

# When is the best time to apply manure to forages?

There is no single best answer.

But research and environmental considerations have changed our understanding of how to handle manure on forage crops.



## Before terminating a stand . . .

The common practice of applying manure to a stand as it's being rotated out of a perennial forage could be the worst approach. The primary risk is that excess nitrogen will be available to the next crop – and possibly cause nutrient runoff and/or leaching – because of a double dose of nitrogen credits from both the crop and manure.

### Recommendations:

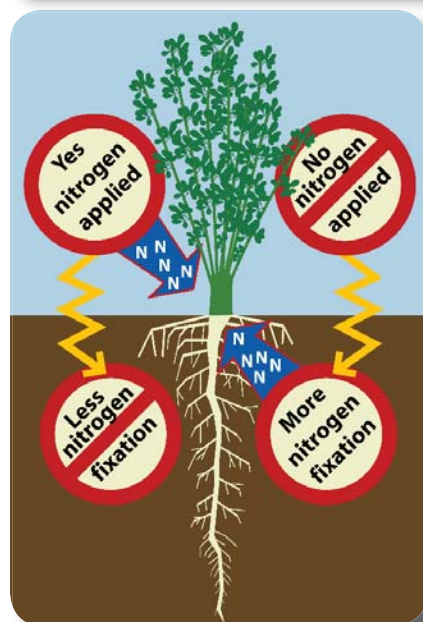
Light manure applications in this case may benefit the subsequent crop without increasing the risk of nitrate leaching. And timely incorporation will reduce volatilization and runoff risk.

## Pre-plant applications . . .

This approach could cause excessive nutrient leaching if too much is applied or runoff if manure is not incorporated soon enough. There's also a risk of damaging seedlings by salts and high ammonia concentrations, and weed competition can increase in manured fields.

### Recommendations:

Manure rates should be based on phosphorus and potassium (except where nitrate leaching is probable). Apply manure no more than a few weeks before planting, and incorporate. Use a companion crop to help capture the manure nitrogen while alfalfa is getting established. Use alfalfa seed inoculated with rhizobia to assure that the stand can fix nitrogen from the atmosphere as the supply of manure nitrogen declines.



Alfalfa can adjust how much nitrogen it fixes depending on how much it receives from other sources, like manure. Consequently, it can serve as a friendly buffer of nitrogen buildup on farms.

## Established stands . . .

Even though legumes such as alfalfa fix nitrogen, they can also utilize the nitrogen in manure that is applied during perennial forage production. This is because alfalfa reduces nitrogen fixation rates when nitrogen from other sources is available (see figure at left). Consequently, alfalfa can serve as a friendly buffer of nitrogen buildup on the farm by using supplied nitrogen when available and making its own nitrogen when it's not available.

### Recommendations:

Apply as soon as possible after harvest and at least 30 days before the next harvest; avoid applications just before stand termination. Apply at low to moderate rates. Use equipment that injects or partially incorporates the manure with minimal stand damage. Select fields with the greatest grass content. Spread manure evenly for good nutrient supply and to reduce stand damage. Avoid traffic on moist soils.

Source: Michael Russelle, Soil Scientist, USDA-Agricultural Research Service, Plant Science Research Unit, St. Paul, MN and U.S. Dairy Forage Research Center at 1925 Linden Dr. West, Madison, WI 53706; phone 608-890-0050  
Contact: Lori.Bocher@ars.usda.gov <http://ars.usda.gov/mwa/madison/dfrc>  
Material may be downloaded and copied for educational purposes.

