LAND APPLICATION OF MANURE

A supplement to Manure Management for Environmental Protection

Manure Management Plan Guidance

361-0300-002

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEPARTMENT OF ENVIRONMENTAL PROTECTION
Bureau of Watershed Management

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AUTHORITY: Section 5(b)(1) and Section 402 of the Pennsylvania Clean Streams Law, 35 P.S. Sections 691.5(b)(1) and 691.402; Section 1920-A of the Administrative Code of 1929, 71 P.S. Section 510-20, and 25 Pa. Code Section 91.36(b).

POLICY: The land application of animal manures and agricultural process wastewater must follow the standards for development and implementation of a plan to manage nutrients for water quality protection using standards outlined in the Manure Management Manual.

PURPOSE: The purpose of these revisions is to update the manual so that it can be used directly by farmers and to make the Manure Management Manual reflect changes to both Federal and State laws.

APPLICABILITY: The revisions to this technical guidance are applicable to all farming operations that land apply manure or agricultural process wastewater.

DISCLAIMER: The policies and procedures outlined in this guidance document are intended to supplement existing requirements. Nothing in the policies or procedures shall affect regulatory requirements.

The policies and procedures herein are not an adjudication or a regulation. There is no intent on the part of the Department to give these rules that weight or deference. This document establishes the framework, within which DEP will exercise its administrative discretion in the future. DEP reserves the discretion to deviate from this policy statement if circumstances warrant.

PAGE LENGTH: 30 pages

PREFACE

This publication supersedes all previous *Field Application of Manure* supplements to the *Manure Management for Environmental Protection* manual published by the Pennsylvania Department of Environmental Protection (DEP). Due to changes in recommendations and practices, copies of the previous manuals should be discarded.

The Manure Management Manual for Environmental Protection and its supplements provide guidelines that comply with DEP regulations concerning animal manures and agricultural process wastewaters. The criteria established in this manual are required to be followed by all operations applying manure or agricultural process wastewater, farms that pasture animals and farms managing an Animal Concentration Area (ACA) unless the operators obtain a permit or approval from DEP to implement alternative practices.

The provisions of this Land Application of Manure Supplement work together with the Agricultural Erosion and Sediment Control Plan required for agricultural plowing and tilling and managing Animal Heavy Use Areas (also known as Animal Concentration Areas). Certain sections of information developed using this manual can be used as part of the Agricultural Erosion and Sediment Control Plan.

Some farmers may have operations that are Concentrated Animal Operations (CAOs) under the Nutrient and Odor Management Act Regulations, or Concentrated Animal Feeding Operations (CAFOs) under Pennsylvania's National Pollutant Discharge Elimination System (NPDES) CAFO program. These farmers must follow requirements different from those found in this manual.

Commonwealth of Pennsylvania
Department of Environmental Protection
Bureau of Watershed Management
Harrisburg, Pennsylvania

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REQUIREMENTS FOR MANURE MANAGEMENT PLANS

Every farm in Pennsylvania that land applies manure or agricultural process wastewater (generated on the farm or received from an importer), regardless of size, is required to have and implement a written Manure Management Plan. This includes manure and agricultural process wastewater application by various types of equipment and/or direct application of manure by animals on pastures and in Animal Concentration Areas (ACAs). In other words, farms that do not mechanically apply manure but which do have pastures or ACAs still need a manure management plan.

The Manure Management Plan format in this manual must be used for the written manure management plan unless the farmer gets approval from DEP for an alternative plan format. In addition to developing a written plan, the farmer must also complete and maintain records to demonstrate compliance with the Manure Management Plan. DEP has developed a Manure Management Plan Workbook for farmers to use that contains the forms described in this manual. Requests for approval of alternative formats should be directed to DEP's Division of Conservation Districts and Nutrient Management, P.O. Box 8465, Harrisburg, PA 17105-8465, phone number 717-783-7576.

Once completed, this Workbook will become the farm's Manure Management Plan which must be implemented. The staff from DEP or county conservation district may request to see a copy of this plan when they visit a farm. The farmer should also provide a copy of the Manure Management Plan Summary Worksheet to the individual that land applies manure at a farm or on any rented land. Failure to follow the plan is a violation of state, and in some cases, federal law.

Manure Management Plans can be prepared by the farmer although the farmer may benefit from obtaining assistance from individuals trained and experienced in developing these plans. Assistance may be available from a variety of sources including certified nutrient management specialists, certified manure brokers and haulers, county conservation districts, Natural Resource Conservation Service (NRCS) staff, Penn State University staff and farm organizations.

Farms defined as Concentrated Animal Feeding Operations (CAFOs) and Concentrated Animal Operations (CAOs) are required to develop written plans as well. The nutrient management plans for these animal operations are required to follow a different more detailed process and must be developed by a Certified Nutrient Management Specialist.

In addition to obtaining approval from DEP, animal operations that do not want to follow the planning process outlined in this manual may obtain the assistance of a certified planner and utilize the nutrient management planning process under the Nutrient and Odor Management Act, 3 Pa.C.S. §§ 501-522 (Act 38) used by the CAFOs and CAOs. This alternative planning process is acceptable to DEP and may provide for some added flexibility in the application of manure on the farm.

MANURE MANAGEMENT PLAN INSTRUCTIONS

The following Manure Management Planning forms and instructions serve as the standard plan format for farmers who own or manage operations where manure or agricultural process wastewater is land applied. Acceptable alternative formats include those approved for use under Act 38 and the CAFO programs. Other planning formats and procedures require DEP approval.

Questions concerning the manure management plan should be directed to the DEP regional office serving the county or alternatively to the county conservation district. Requests for approval of alternative formats should be directed to DEP, Division of Conservation Districts and Nutrient Management, P.O. Box 8465, Harrisburg, PA 17105-8465, phone number 717-783-7576.

The Manure Management Plan has seven sections as outlined below. The first four sections are required for all manure management plans. Section 5 is required if the farm stores either liquid or solid manure. Sections 6 and 7 are required if the farm pastures animals or has ACAs. This manual provides directions on how to complete each of the seven plan sections, the required criteria for developing and implementing a manure management plan, as well as examples of how to complete many of the standard forms. Appendix 1 includes the Manure Application Rate Charts that farmers can use to "look up" application rates for specific manure types and crops. In addition, DEP has developed a Manure Management Plan Workbook for farmers to use that contains a blank copy of the planning forms.

Section 1 - General Information. This section includes general information about the farm. **This section is always required in a manure management plan.**

Section 2 - Mechanical Manure Application Rate and Timing. This section documents manure application rates and timing for mechanical application of manure. **This section is always required in a manure management plan.**

Section 3 - Farm Map. This section provides a farm map identifying the location of fields, structures, environmentally sensitive areas and manure application setbacks. **This section is always required in a manure management plan.**

Section 4 - Recordkeeping. This section provides a description of required recordkeeping and provides forms that can be used for recordkeeping. **This section is always required in a manure management plan.**

Section 5 - Managing Manure Storage in Structures and Stockpiling/Stacking Areas. **This section is only necessary if the farm has a manure storage facility or stockpiles or stacks manure.**

Section 6 - Pasture Management. This section is **only necessary if the farm has one or more pasture fields.**

Section 7 - Animal Concentration Areas. **This section is only necessary if the farm has one or more ACAs** (such as barnyards, feedlots, animal exercise areas).

Section 1 - General Information (All farms must complete this section)

This section includes a contact information page for the plan listing the farm name and address, the plan preparer name and address and the date the plan was developed or updated. Also included is an operation information page which provides general information about the farm and, depending on the responses, directs the farmer to other sections of the plan that must be completed.

1. **Contact Information Page**. Insert the contact information for the farm, and the date the plan was developed on page 2 of the Workbook. If the plan is prepared by someone other than the farmer, include the name, address and phone number of the person that prepared the plan on the contact information page. The following is a sample of how the Contact Information Page may look for a given operation:

CONTACT INFORMATION PAGE

Farm Name:	*Sample Farm*
Name of Owner/Operator:	*Mr. and Mrs. John Q. Public*
Operation Street Address:	*3 Sample Road*
City, State and Zip Code:	*Farm City, PA 12345*
Phone Number (Home/Barn):	*717-555-4567*
(Cell):	*717-555-3456*
Email address:	*samplefarm@email.com*

Name of person preparing the Manure Management Plan
(if other than owner/operator)

Preparer Name:	*Mr. John Smith*
Preparer Organization:	*Fertilizer Sales Company*
Street Address:	*35 Spreader Lane*
City, State and Zip Code:	*Spreader City, PA 23456*
Phone number (Business):	*601-555-4567*
(Cell):	*601-555-3456*
Email Address:	*fertilizersales@sales.com*
Date of Development:	*April 1, 2011*

Note that the Manure Management Plan must be evaluated by the owner/operator annually and updated when necessary to keep the plan consistent with farm management practices.

2. Operation Information Page. Fill in responses on the Operational Information Page on page 3 of the Workbook.

a. List the number of acres, owned and/or rented, available for **mechanical manure application**.

b. List the **animal information** in the spaces provided. Use additional sheets if necessary.

c. List the **crop rotation(s)** used on the farm.

d. Identify any **environmentally sensitive areas** located on the farm and rented land or within 100 feet from the property boundary of the farm or rented land. If you identify any environmentally sensitive areas, you must complete the Environmentally Sensitive Areas Worksheet described on page 4 of the Workbook and mark these areas on the farm map to be used by the manure applicator.

e. Indicate whether there will be **winter application** of manure (mechanical application) on any crop lands. If so, complete the winter application worksheet on page 5 of the Workbook. Winter application is the mechanical application of manure from December 15 through February 28, or anytime the ground is frozen at least 4 inches, or anytime that the ground is snow covered.

f. If the farm has **manure storage facilities**, including concrete tanks, metal or other fabricated tanks, under-building structures or earthen or synthetically-lined manure storage ponds or lagoons, you must complete the Manure Storage Facilities Worksheet on page 8 of the Workbook.

g. Indicate whether the farm has **solid manure stockpiling/stacking areas.** If the farm has manure stockpiling/staking areas (either at the barn or in crop fields), you must meet the requirements in Section 5 on page 18 of these Instructions.

h. If the farm pastures animals, list the number of acres, owned and/or rented, used for **pastures.** If the farm has or uses pasture areas, you must complete the Pasture Management Worksheet on page 9 of the Workbook.

i. If the farm has **Animal Concentration Areas (ACAs)**, list whether they are located on owned or rented land. ACAs are barnyards, feedlots, loafing areas, exercise lots or other similar animal confinement areas as outlined in the definitions section of the manual. Farms with ACAs must complete the ACA Worksheets on pages 9 and 10 of the Workbook.

The following is a sample of how the Operation Information Page may look for a given operation.

OPERATION INFORMATION PAGE

(See Instructions on Page 4)

a. Acres of the operation available for manure application: Owned *120* Rented *50*

b. Animals on the operation:

Animal type	Animal # (normal production day)	Days on farm per year
Dairy cows	*100*	*365*
Dairy heifers	*45*	*365*
Dairy calves	*20*	*365*
Beef steers	*2*	*260*

c. Crop Rotations used on the Operation (use additional pages if necessary) *4 years corn silage, 4 years mixed hay*

d. Environmentally Sensitive Areas:

Private or public drinking water wells	Yes ☒	No ☐
Streams, lakes or ponds	Yes ☒	No ☐
Sinkholes	Yes ☐	No ☒
Areas of concentrated flow including swales, ditches, gullies, etc.	Yes ☒	No ☐
For winter application, above ground inlet to agricultural drainage system	Yes ☐	No ☒

All farms containing environmentally sensitive areas must complete the Environmentally Sensitive Areas Worksheet on page 4 and develop a map of environmentally sensitive areas.

e. Winter Application: Is manure applied during the winter? Yes ☒ No ☐
If yes, you must complete the Winter Application Worksheet on page 5.

f. Manure Storage Facilities: Is manure stored in a manure storage facility (concrete tank, metal tank, under building structure, earthen, clay, or synthetic lined pond or lagoon, etc.)? Yes ☒ No ☐
If yes, you must complete the Manure Storage Facilities Worksheet on page 8.

g. Solid Manure Stockpiling or Stacking:
Is manure stockpiled or stacked in outdoor areas? Yes ☒ No ☐
If yes, you must meet the requirements in Section 5 - Managing Manure Stockpiling/Stacking Areas on page 18 of the Instructions.

h. Pasture Areas: Yes ☒ No ☐
If yes, list acres: Owned *20* Rented _____
All farms containing pastures must complete the Pasture Management Worksheet on page 9.

i. Animal Concentration Areas (ACAs): Yes ☒ No ☐
If yes: Owned ☒ Rented ☐
All farms containing ACAs must complete the ACA Worksheets on pages 9 and 10.

Section 2 - Mechanical Manure Application Rates and Timing (All farms must complete this section)

This portion of the plan identifies fields containing environmentally sensitive areas, plan requirements for winter application and the application rates and timing for each crop group. The plan must include manure and agricultural process wastewater from all sources including both manure generated on the farm and manure imported to the farm.

The information developed under this section is placed on the Manure Management Plan Summary as shown on page 12. You need to follow your completed summary when you apply manure to be sure that you meet your Manure Management Plan requirements.

1. **Environmentally Sensitive Areas Worksheet**

Farmers may not mechanically apply manure within the following areas, regardless of the slope of the land or the ground cover:

a. Within 100 feet of the top of the bank of a stream which generally flows during the time of year when manure is being applied and within 100 feet of a lake or a pond. In other words, for a stream that only flows in April and May, the setback is only applicable to manure applications during that time of the year. In addition, a stream would not include a culvert outlet or a roadside swale that drains stormwater into a field where the stormwater infiltrates into the ground.

   * A farmer can reduce this stream, lake or pond setback to 50 feet where a soil test done within the last 3 years shows phosphorus levels (Mehlich 3-P levels) of less than 200 parts per million (ppm) and the farmer uses no-till practices and if residue is removed, plants a cover crop on the field.

   * The stream, lake or pond setback can be further reduced to 35 feet where the farmer establishes or maintains a permanent vegetated buffer along the water body.

   The 100 foot stream, lake and pond setback cannot be reduced by use of the practices listed above for manure applied during the winter period. Winter applied manure requires a 100 foot setback from streams, lakes and ponds, regardless of conservation practices used within that 100 foot distance.

b. Within 100 feet of an existing open sinkhole.

c. Within 100 feet of an active private drinking water source such as a well or a spring.

d. Within, at a minimum, 100 feet of an active public drinking water source. In some cases state and federal laws may establish greater distances.

e. Within the channel of a non-vegetated concentrated water flow area such as a swale, gully or a ditch. For example, this would include a rock lined swale, but would not include a grassed waterway.

f.	For winter application, a setback of 100 feet from an above ground inlet to an agricultural drainage system (such as inlet pipes to piped outlet terraces) where surface water flow is toward the above ground inlet.

On page 4 of the Workbook:

a. Identify each field (both owned and rented) that contains or borders on an environmentally sensitive area.

b. Identify the environmentally sensitive feature and setback distance for mechanical application of manure (see discussion above).

c. These setback or restricted areas need to be shown on the farm map described in Section 3 on page 13. An excellent map to use to put these setback or restricted areas on is your Agricultural Erosion and Sediment Control Plan (or Conservation Plan) map. You can also use a U.S. Geological Survey (USGS) topographic map, "Pa. One-Stop" map or a "hand drawn" map.

The following is a sample of how the Environmentally Sensitive Areas Worksheet may look, in part, for a given farm:

ENVIRONMENTALLY SENSITIVE AREAS WORKSHEET

Use Additional Sheets as Necessary
(See Instructions on Pages 6 and 7)

Field Identification	Environmentally Sensitive Area (stream, lake, pond, sinkhole, drinking water source, concentrated flow area)	Setback or restricted distance	Is this setback restricted area shown on the plan map (yes/no)
1	*Stream*	*50' (cover crop)*	*Yes*
16	*Home water well*	*100'*	*Yes*
10	*Stream*	*35' (buffer)*	*Yes*

2. Winter Application of Manure Worksheet

For purposes of this portion of the Manure Management Plan, winter includes any one of the following:

a. December 15 through February 28; **or**

b. Anytime the ground is frozen at least 4 inches; **or**

c. Anytime that the ground is snow covered.

Winter application can lead to significant environmental problems if manure is not prevented from getting into streams, lakes and ponds. Winter application is discouraged. DEP encourages farmers to seek other management solutions such as solid manure stacking and liquid manure storage. Assistance may be available through Natural Resources Conservation Service (NRCS) or the county conservation district. Farmers that apply manure in the winter will need to meet the following criteria:

a. The maximum application rate **for the winter season** is 5,000 gallons per acre of liquid manure or 20 tons per acre of dry non-poultry manure per acre or 3 tons of dry poultry manure per acre. As an alternative maximum rate, a farmer can choose to calculate and apply manure to the phosphorus removal rate for the coming year's crops.

b. A setback of 100 feet from an above ground inlet to an agricultural drainage system (such as inlet pipes to piped outlet terraces) where surface water flow is toward the above ground inlet.

c. All fields must have at least 25% crop residue at application time or an established and growing cover crop. Hay fields, sod and pasture fields and fields with an established cover crop should be given highest priority for winter application.

    * The 25% crop residue provision would generally exclude winter manure application to corn silage fields that do not have an established cover crop, corn grain fields where a significant portion of the fodder has been removed, and low yielding soybean fields.

d. Manure may not be applied during winter on fields with slopes greater than 15%. NRCS soil survey slope designations of "A", "B" or "C" slopes are acceptable for winter application determinations.

e. An application setback of 100 feet from the top of the bank of a stream which generally flows during the winter or spring, and within 100 feet of a lake or a pond, along with all the other application setbacks outlined earlier in this section.

Farmers using a Certified Nutrient Management Planner to develop a nutrient management plan for the farm using the Act 38 plan format, or obtaining approval from DEP or county conservation district, may be provided some added flexibility in the application of manure during the winter.

On page 5 of the Workbook:

a. Identify each field (both owned and rented) where there may be winter spreading by mechanical means.

b. Identify whether the manure is liquid or solid.

c. Identify the selected application rate of manure for the winter season for each field where winter application is planned to occur.

d. For each field, identify the percentage of crop residue (or the previous year's crop and the chosen field management practices) or the type of cover crop that will be growing on the field in the winter.

e. Identify the average slope of the field where winter application will take place. The slope cannot exceed 15%.

   * Field slope designations will generally be identified in your Agriculture Erosion and Sediment Pollution Control Plan (conservation plan). Further assistance may be available through your local NRCS office, conservation district, or a Certified Nutrient Management Planner.

In the Environmentally Sensitive Areas Worksheet chart on page 4 of the Workbook, and in the plan map on page 7 of the Workbook (described in Section 3 on page 13 of these instructions), identify any environmentally sensitive features in the winter application fields. Also identify the applicable setbacks remembering that there is an additional winter application setback for above ground inlets to an agricultural drainage system (such as inlet pipes to pipe outlet terraces) where surface water flow is toward the above ground inlet.

The following is a sample of how the Winter Application Worksheet may look, in part, for a given operation:

WINTER APPLICATION WORKSHEET

Use Additional Sheets as Necessary
(See Instructions on Pages 8 and 9)

Field Identification	Type of Manure (from the manure application charts)	Winter Season Application Rate	Percentage of Crop Residue	Type of Cover Crop (if applicable)	Field Slope Percentage
22	*Solid dairy*	*20 ton/acre*	*NA*	*Grass Hay*	*3-8%*

3. **Manure Application Rates and Timing**

This section of the plan must describe the manure application rate(s) by crop group. It includes manure imported to the farm. The Manure Application Plan Summary Worksheet on page 6 of the Workbook is a summary sheet of the manure application amounts and timing developed using the process described below. This summary is used by the manure applicator to identify acceptable application rates.

In determining manure application rates, farmers have three options.

a. Use the values from the Manure Application Rate Charts in Appendix 1 based on the crop group and manure type; **or**

b. Establish application rates based on the applicable Nitrogen or Phosphorus Balance Worksheets (not including the Pa. Phosphorus Index option); **or**

c. Have an individual trained to implement the Pa Phosphorus-Index (such as a Certified Nutrient Management Specialist, a Manure Hauler or Broker or other individual who has received PA Phosphorous Index training) develop this section of the plan using the "Pa. Phosphorus - Index".

As you move down this list of three options, the planning process and recordkeeping requirements are more detailed. However, these more detailed processes may provide additional flexibility to the farmer in the application of manure.

This section, along with the information contained in Appendix 1, provides instructions for use of the Manure Application Charts. Using the charts is suitable for most farmers. However, if you grow a crop not listed in these charts, have animals not listed in the charts, or want additional precision in the calculation of application rates, you can use the Nitrogen or Phosphorus Nutrient Balance Sheets. These Nutrient Balance Sheets and instructions for filling them out are available from the county conservation district office, through Certified Nutrient Management Specialist, and from Certified Manure Brokers. You can use a combination of approaches (charts for some fields and balance sheets for others).

a. Manure Application Tables - (Pages 1 through 4 of Appendix 1 provides detailed instructions on how to determine manure and fertilizer application rates using these charts.) To use the charts in Appendix 1, you must know at least the type of manure, the timing, method of application, the crop to be grown and the realistic optimistic crop yield. These charts have only been developed for certain more common manure types and crops. For other manure types or other crops not included in the charts, the **Nitrogen or Phosphorus Nutrient Balance Sheet** (available from the DEP regional office, conservation district, Penn State Extension office, Certified Nutrient Management Specialist or on the internet at http://panutrientmgmt.cas.psu.edu/) or the **Phosphorus Index (Option 3 on the Balance Sheet)** (developed by an authorized planner**)** must be used.

b. If you have not done a soil test for phosphorus in the past 3 years or if the soil test results show phosphorus levels (Mehlich 3-P levels) greater than or equal to 200 ppm, you must use the phosphorus removal charts on pages 21 to 36 of Appendix 1. If you completed a soil test within the past 3 years which included an assessment of phosphorus levels in the soil and the results show phosphorus levels (Mehlich 3-P levels) of less than 200 ppm, you can use the nitrogen based charts on pages 5 to 20 of Appendix 1.

c. Enter the application rate for each crop group on the **Manure Management Plan Summary** on page 6 of the Workbook.

4. **Manure Management Plan Summary**

The form described in this section provides a summary of the mechanical manure application rates by crop group for a given season. This form needs to be used by the individuals applying manure along with the application setback/restrictions shown on the farm map described in Section 3 on page 14 of these instructions.

On page 6 of the Workbook:

a. List the crop groups (based on crop type and realistic expected yield) and realistic optimum expected yields for all the crops grown on the farm and any rented property in the first column.

   * Remember that if the farm uses more than one manure group on the crop, a separate crop listing needs to be provided for each manure group. In addition, if manure is split applied on grass hay fields in both spring and summer, the plan would show a line for grass hay application in the spring, with the spring application rate listed, and separate line for grass hay application in the summer, with the summer application rate listed.

b. List the manure group to be used on the crop group (such as solid dairy, liquid dairy, liquid swine, solid layer, solid broiler, etc.).

c. List the application season, Spring, Summer, Fall or Winter.

   * Each crop group where winter application is planed must be evaluated using the **Winter Application** worksheet provided on page 5 of the Workbook and described on page 8 of these instructions.

d. List the application rate for each application of manure on the field. For liquid manure the rate is expressed in gallons per acre and for solid manure the rate is expressed in tons per acre.

   * For liquid manure, the application rate cannot exceed 9,000 gallons per acre per application and where applicable the summary must include a note indicating that the manure application will be split with no one application exceeding 9,000 gallons per acre. For split applications, before the next application can take place, there can be no evidence of manure pooling after the initial application.

   Also identify the method for calculating the application rate. Use "C" if the rate comes from the **Manure Application Tables** in Appendix 1, "NBS" if the rate comes from a **Nitrogen or Phosphorus Nutrient Balance Worksheet** and "PI" if the rate was developed by an authorized planner using the **Phosphorus Index.**

e. List the application season and incorporation timing. Incorporation timing is the number of days after application of manure before the manure is mechanically incorporated using equipment such as an injector system, a disk, field cultivator, or chisel.

f. List the commercial Nitrogen (and where applicable Phosphorus) fertilizer planned to be used to meet crop nutrient needs for the various crop groups.

g. List the fields where the crop group may be used.

MANURE MANAGEMENT PLAN SUMMARY

Use Additional Sheets as Necessary
(See Instructions on Pages 10-12)

Crop Group and Yield (a)	Manure Group (b)	Application Season (c)	Planned Application Rate from C, NBS, PI * (d)	Incorporation Timing (e)	Commercial Fertilizer Application Rate (f)	Fields where this crop group can be used (g)
Corn Silage 23 tons	*Liquid dairy*	*Spring*	*9,000 gallons C*	*Unincorporated*	*110 lbs. N*	*1-25*
Corn Silage after alfalfa 23 tons	*Liquid dairy*	*Spring*	*9,000 gallons C*	*Unincorporated*	*42 lbs. N*	*1-25*
Corn Silage 23 tons	*Liquid dairy*	*Fall*	*9,000 gallons C*	*Unincorporated*	*110 lbs. N*	*1-25*
Corn Silage 23 tons	*Solid dairy*	*Fall*	*25 tons C*	*Unincorporated*	*110 lbs. N*	*1-25*
Grass Hay 5 tons	*Liquid Dairy*	*Spring*	*7,000 gallons C*	*Unincorporated*	*190 lbs. N*	*1-25*
Grass Hay 5 tons	*Liquid Dairy*	*Fall*	*7,000 gallons C*	*Unincorporated*	*190 lbs. N*	*1-25*
Grass Hay 5 tons	*Solid Dairy*	*Winter*	*20 tons C*	*Unincorporated*	*150 lbs. N*	*22*

* C - The application rate was taken from the charts in Appendix 1. **Page 2 of Appendix 1 contains an explanation and example of how to use the rate charts when filling out this Manure Management Plan Summary.**
NBS - The application rate was calculated using Nutrient Balance Sheet.
PI - The application rate was calculated by an authorized Planner using the Phosphorus Index.

No single application can exceed 9,000 gallons. For applications rates greater than 9,000 gallons, the application must be split into multiple applications with no evidence of pooling between applications.

Section 3 - Farm Map (All farms must complete this section)

The manure management plan must include a map or maps identifying the lands included in the plan. An excellent map on which to record the necessary Manure Management Plan information is your Agricultural Erosion and Sediment Control Plan (or Conservation Plan) map. You can also use a U.S. Geological Survey (USGS) map or a "hand drawn" map. If you have access to a computer, Penn State University has a "One Plan" mapping process which is available at www.paonestop.org. The map should be inserted on page 7 of the Workbook. The map must identify:

1. The boundaries of the farm.

2. Individual field boundaries for all fields included in the plan.

3. Field identifiers (name or number) and acreage of each field.

4. The identification of average slopes or the average NRCS slope designation for all fields being used for winter application. An NRCS soil survey map can be used to satisfy this requirement. These soil maps are available at the county conservation district or NRCS office.

5. The location of all environmentally sensitive areas and setbacks identified on the Environmentally Sensitive Areas Worksheet.

6. The location of proposed or existing manure storage facilities.

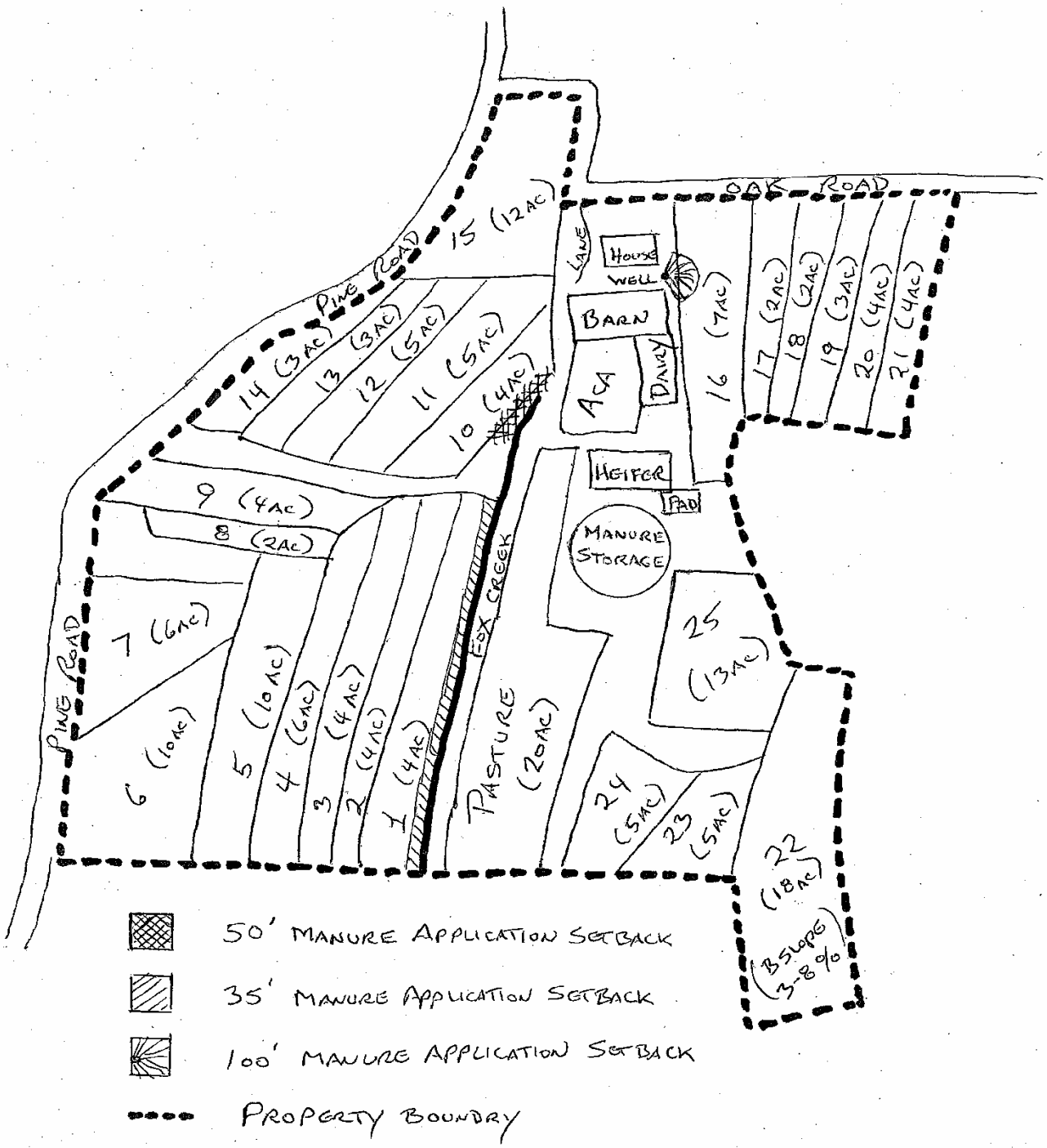
7. The location of manure stockpiling or stacking areas.

8. The location of all pastures.

9. The location of all Animal Concentration Areas.

10. The location and names of all roads adjacent to or within the farm.

SAMPLE FARM MAP



Section 4 - Recordkeeping

Recordkeeping is an important part of every Manure Management Plan. Farmers are required to maintain two types of records. First, the worksheets completed as part of the development of the Manure Management Plan must be retained and be made available to DEP or the county conservation district or other authorized agencies upon request. Second, the farmer must maintain records to demonstrate that the Manure Management Plan has been implemented. Again, these records must be made available to DEP or the county conservation district upon request.

The Manure Management Plan Workbook contains optional blank reporting forms that you can use to document that you are properly implementing the manure management plan requirements. DEP recognizes that many farmers already have a system of recordkeeping that includes the same information as in the sample recordkeeping documents. Farmers can use their existing recordkeeping system if it contains the information outlined in these sample recordkeeping documents. Remember that you are required to keep manure application records and records documenting inspection of your manure storage facilities and stacking areas. Also, accurate records, such as crop yields and manure generation, will assist in making future nutrient application recommendations for specific cropping rotations. The staff from DEP or county conservation district may request to see a copy of these records when they visit your farm.

1. Manure Application Records (See pages 9-15 of the Workbook)

The following three sets of sample records are used to demonstrate that the field application requirements of the Manure Management Plan are being implemented. Each of these records covers one calendar year of manure application. These records must be retained for a period of at least three years and must be available for review by DEP or the county conservation district upon request. Remember that you can also use an existing recordkeeping system if it includes the same type of information as shown in these sample records.

MANURE APPLICATION RATE RECORD
JANUARY 1, _*2011*_ THROUGH DECEMBER 31, _*2011*_
Use Additional Sheets as Necessary
(See Instructions on Page 15)

Date	Field Identification	Acres	Manure Group	Crop Group	Application Rate	Notes
4/22	*1,3,5,7*	*24*	*Liquid dairy*	*Corn Silage*	*9,000 gal*	
4/25	*2,4,6,8*	*22*	*Liquid dairy*	*Grass Hay*	*7,000 gal*	
10/5	*9,11,13*	*12*	*Solid dairy*	*Corn Silage*	*25 tons*	
10/15	*10,12,14,16*	*29*	*Liquid dairy*	*Grass Hay*	*7,000 gal*	
10/15	*15,17,19*	*17*	*Liquid dairy*	*Corn Silage*	*9,000 gal*	

2. Crop Yield Record

CROP YIELD RECORD
JANUARY 1, _*2011*_ THROUGH DECEMBER 31, _*2011*_

Use Additional Sheets as Necessary
(See Instructions on Page 16)

Field Identification	Crop Group	Date Harvested	Yield Goal	Actual Yield Harvested	Notes
1,3,5,7,9,11, 13,15,17,19, 21,23,25	*Corn Silage*	*September 2010*	*21 tons*	*22 tons*	
2,4,6,8,10,12, 14,16,18,20, 22,24	*Grass Hay*	*May and August 2010*	*5 tons*	*4 tons*	

3. Manure Transfer Record

MANURE TRANSFER RECORD
JANUARY 1, _*2011*_ THROUGH DECEMBER 31, _*2011*_

Use Additional Sheets as Necessary
(See Instructions on Page 16)

Date	Name of Importer/Broker	Address and Phone Number Importer/Broker	Manure Group	Amount of Manure Transferred	Crop Group and Application Rate
4/20	*Bill Jones*	*55 Manure Road Manure Town 717-555-4567*	*Solid Beef*	*20 tons*	*Unknown*
10/5	*Bill Jones*	*55 Manure Road Manure Town 717-555-4567*	*Solid Beef*	*15 tons*	*Unknown*

4. Manure Storage Records

In order to prevent discharges of manure from manure storage facilities, it is important to inspect these facilities on at least a monthly basis. The form below is used for these routine inspections. Whenever a problem is identified, you need to immediately take steps to resolve the problem.

MANURE STORAGE FACILITY RECORD
MONTHLY INSPECTION FORM
Use Additional Sheets as Necessary
(See Instructions on Page 17)

Storage Name	Inspection Date	Manure Depth (liquid)	Depth from Surface of Manure to Freeboard (liquid)	Leak Detection System Inspections. Are there any leaks, overflows, or seepages? Describe.	Structural Integrity. Are there cracks, erosion, slope failures, liner deterioration, rodent holes, large vegetation, excessive or lush vegetation, fencing issues, loading area issues? Describe.
Liquid dairy	*1/1/2010*	*3.5 feet*	*7.5 feet*	*None*	*No problems observed*
Same	*2/1/2010*	*5 feet*	*6 feet*	*None*	*Same*
Same	*3/1/2010*	*6.5 feet*	*4.5 feet*	*None*	*Same*
Same	*4/1/2010*	*8 feet*	*3 feet*	*None*	*Same*
Same	*5/1/2010*	*1 foot*	*10 feet*	*None*	*Same*
Same	*6/1/2010*	*2.5 feet*	*8.5 feet*	*None*	*Same*

SECTION 5 - Managing Manure Storage in Structures and Stockpiling/Stacking Areas (All farms with manure storage or stacking must complete this section)

The manure management plan must assure that manure and agricultural process wastewater not immediately applied is properly stored. Manure storage facilities are used for safely containing manure and agricultural process wastewater until it is able to be properly applied or processed. Manure storage facilities include structures such as earthen ponds or lagoons with various liners such as concrete, bentonite, and/or membrane products like HDPE, concrete tanks located outside or under the barn, above ground steel tanks and roofed stockpiling/stacking facilities. If agricultural process wastewater (such as milkhouse waste, wash down water, egg wash water, etc.) is stored in the manure storage facility this added agricultural process wastewater volume must be included in the plan. If the agricultural process wastewater is stored separately, the plan must describe the storage facility for this wastewater.

The plan must list all manure storage facilities on page 8 of the Workbook. For liquid or semi-solid manure storage facilities, the plan must document the type, date of construction, estimated capacity, and documentation of the environmental evaluation of the structure as outlined below. For constructed solid manure stacking pads/facilities, the plan must document the type, size, date of installation and any problems identified with the structure.

Liquid or semi-solid manure storage facilities must be evaluated by the farmer, on at least a monthly basis. Specifically, for liquid or semi-solid manure storage facilities, the operator must document that there is:

1. No evidence of overtopping or leakage from the manure storage facility. The operator must maintain a minimum 12-inch freeboard for all ponds and a minimum 6-inch freeboard for all other manure storage facilities at all times.

2. No visible cracking, rodent holes, tree or shrub growth on the berms or other problems with manure storage facilities that would lead to leakage.

3. No visible slope failures, visible deterioration or tears of any liner, or knowledge of any local water pollution issues associated with the storage facility.

No specific monthly documentation is required for constructed solid manure storage facilities.

Written records, such as those on page 15 of the Workbook must be maintained as part of the Manure Management Plan to demonstrate that these requirements are being met.

Any problems identified in 1 - 3 above need to be addressed immediately. In addition, liquid or semi-solid manure storage facilities built in the year 2000 and later should have been and must continue to be designed by a licensed Pennsylvania Professional Engineer, and the farmer must maintain a copy of a certification from the engineer indicating that the storage facility was built according to the appropriate standards.

1. **Manure Storage Facilities**

MANURE STORAGE FACILITIES (PROVIDE FOR EACH FACILITY)

Use Additional Sheets as Necessary
(See Instructions on Pages 18)

Type of storage(s) (concrete or metal tank, under building structure, earthen or clay or synthetically lined pond or lagoon, exposed concrete pad, roofed solid manure stacking pad, etc.) and year(s) of construction:

Concrete circular tank constructed in 1998
Manure stacking pad constructed in 2005

Approximate size and volume (for liquid and semisolid manure) of existing manure storage(s), indicate if exposed to precipitation.

Concrete Tank 92' diameter, 11' deep (excluding freeboard of 6 inches) exposed to precipitation, 550,000 gallons capacity
Stacking pad 50' by 60'

Indicate if any additional materials are added to the manure including bedding, agricultural process wastewater (water system overflow, wash water, milkhouse waste, egg wash water, etc.):

Tank -150 gallons per day of milkhouse water
Pad - straw bedding used for stacked manure

Manure storage(s) related practices that need to be installed on the farm to address identified problems (such as inadequate storage volume, leaking facilities, inadequate maintenance, runoff from a stack that directly reaches a water body, etc.) and an implementation schedule (season and year) for installation of the practices:

Tank - No problems found with tank
Pad - Need to direct clean water from pad; To be completed in Spring of 2012.

NOTE - If you generate or import agricultural process wastewater at the farm, this wastewater must be included in your manure management plan. On many farms, this wastewater is mixed with manure within the manure storage facility. In that case, there is no separate planning requirement for the agricultural process wastewater. If the agricultural process wastewater is not mixed with manure in the manure storage facility, you should contact the county conservation district or DEP to discuss the process for managing that wastewater.

2. Manure Stockpiling/Stacking

Some operations typically have one or more stockpiling/stacking areas around the barn or in the field to handle situations when direct manure application is impractical. These conditions could be due to severe weather limits or field conditions unsuitable for spreading equipment.

Manure stacking in the farmstead area must use an improved stacking pad or covered area. NRCS or the county conservation districts can provide assistance with this requirement.

The requirements relating to stacking of manure in other areas, (not on the farmstead) such as on crop fields are:

a. Keeping all stockpiles/stacks at least 100 feet from sensitive areas such as streams, lakes and ponds, 100 feet from any open sinkhole, 100 feet from any drinking water well (public or private). These stacks cannot be placed within an area of concentrated water flow such as a swale, ditch or waterway.

b. Stockpiling/stacking manure on properly constructed improved stacking pads whenever possible. When stockpiling/stacking on unimproved areas in crop fields, the stockpiles/stacks should not be in the same location each year.

c. Placing these areas at the top of a hill (this includes the area within 100 feet from the top of the slope), where possible, diverting upslope water away from stockpile/stacking areas.

d. Placing stacks on areas with less than 8% slope.

e. The manure must be dry enough to allow for stacking at least 4 feet in height. When stacked on the application field, the volume needs to be limited to the amount that can be spread on fields nearby to the stack.

f. When stacked on the application field, cover stockpiled/stacked manure with a plastic tarp or other similar water repellent cover if it will be in place for more than 120 days. Manure stacked on a properly managed improved stacking pad does not need to be covered.

Section 6 - Pasture Management (Only farms pasturing animals must complete this section)

All pastures on the farm must be listed in the Manure Management Plan and identified on the farm map. Farms have several choices for managing pastures:

1. The farm can develop a grazing plan meeting the requirements of the NRCS Pennsylvania Technical Guide Practice Standard 528 for Prescribed Grazing, **or**

2. Farmers can manage pastures by assuring that there is dense vegetation in the pasture throughout the growing season. Dense vegetation means that the pasture is managed to minimize bare spots and to maintain an average vegetation height across the pasture during the growing season at least 3 inches high.

Grazed fields that do not have an NRCS grazing plan which are overgrazed (as defined as not meeting the management requirements described above in bullet "2") need either to be managed to restore dense vegetation or these areas will be defined as ACAs and will need to meet the requirements of Section 7 of this manual.

PASTURE MANAGEMENT WORKSHEET

(See Instructions on Pages 21)

All pastures on the farm must be listed in the Manure Management Plan and identified on the farm map.

Please identify your pasture management approach below:

☐ I have a grazing plan meeting the requirements of the Natural Resources Conservation Service Pennsylvania Technical Guide Practice Standard 528 for Prescribed Grazing.

☒ I am managing my pastures by maintaining dense vegetation in the pasture throughout the growing season. Dense vegetation means that the pasture is managed to minimize bare spots and to maintain an average vegetation height across the pasture during the growing season at least 3 inches high.

Grazed fields that do not have an NRCS grazing plan which are overgrazed (as defined as not meeting the management requirements described above in check box "2") need either to be managed to restore dense vegetation or these areas will be defined as Animal Concentration Areas ("ACAs") and will need to meet the requirements of Section 5 Animal Concentration Areas of this manual.

Section 7 - Animal Concentration Areas (Only farms with ACAs must complete this section)

Animal Concentration Areas (ACAs) (also called "Animal Heavy Use Areas") are barnyards, feedlots, loafing areas, exercise lots or other similar animal confinement areas that will not maintain the dense vegetation of a pasture. ACAs do not include areas managed as pastures, meeting the requirements of Section 6 above, or other cropland. However, ACAs may exist within areas maintained as a pasture and must be addressed. Animal access ways, feeding areas, watering areas, shade areas or walkways are not considered ACAs if water from or precipitation onto these areas does not result in runoff of manure or sediment to streams, lakes, ponds, or sinkholes.

ACAs need to be managed to:

1. Divert clean water flow from upslope fields, driveways, barn roofs, etc., away from the ACA;

2. Direct polluted runoff or allow it to flow from the ACA area into a storage facility or best management practice such as a correctly sized and well maintained vegetative filter strip;

3. Limit animal access to surface waters to only properly implemented livestock crossings. Animals may not have free access to streams adjacent to or within ACAs;

4. Minimize the size of denuded areas such as sacrifice lots;

5. Keep areas where animals congregate, such as feed racks, shade and gates, as far away from a water body as practical;

6. Where appropriate, include relocation of movable structures creating ACAs, such as hay rings, at least annually where practical, to minimize ACA development and manure concentration; and

7. Routinely, generally four times per year, remove accumulated manure from ACAs, where practical, to minimize the potential for pollutional discharges.

Farms that have ACAs must list the ACA on the Operation Information Page of the Manure Management Plan, as well as complete the Animal Concentration Area Worksheet (Parts 1 and 2) and locate the ACA on the plan map. The plan needs to identify Best Management Practices (BMPs) that are currently being implemented to prevent pollution and, where necessary, include a schedule for obtaining assistance to develop and implement additional BMPs that require appropriate expertise in design or where additional time is needed to obtain the financial resources to implement the necessary BMPs.

Farmers working with a design professional (conservation district, NRCS, Certified Nutrient Management Planner, etc.) can be provided up to October 29, 2013, to develop a plan addressing the ACA and up to 3 years from the date the plan is developed to implement that plan. DEP believes that most farms will be able to begin implementation on a much shorter time frame but recognizes that more time may be needed for costly BMPs.

The following is a sample of how the Animal Concentration Area Worksheet may look, in part, for a given operation:

ANIMAL CONCENTRATION AREAS WORKSHEET
Part 1
(See Instructions on Page 22)

Some farms may need technical assistance in order to develop and implement BMPs on ACAs. The farmer has until October 29, 2013, to develop the BMPs and no more than 3 years from the date of developing those BMPs, to implement the BMPs. DEP believes that most farms will be able to begin implementation on a much shorter time frame but recognizes that more time may be needed for costly BMPs.

Farmers with ACAs requiring corrective actions need to immediately contact the local conservation district, NRCS, or a private consultant and must document that contact and the time frame for developing and implementing BMPs.

List date contact was made to the assisting agency/party to help in these efforts: *March 1, 2011*

List who was contacted to assist in these efforts: *John Brown, York County Conservation District*

ANIMAL CONCENTRATION AREA WORKSHEET
Part 2
Use Additional Sheets as Necessary
(See Instructions on Page 22)

Location of ACA (refer to Farm Map)	List Yes if BMP has been implemented and if BMP is planned, list planned date for installation				
	Divert clean water around ACA	**Direct polluted water to storage or vegetated treatment area**	**Limit access to streams through stabilized crossings and watering areas**	**Limit size of denuded areas**	**Locate area where animals congregate (feed areas, shade, etc.) away from streams**
North side of heifer barn	*Summer 2012*	*Summer 2012*	*Summer 2012*	*Yes*	*2012*

GLOSSARY

The following terms, when used in this Manure Management Manual, have the following meanings, unless the context clearly indicates otherwise:

Agricultural erosion and sediment control plan (Ag E&S Plan) - A site specific plan identifying BMPs to minimize accelerated erosion and sedimentation from agricultural runoff required by 25 Pa. Code Chapter 102. The agricultural erosion and sediment control components of a conservation plan meet this requirement if consistent with the requirements of Chapter 102 which became effective on November 19, 2010.

Agricultural process wastewater - Wastewater from agricultural operations, including from spillage or overflow from livestock or poultry watering systems, washing, cleaning or flushing pens, milkhouses, barns, manure pits, direct contact swimming, washing or spray cooling of livestock or poultry, egg washing or dust control.

Animal Concentration Area (ACA) - Barnyards, loafing areas, exercise lots or other similar animal confinement areas that will not maintain a growing crop, or where manure deposited by animals is in excess of crop nitrogen needs. The term does not include areas managed as pastures (when the pasture management provisions in Section 6 are followed) and cropland. Animal access ways, feeding areas, watering areas, and shade areas or walkways are not considered ACAs if they do not cause a direct flow of manure contaminated runoff to streams, lakes, ponds, or sinkholes. Animal Concentration Areas can also be referred to as “Animal Heavy Use Areas”.

Best management practice (BMP) - Activities, facilities, measures, planning or procedures that are effective and practicable to manage nutrients to protect, maintain, reclaim and restore the quality of waters and existing and designated uses of surface and ground water.

Concentrated water flow area - Natural or manmade areas where runoff is channeled and conveyed directly to surface water or groundwater. The term includes ditches, waterways, gullies and swales.

Crop group - A crop with a given yield potential and consistent management approach. Appendix 1 of this document provides some examples of commonly used crop groups in Pennsylvania.

Crop Rotation - The process of changing the crops planted in a field in a planned sequence.

Environmentally Sensitive Areas - An area or feature on or near a farm where special care is needed to ensure water quality is protected. Examples include streams, lakes, sinkholes, active water wells, gullies, waterways, and above ground intakes to pipe outlet terraces.

Farmer - The owner and/or operator of an agricultural operation and any person that land applies manure or agricultural process wastewater.

Farm - An agricultural operation or other land where there is land application of manure or agricultural process wastewater.

Farmstead - Buildings and adjacent surface areas of a farm.

Freeboard - The vertical distance between the maximum designed surface elevation of manure or agricultural process wastewater in a liquid or semisolid manure storage facility and the top elevation of the facility.

Improved stacking pad - A permanent, improved, stabilized and compacted surface area with runoff controls to prevent a pollutional discharge used for the storage of solid manure which is capable of being stacked at least 4 feet high.

Manure - Animal excrement (urine and feces), including poultry litter and composted manure, which is produced at an agricultural operation. The term includes materials such as bedding, waste water and raw materials which are commingled with that excrement.

Manure group - A portion of the manure generated on an agricultural operation that is distinct due to factors including but not limited to: animal type(s), and manure consistency.

Manure Management Manual (MMM) - The guidance manual published by the Pennsylvania Department of Environmental Protection that is entitled "Manure Management Manual for Environmental Protection" including its supplements and amendments. The manual describes approved manure management practices for all agricultural operations as required by regulations implemented by the Pennsylvania Department of Environmental Protection.

Mehlich 3-P - The soil test method required to be used to determine phosphorus levels in a field for purposes of the Manure Management Manual.

Manure Management Plan (MMP) - A written site specific plan outlining the agreed upon and acceptable practices for the land application of manure and agricultural process wastewaters under the regulations implemented by the Pennsylvania Department of Environmental Protection. The term includes a plan established using the format contained in this Land Application of Manure Supplement to the Manure Management Manual.

Mechanical application - The application of manure by a person through any mechanical means such as a manure spreader, irrigation system, horse drawn equipment or a pitch fork. The term does not include direct application of manure by animals on pastures and/or in Animal Concentration Areas.

Nutrient Management Plan (NMP) - A site specific plan outlining the agreed upon and acceptable practices for the handling and land application of all plant nutrient sources meeting the requirements established under Pennsylvania's Nutrient Management Program implemented through the regulations of State Conservation Commission (25 Pa. Code Chapter 83).

Pasture - Land used for grazing animals that is managed:

1. under a grazing plan meeting the requirements of the Natural Resources Conservation Service Pennsylvania Technical Guide Practice Standard 528 for Prescribed Grazing or

2. by assuring that there is dense vegetation in the field during the growing season. Dense vegetation means that the pasture is managed to minimize bare spots and keep average vegetation height across the pasture during the growing season at least 3 inches high.

Permanent vegetated buffer - A permanent strip of perennial vegetation (existing or established) parallel to the contours of, and perpendicular to, the dominant slope of the field, located between the field and the protected land feature (stream, lake, pond, sinkhole) and has flow characteristics that are primarily sheet flow with no obvious concentrated flow (converging rills, ephemeral gullies, classic gullies) into/within/leaving the buffer.

LAND APPLICATION OF MANURE

A supplement to Manure Management for Environmental Protection

MANURE MANAGEMENT PLAN

WORKBOOK

To Be Completed, Implemented and Retained
By All Farmers that Land Apply Manure

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

October 29, 2011

MANURE MANAGEMENT PLAN
CHECKLIST

	Manure Management Plan Page No.	Completed or Reviewed	Not Needed
REQUIRED SECTIONS			
Contact Information Page	2		
Operation Information Page	3		
Environmentally Sensitive Areas Worksheet	4		
Winter Application Worksheet	5		
Manure Management Plan Summary	6		
Farm Map	7		
Recordkeeping	11-15		
Managing Manure Storage in Structures and Stockpiling Areas (If the farm has manure storage)	19		
Manure Storage Facilities Worksheet	8		
Manure Stockpiling and Stacking	20 of Instructions		
Managing Manure in Pastures (If the farm has pastures)			
Pasture Management Worksheet	9		
Animal Concentration Areas (If the farm has ACAs) SEE NOTE BELOW			
ACA Worksheet	9-10		
Please note that all farms with crops or ACAs must also have an Agricultural Erosion and Sediment Control Plan meeting the requirements of 25 Pa. Code Chapter 102. Additional information can be obtained from the county conservation district.			

MANURE MANAGEMENT PLAN

CONTACT INFORMATION PAGE

(See Page 3 of Manure Management Guidance Instructions)

Farm Name: _____

Name of Owner/Operator: _____

Operation Street Address: _____

City, State and Zip Code: _____

Phone number (Home/Barn): _____

(Cell): _____

Email Address: _____

Name of person preparing the Manure Management Plan (if other than owner/operator)

Preparer Name: _____

Preparer Organization: _____

Street Address: _____

City, State and Zip Code: _____

Phone Number (Business): _____

(Cell): _____

Email Address: _____

Date of Development: _____

Note that the manure management plan must be evaluated by the owner/operator annually and updated when necessary to keep the plan consistent with farm management practices.

OPERATION INFORMATION PAGE

(See Page 4 of Manure Management Guidance Instructions)

a. Acres of the operation available for manure application: Owned _____ Rented _____

b. Animals on the operation:

Animal type	Animal # (normal production day)	Days on farm per year

c. Crop Rotations used on the Operation (use additional pages if necessary): _____

_____

d. Environmentally Sensitive Areas: Yes ☐ No ☐

Private or public drinking water wells Yes ☐ No ☐

Streams, lakes or ponds Yes ☐ No ☐

Sinkholes Yes ☐ No ☐

Areas of concentrated flow including swales, ditches, gullies, etc. Yes ☐ No ☐

For winter application, above ground inlet to agricultural drainage system Yes ☐ No ☐

All farms containing environmentally sensitive areas must complete the Environmentally Sensitive Areas Worksheet on page 4 and develop a map of environmentally sensitive areas.

e. Winter Application: Is manure applied during the winter? Yes ☐ No ☐

If yes, you must complete the Winter Application Worksheet on page 5.

f. Manure Storage Facilities: Is manure stored in a manure storage facility (concrete tank, metal tank, under building structure, earthen, clay, or synthetic lined pond or lagoon, etc.)? Yes ☐ No ☐

If yes, you must complete the Manure Storage Facilities Worksheet on page 8.

g. Solid Manure Stockpiling or Stacking:

Is manure stockpiled or stacked in outdoor areas? Yes ☐ No ☐

If yes, you must meet the requirements in Section 5 - Managing Manure Stockpiling/Stacking Areas on page 18 of the Instructions.

h. Pasture Areas: Yes ☐ No ☐

If yes, list acres: Owned _____ Rented _____

All farms containing pastures must complete the Pasture Management Worksheet on page 9.

i. Animal Concentration Areas (ACAs): Yes ☐ No ☐

If yes: Owned ☐ Rented ☐

All farms containing ACAs must complete the ACA Worksheets on pages 9 and 10.

ENVIRONMENTALLY SENSITIVE AREAS WORKSHEET

Use Additional Sheets as Necessary

(See Pages 6 and 7 of Manure Management Guidance Instructions)

Field Identification	Environmentally Sensitive Area (stream, lake, pond, sinkhole, drinking water source, concentrated flow area)	Setback or restricted distance	Is this setback restricted area shown on the plan map (yes/no)

WINTER APPLICATION WORKSHEET

Use Additional Sheets as Necessary

(See Pages 8 and 9 of Manure Management Guidance Instructions)

Field Identification	Type of Manure (from the manure application charts)	Winter Season Application Rate	Percentage of Crop Residue	Type of Cover Crop (if applicable)	Field Slope Percentage

MANURE MANAGEMENT PLAN SUMMARY

Use Additional Sheets as Necessary

(See Pages 10-12 of Manure Management Guidance Instructions)

Crop Group and Yield (a)	Manure Group (b)	Application Season (c)	Planned Application Rate from C, NBS, PI * (d)	Incorporation Timing (e)	Commercial Fertilizer Application Rate (f)	Fields where this crop group can be used (g)

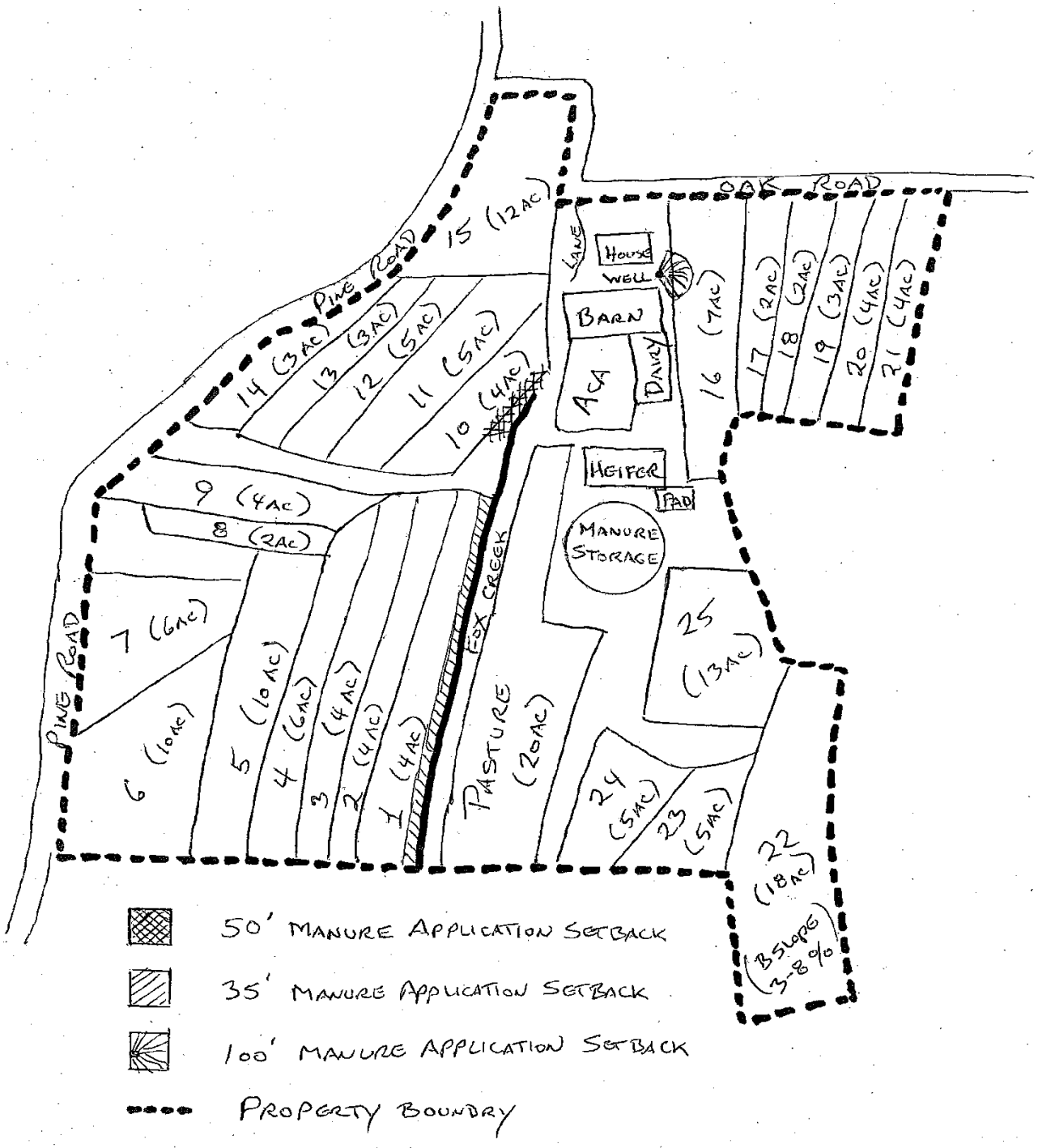
*C - The application rate was taken from the charts in Appendix 1. **Page 2 of Appendix 1 contains an explanation and example of how to use the rate charts when filling out this Manure Management Plan Summary.**

NBS - The application rate was calculated using Nutrient Balance Sheet.

PI - The application rate was calculated by a Certified Nutrient Management Planner using the Phosphorus Index.

No single application can exceed 9,000 gallons. For applications rates greater than 9,000 gallons, the application must be split into multiple applications with no evidence of pooling between applications.

SAMPLE FARM MAP



MANURE STORAGE FACILITIES (PROVIDE FOR EACH FACILITY)

Use Additional Sheets as Necessary

(See Page 18 of Manure Management Guidance Instructions)

Type of storage(s) (concrete or metal tank, under building structure, earthen or clay or synthetically lined pond or lagoon, exposed concrete pad, roofed solid manure stacking pad, etc.) and year(s) of construction:

Approximate size and volume (for liquid and semisolid manure) of existing manure storage(s), indicate if exposed to precipitation.

Indicate if any additional materials are added to the manure including bedding, agricultural process wastewater (water system overflow, wash water, milkhouse waste, egg wash water, etc.):

Manure storage(s) related practices that need to be installed on the farm to address identified problems (such as inadequate storage volume, leaking facilities, inadequate maintenance, runoff from a stack that directly reaches a water body, etc.) and an implementation schedule (season and year) for installation of the practices:

NOTE - If you generate or import agricultural process wastewater at the farm, this wastewater must be included in your manure management plan. On many farms, this wastewater is mixed with manure within the manure storage facility. In that case, there is no separate planning requirement for the agricultural process wastewater. If the agricultural process wastewater is not mixed with manure in the manure storage facility, you should contact the county conservation district or DEP to discuss the process for managing that wastewater.

PASTURE MANAGEMENT WORKSHEET
(See Page 21 of Manure Management Guidance Instructions)

All pastures on the farm must be listed in the Manure Management Plan and identified on the farm map.

Please identify your pasture management approach below:

☐ I have a grazing plan meeting the requirements of the Natural Resources Conservation Service Pennsylvania Technical Guide Practice Standard 528 for Prescribed Grazing.

☐ I am managing my pastures by maintaining dense vegetation in the pasture throughout the growing season. Dense vegetation means that the pasture is managed to minimize bare spots and to maintain an average vegetation height across the pasture during the growing season at least 3 inches high.

Grazed fields that do not have an NRCS grazing plan which are overgrazed (as defined as not meeting the management requirements described above in check box "2") need either to be managed to restore dense vegetation or these areas will be defined as Animal Concentration Areas ("ACAs") and will need to meet the requirements of Section 5 Animal Concentration Areas of this manual.

ANIMAL CONCENTRATION AREAS WORKSHEET
Part 1
(See Page 22 of Manure Management Guidance Instructions)

Some farms may need technical assistance in order to develop and implement BMPs on ACAs. The farmer has until October 29, 2013, to develop the BMPs and no more than 3 years from the date of developing those BMPs, to implement the BMPs. DEP believes that most farms will be able to begin implementation on a much shorter time frame but recognizes that more time may be needed for costly BMPs.

Farmers with ACAs requiring corrective actions need to immediately contact the local conservation district, NRCS, or a private consultant and must document that contact and the time frame for developing and implementing BMPs.

List date contact was made to the assisting agency/party to help in these efforts: _____

_____

_____

List who was contacted to assist in these efforts: _____

_____

ANIMAL CONCENTRATION AREA WORKSHEET
Part 2
Use Additional Sheets as Necessary
(See Page 22 of Manure Management Guidance Instructions)

Location of ACA (refer to Farm Map)	List Yes if BMP has been implemented and if BMP is planned, list date for installation				
	Divert clean water around ACA	Direct polluted water to storage or vegetated treatment area	Limit access to streams through stabilized crossings and watering areas	Limit size of denuded areas	Locate area where animals congregate (feed areas, shade, etc.) away from streams

LAND APPLICATION OF MANURE

A supplement to Manure Management for Environmental Protection

RECORDKEEPING FORMS

(See Pages 15 through 17 of Manure Management Guidance Instructions)

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

MANURE APPLICATION RATE RECORD
JANUARY 1, _____ THROUGH DECEMBER 31, _____

Use Additional Sheets as Necessary

(See Page 15 of Manure Management Guidance Instructions)

Date	Field Identification	Acres	Manure Group	Crop Group	Application Rate	Notes

CROP YIELD RECORD
JANUARY 1, _____ THROUGH DECEMBER 31, _____

Use Additional Sheets as Necessary

(See Page 16 of Manure Management Guidance Instructions)

Field Identification	Crop Group	Date Harvested	Yield Goal	Actual Yield Harvested	Notes

MANURE TRANSFER RECORD
JANUARY 1, _____ THROUGH DECEMBER 31, _____

Use Additional Sheets as Necessary

(See Page 16 of Manure Management Guidance Instructions)

Date	Name of Importer/Broker	Address and Phone Number Importer/Broker	Manure Group	Amount of Manure Transferred	Crop Group and Application Rate

MANURE STORAGE FACILITY RECORD
MONTHLY INSPECTION FORM

Use Additional Sheets as Necessary

(See Page 17 of Manure Management Guidance Instructions)

Storage Name	Inspection Date	Manure Depth (liquid)	Depth from Surface of Manure to Freeboard (liquid)	Leak Detection System Inspections. Are there any leaks, overflows, or seepages? Describe.	Structural Integrity. Are there cracks, erosion, slope failures, liner deterioration, rodent holes, large vegetation, excessive or lush vegetation, fencing issues, loading area issues? Describe.

APPENDIX 1

LAND APPLICATION OF MANURE

A supplement to Manure Management for Environmental Protection

MANURE APPLICATION RATE TABLES

pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION

October 29, 2011

TABLE OF CONTENTS

How to use Manure Application Rate Tables to determine the manure application rate:

The guidance below provides a step-by-step example for determining manure application and supplemental N fertilizer rates as a part of Manure Management Plan (MMP) development. Management options selected in this example are highlighted in the table. This example is based on the MMP Summary located on page 12 of the MMP Instructions.

1. Determine if you will be using the Nitrogen Based (pages 5 – 20) **or** Crop Phosphorus Removal Based (pages 21 – 36) Manure Application Rate tables.

    - The example farm has soil tests and all soil tests are less than 200 ppm Mehlich 3-P. Therefore, the manure application rate will be determined using the Nitrogen Based Manure Application Rate Tables found in Appendix 1 (*Manure Application Rate Charts and Instructions 2011*), pages 5 to 20.

2. Find the Manure Application Rate Table for the manure type being applied.

    - In the example, liquid dairy manure is being applied so the liquid dairy manure table is used. The "Liquid Dairy Nitrogen based Manure Application Rate Table" is located in Appendix 1 on pages 7 and 8.

3. On the Manure Application Rate Table select the Crop Group that will receive the manure application.

    - In the example, liquid dairy manure is being applied to Corn Silage. Therefore, the "Corn Silage" crop group on the "Liquid Dairy Nitrogen based Manure Application Table" is used. This information is located in Appendix 1, page 7, and it is the fourth crop group table.

4. Select the manure application management (manure application season and manure incorporation timing) that best matches how the manure will be applied.

    - In the example, liquid dairy is applied in the Spring with No Incorporation. Therefore, under the "Manure Application Method" column select "Spring No Incorporation." This is the third line down on the table.

5. Determine the realistic expected yield for the crop group. Then find the corresponding Yield Group at the top of the Manure Application Rate Table.

    - In the example, the corn silage has an expected yield of 23 ton/acre. Therefore, select the "22-25 ton/A" Yield Group which is the second Yield Group listed on the table.

6. Determine the intersection of the Manure Application Method row and Yield Group column. This intersection is the maximum manure application rate and the amount of additional fertilizer N that will be required if the maximum rate is applied.

    - In the example, the maximum manure application rate is 16,000 gal/acre and the N fertilizer required is 70 lb. of N fertilizer per acre. See the example Manure Application Rate Table below (*Figure 1*).

7. Select a planned manure rate that is less than or equal to the maximum rate in the Manure Application Rate Table.

    - In the example, a planned manure application of "9,000 gal/acre" is selected.

8. Determine the needed supplemental N fertilizer. If the maximum manure application rate is equal to the planned manure application rate then the supplemental N fertilizer rate is listed in the Manure Application Rate Table. If the planned manure application rate is less than the maximum manure application rate then the supplemental N fertilizer must be calculated.

    In the example, the maximum manure application rate is 16,000 gal/acre and the planned manure application rate is 9,000 gal/acre of dairy liquid manure. Therefore, supplemental N fertilizer must be calculated using the following steps.

    - Determine the value from the Manure Application Rate Adjustment, this is the last column on the Manure Application Rate Table.

      In this example, manure is applied in the Spring with No Incorporation. Therefore, read across the third line of the table to the last column to determine that the Manure Application Rate Adjustment value is 6 lbs. N.

    - Calculate the supplemental N fertilizer rate.

      In the example, the maximum manure application rate is 16,000 gal/acre and the planned manure application rate is 9,000 gal/acre. The difference between the two rates is 7,000 gal/acre.

      To determine the supplemental N fertilizer needed, first multiply the Manure Application Rate Adjustment value, which is 6 lbs. N, by 7. The 7 comes from decreasing the maximum manure application rate by 7,000 gallons.(16,000 – 9,000 = 7,000/1,000 = 7) This equals 42 lbs. N fertilizer.

      Secondly, add the 42 lbs. N fertilizer calculated above to the 70 lbs. N fertilizer from the Manure Application Rate Table. In the example, the total supplemental N fertilizer needed equals 112 lbs. N.

9. Enter the planned manure rate (9,000 gal/acre) and the planned supplemental fertilizer (112 lbs. of N per acre) in the Manure Management Plan Summary. Note that in the Manure Management Plan Summary, the planned N was rounded to 110 lbs. N per acre.

Figure 1
Liquid Dairy
Nitrogen Based Manure Application Rates

Corn Silage	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Spring Incorporation within 1 day	9000	0	11000	0	14000	0	16000	0	14
Spring Incorporation within 1 week	13000	0	16000	0	16000	35	16000	65	10
Spring No Incorporation	**16000**	**40**	**16000**	**70**	**16000**	**100**	**16000**	**130**	**6**
Fall	16000	40	16000	70	16000	100	16000	130	6
Winter with cover crop	5000	75	5000	105	5000	135	5000	165	11
Winter No cover crop	5000	100	5000	130	5000	160	5000	190	6

NOTE: Only part of the table is shown in this example.

IMPORTANT NOTES ABOUT THE MANURE RATE TABLES

1. Maximum nitrogen (N) based rates in these tables are based on applying no more N than can be used by the current crop or limiting phosphorus to the maximum that would be recommended for that crop on a soil test report in PA, whichever is lower. This second "P" criteria is why in the N based tables some of the manure rates seem low and there is significant N fertilizer recommended. Using the Nutrient Balance Sheet (NBS) approach and the P Index may allow higher manure application rates depending on the site specific information for the field.

2. For liquid manure there is a 9,000 gal per acre cap on the amount of liquid that can be applied in one application. Therefore, if a rate in the table is greater than 9,000 gal/A, this will have to be split into multiple applications so that no one application exceeds this cap.

3. In the phosphorus based tables the allowable rates of poultry manure application can be very low and in some cases not possible to apply with common application equipment. For poultry manure, banking is allowed to overcome this problem. Banking means applying manure at a higher rate in one year to supply enough P for several years but then no manure or other P application in the subsequent years until the banked P is utilized. However, the rate of application can never exceed the N based rate. (See the Banking Example on the next page.)

Banking Example

Spring application of broiler manure incorporated within a week for corn for grain at 161-190 bu/A yield level would be limited to 1 ton per acre plus 135 lbs. fertilizer N/A using the Phosphorus based tables. (See bolded entries in the table below.)

Broiler
Crop Phosphorus Removal Based Manure Application Rates

Corn Grain	Yield Groups (bu/A)								Manure Application Rate Adjustment
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	1	50	1	80	1	110	1	140	59
Spring Incorporation within 1 week	1	75	1	105	**1**	**135**	1	165	36
Spring No Incorporation	1	100	1	130	1	160	1	190	12
Fall	1	100	1	130	1	160	1	190	12
Winter with cover crop	1	70	1	100	1	130	1	160	40
Winter No cover crop	1	100	1	130	1	160	1	190	12

NOTE: Only part of the table is shown in this example.

With banking applying 3 ton/A in one year could be proposed, which would meet the P requirements of this crop for 3 years, and be more practical to apply. Then no additional manure or fertilizer P could be applied in the following 2 years. For this to be acceptable, the multiple year manure application rate (3 ton/A in this example) cannot exceed the N based rate for the same management in the year the manure is applied. Check this multiple year P based rate in the N based table, which indicates that for a spring application of broiler manure incorporated within a week for corn for grain at 161-190 bu/A yield level would be limited to 4 ton per acre plus 30 lbs. N/A. Thus, the 3 ton/A banked rate would not exceed the N based rate and would be acceptable. The N fertilizer recommendation (30 lbs. N/A from the charts, plus 36 lbs. additional N because the 3 tons manure rate is a one ton reduction from the maximum rate) from the N based table would be used in the year of manure application. The full recommended N fertilizer would have to be applied in the following 2 years when manure is not applied. (See bolded entries in the table below.)

Broiler
Nitrogen Based Manure Application Rates

Corn Grain	Yield Groups (bu/A)								Manure Application Rate Adjustment
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	2	0	2	20	3	0	3	20	59
Spring Incorporation within 1 week	3	0	4	0	**4**	**30**	4	60	36
Spring No Incorporation	4	65	4	95	4	125	4	155	12
Fall	4	65	4	95	4	125	4	155	12
Winter with cover crop	3	0	3	20	3	50	3	80	40
Winter No cover crop	3	75	3	105	3	135	3	165	12

NOTE: Only part of the table is shown in this example.

Solid Dairy
Nitrogen Based Manure Application Rates

Corn Grain	Yield Groups (bu/A)								Manure Application Rate Adjustment
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	20	10	30	0	35	0	40	0	5
Spring Incorporation within 1 week	30	0	40	0	50	0	50	25	4
Spring No Incorporation	50	10	50	40	50	70	50	100	2
Fall	50	10	50	40	50	70	50	100	2
Winter with cover crop	20	30	20	60	20	90	20	120	4
Winter No cover crop	20	70	20	100	20	130	20	160	2

Corn Grain after Alfalfa	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	10	0	15	0	20	0	20	10	5
Spring Incorporation within 1 week	15	0	20	0	25	0	30	0	4
Spring No Incorporation	25	0	35	0	45	0	50	10	2
Fall	25	0	35	0	45	0	50	10	2
Winter with cover crop	15	0	20	0	20	10	20	30	4
Winter No cover crop	20	10	20	30	20	50	20	70	2

Corn Grain after Soybeans	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	15	0	20	0	20	10	25	0	5
Spring Incorporation within 1 week	20	0	25	0	30	0	35	0	4
Spring No Incorporation	35	0	45	0	50	10	50	30	2
Fall	35	0	45	0	50	10	50	30	2
Winter with cover crop	20	0	20	10	20	30	20	50	4
Winter No cover crop	20	30	20	50	20	70	20	90	2

Corn Silage	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	25	0	30	10	40	0	45	0	5
Spring Incorporation within 1 week	35	0	45	0	50	15	50	45	4
Spring No Incorporation	50	30	50	60	50	90	50	120	2
Fall	50	30	50	60	50	90	50	120	2
Winter with cover crop	20	50	20	80	20	110	20	140	4
Winter No cover crop	20	90	20	120	20	150	20	180	2

Corn Silage after Alfalfa	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	15	0	20	0	20	10	25	0	5
Spring Incorporation within 1 week	20	0	25	0	30	0	35	0	4
Spring No Incorporation	35	0	45	0	50	10	50	30	2
Fall	35	0	45	0	50	10	50	30	2
Winter with cover crop	20	0	20	10	20	30	20	50	4
Winter No cover crop	20	30	20	50	20	70	20	90	2

Solid Dairy
Nitrogen Based Manure Application Rates

Corn Silage after Soybeans	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	20	0	20	10	25	0	30	0	5
Spring Incorporation within 1 week	25	0	30	0	35	0	45	0	4
Spring No Incorporation	45	0	50	10	50	30	50	50	2
Fall	45	0	50	10	50	30	50	50	2
Winter with cover crop	20	10	20	30	20	50	20	70	4
Winter No cover crop	20	50	20	70	20	90	20	110	2

Grass Hay	Yield Groups (ton/A)								
	3-4		4.1-5		5.1-6		6.1-7		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	35	0	45	0	50	30	50	80	5
Spring Incorporation within 1 week	50	0	50	55	50	105	50	155	4
Spring No Incorporation	50	80	50	130	50	180	50	230	2
Fall	50	80	50	130	50	180	50	230	2
Winter with cover crop	20	100	20	150	20	200	20	250	4
Winter No cover crop	20	140	20	190	20	240	20	290	2

Small Grains	Yield Groups (bu/A)								
	60-75		76-90		91-105		106-130		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	5	10	10	0	15	0	15	0	5
Spring Incorporation within 1 week	10	0	15	0	20	0	25	0	4
Spring No Incorporation	20	0	25	0	35	0	40	0	2
Fall	20	0	25	0	35	0	40	0	2
Winter with cover crop	10	0	15	0	15	0	20	0	4
Winter No cover crop	20	0	20	10	20	25	20	40	2

No more than 9000 gal/A of liquid manure can be applied in a single application.
Spilt higher rates into multiple applications.

Liquid Dairy
Nitrogen Based Manure Application Rates

Corn Grain	Yield Groups (bu/A)								Manure Application Rate Adjustment
	100-130		131-160		161-190		191-220		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	8000	0	10000	0	12000	0	14000	0	14
Spring Incorporation within 1 week	11000	0	14000	0	16000	15	16000	45	10
Spring No Incorporation	16000	20	16000	50	16000	80	16000	110	6
Fall	16000	20	16000	50	16000	80	16000	110	6
Winter with cover crop	5000	55	5000	85	5000	115	5000	145	11
Winter No cover crop	5000	80	5000	110	5000	140	5000	170	6

Corn Grain after Alfalfa	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	4000	0	5000	0	6000	0	8000	0	14
Spring Incorporation within 1 week	5000	0	7000	0	9000	0	11000	0	10
Spring No Incorporation	9000	0	13000	0	16000	0	16000	20	6
Fall	9000	0	13000	0	16000	0	16000	20	6
Winter with cover crop	4000	0	5000	15	5000	35	5000	55	11
Winter No cover crop	5000	20	5000	40	5000	60	5000	80	6

Corn Grain after Soybeans	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	5000	0	6000	0	8000	0	9000	0	14
Spring Incorporation within 1 week	7000	0	9000	0	11000	0	13000	0	10
Spring No Incorporation	13000	0	16000	0	16000	20	16000	40	6
Fall	13000	0	16000	0	16000	20	16000	40	6
Winter with cover crop	5000	15	5000	35	5000	55	5000	75	11
Winter No cover crop	5000	40	5000	60	5000	80	5000	100	6

Corn Silage	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	9000	0	11000	0	14000	0	16000	0	14
Spring Incorporation within 1 week	13000	0	16000	0	16000	35	16000	65	10
Spring No Incorporation	16000	40	16000	70	16000	100	16000	130	6
Fall	16000	40	16000	70	16000	100	16000	130	6
Winter with cover crop	5000	75	5000	105	5000	135	5000	165	11
Winter No cover crop	5000	100	5000	130	5000	160	5000	190	6

Corn Silage after Alfalfa	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	5000	0	6000	0	8000	0	9000	0	14
Spring Incorporation within 1 week	7000	0	9000	0	11000	0	13000	0	10
Spring No Incorporation	13000	0	16000	0	16000	20	16000	40	6
Fall	13000	0	16000	0	16000	20	16000	40	6
Winter with cover crop	5000	15	5000	35	5000	55	5000	75	11
Winter No cover crop	5000	40	5000	60	5000	80	5000	100	6

Liquid Dairy
Nitrogen Based Manure Application Rates

Corn Silage after Soybeans	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Spring Incorporation within 1 day	6000	0	8000	0	9000	0	11000	0	14
Spring Incorporation within 1 week	9000	0	11000	0	13000	0	15000	0	10
Spring No Incorporation	16000	0	16000	20	16000	40	16000	60	6
Fall	16000	0	16000	20	16000	40	16000	60	6
Winter with cover crop	5000	35	5000	55	5000	75	5000	95	11
Winter No cover crop	5000	60	5000	80	5000	100	5000	120	6

Grass Hay	Yield Groups (ton/A)								
	3-4		4.1-5		5.1-6		6.1-7		
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Spring Incorporation within 1 day	13000	0	16000	0	16000	55	16000	105	14
Spring Incorporation within 1 week	16000	25	16000	75	16000	125	16000	175	10
Spring No Incorporation	16000	90	16000	140	16000	190	16000	240	6
Fall	16000	90	16000	140	16000	190	16000	240	6
Winter with cover crop	5000	125	5000	175	5000	225	5000	275	11
Winter No cover crop	5000	150	5000	200	5000	250	5000	300	6

Small Grains	Yield Groups (bu/A)								
	60-75		76-90		91-105		106-130		
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Spring Incorporation within 1 day	3000	0	4000	0	5000	0	6000	0	14
Spring Incorporation within 1 week	4000	0	5000	0	7000	0	8000	0	10
Spring No Incorporation	6000	0	9000	0	12000	0	14000	0	6
Fall	6000	0	9000	0	12000	0	14000	0	6
Winter with cover crop	3000	0	4000	0	5000	0	5000	25	11
Winter No cover crop	5000	0	5000	20	5000	35	5000	50	6

No more than 9000 gal/A of liquid manure can be applied in a single application.
Spilt higher rates into multiple applications.

Liquid Swine
Nitrogen Based Manure Application Rates

Corn Grain	Yield Groups (bu/A)								Manure Application Rate Adjustment
	100-130		131-160		161-190		191-220		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	5000	0	6000	0	8000	0	9000	0	22
Spring Incorporation within 1 week	9000	0	9000	30	9000	60	9000	90	12
Spring No Incorporation	9000	55	9000	85	9000	115	9000	145	6
Fall	9000	55	9000	85	9000	115	9000	145	6
Winter with cover crop	5000	40	5000	70	5000	100	5000	130	14
Winter No cover crop	5000	80	5000	110	5000	140	5000	170	6

Corn Grain after Alfalfa	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	2000	0	3000	0	4000	0	5000	0	22
Spring Incorporation within 1 week	4000	0	6000	0	7000	0	9000	0	12
Spring No Incorporation	8000	0	9000	15	9000	35	9000	55	6
Fall	8000	0	9000	15	9000	35	9000	55	6
Winter with cover crop	4000	0	5000	0	5000	20	5000	40	14
Winter No cover crop	5000	20	5000	40	5000	60	5000	80	6

Corn Grain after Soybeans	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	3000	0	4000	0	5000	0	6000	0	22
Spring Incorporation within 1 week	6000	0	7000	0	9000	0	9000	20	12
Spring No Incorporation	9000	15	9000	35	9000	55	9000	75	6
Fall	9000	15	9000	35	9000	55	9000	75	6
Winter with cover crop	5000	0	5000	20	5000	40	5000	60	14
Winter No cover crop	5000	40	5000	60	5000	80	5000	100	6

Corn Silage	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	6000	0	7000	0	9000	0	9000	25	22
Spring Incorporation within 1 week	9000	20	9000	50	9000	80	9000	110	12
Spring No Incorporation	9000	75	9000	105	9000	135	9000	165	6
Fall	9000	75	9000	105	9000	135	9000	165	6
Winter with cover crop	5000	60	5000	90	5000	120	5000	150	14
Winter No cover crop	5000	100	5000	130	5000	160	5000	190	6

Corn Silage after Alfalfa	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	3000	0	4000	0	5000	0	6000	0	22
Spring Incorporation within 1 week	6000	0	7000	0	9000	0	9000	20	12
Spring No Incorporation	9000	15	9000	35	9000	55	9000	75	6
Fall	9000	15	9000	35	9000	55	9000	75	6
Winter with cover crop	5000	0	5000	20	5000	40	5000	60	14
Winter No cover crop	5000	40	5000	60	5000	80	5000	100	6

Liquid Swine
Nitrogen Based Manure Application Rates

Corn Silage after Soybeans	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	4000	0	5000	0	6000	0	7000	0	22
Spring Incorporation within 1 week	7000	0	9000	0	9000	20	9000	40	12
Spring No Incorporation	9000	35	9000	55	9000	75	9000	95	6
Fall	9000	35	9000	55	9000	75	9000	95	6
Winter with cover crop	5000	20	5000	40	5000	60	5000	80	14
Winter No cover crop	5000	60	5000	80	5000	100	5000	120	6

Grass Hay	Yield Groups (ton/A)								
	3-4		4.1-5		5.1-6		6.1-7		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	8000	0	9000	35	9000	85	9000	135	22
Spring Incorporation within 1 week	9000	70	9000	120	9000	170	9000	220	12
Spring No Incorporation	9000	125	9000	175	9000	225	9000	275	6
Fall	9000	125	9000	175	9000	225	9000	275	6
Winter with cover crop	5000	110	5000	160	5000	210	5000	260	14
Winter No cover crop	5000	150	5000	200	5000	250	5000	300	6

Small Grains	Yield Groups (bu/A)								
	60-75		76-90		91-105		106-130		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	2000	0	2000	0	3000	0	4000	0	22
Spring Incorporation within 1 week	3000	0	4000	0	5000	0	6000	0	12
Spring No Incorporation	6000	0	8000	0	9000	0	9000	25	6
Fall	6000	0	8000	0	9000	0	9000	25	6
Winter with cover crop	3000	0	4000	0	5000	0	5000	10	14
Winter No cover crop	5000	0	5000	20	5000	35	5000	50	6

No more than 9000 gal/A of liquid manure can be applied in a single application.
Spilt higher rates into multiple applications.

Layer
Nitrogen Based Manure Application Rates

Corn Grain	Yield Groups (bu/A)								Manure Application Rate Adjustment
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	4	0	4	30	4	60	4	90	28
Spring Incorporation within 1 week	4	45	4	75	4	105	4	135	17
Spring No Incorporation	4	90	4	120	4	150	4	180	6
Fall	4	90	4	120	4	150	4	180	6
Winter with cover crop	3	55	3	85	3	115	3	145	19
Winter No cover crop	3	95	3	125	3	155	3	185	6

Corn Grain after Alfalfa	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	2	0	3	0	3	0	4	0	28
Spring Incorporation within 1 week	3	0	4	0	4	25	4	45	17
Spring No Incorporation	4	30	4	50	4	70	4	90	6
Fall	4	30	4	50	4	70	4	90	6
Winter with cover crop	3	0	3	15	3	35	3	55	19
Winter No cover crop	3	35	3	55	3	75	3	95	6

Corn Grain after Soybeans	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	3	0	3	0	4	0	4	20	28
Spring Incorporation within 1 week	4	0	4	25	4	45	4	65	17
Spring No Incorporation	4	50	4	70	4	90	4	110	6
Fall	4	50	4	70	4	90	4	110	6
Winter with cover crop	3	15	3	35	3	55	3	75	19
Winter No cover crop	3	55	3	75	3	95	3	115	6

Corn Silage	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	4	20	4	50	4	80	4	110	28
Spring Incorporation within 1 week	4	65	4	95	4	125	4	155	17
Spring No Incorporation	4	110	4	140	4	170	4	200	6
Fall	4	110	4	140	4	170	4	200	6
Winter with cover crop	3	75	3	105	3	135	3	165	19
Winter No cover crop	3	115	3	145	3	175	3	205	6

Corn Silage after Alfalfa	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	3	0	3	0	4	0	4	20	28
Spring Incorporation within 1 week	4	0	4	25	4	45	4	65	17
Spring No Incorporation	4	50	4	70	4	90	4	110	6
Fall	4	50	4	70	4	90	4	110	6
Winter with cover crop	3	15	3	35	3	55	3	75	19
Winter No cover crop	3	55	3	75	3	95	3	115	6

Layer
Nitrogen Based Manure Application Rates

Corn Silage after Soybeans	Yield Groups (ton/A)								For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
	17-21		22-25		26-29		30-33		
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	3	0	4	0	4	20	4	40	28
Spring Incorporation within 1 week	4	25	4	45	4	65	4	85	17
Spring No Incorporation	4	70	4	90	4	110	4	130	6
Fall	4	70	4	90	4	110	4	130	6
Winter with cover crop	3	35	3	55	3	75	3	95	19
Winter No cover crop	3	75	3	95	3	115	3	135	6

Grass Hay	Yield Groups (ton/A)								For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
	3-4		4.1-5		5.1-6		6.1-7		
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	4	70	4	120	4	170	4	220	28
Spring Incorporation within 1 week	4	115	4	165	4	215	4	265	17
Spring No Incorporation	4	160	4	210	4	260	4	310	6
Fall	4	160	4	210	4	260	4	310	6
Winter with cover crop	3	125	3	175	3	225	3	275	19
Winter No cover crop	3	165	3	215	3	265	3	315	6

Small Grains	Yield Groups (bu/A)								For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
	60-75		76-90		91-105		106-130		
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	1	0	2	0	2	0	3	0	28
Spring Incorporation within 1 week	2	0	3	0	4	0	4	15	17
Spring No Incorporation	4	15	4	30	4	45	4	60	6
Fall	4	15	4	30	4	45	4	60	6
Winter with cover crop	2	0	3	0	3	0	3	25	19
Winter No cover crop	3	20	3	35	3	50	3	65	6

No more than 9000 gal/A of liquid manure can be applied in a single application.
Spilt higher rates into multiple applications.

Broiler
Nitrogen Based Manure Application Rates

Corn Grain	Yield Groups (bu/A)								Manure Application Rate Adjustment
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	2	0	2	20	3	0	3	20	59
Spring Incorporation within 1 week	3	0	4	0	4	30	4	60	36
Spring No Incorporation	4	65	4	95	4	125	4	155	12
Fall	4	65	4	95	4	125	4	155	12
Winter with cover crop	3	0	3	20	3	50	3	80	40
Winter No cover crop	3	75	3	105	3	135	3	165	12

Corn Grain after Alfalfa	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	1	0	1	10	2	0	2	0	59
Spring Incorporation within 1 week	1	15	2	0	3	0	3	0	36
Spring No Incorporation	4	0	4	25	4	45	4	65	12
Fall	4	0	4	25	4	45	4	65	12
Winter with cover crop	1	10	2	0	2	10	3	0	40
Winter No cover crop	3	15	3	35	3	55	3	75	12

Corn Grain after Soybeans	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	1	10	2	0	2	0	2	10	59
Spring Incorporation within 1 week	2	0	3	0	3	0	4	0	36
Spring No Incorporation	4	25	4	45	4	65	4	85	12
Fall	4	25	4	45	4	65	4	85	12
Winter with cover crop	2	0	2	10	3	0	3	10	40
Winter No cover crop	3	35	3	55	3	75	3	95	12

Corn Silage	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	2	10	3	0	3	10	4	0	59
Spring Incorporation within 1 week	4	0	4	20	4	50	4	80	36
Spring No Incorporation	4	85	4	115	4	145	4	175	12
Fall	4	85	4	115	4	145	4	175	12
Winter with cover crop	3	10	3	40	3	70	3	100	40
Winter No cover crop	3	95	3	125	3	155	3	185	12

Corn Silage after Alfalfa	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	1	10	2	0	2	0	2	10	59
Spring Incorporation within 1 week	2	0	3	0	3	0	4	0	36
Spring No Incorporation	4	25	4	45	4	65	4	85	12
Fall	4	25	4	45	4	65	4	85	12
Winter with cover crop	2	0	2	10	3	0	3	10	40
Winter No cover crop	3	35	3	55	3	75	3	95	12

Broiler
Nitrogen Based Manure Application Rates

Corn Silage after Soybeans	Yield Groups (ton/A)								For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
	17-21		22-25		26-29		30-33		
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	2	0	2	0	2	10	3	0	59
Spring Incorporation within 1 week	3	0	3	0	4	0	4	0	36
Spring No Incorporation	4	45	4	65	4	85	4	105	12
Fall	4	45	4	65	4	85	4	105	12
Winter with cover crop	2	10	3	0	3	10	3	30	40
Winter No cover crop	3	55	3	75	3	95	3	115	12

Grass Hay	Yield Groups (ton/A)								For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
	3-4		4.1-5		5.1-6		6.1-7		
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	3	0	4	0	4	45	4	95	59
Spring Incorporation within 1 week	4	40	4	90	4	140	4	190	36
Spring No Incorporation	4	135	4	185	4	235	4	285	12
Fall	4	135	4	185	4	235	4	285	12
Winter with cover crop	3	60	3	110	3	160	3	210	40
Winter No cover crop	3	145	3	195	3	245	3	295	12

Small Grains	Yield Groups (bu/A)								For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
	60-75		76-90		91-105		106-130		
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	1	0	1	0	1	0	1	20	59
Spring Incorporation within 1 week	1	0	1	15	2	0	2	0	36
Spring No Incorporation	3	0	4	0	4	20	4	35	12
Fall	3	0	4	0	4	20	4	35	12
Winter with cover crop	1	0	1	10	2	0	2	0	40
Winter No cover crop	3	0	3	15	3	30	3	45	12

No more than 9000 gal/A of liquid manure can be applied in a single application.
Spilt higher rates into multiple applications.

Beef Cow Calf
Nitrogen Based Manure Application Rates

Corn Grain	Yield Groups (bu/A)								Manure Application Rate Adjustment
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	20	0	25	0	30	0	30	35	6
Spring Incorporation within 1 week	30	0	30	25	30	55	30	85	4
Spring No Incorporation	30	45	30	75	30	105	30	135	2
Fall	30	45	30	75	30	105	30	135	2
Winter with cover crop	20	20	20	50	20	80	20	110	4
Winter No cover crop	20	65	20	95	20	125	20	155	2

Corn Grain after Alfalfa	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	10	0	15	0	15	0	20	0	6
Spring Incorporation within 1 week	15	0	20	0	25	0	30	0	4
Spring No Incorporation	25	0	30	0	30	25	30	45	2
Fall	25	0	30	0	30	25	30	45	2
Winter with cover crop	10	0	15	0	20	0	20	20	4
Winter No cover crop	20	0	20	25	20	45	20	65	2

Corn Grain after Soybeans	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	15	0	15	0	20	0	25	0	6
Spring Incorporation within 1 week	20	0	25	0	30	0	30	15	4
Spring No Incorporation	30	0	30	25	30	45	30	65	2
Fall	30	0	30	25	30	45	30	65	2
Winter with cover crop	15	0	20	0	20	20	20	40	4
Winter No cover crop	20	25	20	45	20	65	20	85	2

Corn Silage	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	20	0	25	0	30	0	30	55	6
Spring Incorporation within 1 week	30	0	30	25	30	55	30	105	4
Spring No Incorporation	30	45	30	75	30	105	30	155	2
Fall	30	45	30	75	30	105	30	155	2
Winter with cover crop	20	20	20	50	20	80	20	130	4
Winter No cover crop	20	65	20	95	20	125	20	175	2

Corn Silage after Alfalfa	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	10	0	15	0	15	0	25	0	6
Spring Incorporation within 1 week	15	0	20	0	25	0	30	15	4
Spring No Incorporation	25	0	30	0	30	25	30	65	2
Fall	25	0	30	0	30	25	30	65	2
Winter with cover crop	10	0	15	0	20	0	20	40	4
Winter No cover crop	20	0	20	25	20	45	20	85	2

Beef Cow Calf
Nitrogen Based Manure Application Rates

Corn Silage after Soybeans	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	15	0	15	0	20	0	25	15	6
Spring Incorporation within 1 week	20	0	25	0	30	0	30	35	4
Spring No Incorporation	30	0	30	25	30	45	30	85	2
Fall	30	0	30	25	30	45	30	85	2
Winter with cover crop	15	0	20	0	20	20	20	60	4
Winter No cover crop	20	25	20	45	20	65	20	105	2

Grass Hay	Yield Groups (ton/A)								
	3-4		4.1-5		5.1-6		6.1-7		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	20	0	25	0	30	0	30	165	6
Spring Incorporation within 1 week	30	0	30	25	30	55	30	215	4
Spring No Incorporation	30	45	30	75	30	105	30	265	2
Fall	30	45	30	75	30	105	30	265	2
Winter with cover crop	20	20	20	50	20	80	20	240	4
Winter No cover crop	20	65	20	95	20	125	20	285	2

Small Grains	Yield Groups (bu/A)								
	60-75		76-90		91-105		106-130		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	20	0	25	0	30	0	15	0	6
Spring Incorporation within 1 week	30	0	30	25	30	55	20	0	4
Spring No Incorporation	30	45	30	75	30	105	30	15	2
Fall	30	45	30	75	30	105	30	15	2
Winter with cover crop	20	20	20	50	20	80	20	0	4
Winter No cover crop	20	65	20	95	20	125	20	35	2

No more than 9000 gal/A of liquid manure can be applied in a single application.
Spilt higher rates into multiple applications.

Beef Steer
Nitrogen Based Manure Application Rates

Corn Grain	Yield Groups (bu/A)								Manure Application Rate Adjustment
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	15	0	20	0	25	0	30	0	7
Spring Incorporation within 1 week	20	10	30	0	35	0	40	0	5
Spring No Incorporation	40	0	40	30	40	60	40	90	3
Fall	40	0	40	30	40	60	40	90	3
Winter with cover crop	20	0	20	30	20	60	20	90	6
Winter No cover crop	20	55	20	85	20	115	20	145	3

Corn Grain after Alfalfa	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	5	15	10	0	15	0	15	0	7
Spring Incorporation within 1 week	10	0	15	0	20	0	20	10	5
Spring No Incorporation	20	0	25	0	30	0	40	0	3
Fall	20	0	25	0	30	0	40	0	3
Winter with cover crop	10	0	15	0	15	0	20	0	6
Winter No cover crop	20	0	20	15	20	35	20	55	3

Corn Grain after Soybeans	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	10	0	15	0	15	0	20	0	7
Spring Incorporation within 1 week	15	0	20	0	20	10	25	0	5
Spring No Incorporation	25	0	30	0	40	0	40	20	3
Fall	25	0	30	0	40	0	40	20	3
Winter with cover crop	15	0	15	0	20	0	20	20	6
Winter No cover crop	20	15	20	35	20	55	20	75	3

Corn Silage	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	15	0	20	0	25	0	30	10	7
Spring Incorporation within 1 week	20	10	30	0	35	0	40	25	5
Spring No Incorporation	40	0	40	30	40	60	40	110	3
Fall	40	0	40	30	40	60	40	110	3
Winter with cover crop	20	0	20	30	20	60	20	110	6
Winter No cover crop	20	55	20	85	20	115	20	165	3

Corn Silage after Alfalfa	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	5	15	10	0	15	0	20	0	7
Spring Incorporation within 1 week	10	0	15	0	20	0	25	0	5
Spring No Incorporation	20	0	25	0	30	0	40	20	3
Fall	20	0	25	0	30	0	40	20	3
Winter with cover crop	10	0	15	0	15	0	20	20	6
Winter No cover crop	20	0	20	15	20	35	20	75	3

Beef Steer
Nitrogen Based Manure Application Rates

Corn Silage after Soybeans	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	10	0	15	0	15	0	20	10	7
Spring Incorporation within 1 week	15	0	20	0	20	10	30	0	5
Spring No Incorporation	25	0	30	0	40	0	40	40	3
Fall	25	0	30	0	40	0	40	40	3
Winter with cover crop	15	0	15	0	20	0	20	40	6
Winter No cover crop	20	15	20	35	20	55	20	95	3

Grass Hay	Yield Groups (ton/A)								
	3-4		4.1-5		5.1-6		6.1-7		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	15	0	20	0	25	0	40	50	7
Spring Incorporation within 1 week	20	10	30	0	35	0	40	135	5
Spring No Incorporation	40	0	40	30	40	60	40	220	3
Fall	40	0	40	30	40	60	40	220	3
Winter with cover crop	20	0	20	30	20	60	20	220	6
Winter No cover crop	20	55	20	85	20	115	20	275	3

Small Grains	Yield Groups (bu/A)								
	60-75		76-90		91-105		106-130		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	15	0	20	0	25	0	10	10	7
Spring Incorporation within 1 week	20	10	30	0	35	0	15	0	5
Spring No Incorporation	40	0	40	30	40	60	30	0	3
Fall	40	0	40	30	40	60	30	0	3
Winter with cover crop	20	0	20	30	20	60	15	0	6
Winter No cover crop	20	55	20	85	20	115	20	25	3

No more than 9000 gal/A of liquid manure can be applied in a single application.
Spilt higher rates into multiple applications.

Horse
Nitrogen Based Manure Application Rates

Corn Grain	Yield Groups (bu/A)								Manure Application Rate Adjustment
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	20	0	25	0	30	0	35	0	6
Spring Incorporation within 1 week	25	0	35	0	40	0	40	30	4
Spring No Incorporation	40	15	40	45	40	75	40	105	2
Fall	40	15	40	45	40	75	40	105	2
Winter with cover crop	20	15	20	45	20	75	20	105	5
Winter No cover crop	20	60	20	90	20	120	20	150	2

Corn Grain after Alfalfa	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	10	0	10	10	15	0	20	0	6
Spring Incorporation within 1 week	10	0	15	0	20	0	25	0	4
Spring No Incorporation	20	0	30	0	40	0	40	15	2
Fall	20	0	30	0	40	0	40	15	2
Winter with cover crop	10	0	15	0	20	0	20	15	5
Winter No cover crop	20	0	20	20	20	40	20	60	2

Corn Grain after Soybeans	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	10	10	15	0	20	0	20	10	6
Spring Incorporation within 1 week	15	0	20	0	25	0	30	0	4
Spring No Incorporation	30	0	40	0	40	15	40	35	2
Fall	30	0	40	0	40	15	40	35	2
Winter with cover crop	15	0	20	0	20	15	20	35	5
Winter No cover crop	20	20	20	40	20	60	20	80	2

Corn Silage	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	20	0	25	0	30	0	35	10	6
Spring Incorporation within 1 week	25	0	35	0	40	0	40	50	4
Spring No Incorporation	40	15	40	45	40	75	40	125	2
Fall	40	15	40	45	40	75	40	125	2
Winter with cover crop	20	15	20	45	20	75	20	125	5
Winter No cover crop	20	60	20	90	20	120	20	170	2

Corn Silage after Alfalfa	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	10	0	10	10	15	0	20	10	6
Spring Incorporation within 1 week	10	0	15	0	20	0	30	0	4
Spring No Incorporation	20	0	30	0	40	0	40	35	2
Fall	20	0	30	0	40	0	40	35	2
Winter with cover crop	10	0	15	0	20	0	20	35	5
Winter No cover crop	20	0	20	20	20	40	20	80	2

Horse
Nitrogen Based Manure Application Rates

Corn Silage after Soybeans	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	10	10	15	0	20	0	25	0	6
Spring Incorporation within 1 week	15	0	20	0	25	0	35	0	4
Spring No Incorporation	30	0	40	0	40	15	40	55	2
Fall	30	0	40	0	40	15	40	55	2
Winter with cover crop	15	0	20	0	20	15	20	55	5
Winter No cover crop	20	20	20	40	20	60	20	100	2

Grass Hay	Yield Groups (ton/A)								
	3-4		4.1-5		5.1-6		6.1-7		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	20	0	25	0	30	0	40	90	6
Spring Incorporation within 1 week	25	0	35	0	40	0	40	160	4
Spring No Incorporation	40	15	40	45	40	75	40	235	2
Fall	40	15	40	45	40	75	40	235	2
Winter with cover crop	20	15	20	45	20	75	20	235	5
Winter No cover crop	20	60	20	90	20	120	20	280	2

Small Grains	Yield Groups (bu/A)								
	60-75		76-90		91-105		106-130		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	20	0	25	0	30	0	15	0	6
Spring Incorporation within 1 week	25	0	35	0	40	0	20	0	4
Spring No Incorporation	40	15	40	45	40	75	35	0	2
Fall	40	15	40	45	40	75	35	0	2
Winter with cover crop	20	15	20	45	20	75	15	0	5
Winter No cover crop	20	60	20	90	20	120	20	30	2

No more than 9000 gal/A of liquid manure can be applied in a single application.
Spilt higher rates into multiple applications.

Solid Dairy
Crop Phosphorus Removal Based Manure Application Rates

Corn Grain	Yield Groups (bu/A)								Manure Application Rate Adjustment
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	15	35	15	65	20	70	20	100	5
Spring Incorporation within 1 week	15	60	15	90	20	100	20	130	4
Spring No Incorporation	15	80	15	110	20	130	20	160	2
Fall	15	80	15	110	20	130	20	160	2
Winter with cover crop	15	50	15	80	20	90	20	120	4
Winter No cover crop	15	80	15	110	20	130	20	160	2

Corn Grain after Alfalfa	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	10	0	15	0	20	0	20	10	5
Spring Incorporation within 1 week	15	0	15	20	20	20	20	40	4
Spring No Incorporation	15	20	15	40	20	50	20	70	2
Fall	15	20	15	40	20	50	20	70	2
Winter with cover crop	15	0	15	10	20	10	20	30	4
Winter No cover crop	15	20	15	40	20	50	20	70	2

Corn Grain after Soybeans	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	15	0	15	15	20	10	20	30	5
Spring Incorporation within 1 week	15	20	15	40	20	40	20	60	4
Spring No Incorporation	15	40	15	60	20	70	20	90	2
Fall	15	40	15	60	20	70	20	90	2
Winter with cover crop	15	10	15	30	20	30	20	50	4
Winter No cover crop	15	40	15	60	20	70	20	90	2

Corn Silage	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	25	0	30	10	35	15	40	20	5
Spring Incorporation within 1 week	25	45	30	55	35	70	40	80	4
Spring No Incorporation	25	80	30	100	35	120	40	140	2
Fall	25	80	30	100	35	120	40	140	2
Winter with cover crop	20	50	20	80	20	110	20	140	4
Winter No cover crop	20	90	20	120	20	150	20	180	2

Corn Silage after Alfalfa	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	15	0	20	0	20	10	25	0	5
Spring Incorporation within 1 week	20	0	25	0	30	0	35	0	4
Spring No Incorporation	25	20	30	30	35	40	40	50	2
Fall	25	20	30	30	35	40	40	50	2
Winter with cover crop	20	0	20	10	20	30	20	50	4
Winter No cover crop	20	30	20	50	20	70	20	90	2

Solid Dairy
Crop Phosphorus Removal Based Manure Application Rates

Corn Silage after Soybeans	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	20	0	20	10	25	0	30	0	5
Spring Incorporation within 1 week	25	0	30	0	35	0	40	10	4
Spring No Incorporation	25	40	30	50	35	60	40	70	2
Fall	25	40	30	50	35	60	40	70	2
Winter with cover crop	20	10	20	30	20	50	20	70	4
Winter No cover crop	20	50	20	70	20	90	20	110	2

Grass Hay	Yield Groups (ton/A)								
	3-4		4.1-5		5.1-6		6.1-7		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	15	105	20	130	25	155	25	205	5
Spring Incorporation within 1 week	15	130	20	160	25	195	25	245	4
Spring No Incorporation	15	150	20	190	25	230	25	280	2
Fall	15	150	20	190	25	230	25	280	2
Winter with cover crop	15	120	20	150	20	200	20	250	4
Winter No cover crop	15	150	20	190	20	240	20	290	2

Small Grains	Yield Groups (bu/A)								
	60-75		76-90		91-105		106-130		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	5	10	10	0	15	0	15	0	5
Spring Incorporation within 1 week	10	0	15	0	20	0	25	0	4
Spring No Incorporation	15	0	20	10	25	15	30	20	2
Fall	15	0	20	10	25	15	30	20	2
Winter with cover crop	10	0	15	0	15	0	20	0	4
Winter No cover crop	15	0	20	10	20	25	20	40	2

No more than 9000 gal/A of liquid manure can be applied in a single application.
Spilt higher rates into multiple applications.

Liquid Dairy
Crop Phosphorus Removal Based Manure Application Rates

Corn Grain	Yield Groups (bu/A)								Manure Application Rate Adjustment
	100-130		131-160		161-190		191-220		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	4000	55	5000	70	6000	85	7000	100	14
Spring Incorporation within 1 week	4000	70	5000	90	6000	110	7000	130	10
Spring No Incorporation	4000	90	5000	110	6000	135	7000	160	6
Fall	4000	90	5000	110	6000	135	7000	160	6
Winter with cover crop	4000	65	5000	85	5000	115	5000	145	11
Winter No cover crop	4000	90	5000	110	5000	140	5000	170	6

Corn Grain after Alfalfa	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	4000	0	5000	0	6000	0	7000	10	14
Spring Incorporation within 1 week	4000	10	5000	20	6000	30	7000	40	10
Spring No Incorporation	4000	30	5000	40	6000	55	7000	70	6
Fall	4000	30	5000	40	6000	55	7000	70	6
Winter with cover crop	4000	0	5000	15	5000	35	5000	55	11
Winter No cover crop	4000	30	5000	40	5000	60	5000	80	6

Corn Grain after Soybeans	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	4000	15	5000	20	6000	25	7000	30	14
Spring Incorporation within 1 week	4000	30	5000	40	6000	50	7000	60	10
Spring No Incorporation	4000	50	5000	60	6000	75	7000	90	6
Fall	4000	50	5000	60	6000	75	7000	90	6
Winter with cover crop	4000	25	5000	35	5000	55	5000	75	11
Winter No cover crop	4000	50	5000	60	5000	80	5000	100	6

Corn Silage	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	8000	20	10000	20	11000	35	13000	40	14
Spring Incorporation within 1 week	8000	50	10000	60	11000	80	13000	95	10
Spring No Incorporation	8000	85	10000	105	11000	130	13000	145	6
Fall	8000	85	10000	105	11000	130	13000	145	6
Winter with cover crop	5000	75	5000	105	5000	135	5000	165	11
Winter No cover crop	5000	100	5000	130	5000	160	5000	190	6

Corn Silage after Alfalfa	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	5000	0	6000	0	8000	0	9000	0	14
Spring Incorporation within 1 week	7000	0	9000	0	11000	0	13000	0	10
Spring No Incorporation	8000	25	10000	35	11000	50	13000	55	6
Fall	8000	25	10000	35	11000	50	13000	55	6
Winter with cover crop	5000	15	5000	35	5000	55	5000	75	11
Winter No cover crop	5000	40	5000	60	5000	80	5000	100	6

Liquid Dairy
Crop Phosphorus Removal Based Manure Application Rates

Corn Silage after Soybeans	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Spring Incorporation within 1 day	6000	0	8000	0	9000	0	11000	0	14
Spring Incorporation within 1 week	8000	10	10000	10	11000	20	13000	25	10
Spring No Incorporation	8000	45	10000	55	11000	70	13000	75	6
Fall	8000	45	10000	55	11000	70	13000	75	6
Winter with cover crop	5000	35	5000	55	5000	75	5000	95	11
Winter No cover crop	5000	60	5000	80	5000	100	5000	120	6

Grass Hay	Yield Groups (ton/A)								
	3-4		4.1-5		5.1-6		6.1-7		
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Spring Incorporation within 1 day	5000	110	6000	145	7000	180	8000	220	14
Spring Incorporation within 1 week	5000	130	6000	170	7000	210	8000	250	10
Spring No Incorporation	5000	150	6000	195	7000	240	8000	285	6
Fall	5000	150	6000	195	7000	240	8000	285	6
Winter with cover crop	5000	125	5000	175	5000	225	5000	275	11
Winter No cover crop	5000	150	5000	200	5000	250	5000	300	6

Small Grains	Yield Groups (bu/A)								
	60-75		76-90		91-105		106-130		
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Spring Incorporation within 1 day	3000	0	4000	0	5000	0	6000	0	14
Spring Incorporation within 1 week	4000	0	5000	0	7000	0	8000	0	10
Spring No Incorporation	5000	0	6000	15	7000	25	8000	35	6
Fall	5000	0	6000	15	7000	25	8000	35	6
Winter with cover crop	3000	0	4000	0	5000	0	5000	25	11
Winter No cover crop	5000	0	5000	20	5000	35	5000	50	6

No more than 9000 gal/A of liquid manure can be applied in a single application.
Spilt higher rates into multiple applications.

Liquid Swine
Crop Phosphorus Removal Based Manure Application Rates

Corn Grain	Yield Groups (bu/A)								Manure Application Rate Adjustment
	100-130		131-160		161-190		191-220		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	2000	65	3000	75	3000	105	4000	115	22
Spring Incorporation within 1 week	2000	85	3000	105	3000	135	4000	150	12
Spring No Incorporation	2000	100	3000	120	3000	150	4000	175	6
Fall	2000	100	3000	120	3000	150	4000	175	6
Winter with cover crop	2000	80	3000	100	3000	130	4000	145	14
Winter No cover crop	2000	100	3000	120	3000	150	4000	175	6

Corn Grain after Alfalfa	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	2000	0	3000	0	3000	25	4000	25	22
Spring Incorporation within 1 week	2000	25	3000	35	3000	55	4000	60	12
Spring No Incorporation	2000	40	3000	50	3000	70	4000	85	6
Fall	2000	40	3000	50	3000	70	4000	85	6
Winter with cover crop	2000	20	3000	30	3000	50	4000	55	14
Winter No cover crop	2000	40	3000	50	3000	70	4000	85	6

Corn Grain after Soybeans	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	2000	25	3000	25	3000	45	4000	45	22
Spring Incorporation within 1 week	2000	45	3000	55	3000	75	4000	80	12
Spring No Incorporation	2000	60	3000	70	3000	90	4000	105	6
Fall	2000	60	3000	70	3000	90	4000	105	6
Winter with cover crop	2000	40	3000	50	3000	70	4000	75	14
Winter No cover crop	2000	60	3000	70	3000	90	4000	105	6

Corn Silage	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	4000	45	5000	50	6000	60	7000	70	22
Spring Incorporation within 1 week	4000	80	5000	100	6000	115	7000	135	12
Spring No Incorporation	4000	105	5000	130	6000	155	7000	175	6
Fall	4000	105	5000	130	6000	155	7000	175	6
Winter with cover crop	4000	75	5000	90	5000	120	5000	150	14
Winter No cover crop	4000	105	5000	130	5000	160	5000	190	6

Corn Silage after Alfalfa	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	
Spring Incorporation within 1 day	3000	0	4000	0	5000	0	6000	0	22
Spring Incorporation within 1 week	4000	20	5000	30	6000	35	7000	45	12
Spring No Incorporation	4000	45	5000	60	6000	75	7000	85	6
Fall	4000	45	5000	60	6000	75	7000	85	6
Winter with cover crop	4000	15	5000	20	5000	40	5000	60	14
Winter No cover crop	4000	45	5000	60	5000	80	5000	100	6

Liquid Swine
Crop Phosphorus Removal Based Manure Application Rates

Corn Silage after Soybeans	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Spring Incorporation within 1 day	4000	0	5000	0	6000	0	7000	0	22
Spring Incorporation within 1 week	4000	40	5000	50	6000	55	7000	65	12
Spring No Incorporation	4000	65	5000	80	6000	95	7000	105	6
Fall	4000	65	5000	80	6000	95	7000	105	6
Winter with cover crop	4000	35	5000	40	5000	60	5000	80	14
Winter No cover crop	4000	65	5000	80	5000	100	5000	120	6

Grass Hay	Yield Groups (ton/A)								
	3-4		4.1-5		5.1-6		6.1-7		
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Spring Incorporation within 1 day	3000	115	3000	165	4000	195	4000	245	22
Spring Incorporation within 1 week	3000	145	3000	195	4000	230	4000	280	12
Spring No Incorporation	3000	160	3000	210	4000	255	4000	305	6
Fall	3000	160	3000	210	4000	255	4000	305	6
Winter with cover crop	3000	140	3000	190	4000	225	4000	275	14
Winter No cover crop	3000	160	3000	210	4000	255	4000	305	6

Small Grains	Yield Groups (bu/A)								
	60-75		76-90		91-105		106-130		
Manure Application Method	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	Manure gal/A	Fert N lb/A	For each 1000 gal/A less than the rate in the table, apply lbs. N fertilizer listed below.
Spring Incorporation within 1 day	2000	0	2000	0	3000	0	4000	0	22
Spring Incorporation within 1 week	3000	0	3000	15	4000	15	5000	20	12
Spring No Incorporation	3000	15	3000	30	4000	40	5000	50	6
Fall	3000	15	3000	30	4000	40	5000	50	6
Winter with cover crop	3000	0	3000	0	4000	0	5000	10	14
Winter No cover crop	3000	15	3000	30	4000	40	5000	50	6

No more than 9000 gal/A of liquid manure can be applied in a single application.
Spilt higher rates into multiple applications.

Layer
Crop Phosphorus Removal Based Manure Application Rates

Corn Grain	Yield Groups (bu/A)								Manure Application Rate Adjustment
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	1	80	1	110	1	140	2	145	28
Spring Incorporation within 1 week	1	95	1	125	1	155	2	165	17
Spring No Incorporation	1	105	1	135	1	165	2	190	6
Fall	1	105	1	135	1	165	2	190	6
Winter with cover crop	1	90	1	120	1	150	2	165	19
Winter No cover crop	1	105	1	135	1	165	2	190	6

Corn Grain after Alfalfa	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	1	20	1	40	1	60	2	55	28
Spring Incorporation within 1 week	1	35	1	55	1	75	2	75	17
Spring No Incorporation	1	45	1	65	1	85	2	100	6
Fall	1	45	1	65	1	85	2	100	6
Winter with cover crop	1	30	1	50	1	70	2	75	19
Winter No cover crop	1	45	1	65	1	85	2	100	6

Corn Grain after Soybeans	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	1	40	1	60	1	80	2	75	28
Spring Incorporation within 1 week	1	55	1	75	1	95	2	95	17
Spring No Incorporation	1	65	1	85	1	105	2	120	6
Fall	1	65	1	85	1	105	2	120	6
Winter with cover crop	1	50	1	70	1	90	2	95	19
Winter No cover crop	1	65	1	85	1	105	2	120	6

Corn Silage	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	2	75	2	105	3	105	3	135	28
Spring Incorporation within 1 week	2	95	2	125	3	140	3	170	17
Spring No Incorporation	2	120	2	150	3	175	3	205	6
Fall	2	120	2	150	3	175	3	205	6
Winter with cover crop	2	95	2	125	3	135	3	165	19
Winter No cover crop	2	120	2	150	3	175	3	205	6

Corn Silage after Alfalfa	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	2	15	2	35	3	25	3	45	28
Spring Incorporation within 1 week	2	35	2	55	3	60	3	80	17
Spring No Incorporation	2	60	2	80	3	95	3	115	6
Fall	2	60	2	80	3	95	3	115	6
Winter with cover crop	2	35	2	55	3	55	3	75	19
Winter No cover crop	2	60	2	80	3	95	3	115	6

Layer
Crop Phosphorus Removal Based Manure Application Rates

Corn Silage after Soybeans	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	2	35	2	55	3	45	3	65	28
Spring Incorporation within 1 week	2	55	2	75	3	80	3	100	17
Spring No Incorporation	2	80	2	100	3	115	3	135	6
Fall	2	80	2	100	3	115	3	135	6
Winter with cover crop	2	55	2	75	3	75	3	95	19
Winter No cover crop	2	80	2	100	3	115	3	135	6

Grass Hay	Yield Groups (ton/A)								
	3-4		4.1-5		5.1-6		6.1-7		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	1	150	1	200	2	225	2	275	28
Spring Incorporation within 1 week	1	165	1	215	2	245	2	295	17
Spring No Incorporation	1	175	1	225	2	270	2	320	6
Fall	1	175	1	225	2	270	2	320	6
Winter with cover crop	1	160	1	210	2	245	2	295	19
Winter No cover crop	1	175	1	225	2	270	2	320	6

Small Grains	Yield Groups (bu/A)								
	60-75		76-90		91-105		106-130		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	1	0	1	20	2	0	2	25	28
Spring Incorporation within 1 week	1	20	1	35	2	30	2	45	17
Spring No Incorporation	1	30	1	45	2	55	2	70	6
Fall	1	30	1	45	2	55	2	70	6
Winter with cover crop	1	15	1	30	2	30	2	45	19
Winter No cover crop	1	30	1	45	2	55	2	70	6

No more than 9000 gal/A of liquid manure can be applied in a single application.
Spilt higher rates into multiple applications.

Broiler
Crop Phosphorus Removal Based Manure Application Rates

Corn Grain	Yield Groups (bu/A)								Manure Application Rate Adjustment
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	1	50	1	80	1	110	1	140	59
Spring Incorporation within 1 week	1	75	1	105	1	135	1	165	36
Spring No Incorporation	1	100	1	130	1	160	1	190	12
Fall	1	100	1	130	1	160	1	190	12
Winter with cover crop	1	70	1	100	1	130	1	160	40
Winter No cover crop	1	100	1	130	1	160	1	190	12

Corn Grain after Alfalfa	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	1	0	1	10	1	30	1	50	59
Spring Incorporation within 1 week	1	15	1	35	1	55	1	75	36
Spring No Incorporation	1	40	1	60	1	80	1	100	12
Fall	1	40	1	60	1	80	1	100	12
Winter with cover crop	1	10	1	30	1	50	1	70	40
Winter No cover crop	1	40	1	60	1	80	1	100	12

Corn Grain after Soybeans	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	1	10	1	30	1	50	1	70	59
Spring Incorporation within 1 week	1	35	1	55	1	75	1	95	36
Spring No Incorporation	1	60	1	80	1	100	1	120	12
Fall	1	60	1	80	1	100	1	120	12
Winter with cover crop	1	30	1	50	1	70	1	90	40
Winter No cover crop	1	60	1	80	1	100	1	120	12

Corn Silage	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	2	10	2	40	2	70	3	40	59
Spring Incorporation within 1 week	2	60	2	90	2	120	3	115	36
Spring No Incorporation	2	105	2	135	2	165	3	185	12
Fall	2	105	2	135	2	165	3	185	12
Winter with cover crop	2	50	2	80	2	110	3	100	40
Winter No cover crop	2	105	2	135	2	165	3	185	12

Corn Silage after Alfalfa	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	1	10	2	0	2	0	2	10	59
Spring Incorporation within 1 week	2	0	2	20	2	40	3	25	36
Spring No Incorporation	2	45	2	65	2	85	3	95	12
Fall	2	45	2	65	2	85	3	95	12
Winter with cover crop	2	0	2	10	2	30	3	10	40
Winter No cover crop	2	45	2	65	2	85	3	95	12

Broiler

Crop Phosphorus Removal Based Manure Application Rates

Corn Silage after Soybeans	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	2	0	2	0	2	10	3	0	59
Spring Incorporation within 1 week	2	20	2	40	2	60	3	45	36
Spring No Incorporation	2	65	2	85	2	105	3	115	12
Fall	2	65	2	85	2	105	3	115	12
Winter with cover crop	2	10	2	30	2	50	3	30	40
Winter No cover crop	2	65	2	85	2	105	3	115	12

Grass Hay	Yield Groups (ton/A)								
	3-4		4.1-5		5.1-6		6.1-7		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	1	120	1	170	1	220	2	210	59
Spring Incorporation within 1 week	1	145	1	195	1	245	2	260	36
Spring No Incorporation	1	170	1	220	1	270	2	305	12
Fall	1	170	1	220	1	270	2	305	12
Winter with cover crop	1	140	1	190	1	240	2	250	40
Winter No cover crop	1	170	1	220	1	270	2	305	12

Small Grains	Yield Groups (bu/A)								
	60-75		76-90		91-105		106-130		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	1	0	1	0	1	0	1	20	59
Spring Incorporation within 1 week	1	0	1	15	2	0	2	0	36
Spring No Incorporation	1	25	1	40	2	40	2	55	12
Fall	1	25	1	40	2	40	2	55	12
Winter with cover crop	1	0	1	10	2	0	2	0	40
Winter No cover crop	1	25	1	40	2	40	2	55	12

No more than 9000 gal/A of liquid manure can be applied in a single application.
Spilt higher rates into multiple applications.

Beef Cow Calf
Crop Phosphorus Removal Based Manure Application Rates

Corn Grain	Yield Groups (bu/A)								Manure Application Rate Adjustment
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	5	85	10	85	10	115	15	120	6
Spring Incorporation within 1 week	5	90	10	100	10	130	15	140	4
Spring No Incorporation	5	100	10	120	10	150	15	165	2
Fall	5	100	10	120	10	150	15	165	2
Winter with cover crop	5	90	10	95	10	125	15	135	4
Winter No cover crop	5	100	10	120	10	150	15	165	2

Corn Grain after Alfalfa	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	5	25	10	15	10	35	15	30	6
Spring Incorporation within 1 week	5	30	10	30	10	50	15	50	4
Spring No Incorporation	5	40	10	50	10	70	15	75	2
Fall	5	40	10	50	10	70	15	75	2
Winter with cover crop	5	30	10	25	10	45	15	45	4
Winter No cover crop	5	40	10	50	10	70	15	75	2

Corn Grain after Soybeans	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	5	45	10	35	10	55	15	50	6
Spring Incorporation within 1 week	5	50	10	50	10	70	15	70	4
Spring No Incorporation	5	60	10	70	10	90	15	95	2
Fall	5	60	10	70	10	90	15	95	2
Winter with cover crop	5	50	10	45	10	65	15	65	4
Winter No cover crop	5	60	10	70	10	90	15	95	2

Corn Silage	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	15	30	20	30	20	60	25	85	6
Spring Incorporation within 1 week	15	50	20	65	20	95	25	125	4
Spring No Incorporation	15	75	20	95	20	125	25	165	2
Fall	15	75	20	95	20	125	25	165	2
Winter with cover crop	15	45	20	50	20	80	20	130	4
Winter No cover crop	15	75	20	95	20	125	20	175	2

Corn Silage after Alfalfa	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	10	0	15	0	15	0	25	0	6
Spring Incorporation within 1 week	15	0	20	0	20	15	25	35	4
Spring No Incorporation	15	15	20	25	20	45	25	75	2
Fall	15	15	20	25	20	45	25	75	2
Winter with cover crop	10	0	15	0	20	0	20	40	4
Winter No cover crop	15	15	20	25	20	45	20	85	2

Beef Cow Calf
Crop Phosphorus Removal Based Manure Application Rates

Corn Silage after Soybeans	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	15	0	15	0	20	0	25	15	6
Spring Incorporation within 1 week	15	10	20	15	20	35	25	55	4
Spring No Incorporation	15	35	20	45	20	65	25	95	2
Fall	15	35	20	45	20	65	25	95	2
Winter with cover crop	15	0	20	0	20	20	20	60	4
Winter No cover crop	15	35	20	45	20	65	20	105	2

Grass Hay	Yield Groups (ton/A)								
	3-4		4.1-5		5.1-6		6.1-7		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	10	55	10	85	15	90	15	250	6
Spring Incorporation within 1 week	10	70	10	100	15	110	15	270	4
Spring No Incorporation	10	90	10	120	15	135	15	295	2
Fall	10	90	10	120	15	135	15	295	2
Winter with cover crop	10	65	10	95	15	105	15	265	4
Winter No cover crop	10	90	10	120	15	135	15	295	2

Small Grains	Yield Groups (bu/A)								
	60-75		76-90		91-105		106-130		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	10	55	10	85	15	90	15	0	6
Spring Incorporation within 1 week	10	70	10	100	15	110	15	20	4
Spring No Incorporation	10	90	10	120	15	135	15	45	2
Fall	10	90	10	120	15	135	15	45	2
Winter with cover crop	10	65	10	95	15	105	15	15	4
Winter No cover crop	10	90	10	120	15	135	15	45	2

No more than 9000 gal/A of liquid manure can be applied in a single application.
Spilt higher rates into multiple applications.

Beef Steer
Crop Phosphorus Removal Based Manure Application Rates

Corn Grain	Yield Groups (bu/A)								Manure Application Rate Adjustment
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	10	40	15	35	15	65	20	60	7
Spring Incorporation within 1 week	10	60	15	65	15	95	20	100	5
Spring No Incorporation	10	80	15	100	15	130	20	145	3
Fall	10	80	15	100	15	130	20	145	3
Winter with cover crop	10	55	15	55	15	85	20	90	6
Winter No cover crop	10	80	15	100	15	130	20	145	3

Corn Grain after Alfalfa	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	5	15	10	0	15	0	15	0	7
Spring Incorporation within 1 week	10	0	15	0	15	15	20	10	5
Spring No Incorporation	10	20	15	30	15	50	20	55	3
Fall	10	20	15	30	15	50	20	55	3
Winter with cover crop	10	0	15	0	15	0	20	0	6
Winter No cover crop	10	20	15	30	15	50	20	55	3

Corn Grain after Soybeans	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	10	0	15	0	15	0	20	0	7
Spring Incorporation within 1 week	10	20	15	15	15	35	20	30	5
Spring No Incorporation	10	40	15	50	15	70	20	75	3
Fall	10	40	15	50	15	70	20	75	3
Winter with cover crop	10	15	15	0	15	25	20	20	6
Winter No cover crop	10	40	15	50	15	70	20	75	3

Corn Silage	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	15	0	20	0	25	0	30	10	7
Spring Incorporation within 1 week	20	10	25	20	30	25	35	50	5
Spring No Incorporation	20	55	25	70	30	85	35	120	3
Fall	20	55	25	70	30	85	35	120	3
Winter with cover crop	20	0	20	30	20	60	20	110	6
Winter No cover crop	20	55	20	85	20	115	20	165	3

Corn Silage after Alfalfa	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	5	15	10	0	15	0	20	0	7
Spring Incorporation within 1 week	10	0	15	0	20	0	25	0	5
Spring No Incorporation	20	0	25	0	30	0	35	30	3
Fall	20	0	25	0	30	0	35	30	3
Winter with cover crop	10	0	15	0	15	0	20	20	6
Winter No cover crop	20	0	20	15	20	35	20	75	3

Beef Steer

Crop Phosphorus Removal Based Manure Application Rates

Corn Silage after Soybeans	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Spring Incorporation within 1 day	10	0	15	0	15	0	20	10	7
Spring Incorporation within 1 week	15	0	20	0	20	10	30	0	5
Spring No Incorporation	20	15	25	20	30	25	35	50	3
Fall	20	15	25	20	30	25	35	50	3
Winter with cover crop	15	0	15	0	20	0	20	40	6
Winter No cover crop	20	15	20	35	20	55	20	95	3

Grass Hay	Yield Groups (ton/A)								
	3-4		4.1-5		5.1-6		6.1-7		
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Spring Incorporation within 1 day	10	40	15	35	20	30	20	190	7
Spring Incorporation within 1 week	10	60	15	65	20	70	20	230	5
Spring No Incorporation	10	80	15	100	20	115	20	275	3
Fall	10	80	15	100	20	115	20	275	3
Winter with cover crop	10	55	15	55	20	60	20	220	6
Winter No cover crop	10	80	15	100	20	115	20	275	3

Small Grains	Yield Groups (bu/A)								
	60-75		76-90		91-105		106-130		
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Spring Incorporation within 1 day	15	0	15	35	20	30	10	10	7
Spring Incorporation within 1 week	15	35	15	65	20	70	15	0	5
Spring No Incorporation	15	70	15	100	20	115	20	25	3
Fall	15	70	15	100	20	115	20	25	3
Winter with cover crop	15	25	15	55	20	60	15	0	6
Winter No cover crop	15	70	15	100	20	115	20	25	3

No more than 9000 gal/A of liquid manure can be applied in a single application.
Spilt higher rates into multiple applications.

Horse
Crop Phosphorus Removal Based Manure Application Rates

Corn Grain	Yield Groups (bu/A)								Manure Application Rate Adjustment
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	10	50	15	50	15	80	20	80	6
Spring Incorporation within 1 week	10	70	15	75	15	105	20	115	4
Spring No Incorporation	10	85	15	105	15	135	20	150	2
Fall	10	85	15	105	15	135	20	150	2
Winter with cover crop	10	60	15	70	15	100	20	105	5
Winter No cover crop	10	85	15	105	15	135	20	150	2

Corn Grain after Alfalfa	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	10	0	10	10	15	0	20	0	6
Spring Incorporation within 1 week	10	0	15	0	15	25	20	25	4
Spring No Incorporation	10	25	15	35	15	55	20	60	2
Fall	10	25	15	35	15	55	20	60	2
Winter with cover crop	10	0	15	0	15	20	20	15	5
Winter No cover crop	10	25	15	35	15	55	20	60	2

Corn Grain after Soybeans	Yield Groups (bu/A)								
	100-130		131-160		161-190		191-220		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	10	10	15	0	15	20	20	10	6
Spring Incorporation within 1 week	10	30	15	25	15	45	20	45	4
Spring No Incorporation	10	45	15	55	15	75	20	80	2
Fall	10	45	15	55	15	75	20	80	2
Winter with cover crop	10	20	15	20	15	40	20	35	5
Winter No cover crop	10	45	15	55	15	75	20	80	2

Corn Silage	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	20	0	25	0	30	0	35	10	6
Spring Incorporation within 1 week	20	25	25	35	30	45	35	75	4
Spring No Incorporation	20	60	25	80	30	100	35	135	2
Fall	20	60	25	80	30	100	35	135	2
Winter with cover crop	20	15	20	45	20	75	20	125	5
Winter No cover crop	20	60	20	90	20	120	20	170	2

Corn Silage after Alfalfa	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	10	0	10	10	15	0	20	10	6
Spring Incorporation within 1 week	10	0	15	0	20	0	30	0	4
Spring No Incorporation	20	0	25	0	30	20	35	45	2
Fall	20	0	25	0	30	20	35	45	2
Winter with cover crop	10	0	15	0	20	0	20	35	5
Winter No cover crop	20	0	20	20	20	40	20	80	2

Horse

Crop Phosphorus Removal Based Manure Application Rates

Corn Silage after Soybeans	Yield Groups (ton/A)								
	17-21		22-25		26-29		30-33		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	10	10	15	0	20	0	25	0	6
Spring Incorporation within 1 week	15	0	20	0	25	0	35	0	4
Spring No Incorporation	20	20	25	30	30	40	35	65	2
Fall	20	20	25	30	30	40	35	65	2
Winter with cover crop	15	0	20	0	20	15	20	55	5
Winter No cover crop	20	20	20	40	20	60	20	100	2

Grass Hay	Yield Groups (ton/A)								
	3-4		4.1-5		5.1-6		6.1-7		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	10	50	15	50	20	50	20	210	6
Spring Incorporation within 1 week	10	70	15	75	20	85	20	245	4
Spring No Incorporation	10	85	15	105	20	120	20	280	2
Fall	10	85	15	105	20	120	20	280	2
Winter with cover crop	10	60	15	70	20	75	20	235	5
Winter No cover crop	10	85	15	105	20	120	20	280	2

Small Grains	Yield Groups (bu/A)								
	60-75		76-90		91-105		106-130		For each Ton/A less than the rate in the table, apply lbs. N fertilizer listed below.
Manure Application Method	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	Manure ton/A	Fert N lb/A	
Spring Incorporation within 1 day	15	20	15	50	20	50	15	0	6
Spring Incorporation within 1 week	15	45	15	75	20	85	20	0	4
Spring No Incorporation	15	75	15	105	20	120	20	30	2
Fall	15	75	15	105	20	120	20	30	2
Winter with cover crop	15	40	15	70	20	75	15	0	5
Winter No cover crop	15	75	15	105	20	120	20	30	2

No more than 9000 gal/A of liquid manure can be applied in a single application.
Spilt higher rates into multiple applications.