Options for Manure Application in Spring 2019
Kapil Arora, ISU Extension Ag Engineer

Excessive rains in Fall 2018 and Spring 2019 have created extremely wet conditions which delayed farm operations including manure application. Several livestock operations still have manure to apply in Spring 2019 to ensure enough storage capacity exists to get through the 2019 crop growing season. As these producers prepare for Spring 2019, the following manure application options can be considered.

Applying manure to land to be planted to soybeans

In case fields dry out just enough for corn planting to occur, manure application may need to be considered for land to be planted to soybeans. Several manure management plans show manure application only to corn in a corn-soybean or corn-corn-soybean rotations. In case the decision is made to apply manure to soybeans, the manure management plan may need to be modified and an application rate need to be calculated for the soybean crop prior to any manure application. Iowa Department of Natural Resources (Iowa DNR) rules allow manure to be applied to soybeans but the application rate cannot exceed 100 pounds of available nitrogen per acre.

Side-dressing manure to land planted to corn

Manure application as side-dressed on corn is an option if field conditions do not allow any manure application prior to corn or soybean planting. A major hurdle exists as the equipment used in fall or spring application of manure is not the same as needed to side-dress manure. Producers needing to use this option may need to locate equipment or commercial manure applicators who may have such equipment.

Alternate Fields

Pastures and/or fields planted to alfalfa, which exist within a reasonable distance but are not cropped by the swine producers, can also be considered for manure application. Such fields, which belong to neighbors, can serve as an option for manure application. For these fields to be included in the manure management plan, a written manure application agreement, soil samples per DNR requirements, and calculation of the Phosphorus Index will be needed prior to any manure application. Application rates will also need to be calculated based on the crop which will receive manure application. Such calculations will need to consider any legume credits and/or any commercial fertilizer application which may have already been applied or is planned to be applied by both the swine producer as well as the person farming such fields. The swine producer will need to obtain a signed statement of intent from the person farming these fields. This statement of intent needs to identify any fertilizer application from all sources so that the manure application rate can be calculated accordingly prior to any land application.
These options provide a brief summary of the choices which exist for a swine producer to consider for manure application in Spring 2019. Swine producers are encouraged to explore these options or other alternatives (storage or irrigation) in further detail with their respective Iowa DNR Field Offices. Additional assistance through Iowa State University Extension & Outreach is also available.

**Late Spring N Testing During This Season**

This fall proved a difficult application season, and as a result I had numerous questions about how did switching to surface application impact nitrogen supply for the upcoming growing season. While the cool weather conditions during application probably helped to minimize volatilization losses at the time of application, the wet spring and its potential for nitrogen leaching may be having a more significant impact on anticipated nitrogen supply. One tool to help analyze nitrate available for crop production is the Late Spring N test. You can read more about the test in the [Use of the Late-Spring Nitrate Test in Iowa Corn Production publication](#). For more specific issues related to the 2019 growing season, like when should that sample be pulled, John Sawyer, professor of agronomy and extension specialist in soil fertility and nutrient management, wrote a recent ISU ICM article titled [Late-Spring Soil Nitrate Test (LSNT) Use in 2019](#). The calibrated LSNT sampling time is when corn is six to twelve inches tall (measured from the ground to the center of the whorl). That timing is usually late May to early June. This year, with the wet, cold conditions and delays in planting, many fields will likely not have corn at that height during the late May through early June period. So, when should samples be collected this year? We suggest collecting LSNT soil samples in the first two weeks of June even if the corn is not the suggested height. If you are using this test or just interested in what the results might show, spend a little time reviewing both the publication and the article to make the most of your sampling.

**Manure Side-dressing**

As the warm summer heat pushes the corn taller, or at least out of the ground, it seems a good time to discuss side-dressing manure. Today, I want to look at three potential reasons people may want to side-dress manure: storage management, nitrogen management, and equipment availability.

**So, what is side-dressing manure?**

Side-dressing is the application of fertilizer to an already established and growing crop. In the case of side-dressing manure, it simply refers to the fertilizer source being a manure. This can be done using either tanks or dragline application methods, though equipment must clear the emerged corn and move mostly between rows, giving only a short window for application.

**Storage Management**

Side-dressing opens up an additional spring window for manure application and thus potentially a chance to reduce storage pressure by having more room available going into fall. However, there are a few things to consider. Side-dressing with manure has a relatively short window. It probably isn’t a good idea to rely on it as your only land application window, as the weather during this short window can be unpredictable. From a nutrient management perspective, if we miss this window we can still get nitrogen applied using other sources and other equipment to provide it fertility, but that doesn’t provide an opportunity to use the manure.

In a year like 2019, where the previous spring and fall offered challenging application windows, side-dressing may be a way to get some more of the manure out of the storage and make sure you can get to the fall application windows.

**Nitrogen Management**

Side-dressing nitrogen allows it to be placed just before corn uptake is maximized and in so doing
the risk of losses from earlier spring rains or long warm falls is reduced. There is some risk the weather during the side-dress window will not be suitable for manure application, but as other forms of nitrogen can be applied at larger growth stages, there is still options available to successfully manage the crop.

In terms of manure, though we often think of it as an organic nutrient source, much of the nitrogen, approximately 70% in the case of liquid swine manures, is available as ammonium. This fraction is immediately available for crop uptake and means this type of liquid manure is a good choice for side-dress fertilizers.

Equipment Considerations

While both tanks and dragline application methods can be used, the equipment needs to be set up so it will fit between the rows. For tanks, this means having tire widths that can move between the rows and injectors. For dragline application, it means making sure application is finished during or prior to the V4 stages so the corn plants are still springy enough they can bend over when the hose crosses over them.

Initial results from studies by Glen Arnold, Ohio State University Extension, have shown that manure be as a side-dress fertilizer can be effective and you can see a summary of results from his [work](#) or watch a summary of his [research presentation](#).

![Figure 1. Manure Side-dressing using a dragline application method.](image)

Iowa Drainage School

Iowa Drainage School teaches stakeholders in subsurface tile drainage concepts, planning and laying out tile drainage systems including surveying a profile, laying out the system, calculating tile line sizes and spacing using actual field data, making connections, and setting up drainage control structures, and fixing common drainage system issues. The three-day school includes hands-on activities, problem solving, team drainage design project, and tile installation demonstrations to help participants learn different drainage concepts. The school will be held at the Borlaug Learning Center at Nashua, IA from August 20 through 22, 2019. Borlaug Learning Center is located on the Iowa State University Extension and Outreach’s Northeast Area Research Farm. More details including registration fees, agenda, lodging, directions, etc. is available at [www.aep.iastate.edu/ids/](http://www.aep.iastate.edu/ids/).

Events

**Recent Research Efforts to Reduce Greenhouse Gas Emissions** webinar
June 21, 2019, 1:30 pm

**Iowa Swine Day**
Ames, Iowa
June 27, 2019
North American Manure Expo
Fair Oaks, Indiana
July 31 – August 1, 2019

Iowa Drainage School
Nashua, Iowa
August 20 – 22, 2019