



4R Liquid Manure Management Strategies for Optimizing Right Time, Right Place

by Christine Brown, CCA-ON, 4R-NMS

Manure storage capacity will always be an issue if opportunities for application are not considered until the storage is full. To avoid potential issues, look for manure application opportunities during the year and particularly during the growing season and within the crop rotation. The chart below provides an overview of manure application options that will check all the boxes to meet good 4R nutrient stewardship practices.

Month		Application Opportunities/Precautions with Liquid Manure
All Year	✓ ✓ ✓ X	<ul style="list-style-type: none">• Sample manure at time of application to analyze nutrient contribution for crops• Use analysis information to fine-tune crop needs from commercial fertilizer• Calibrate application equipment to ensure proper application rate/distribution• Avoid applying manure on fields with very high soil fertility levels
March	✓	<ul style="list-style-type: none">• Consider building additional storage where current storage is inadequate (approvals and building permits take time)
April	✓	<ul style="list-style-type: none">• Consider covering an existing storage to reduce the cost of transporting water
May	✓ ✓	<ul style="list-style-type: none">• Manure applied to winter wheat (monitor: topography and liquid loading)• Manure applied to crop residue or ahead of spring tillage• Injection or surface application followed by immediate incorporation maximizes soil/manure contact
June	X X X	<ul style="list-style-type: none">• Avoid applying manure on established alfalfa before 1st cut• Avoid applying manure on spring cereals with low N requirement (lodging risk)• Avoid application to wet soils that causes rutting and compaction
June	✓	<ul style="list-style-type: none">• Maximize application to growing crops (↑nutrient efficiency; ↓nitrous oxide emissions)
July	✓ ✓	<ul style="list-style-type: none">• Side-dress application to standing corn• Apply to just harvested forage fields (before regrowth; monitor rate)
August	✓ ✓	<ul style="list-style-type: none">• Apply following wheat/spring cereal harvest (ideally with cover crops)• Apply to more distant fields; Sell manure to cash crop neighbours; or trade manure for straw, etc.
September	✓ X X	<ul style="list-style-type: none">• Apply following processing crops/edible beans/corn silage (ideally with cover crops)• Pre-till tile-drained fields with large cracks/macropores (or apply < 4,000 gal/ac)• Avoid application on areas of concentrated flow and grassed waterways
September	✓	<ul style="list-style-type: none">• Apply to forage fields that will be converted to corn (consider N carryover)
October	✓ ✓	<ul style="list-style-type: none">• Apply following soybean harvest (where winter wheat is not planted)• Apply following early harvested corn with incorporation as soon as possible
November	✓ X X	<ul style="list-style-type: none">• Consider side-by-side comparison using N-inhibitors with late fall applied manure• Pre-till tile-drained fields with large cracks/macropores (or apply < 4,000 gal/ac)• Avoid application on areas of concentrated flow and grassed waterways
December	✓ X	<ul style="list-style-type: none">• Apply manure only when immediate incorporation is possible• Avoid application on areas of concentrated flow and grassed waterways
January	X	<ul style="list-style-type: none">• Avoid application on frozen or snow covered fields
February		<ul style="list-style-type: none">• Where winter application is unavoidable (Contingency planning):<ul style="list-style-type: none">o Access additional storage (neighbour, previous livestock facility)o Apply on fields protected from upslope runoffo Apply to fields with little slope (< 5 %) and no direct access to water sourceso Keep liquid loading as low as possible (reduced rates)o Apply to fields with residue cover or living cropso Apply early in the winter when soil still has some warmth beneath the surface
March		

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This industry driven program helps ensure that Ontario crop producers are well served by those providing their crop production advice. This article was written by one of those CCA's.