



Ohio Administrative Code

Rule 901:10-2-14 Contents of manure management plan: land application methods.

Effective: February 13, 2021

This rule establishes best management practices that govern land application of manure on land application areas. The land application of manure at each land application area shall be conducted to utilize nutrients at agronomic rates, and to minimize nutrient runoff to waters of the state and shall be recorded in the operating record in accordance with rule 901:10-2-16 of the Administrative Code. The discharge of manure to waters of the state from a facility as a result of application of that manure by the facility to land application areas is a discharge from that facility subject to NPDES requirements except where it is an agricultural stormwater discharge. Where manure has been applied in accordance with this rule and an approved manure management plan, a precipitation-related discharge of manure from land application areas is agricultural stormwater discharge.

(A) The manure management plan shall contain procedures on how manure shall be transported to land application areas in a manner that minimizes loss or spillage, and how spills will be promptly cleaned up or removed.

(B) Manure application rate - testing criteria:

(1) The manure application rate shall be based on the land application area's soil tests conducted in accordance with rule 901:10-2-13 of the Administrative Code and that are no older than three years.

(2) The manure application rate shall be based on the most current manure test results conducted in accordance with rule 901:10-2-10 of the Administrative Code. The manure test results expressed as a nutrient percentage shall be converted into either pounds per ton of dry or wet manure or pounds per one thousand gallons of liquid manure.

(C) General criteria for manure application. The manure application rate shall be based on the most limiting factor of rates derived from paragraphs (B) to (G) of this rule, including factors derived from all appendices to this rule, whichever factor is determined to be the most restrictive factor for purposes of protecting waters of the state.



(1) For liquid manure:

- (a) The crop nitrogen requirements or removal of nitrogen described in paragraph (D) of this rule, expressed in thousands of gallons of manure per acre;
- (b) The phosphate application limits as described in paragraph (E) of this rule, expressed in thousands of gallons of manure per acre;
- (c) The restrictions on the rate of liquid manure applied, taken from notes (1) and (5) in appendix A table 2 to this rule, with volume expressed as a measure of gallons per acre or inches per acre;
- (d) The application rate shall not exceed the available water capacity of the soil as described in appendix B to this rule;
- (e) The application rate shall be adjusted to preclude surface ponding and/or runoff from a land application area.

(2) For solid manure:

- (a) The crop nitrogen requirements or removal of nitrogen as described in paragraph (D) of this rule expressed in pounds per ton of dry manure per acre;
- (b) The phosphate application limits as described in paragraph (E) of this rule expressed in pounds per ton of dry manure per acre;
- (c) The restrictions on the rate of solid manure applied, taken from notes (1) and (5) in appendix A table 2 to this rule with volume expressed as a measure of tons/acre.

(3) All land applications of manure shall comply with all restrictions contained in appendix A to this rule unless a compliance alternative is submitted and approved by the director. As a compliance alternative, the concentrated animal feeding operation or certified livestock manager may demonstrate that a setback or buffer is not necessary because implementation of alternative



conservation practices or field-specific conditions will provide pollutant reductions equivalent or better than the reductions that would be achieved by the one hundred foot setback or a thirty five foot vegetated buffer. As a compliance alternative, the concentrated animal feeding facility or certified livestock manager may demonstrate that a soil listed in appendix A, table 1 to this rule is not prone to flooding in a particular county in which land applications of manure are planned, through reference to the current United States department of agriculture, natural resources conservation service, web soil survey for the county.

Comment: The natural resources conservation service and the Ohio state university have conducted extensive research on manure injection and manure incorporation on all representative Ohio soil types. Refer to "United States Department of Agriculture - Natural Resource Conservation Service. Field Office Technical Guide - Conservation Practice Standard 633. Columbus, Ohio, June 2003." A copy is available for review at the Ohio department of agriculture website <http://agri.ohio.gov/>.

(4) For all land application of liquid manures, the owner or operator shall maintain or have access to methods or devices to capture or stop subsurface drain flow if liquid manure reaches the subsurface drain outlets. Use of drain outlet plugs or other devices shall be recorded in the operating record in accordance with rule 901:10-2-16 of the Administrative Code.

(5) Calculate the total amount of nitrogen and phosphate to be applied to each field, including sources other than manure such as commercial fertilizer or other organic by-products.

(6) Land application of manure by means of surface application shall not occur if the forecast contains a greater than fifty per cent chance of precipitation as determined in "Managing Manure Nutrients at Concentrated Animal Feeding Operations, Appendix M, United States Environmental Protection Agency, EPA-821-B-04-006, August 2004," exceeding an amount of one-quarter inch for hydrologic soil group D soils and one-half inch for hydrologic soil group A, B, and C soils, for a period extending twenty-four hours after the start of land application. Record weather conditions in the operating record for conditions at the time of application and for twenty-four hours prior to and following application. A copy is available for review at the Ohio department of agriculture website <http://agri.ohio.gov/>.

(D) The manure application rate for nitrogen shall be based on the following criteria:



- (1) The application rate for nitrogen shall be based on utilization of crops at the recommended agronomic rates and based on minimum runoff and leaching that may impact waters of the state.
- (2) In determining the agronomic rate for nitrogen, the owner or operator shall do the following:
 - (a) Determine the nitrogen requirements or removal rates for the realistic yield goal of planned crops using nutrient amounts from appendix C, tables 1, 2 or 3 to this rule.
 - (b) Subtract the nitrogen credit for crop residue, legumes, and other sources of nitrogen to be given to the next crop in accordance with values for previous crops given in appendix C, table 4 to this rule;
 - (c) When applying nitrogen to a grass or legume cover crop that is growing or being established immediately after manure application, manure can be applied at the recommended nitrogen rate for the next non-legume crop or the nitrogen removal rate for the next legume crop.
- (3) In determining how to minimize nitrogen leaching that may impact waters of the state, the owner or operator shall do the following:
 - (a) Assess each land application area with the Ohio nitrogen leaching risk assessment procedure contained in appendix C, table 5 to this rule;
 - (b) If the nitrogen leaching risk assessment procedure completed in accordance with paragraph (D)(3)(a) of this rule demonstrates that the land application site has a high nitrogen leaching potential and no growing crop, then application of manure shall be limited to fifty pounds of nitrogen per acre calculated at the time of application prior to October first.
- (4) In calculating the actual rate of application of nitrogen from manure, the figures in appendix C, table 6 to this rule shall be used along with the manure test results conducted according to rule 901:10-2-10 of the Administrative Code.
- (5) The requirements of paragraph (D) of this rule may be changed only if the owner or operator can demonstrate to the director nutrient insufficiency in accordance with the prescribed nitrate soil test



procedures of tables 7 and 8 in appendix C to this rule.

(E) The manure application rate for phosphate shall be determined using the soil test analysis obtained pursuant to rule 901:10-2-13 of the Administrative Code and the following criteria:

(1) Prior to the land application of manure, land application areas shall be assessed with either the phosphorus index risk assessment procedure in appendix E, table 1 to this rule or the phosphorus soil test risk assessment procedure in appendix E, table 2 to this rule. The manure application rate for phosphate shall be limited in compliance with the applicable provision in the:

(a) Generalized interpretation of phosphorus index and management column in appendix E, table 1, to this rule, or

(b) The application criteria in appendix E, table 2, to this rule.

(2) The phosphate requirements for the realistic yield goals of planned crops, crop rotations, and/or plant biomass shall be determined using amounts from appendix C, table 1 to this rule;

(3) Phosphate applications between two-hundred fifty pounds per acre and five hundred pounds per acre are not recommended but may be made if the values for liquid manure exceed sixty pounds phosphate per one thousand gallons and if the values for solid manure exceed eighty pounds phosphate per ton and application is subject to these additional requirements:

(a) No manure application shall occur on land with soil tests that exceed more than one hundred parts per million Bray P1;

(b) No manure application shall occur on frozen or snow-covered ground;

(c) The manure shall be incorporated within twenty-four hours;

(d) No additional phosphate application shall be made for a minimum of three years on fields with soil tests that measure less than forty parts per million Bray P1 or equivalent; and



(e) No additional phosphate application shall be made for a minimum of five years on fields with soil tests between forty and one-hundred parts per million Bray P1 or equivalent.

(4) Notwithstanding the procedures in paragraph (E) of this rule but subject to the restrictions in appendix B to this rule, for a single phosphate application in a year, the application rate shall not exceed five hundred pounds per acre of phosphate.

(F) Land application for crops or other uses not listed in appendix C to this rule will be considered on a case-by-case basis. The owner or operator shall submit existing published or documented data that is acceptable to the director.

(G) General criteria for frozen and snow-covered ground. In addition to complying with all of the criteria in paragraphs (A) to (F) of this rule, the following actions are required for surface application of manure to land with frozen or snow-covered ground.

If manure can be injected or incorporated then the land application site is not frozen or snow covered and therefore subject to paragraphs (A) to (F) of this rule.

The owner or operator shall comply with rule 901:10-2-08 of the Administrative Code and this rule and use best efforts to avoid surface application of manure to frozen or snow covered ground by ensuring enough manure storage capacity by November of each year for a minimum of one hundred twenty to one hundred eighty days.

Manure injection or manure incorporation performed within twenty-four hours at the land application site is the preferred alternative to surface application of manure. Solid manure with less than fifty per cent moisture shall be stockpiled at the land application site in lieu of manure application on frozen or snow covered ground.

Surface application of manure on frozen or snow-covered ground is prohibited unless performed in accordance with all of the following requirements in paragraph (G)(1) of this rule.

(1) Application.



- (a) Prior approval for each surface application of manure shall be obtained from the director or his designated representative.
- (b) Except as required by paragraph (G)(1)(g) of this rule, the application rate is limited to ten wet tons per acre for solid manure with more than fifty per cent moisture.
- (c) Except as required by paragraph (G)(1)(g) of this rule, the application rate is limited to five thousand gallons per acre for liquid manure.
- (d) Applications are to be made on land with at least ninety per cent surface residue cover at the time of application such as good quality hay or pasture field, all corn grain residue remaining after harvest, and all small grain residue cover remaining after harvest. Vegetation or residue shall not be completely covered by ice or snow at the time of application.
- (e) Manure ponding shall be prevented.
- (f) Manure shall not be applied on more than twenty contiguous acres. Contiguous areas for application are to be separated by a break of at least two hundred feet. Areas that are furthest from streams, ditches, waterways, and/or surface waters are to be utilized in preference to areas with the potential for surface water runoff.
- (g) Setbacks from surface waters and conduits to surface waters, (including grassed waterways and surface drains) shall be a minimum of two hundred feet. Setbacks shall have at least ninety per cent surface residue cover and vegetation or residue shall not be completely covered by ice or snow at the time of application.
- (h) For application fields with slopes greater than six percent, manure shall be applied in alternating strips sixty to two hundred feet wide generally on the contour, or in the case that the field is managed in contour strips with alternative strips in grass or legume, manure shall only be applied on alternative strips. Manure application rates shall be determined for each separate application strip area and not the area of the entire application field.
- (i) Any manure application with phosphorus exceeding two hundred and fifty pounds per acre is



prohibited.

(2) Monitoring.

(a) Concentrated field surface drainage and tile outlets shall be visually monitored at the conclusion of manure application and periodically afterwards when weather, temperature increase, snowmelt and rainfall are likely to produce manure runoff. Periodic visual monitoring shall continue until manure is assimilated into the application field and is no longer likely to discharge into waters of the state.

(b) Upon discovering a discharge to waters of the state, the owner or operator shall notify the department within two hours of detection of the runoff event.

(c) In addition to the visual monitoring and reporting in this paragraph, the owner or operator shall collect representative grab samples from the discharges of land applied manure into waters of the state at the point that the discharge enters waters of the state (i.e. concentrated field surface runoff or field tile outlet discharge prior to entrance to surface waters) and have the sample analyzed for ammonia nitrogen levels.

(d) The owner or operator shall:

(i) Collect the sample within thirty minutes of the first knowledge of the discharge; or

(ii) If the sampling in that period is inappropriate due to dangerous weather conditions, the owner or operator shall collect the sample as soon as possible after suitable conditions occur and shall document the reason for delay.

(e) The owner or operator shall report the results of the discharge event to the department within fourteen days of occurrence. The report shall, at a minimum, contain the sample results, describe the reason for the discharge, the location, estimate of quantity and duration of the discharge, and duration of the precipitation leading up to the event, any measures taken to clean up and eliminate the discharge, and copies of land application records. Laboratory results not available at the time of the report submitted shall be submitted to the department within five days of receipt.



(f) If the ammonia nitrogen level in a water quality sample is determined to be twenty-six mg/L or greater in the discharge at the point it enters waters of the state, then additional surface application of manure to frozen and/or snow covered ground is prohibited on the field where the runoff event occurred.

(g) In the event that an owner or operator complies with all of the requirements of paragraph (G) of this rule and runoff enters waters of the state resulting in ammonia nitrogen level in a sample determined to be twenty-six mg/L or greater in three application events authorized in accordance with paragraph (G)(1)(a) of this rule, then additional surface application of manure to frozen and/or snow covered ground shall be prohibited for the duration of the permit.

(h) In the event that the owner or operator fails to comply with the land application requirements for frozen or snow covered ground, including but not limited to prior notice, and approval for each application pursuant to paragraph (G)(1)(a) of this rule, notice of discharge, monitoring and record keeping, for more than two surface land application events, then land application on any frozen or snow-covered ground shall be prohibited for that owner or operator for the duration of the permit upon receipt of a third notice of deficiencies resulting in noncompliance pursuant to section 903.17 of the Revised Code.