Section 9 Example: Estimating Manure Phosphorus Application Rates

Calculations:

P-Based Application Rate = Corn Phosphorus Need (2) / Manure P Content (11)

Corn Phosphorus Need was calculated previously in equation 2

Manure P Content is representative concentration of manure P from manure analysis

P-Index Interpretation: The Nebraska P-Index developed by the University of Nebraska (2006) will be used for analysis. The P Index risk value is the sum of the erosion and runoff components. The interpretation of risk and recommended manure application risk fall into one of four levels:

Low (0-2). Current practices keep water quality impairment low due to agricultural P pollution. Manure can be applied at rates sufficient to meet crop P needs.

Medium (2-5). Delivery of agricultural P many cause some water quality impairment and consideration should be given to alternative conservation and P management practices. Manure can be applied at rates sufficient to meet crop N needs.

Hight (5-15). Phosphorus loss from the field causes much water quality impairment. Remedial action, such as alternative conservation measures or P management practices, is required. Manure can be applied, but applied P should not exceed crop P removal. Crop P removal can be the sum of single year crop P removal over 5 years with no manure application during the next four years to this same field.

Very High (> 15). Impairment of water quality is extreme and remedial action is urgently required. Phosphorus application should be discontinued. Improved conservation measures should be implemented.

Requirements for application of a phosphorus-based manure rate to a field include:

a. No single manure application shall exceed the nitrogen-based rate of the planned crop receiving the particular manure application.
b. Phosphorus in manure should be considered 100 percent available unless soil phosphorus concentrations are below optimum levels for crop production. In that case, values suggested in State University extension publication PM 0000, “Managing Manure Nutrients for Crop Production” will be used.
c. If the actual crop schedule differs from the planned crop schedule, then any surplus or deficit of phosphorus shall be accounted for in the subsequent manure application.

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Assessment completed in 2007

Field	P-Index Value	Application Rate
Field 1 – Pivot	0.7	N-Based rate
Field 2 – Feedlot Quarter	1.2	N-Based rate
Field 3 – Dry Quarter (West)	10.3	P-Based rate – 4 year P supply for single application
Field 3 – Dry Quarter (East)	6.6	P-Based rate– 4 year P supply for single application

Nebraska Phosphorus Index

USDA NRCS Natural Resources Conservation Service

University of Nebraska Lincoln EXTENSION

Prepared by:	***Jane Doe***			
Prepared for:	***Joe Farmer***			
County	Pierce	Pierce	Pierce	
Field	Field 1 - Pivot	Field 2 - Feedlot Qtr	Field 3 -Dry Qtr (West)	
Option				
Erosion, S&R	2.0	1.0	7.6	
Filter width	20-35 ft.	0-10 ft	20-35 ft.	
Enrichment	Tillage	Perennial Forage and Grass	Tillage	
Land use	Conservation Till without contoui	Perennial Forage, Grass, or Hay	Conservation Till with contoui	
	High Residue Crop/Low residue	Meadow/grass hayland (non gra	Row crop High Residue/Low	
Soil type	Hord-Hobbs silt loams, 0 to 7 pe	Nora silt loam, 7 to 11 percent sl	Nora silt loam, 7 to 11 percer	
Soil P (ppm)	13.0	55.0	250.0	
Applied P lbs	250.0	100.0	150.0	
	Surface Application, No Incorpor	Incorporate or Inject Within 24 H	Select the application methoc	
Irrigation	Sprinkler	Sprinkler	None	
Rate gpm				
Furrow slope%				
Manure	7	0	5	
P-Index Value	0.7	1.2	10.3	

County	Pierce
Field	Field 3 -Dry Qtr (East)
Option	
Erosion, S&R	4.3
Sediment trap	None
Field radius	0.0
Filter width	20-35 ft.
Enrichment	Tillage
Land use	Conservation Till without contouring
	High Residue Crop/Low residue Crop - mt
Soil type	Hord-Hobbs silt loams, 0 to 7 percent slopes
Soil P (ppm)	278.0
Applied P lbs	150.0
	Surface Application, No Incorporation
Irrigation	None
Rate gpm	
Furrow slope%	
Manure	5
P-Index Value	6.6

0.4	0.4	

P -Index Value 0 to 2 = Low risk, 2 to 5 = Medium risk, 5 to 15 = High risk, 15+ = Very high risk

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