

New Fashion Pork

MPCA Rule Changes Response

Please accept these comments in regard to the proposed rules changes for the upcoming NPDES/SDS permit updates.

There are some major concerns about the new application timing rule. How the current change is now worded, would require by 2028 that all manure to vulnerable soiled fields must be applied in the spring unless (1) applying to an actively growing crop, (2) application to an active cover crop or plant a cover crop within 14 days of harvest or (3) have a perennial crop for at least 2 of the next 5 years. I strongly disagree with this proposed rule for the reasons stated below.

This is a significant concern as it is very limiting to new and developing technologies to decrease nitrate leaching and soil erosion. It also has the potential for causing greater negative effects through compaction and increased chemical use when terminating the cover crop. These changes do not take enough consideration to Minnesota's climate when dealing with cover cropping and spring moisture. The University of Minnesota cover crop page states "The primary challenge that successful cover cropping faces in Minnesota is the short growing season. There's rarely ample time and favorable field conditions to plant and establish a cover crop after the grain harvest and before winter sets in." The Strock et al., 2004 study concluded that cover crop establishment in Minnesota is difficult leading to inconsistent nitrate reduction and soil erosion control. Additional research from the University of Minnesota also shows years 2019-2024 were very challenging years for cover crops in Minnesota. The timing of planting can be critical for establishing the cover crop to suit its purpose. With such a short planting window

the opportunity for a successful cover crop is shown to be minimal. The current economics and research do not currently support the use of cover cropping in much of Minnesota.

Though cover crops have been shown to increase soil health it has also been shown to decrease corn yields. The University of Minnesota is still conducting research on the effectiveness of cover crop practices in Minnesota. Current research will also help to understand the amount of nitrogen remaining in the soil after said cover crop is harvested or terminated. This new rule is ahead of that research. According to the literature review in progress by the U of M on cover crops, the most recent data stems from 2014.

Northern Minnesota has a shorter growing season than southern Minnesota, making cover crops even more difficult for those in northern Minnesota where there is a large area of vulnerable soils. According to the data provided by the National Centers for Environmental Information, in northern Minnesota there is a 70% chance that after October 2nd the temperature will fall under 32 degrees. The last permit update restricted applications prior to October 15th due to the soil temperature history being at or below 50 degrees. It has been shown that once the soil temperature reaches 50 degrees or lower the rate of nitrification greatly reduces. Microbial activity will rapidly slow down, decreasing the plants opportunity for nutrient uptake as temperatures continue to decrease into the winter months. This is a large contributing factor as to why cover crops in much of Minnesota have been unsuccessful for the past 5 years. I don't believe enough time has been given to show the impact of the delayed manure application in regard to soil temperature to justify the additions of even more regulations. Before cover crops or 100% spring manure application are made the exclusive

options to fall application on vulnerable soils, the land grant universities need to have time to prove the effectiveness of them.

In 2022 the U of M published a study that shows cover crops to be more suited for cropping systems following, sweet corn, peas, or other canning crops, small grains, or corn silage. These types of systems where the crop is harvested earlier in the year allow for the cover crop to get established and grow before the soil begins to freeze. Though these types of farming practices do occur in some parts of Minnesota it is a very small percentage. Other information that is still unknown and needs further research is nitrogen credit depending on which cover crop is planted. There has not been enough data in Minnesota with different cover crops to conclude what is left over in the soil after the crop is killed off. There is still a lot of research to be done in Minnesota on this subject which is why this rule should not be apart of the new NPDES/SDS permit at this time.

Additionally, there is a lot of consumer backlash about the use of chemicals and the amount of chemicals that have been entering our food and water systems. When using cover crops it is important that they are terminated as soon as conditions are good for the herbicide to be effective. This opens another avenue for more chemicals to get into our food and water systems. The most recent cover crop study had to apply 2 applications of glyphosate due to cooler weather temperatures that decreased the effectiveness of the first application. Glyphosate is a water soluble chemical which is already found in 1/3 of the US waterways according to the Battaglin W., et al.(2014) study. The increasing amount of chemicals is correlated to the decreasing health of the soil.

Manure application alone is a great asset to soil health, which in turn helps the soil retain nutrients that could otherwise be lost. How manure works in the soil compared to commercial fertilizer is that it is more slowly releasing. As the crop matures the nitrogen needs start to increase. Manure better naturally allows for slower releasing of plant available nutrients. Manure also increases the microbial activity in the soil allowing for more nutrients to be able to get to the crops for uptake. Every year manure is applied, it is feeding the soil and increasing the health of the soil compared to commercial fertilizer.

When it comes to spring application a major concern is the compaction issues it will cause when trying to apply manure. Compaction presses together the soil particles reducing the pore space and the ability for the soil to penetrate water. This causes issues with the plants root system and its ability to penetrate through the soil picking up the necessary nutrients. Soil compaction from the spring application could cause greater harm than good when trying to eliminate erosion and capture nitrogen to limit leaching, it will do the complete opposite. Equipment today is built a lot bigger than it was in the past, this can greatly increase the chances of soil compaction depending on weather and soil type. Compaction can occur more easily when soil conditions are wet which happens often in a Minnesota spring.

It is within the MPCA's best interest to recognize the advancement of strategic best management practices as many farmers are converting from traditional high tillage farming practices to minimized tillage strategic farming. In our farming operation we utilize zone tillage, (strip tillage) which is a practice that disturbs very little of the soil when applying manure and planting the crop. This practice uses RTK technology that allows accuracy within 1 inch, to strategically inject manure which results in reduced risk of storm runoff. The GPS allows the

seed to be planted right where the manure was injected allowing for an increased uptake in nutrients, lowering the gallons of manure that needs to be applied and creates an increased crop yield. No other fall tillage is used in this system which greatly reduces input costs such as tractor hours, fuel consumption, and soil compaction to the fields ultimately reducing the fields carbon footprint substantially. Natural fertilizers like manure, reduce the generation of greenhouse gases in-leu of synthetic fertilizers that can deplete the soil health. To continue to create sustainable operations it is critical to allow for multiple different best management practices for each different operation.

Soil health needs to be a priority in restoring the health of the waters and animal agriculture manure is part of that solution. My recommendation would be to provide additional best management practices such as the practices listed above, that could apply to fall manure applications throughout the vulnerable soils in Minnesota, instead of a one size fits all approach.

Thank you for your consideration of our comments and suggestions for the draft NPDES/SDS permits.



Sources:

- 1 [Final Spring/First Fall Freeze & Frost Date Probabilities | Minnesota DNR \(state.mn.us\)](#)
- 2 [Soil compaction | UMN Extension](#)
- 3 [Viable cover cropping opportunities in Minnesota | UMN Extension](#)
- 4 [Planting date matters for cover crops too \(umn.edu\)](#)
- 5 [Glyphosate and Its Degradation Product AMPA Occur Frequently and Widely in U.S. Soils, Surface Water, Groundwater, and Precipitation - Battaglin - 2014 - JAWRA Journal of the American Water Resources Association - Wiley Online Library](#)
- 6 [How can animal manure help my soils be healthier and more productive? | UNL Water](#)