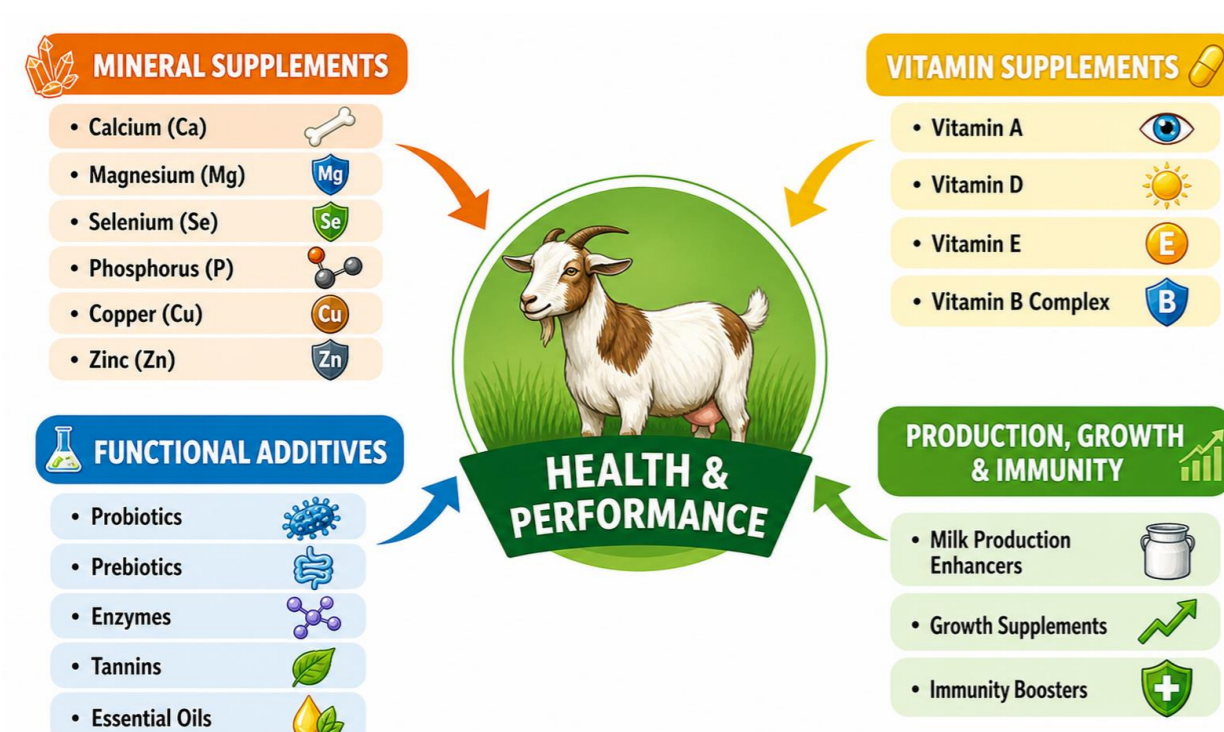


Figure 1. Functional supplements in goats

• Material and method

The material the authors used in this paper consist in articles published in the last six years – thus proving the importance of the topic of functional supplements for goats. As for the research method, it is the bibliographical one, and it consisted in identifying the main trends of the research in functional supplements for goats.

• Results and discussion

Goats feed on fodder shrubs and trees; on forbs, pastures, and rangelands; on agro-industrial by-products and crop residues; and on novel feeds – i.e. macro-nutrients. However, they also need micro-nutrients – feed additives (e.g. antioxidants such as polyphenols, resveratrol, selenium, tannin, or turmeric; exogenous enzymes; organic acids; plant extracts and essential oils; probiotics and prebiotics), as well as functional supplements – for health, in general, for milk production, and containing minerals and vitamins.

1. Health Functional Supplements

A well-rounded program should include :

- Electrolytes, which are useful during diarrhoea, heat stress, or transport;
- Herbal parasite-support blends, which support dewormers;
- Joint and mobility supplements — for heavy breeding males or for older goats;
- Probiotics, to improve digestion and reduce stress-related digestive issues;
- Yeast cultures, to enhance rumen efficiency.

Minerals are the backbone of functional supplementation in goats, because even small deficiencies can cause major health problems. Most goat herds benefit from a loose mineral mix formulated specifically for them, but not blocks because goats do not lick blocks effectively.

Goats need vitamins in small amounts, but deficiencies can still occur, especially in dry forage conditions or in winter. Most vitamins are produced internally or obtained from good forage, but supplementation helps during illness, poor-quality feed, or stress.

• Conclusions

The following conclusions can be drawn from the analysis above: goat grazing behaviour is shaped by evolution, anatomy, and environment; understanding natural and grazing behaviour improves management and sustainability; modern monitoring technologies greatly enhance behavioural research; goats have strong and consistent feeding preferences; daily grazing behaviour follows a predictable pattern; and forage selection is driven by nutrition, accessibility, experience, and plant chemistry.