USDA-NRCS and the Minnesota P-Index

Jeff St. Ores
Water Quality Specialist
USDA-NRCS

Potential Use of the P-Index

- **Augment NRCS nutrient management guidance (Conservation Practice Standard Code 590-Nutrient Management)**
  - **Environmental Quality Incentives Program (EQIP) cost-sharing**

NRCS 590 standard

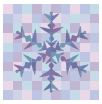
- Focuses on crop growth
- Seeks to insure that crop amendments stay in the zone of application
- Emphasizes N, P, K, o.m. pH and potential disease bearing organisms
- Provides rate, timing, form, placement and incorporation recommendations
- Three decision making aides.
  - Winter-time manure applications
  - Commercial N applications and leaching
  - Organic P applications and Runoff

Winter Application Restrictions

TABLE 1. SUMMARY TABLE – APPLICATION RESTRICTIONS FOR FROZEN, SNOW-COVERED OR ACTIVELY THAWING CONDITIONS

Do not recommend manure and commercial nitrogen or phosphorous fertilizer applications when ground is frozen, snow-covered or actively thawing on fields:

1 **Within 300 feet of sensitive features including surface waters, surface tile intakes, sinkholes, water supply wells, mines and quarries OR**
2 **With uncontrolled ephemeral erosion OR**
3 **With frequently flooded soils OR**
4 **That are idled cropland with a perennial cover, CRP or similar land OR**
5 **With sheet and rill soil losses greater than 2-4 tons per acre per year**



Distance to sensitive feature (feet)	Sheet and Rill Erosion (Tons/Acre/ Year)	*Ephemeral Erosion not Controlled*	*Frequently Flooded Soils*	*Idled Cropland with perennial cover, CRP or similar land*
		No Commercial Nitrogen or Phosphorous Fertilizer or Manure Applications		
< 300	No Commercial Nitrogen or Phosphorous Fertilizer or Manure Applications			
>300	> 4	No Solid Manure Applications		
	> 2	No Commercial Nitrogen or Phosphorous Fertilizer or Liquid Manure Applications		

Field Phosphorus Loss Risk Assessment

PHOSPHORUS LOSS POTENTIAL AND MANURE APPLICATION RATES

Distance to Surface Water (feet)	Effective 100 ft. Filter Strip	Soil Test Phosphorous Levels (ppm) Bray P1	Soil Test Phosphorous Levels (ppm) Olsen	Sheet and Rill Erosion (Tons/Acre/Year)	Base Manure Application Rate on:
NA	NA	NA	NA	> 6	No Application
Less Than 300'	No	≤ 21	≤ 16	< 6	Nitrogen Needs
		22 - 75	17 - 60	< 6	P_2O_5 Removal
		76 - 150	61 - 120	< 4	P_2O_5 Removal
				4 - 6	No Application
		> 150	>120	< 6	No Application
	Yes	≤ 21	≤ 16	< 6	Nitrogen Needs
		22 - 75	17 - 60	< 4	Nitrogen Needs
				4 - 6	P_2O_5 Removal
		76 - 150	61 - 120	< 6	P_2O_5 Removal
		> 150	>120	≤ 2	P_2O_5 Removal
				> 2	No Application
300' or Greater	No	< 76	< 61	< 6	Nitrogen Needs
		76 – 150	61 - 120	< 6	P_2O_5 Removal
		> 150	> 120	< 4	P_2O_5 Removal
				> 4	No Application
	Yes	≤ 150	≤ 120	< 6	Nitrogen Needs
		>150	>120	< 4	Nitrogen Needs
				4 – 6	P_2O_5 Removal

P removal can be accomplished by applying at N based rates followed by no additional apps in subsequent years

NRCS 590 Standard

- The 590 standard is revised on a 3-5 year basis.
- This year we will begin the revision process-Goal to release in late summer 2006.

Proposed changes to 590 Nutrient Management standard

- Use P-Index to:
  - Evaluate non-livestock operations for P movement in P-impaired watersheds
  - Advise when to use P-Index by incorporating into NRCS P loss assessment table.

Field Phosphorus Loss Risk Assessment

PHOSPHORUS LOSS POTENTIAL AND MANURE APPLICATION RATES

Distance to Surface Water (feet)	Effective 100 ft. Filter Strip	Soil Test Phosphorous Levels (ppm)		Sheet and Rill Erosion (Tons/Acre/Year)	**Base Manure Application Rate on:**
		Bray P1	Olsen		
NA	NA	NA	NA	> 6	No Application
Less Than 300'	No	≤ 21	≤ 16	< 6	Nitrogen Needs
		22 - 150	17 - 120	< 6	P_2O_5 Removal
		> 150	>120	< 2	P_2O_5 Removal
				>2	No Application
	Yes	≤75	≤ 60	< 6	Nitrogen Needs
		76 - 150	61 - 120	< 6	P_2O_5 Removal
		> 150	>120	≤ 4	P_2O_5 Removal
				> 4	Run P-Index
300' or Greater		< 76	< 61	< 4	Nitrogen Needs
				4- 6	Run P-Index
		> 76	> 61	< 6	Run P-Index

P removal can be accomplished by applying at N based rates followed by no additional apps in subsequent years

QUESTIONS???

Jeff St. Ores
USDA-NRCS
375 Jackson Street, Suite 600,
St. Paul, Minn. 55101
(651) 602-7869
jeff.st.ores@mn.usda.gov