

# Managing The Nitrogen Cycle In Pastures

**FAYETTEVILLE, ARK.**

**N**itrogen is one of the most important, and costliest, plant nutrients, especially for cattle producers. Knowledge of the nitrogen cycle is an important start in shaving costs off of this expensive fertilizer.

“Nitrogen compounds have to be converted to ammonium or nitrate to become useable by plants,” says Dirk Philipp, assistant professor for University of Arkansas System Division of Agriculture.

For this process to happen, soil microbes enzymatically convert urea, which is one of the main nitrogen sources, first to carbon dioxide and ammonia, and then into nitrates ready for plant uptake.

Keeping these microbes healthy and alive is of utmost important for the nitrogen cycle. However, these microbes can only thrive in optimum environmental conditions.

“Testing your soil for an optimal pH, for example, will allow you to keep these beneficial bacteria well-functioning,” says Philipp. “These microbes can also help keep nitrates from leaching out of your fields by incorporating ex-

cess nitrates into soil organic matter.”

Cattle are an important part of the nitrogen cycle, and their management determines in large part, the nitrogen use efficiency in pastures.

“In your pasture, do cattle leave urine and manure all over the place? If they don’t your field can lose nitrogen,” Philipp said.

There are a few additional pointers for managing the nitrogen cycle in your pasture:

- Maintain ground cover.
- Maintain appropriate stocking rates.
- Use strip grazing, rotational stocking, or other methods that encourage cattle movement to improve manure distribution.
- Move water tanks, feed bunks, and hay rings frequently.
- Maintain a record of soil fertility tests. Watch out for other nutrient deficiencies, as they can limit plant growth and nitrogen utilization.
- Monitor nitrogen fertilizer prices. Fertilizers come with different percentages of nitrogen that will affect the calculation of cost-effectiveness.

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