Late Season Wet Weather Creates Hurdles for Manure Application

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Protecting watersources from manure would be a lot easier if the weather would cooperate. After a relatively good growing season, the conditions since September have been wetter than normal with only short windows between rain events to complete harvest and field work. A challenging corn harvest, combined with wet soils and early snow events has resulted in fieldwork that is behind schedule and manure storages that are full and need to be emptied before the calendar gets to "winter".

Water contamination from field drainage tiles, soil erosion and surface runoff must be considered when applying manure during a wet and/or wintry October, November or December. Field damage from soil compaction, especially on heavier soils is another consideration in balancing field operations and healthy soils.

For some farms, manure application will need to occur in "winter" conditions. ("Winter", for the purposes of this article, is defined as frozen or snow covered soils, not the calendar date). For others, manure application will be the contingency plan to avoid an overflowing storage. In some fields, frozen soils may be required before tankers or spreaders can manoeuvre them.

For application that must occur in wet conditions, the ideal option is still to surface apply manure onto crop residue followed by incorporation of the manure as soon as possible after application. Where this is not possible a common sense approach to minimize water or soil contamination is required. This includes identifying and managing high risk areas. Options for manure application during a wet harvest season or in "winter" conditions are as follows:

Custom Application

Is this the year where custom application makes the most sense? It is important to consider place and method of application. Consider hiring a custom applicator if harvest and workload dictates that manure application cannot be done to meet environmental or farm needs. A custom applicator with site specific or GPS capabilities is able to map the location and rate of manure application so that commercial fertilizer supplementation becomes easier next spring.

Assessing Sites for Application

Some fields on the farm have higher risk for nutrient contamination; more topography, surface runs, infiltration; poor soil structure that makes them a poor choice for late-season manure application. Choose fields, or parts of fields furthest from water courses, fields that have less slope and fields with buffers (fence lines) as the first choice for application. Choose fields with relatively high amounts of crop residue when possible.

Records

Keep records of where manure has and hasn't been spread for crop nutrient and liability purposes.

Avoid Injection Into Wet Soils

Injection of liquid manure isn't a good option in wet soils. Wet soils smear more easily, especially when combined with additional and concentrated liquids at each injection point. Surface application onto crop residue (ideally corn) followed by tillage at the earliest opportunity will result in the least amount of compaction damage in wet soils.

Avoid Contaminating Surface Water

Spread on fields or parts of fields with the least slope. Start with fields where there is no access to surface water. Water flow patterns are obvious in most fields during a storm. Take note of these areas and avoid manure application to them as well as other areas where there is evidence of ponded water or eroded rills through the field.

Separation Distances From Watercourses

Maintain separation distances from watercourses. Under good spreading conditions, the recommended separation distance from any watercourse normally ranges between 40 and 100 feet, depending on runoff risk. In winter application, the separation distance should be at least 100 feet. (In the Nutrient Management regulations, the minimum setback increases to 330 feet with winter application where slope to the watercourse is greater than 3% for liquid manure, or 6% slope where solid manure is applied).

Separation Distances From Surface Inlets

Surface inlets or hickenbottoms act as direct channel to surface water. In a wet year, the risk of water contaminated with manure moving through surface inlets increases. As a result, separation distances from hickenbottoms or inlets should be the same as for watercourses.

Keep Application Rates Low

A rate of 5,600 Imperial gallons per acre (6,800 US gal/ac) is the equivalent to ¼ inch (6 mm) evenly applied across spread width. Consider the soil conditions at the time of application. If a ¼ inch of rain fell in one minute, would it runoff or move?

Monitor & Be Prepared to Implement The Contingency Plan

For all manure application options, monitoring is essential to ensure that contamination of water sources does not occur. If a spill or discharge to a watercourse does occur, it is required by law for the producer or operator of the application equipment to immediately contact the Spills Action Centre at 1-800-268-6060, followed by implementation of the farm's contingency plan.

Alternate Manure Storage?

Consider alternative storage if available. Some neighbours may have sold their livestock, but still have manure storage space that could be "rented".

Temporary Solid Storages

Where temporary field storages will be used for solid manure, make sure that the location is flat, and away from water sources and tiles locations. Location with respect to neighbours should also be considered due to potential odour complaints.

Application to Frozen or Snow-covered Soils

Spreading manure on frozen, or snow covered soils is not a recommended practice. But, if manure can be incorporated on the day of application or if storage capacity will not allow the producer to make it till spring, then manure applied early in the winter season generally has better infiltration capacity and is usually lower risk than manure applied in February when there is a deeper layer of frost and higher risk for runoff. (Farms implicated under the regulation must incorporate liquid manure within 6 hours after application to frozen or snow-covered soil)

Consider Snowmelt Runoff

If manure is being applied to snow covered fields, consider the soil under the snow. Risk of contaminated runoff is highest where rainfall is combined with melting snow over frozen soils. Where will the runoff move? Snow covered fields with unfrozen soils, still have some capacity for infiltration. However, compaction could be an issue and there is still risk of contaminated runoff depending on conditions at snow melt. Target manure application considering snowmelt runoff patterns and avoid application in high risk areas.

Sewage biosolids can not be applied during "winter". Details regarding temporary storage, and winter application is covered in more detail in OMAFRA Factsheets:

- *Temporary Field Storage of Solid Manure or Prescribed Materials* (Factsheet #05-009)
- *Applying Manure and Other Agricultural Source Materials in Winter* (Factsheet #04-069)