



November 2018

Preparing for Early Winter Manure Application

It has been a challenging fall application season, with a delayed harvest and wet soil conditions early, followed by a cold fall with soil temperatures in Iowa hovering just above the freezing mark. Given the challenging conditions we've had, it is important to review the rules, so we can be prepared as possible for when soils do freeze.

As most of you are aware the winter application of manure on snow-covered and frozen ground rule was passed in 2010. This law only applied to liquid manure from confinement animal feeding operations with more than 500 animal units and only limits application during specific dates (from December 21 to April 1 on snow-covered ground, and from February 1 to April 1 on frozen ground). This means for the next month, manure application from these facilities is permissible; however, some operations may have to switch from a planned injection application to surface application if the ground becomes impenetrable. If this change is needed please remember the following:

1. If a farm claimed injection/incorporation points on the MasterMatrix, it is required you inject/incorporate, or you must get permission from the Iowa DNR before switching to surface application.
2. If you have either an NPDES permit or an NRCS comprehensive nutrient management plan, check this document carefully to see if you have any application restrictions that may be impacted by frozen or snow-covered ground.

If you are switching manure application to surface application there are a few additional considerations you should make in your nutrient application. In terms of nutrient management planning, look at updating the volatilization correction factor. Based on Table 2., of [PMR 1003, "Using Manure Nutrients for Crop Production"](#) a correction factor of 0.25-0.90 is recommended for not incorporated surface applied liquid manure and a factor of 0.70-0.85 is recommended for not incorporated surface applied solid manure. Also check how switching to surface application will impact the fields P-Index to ensure both the new rate and application method is allowed.

Finally, review your fields for [setback distance requirements](#). With injection/incorporation, the required setback distances are often 0, but when switching to surface application setbacks of 750 feet from residences and public use areas, 200 feet from water sources and other designated areas, and 800 feet from high quality water resources will be required for liquid manure.



Figure 1: Review manure application rules as weather challenges continue.

The Manure Scoop

In this month's [Manure Scoop](#) we take a look at the difference between composting and stock piling and the science behind both.



Figure 2: Manure is stockpiled as a storage method.

Best Application Tips for Winter Application

As we deal with frozen soils, switching to surface manure application, and the challenges of dealing with manure application during colder temperatures we need to be mindful of our application practices. While these application conditions don't necessarily increase nutrient loss, they do increase the risk of potential loss.

Nutrient movement is always driven by water movement – so what makes winter application riskier? Winter often has a mix of freezing and thawing, and these freeze-thaw cycles affect soil structure, infiltration, and water movement. Often what happens is freezing and thawing break up surface soil aggregates and cause a crust to develop. This makes it more difficult for water to move through the soil and makes it harder to resist erosion, but it's really not as cut and dried. In 1955 they identified four types of frozen soil structures: concrete, honeycomb, stalactite, and granular. Of these structures, it's the concrete structure that really slows water infiltration. Unfortunately, this is also one of the more common structures to develop, especially if soils are wetter when they freeze, which is what we normally see after a few freeze thaw cycles that have left soils close to saturation. This is one of the reasons if winter manure application is necessary, earlier application (in the winter) is safer, because typically they tend to be a bit drier than they would be later in the winter.

One thing all the studies of manure application to frozen ground have in common is variability. Every situation is different – the weather, the soil, the manure characteristics all play a role. However, what we do know is the response is typically driven by the hydraulic conditions. If rapid snowmelt or rainfall is imminent, don't apply.

Best management practices for winter manure application include applying to level ground and where soil erosion is controlled. If you do need to apply, timing and weather conditions are two of the most important factors affecting the amount of manure nutrient we lose. Nutrient loss requires something to move the manure nutrients from the field to a water body; this is usually either snowmelt or a rainfall event onto the frozen soil. If these events are small, nutrient losses tend to be low; if it is a larger runoff event then nutrient losses are higher. In general, the more time that passes between the manure application and the first runoff

event, the less risk of environmental impact from nutrient transport. This means watching the weather forecast and avoiding manure application for a few days before anticipated snowmelts or rainfalls can make a big difference in limiting manure nutrient loss.

Additional recommendations include incorporating the manure when you can, avoiding areas of concentrated flow such as waterways, ditches, or similar areas, using setbacks from sensitive areas like stream banks, sinkholes, and similar, and if possible avoiding application near areas that drain to surface tile inlets. If these areas can't be avoided, add protection around drainage tile intakes to prevent entry by manure or runoff water.

In summary, a few things you can do are:

- Take into account soil and weather conditions and make the best decision based on the conditions you face
- Avoid applying before a snowmelt or rainfall event
- Apply to areas of level ground or soil erosion is controlled to help prevent nutrient transport
- Follow appropriate setback distance requirements
- Sleeve surface tile inlets to prevent runoff from entering tiles

Thanksgiving Fast Facts

It should come as no surprise, but Midwest agriculture provides much of the food for your Thanksgiving feast. Here are a few quick facts to share this week:

- Iowa ranks 7th in the nation in turkey production. Annually, Iowa farmers produce 12 million turkeys. Additionally, turkey production is responsible for over \$10 billion dollars in economic activity in the state.
- Each year Iowa turkeys produce about 300,000 tons of turkey litter, containing almost \$10 million dollars of fertilizer value.

- Minnesota leads the nation in turkey production, raising about 46 million turkeys each year.
- Wisconsin is the nation's leader in green bean production, processing around 300,000 tons of green beans each year.
- Chances are that the pumpkin in your pie was grown in Illinois, with ninety to ninety-five percent of all processed pumpkin grown around Morton, Illinois.

Events

[Integrated Crop Management Conference](#)

November 28 – 29, 2018, Ames, Iowa

[Commercial Manure Applicator Training](#)

January 3, 2019, 76 locations

[Crop Advantage Series](#)

January 2019, multiple dates and locations

[Soil Health Conference](#)

February 4-5, 2019, Ames, Iowa

[Soil Fertility and Nutrient Management Short Course](#)

February 19, 2019, Ames, Iowa