

EXPANDING MANURE APPLICATION WINDOWS

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As of early August in Wisconsin, fall manure applications shouldn't be impacted by a late start to the growing season. However, dairy farmers may experience application issues this fall if wet, rainy conditions like those experienced in 2018 and 2019 recur. Weather during those years forced farms to miss their normal fall manure application windows and dictated that many applications needed to be made on frozen soils or delayed until the following spring.

Fortunately, there are management choices dairy farmers can make to reduce the risk of having to make all their manure applications during unfavorable weather conditions that occur frequently during the spring and fall. These choices can:

- Shift field activities away from busy planting and harvesting times.
- Reduce soil compaction and/or manure runoff events by not having to make all applications when soils are wet or saturated.
- Better match nutrient applications to crops that need them.
- Reduce unwanted nitrogen losses outside the typical growing season, especially on coarse-textured soils.

Adding New Forage Crops

Dairy crop rotations have traditionally relied heavily on corn silage and alfalfa to provide needed forages. However, manure applications to corn silage are almost always limited to spring before planting and fall after harvest when crop need is low. Alfalfa fields can receive manure during the growing season, but have other complications such as application equipment causing long-term physical damage to alfalfa crowns, potential yield decreases, and inefficient use of nitrogen supplied from manure.

Forage Grasses

Adding forage grasses (Italian ryegrass, tall fescue, etc.) to a crop rotation allows manure to be applied outside the usual spring and fall periods to a crop that has good tolerance to applications. Advantages include:

- Multiple harvests of grasses during the growing season allow several application opportunities during the growing season.
- The fibrous root system is less prone to damage, compared to alfalfa crowns, from heavy application equipment.
- Forage grasses usually have increased yields after manure applications due to using needed moisture and nitrogen supplied in manure.
- Year-round plant growth captures fall nitrogen losses that frequently occur when fields receive manure applications several months before crop needs.

Small Grains

Winter small grains can be used as a spring forage crop when planted in late summer/fall after harvest of vegetable crops, corn silage, or soybeans.

- Winter rye, winter wheat, and winter triticale are the most common winter small grains used for spring forage in Wisconsin.
- Planting an "extra" winter small grain crop in early fall allows for a manure application opportunity when soils are usually not saturated.
- Corn silage and soybean maturities can be timed for a mid-September harvest to allow plenty of time for fall-planted small grains to grow extensive root systems that scavenge excess soil nitrogen commonly lost during the winter.
- In addition to adding soil organic matter, fall-planted small grains provide soil erosion protection and increased water infiltration from fall rains and spring runoff.



Spring growth of winter rye in 2022.

Application Equipment

Until recently, manure applications to growing forage crops were usually made using large tankers (5,000-7,000 gallons/load) applying unincorporated manure on the soil surface. Major drawbacks of this method include crop injury, unwanted nitrogen losses to the atmosphere, high susceptibility for phosphorus runoff, and lingering smells after application. Today, there are application options that reduce these issues.

- Low-disturbance manure application. A toolbar with “aerator bands” or discs at a slight angle and drop hoses allow manure to be placed at or under the soil surface with minimal disturbance to the soil. The toolbar is normally connected to a drag line hose to reduce equipment weight and provide consistent application rates across the field.
- Dribble bar. This system is often on a tractor-mounted toolbar and attached to a dragline hose. However, some tankers are starting to offer similar toolbars. No soil disturbance occurs as manure at low pressure is “dribbled” on the soil surface using tubes hanging from the toolbar. This system differs from traditional broadcast applications by placing manure directly in bands on the soil surface and not in a wide pattern covering both soil and emerged vegetation. Dribbling manure on the soil surface reduces smells, improves placement accuracy, allows for faster infiltration of nutrients, and minimizes vegetation “burn” from manure applications.

Choosing to use any of the above management practices can relieve the stress involved with having to make **all** your manure applications during unfavorable weather conditions common in spring and fall. Adding new forage sources or updating application equipment provides forage producers greater opportunities to make needed manure applications that increase profitability and improve water quality.



Low-disturbance manure application (right side of photo) on a forage grass field.