

BASELINE NUTRIENT MANAGEMENT PLAN



**Joe Farmer
Any Address MN. 55555
(000) 000-0000**

BASELINE NUTRIENT MANAGEMENT PLAN (Version 2.1)
(Meets Requirements of USDA-NRCS Programs)

Joe Farmer
 Any Street
 Any City, MN 55555
 (000) 000-0000

This plan and appendices provide information to help manage fertilizer in a manner that improves plant, soil, water, air, and other resources. The plan provides nutrient rate recommendations that should be annually updated. This Baseline Nutrient Management Plan includes field maps and information on:

- ✓ Sensitive areas and sensitive area management
- ✓ Operation and maintenance activities
- ✓ Recommended nutrient application rates, timing and placement

I. FIELDS WITH SENSITIVE AREAS REQUIRING SPECIAL MANAGEMENT

Sensitive Features and Areas

Your fields may contain sensitive features and/or areas requiring special management to keep fertilizer in the zone of application. These often natural features increase the potential for applied nitrogen and phosphorus to move towards ground water or surface waters. Elevated levels of nitrogen in drinking water can be dangerous to babies and young livestock. Scientific trials show direct relationships between soluble algal available phosphorus in runoff and soil test phosphorus (STP) levels. Potential to accelerate algae growth increases as STP levels increase if a field's runoff reaches surface waters.

The following sensitive features occur on one or more of your fields. The Appendix contains one or more reports that identify specific fields containing these sensitive features.

Lake, Stream Wetland <300'	Sinkhole, well, mine or quarry	Sheet and Rill Soil losses > 6 tons/ acre/year or excessive ephemeral erosion	Fractured bedrock	Frequently flooded soils	Coarse texture soils	Public Water Supply Mgt. area
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Nitrogen and Phosphorus Loss

The general sensitivity of the farm to timing of commercial fertilizer nitrogen applications has been determined based on soil texture in your fields and annual rainfall amounts. Additional factors used in this evaluation include: (None). Based on this evaluation, nitrogen transport and loss potentials are **Low** for fall applications, **High** for spring preplant applications and **Low** for sidedress or split applications. Field specific loss ratings can be found on the appended "**Field Nitrogen Loss Assessment**" report.

The general sensitivity of the farm to phosphorus transport has not been determined using the Minnesota P-Index. Based on this evaluation, phosphorus transport and loss potentials are **not evaluated**. Field specific loss ratings are not found in the appendix.

II. RECOMMENDED PRACTICES FOR SENSITIVE AREAS AND FEATURES

Land Treatment Practices

The following practices are recommended on sensitive fields receiving nutrient applications.

PRACTICE	FIELDS	INSTALL YEAR
Residue Management	1,4,7, South 36	2001
Filter Strip	2,4	2004

Consult your Soil and Water Conservation Plan for additional detail.

Nutrient Management in Sensitive Areas

Consult the appended reports **Nutrient Application Restrictions in Sensitive Areas**” and **“Management Practice Considerations for Nitrogen and Phosphorus”** for sensitive area application guidance.

High Soil Phosphorus Levels

You should manage your operation to avoid excessive build-up of soil test phosphorus (STP). Your baseline plan and subsequent annual plans may not recommend applications on some fields because of very high STP levels.

III. OPERATION AND MAINTENANCE

1. Operation

- Soils should be sampled for organic matter, pH, phosphorus and potassium on each field at least once every 4 years. Testing for residual soil nitrate should be done annually where appropriate. Soil samples will be collected and handled according to Univ. of Minn. or NRCS guidelines (USDA-NRCS-MN Fact Sheet MN-NUTR3 Soil Sampling) and analyzed by a Minnesota Department of Agriculture (MDA) certified laboratory.

Planned Soil Sampling		Planned Calibration Years	
Fields		Year	Fertilizer
Home Farm	All Fields	2002	2003
Raddle Farm	All Fields	2003	2003
Ricke Farm	All Fields	2004	2003

- Commercial fertilizer application equipment will be maintained and calibrated according to manufacturer directions and MN. Dept. of Agriculture and Univ. of Minn. guidelines (MDA Fact Sheet **Maintaining Anhydrous Ammonia Equipment** and UMES fact sheet **Calibrating Manure Spreaders**). Equipment will be maintained to insure that applied rates do not deviate from planned rates by more than approximately 15%.
- Use safety practices to minimize exposure to chemical fertilizers-particularly ammonia forms of fertilizers (MN. Dept. of Ag. Fact Sheets **Minnesota Ammonia Rules Revised** and **Anhydrous Ammonia Quick Checklist**). Wear protective clothing including footwear, a respirator, and gloves when appropriate.
- Protect fertilizer storage areas from weather to minimize runoff, leakage, and loss of material.

2. Maintenance

Maintain application equipment in good operating condition and clean after nutrient applications.

3. Record keeping - Maintain records for a six-year period.

At your request, record keeping forms **have not** been included in this plan.

Field specific records

- Crop yields, planting and harvest dates and crop residues removed.
- Type of nutrient applied to each field (commercial fertilizer, other nutrient source) and analysis of the nutrient.
- Application dates and rates, including application methods and time to incorporation.

4. Plan Review

This baseline plan including rate recommendations should be reviewed annually and updated as rotations and realistic yields change.

IV. CROP NUTRIENT MANAGEMENT PLAN

The attached **Crop Nutrient Management Plan** recommends fertilizer application methods, timing and rates. The recommendations take into consideration potential for loss of nitrogen and/or phosphorus to air, runoff and leaching and are based on realistic yield goals, soil tests, and University of Minnesota fertilizer guidelines.

The recommendations will generally be field and year specific. However on some farms the recommendations may be grouped by similar field and will be for each crop in your rotation.

This plan complies with USDA-Natural Resources Conservation Service of Minnesota standards and any applicable federal or state regulation in place as of the date shown below. Additional practices may be necessary to comply with local regulations. This plan was developed based on the current crop and animal production practices of the farm operation. Changes in those production practices could result in the need for modifying and updating of this plan.

NRCS Certified Nutrient Specialist signature

Date

Specialist Name

TSP I.D. # or Agency Staff Title

Street Address

Phone Number

City / State / Zip Code

APPENDIX 1

Maps



Annual Crop Nutrient Management Plan

NRCS form MN-CPA-038 or “Field Specific Summary of Nutrient Applications”¹
or Equivalent.



Sensitive Area Recommendations

“Nutrient Application Restrictions in Sensitive Areas” report



“Management Practice Considerations for N and P” report



Sensitive Area Determinations: NRCS form MN-CPA-40 (Farming Practices Inventory) or
equivalent

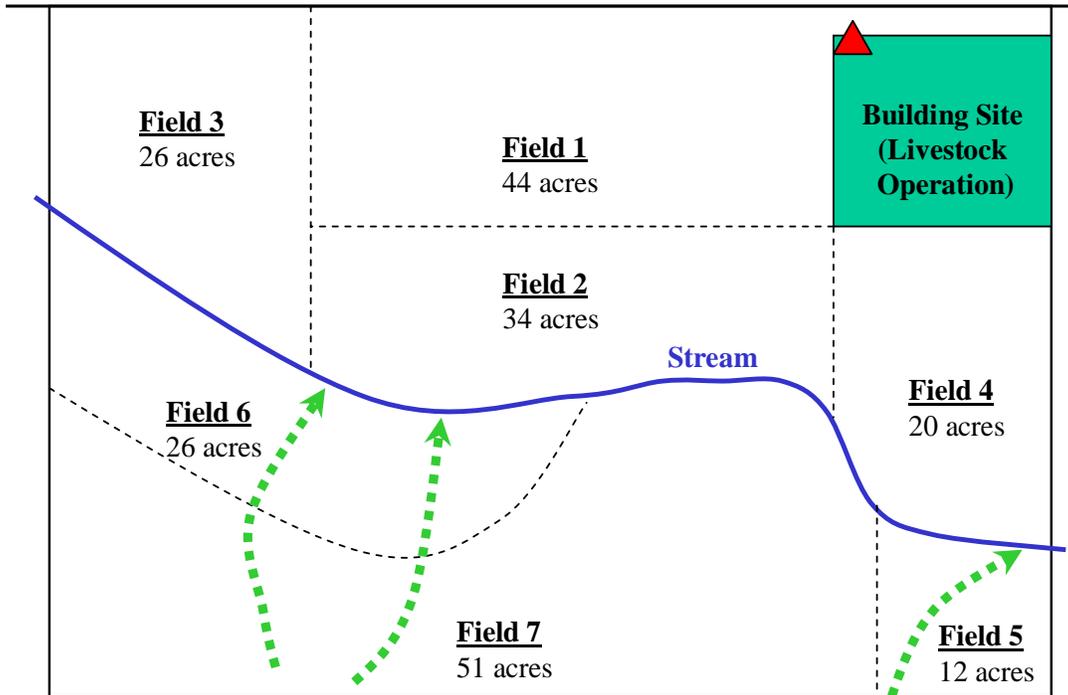


¹ Report from Nutrient Management Planner for Minnesota Software

**Joe Farmer
Home Farm
(213 tillable acres)
Tract T558**



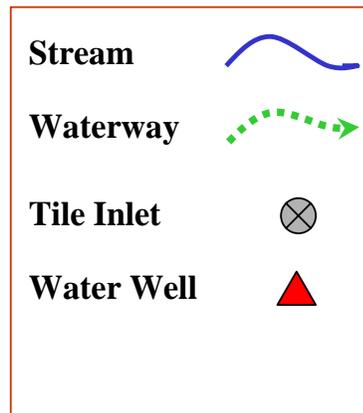
Hwy 50 (240th Street)



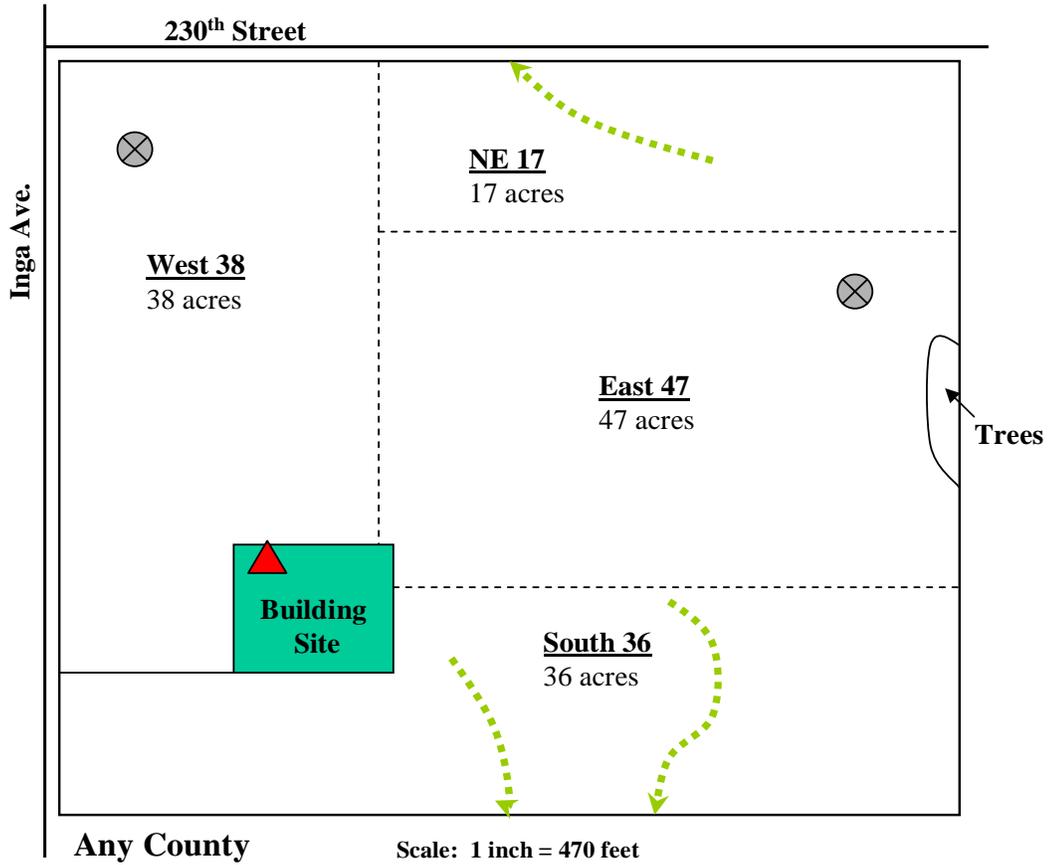
**Any County
Any Township
Section 14, NW 1/4**

Scale: 1 inch = 620 feet

Sensitive Areas



**Joe Farmer
Raddle Farm
(138 tillable acres)
Tract 978**



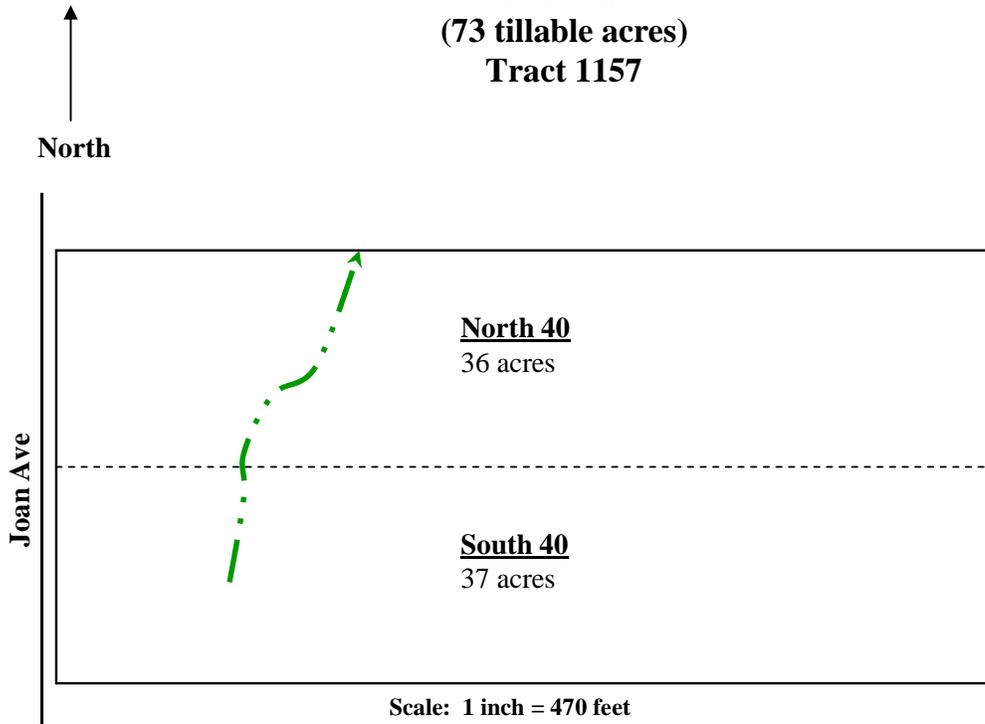
**Any County
Any Township
Section 7, NW 1/4**

Scale: 1 inch = 470 feet

Sensitive Areas

Stream	
Waterway	
Tile Inlet	
Water Well	

**Joe Farmer
Ricke Farm
(73 tillable acres)
Tract 1157**



**Any County
Any Township
Section 20, NW 1/4**

Sensitive Areas

Stream	
Waterway	
Tile Inlet	
Water Well	
Special Protection Area	

FARM NUTRIENT MANAGEMENT PLAN

For Crop Year 2002

Joe Farmer

Farm # <u>Home, Raddle and Ricke</u>		Tract # <u>558;978;1157</u>		Fields with Sensitive Areas <u>1thru 7; SandN 40; S36, W38</u>					
Field	Crop	Source	Form or analysis	Rate	Timing	Method	Planning yr. nutrients (lbs./acre)		
							N	P ₂ O ₅	K ₂ O
Home2,3,4,6	Corn	Fertilizer	Urea	250 lbs./ac.	Spring pre-plant	Surface Broadcast/incorp.	92		
		Fertilizer	7-21-7	5 gal./ac.	At planting	Row starter 2X2 placement	4	12	4
Field Totals							96	12	4
Home 1, 5, 7; Raddle E47, S36; Ricke So 40	Soybean	None							
Field Totals							0	0	0
Raddle NE17, W 38 Ricke No 40	Corn	Fertilizer	Urea	250 lbs./ac	Spring pre-plant	Surface Broadcast/incorp.	92		
		Fertilizer	7-21-7	10 gal./ac.	At planting	Row starter 2X2 placement	8	23	8
Field Totals							100	23	8
Field Totals									
Field Totals									

Sensitive Area Practices: Spring N applications on all fields ; Mulch tillage on select fields; filter strip on field fields 2 and 4

Commercial Nutrient Application Restrictions in Sensitive Areas

Restrictions based on USDA-NRCS requirements for individuals participating in cost-share programs.

Environmentally Sensitive Features	Non-Winter Applications	Winter Applications (When soil is frozen, snow-covered or actively thawing)
Surface Waters - Intermittent Streams, DNR Protected Wetlands, Drainage Ditches without Berms, Lakes, Streams	Incorporate phosphorus applications within a few days on fields draining towards surface waters	Do not apply commercial fertilizer within 300 feet of surface waters. Do not apply on other fields unless soil losses are < 3 tons/ acre/ year
Water Supply Wells (Active or Inactive), Mines, Quarries, sinkholes receiving runoff and other direct conduits to ground water	Immediately incorporate nitrogen fertilizer applications on fields draining towards these features.	
Fields with sheet and rill losses greater than 6 tons/acre/year or excessive ephemeral erosion	<u>Either do not apply commercial fertilizer or control soil losses</u>	
Fractured Bedrock	Do not fall apply commercial nitrogen fertilizer on fields with less than 36 inches of soil above the bedrock	
Frequently Flooded Soils as classified by NRCS	<u>During usual peak flooding periods, Incorporate commercial fertilizer applications within 24 hours</u>	Do not apply commercial nitrogen or phosphorous fertilizer
Coarse Textured Soils	Do not apply commercial nitrogen fertilizer in fall	
Vulnerable Drinking Water Supply Management Areas	Do not apply commercial nitrogen fertilizer in fall	

Management Practice Considerations for Nitrogen and Phosphorus

Nitrogen Best Management Practices for Southeastern Minnesota

- Adjust nitrogen rate according to soil organic matter content, previous crop and manure applications
- Use a soil nitrate test where appropriate
- Use prudent manure management to optimize nitrogen credit
 1. Injection of manure is preferable, especially on strongly sloping soils
 2. Avoid manure application to sloping, frozen soils
 3. Incorporate manure applications whenever possible
- Plan nitrogen application timing to achieve high efficiency of nitrogen use
 1. Do not apply fertilizer nitrogen in the fall
 2. Spring preplant application of anhydrous ammonia or urea is encouraged. Broadcast urea should be incorporated within three days of application
 3. Apply sidedress applications to corn before it is 12 inches high
 4. Inject or incorporate sidedress applications of urea and UAN to a minimum depth of 4 inches
 5. Use a nitrification inhibitor with preplant nitrogen applications if soils are poorly drained and soil moisture levels are high near the surface
 6. Minimize direct movement of surface-water runoff to sinkholes

Phosphorus Management Practices

- Subsurface band or row apply commercial phosphorous fertilizer
- Immediately incorporate broadcast commercial fertilizer
- Control soil losses and runoff to levels considered safe for the soil resource; control to lower levels when fields have very high to excessive soil test phosphorus levels
 1. Control sheet and rill losses by installing conservation practices including conservation tillage, contour farming, strip cropping, terraces and cover crops
 2. Control ephemeral erosion by installing water and sediment control basins, waterways and diversions

Farming Practices Inventory

Producer Joe Farmer

General Information

Address Any Street, Any City, Minn. 55555

Phone Number(s) House (000) 000-0000 Barn _____

Farms	Home	Raddle	Ricke
Tracts(s)	T558	T978	T1157
Field(s)	1thru7	NE17, W38,E47,S36	S40. N40

Sensitive Features

Soil and Geological Features								Water		Other			
Soil Test P > 21 or 75 B (16 or 60 O)	Coarse Texture Soils	Frequently Flood Soils	Water Table Depth < 24"	Bedrock Depth < 40"	Sink-holes < 300'	Slope > 6%	Soil Loss ≥6 T/A	Uncontrolled Ephemeral Erosion	Lake Stream Wetland <300'	Water -way or Ditch	Mine or Quarry <300'	Open Tile Intake <300'	Water Supply Well <300'
									2-7				1
	N40, S40												
						S36							W38

Water Quality Priority Area

(e.g. if applicable enter W.Q. Watershed Project, Impaired Lake, designated TMDL segment and/or vulnerable Source Water Assessment Area or Drinking Water Supply Management Area)

Crop Production Practices

Who assists with crop production decisions (fertilizer, pesticides, etc.)? _____

Scouting? _____ Testing _____

Who assists with commercial fertilizer applications? _____

Type(s) of fertilizer application equipment _____

Complete Forms MN-CPA-41 (Cropping History and Soil Fertility Inventory) and MN-CPA-43 (Nutrient Management Practices Inventory).

Tillage Practices

Livestock Production

No Yes Complete Form MN-CPA-42 (Manure Information Inventory)

Frequently flooded floods 50-100 times in 100 years

* Public water wetlands.

Date

APPENDIX 2

Evaluations

NRCS Minnesota Field Nitrogen Loss Assessment²
Minn. P-Index²
Field specific Soil Loss estimates² or location
NRCS form MN-CPA-023 (Field Nutrient Management Plan)² or
“Field Nutrient Budgets”^{1, 2}

General Information

List of Required Permits if Any²
“General Farm Field Information” Report^{1,2} and “Crop Information” Report^{1,2}
or
NRCS form MN-CPA-41 (Cropping History and Soil Fertility Inventory)²
NRCS form MN-CPA-43 (Nutrient Management Practices Inventory) or equivalent)²

Soils Information

Soil Maps and Soil Legends²
“Soil Information Report”^{1,2}
Soil Test Reports²

¹ Report from Nutrient Management Planner for Minnesota Software

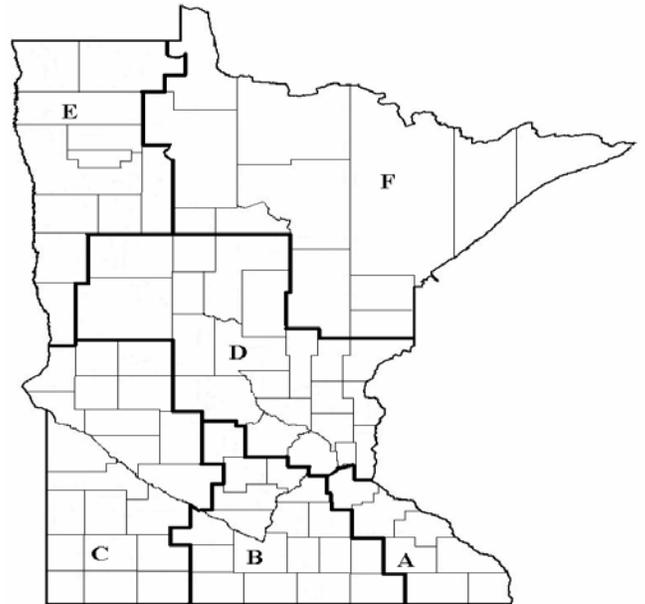
² These evaluations, and reports are located in the NRCS/SWCD copy of your plan if you do not want hard copies at this time.

FIELD NITROGEN LOSS ASSESSMENT

Table 1: Long Term Annual Relative Nitrogen Loss Potential¹

Figure 1: Nitrogen Loss Zones

Zone	Application Method	Soil Texture		
		Coarse ²	Medium	Fine
A	Fall	VH	H	M
	Spring preplant	H	M	M
	Sidedress or split	M	L	L
B	Fall	VH	M	M
	Spring preplant	H	L	L
	Sidedress or split ³	M	L	L
C,D	Fall	VH	L	L
	Spring preplant	H	L	L
	Sidedress or split ³	M	L	L
E	Fall	M	L	L
	Spring preplant	L	L	L
	Sidedress or split ³	L	L	L
F	Fall	H	L	L
	Spring preplant	M	L	L
	Sidedress or split ³	M	L	L



¹Potential Rating: VH-Very High, H-High, M-Moderate, L-Low.

²Coarse-textured soils apply to the surface soil texture and/or the subsoil texture within three feet of the surface. These textures include sand, loamy sand, loamy coarse sand, fine sand, loamy fine sand, loamy very fine sand, coarse sand, very fine sand, and any of the above listed textures with gravelly or very gravelly modifiers.

³ If applied after June 15, the loss rating is reduced to Low on Coarse textured soils. However, late nitrogen applications on most soils that are followed by conditions that reduce yield (i.e. below average precipitation) can cause nitrogen loss to occur due to the crop not utilizing the applied nitrogen. To reduce the potential for this to occur on corn ground, apply no later than the 8th leaf stage.

PRODUCER: Joe Farmer

FARM: Home, Raddle, Rickey

MAP ZONE OR LOCATION: A

FIELD	APPLICATION METHOD	SOIL TEXTURE	RATING
Home 1 thru 7	Spring preplant	Medium	Moderate
Ricke No. and So. 40's	Sidedress or split	Coarse	Moderate
Raddle All Fields	Spring preplant	Medium	Moderate

When ratings are M or higher select management options from UMES' Regional Nitrogen Best Management Practices. Please note that the management option of most importance in Zone A and on coarse textured soils statewide is eliminating fall application of commercial N fertilizers.

APPENDIX 3

Fact Sheets and Recordkeeping Forms

**NRCS Fact Sheet MN-NUTR3-Soil Sampling¹
Recordkeeping forms¹**



¹. NRCS recordkeeping and certification forms can be found at the following location if you do not want a hard copy at this time:

<http://www.mn.nrcs.usda.gov/technical/ecs/nutrient/nutrient.html>

