

**State of North Carolina**  
**Department of Environment and Natural Resources**  
**Division of Water Quality**  
**Animal Feeding Operations Permit Application Form**  
*(THIS FORM MAY BE PHOTOCOPIED FOR USE AS AN ORIGINAL)*  
**NPDES General Permit - Existing Animal Waste Operations**

**1. GENERAL INFORMATION:**

- 1.1 Facility name: Small Acres Dairy
- 1.2 Print Land Owner's name: Mike Corn
- 1.3 Mailing address: 735 Butler Bridge Road  
 City, State: Fletcher, NC Zip: 28732  
 Telephone number (include area code): ( 828 ) 684 - 0475
- 1.4 Physical address: 1470 Jeffress Road  
 City, State: Mills River, NC Zip: 28759  
 Telephone number (include area code): ( \_\_\_\_\_ ) \_\_\_\_\_ - \_\_\_\_\_
- 1.5 County where facility is located: Henderson
- 1.6 Facility location (directions from nearest major highway, using SR numbers for state roads): From Hendersonville take exit 44. Turn right onto Hendersonville Road toward Asheville, Turn left onto Butler Bridge Road. Turn Left onto Jeffress Road (Co Rd 1345). Dairy is on right.
- 1.7 Farm Manager's name (if different from Land Owner): \_\_\_\_\_
- 1.8 Lessee's / Integrator's name (if applicable; circle which type is listed): \_\_\_\_\_
- 1.9 Facility's original start-up date: 1/1/02 is when Mike took over Date(s) of facility expansion(s) (if applicable): \_\_\_\_\_

**2. OPERATION INFORMATION:**

2.1 Facility number: 45-07

2.2 Operation Description:

Please enter the Design Capacity of the system. The "No. of Animals" should be the maximum number for which the waste management structures were designed.

<u>Type of Swine</u>	<u>No. of Animals</u>	<u>Type of Poultry</u>	<u>No. of Animals</u>	<u>Type of Cattle</u>	<u>No. of Animals</u>
<input type="checkbox"/> Wean to Feeder	_____	<input type="checkbox"/> Layer	_____	<input type="checkbox"/> Beef Brood Cow	_____
<input type="checkbox"/> Feeder to Finish	_____	<input type="checkbox"/> Non-Layer	_____	<input type="checkbox"/> Beef Feeder	_____
<input type="checkbox"/> Farrow to Wean (# sow)	_____	<input type="checkbox"/> Turkey	_____	<input type="checkbox"/> Beef Stocker Calf	_____
<input type="checkbox"/> Farrow to Feeder (# sow)	_____	<input type="checkbox"/> Turkey Poults	_____	<input type="checkbox"/> Dairy Calf	_____
<input type="checkbox"/> Farrow to Finish (# sow)	_____			<input type="checkbox"/> Dairy Heifer	_____
<input type="checkbox"/> Wean to Finish (# sow)	_____			<input type="checkbox"/> Dry Cow	_____
<input type="checkbox"/> Gilts	_____			<input checked="" type="checkbox"/> Milk Cow	<u>250 Holstein or</u>
					<u>350 Jerseys (= same amount of SSLW)</u>
<input type="checkbox"/> Boar/Stud	_____				

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2.3 Acreage cleared and available for application (excluding all required buffers and areas not covered by the application system): 362.54 Required Acreage (as listed in the CAWMP): If applied at agronomic rates, there would be a deficit of 9.2 million gallons of slurry/liquid waste. There would be another deficit of 1,000 tons of solid waste. There is more than enough acres to apply waste to for this plan.

2.4 Number of lagoons: \_\_\_\_\_ Total Capacity (cubic feet): \_\_\_\_\_ Required Capacity (cubic feet): \_\_\_\_\_  
 Number of Storage Ponds: 2

1) Total Capacity (cubic feet): Waste Water 100,710 Required Capacity (cubic feet): 81,630 (60 days of storage)

2) Total Capacity (cubic feet): Solid Waste 47,510 Required Capacity (cubic feet): 44,579 (80 days of storage)

2.5 Are subsurface drains present within 100' of any of the application fields? YES or NO (circle one)

2.6 Are subsurface drains present in the vicinity or under the waste management system? YES or NO (circle one)

2.7 Does this facility meet all applicable siting requirements? YES or NO (circle one)

**3. REQUIRED ITEMS CHECKLIST:**

Please indicate that you have included the following required items by signing your initials in the space provided next to each item.

3.1 One completed and signed original and two copies of the application for NPDES General Permit - Animal Waste Operations;

Applicants Initials

JRC

3.2 Three copies of a general location map indicating the location of the animal waste facilities and field locations where animal waste is land applied and a county road map with the location of the facility indicated;

JRC

3.3 Three copies of the entire Certified Animal Waste Management Plan (CAWMP). If the facility does not have a CAWMP, it must be completed prior to submittal of a permit application for animal waste operations.

JRC

The CAWMP **must** include the following components. *Some of these components may not have been required at the time the facility was certified but should be added to the CAWMP for permitting purposes:*

- 3.3.1 The Waste Utilization Plan (WUP) must include the amount of Plant Available Nitrogen (PAN) produced and utilized by the facility
- 3.3.2 The method by which waste is applied to the disposal fields (e.g. irrigation, injection, etc.)
- 3.3.3 A map of every field used for land application
- 3.3.4 The soil series present on every land application field
- 3.3.5 The crops grown on every land application field
- 3.3.6 The Realistic Yield Expectation (RYE) for every crop shown in the WUP
- 3.3.7 The PAN applied to every land application field
- 3.3.8 The waste application windows for every crop utilized in the WUP
- 3.3.9 The required NRCS Standard specifications
- 3.3.10 A site schematic
- 3.3.11 Emergency Action Plan
- 3.3.12 Insect Control Checklist with chosen best management practices noted
- 3.3.13 Odor Control Checklist with chosen best management practices noted
- 3.3.14 Mortality Control Checklist with the selected method noted
- 3.3.15 Lagoon/storage pond capacity documentation (design, calculations, etc.); please be sure to include any site evaluations, wetland determinations, or hazard classifications that may be applicable to your facility
- 3.3.16 Operation and Maintenance Plan

If your CAWMP includes any components not shown on this list, please include the additional components with your submittal. (Composting, waste transfers, etc.)

**4. APPLICANT'S CERTIFICATION:**

I, Mike Corn (Land Owner's name listed in question 1.2), attest that this application for Small Acres Dairy (Facility name listed in question 1.1) has been reviewed by me and is accurate and complete to the best of my knowledge. I understand that if all required parts of this application are not completed and that if all required supporting information and attachments are not included, this application package will be returned to me as incomplete.

Signature *Michael R. Corn* Date 10-1-12

**5. MANAGER'S CERTIFICATION:** (complete only if different from the Land Owner)

I, \_\_\_\_\_ (Manager's name listed in question 1.6), attest that this application for \_\_\_\_\_ (Facility name listed in question 1.1) has been reviewed by me and is accurate and complete to the best of my knowledge. I understand that if all required parts of this application are not completed and that if all required supporting information and attachments are not included, this application package will be returned as incomplete.

Signature \_\_\_\_\_ Date \_\_\_\_\_

THE COMPLETED APPLICATION PACKAGE, INCLUDING ALL SUPPORTING INFORMATION AND MATERIALS, SHOULD BE SENT TO THE FOLLOWING ADDRESS:

**NORTH CAROLINA DIVISION OF WATER QUALITY  
AQUIFER PROTECTION SECTION  
ANIMAL FEEDING OPERATIONS UNIT  
1636 MAIL SERVICE CENTER  
RALEIGH, NORTH CAROLINA 27699-1636  
TELEPHONE NUMBER: (919) 733-3221  
FAX NUMBER: (919) 715-6048**

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6. SURFACE WATER CLASSIFICATION:

This form must be completed by the appropriate DWQ regional office and included as a part of the project submittal information.

INSTRUCTIONS TO NC PROFESSIONALS:

The classification of the downslope surface waters (the surface waters that any overflow from the facility would flow toward) in which this animal waste management system will be operated must be determined by the appropriate DWQ regional office. Therefore, you are required, prior to submittal of the application package, to submit this form, with items 1 through 6 completed, to the appropriate Division of Water Quality Regional Aquifer Protection Supervisor (see page 6 of 10). At a minimum, you must include an 8.5" by 11" copy of the portion of a 7.5 minute USGS Topographic Map which shows the location of this animal waste application system and the downslope surface waters in which they will be located. Identify the closest downslope surface waters on the attached map copy. Once the regional office has completed the classification, reincorporate this completed page and the topographic map into the complete application form and submit the application package.

6.1 Farm Name: Small Acres Dairy

6.2 Name & complete address of engineering firm: \_\_\_\_\_

Telephone number: ( \_\_\_\_\_ ) \_\_\_\_\_ - \_\_\_\_\_

6.3 Name of closest downslope surface waters: Unnamed tributary to French Broad River

6.4 County(ies) where the animal waste management system and surface waters are located: Henderson

6.5 Map name and date: Skyland quadrangle 1991

6.6 NC Professional's Seal (If appropriate), Signature, and Date:

TO: REGIONAL AQUIFER PROTECTION SUPERVISOR

Please provide me with the classification of the watershed where this animal waste management facility will be or has been constructed or field located, as identified on the attached map segment(s):

Name of surface waters: Unnamed tributary to French Broad River

Classification (as established by the Environmental Management Commission): \_\_\_\_\_ Class "C" \_\_\_\_\_

Proposed classification, if applicable: \_\_\_\_\_

Signature of regional office personnel: Ed Walker Date: 7/11/2011

(All attachments must be signed)

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Michael F. Easley, Governor  
William G. Ross Jr., Secretary  
North Carolina Department of Environment and Natural Resources  
Alan W. Klimek, P. E., Director  
Division of Water Quality

October 1, 2004

Michael R. Corn  
Small Acres Dairy  
735 Butler Bridge Rd  
Fletcher NC 28732

Subject: Certificate of Coverage No. AWC450007  
Small Acres Dairy  
Cattle Waste Collection, Treatment,  
Storage and Application System  
Henderson County

Dear Michael R. Corn:

On June 11, 2004, the North Carolina Division of Water Quality (Division) issued a revised State General Permit for swine facilities. The General Permit was issued in accordance with the directive of Senate Bill 733 (Session Law 2003-28).

In accordance with your application received on January 28, 2003 and in accordance with the directive of Senate Bill 733, we are hereby forwarding to you this Certificate of Coverage (COC) issued to Michael R. Corn, authorizing the operation of the subject animal waste collection, treatment, storage and land application system in accordance with General Permit AWG200000. The issuance of this COC supercedes and terminates your previous COC Number AWC450007 which expires October 1, 2004.

This approval shall consist of the operation of this system including, but not limited to, the management of animal waste from the Small Acres Dairy, located in Henderson County, with an animal capacity of no greater than an **annual average of 250 Dairy** cattle and the application to land as specified in the facility's Certified Animal Waste Management Plan (CAWMP).

The COC shall be effective from the date of issuance until September 30, 2009. Pursuant to this COC, you are authorized and required to operate the system in conformity with the conditions and limitations as specified in the General Permit, the facility's CAWMP, and this COC. An adequate system for collecting and maintaining the required monitoring data and operational information must be established for this facility. Any increase in waste production greater than the certified design capacity or increase in number of animals authorized by this COC (as provided above) will require a modification to the CAWMP and this COC and must be completed prior to actual increase in either wastewater flow or number of animals.

Please carefully read this COC and the enclosed State General Permit. Since this is a revised State General Permit, it contains new requirements in addition to most of the conditions contained in the previous State General Permit. Enclosed for your convenience is a package containing the new and revised forms used for record keeping and reporting. Please pay careful attention to the record keeping and monitoring conditions in this permit.

If your Waste Utilization Plan has been developed based on site specific information, careful evaluation of future samples is necessary. Should your records show that the current Waste Utilization Plan is inaccurate you will need to have a new Waste Utilization Plan developed.

COC ~  
Existing  
S

The issuance of this COC does not excuse the Permittee from the obligation to comply with all applicable laws, rules, standards, and ordinances (local, state, and federal), nor does issuance of a COC to operate under this permit convey any property rights in either real or personal property.

Upon abandonment or depopulation for a period of four years or more, the Permittee must submit documentation to the Division demonstrating that all current NRCS standards are met prior to restocking of the facility.

Per 15A NCAC 2H .0225(c) a compliance boundary is provided for the facility and no new water supply wells shall be constructed within the compliance boundary. Per NRCS standards a 100 foot separation shall be maintained between water supply wells and any lagoon, storage pond, or any wetted area of a spray field.

Please be advised that any violation of the terms and conditions specified in this COC, the General Permit or the CAWMP may result in the revocation of this COC, or penalties in accordance with NCGS 143-215.6A through 143-215.6C including civil penalties, criminal penalties, and injunctive relief.

If you wish to continue the activity permitted under the General Permit after the expiration date of the General Permit, an application for renewal must be filed at least 180 days prior to expiration.

This COC is not automatically transferable. A name/ownership change application must be submitted to the Division prior to a name change or change in ownership.

If any parts, requirements, or limitations contained in this COC are unacceptable, you have the right to apply for an individual permit by contacting the staff member listed below for information on this process. Unless such a request is made within 30 days, this COC shall be final and binding.

This facility is located in a county covered by our Asheville Regional Office. The Regional Office Water Quality Staff may be reached at (828) 296-4500. If you need additional information concerning this COC or the General Permit, please contact J.R. Joshi at (919) 715-6698.

Sincerely,



for Alan W. Klimek, P.E.

Enclosures (General Permit AWG200000)

cc: (Certificate of Coverage only for all cc's)  
Asheville Regional Office, Aquifer Protection Section  
Henderson County Health Department  
Henderson County Soil and Water Conservation District  
Permit File AWC450007  
APS Central Files

# Nutrient Management Plan For Animal Waste Utilization

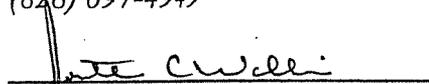
01-08-2013

## This plan has been prepared for:

*Small Acres Dairy*  
*Michael R. Corn*  
*735 Butler Bridge Rd.*  
*Fletcher, NC 28732*  
*(828) 684-0475*

## This plan has been developed by:

*Jonathan C. Wallin*  
*Soil & Water Conservation District*  
*61 Triple Springs Rd.*  
*Hendersonville, NC 28792*  
*(828) 697-4949*

  
Developer Signature

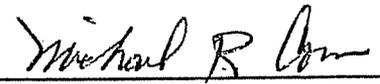
**Type of Plan:** Nutrient Management with Both Manure and Fertilizer

## Owner/Manager/Producer Agreement

I (we) understand and agree to the specifications and the operation and maintenance procedures established in this nutrient management plan which includes an animal waste utilization plan for the farm named above. I have read and understand the Required Specifications concerning animal waste management that are included with this plan.

  
Signature (owner)

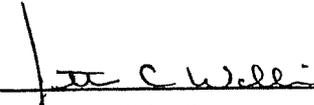
1-8-13  
Date

  
Signature (manager or producer)

1-8-13  
Date

This plan meets the minimum standards and specifications of the U.S. Department of Agriculture - Natural Resources Conservation Service or the standard of practices adopted by the Soil and Water Conservation Commission.

Plan Approved By:

  
Technical Specialist Signature

1/8/13  
Date

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**Nutrients applied in accordance with this plan will be supplied from the following source(s):**

Commercial Fertilizer is included in this plan.

U4	Small Acres Dairy Slurry Pond waste generated 708,000 gals/year by a 250 animal Dairy (Milk Cow) Liquid Manure Slurry operation. This production facility has waste storage capacities of approximately 90 days.				
Estimated Pounds of Plant Available Nitrogen Generated per Year					
Broadcast	8630				
Incorporated	11768				
Injected	13337				
Irrigated	7845				
	Max. Avail. PAN (lbs) *	Actual PAN Applied (lbs)	PAN Surplus/Deficit (lbs)	Actual Volume Applied (Gallons)	Volume Surplus/Deficit (Gallons)
Year 1	8,630	41771	-33,141	3,428,322	-2,720,322

U5	Small Acres Liquid Waste Pond waste generated 1,206,000 gals/year by a 250 animal Dairy (Milk Cow) Lagoon Liquid operation. This production facility has waste storage capacities of approximately 60 days.				
Estimated Pounds of Plant Available Nitrogen Generated per Year					
Broadcast	2048				
Incorporated	3182				
Injected	3443				
Irrigated	2179				
	Max. Avail. PAN (lbs) *	Actual PAN Applied (lbs)	PAN Surplus/Deficit (lbs)	Actual Volume Applied (Gallons)	Volume Surplus/Deficit (Gallons)
Year 1	2,078	13164	-11,086	7,732,620	-6,526,620

Note: In source ID, S means standard source, U means user defined source.

\* Max. Available PAN is calculated on the basis of the actual application method(s) identified in the plan for this source.

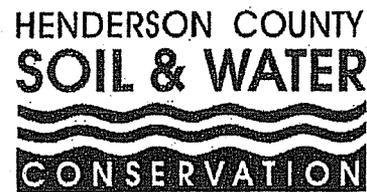
U6	Small Acres Dairy Solid Manure from Concrete Pit waste generated 1,912.50 tons/year by a 250 animal Dairy (Milk Cow) Solid operation.				
Estimated Pounds of Plant Available Nitrogen Generated per Year					
Broadcast	8224				
Incorporated	10901				
Injected	N/A				
Irrigated	N/A				
	Max. Avail. PAN (lbs) *	Actual PAN Applied (lbs)	PAN Surplus/Deficit (lbs)	Actual Quantity Applied (Tons)	Surplus/Deficit (Tons)
Year 1	8,224	12659	-4,435	2,945.68	-1,033.18

This plan includes a User Defined Source to determine the total pounds of PAN in lieu of NRCS Standard values. Refer to North Carolina Cooperative Extension Service publication AG-439-42 entitled "Soil Facts: Use of On-Farm Records for Modifying a Certified Animal Waste Management Plan" for guidance on using on-farm records to develop a User Defined Source.

Note: In source ID, S means standard source, U means user defined source.

\* Max. Available PAN is calculated on the basis of the actual application method(s) identified in the plan for this source.

Henderson County Soil & Water Conservation District  
61 Triple Springs Road  
Hendersonville, NC 28792  
(828) 697-4949 (828) 693-5832 (fax)  
<http://hendersoncountync.org/soil>



January 8, 2013

Mr. J. R. Joshi  
NCDENR - DWQ  
1636 Mail Service Center  
Raleigh NC, 27699-1636

Dear Mr. Joshi:

The Henderson County Soil & Water Conservation and the NC Division of Soil & Water Conservation have been assisting Small Acres Dairy with their NPDES permit application. Please see below the response to each of the additional information requests that you had concerning the application:

1. Phosphorus Calculation: NCANAT version 2.04 was used calculating the PLAT for each field. Please find the information enclosed.
2. Site Map: An updated 'as built' site map of the facility is enclosed.
3. Setback Map: The 'as built' map of the facility includes the only spray filed that is part of the plan. A 35-foot setback is noted due to a vegetative buffer being established.
4. Nutrient Management Plan: User defined RYEs were used for fields that have Kinkora soils when growing small grain (silage). This is due to lack of small grain (silage) information in the Nutrient Management software for the Kinkora soils. When determining what RYE to use, the Rosman soil was used for comparison. Rosman is very similar to Kinkora as each is a flood plain soil. Rosman has a RYE of 32 tons for corn (silage) and 12 tons for small grain (silage). Kinkora has a RYE of 16 tons for corn (silage) which is half the RYE for Kinkora, so half the Rosman RYE was used for the RYE of Kintora small grain (silage). This is how 6 tons was determined for Kinkora's RYE for small grain (silage).

The RYE for small grain (silage) on Toxaway soils was derived using the same process. Rosman soils information was used. Rosman has a RYE of 32 tons for corn (silage) and 12 tons for small grain (silage). Toxaway has a RYE of 28 tons for corn (silage), so in comparison 10 tons was established for small grain (silage) for Toxaway soils.



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The enclosed soils information came from Dr Crouse's web site at NC State University

<http://nutrients.soil.ncsu.edu/index.htm>

The user defined application dates were established to allow Small Acres to apply waste in a wider window. This will allow them to get the maximum amount of nutrients applied to the crops so that maximum yields can be met. These application windows are not out of line as long as waste is applied in the proper manner during allowable times.

5. Field Map: The correct acreage has been updated in the plan.

Sincerely



Jonathan Wallin

Director

Henderson County Soil & Water Conservation District

Enclosures:

cc. file

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Aquifer Protection Section

## Narrative

Small Acres Dairy is permitted for 250 milking cows based on a 1,400 per head average weight for each individual Holstein per NRCS Technical Guide, Section IV, 633 Waste Utilization. According to the North Carolina General Permit No. AWG200000 the Steady State Live Weight (SSLW) for 250 Holstein milking cows is 350,000 lbs. ( $250 \times 1,400 = 350,000$ ). This (350,000) is the maximum that is allowed to remain in compliance. Small Acres Dairy is only milking Jersey cows. The SSLW for Jersey milking cows (1,000 lbs each) shall not exceed 350,000 lbs in order to remain in compliance with the General Permit.  $350,000/1,000 = 350$  Jersey's maximum to remain in compliance with the SSLW in the North Carolina General Permit No. AWG200000. Based on the SSLW Small Acres is in compliance as long as there are less than 350 Jerseys being milked.

The milking cows at this operation are confined to freestalls. Waste will be scraped into two manure storage structures. Milk parlor runoff and all runoff from the freestall area will flow into a holding pond. Manure will be loaded into a manure spreader and spread onto cropland. When the weather is too bad to spread manure on cropland, it can be spread onto the pastureland and hayland rented nearby.

Water from the holding pond will be irrigated on 4.6 wettable acres of grassland adjacent to the pond (Tract 33632, field 3). When waste analysis shows PAN in holding pond water in excess of that needed by field 3, the excess will be hauled to other fields. Waste may be broadcast on the remaining useable acres of this field as long as the waste is not broadcast within 25 feet of perennial water or allowed to reach the public right-of way.

Spreading method is broadcast on all fields except field 3 of Tract 33632 which is irrigation.

Note: User Defined Sources were developed using an Excel Spreadsheet developed by S. Bingham for nutrient management planning.

Small Acres Dairy Slurry Pond based on 45% collection rate and 2832 gal/head Annual Storage Volume per dairy animal.

Nutrient	N	P	K	Ca	Mg	S	Mn
Cu	B	CCE%					
ppm concentration	3319.55	898.8398	2671.894	1504.633	702.1293	456.8076	26.16486
	6.772081	30.92994	2.499513	0			

Small Acres Liquid Waste based on 10% collection rate and 120600 gal/head Annual Storage Volume per dairy animal.

Nutrient	N	P	K	Ca	Mg	S	Mn
Cu	B	CCE%					
ppm concentration	433.0647	117.2616	348.5721	196.2927	91.59896	59.59458	3.413436
	0.883478	4.035083	0.326084	0			

Small Acres Dairy Solid Manure form Concrete Pit. Volume = 17, Collection rate 45% totaling 7.65 T/Head

Nutrient	DM%	N	P	K	Ca	Mg	S	Mn
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## Narrative

Cu	Zn	B	CCE%						
ppm concentration		18.32	27293	7389	19787	13654	6004.7	4531.93	234.52
45.39	192.49	23.02	0						

Note: Soil Samples used for plan were taken by Small Acres Dairy. Fields associated with each sample was identified by Mike Corn

The table shown below provides a summary of the crops or rotations included in this plan for each field. Realistic Yield estimates are also provided for each crop, as well as the crop's P2O5 Removal Rate. The Leaching Index (LI) and the Phosphorous Loss Assessment Tool (PLAT) Rating are also provided for each field, where available.

If a field's PLAT Rating is High, any planned manure application is limited to the phosphorous removal rate of the harvested plant biomass for the crop rotation or multiple years in the crop sequence. Fields with a Very High PLAT Rating should receive no additional applications of manure. Regardless of the PLAT rating, starter fertilizers may be recommended in accordance with North Carolina State University guidelines or recommendations. The quantity of P2O5 applied to each crop is shown in the following table if the field's PLAT rating is High or Very High.

### Planned Crops Summary

Tract	Field	Total Acres	Useable Acres	Plat Rating	LI	Soil Series	Crop Sequence	RYE	P2O5	
									Removal (lbs/acre)	Applied (lbs/acre)
221	2	9.85	9.85	Medium	N/A	Hayesville	Small Grain, Silage	11.4 Tons	62	N/A
							Corn, Silage	17.1 Tons	58	N/A
221	3	2.38	2.38	Medium	N/A	Hayesville	Small Grain, Silage	11.4 Tons	62	N/A
							Corn, Silage	17.1 Tons	58	N/A
29	1	5.98	5.53	Medium	N/A	Toxaway	Small Grain, Silage	10.0 Tons	54	N/A
							Corn, Silage	28.0 Tons	95	N/A
33632	3	9.00	4.60	Low	20.0	Toxaway	Fescue Pasture	3.5 Tons	6	N/A
34170	10	8.10	7.81	High	20.0	Toxaway	Small Grain, Silage	10.0 Tons	54	0
							Corn, Silage	28.0 Tons	95	138
34170	11	3.90	3.70	High	20.0	Toxaway	Small Grain, Silage	10.0 Tons	54	0
							Corn, Silage	28.0 Tons	95	138
34171	9	6.20	5.74	Medium	202.0	Rosman	Small Grain, Silage	12.0 Tons	65	N/A
							Corn, Silage	32.0 Tons	109	N/A
34172	1	5.93	5.93	High	15.0	Kinkora	Small Grain, Silage	*6.0 Tons	32	32
							Corn, Silage	16.0 Tons	54	54
34172	12	4.30	4.00	Low	25.0	Rosman	Small Grain, Silage	12.0 Tons	65	N/A
							Corn, Silage	32.0 Tons	109	N/A
34172	2	11.70	11.33	High	20.0	Kinkora	Small Grain, Silage	*6.0 Tons	32	32
							Corn, Silage	16.0 Tons	54	54
34172	3	3.90	3.65	Low	25.0	Rosman	Small Grain, Silage	12.0 Tons	65	N/A
							Corn, Silage	32.0 Tons	109	N/A
34228	1	14.17	13.62	High	N/A	Codorus	Small Grain, Silage	10.0 Tons	54	54
							Corn, Silage	26.0 Tons	88	88
34228	2	6.72	5.98	High	N/A	Codorus	Small Grain, Silage	10.0 Tons	54	54
							Corn, Silage	26.0 Tons	88	88
34295	2	5.14	5.14	Medium	N/A	Toxaway	Small Grain, Silage	10.0 Tons	54	N/A
							Corn, Silage	28.0 Tons	95	N/A
34492	1	4.04	4.04	Low	N/A	Fannin	Fescue Hay	2.0 Tons	31	N/A

Planned Crops Summary

Tract	Field	Total Acres	Useable Acres	Plat Rating	LI	Soil Series	Crop Sequence	RYE	P2O5	
									Removal (lbs/acre)	Applied (lbs/acre)
34492	2	3.47	3.47	Medium	N/A	Hayesville	Fescue Hay	5.2 Tons	82	N/A
34492	3	2.05	2.05	Medium	N/A	Codorus	Fescue Hay	4.5 Tons	71	N/A
544	1	46.40	46.40	Low	N/A	Rosman	Small Grain, Silage	12.0 Tons	65	N/A
							Corn, Silage	32.0 Tons	109	N/A
547	1	9.59	9.00	Low	N/A	Elsinboro	Fescue Pasture	4.9 Tons	8	N/A
549	1	14.10	12.75	Low	20.0	Rosman	Small Grain, Silage	12.0 Tons	65	N/A
							Corn, Silage	32.0 Tons	109	N/A
549	2	7.20	7.20	Medium	15.0	Codorus	Fescue Hay	4.4 Tons	69	N/A
549	3	4.00	4.00	Medium	15.0	Codorus	Small Grain, Silage	N/A	0	N/A
							Corn, Silage	25.5 Tons	87	N/A
580	5	1.61	1.00	Medium	N/A	Delanco	Small Grain, Silage	7.5 Tons	41	N/A
							Corn, Silage	23.0 Tons	78	N/A
605	1	12.90	12.01	High	15.0	Kinkora	Small Grain, Silage	*6.0 Tons	32	32
							Corn, Silage	16.0 Tons	54	54
605	2	16.50	15.34	High	15.0	Kinkora	Small Grain, Silage	*6.0 Tons	32	32
							Corn, Silage	16.0 Tons	54	54
639	2	32.49	32.49	Medium	N/A	Delanco	Small Grain, Silage	7.5 Tons	41	N/A
							Corn, Silage	23.0 Tons	78	N/A
639	5	31.84	31.84	Medium	N/A	Delanco	Small Grain, Silage	7.5 Tons	41	N/A
							Corn, Silage	23.0 Tons	78	N/A
639	6	5.54	5.54	Low	N/A	Bradson	Small Grain, Silage	11.8 Tons	64	N/A
							Corn, Silage	17.6 Tons	60	N/A
639	7	14.13	14.13	Medium	N/A	Bradson	Small Grain, Silage	11.8 Tons	64	N/A
							Corn, Silage	17.6 Tons	60	N/A
859	1	7.00	7.00	Low	N/A	Toxaway	Fescue Hay	3.5 Tons	55	N/A
859	2	17.00	16.51	Low	20.0	Toxaway	Fescue Hay	3.5 Tons	55	N/A
859	3	13.60	13.08	Low	20.0	Toxaway	Fescue Hay	3.5 Tons	55	N/A
859	4	20.23	20.23	Low	N/A	Toxaway	Fescue Hay	3.5 Tons	55	N/A
859	6	6.61	6.61	Medium	N/A	Toxaway	Fescue Hay	3.5 Tons	55	N/A
859	7	7.89	7.89	Medium	N/A	Toxaway	Fescue Hay	3.5 Tons	55	N/A

PLAN TOTALS: 375.46 361.84

<i>LI</i>	<i>Potential Leaching</i>	<i>Technical Guidance</i>
< 2	Low potential to contribute to soluble nutrient leaching below the root zone.	None
$\geq 2$ & $\leq 10$	Moderate potential to contribute to soluble nutrient leaching below the root zone.	Nutrient Management (590) should be planned.
> 10	High potential to contribute to soluble nutrient leaching below the root zone.	Nutrient Management (590) should be planned. Other conservation practices that improve the soils available water holding capacity and improve nutrient use efficiency should be considered. Examples are Cover Crops (340) to scavenge nutrients, Sod-Based Rotations (328), Long-Term No-Till (778), and edge-of-field practices such as Filter Strips (393) and Riparian Forest Buffers (391).

<i>PLAT Index</i>	<i>Rating</i>	<i>P Management Recommendation</i>
0 - 25	Low	No adjustment needed; N based application
25 - 50	Medium	No adjustment needed; N based application
51 - 100	High	Application limited to crop P removal
> 100	Very High	Starter P application only

The Waste Utilization table shown below summarizes the waste utilization plan for this operation. This plan provides an estimate of the number of acres of cropland needed to use the nutrients being produced. The plan requires consideration of the realistic yields of the crops to be grown, their nutrient requirements, and proper timing of applications to maximize nutrient uptake.

This table provides an estimate of the amount of nitrogen required by the crop being grown and an estimate of the nitrogen amount being supplied by manure or other by-products, commercial fertilizer and residual from previous crops. An estimate of the quantity of solid and liquid waste that will be applied on each field in order to supply the indicated quantity of nitrogen from each source is also included. A balance of the total manure produced and the total manure applied is included in the table to ensure that the plan adequately provides for the utilization of the manure generated by the operation.

Waste Utilization Table

Year 1

Tract	Field	Source ID	Soil Series	Total Acres	Use Acres	Crop	RYE	Applic. Period	Nitrogen PA Nutrient Req'd (lbs/A)	Comn. Fert. Applied (lbs/A)		Res. (lbs/A)	Applic. Method	Manure PA Nutrients Applied (lbs/A)	Liquid Manure Applied (acre)	Solid Manure Applied (acre)	Liquid Manure Applied (Field)	Solid Manure Applied (Field)
										N	N							
221	2	U4	Hayesville	9.85	9.85	Small Grain, Silage	11.4 Ton	9/1-3/31	121	0	0	0	Broad.	121	9.93	0.00	97.78	0.00
221	2	U4	Hayesville	9.85	9.85	Corn, Silage	17.1 Ton	*2/15-6/30	178	0	0	0	Broad.	178	14.60	0.00	143.85	0.00
221	3	U4	Hayesville	2.38	2.38	Small Grain, Silage	11.4 Ton	9/1-3/31	121	0	0	0	Broad.	121	9.93	0.00	23.63	0.00
221	3	U4	Hayesville	2.38	2.38	Corn, Silage	17.1 Ton	*2/15-6/30	178	0	0	0	Broad.	178	14.60	0.00	34.76	0.00
29	1	U6	Toxaway	5.98	5.53	Small Grain, Silage	*10.0 To	9/1-3/31	*103	0	0	0	Broad.	103	0.00	23.95	0.00	132.46
29	1	U6	Toxaway	5.98	5.53	Corn, Silage	28.0 Ton	*2/15-6/30	286	146	0	0	Broad.	140	0.00	32.56	0.00	180.04
33632	3	U5	Toxaway	9.00	4.60	Fescue Pasture	3.5 Tons	8/1-7/31	108	0	0	0	Irrig.	108	59.77	0.00	274.94	0.00
34170	10	U4	Toxaway	8.10	7.81	Small Grain, Silage	*10.0 To	9/1-3/31	*103	103	0	0	Broad.	0	0.00	0.00	0.00	0.00
34170	10	U4	Toxaway	8.10	7.81	Corn, Silage	28.0 Ton	*2/15-6/30	286	146	0	0	Broad.	140	11.49	0.00	89.71	0.00
34170	11	U4	Toxaway	3.90	3.70	Small Grain, Silage	*10.0 To	9/1-3/31	*103	103	0	0	Broad.	0	0.00	0.00	0.00	0.00
34170	11	U4	Toxaway	3.90	3.70	Corn, Silage	28.0 Ton	*2/15-6/30	286	146	0	0	Broad.	140	11.49	0.00	42.50	0.00
34171	9	U6	Rosman	6.20	5.74	Small Grain, Silage	12.0 Ton	9/1-3/31	133	0	0	0	Broad.	133	0.00	30.93	0.00	177.54
34171	9	U4	Rosman	6.20	5.74	Corn, Silage	32.0 Ton	*2/15-6/30	349	209	0	0	Broad.	140	11.49	0.00	65.93	0.00
34172	1	U4	Kinkora	5.93	5.93	Small Grain, Silage	*6.0 Ton	9/1-3/31	*64	41	0	0	Broad.	23	1.86	0.00	11.05	0.00
34172	1	U4	Kinkora	5.93	5.93	Corn, Silage	16.0 Ton	*2/15-6/30	166	128	0	0	Broad.	38	3.14	0.00	18.64	0.00
34172	12	U6	Rosman	4.30	4.00	Small Grain, Silage	12.0 Ton	9/1-3/31	133	0	0	0	Broad.	133	0.00	30.93	0.00	123.71

Tract	Field	Source ID	Soil Series	Total Acres	Use Acres	Crop	Applic. Period	Nitrogen PA Nutrient Req'd Applied (lbs/A)		Comm. Fert. Nutrient Applied (lbs/A)		Res. (lbs/A)		Applic. Method	Manure PA Nutrient Applied (lbs/A)	Liquid Manure Applied (acre)	Solid Manure Applied (acre)	Liquid Manure Applied (Field) 1000 gals	Solid Manure Applied (Field) tons
								N		N		N							
34172	12	U6	Rosman	4.30	4.00	Corn, Silage	*2/15-6/30	349		209	0	0	Broad.	140	0.00	32.56	0.00	130.23	0.00
34172	2	U4	Kinkora	11.70	11.33	Small Grain, Silage	9/1-3/31	*64		41	0	0	Broad.	23	1.86	0.00	21.11	0.00	0.00
34172	2	U4	Kinkora	11.70	11.33	Corn, Silage	*2/15-6/30	166		128	0	0	Broad.	38	3.14	0.00	35.62	0.00	0.00
34172	3	U6	Rosman	3.90	3.65	Small Grain, Silage	9/1-3/31	133		0	0	0	Broad.	133	0.00	30.93	0.00	112.89	0.00
34172	3	U6	Rosman	3.90	3.65	Corn, Silage	*2/15-6/30	349		209	0	0	Broad.	140	0.00	32.56	0.00	118.84	0.00
34228	1	U4	Codorus	14.17	13.62	Small Grain, Silage	9/1-3/31	*106		68	0	0	Broad.	38	3.14	0.00	42.82	0.00	0.00
34228	1	U4	Codorus	14.17	13.62	Corn, Silage	*2/15-6/30	270		208	0	0	Broad.	62	5.12	0.00	69.78	0.00	0.00
34228	2	U4	Codorus	6.72	5.98	Small Grain, Silage	9/1-3/31	*106		68	0	0	Broad.	38	3.14	0.00	18.80	0.00	0.00
34228	2	U4	Codorus	6.72	5.98	Corn, Silage	*2/15-6/30	270		208	0	0	Broad.	62	5.12	0.00	30.64	0.00	0.00
34295	2	U6	Toxaway	5.14	5.14	Small Grain, Silage	9/1-3/31	*103		0	0	0	Broad.	103	0.00	23.95	0.00	123.12	0.00
34295	2	U4	Toxaway	5.14	5.14	Corn, Silage	*2/15-6/30	286		146	0	0	Broad.	140	11.49	0.00	59.04	0.00	0.00
34492	1	U4	Fannin	4.04	4.04	Fescue Hay	8/1-7/31	84		0	0	0	Broad.	84	6.89	0.00	27.84	0.00	0.00
34492	2	U4	Hayesville	3.47	3.47	Fescue Hay	8/1-7/31	219		0	0	0	Broad.	219	17.97	0.00	62.35	0.00	0.00
34492	3	U4	Codorus	2.05	2.05	Fescue Hay	8/1-7/31	190		0	0	0	Broad.	190	15.59	0.00	31.96	0.00	0.00
544	1	U5	Rosman	46.40	46.40	Small Grain, Silage	9/1-3/31	133		0	0	0	Broad.	133	78.30	0.00	3,633.23	0.00	0.00
544	1	U5	Rosman	46.40	46.40	Corn, Silage	*2/15-6/30	349		209	0	0	Broad.	140	82.42	0.00	3,824.45	0.00	0.00
547	1	U4	Elsinboro	9.59	9.00	Fescue Pasture	8/1-7/31	163		0	0	0	Broad.	163	13.37	0.00	120.36	0.00	0.00
549	1	U6	Rosman	14.10	12.75	Small Grain, Silage	9/1-3/31	133		0	0	0	Broad.	133	0.00	30.93	0.00	394.35	0.00
549	1	U6	Rosman	14.10	12.75	Corn, Silage	*2/15-6/30	349		209	0	0	Broad.	140	0.00	32.56	0.00	415.11	0.00
549	2	U4	Codorus	7.20	7.20	Fescue Hay	8/1-7/31	186		0	0	0	Broad.	186	15.26	0.00	109.87	0.00	0.00
549	3	U4	Codorus	4.00	4.00	Corn, Silage	*2/15-6/30	265		125	0	0	Broad.	140	11.49	0.00	45.94	0.00	0.00
580	5	U4	Delanco	1.61	1.00	Small Grain, Silage	9/1-3/31	81		0	0	0	Broad.	81	6.65	0.00	6.65	0.00	0.00

Waste Utilization Table

Year 1

Tract	Field	Source ID	Soil Series	Total Acres	Use. Acres	Crop	Applic. Period	Nitrogen PA Nutrient Req'd (lbs/A)	Comm. Fert. Nutrient Applied (lbs/A)	Res. (lbs/A)	Applic. Method	Manure PA Nutrient Applied (lbs/A)	Liquid Manure Applied (acre)	Solid Manure Applied (acre)	Liquid Manure Applied (Field)	Solid Manure Applied (Field)
580	5	U4	Delanco	1.61	1.00	Corn, Silage	*2/15-6/30	246	106	0	Broad.	140	11.49	0.00	11.49	0.00
605	1	U6	Kinkora	12.90	12.01	Small Grain, Silage	9/1-3/31	*64	42	0	Broad.	22	0.00	5.16	0.00	61.99
605	1	U6	Kinkora	12.90	12.01	Corn, Silage	*2/15-6/30	166	129	0	Broad.	37	0.00	8.71	0.00	104.61
605	2	U4	Kinkora	16.50	15.34	Small Grain, Silage	9/1-3/31	*64	41	0	Broad.	23	1.86	0.00	28.58	0.00
605	2	U4	Kinkora	16.50	15.34	Corn, Silage	*2/15-6/30	166	128	0	Broad.	38	3.14	0.00	48.23	0.00
639	2	U4	Delanco	32.49	32.49	Small Grain, Silage	9/1-3/31	81	0	0	Broad.	81	6.65	0.00	215.91	0.00
639	2	U4	Delanco	32.49	32.49	Corn, Silage	*2/15-6/30	246	106	0	Broad.	140	11.49	0.00	373.18	0.00
639	5	U4	Delanco	31.84	31.84	Small Grain, Silage	9/1-3/31	81	0	0	Broad.	81	6.65	0.00	211.59	0.00
639	5	U4	Delanco	31.84	31.84	Corn, Silage	*2/15-6/30	246	106	0	Broad.	140	11.49	0.00	365.72	0.00
639	6	U4	Bradson	5.54	5.54	Small Grain, Silage	9/1-3/31	125	0	0	Broad.	125	10.26	0.00	56.82	0.00
639	6	U4	Bradson	5.54	5.54	Corn, Silage	*2/15-6/30	183	43	0	Broad.	140	11.49	0.00	63.63	0.00
639	7	U6	Bradson	14.13	14.13	Small Grain, Silage	9/1-3/31	125	0	0	Broad.	125	0.00	29.07	0.00	410.75
639	7	U6	Bradson	14.13	14.13	Corn, Silage	*2/15-6/30	183	43	0	Broad.	140	0.00	32.56	0.00	460.04
859	1	U4	Toxaway	7.00	7.00	Fescue Hay	8/1-7/31	144	0	0	Broad.	144	11.81	0.00	82.70	0.00
859	2	U4	Toxaway	17.00	16.51	Fescue Hay	8/1-7/31	144	0	0	Broad.	144	11.81	0.00	195.05	0.00
859	3	U4	Toxaway	13.60	13.08	Fescue Hay	8/1-7/31	144	0	0	Broad.	144	11.81	0.00	154.53	0.00
859	4	U4	Toxaway	20.23	20.23	Fescue Hay	8/1-7/31	144	0	0	Broad.	144	11.81	0.00	239.00	0.00
859	6	U4	Toxaway	6.61	6.61	Fescue Hay	8/1-7/31	144	0	0	Broad.	144	11.81	0.00	78.09	0.00
859	7	U4	Toxaway	7.89	7.89	Fescue Hay	8/1-7/31	144	0	0	Broad.	144	11.81	0.00	93.21	0.00

Tract	Field	Source ID	Soil Series	Total Acres	Use. Acres	Crop	Applic. Period	Nitrogen PA Nutrient Req'd (lbs/A)	Comm. Fert. Nutrient Applied (lbs/A)	Res. (lbs/A)	Applic. Method	Manure PA Nutrient Applied (lbs/A)	Liquid Manure Applied (acre)	Solid Manure Applied (acre)	Liquid Manure Applied (Field)	Solid Manure Applied (Field)
Total Applied, 1000 gallons																
Total Produced, 1000 gallons																
Balance, 1000 gallons																
Total Applied, tons																
Total Produced, tons																
Balance, tons																
															11,160.94	2,945.68
															1,914.00	1,912.50
															-9,246.94	-1,033.18

Notes: 1. In the tract column, ~ symbol means leased, otherwise, owned. 2. Symbol \* means user entered data.

The Irrigation Application Factors for each field in this plan are shown in the following table. Infiltration rate varies with soils. If applying waste nutrients through an irrigation system, you must apply at a rate that will not result in runoff. This table provides the maximum application rate per hour that may be applied to each field selected to receive wastewater. It also lists the maximum application amount that each field may receive in any one application event.

#### Irrigation Application Factors

Tract	Field	Soil Series	Application Rate (inches/hour)	Application Amount (inches)
33632	3	Toxaway	0.60	1.0

The Nutrient Management Recommendations table shown below provides an annual summary of the nutrient management plan developed for this operation. This table provides a nutrient balance for the listed fields and crops for each year of the plan. Required nutrients are based on the realistic yields of the crops to be grown, their nutrient requirements and soil test results. The quantity of nutrient supplied by each source is also identified.

The total quantity of nitrogen applied to each crop should not exceed the required amount. However, the quantity of other nutrients applied may exceed their required amounts. This most commonly occurs when manure or other byproducts are utilized to meet the nitrogen needs of the crop. Nutrient management plans may require that the application of animal waste be limited so as to prevent over application of phosphorous when excessive levels of this nutrient are detected in a field. In such situations, additional nitrogen applications from nonorganic sources may be required to supply the recommended amounts of nitrogen.

Nutrient Management Recommendations Test

YEAR		0			N (lbs/A)	P2O5 (lbs/A)	K2O (lbs/A)	Mg (lbs/A)	Mn (lbs/A)	Zn (lbs/A)	Cu (lbs/A)	Lime (tons/A)
Tract	Field	221	2	Req'd Nutrients	121	0	20	0	0	0	0	0
Acres	App. Period	9.85	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	0
Soil Series		Hayesville		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	11.4 Tons	07-02-12	Manure	121	119	186	58	2	3	1	0
P Removal	Rating	62 lbs/ac.	Medium	BALANCE	0	119	166	58	2	3	1	0
Tract	Field	221	3	Req'd Nutrients	121	0	10	0	0	0	0	0
Acres	App. Period	2.38	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	0
Soil Series		Hayesville		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	11.4 Tons	07-02-12	Manure	121	119	186	58	2	3	1	0
P Removal	Rating	62 lbs/ac.	Medium	BALANCE	0	119	176	58	2	3	1	0
Tract	Field	29	1	Req'd Nutrients	*103	0	80	0	0	0	0	1
Acres	App. Period	5.53	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	1
Soil Series		Toxaway		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	*10.0 Tons	07-02-12	Manure	103	104	146	53	2	2	0	0
P Removal	Rating	54 lbs/ac.	Medium	BALANCE	0	104	66	53	2	2	0	0
Tract	Field	34170	10	Req'd Nutrients	*103	0	0	0	0	0	0	0
Acres	App. Period	7.81	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	103	0	0	0	0	0	0	0
Soil Series		Toxaway		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	*10.0 Tons	05-11-11	Manure	0	0	0	0	0	0	0	0
P Removal	Rating	54 lbs/ac.	High	BALANCE	0	0	0	0	0	0	0	0

Nutrient Management Recommendations Test

YEAR		0			N (lbs/A)	P2O5 (lbs/A)	K2O (lbs/A)	Mg (lbs/A)	Mn (lbs/A)	Zn (lbs/A)	Cu (lbs/A)	Lime (tons/A)
Tract	Field	34170	11	Req'd Nutrients	*103	0	10	0	0	0	0	0
Acres	App. Period	3.70	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	103	0	10	0	0	0	0	0
Soil Series		Toxaway		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	*10.0 Tons	05-11-11	Manure	0	0	0	0	0	0	0	0
P Removal	Rating	54 lbs/ac.	High	BALANCE	0	0	0	0	0	0	0	0
Tract	Field	34171	9	Req'd Nutrients	133	0	0	0	0	0	0	0
Acres	App. Period	5.74	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	0
Soil Series		Rosman		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	12.0 Tons	05-11-11	Manure	133	134	188	68	3	2	1	0
P Removal	Rating	65 lbs/ac.	Medium	BALANCE	0	134	188	68	3	2	1	0
Tract	Field	34172	1	Req'd Nutrients	*64	*43	30	0	0	0	0	0
Acres	App. Period	5.93	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	41	11	0	0	0	0	0	0
Soil Series		Kinkora		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	*6.0 Tons	04-08-11	Manure	23	32	35	11	0	0	0	0
P Removal	Rating	32 lbs/ac.	High	BALANCE	0	0	5	11	0	0	0	0
Tract	Field	34172	12	Req'd Nutrients	133	0	30	0	0	0	0	0
Acres	App. Period	4.00	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	0
Soil Series		Rosman		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	12.0 Tons	05-11-11	Manure	133	134	188	68	3	2	1	0
P Removal	Rating	65 lbs/ac.	Low	BALANCE	0	134	158	68	3	2	1	0
Tract	Field	34172	2	Req'd Nutrients	*64	*43	30	0	0	0	0	0
Acres	App. Period	11.33	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	41	11	0	0	0	0	0	0
Soil Series		Kinkora		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	*6.0 Tons	07-08-11	Manure	23	32	35	11	0	0	0	0
P Removal	Rating	32 lbs/ac.	High	BALANCE	0	0	5	11	0	0	0	0

Nutrient Management Recommendations Test

YEAR		0			N (lbs/A)	P2O5 (lbs/A)	K2O (lbs/A)	Mg (lbs/A)	Mn (lbs/A)	Zn (lbs/A)	Cu (lbs/A)	Lime (tons/A)
Tract	Field	34172	3	Req'd Nutrients	133	0	30	0	0	0	0	0
Acres	App. Period	3.65	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	0
Soil Series		Rosman		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	12.0 Tons	05-11-11	Manure	133	134	188	68	3	2	1	0
P Removal	Rating	65 lbs/ac.	Low	BALANCE	0	134	158	68	3	2	1	0
Tract	Field	34228	1	Req'd Nutrients	*106	0	10	0	0	0	0	1
Acres	App. Period	13.62	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	68	0	0	0	0	0	0	1
Soil Series		Codorus		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	*10.0 Tons	07-02-12	Manure	38	54	59	18	1	1	0	0
P Removal	Rating	54 lbs/ac.	High	BALANCE	0	54	49	18	1	1	0	0
Tract	Field	34228	2	Req'd Nutrients	*106	0	0	0	0	0	0	1
Acres	App. Period	5.98	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	68	0	0	0	0	0	0	1
Soil Series		Codorus		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	*10.0 Tons	07-02-12	Manure	38	54	59	18	1	1	0	0
P Removal	Rating	54 lbs/ac.	High	BALANCE	0	54	59	18	1	1	0	0
Tract	Field	34295	2	Req'd Nutrients	*103	40	80	0	0	0	0	1
Acres	App. Period	5.14	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	1
Soil Series		Toxaway		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	*10.0 Tons	07-02-12	Manure	103	104	146	53	2	2	0	0
P Removal	Rating	54 lbs/ac.	Medium	BALANCE	0	64	66	53	2	2	0	0
Tract	Field	544	1	Req'd Nutrients	133	0	0	0	0	0	0	0
Acres	App. Period	46.40	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	0
Soil Series		Rosman		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	12.0 Tons	05-11-11	Manure	133	123	191	60	2	3	1	0
P Removal	Rating	65 lbs/ac.	Low	BALANCE	0	123	191	60	2	3	1	0

Nutrient Management Recommendations Test

YEAR		0			N (lbs/A)	P2O5 (lbs/A)	K2O (lbs/A)	Mg (lbs/A)	Mn (lbs/A)	Zn (lbs/A)	Cu (lbs/A)	Lime (tons/A)
Tract	Field	549	1	Req'd Nutrients	133	90	60	0	0	0	0	0
Acres	App. Period	12.75	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	0
Soil Series		Rosman		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	12.0 Tons	05-11-11	Manure	133	134	188	68	3	2	1	0
P Removal	Rating	65 lbs/ac.	Low	BALANCE	0	44	128	68	3	2	1	0
Tract	Field	549	3	Req'd Nutrients	0	80	40	0	0	0	0	2
Acres	App. Period	4.00	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	80	40	0	0	0	0	2
Soil Series		Codorus		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	0.0 Tons	05-11-11	Manure	0	0	0	0	0	0	0	0
P Removal	Rating	0 lbs/ac.	Medium	BALANCE	0	0	0	0	0	0	0	0
Tract	Field	580	5	Req'd Nutrients	81	0	0	0	0	0	0	2
Acres	App. Period	1.00	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	2
Soil Series		Delanco		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	7.5 Tons	05-23-11	Manure	81	80	124	39	1	2	0	0
P Removal	Rating	41 lbs/ac.	Medium	BALANCE	0	80	124	39	1	2	0	0
Tract	Field	605	1	Req'd Nutrients	*64	*43	0	0	0	0	0	0
Acres	App. Period	12.01	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	42	11	0	0	0	0	0	0
Soil Series		Kinkora		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	*6.0 Tons	07-08-11	Manure	22	32	31	11	0	0	0	0
P Removal	Rating	32 lbs/ac.	High	BALANCE	0	0	31	11	0	0	0	0
Tract	Field	605	2	Req'd Nutrients	*64	*43	0	0	0	0	0	0
Acres	App. Period	15.34	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	41	11	0	0	0	0	0	0
Soil Series		Kinkora		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	*6.0 Tons	05-11-11	Manure	23	32	35	11	0	0	0	0
P Removal	Rating	32 lbs/ac.	High	BALANCE	0	0	35	11	0	0	0	0

Nutrient Management Recommendations Test

YEAR		0			N (lbs/A)	P2O5 (lbs/A)	K2O (lbs/A)	Mg (lbs/A)	Mn (lbs/A)	Zn (lbs/A)	Cu (lbs/A)	Lime (tons/A)
Tract	Field	639	2	Req'd Nutrients	81	30	80	0	0	0	0	1
Acres	App. Period	32.49	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	1
Soil Series		Delanco		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	7.5 Tons	05-11-11	Manure	81	80	124	39	1	2	0	0
P Removal	Rating	41 lbs/ac.	Medium	BALANCE	0	50	44	39	1	2	0	0
Tract	Field	639	5	Req'd Nutrients	81	30	80	0	0	0	0	1
Acres	App. Period	31.84	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	1
Soil Series		Delanco		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	7.5 Tons	05-11-11	Manure	81	80	124	39	1	2	0	0
P Removal	Rating	41 lbs/ac.	Medium	BALANCE	0	50	44	39	1	2	0	0
Tract	Field	639	6	Req'd Nutrients	125	0	0	0	0	0	0	0
Acres	App. Period	5.54	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	0
Soil Series		Bradson		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	11.8 Tons	05-11-11	Manure	125	123	192	60	2	3	1	0
P Removal	Rating	64 lbs/ac.	Low	BALANCE	0	123	192	60	2	3	1	0
Tract	Field	639	7	Req'd Nutrients	125	0	20	0	0	0	0	0
Acres	App. Period	14.13	9/1-3/31	Supplied By:								
CROP		Small Grain, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	0
Soil Series		Bradson		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	11.8 Tons	05-11-11	Manure	125	126	177	64	2	2	0	0
P Removal	Rating	64 lbs/ac.	Medium	BALANCE	0	126	157	64	2	2	0	0

NOTE: Symbol \* means user entered data.

Nutrient Management Recommendations Test

YEAR		1			N (lbs/A)	P2O5 (lbs/A)	K2O (lbs/A)	Mg (lbs/A)	Mn (lbs/A)	Zn (lbs/A)	Cu (lbs/A)	Lime (tons/A)
Tract	Field	221	2	Req'd Nutrients	178	0	60	0	0	0	0	0
Acres	App. Period	9.85	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	0
Soil Series		Hayesville		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	17.1 Tons	07-02-12	Manure	178	176	274	86	3	4	1	0
P Removal	Rating	58 lbs/ac.	Medium	BALANCE	0	176	214	86	3	4	1	0
Tract	Field	221	3	Req'd Nutrients	178	0	50	0	0	0	0	0
Acres	App. Period	2.38	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	0
Soil Series		Hayesville		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	17.1 Tons	07-02-12	Manure	178	176	274	86	3	4	1	0
P Removal	Rating	58 lbs/ac.	Medium	BALANCE	0	176	224	86	3	4	1	0
Tract	Field	29	1	Req'd Nutrients	286	0	140	0	0	0	0	0
Acres	App. Period	5.53	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	146	0	0	0	0	0	0	0
Soil Series		Toxaway		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	28.0 Tons	07-02-12	Manure	140	141	198	72	3	2	1	0
P Removal	Rating	95 lbs/ac.	Medium	BALANCE	0	141	58	72	3	2	1	0
Tract	Field	33632	3	Req'd Nutrients	108	0	0	0	0	0	0	0
Acres	App. Period	4.60	8/1-7/31	Supplied By:								
CROP		Fescue Pasture		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	0
Soil Series		Toxaway		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	3.5 Tons	02-02-05	Manure	108	94	146	46	2	2	0	0
P Removal	Rating	6 lbs/ac.	Low	BALANCE	0	94	146	46	2	2	0	0
Tract	Field	34170	10	Req'd Nutrients	286	0	0	0	0	0	0	0
Acres	App. Period	7.81	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	146	0	0	0	0	0	0	0
Soil Series		Toxaway		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	28.0 Tons	05-11-11	Manure	140	138	215	67	3	3	1	0
P Removal	Rating	95 lbs/ac.	High	BALANCE	0	138	215	67	3	3	1	0

Nutrient Management Recommendations Test

YEAR		1			N (lbs/A)	P2O5 (lbs/A)	K2O (lbs/A)	Mg (lbs/A)	Mn (lbs/A)	Zn (lbs/A)	Cu (lbs/A)	Lime (tons/A)
Tract	Field	34170	11	Req'd Nutrients	286	0	50	0	0	0	0	0
Acres	App. Period	3.70	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	146	0	0	0	0	0	0	0
Soil Series		Toxaway		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	28.0 Tons	05-11-11	Manure	140	138	215	67	3	3	1	0
P Removal	Rating	95 lbs/ac.	High	BALANCE	0	138	165	67	3	3	1	0
Tract	Field	34171	9	Req'd Nutrients	349	0	30	0	0	0	0	0
Acres	App. Period	5.74	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	209	0	0	0	0	0	0	0
Soil Series		Rosman		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	32.0 Tons	05-11-11	Manure	140	138	215	67	3	3	1	0
P Removal	Rating	109 lbs/ac.	Medium	BALANCE	0	138	185	67	3	3	1	0
Tract	Field	34172	1	Req'd Nutrients	166	*54	80	0	0	0	0	0
Acres	App. Period	5.93	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	128	0	21	0	0	0	0	0
Soil Series		Kinkora		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	16.0 Tons	04-08-11	Manure	38	54	59	18	1	1	0	0
P Removal	Rating	54 lbs/ac.	High	BALANCE	0	0	0	18	1	1	0	0
Tract	Field	34172	12	Req'd Nutrients	349	0	80	0	0	0	0	0
Acres	App. Period	4.00	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	209	0	0	0	0	0	0	0
Soil Series		Rosman		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	32.0 Tons	05-11-11	Manure	140	141	198	72	3	2	1	0
P Removal	Rating	109 lbs/ac.	Low	BALANCE	0	141	118	72	3	2	1	0
Tract	Field	34172	2	Req'd Nutrients	166	*54	80	0	0	0	0	0
Acres	App. Period	11.33	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	128	0	21	0	0	0	0	0
Soil Series		Kinkora		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	16.0 Tons	07-08-11	Manure	38	54	59	18	1	1	0	0
P Removal	Rating	54 lbs/ac.	High	BALANCE	0	0	0	18	1	1	0	0

Nutrient Management Recommendations Test

YEAR		1			N (lbs/A)	P2O5 (lbs/A)	K2O (lbs/A)	Mg (lbs/A)	Mn (lbs/A)	Zn (lbs/A)	Cu (lbs/A)	Lime (tons/A)
Tract	Field	34172	3	Req'd Nutrients	349	0	80	0	0	0	0	0
Acres	App. Period	3.65	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	209	0	0	0	0	0	0	0
Soil Series		Rosman		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	32.0 Tons	05-11-11	Manure	140	141	198	72	3	2	1	0
P Removal	Rating	109 lbs/ac.	Low	BALANCE	0	141	118	72	3	2	1	0
Tract	Field	34228	1	Req'd Nutrients	270	0	50	0	0	0	0	0
Acres	App. Period	13.62	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	208	0	0	0	0	0	0	0
Soil Series		Codorus		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	26.0 Tons	07-02-12	Manure	62	88	96	30	1	1	0	0
P Removal	Rating	88 lbs/ac.	High	BALANCE	0	88	46	30	1	1	0	0
Tract	Field	34228	2	Req'd Nutrients	270	0	0	0	0	0	0	0
Acres	App. Period	5.98	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	208	0	0	0	0	0	0	0
Soil Series		Codorus		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	26.0 Tons	07-02-12	Manure	62	88	96	30	1	1	0	0
P Removal	Rating	88 lbs/ac.	High	BALANCE	0	88	96	30	1	1	0	0
Tract	Field	34295	2	Req'd Nutrients	286	50	140	0	0	0	0	0
Acres	App. Period	5.14	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	146	0	0	0	0	0	0	0
Soil Series		Toxaway		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	28.0 Tons	07-02-12	Manure	140	138	215	67	3	3	1	0
P Removal	Rating	95 lbs/ac.	Medium	BALANCE	0	88	75	67	3	3	1	0
Tract	Field	34492	1	Req'd Nutrients	84	0	80	0	0	0	0	1
Acres	App. Period	4.04	8/1-7/31	Supplied By:								
CROP		Fescue Hay		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	1
Soil Series		Fannin		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	2.0 Tons	07-02-12	Manure	84	83	129	40	2	2	0	0
P Removal	Rating	31 lbs/ac.	Low	BALANCE	0	83	49	40	2	2	0	0

Nutrient Management Recommendations Test

YEAR		1			N (lbs/A)	P2O5 (lbs/A)	K2O (lbs/A)	Mg (lbs/A)	Mn (lbs/A)	Zn (lbs/A)	Cu (lbs/A)	Lime (tons/A)
Tract	Field	34492	2	Req'd Nutrients	219	0	0	0	0	0	0	0
Acres	App. Period	3.47	8/1-7/31	Supplied By:								
CROP		Fescue Hay		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	0
Soil Series		Hayesville		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	5.2 Tons	07-02-12	Manure	219	216	337	105	4	5	1	0
P Removal	Rating	82 lbs/ac.	Medium	BALANCE	0	216	337	105	4	5	1	0
Tract	Field	34492	3	Req'd Nutrients	190	0	110	0	0	0	0	0
Acres	App. Period	2.05	8/1-7/31	Supplied By:								
CROP		Fescue Hay		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	0
Soil Series		Codorus		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	4.5 Tons	07-02-12	Manure	190	187	292	91	3	4	1	0
P Removal	Rating	71 lbs/ac.	Medium	BALANCE	0	187	182	91	3	4	1	0
Tract	Field	544	1	Req'd Nutrients	349	20	40	0	0	0	0	0
Acres	App. Period	46.40	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	209	0	0	0	0	0	0	0
Soil Series		Rosman		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	32.0 Tons	05-11-11	Manure	140	129	201	63	2	3	1	0
P Removal	Rating	109 lbs/ac.	Low	BALANCE	0	109	161	63	2	3	1	0
Tract	Field	547	1	Req'd Nutrients	163	0	0	0	0	0	0	2
Acres	App. Period	9.00	8/1-7/31	Supplied By:								
CROP		Fescue Pasture		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	2
Soil Series		Elsinboro		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	4.9 Tons	05-23-11	Manure	163	161	250	78	3	3	1	0
P Removal	Rating	8 lbs/ac.	Low	BALANCE	0	161	250	78	3	3	1	0
Tract	Field	549	1	Req'd Nutrients	349	100	120	0	0	0	0	0
Acres	App. Period	12.75	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	209	0	0	0	0	0	0	0
Soil Series		Rosman		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	32.0 Tons	05-11-11	Manure	140	141	198	72	3	2	1	0
P Removal	Rating	109 lbs/ac.	Low	BALANCE	0	41	78	72	3	2	1	0

### Nutrient Management Recommendations Test

YEAR		1			N (lbs/A)	P2O5 (lbs/A)	K2O (lbs/A)	Mg (lbs/A)	Mn (lbs/A)	Zn (lbs/A)	Cu (lbs/A)	Lime (tons/A)
Tract	Field	549	2	Req'd Nutrients	186	0	40	0	0	0	0	2
Acres	App. Period	7.20	8/1-7/31	Supplied By:								
CROP		Fescue Hay		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	2
Soil Series		Codorus		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	4.4 Tons	05-11-11	Manure	186	183	286	89	3	4	1	0
P Removal	Rating	69 lbs/ac.	Medium	BALANCE	0	183	246	89	3	4	1	0
Tract	Field	549	3	Req'd Nutrients	265	90	90	0	0	0	0	0
Acres	App. Period	4.00	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	- 125	0	0	0	0	0	0	0
Soil Series		Codorus		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	25.5 Tons	05-11-11	Manure	140	138	215	67	3	3	1	0
P Removal	Rating	87 lbs/ac.	Medium	BALANCE	0	48	125	67	3	3	1	0
Tract	Field	580	5	Req'd Nutrients	246	20	30	0	0	0	0	0
Acres	App. Period	1.00	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	106	0	0	0	0	0	0	0
Soil Series		Delanco		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	23.0 Tons	05-23-11	Manure	140	138	215	67	3	3	1	0
P Removal	Rating	78 lbs/ac.	Medium	BALANCE	0	118	185	67	3	3	1	0
Tract	Field	605	1	Req'd Nutrients	166	*54	10	0	0	0	0	0
Acres	App. Period	12.01	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	129	0	0	0	0	0	0	0
Soil Series		Kinkora		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	16.0 Tons	07-08-11	Manure	37	54	53	19	1	1	0	0
P Removal	Rating	54 lbs/ac.	High	BALANCE	0	0	43	19	1	1	0	0
Tract	Field	605	2	Req'd Nutrients	166	*54	10	0	0	0	0	0
Acres	App. Period	15.34	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	128	0	0	0	0	0	0	0
Soil Series		Kinkora		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	16.0 Tons	05-11-11	Manure	38	54	59	18	1	1	0	0
P Removal	Rating	54 lbs/ac.	High	BALANCE	0	0	49	18	1	1	0	0

Nutrient Management Recommendations Test

YEAR		1			N (lbs/A)	P2O5 (lbs/A)	K2O (lbs/A)	Mg (lbs/A)	Mn (lbs/A)	Zn (lbs/A)	Cu (lbs/A)	Lime (tons/A)
Tract	Field	639	2	Req'd Nutrients	246	40	140	0	0	0	0	0
Acres	App. Period	32.49	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	106	0	0	0	0	0	0	0
Soil Series		Delanco		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	23.0 Tons	05-11-11	Manure	140	138	215	67	3	3	1	0
P Removal	Rating	78 lbs/ac.	Medium	BALANCE	0	98	75	67	3	3	1	0
Tract	Field	639	5	Req'd Nutrients	246	40	140	0	0	0	0	0
Acres	App. Period	31.84	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	106	0	0	0	0	0	0	0
Soil Series		Delanco		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	23.0 Tons	05-11-11	Manure	140	138	215	67	3	3	1	0
P Removal	Rating	78 lbs/ac.	Medium	BALANCE	0	98	75	67	3	3	1	0
Tract	Field	639	6	Req'd Nutrients	183	20	40	0	0	0	0	0
Acres	App. Period	5.54	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	43	0	0	0	0	0	0	0
Soil Series		Bradson		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	17.6 Tons	05-11-11	Manure	140	138	215	67	3	3	1	0
P Removal	Rating	60 lbs/ac.	Low	BALANCE	0	118	175	67	3	3	1	0
Tract	Field	639	7	Req'd Nutrients	183	20	60	0	0	0	0	0
Acres	App. Period	14.13	*2/15-6/30	Supplied By:								
CROP		Corn, Silage		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	43	0	0	0	0	0	0	0
Soil Series		Bradson		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	17.6 Tons	05-11-11	Manure	140	141	198	72	3	2	1	0
P Removal	Rating	60 lbs/ac.	Medium	BALANCE	0	121	138	72	3	2	1	0
Tract	Field	859	1	Req'd Nutrients	144	0	0	0	0	0	0	0
Acres	App. Period	7.00	8/1-7/31	Supplied By:								
CROP		Fescue Hay		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	0
Soil Series		Toxaway		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	3.5 Tons	05-11-11	Manure	144	142	221	69	3	3	1	0
P Removal	Rating	55 lbs/ac.	Low	BALANCE	0	142	221	69	3	3	1	0

Nutrient Management Recommendations Test

YEAR		1			N (lbs/A)	P2O5 (lbs/A)	K2O (lbs/A)	Mg (lbs/A)	Mn (lbs/A)	Zn (lbs/A)	Cu (lbs/A)	Lime (tons/A)
Tract	Field	859	2	Req'd Nutrients	144	0	0	0	0	0	0	0
Acres	App. Period	16.51	8/1-7/31	Supplied By:								
CROP		Fescue Hay		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	0
Soil Series		Toxaway		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	3.5 Tons	05-11-11	Manure	144	142	221	69	3	3	1	0
P Removal	Rating	55 lbs/ac.	Low	BALANCE	0	142	221	69	3	3	1	0
Tract	Field	859	3	Req'd Nutrients	144	0	0	0	0	0	0	0
Acres	App. Period	13.08	8/1-7/31	Supplied By:								
CROP		Fescue Hay		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	0
Soil Series		Toxaway		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	3.5 Tons	05-11-11	Manure	144	142	221	69	3	3	1	0
P Removal	Rating	55 lbs/ac.	Low	BALANCE	0	142	221	69	3	3	1	0
Tract	Field	859	4	Req'd Nutrients	144	0	0	0	0	0	0	2
Acres	App. Period	20.23	8/1-7/31	Supplied By:								
CROP		Fescue Hay		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	2
Soil Series		Toxaway		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	3.5 Tons	05-11-11	Manure	144	142	221	69	3	3	1	0
P Removal	Rating	55 lbs/ac.	Low	BALANCE	0	142	221	69	3	3	1	0
Tract	Field	859	6	Req'd Nutrients	144	0	0	0	0	0	0	0
Acres	App. Period	6.61	8/1-7/31	Supplied By:								
CROP		Fescue Hay		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	0
Soil Series		Toxaway		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	3.5 Tons	05-11-11	Manure	144	142	221	69	3	3	1	0
P Removal	Rating	55 lbs/ac.	Medium	BALANCE	0	142	221	69	3	3	1	0
Tract	Field	859	7	Req'd Nutrients	144	0	0	0	0	0	0	0
Acres	App. Period	7.89	8/1-7/31	Supplied By:								
CROP		Fescue Hay		Starter	0	0	0	0	0	0	0	0
				Commercial Fert.	0	0	0	0	0	0	0	0
Soil Series		Toxaway		Residual	0	0	0	0	0	0	0	0
RYE	Sample Date	3.5 Tons	05-11-11	Manure	144	142	221	69	3	3	1	0
P Removal	Rating	55 lbs/ac.	Medium	BALANCE	0	142	221	69	3	3	1	0

NOTE: Symbol \* means user entered data.

The Required Soil Test Values shown in the following table provide a summary of recommended actions that should be taken if soil tests indicate excessive levels of copper or zinc. Fields that receive manure must have an annual soil analysis for these elements. High levels of zinc and copper can adversely affect plant growth. Alternative crop sites must be used when the concentration of these metals approach excessive levels. Site life can be estimated by dividing the amount of copper and zinc to be applied in lbs/acre by 0.036 and 0.071, respectively and multiplying the result by 0.85. By adding this quantity to the current soil index for copper or zinc, we can predict life of the site for waste disposal.

In addition to copper and zinc indices, this table also provides a summary of lime recommendations for each crop based on the most recent soil sample. Application of lime at recommended rates is necessary to maintain soil pH in the optimum range for crop production.

Required Soil Test Values

Tract	Field	Crop	pH	Lime Reconn. (tons/acre)	Cu-I	Copper Recommendation	Zn-I	Zinc Recommendation
221	2	Small Grain, Silage	5.9	0.0	197	None	143	None
221	2	Corn, Silage	5.9	0.0	197	None	143	None
221	3	Small Grain, Silage	6.3	0.0	164	None	149	None
221	3	Corn, Silage	6.3	0.0	164	None	149	None
29	1	Small Grain, Silage	5.8	0.5	210	None	112	None
29	1	Corn, Silage	5.8	0.0	210	None	112	None
33632	3	Fescue Pasture	6.3	0.0	131	None	239	None
34170	10	Small Grain, Silage	6.6	0.0	388	None	166	None
34170	10	Corn, Silage	6.6	0.0	388	None	166	None
34170	11	Small Grain, Silage	6.6	0.0	423	None	99	None
34170	11	Corn, Silage	6.6	0.0	423	None	99	None
34171	9	Small Grain, Silage	7.0	0.0	415	None	313	None
34171	9	Corn, Silage	7.0	0.0	415	None	313	None
34172	1	Small Grain, Silage	6.3	0.0	326	None	114	None
34172	1	Corn, Silage	6.3	0.0	326	None	114	None
34172	12	Small Grain, Silage	6.3	0.0	326	None	114	None
34172	12	Corn, Silage	6.3	0.0	326	None	114	None
34172	2	Small Grain, Silage	6.3	0.0	326	None	114	None
34172	2	Corn, Silage	6.3	0.0	326	None	114	None
34172	3	Small Grain, Silage	6.3	0.0	326	None	114	None
34172	3	Corn, Silage	6.3	0.0	326	None	114	None
34228	1	Small Grain, Silage	5.5	1.0	329	None	114	None
34228	1	Corn, Silage	5.5	0.0	329	None	114	None

Required Soil Test Values

Tract	Field	Crop	pH	Lime Recom. (tons/acre)	Cu-I	Copper Recommendation	Zn-I	Zinc Recommendation
34228	2	Small Grain, Silage	5.7	0.7	241	None	172	None
34228	2	Corn, Silage	5.7	0.0	241	None	172	None
34295	2	Small Grain, Silage	5.6	0.9	87	None	101	None
34295	2	Corn, Silage	5.6	0.0	87	None	101	None
34492	1	Fescue Hay	5.5	0.9	39	None	37	None
34492	2	Fescue Hay	6.0	0.0	166	None	126	None
34492	3	Fescue Hay	5.8	0.4	100	None	76	None
544	1	Small Grain, Silage	6.8	0.0	117	None	91	None
544	1	Corn, Silage	6.8	0.0	117	None	91	None
547	1	Fescue Pasture	5.2	1.5	129	None	137	None
549	1	Small Grain, Silage	5.9	0.0	157	None	49	None
549	1	Corn, Silage	5.9	0.0	157	None	49	None
549	2	Fescue Hay	5.0	1.7	84	None	36	None
549	3	Small Grain, Silage	5.0	1.7	84	None	36	None
549	3	Corn, Silage	5.0	0.0	84	None	36	None
580	5	Small Grain, Silage	5.2	1.5	129	None	137	None
580	5	Corn, Silage	5.2	0.0	129	None	137	None
605	1	Small Grain, Silage	6.5	0.0	86	None	65	None
605	1	Corn, Silage	6.5	0.0	86	None	65	None
605	2	Small Grain, Silage	6.5	0.0	86	None	65	None
605	2	Corn, Silage	6.5	0.0	86	None	65	None
639	2	Small Grain, Silage	5.3	1.3	96	None	137	None
639	2	Corn, Silage	5.3	0.0	96	None	137	None
639	5	Small Grain, Silage	5.3	1.3	96	None	137	None
639	5	Corn, Silage	5.3	0.0	96	None	137	None
639	6	Small Grain, Silage	6.7	0.0	70	None	86	None
639	6	Corn, Silage	6.7	0.0	70	None	86	None
639	7	Small Grain, Silage	5.9	0.0	89	None	70	None
639	7	Corn, Silage	5.9	0.0	89	None	70	None
859	1	Fescue Hay	6.7	0.0	88	None	129	None

Required Soil Test Values

Tract	Field	Crop	pH	Lime Recom. (tons/acre)	Cu-I	Copper Recommendation	Zn-I	Zinc Recommendation
859	2	Fescue Hay	6.7	0.0	88	None	129	None
859	3	Fescue Hay	6.7	0.0	88	None	129	None
859	4	Fescue Hay	5.2	1.5	129	None	137	None
859	6	Fescue Hay	6.2	0.0	313	None	392	None
859	7	Fescue Hay	6.2	0.0	313	None	392	None

The Available Waste Storage Capacity table provides an estimate of the number of days of storage capacity available at the end of each month of the plan. Available storage capacity is calculated as the design storage capacity in days minus the number of days of net storage volume accumulated. The start date is a value entered by the user and is defined as the date prior to applying nutrients to the first crop in the plan at which storage volume in the lagoon or holding pond is equal to zero.

Available storage capacity should be greater than or equal to zero and less than or equal to the design storage capacity of the facility. If the available storage capacity is greater than the design storage capacity, this indicates that the plan calls for the application of nutrients that have not yet accumulated. If available storage capacity is negative, the estimated volume of accumulated waste exceeds the design storage volume of the structure. Either of these situations indicates that the planned application interval in the waste utilization plan is inconsistent with the structure's temporary storage capacity.

**Available Waste Storage Capacity**

Source Name	Small Acres Dairy Slurry Pond		Design Storage Capacity (Days)
Start Date	9/1		90
Plan Year	Month	Available Storage Capacity (Days) *	
1	1	90	
1	2	90	
1	3	90	
1	4	90	
1	5	90	
1	6	90	
1	7	86	
1	8	90	
1	9	90	
1	10	90	
1	11	90	
1	12	90	

\* Available Storage Capacity is calculated as of the end of each month.

Available Waste Storage Capacity

Source Name	Small Acres Liquid Waste Pond		Design Storage Capacity (Days)
Start Date	9/1		60
Plan Year	Month	Available Storage Capacity (Days) *	
1	1	37	
1	2	60	
1	3	60	
1	4	60	
1	5	60	
1	6	60	
1	7	60	
1	8	46	
1	9	60	
1	10	60	
1	11	41	
1	12	10	

\* Available Storage Capacity is calculated as of the end of each month.

## Required Specifications For Animal Waste Management

1. **Animal waste shall not reach surface waters of the state by runoff, drift, manmade conveyances, direct application, or direct discharge during operation or land application. Any discharge of waste that reaches surface water is prohibited.**
2. **There must be documentation in the design folder that the producer either owns or has an agreement for use of adequate land on which to properly apply the waste. If the producer does not own adequate land to properly dispose of the waste, he/she shall provide evidence of an agreement with a landowner, who is within a reasonable proximity, allowing him/her the use of the land for waste application. It is the responsibility of the owner of the waste production facility to secure an update of the Nutrient Management Plan when there is a change in the operation, increase in the number of animals, method of application, receiving crop type, or available land.**
3. **Animal waste shall be applied to meet, but not exceed, the nitrogen needs for realistic crop yields based upon soil type, available moisture, historical data, climatic conditions, and level of management, unless there are regulations that restrict the rate of applications for other nutrients.**
4. **Animal waste shall be applied to land eroding less than 5 tons per acre per year. Waste may be applied to land eroding at more than 5 tons per acre per year but less than 10 tons per acre per year provided grass filter strips are installed where runoff leaves the field (see USDA, NRCS Field Office Technical Guide Standard 393 - Filter Strips).**
5. **Odors can be reduced by injecting the waste or by disking after waste application. Waste should not be applied when there is danger of drift from the land application field.**
6. **When animal waste is to be applied on acres subject to flooding, waste will be soil incorporated on conventionally tilled cropland. When waste is applied to conservation tilled crops or grassland, the waste may be broadcast provided the application does not occur during a season prone to flooding (see "Weather and Climate in North Carolina" for guidance).**
7. **Liquid waste shall be applied at rates not to exceed the soil infiltration rate such that runoff does not occur offsite or to surface waters and in a method which does not cause drift from the site during application. No ponding should occur in order to control odor and flies.**

8. **Animal waste shall not be applied to saturated soils, during rainfall events, or when the soil surface is frozen.**
9. **Animal waste shall be applied on actively growing crops in such a manner that the crop is not covered with waste to a depth that would inhibit growth. The potential for salt damage from animal waste should also be considered.**
10. **Nutrients from waste shall not be applied in fall or winter for spring planted crops on soils with a high potential for leaching. Waste/nutrient loading rates on these soils should be held to a minimum and a suitable winter cover crop planted to take up released nutrients. Waste shall not be applied more than 30 days prior to planting of the crop or forages breaking dormancy.**
11. **Any new swine facility sited on or after October 1, 1995 shall comply with the following: The outer perimeter of the land area onto which waste is applied from a lagoon that is a component of a swine farm shall be at least 50 feet from any residential property boundary and canal. Animal waste, other than swine waste from facilities sited on or after October 1, 1995, shall not be applied closer than 25 feet to perennial waters.**
12. **Animal waste shall not be applied closer than 100 feet to wells.**
13. **Animal waste shall not be applied closer than 200 feet of dwellings other than those owned by the landowner.**
14. **Waste shall be applied in a manner not to reach other property and public right-of-ways.**
15. **Animal waste shall not be discharged into surface waters, drainageways, or wetlands by a discharge or by over-spraying. Animal waste may be applied to prior converted cropland provided the fields have been approved as a land application site by a "technical specialist". Animal waste shall not be applied on grassed waterways that discharge directly into water courses, and on other grassed waterways, waste shall be applied at agronomic rates in a manner that causes no runoff or drift from the site.**
16. **Domestic and industrial waste from washdown facilities, showers, toilets, sinks, etc., shall not be discharged into the animal waste management system.**

17. A protective cover of appropriate vegetation will be established on all disturbed areas (lagoon embankments, berms, pipe runs, etc.). Areas shall be fenced, as necessary, to protect the vegetation. Vegetation such as trees, shrubs, and other woody species, etc., are limited to areas where considered appropriate. Lagoon areas should be kept mowed and accessible. Berms and structures should be inspected regularly for evidence of erosion, leakage, or discharge.
18. If animal production at the facility is to be suspended or terminated, the owner is responsible for obtaining and implementing a "closure plan" which will eliminate the possibility of an illegal discharge, pollution, and erosion.
19. Waste handling structures, piping, pumps, reels, etc., should be inspected on a regular basis to prevent breakdowns, leaks, and spills. A regular maintenance checklist should be kept on site.
20. Animal waste can be used in a rotation that includes vegetables and other crops for direct human consumption. However, if animal waste is used on crops for direct human consumption, it should only be applied pre-plant with no further applications of animal waste during the crop season.
21. Highly visible markers shall be installed to mark the top and bottom elevations of the temporary storage (pumping volume) of all waste treatment lagoons. Pumping shall be managed to maintain the liquid level between the markers. A marker will be required to mark the maximum storage volume for waste storage ponds.
22. Waste shall be tested within 60 days of utilization and soil shall be tested at least annually at crop sites where waste products are applied. Nitrogen shall be the rate-determining nutrient, unless other restrictions require waste to be applied based on other nutrients, resulting in a lower application rate than a nitrogen based rate. Zinc and copper levels in the soils shall be monitored and alternative crop sites shall be used when these metals approach excessive levels. pH shall be adjusted and maintained for optimum crop production. Soil and waste analysis records shall be kept for a minimum of five years. Poultry dry waste application records shall be maintained for a minimum of three years.  
Waste application records for all other waste shall be maintained for five (5) years.
23. Dead animals will be disposed of in a manner that meets North Carolina regulations.

# NUTRIENT MANAGEMENT and WASTE UTILIZATION PLAN SUPPLEMENTAL INFORMATION

N.C. Practice Job Sheet: NC-590-633

Prepared for: Small Acres Dairy - Mike Corn

By: Jonathan Wallin

Farm: \_\_\_\_\_ Tract: \_\_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

## WHAT IS NUTRIENT MANAGEMENT?

The conservation practice, Nutrient Management, is managing the amount, source, placement, form and timing of the application of nutrients and soil amendments to achieve realistic production goals, while minimizing nutrient movement to surface or ground waters. The practice, Waste Utilization, is using agricultural waste such as manure or wastewater in an environmentally sound manner. These practices are jointly accomplished through the development of a Nutrient Management/Waste Utilization Plan, which is normally part of a broader Conservation Plan that addresses multiple natural resource concerns on the land.

## PURPOSE OF NUTRIENT MANAGEMENT and WASTE UTILIZATION PRACTICES

Your nutrient management/waste utilization plan is intended to accomplish one or more of the following objectives:

- To budget nutrients for plant production.
- To properly utilize manure or organic by-products as a plant nutrient source.
- To minimize the delivery of agricultural nutrients to surface and ground water resources.
- To maintain or improve the physical, chemical, and biological condition of the soil.

- To utilize agricultural wastes for livestock feed or as an energy source.

## CONTENTS OF THE NUTRIENT MANAGEMENT / WASTE UTILIZATION PLAN

The information provided in this Job Sheet and the attachments meet the minimum requirements for a Nutrient Management Plan for USDA-NRCS purposes. This Nutrient Management Plan includes:

1. A plan map and soils map for the area planned (these may be part of the overall Conservation Plan).
2. Location of designated sensitive areas or resources (streams, wells, sinkholes, etc.) and any associated nutrient application setbacks, etc.
3. Your planned crop rotation.
4. Results of soil, plant, water tests.
5. Results from Phosphorus Loss Assessment Tool (PLAT) or Leaching Index (LI) as required.
6. Realistic yield expectations for the crops in the rotation, and their source if other than default values approved for N.C.
7. Recommended nutrient application rates for nitrogen, phosphorus, and potassium, as well as timing, form,

and method of application and incorporation, if applicable.

8. This Job Sheet (or comparable information), that provides the following:
- General requirements of this practice, as well as additional requirements to meet the natural resource protection purposes listed above.
  - Additional considerations specific to this plan.
  - Operation and maintenance information associated with this practice.

Because this Nutrient Management Plan includes agricultural organic sources, additional items are required in the plan to ensure proper waste utilization:

- Waste Utilization Agreement (if applicable)
- Waste Utilization Third Party Agreement (if applicable)
- Additional engineering design and operating information for waste storage structures, transport, and application system, as applicable. These designs, and the instructions for operating these structures, is an integral component of your overall Nutrient Management/Waste Utilization Plan.
- Emergency Action Plan to prevent overtopping or other discharges from storage structures or facilities, as applicable.

This plan was developed based on the current NRCS 590 and 633 standards and Federal, state, or local regulations or policies. Changes in laws or regulations may necessitate a revision of the plan.

## **BASIC REQUIREMENTS FOR WASTE UTILIZATION**

### **General**

All manure and organic residues must be applied according to a nutrient management plan (see the following section, "BASIC

## **REQUIREMENTS FOR NUTRIENT MANAGEMENT")**

You are required to acquire and comply with all federal, state, or local permit requirements related to the handling and application of manure or organic materials.

The nutrient management/waste utilization plan must address all organic waste generated at or brought to the facility. A Waste Utilization Third Party Agreement must exist to address all organic waste not handled by the nutrient management/waste utilization plan.

Manure or organic wastes will not be applied to the following areas:

- surface waters,
- wetlands, unless constructed as a component in a waste treatment system,
- soils subject to frequent flooding during the period when flooding is expected,
- frozen, snow-covered, or saturated soils,
- within 200 feet of a dwelling other than those owned by the producer,
- within 100 feet of a well,
- within 25 feet of surface waters, or
- within any other setbacks as identified by federal, state, or local laws or regulations (e.g. NC General Statute prevents swine lagoon effluent from being applied within 75 feet of a residential property boundary or perennial stream or river if the facility was sited on or after October 1995.)

Manure or organic wastes will be applied in a manner not to reach surface waters, wetlands (unless constructed as a component in a waste treatment system), property owned by others, or public right-of-way.

Sludge that accumulates in waste storage structures must be analyzed prior to land

application. Adequate provisions (available land and/or third party manure agreements) must exist to ensure sludge is applied in adherence to all nutrient application requirements. All federal and state guidance regarding the proper testing, handling, planning, and application of sludge must be followed for regulated operations.

Since compliance with all applicable North Carolina laws is the responsibility of the producer, you should consult the most current version of the Guidance Memo for Implementing the Environmental Management Commission's Regulations for Animal Waste Management for questions.

### **ADDITIONAL REQUIREMENTS FOR PROVIDING LIVESTOCK FEED**

If applicable, all agricultural wastes or other organic residues used for feedstock must be handled in a manner to minimize contamination and preserve its feed value. Chicken litter stored for this purpose must be covered. A qualified animal nutritionist shall develop rations that utilize animal wastes.

### **ADDITIONAL REQUIREMENTS FOR PROVIDING A SOURCE OF ENERGY**

If your facility is to be used for energy production, all energy producing components of the system are included in the Nutrient Management/Waste Utilization Plan and provisions for the utilization of residues of energy production identified. Your Nutrient Management Plan includes the use of these residues, if applicable.

### **BASIC REQUIREMENTS FOR NUTRIENT MANAGEMENT**

#### **General**

Application of nutrients must comply with all applicable Federal, state, and local laws and regulations.

The realistic yield expectations (RYEs) in this plan are based on one or more of the following:

- Default values approved by the N.C. Interagency Nutrient Management Committee that incorporate soil productivity information, yield data, and research with North Carolina soils, and cropping systems. Additional information on the default values may be found at:

[www.soil.ncsu.edu/nmp/ncnmwg/index.htm](http://www.soil.ncsu.edu/nmp/ncnmwg/index.htm)

- Documented actual yield data from the site, determined by the average of the highest three yields of the last five consecutive specific crop harvests. (For forage crops, determine the average of the highest three years of the last five years.)
- A fertilization rate recommended by North Carolina State University may be used in cases where no yield data or approved RYE values exist for a crop.
- An RYE inferred from a similar crop on a soil with similar physical and chemical features may be used for new crops or in the absence of other RYE data. This inferred RYE may **ONLY** be specified by a certified Nutrient Management planner.

Erosion, runoff, and water management controls have been planned, as needed, on fields that receive nutrients.

#### **Soil Testing**

This nutrient management plan has been developed based on current soil test results (no older than three years).

Soil samples must be collected and prepared in accordance with North Carolina State University or the North Carolina Department of Agriculture and Consumer Services (NCDA&CS) Agronomic Division standards or recommendations.

Soil test analyses can be performed by any laboratory or program that is certified by the North Carolina Department of Environment and Natural Resources (NCDENR), Division of Water Quality, Laboratory Section.

NCDA&CS Agronomic Division uses the Mehlich-3 extractant process for soil testing. Growers who utilize other laboratories must request the use of the Mehlich-3 methodology to ensure the test results are compatible with North Carolina's nutrient management planning and assessment tools. For statewide consistency, all laboratories used must provide fertilization recommendations using guidelines and methodologies as referenced at the NCDA&CS website:

[www.ncagr.com/agronomi/obook.htm](http://www.ncagr.com/agronomi/obook.htm)

Growers are encouraged to use a laboratory that is supported by field research within the state.

Soil testing shall include analysis for all nutrients for which specific information is needed to develop the nutrient plan.

### Plant Tissue Testing

Tissue sampling and testing, when used, shall be done in accordance with North Carolina State University or NCDA&CS standards or recommendations.

### Manure Testing

Nutrient values of manure and organic by-products shall be established for planning purposes based on laboratory analysis, acceptable default values, or historic records for the operation.

When determining actual application rates, a laboratory analysis is required. State regulations require that waste be tested within 60 days of utilization for some operations. In the case of daily spreading, the waste must be sampled and analyzed at least once a year. Acceptable laboratories include the

NCDA&CS Agronomic Division, or others certified by the NCDENR.

### Field Risk Assessment

A field-specific assessment of the potential for phosphorus transport from each field (or groups of similar fields) have been conducted, using the North Carolina Phosphorus Loss Assessment Tool (PLAT)

PLAT assesses the potential for phosphorus (P) to be transported from the site to surface water through each of the four primary loss pathways:

- sediment-bound P transported through erosion,
- soluble P transported through surface runoff,
- soluble P leached through the soil profile, and
- non-incorporated source P transported through surface runoff.

Based on the assessment of each loss pathway, PLAT produces a single rating for each field. As shown below, this rating will identify whether nitrogen or phosphorus shall be the rate-determining element in developing the planned application rate for manure.

PLAT Rating	Nutrient Application Criteria
LOW	Nitrogen-based manure application.
MEDIUM	Nitrogen-based manure application.
HIGH	Manure application limited to phosphorus removal from site in harvested plant biomass.
VERY HIGH	No additional manure application to be specified in plan for the site.

On all sites, regardless of the PLAT rating, starter fertilizers may be recommended in accordance with NCSU guidelines or recommendations.

In some cases, specific conservation practices that reduce the potential for phosphorus transport have been incorporated into PLAT. Examples include buffers or filter strips, ponds, water table management, and residue management and conservation tillage. Similarly, soil erosion rates, either existing or planned, have been incorporated into your PLAT analysis. This information is shown on the PLAT results enclosed. Because the management of the site actually affects the PLAT rating, all practices identified on the PLAT analysis (including any required to achieve the specified erosion rate) must be either already installed or included in a Conservation Plan for the Nutrient Management Plan to be approved.

### **Nutrient Application Rates**

Recommended nutrient application rates are based on North Carolina State University or NCDA&CS recommendations that consider current soil test results, RYEs, and management.

Liming material shall be applied as needed to adjust soil pH to the specific range required by the crop or crops in the rotation for optimum availability and utilization of nutrients.

The application amount and rate (in/hr) for liquid wastes (e.g. applied through irrigation) shall not result in runoff from the site. The application shall not exceed the field capacity of the soil.

The planned rates of nutrient application are shown on the attached sheets. These rates have been computed as follows:

- **Nitrogen Application** - When the plan is nitrogen-based (a PLAT rating of Low or Medium), the application rate of manure or organic by-products shall be based on the recommended nitrogen rate using the RYE for the site (or a rate recommended by NCSU or NCDA in the case of crops without established RYEs). This may result in an application rate for other

nutrients that exceeds the soil test recommendation.

- When the plan is being implemented on a phosphorus standard (a PLAT rating of High or Very High), manure or other organic by-products shall be applied at rates consistent with the phosphorus application guidance below. In such situations, an additional nitrogen application from non-organic sources may be required to supply nitrogen at the rate recommended by the RYE.
- Within the limits allowed by PLAT, manure or other organic by-products may be applied on soybeans at rates equal to the estimated removal of nitrogen in harvested plant biomass.
- All nitrogen rates for hay production are for pure grass stands. Due to the nutrient recycling by grazing animals, the planned nitrogen rate per unit yield for hay crops shall be reduced by 25% for the portion of the expected yield that is removed through grazing.
- **Phosphorus Application** – When manure or other organic by-products are used, the planned rates of phosphorus application shall be based on the PLAT rating for the site, as follows:

Low or Medium Rating – The planned manure or organic by-product application rate is based on the nitrogen needs of the crop.

High Rating – The planned manure or organic by-product application rate is limited to the phosphorus removal rate of the harvested plant biomass.

Very High Rating – No additional manure or organic by-product application is specified in the plan.

On all sites, regardless of the PLAT rating, starter fertilizers containing nitrogen, phosphorus, and potassium may be recommended in accordance with North Carolina State University guidelines or recommendations.

A single application of phosphorus applied as manure or organic by-product may be made at a rate equal to the recommended phosphorus application or estimated phosphorus removal in harvested plant biomass for the crop rotation or multiple years in the crop sequence.

- When such single applications are made, the rate shall:
  - ◆ not exceed the recommended nitrogen application rate during the year of application, or
  - ◆ not exceed the estimated nitrogen removal in harvested plant biomass during the year of application when there is no recommended nitrogen application, or
  - ◆ not be made on sites with a Very High PLAT risk rating.
- **Potassium Application** – Planned potassium application rates should match the soil test recommended rates as closely as possible. (This is particularly critical in situations where a potentially harmful nutrient imbalance in crops or forages may occur, such as grass tetany). When using manure or other organic sources, the addition of potassium from non-organic sources may be required.
- **Other Plant Nutrients** - The planned rates of application of other nutrients if applicable are consistent with North Carolina State University or the NCDA&CS guidelines or recommendations.

### Nutrient Application Timing

Timing of nutrient application shall correspond as closely as possible with

plant nutrient uptake characteristics, while considering cropping system limitations, weather and climatic conditions, and field accessibility. Nutrients shall not be applied to frozen, snow-covered, or saturated soil.

Manure or organic by-products shall not be applied more than 30 days prior to planting of the crop or forages breaking dormancy.

For nutrients applied through irrigation systems, application equipment should be properly calibrated to ensure uniform distribution of material at planned rates.

### Plan Review and Revision Period

A thorough review and revision (if needed) of the nutrient management plan shall be conducted on a regular cycle, not to exceed five years.

### Heavy Metals Monitoring

For animal waste, including sludge, zinc and copper concentrations shall be monitored and alternative crop sites for application shall be sought when these metals approach excessive concentrations. The following criteria and actions are provided:

ZINC Mehlich-3 Index (Zn-I)	Action
300 (21 lbs/ac)	Peanuts are very sensitive to zinc, and application on peanuts should be limited. Seek alternative sites when possible. The risk of zinc toxicity is greater with low soil pH and has been seen at Zn-I as low as 300. *
500 (35 lbs/ac)	Critical toxic level for peanuts. Cease application on peanuts. *
2,000 (142 lbs/ac)	Caution: Seek alternative sites when possible for all crops. *
3,000 (213 lbs/ac)	Critical toxic level for all crops. Cease application for all crops. *

COPPER	
Mehlich-3 Index (Cu-I)	Action
2,000 (72 lbs/ac)	Caution: Seek alternative sites when possible for all crops. *
3,000 (108 lbs/ac)	Critical toxic level for all crops. Cease application on all crops. *
	* Maintain pH at 6.0 on these sites.

When sewage sludge is applied, the accumulation of potential pollutants (including arsenic, cadmium, copper, lead, selenium, and zinc) in the soil shall be monitored in accordance with the US Code, Reference 40 CFR, Parts 403 and 503, and applicable state and local laws or regulations. Additional information on heavy metal criteria for sewage sludge may be found in Land Application of Sewage Sludge, EPA/831-B-93-002b publication number at:

<http://www.epa.gov/npdes/pubs/sludge.pdf>

#### ADDITIONAL REQUIREMENTS FOR MINIMIZING DELIVERY OF NUTRIENTS TO SURFACE AND GROUND WATER

In areas that have been identified as impaired with agricultural nutrients being a likely source, an assessment shall be completed of the potential for nitrogen or phosphorus transport from the site. (The streams/water bodies in this category are listed in the USDA-NRCS Field Office Technical Guide, Section I.)

NO

This nutrient management plan **IS NOT** in an area where surface waters are impaired, with agricultural nutrients identified as a likely source. The Leaching Index (LI) is not required.

YES

This nutrient management plan **IS** in an area where surface waters are impaired, with agricultural nutrients identified as a

likely source. The Leaching Index (LI) is included in this plan.

While the results of the LI does not affect your planned nutrient application rates, some additional conservation practices may be specified in the plan to reduce the risk of nutrient movement from the field, if applicable.

#### IMPORTANCE OF MANAGING NUTRIENTS

Nitrogen and phosphorus are water soluble elements and either or both may be components of organic and inorganic fertilizers. In soluble forms, both can move with water as leachate down through the soil, or over the soil surface as runoff after rainfall. While nitrogen and phosphorus exist in different forms and may move through different transport processes on the same site, they both can have detrimental effects on both surface and shallow ground water quality. As an example, excess nutrients can result in accelerated eutrophication with severe algal blooms and fish kills.

Because of the topography, hydrology, and other factors in the state, the environmental problems from excess nutrients reaching surface water may not be exhibited near the contributing source, but rather create water quality problems far downstream. Consequently, the Neuse River Basin, Tar-Pamlico Basin, the Chowan River, the watershed of the B. Everett Jordan Reservoir, and the watershed of the New River in Onslow County are listed as Nutrient Sensitive waters in North Carolina.

Nitrogen: Nitrogen applied as fertilizer or organic material is transformed into nitrate and can move with the water moving downward into the shallow ground water and eventually to surface waters. (Relatively small amounts of nitrogen reach our surface waters through rainfall runoff. ) The Leaching Index (LI) is a

required part of the nutrient management plan in some areas of the state with surface water impairments. The LI uses soils information and local climate data to assess the potential hazard from leaching of nutrients. The results of the LI analysis and recommended actions are included in your nutrient management plan, if applicable.

**Phosphorus:** Research in recent decades indicates that, with high soil phosphorus levels, phosphorus has more potential to be transported off-site than recognized in the past. Phosphorus can be transported in several ways: (1) attached to soil particles leaving the field through erosion, (2) in soluble form leaving the field in surface runoff, and (3) in soluble form leaching downward through the soil profile, and eventually into surface water. Unlike nitrogen, the most likely transport pathway for phosphorus varies by site, and depends upon such factors as soil erosion rate, soil phosphorus levels, texture of soils, existence of buffers, and other factors. In N.C., PLAT is the tool used to assess potential excessive phosphorus losses. The results of the PLAT analysis and recommended actions are included in your nutrient management plan, if applicable.

If a site receives a PLAT rating of Low or Medium, then applying manure at rates based on the nitrogen needs of the crop is allowed. It is important to realize that this may result in phosphorus being applied at rates that significantly exceed the crop's phosphorus removal rate. In these cases, the planned nutrient application rate is not sustainable, and eventually a PLAT rating of High may be reached.

## OPERATION & MAINTENANCE

You are responsible for safe operation and maintenance of this practice, including all equipment. The following Operation & Maintenance should be conducted:

1. Review the plan annually to determine if adjustments or modifications to the plan

are needed. (The S.B. 1217 interagency group guidelines accepted by the N.C. Division of Water Quality for .0200 operations specify a plan revision when there are changes in crops or cropping patterns that utilize more than 25 percent of the nitrogen generated by the operation.) As a minimum, nutrient management plans shall be thoroughly reviewed every five years and revised if necessary. The next review will be performed in \_\_\_\_\_.

2. Protect fertilizer and organic by-product storage facilities from weather and accidental leakage or spillage.
3. Ensure proper calibration of application equipment to ensure uniform distribution of material at planned rates.
4. Inspect and maintain the equipment and facilities used to implement the Nutrient Management/Waste Utilization Plan regularly. Any needed repairs should be made in a timely manner.
5. Review the Emergency Action Plan, if applicable, annually.
6. Records should be maintained for five years, or for a period as required by other Federal, state, or local ordinances, or program or contract requirements. To ensure adequate information exists to support sound nutrient management, NRCS recommends the following records be included:
  - Soil test results and recommendations for nutrient application,
  - Quantities, analyses and sources of nutrients applied (When the actual rates used exceed the recommended and planned rates on inorganic fertilizer plans,

records should indicate the reasons for the differences, e.g. inability to acquire custom blended fertilizer.)

- Dates and method of nutrient applications,
- Crops planted, planting and harvest dates, yields, and crop residues removed,
- Results of water, plant, and organic by-product analyses, and
- Dates of review and person performing the review, and recommendations that resulted from the review.

NOTE: State laws or regulations may define record-keeping requirements for some operations.

7. Ensure that workers are protected from and avoid unnecessary contact with inorganic fertilizers and organic by-products. Protection should include the use of protective clothing when working with plant nutrients. Extra caution must be taken when handling ammonia sources of nutrients, or when dealing with organic wastes stored in poorly ventilated enclosures.
8. Properly dispose of material generated by the cleaning of nutrient application equipment. Excess material should be collected and stored or field applied in an appropriate manner. Excess material should not be applied on areas of high potential risk for runoff or leaching.
9. Properly dispose of or recycle nutrient containers according to state and local guidelines or regulations.

## Crop Notes

The following crop note applies to field(s): 3

### Fescue: Mountains

Adaptation: Well-adapted.

In the Mountains, tall fescue can be planted July 25 to Aug. 20 (best) and Mar. 20 to Apr. 20. For pure-stand broadcast seedings use 20 to 30 lb/ac., for drilled use 15 to 20 lb/ac. seed. Use certified seed to avoid introducing weeds or annual ryegrass. Plant seed 0.25" to 0.5" deep for pure stands, 0.25" in mixture with clovers. Soil test for preplant and maintenance lime, phosphorus, and potassium recommendations. Apply 40 to 60 lb/ac nitrogen at planting for pure stands only. Do not apply N for mixtures with clovers but use proper legume inoculation techniques. Apply 150 to 200 lb/ac. N to pure-stand fescue for hay production; reduce N rates by 25% for grazing. Apply N Mar. 10 to Apr. 20 and Aug. 10 to Sept. 10, with equal amounts in each window. In higher mountain pastures spring N can be delayed until after the early flush of seedheads has been mowed or grazed off. Refer to NCSU Technical Bulletin 305 Production and Utilization of Pastures and Forages in North Carolina for additional information or consult your regional agronomist or extension agent for assistance.

The following crop note applies to field(s): 1

### Fescue: Mountains

Adaptation: Well-adapted.

In the Mountains, tall fescue can be planted July 25 to Aug. 20 (best) and Mar. 20 to Apr. 20. For pure-stand broadcast seedings use 20 to 30 lb/ac., for drilled use 15 to 20 lb/ac. seed. Use certified seed to avoid introducing weeds or annual ryegrass. Plant seed 0.25" to 0.5" deep for pure stands, 0.25" in mixture with clovers. Soil test for preplant and maintenance lime, phosphorus, and potassium recommendations. Apply 40 to 60 lb/ac nitrogen at planting for pure stands only. Do not apply N for mixtures with clovers but use proper legume inoculation techniques. Apply 150 to 200 lb/ac. N to pure-stand fescue for hay production; reduce N rates by 25% for grazing. Apply N Mar. 10 to Apr. 20 and Aug. 10 to Sept. 10, with equal amounts in each window. In higher mountain pastures spring N can be delayed until after the early flush of seedheads has been mowed or grazed off. Refer to NCSU Technical Bulletin 305 Production and Utilization of Pastures and Forages in North Carolina for additional information or consult your regional agronomist or extension agent for assistance.

The following crop note applies to field(s): 1, 2, 3

#### Corn Silage: Piedmont and Mountains

In the Piedmont, corn should be planted when soil temperature reaches 52 to 55 degrees fahrenheit. Plant 1-2" deep. Adequate depth control is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply 10 to 12 lbs. nitrogen per ton of expected yield. All nitrogen can be applied at planting. Also acceptable is to apply 2/3 to 3/4 of the nitrogen at planting and the rest when corn is in the 7 to 9 leaf stage. Tropical corn for silage needs about 6-8 lbs nitrogen per ton of expected yield applying no more than 100 to 120 lbs total nitrogen. Research has shown that nitrogen can be reduced by approximately 15 percent when soil injected. The total N is dependent on the soil type and expected yield. Apply phosphorus and potassium according to a soil test before planting. Phosphorus is best utilized when banded with the planter as a starter. Plant samples can be analyzed during the growing season to monitor the nutrient status of the corn. Timely management of weeds and insects is essential in profitable corn silage production. Plant a cover crop after harvest.

The following crop note applies to field(s): 2, 5

#### Corn Silage: Piedmont and Mountains

In the Piedmont, corn should be planted when soil temperature reaches 52 to 55 degrees fahrenheit. Plant 1-2" deep. Adequate depth control is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply 10 to 12 lbs. nitrogen per ton of expected yield. All nitrogen can be applied at planting. Also acceptable is to apply 2/3 to 3/4 of the nitrogen at planting and the rest when corn is in the 7 to 9 leaf stage. Tropical corn for silage needs about 6-8 lbs nitrogen per ton of expected yield applying no more than 100 to 120 lbs total nitrogen. Research has shown that nitrogen can be reduced by approximately 15 percent when soil injected. The total N is dependent on the soil type and expected yield. Apply phosphorus and potassium according to a soil test before planting. Phosphorus is best utilized when banded with the planter as a starter. Plant samples can be analyzed during the growing season to monitor the nutrient status of the corn. Timely management of weeds and insects is essential in profitable corn silage production. Plant a cover crop after harvest.

The following crop note applies to field(s): 1, 2

Corn Silage: Piedmont and Mountains

In the Piedmont, corn should be planted when soil temperature reaches 52 to 55 degrees fahrenheit. Plant 1-2" deep. Adequate depth control is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply 10 to 12 lbs. nitrogen per ton of expected yield. All nitrogen can be applied at planting. Also acceptable is to apply 2/3 to 3/4 of the nitrogen at planting and the rest when corn is in the 7 to 9 leaf stage. Tropical corn for silage needs about 6-8 lbs nitrogen per ton of expected yield applying no more than 100 to 120 lbs total nitrogen. Research has shown that nitrogen can be reduced by approximately 15 percent when soil injected. The total N is dependent on the soil type and expected yield. Apply phosphorus and potassium according to a soil test before planting. Phosphorus is best utilized when banded with the planter as a starter. Plant samples can be analyzed during the growing season to monitor the nutrient status of the corn. Timely management of weeds and insects is essential in profitable corn silage production. Plant a cover crop after harvest.

The following crop note applies to field(s): 1, 10, 11, 2

Corn Silage: Piedmont and Mountains

In the Piedmont, corn should be planted when soil temperature reaches 52 to 55 degrees fahrenheit. Plant 1-2" deep. Adequate depth control is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply 10 to 12 lbs. nitrogen per ton of expected yield. All nitrogen can be applied at planting. Also acceptable is to apply 2/3 to 3/4 of the nitrogen at planting and the rest when corn is in the 7 to 9 leaf stage. Tropical corn for silage needs about 6-8 lbs nitrogen per ton of expected yield applying no more than 100 to 120 lbs total nitrogen. Research has shown that nitrogen can be reduced by approximately 15 percent when soil injected. The total N is dependent on the soil type and expected yield. Apply phosphorus and potassium according to a soil test before planting. Phosphorus is best utilized when banded with the planter as a starter. Plant samples can be analyzed during the growing season to monitor the nutrient status of the corn. Timely management of weeds and insects is essential in profitable corn silage production. Plant a cover crop after harvest.

The following crop note applies to field(s): 1, 12, 3, 9

#### Corn Silage: Piedmont and Mountains

In the Piedmont, corn should be planted when soil temperature reaches 52 to 55 degrees fahrenheit. Plant 1-2" deep. Adequate depth control is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply 10 to 12 lbs. nitrogen per ton of expected yield. All nitrogen can be applied at planting. Also acceptable is to apply 2/3 to 3/4 of the nitrogen at planting and the rest when corn is in the 7 to 9 leaf stage. Tropical corn for silage needs about 6-8 lbs nitrogen per ton of expected yield applying no more than 100 to 120 lbs total nitrogen. Research has shown that nitrogen can be reduced by approximately 15 percent when soil injected. The total N is dependent on the soil type and expected yield. Apply phosphorus and potassium according to a soil test before planting. Phosphorus is best utilized when banded with the planter as a starter. Plant samples can be analyzed during the growing season to monitor the nutrient status of the corn. Timely management of weeds and insects is essential in profitable corn silage production. Plant a cover crop after harvest.

The following crop note applies to field(s): 2, 3, 6, 7

#### Corn Silage: Piedmont and Mountains

In the Piedmont, corn should be planted when soil temperature reaches 52 to 55 degrees fahrenheit. Plant 1-2" deep. Adequate depth control is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply 10 to 12 lbs. nitrogen per ton of expected yield. All nitrogen can be applied at planting. Also acceptable is to apply 2/3 to 3/4 of the nitrogen at planting and the rest when corn is in the 7 to 9 leaf stage. Tropical corn for silage needs about 6-8 lbs nitrogen per ton of expected yield applying no more than 100 to 120 lbs total nitrogen. Research has shown that nitrogen can be reduced by approximately 15 percent when soil injected. The total N is dependent on the soil type and expected yield. Apply phosphorus and potassium according to a soil test before planting. Phosphorus is best utilized when banded with the planter as a starter. Plant samples can be analyzed during the growing season to monitor the nutrient status of the corn. Timely management of weeds and insects is essential in profitable corn silage production. Plant a cover crop after harvest.

The following crop note applies to field(s): 2, 3

#### Fescue: Piedmont

Adaptation: Well-adapted.

In the Piedmont, tall fescue can be planted Aug. 20 to Oct. 10 (best) and Feb. 15 to Mar. 20. For pure-stand broadcast seedings use 20 to 30 lb/ac., for drilled use 15 to 20 lb/ac. seed. Use certified seed to avoid introducing weeds or annual ryegrass. Plant seed 0.25" to 0.5" deep for pure stands, 0.25" in mixture with clovers. Soil test for preplant and maintenance lime, phosphorus, and potassium recommendations. Apply 40 to 60 lb/ac nitrogen at planting for pure stands only. Do not apply N for mixtures with clovers but use proper legume inoculation techniques. Apply 150 to 200 lb/ac. N to pure-stand fescue for hay production; reduce N rates by 25% to 50% for grazing. Apply N Feb. 1 to Mar. 20 and Aug. 20 to Sept. 30, with equal amounts in each window. Refer to NCSU Technical Bulletin 305 Production and Utilization of Pastures and Forages in North Carolina for additional information or consult your regional agronomist or extension agent for assistance.

The following crop note applies to field(s): 1, 2, 3, 4, 6, 7

Fescue: Mountains

Adaptation: Well-adapted.

In the Mountains, tall fescue can be planted July 25 to Aug. 20 (best) and Mar. 20 to Apr. 20. For pure-stand broadcast seedings use 20 to 30 lb/ac., for drilled use 15 to 20 lb/ac. seed. Use certified seed to avoid introducing weeds or annual ryegrass. Plant seed 0.25" to 0.5" deep for pure stands, 0.25" in mixture with clovers. Soil test for preplant and maintenance lime, phosphorus, and potassium recommendations. Apply 40 to 60 lb/ac nitrogen at planting for pure stands only. Do not apply N for mixtures with clovers but use proper legume inoculation techniques. Apply 150 to 200 lb/ac. N to pure-stand fescue for hay production; reduce N rates by 25% to 50% for grazing. Apply N Mar. 10 to Apr. 20 and Aug. 10 to Sept. 10, with equal amounts in each window. In higher mountain pastures spring N can be delayed until after the early flush of seedheads has been mowed or grazed off. Refer to NCSU Technical Bulletin 305 Production and Utilization of Pastures and Forages in North Carolina for additional information or consult your regional agronomist or extension agent for assistance.

The following crop note applies to field(s): 2

Fescue: Mountains

Adaptation: Well-adapted.

In the Mountains, tall fescue can be planted July 25 to Aug. 20 (best) and Mar. 20 to Apr. 20. For pure-stand broadcast seedings use 20 to 30 lb/ac., for drilled use 15 to 20 lb/ac. seed. Use certified seed to avoid introducing weeds or annual ryegrass. Plant seed 0.25" to 0.5" deep for pure stands, 0.25" in mixture with clovers. Soil test for preplant and maintenance lime, phosphorus, and potassium recommendations. Apply 40 to 60 lb/ac nitrogen at planting for pure stands only. Do not apply N for mixtures with clovers but use proper legume inoculation techniques. Apply 150 to 200 lb/ac. N to pure-stand fescue for hay production; reduce N rates by 25% to 50% for grazing. Apply N Mar. 10 to Apr. 20 and Aug. 10 to Sept. 10, with equal amounts in each window. In higher mountain pastures spring N can be delayed until after the early flush of seedheads has been mowed or grazed off. Refer to NCSU Technical Bulletin 305 Production and Utilization of Pastures and Forages in North Carolina for additional information or consult your regional agronomist or extension agent for assistance.

The following crop note applies to field(s): 1

#### Fescue: Mountains

Adaptation: Well-adapted.

In the Mountains, tall fescue can be planted July 25 to Aug. 20 (best) and Mar. 20 to Apr. 20. For pure-stand broadcast seedings use 20 to 30 lb/ac., for drilled use 15 to 20 lb/ac. seed. Use certified seed to avoid introducing weeds or annual ryegrass. Plant seed 0.25" to 0.5" deep for pure stands, 0.25" in mixture with clovers. Soil test for preplant and maintenance lime, phosphorus, and potassium recommendations. Apply 40 to 60 lb/ac nitrogen at planting for pure stands only. Do not apply N for mixtures with clovers but use proper legume inoculation techniques. Apply 150 to 200 lb/ac. N to pure-stand fescue for hay production; reduce N rates by 25% to 50% for grazing. Apply N Mar. 10 to Apr. 20 and Aug. 10 to Sept. 10, with equal amounts in each window. In higher mountain pastures spring N can be delayed until after the early flush of seedheads has been mowed or grazed off. Refer to NCSU Technical Bulletin 305 Production and Utilization of Pastures and Forages in North Carolina for additional information or consult your regional agronomist or extension agent for assistance.

The following crop note applies to field(s): 1, 2, 3

#### Small Grain Silage, Piedmont and Mountains

In the Piedmont, small grain silage should be planted from October 10 to November 3. In the Mountains, small grain silage should be planted from September 15 to October 31. Plant 18 to 22 seed/drill row foot at 1-1 1/2" deep and increase the seeding rate by 5% for each week seeding is delayed beyond the optimum time frame. See the seeding rates table for applicable seeding rate modifications in the current NCSU "Small Grain Production Guide". Also, increase the initial seeding rate by at least 10% when planting no-till. Adequate depth control when planting the small grain is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply approximately 30 lbs N at planting. Increase N at planting by 20% for no-till. Phosphorus and potassium should be applied according to a soil test at this time. The remaining N should be applied during February-March. Apply 10 to 12 lbs. N per ton of expected yield. The total N is dependent on soil type and expected yield. Plant samples can be analyzed during the growing season to monitor the nutrient status of the small grain. Timely management of diseases, weeds and insects are essential for profitable small grain silage production. Plant a cover crop after harvest.

The following crop note applies to field(s): 2, 5

#### Small Grain Silage, Piedmont and Mountains

In the Piedmont, small grain silage should be planted from October 10 to November 3. In the Mountains, small grain silage should be planted from September 15 to October 31. Plant 18 to 22 seed/drill row foot at 1-1 1/2" deep and increase the seeding rate by 5% for each week seeding is delayed beyond the optimum time frame. See the seeding rates table for applicable seeding rate modifications in the current NCSU "Small Grain Production Guide". Also, increase the initial seeding rate by at least 10% when planting no-till. Adequate depth control when planting the small grain is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply approximately 30 lbs N at planting. Increase N at planting by 20% for no-till. Phosphorus and potassium should be applied according to a soil test at this time. The remaining N should be applied during February-March. Apply 10 to 12 lbs. N per ton of expected yield. The total N is dependent on soil type and expected yield. Plant samples can be analyzed during the growing season to monitor the nutrient status of the small grain. Timely management of diseases, weeds and insects are essential for profitable small grain silage production. Plant a cover crop after harvest.

The following crop note applies to field(s): 1, 2

#### Small Grain Silage, Piedmont and Mountains

In the Piedmont, small grain silage should be planted from October 10 to November 3. In the Mountains, small grain silage should be planted from September 15 to October 31. Plant 18 to 22 seed/drill row foot at 1-1 1/2" deep and increase the seeding rate by 5% for each week seeding is delayed beyond the optimum time frame. See the seeding rates table for applicable seeding rate modifications in the current NCSU "Small Grain Production Guide". Also, increase the initial seeding rate by at least 10% when planting no-till. Adequate depth control when planting the small grain is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply approximately 30 lbs N at planting. Increase N at planting by 20% for no-till. Phosphorus and potassium should be applied according to a soil test at this time. The remaining N should be applied during February-March. Apply 10 to 12 lbs. N per ton of expected yield. The total N is dependent on soil type and expected yield. Plant samples can be analyzed during the growing season to monitor the nutrient status of the small grain. Timely management of diseases, weeds and insects are essential for profitable small grain silage production. Plant a cover crop after harvest.

The following crop note applies to field(s): 1, 10, 11, 2

#### Small Grain Silage, Piedmont and Mountains

In the Piedmont, small grain silage should be planted from October 10 to November 3. In the Mountains, small grain silage should be planted from September 15 to October 31. Plant 18 to 22 seed/drill row foot at 1-1 1/2" deep and increase the seeding rate by 5% for each week seeding is delayed beyond the optimum time frame. See the seeding rates table for applicable seeding rate modifications in the current NCSU "Small Grain Production Guide". Also, increase the initial seeding rate by at least 10% when planting no-till. Adequate depth control when planting the small grain is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply approximately 30 lbs N at planting. Increase N at planting by 20% for no-till. Phosphorus and potassium should be applied according to a soil test at this time. The remaining N should be applied during February-March. Apply 10 to 12 lbs. N per ton of expected yield. The total N is dependent on soil type and expected yield. Plant samples can be analyzed during the growing season to monitor the nutrient status of the small grain. Timely management of diseases, weeds and insects are essential for profitable small grain silage production. Plant a cover crop after harvest.

The following crop note applies to field(s): 1, 12, 3, 9

#### Small Grain Silage, Piedmont and Mountains

In the Piedmont, small grain silage should be planted from October 10 to November 3. In the Mountains, small grain silage should be planted from September 15 to October 31. Plant 18 to 22 seed/drill row foot at 1-1 1/2" deep and increase the seeding rate by 5% for each week seeding is delayed beyond the optimum time frame. See the seeding rates table for applicable seeding rate modifications in the current NCSU "Small Grain Production Guide". Also, increase the initial seeding rate by at least 10% when planting no-till. Adequate depth control when planting the small grain is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply approximately 30 lbs N at planting. Increase N at planting by 20% for no-till. Phosphorus and potassium should be applied according to a soil test at this time. The remaining N should be applied during February-March. Apply 10 to 12 lbs. N per ton of expected yield. The total N is dependent on soil type and expected yield. Plant samples can be analyzed during the growing season to monitor the nutrient status of the small grain. Timely management of diseases, weeds and insects are essential for profitable small grain silage production. Plant a cover crop after harvest.

The following crop note applies to field(s): 2, 3, 6, 7

### Small Grain Silage, Piedmont and Mountains

In the Piedmont, small grain silage should be planted from October 10 to November 3. In the Mountains, small grain silage should be planted from September 15 to October 31. Plant 18 to 22 seed/drill row foot at 1-1 1/2" deep and increase the seeding rate by 5% for each week seeding is delayed beyond the optimum time frame. See the seeding rates table for applicable seeding rate modifications in the current NCSU "Small Grain Production Guide". Also, increase the initial seeding rate by at least 10% when planting no-till. Adequate depth control when planting the small grain is essential. Review the NCSU Official Variety "green book" and information from private companies to select a high yielding variety with the characteristics needed for your area and conditions. Apply approximately 30 lbs N at planting. Increase N at planting by 20% for no-till. Phosphorus and potassium should be applied according to a soil test at this time. The remaining N should be applied during February-March. Apply 10 to 12 lbs. N per ton of expected yield. The total N is dependent on soil type and expected yield. Plant samples can be analyzed during the growing season to monitor the nutrient status of the small grain. Timely management of diseases, weeds and insects are essential for profitable small grain silage production. Plant a cover crop after harvest.

**Realistic Yields for Ko: Kinkora loam in Henderson County**

<b>Crop</b>	<b>Yield</b>	<b>Nitrogen Factor</b>	<b>Realistic Nitrogen Rate (lbs/acre)</b>	<b>Estimated Phosphorus Removal (lbs P<sub>2</sub>O<sub>5</sub>/acre)</b>
Barley (Grain)	0 Bushels	1.44	0	0
Corn (Grain)	105 Bushels	1.06	111	46
Corn (Silage)	16 Tons	10.4	166	54
Cotton	0 Pounds	0	0	0
Sorghum (Silage)	13.5 Tons	7.3	99	41
Oats (Grain)	0 Bushels	1.07	0	0
Peanuts	0 Pounds	0	0	0
Rye (Grain)	0 Bushels	1.86	0	0
Small Grain (Silage)	0 Tons	10.6	0	0
Sorghum (Grain)	50 CWT	1.61	81	38
Soybeans (Double Cropped)	0 Bushels	0	0	0
Soybeans (Full Season)	0 Bushels	0	0	0
Soybeans (Double Cropped - Manured)	0 Bushels	3.84	0	0
Soybeans (Full Season - Manured)	0 Bushels	3.84	0	0
Tobacco (Burley)	1000 Pounds	0.072	72	4
Tobacco (Flue Cured)	0 Pounds	0.024	0	0
Triticale (Grain)	0 Bushels	1.45	0	0
Tropical Corn (Silage)	16 Tons	6.2	99	54
Wheat (Grain)	0 Bushels	1.86	0	0
Bahlagrass (Hay)	0 Tons	42	0	0
Caucasion/Old World Bluestem (Hay)	0 Tons	42	0	0
Common Bermudagrass (Hay)	0 Tons	42	0	0
Dallisgrass (Hay)	0 Tons	42	0	0
Fescue (Hay)	2 Tons	42	84	31
Hybrid Bermudagrass (Hay)	0 Tons	42	0	0
Hybrid Bermudagrass overseeded with Rescuegrass (Hay)	0 Tons	42	0	0
Mixed Cool Season Grass (Hay)	1.5 Tons	42	63	21
Orchardgrass (Hay)	1.8 Tons	42	74	26
Pearl Millet (Hay)	0 Tons	47	0	0
Rescuegrass (Hay)	0 Tons	42	0	0
Sorghum Sudan (Hay)	0 Tons	47	0	0
Timothy Grass (Hay)	1.5 Tons	42	63	17

## Realistic Yields for To: *Toxaway silt loam* in Henderson County

Crop	Yield	Nitrogen Factor	Realistic Nitrogen Rate (lbs/acre)	Estimated Phosphorus Removal (lbs P <sub>2</sub> O <sub>5</sub> /acre)
Barley (Grain)	0 Bushels	1.42	0	0
Corn (Grain)	175 Bushels	1.03	180	77
Corn (Silage)	28 Tons	10.2	286	95
Cotton	0 Pounds	0	0	0
Sorghum (Silage)	23.8 Tons	7.1	169	71
Oats (Grain)	0 Bushels	1.03	0	0
Peanuts	0 Pounds	0	0	0
Rye (Grain)	0 Bushels	1.78	0	0
Small Grain (Silage)	0 Tons	10.3	0	0
Sorghum (Grain)	85 CWT	1.56	133	64
Soybeans (Double Cropped)	51 Bushels	0	0	41
Soybeans (Full Season)	60 Bushels	0	0	48
Soybeans (Double Cropped - Manured)	51 Bushels	3.82	195	41
Soybeans (Full Season - Manured)	60 Bushels	3.82	229	48
Tobacco (Burley)	1800 Pounds	0.071	128	8
Tobacco (Flue Cured)	0 Pounds	0.022	0	0
Triticale (Grain)	0 Bushels	1.42	0	0
Tropical Corn (Silage)	28 Tons	6.1	171	95
Wheat (Grain)	0 Bushels	1.78	0	0
Bahia grass (Hay)	0 Tons	41	0	0
Caucasion/Old World Bluestem (Hay)	0 Tons	41	0	0
Common Bermudagrass (Hay)	0 Tons	41	0	0
Dallisgrass (Hay)	0 Tons	41	0	0
Fescue (Hay)	3.5 Tons	41	144	55
Hybrid Bermudagrass (Hay)	0 Tons	41	0	0
Hybrid Bermudagrass overseeded with	0 Tons	41	0	0
Rescuegrass (Hay)				
Mixed Cool Season Grass (Hay)	2.5 Tons	41	103	36
Orchardgrass (Hay)	3.3 Tons	41	133	47
Pearl Millet (Hay)	0 Tons	46	0	0
Rescuegrass (Hay)	0 Tons	41	0	0
Sorghum Sudan (Hay)	0 Tons	46	0	0
Timothy Grass (Hay)	2.8 Tons	41	113	31

**Realistic Yields for Ro: Rosman loam in Henderson County**

<b>Crop</b>	<b>Yield</b>	<b>Nitrogen Factor</b>	<b>Realistic Nitrogen Rate (lbs/acre)</b>	<b>Estimated Phosphorus Removal (lbs P<sub>2</sub>O<sub>5</sub>/acre)</b>
Barley (Grain)	101 Bushels	1.49	150	38
Corn (Grain)	205 Bushels	1.11	228	90
Corn (Silage)	32 Tons	10.9	349	109
Cotton	0 Pounds	0	0	0
Sorghum (Silage)	27.3 Tons	7.6	207	82
Oats (Grain)	128 Bushels	1.13	145	32
Peanuts	0 Pounds	0	0	0
Rye (Grain)	75 Bushels	2.01	151	25
Small Grain (Silage)	12 Tons	11.1	133	65
Sorghum (Grain)	100 CWT	1.72	172	75
Soybeans (Double Cropped)	55 Bushels	0	0	44
Soybeans (Full Season)	65 Bushels	0	0	52
Soybeans (Double Cropped - Manured)	55 Bushels	3.89	214	44
Soybeans (Full Season - Manured)	65 Bushels	3.89	253	52
Tobacco (Burley)	2600 Pounds	0.074	192	11
Tobacco (Flue Cured)	0 Pounds	0.029	0	0
Triticale (Grain)	105 Bushels	1.52	160	35
Tropical Corn (Silage)	32 Tons	6.5	208	109
Wheat (Grain)	75 Bushels	2.01	151	38
Bahiagrass (Hay)	0 Tons	44	0	0
Caucasion/Old World Bluestem (Hay)	0 Tons	44	0	0
Common Bermudagrass (Hay)	0 Tons	44	0	0
Dallisgrass (Hay)	0 Tons	44	0	0
Fescue (Hay)	5 Tons	44	220	79
Hybrid Bermudagrass (Hay)	0 Tons	44	0	0
Hybrid Bermudagrass overseeded with Rescuegrass (Hay)	0 Tons	44	0	0
Mixed Cool Season Grass (Hay)	3.5 Tons	44	154	50
Orchardgrass (Hay)	4.5 Tons	44	198	66
Pearl Millet (Hay)	0 Tons	49	0	0
Rescuegrass (Hay)	0 Tons	44	0	0
Sorghum Sudan (Hay)	0 Tons	49	0	0
Timothy Grass (Hay)	4 Tons	44	176	45