October 2018

Fall Manure Application – Evaluating the Conditions

This spring started cool and wet, delaying planting season, but was followed by a beautiful early summer with warm temperatures and heat units that pushed crops forward quickly. As harvest season has neared, we have been faced with some wet conditions slowing harvest. According to the most recent Iowa crop progress and conditions report issued on October 14th, only 17% of the corn has been harvested and 19% of the soybeans have been harvested. Corn is slightly behind the five-year average (24%) harvested but slightly ahead of last year. About half of the five-year average for soybean (51%) are currently harvested, but only slightly behind last year’s (31%) harvested at this time. This is to say, while harvest is behind what we may have hoped, the upcoming forecast shows relatively low chances for rain over the next nine days. Hopefully, this will provide an opportunity to start catching up on harvest and get manure to the fields.

If you are curious about soil temperatures, the ISU Soil Moisture Network is one source of data that can be useful. It suggests, Iowa’s soil temperatures currently sit in the high 40’s in the western half Iowa with temperatures in the low 40’s in the eastern half of the state. Historical data suggests in Ames we would be below a soil temperature of 50°F at this time 72% of the time. As a point of reference, soil temperature, will on average, reach 32°F on November 25th, with other locations in Iowa having similar probabilities of freezing at that date, giving around 38 calendar days for manure application on average.

Given the wet conditions this fall, there are a few options to consider as we make sure all farms are ready for the coming winter.

1. **Plan ahead.** The rush of the season can make biosecurity a challenge. Planning out an order of operations, considering both the health status of the farm and the need to get the storage drawn down, and the availability of fields and suitability of soils to take manure in the area can alleviate some biosecurity concerns.

2. **Partially empty basins.** Make sure to empty enough to maintain freeboard and enough manure to get you through until field conditions are more suitable for full application, or next spring. Typical swine finishing barns accumulate manure at a rate of about 1.5 inches per week, meaning at least 3 feet of usable storage would be required to make it to spring.

3. **Discuss your options.** Communication is always critical, but in a year with a condensed application season and challenging soil conditions, it is critical to make sure everyone is on the same page.

4. **Field selection.** All fields aren’t the same and all spots in a single field aren’t the same. Though it may not be ideal, try to look for fields that dry out quicker and get them first. Avoiding wet spots and relying on the technology in your tractor to get back to
the spots you had to miss later in the season when better soil conditions exist.

5. **Watch your rates.** Manure management plans specify the maximum amount of manure you can apply based on nitrogen or phosphorus, but that doesn’t mean they will be able to infiltrate and hold all the water that comes with the manure. To get the manure to infiltrate and stay in the soil, manure application rates may need to be reduced in some cases.

6. **Determine your options.** A farm that has received points for injection on the Master Matrix needs written approval from a field office prior to switching to surface application. If this is you, be prepared to contact the field office should manure application season continue towards late November when frozen soil conditions may be encountered.

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**Figure 1:** A wet fall is delaying harvest, but time is still available for manure application.

**The Manure Scoop**

In this month’s **Manure Scoop** we take a look at manure value and focus specifically on how different decisions we make can impact the cost to get a gallon of manure out to our field, but also what that does to the value we get from those manure nutrients. So if you like talking about manure economics and how to get the most from that black gold on your operation make sure to take a look at this month’s discussion.

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**Figure 2:** Side dressing manure slows our gallon per minute and in this month’s Manure Scoop we’ll explore how it impacts value.

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**Minimizing Soil Compaction**

Rainfall the past two months has increased concerns about soil compaction. Check out a recent ICM Blog, [How to Minimize Soil Compaction During Harvest](#), which explored ways to minimize compaction during harvest and many of these practices can be applied to manure application.

**Wet Soil Conditions and Hydraulic Pressure May Lead to Pit Failure**

This fall has been exceptionally wet and that has led to saturated soil conditions around much of Iowa, and while this has made the primary focus on manure delayed harvest of corn and soybeans and thus limited area for manure application. These soil conditions may also lead to saturated soils around the manure storage, as the hydrostatic pressure of the saturated soils places high amounts of pressure on both the side walls of manure storages as well as up lift pressure on the floor. When a manure pit is full, these pressures are equalized by the manure inside, but when emptied damage to the concrete can occur.

Seasonal high water tables and saturated soils can exert water pressure on the liquid manure storage.
foundation walls and floor slab, and have the potential to cause significant structural damage if not adequately controlled. Structural damage can include cracking of the walls, heaving of the floor or side walls.

Saturation of the soils around the facility can occur from either precipitation or from a high water table. Rain can cause water to pool on the ground surface around the exterior of the concrete storage and saturate the soil. This excess soil water can’t be held by the soil and can create significant pressure on the structural walls and the floor. Ensuring the soil around the structure slopes away from the building can help direct this water away from the building. In cases where a seasonal high water table is present around a manure storage a perimeter drain tile system is generally recommended to help remove water and reduce water pressure on the exterior of the manure storage. While these tile systems should usually be adequate to prevent manure storages, during exceptional weather conditions this tiles may not be able to remove water due to the tile system outlet being below the stream level or alternatively, if the perimeter tile is connected into an existing tile network, flow limitations of the tile system due to full pipes from large drainage areas.

There are a few things you can check to help determine if your manure storage is facing high hydraulic pressures.

1. Evaluate the grade of the soil around your facility. If water isn’t draining away consider trying to regrade the landscape around your buildings this fall or next spring to improve site drainage. In the meantime, allow the soils around your facility several days to dry before removing manure from the storage.
2. If a tile system surrounds your storage, check to see if the tile system is still flowing. If the tile system is flowing, especially at levels higher than normal, it would indicate that the soil around the facility still has excess water conditions around the storage that could put hydrostatic pressure on both the walls and floor of the storage and lead to potential concerns about pit damage.

Celebrate National Pork Month

Celebrate National Pork Month and support Iowa farmers by cooking your favorite cut of pork. A few reasons to celebrate include:

- Fifty million hogs are marketed in Iowa each year.
- Over 141,000 jobs are associated with the Iowa pork industry.
- Manure provides more than $1 billion-dollar of nutrient value.

Figure 3: Grilled stuffed pork chops are one of Dr. Manure’s favorite recipes.

Manure Sampling

Manure is a valuable commodity to your farm. While the use of average values can be helpful in determining the available nutrients, factors such as feed rations, water use, and age of the animal can contribute to variation in manure content. Sampling
on a regular basis (every three to five years for existing facilities) allows you to adjust your application rates as necessary. To fully utilize the available nutrients, while protecting the environment, check out the resources below:

- **PM 1558 How to Sample Manure for Nutrient Analysis**
- **PMR 1003 Using Manure Nutrients for Crop Production**
- **PM 3014 How To Interpret Your Manure Nutrient Analysis**

![Figure 4: Collecting a liquid manure sample. Photo credit: Angie Rieck-Hinz, Iowa State University Extension and Outreach](image)

**Events**

**Manure Sampling Webinar**
November 16, 2018, 1:30 pm

**Integrated Crop Management Conference**
November 28 – 29, 2018, Ames, Iowa