

4Rs for Manure

RIGHT SOURCE

RIGHT RATE

RIGHT TIME

RIGHT PLACE

BASIC

Manure test no older than 3 years for each manure applied (liquid, dry, or by species, or by storage)	Soil test once per crop rotation not to exceed 4 years old at time of application	Follow Relevant Ohio laws based on field location (e.g. Grand Lake St. Marys Watershed Distressed Watershed Rules (SB 150); Western Lake Erie Basin (SB 1 and SB 150); All other areas of Ohio SB 150); H2Ohio Program	Subsurface incorporation within 24 - 72 hours after application
	Adjust manure application rate for each field and crop based on soil test data	Monitor soil conditions before application and avoid saturated soils	Follow minimum legal setback / buffer for wells and waterways
	No more than 500 Lbs/ac of potash (K ₂ O) are applied in any one year	Timing of application is recommended based on Ohio NRCS-590 Practice Standard	
	No more than 250 Lbs/ac of P ₂ O ₅ are applied in any one year		
	Manure application rate is recommended based on guidelines from Ohio NRCS-590 Practice Standard		

INTERMEDIATE

Manure test on an annual basis for each source (liquid, dry, or by species, or by storage)	As in Basic, plus:	As in Basic, plus:	Subsurface incorporation within 24 - 72 hours after application OR
	Increase soil testing frequency so results do not exceed 2 years old at time of application	Use a nutrient environmental risk assessment tool as outlined in Ohio NRCS-590 Practice Standard	Apply manure as a top-dress in overwintering small grain or hay OR
	Adjust manure application rate for each field and crop based on soil test data and historical yield values and goals	Timing of application is recommended based on Ohio NRCS-590 Practice Standard	Plant a cover crop after manure application OR
	Account for all previous nutrient contributions (Last 3 years of manure application, legume crops, crop residue, cover crops, and fertilizer applications) for split application rates	Split total nutrient load from manure application over multiple timings (spring/summer/fall) when total application is above 13,500 gal per acre or conditions are appropriate	Participate in an overwintering small grains program
	Follow manure rate guidelines from Ohio NRCS-590 Practice Standard		
	Use in season tests such as PSNT or tissue testing to determine in-season rates		

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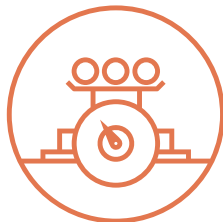
ADVANCED

Manure application test at increased frequency (e.g. sample multiple times during application for each storage and calculate composite value per storage structure)	As in Basic and Intermediate, plus:	As in Basic and Intermediate, plus:	As in Basic and Intermediate, plus:
May add nitrogen stabilizer product to manure before application	Adjust manure application rate during applications - by field and by manure storage source	All manure is applied during the growing season (immediately prior to planting, on a growing crop, or on a growing cover crop, i.e. spring re-growth)	Subsurface application of all manure (injection, banding, or strip tillage at time of application)
Add other nutrient enhancement product to manure before application	Apply manure based on precision or variable rate recommendations	Manure applications in-season (on a growing corn or grass forage crop) are split based on crop nutrient uptake needs	Installation and management of buffers located in critical source areas
	Soil test for grid, zone or other GIS/variable rate recommendations for each field		Add an overwintering small grain to crop rotation with manure application
	Determine in-season nitrogen application rates using reflectance measurements, modeling tools, or aerial imagery		Install and manage drainage water control structures if applicable to the field



RIGHT SOURCE

Matches fertilizer type to crop needs.



RIGHT RATE

Matches amount of fertilizer to crop needs.



RIGHT TIME

Makes nutrients available when crops need them.



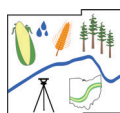
RIGHT PLACE

Keeps nutrients where crops can use them.

CONTRIBUTORS



Ohio Federation of Soil & Water Conservation Districts



Crawford Soil & Water District



OTTE AG, LLC



THE FERTILIZER INSTITUTE



W.D. Farms LLC
Excellence in Application



NUTRIENT STEWARDSHIP CERTIFICATION

OHIO MANURE APPLICATION LAWS

GRAND LAKE ST. MARYS WATERSHED (*DISTRESSED WATERSHED RULES*)

- All manure must be handled according to Ohio NRCS-590 Practice Standard
- Manure may not be applied between December 15 and March 1
- If ground is frozen or covered in more than one inch of snow outside those dates, manure may not be applied unless it is injected or incorporated within 24 hours of surface application
- Manure cannot be surface applied if there is greater than 50% chance of precipitation exceeding 1/2 inch within a period of 24 hours for the land application area
- Manure storage volume records must be kept to ensure that a minimum manure storage capacity of 120 days on December 1 of each year is available
- Local weather forecast records must be kept and made available upon request
- Weather forecasts, manure test results, soil analyses and manure storage volume records must be kept for a minimum of five years
- Operations generating 350 tons or 100,000 gallons of manure annually are required to maintain a Comprehensive Nutrient Management Plan or equivalent Nutrient Management Plan
- Plans must be updated every three years and/or with every 10% increase in animal units and/or a change in ownership
- Fertilizer certification is required under Senate Bill 150

WESTERN LAKE ERIE BASIN

- All manure must be handled according to Senate Bill 1
- Manure and fertilizer may not be applied on snow covered ground with more than 1 inch of snow or 1/2 inch of ice
- Manure and fertilizer may not be surface applied when the top two inches of soil are saturated from precipitation
- Manure may not be surface applied if forecast for area contains a greater than 50% chance of precipitation exceeding 1/2 inch within a period of 24 hours for the land application area
- Fertilizer may not be surface applied if the forecast for area contains a greater than 50% chance of precipitation exceeding one inch within a period of 12 hours for the application area
- Exceptions:
 - Manure/Fertilizer is applied to a growing crop (summer = any green crop; winter = any plant that does not winter kill)
 - Manure/Fertilizer is injected into the ground
 - Manure is incorporated (minimum of 4 inches) within 24 hours of application
 - In the event of emergency, written consent from the ODA Director and the application is completed in accordance with NRCS 590
 - Manure/Fertilizer application to snow and ice covered ground remains discouraged
- Fertilizer certification is required under Senate Bill 150

H2OHIO PARTICIPATION

- Review your program agreement

ALL OTHER AREAS OF OHIO

- All manure is recommended to be handled following Ohio NRCS-590 Practice Standard
 - Avoid surface application on frozen ground or ground covered in more than 1 inch of snow or 1/2 inch of ice
 - Avoid surface application when top two inches of soil are saturated from precipitation
 - Avoid surface application if forecast for area contains greater than 50% chance of precipitation exceeding 1/2 inch for a period of 24 hours for the application area
 - Inject manure or incorporate within 24 hours of application to prevent runoff
 - Apply manure to a growing crop. In summer, any green crop. In winter, on any plant that does not winter kill
- Fertilizer certification is required under Senate Bill 150

**TABLE 4 FROM THE NRCS NUTRIENT MANAGEMENT
590 STANDARD OHIO DOCUMENT**

Type of Sensitive - Setback Area	Setbacks Based on Methods of Manure Application	
	Surface Application	Surface Incorporation Within 24 Hours OR Direct Injection
Residences/ Private Wells down slope from the application area	100 ft.	100 ft.
Sinkholes	300 ft.	100 ft.
Pond or Lake	35 ft. vegetative barrier ¹ , with the remaining 100 ft. setback in non-vegetative setback ²	35 ft. vegetative barrier ¹
<ul style="list-style-type: none"> • Streams • Ditches • Surface Inlets 	<i>One of the following:</i> <ul style="list-style-type: none"> • 35 ft. vegetative barrier¹ • 100 ft. setback in non-vegetative setback² • 35 ft. in non-vegetative setback³ 	None
Grassfed Waterway	35 ft.	None
Field Surface Drains	35 ft. ⁴	None
Public Wells	300 ft.	100 ft.
Developed Springs	300 ft. upslope	300 ft. upslope
Public Surface Drinking Water Intake	300 ft.	300 ft.

¹Permanent vegetation consisting of grass, grass/legume mix, trees/shrubs, or trees/shrubs and grass/legumes. Measured from top of bank.

²Includes 100 ft. total setback. The setback must include a minimum of 35 ft. of vegetative cover from top of bank with the remainder of the 100 ft. with no vegetative requirement. The setback is measured from the top of bank.

³Applies if the manure application area has at least 50% vegetation/residue cover at the time of application.

⁴No setback required for field surface drains if the Additional Criteria to Protect Water Quality, Item 5 is applied from this standard.

⁵CAFOs must follow the setbacks defined in the Ohio Department of Agriculture rules regarding manure application

⁶Excludes sludge that is regulated by the Ohio Environmental Protection Agency and septage regulated by the Ohio Department of Health.