



## Knowledge grows

# Optimizing digestion in the dry season: feed urea as efficient protein alternative



### 1. Role of urea in animal nutrition

Protein is important for many functions in the animal's body. Providing adequate levels of protein, we ensure that vital organs and systems, including mammary gland activity, reproductive and immune functions, operate properly.

The goal of protein nutrition in ruminants is to provide minimum amount of dietary crude protein (CP) and adequate amounts of ruminally degradable protein (RDP) for optimal ruminal efficiency and microbial CP production.

Maximum performance is achieved when requirements for both protein and energy are met.

Protein supplementation is the most expensive component of the ration after energy. Ruminant livestock producers can decrease these costs by partially replacing true protein sources by non-protein nitrogen (NPN) sources as long as it is fed to animals with functional rumen. The price per unit of nitrogen content is less expensive compared to other true protein sources.

Non protein nitrogen, which has been fed to ruminants for more than a hundred of years, is quickly degraded and converted into microbial protein by the rumen microorganisms (therefore providing RDP).

It is of utmost importance to synchronize the ruminal ammonia and energy availability to maximize nitrogen use efficiency and animal performance.

NPN sources are particularly interesting to supplement low-protein feeds or forages to improve feed utilization and rumen ecology.

The most common NPN source used in ruminant feeding is urea.

Feed urea can help to maintain animal productivity and health during periods of lower feedstuff availability.

There is usually room for a higher urea inclusion rate than what is being done in practice. The inclusion rate can reach up to 1% of the total diet (on dry matter basis), or even more in some set ups. An adaptation period, where urea inclusion in diet is gradually increased, would allow to maximize the level of non-protein nitrogen in feed without any metabolic disturbance. Thus, resulting in savings for the feed producer and farmer.



## 2. Feed urea, food security and livestock sector sustainability

Feeding urea can potentially reduce the need for protein-rich feed ingredients like soybean meal, which may require more land, water, and energy resources for production.

Land use is one of the current issues in livestock farming as, according to FAO (2027), 80% of the agricultural land is dedicated to animal nutrition.

Production of soybeans and its transportation overseas contribute to greenhouse gas emissions and severely impact local biodiversity through activities such as deforestation, agricultural practices, and transportation.

## 3. Quality aspects

Feed Grade Urea is considered a feed additive in the EU and other countries like Brazil, so our feed urea production is certified according to ISO14001, GMP+ or FAMI-QS ensuring full traceability and food safety (HACCP).

The European Regulation (EC) No. 183/2005 of the European Parliament and of the Council lays down the requirements for feed hygiene, conditions and arrangements, ensuring traceability of feed as well as conditions and arrangements for registration and approval of establishments. As a feed additive, feed urea is subject to this regulation. Only feed registered economic operators can produce, store, purchase, sell and use feed urea.

Fertilizer grade urea is usually stored in “less controlled and less hygienic conditions”, which could be unsafe for feed purposes. Therefore, it does not comply with this regulation.



## 4. Is all urea equally suitable for ruminant livestock?

Solid urea is available in two different formats, granular and prilled.

### Prilled urea

- Has typically a uniform size and a smooth surface.
- Is often used in animal feed formulations due to its ease of handling.
- Dissolves relatively quickly in water, making it readily available as a source of nitrogen for livestock.

### Granular urea

- Particles are larger and harder than prilled urea, and they may have a rough or uneven surface.
- May be more challenging to handle and may require additional processing steps, such as grinding or screening, to achieve the desired particle size for animal feed.
- May be more prone to caking or clumping during storage, which can affect its flowability and ease of handling.

These attributes make prilled urea the preferred option.

1. RUMISAN® feed urea means traceability and supplier reliability to ensure safety along the feed and food chain
2. RUMISAN®'s uniform prill size guarantees homogeneous mixing and has several applications: lick compound feed, salt licks or blocks, liquid supplements, silage, or treatment of low-quality roughage contribute to greenhouse gas emissions and severely impact local biodiversity through activities such as deforestation, agricultural practices, and transportation.

***Working with a qualified nutritionist or veterinarian is recommended to determine the appropriate dose of urea to use in animal feed based on specific requirements and considerations.***