United States Department of Agriculture
Natural Resources Conservation Service

NE-WQL11 2011 Ranking Period 1

Water Quality Enhancement Activity – WQL11 – Precision application technology to apply nutrients

State Criteria (same as NATIONAL CRITERIA)

Additional Criteria for Nebraska

- Soil samples will be taken using either grid sampling and/or geo-referenced (GIS) management zones (directed) sampling.
  (1) Grid Sampling
    (a) When using grid sampling a sampling density of at least one sample per 5.0 acres is required. The University of Nebraska recommends a sampling density of at least one sample per 2.5 acres and a sampling density of one sample per acre is recommended for fields with more apparent variability.
    (b) Grid sampling is typically used for surface samples and all nutrients other than nitrogen.
  (2) Geo-referenced (GIS) Management Zones (directed) Sampling
    (a) When using directed sampling, individual soil samples shall represent an area no larger than 20 acres in size. Areas with similar results and recommendations can be combined into larger management zones.
    (b) Management zones will be selected using GIS yield maps, digital soil maps, aerial photography, and other maps of soil variability such as maps from previous grid sampling efforts.
    (c) Management zones should have similar management (i.e. cropping history, manure and fertilizer applications, and irrigation) and similar soil and site conditions (i.e. soil texture, soil color, organic matter, slope, drainage, etc.).
  (3) A combination of grid and directed sampling may be utilized. For example, surface grid samples may be utilized for amendments/nutrients other than nitrogen, and directed management zone sampling used for nitrogen management.
- Soils shall be sampled and analyzed in accordance with Practice Specification for Nutrient Management (S-590) or NebGuide "Guidelines for Soil Sampling" (G1740)
- All soil samples must be taken prior to applying fertilizer or manure.
- If applicable, manure shall be sampled and analyzed annually in accordance with Practice Standard 633 – Waste Utilization. Refer to NebGuide *"Sampling Manures for Nutrient Analysis, G1450"* and NebGuide "*Manure Testing: What to Request*, G1780" (formerly NF02-507).. Available at: http://digitalcommons.unl.edu/cgi/viewcontent.cgi?article=2798&context=extensionhist

- All nutrients will be applied using variable rate technologies (VRT).
- Nutrient application rates will follow University of Nebraska recommendations based on soil tests and established yield goals (refer to Practice Standard 590 and Practice Specification (S-590) for Nutrient Management).
- Nitrogen will be split applied based on University of Nebraska recommendations and real time analysis of crop nitrogen needs using chlorophyll meters, sensors mounted on the VRT application equipment, or in-season aerial photography.

  (1) Apply ¼ to ¾ the recommended nitrogen rate prior to planting. Lower rates are recommended for VRT application equipment with mounted sensors, higher rates for the chlorophyll meters or in-season aerial photography.
  (2) Unless in-season fertilizer applications can be made using a VRT applicator, the initial application

must be made using a VRT applicator.

(3) Fertilize reference strips within the field with the full recommended rates plus 20%.

(4) Multiple reference strips should be established across the field so that all management zones are represented. When using VRT application equipment with mounted sensors it is recommended that the reference strips be established across the rows and be wide enough to accommodate all of the sensors on the equipment so that the sensors will pass through a reference strip on each pass.

(5) Measure canopy nitrogen status at the V10-V12 growth stage using the selected diagnostic tool and apply nitrogen accordingly.

(6) Nitrogen can be applied using high clearance fertilizer application equipment or an irrigation system capable of applying fertilizer during the growing season.

(7) If nitrogen can be applied incrementally to the growing crop, apply nitrogen in 20-40 lb increments and monitor crop status on a weekly basis. Otherwise, apply enough additional nitrogen to meet UNL recommendations.

(8) For additional information refer to Extension Circular EC163 "*Site-specific Nitrogen Management for Irrigated Corn*" or NebGuide G1632 "*Using a Chlorophyll Meter to Improve Nitrogen Management.*"

Documentation Requirements (SEE NATIONAL ENHANCEMENT ACTIVITY JOBSHEET)
Additional Documentation Requirements

1. Provide a map indicating where the activities are applied.
2. Provide copy of the soil sampling protocol (grid or zone).
3. Provide a copy of the soil test results.
4. Provide copies of manure analysis, if applicable.
5. Complete the nutrient and fertilizer application table on the following page.
6. Provide a copy of the as-applied digital map of nutrients applied.
7. Complete the fertilizer/application equipment type and calibration date on the following table:

Type of Equipment	Date of Calibration

I certify that the enhancement criteria have been met and the required documentation provided to NRCS.

Certified by: _____ **Date:**_____

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Field Information				Commercial Fertilizer and Manure Application Information								
Tract & Field	Acres	Crop & Yield	Type of Soil Test (Grid or Zone) & no. of samples	Date Applied (m/d/yr)	Form	Rate (lb/a)	Method	If Manure, Days to Incorp.	N Avail. (lb/a)	P Avail. (lb/a)	Total N Avail. (lb/a)	Total P Avail. (lb/a)
Ex. T1234 & F1	*78.9*	Crop	*Grid – 32 samples*	4/1/10	28-0-0	300-500	Surface applied		84-140		168-224	
		Corn										
		Yield		6/15/10	28-0-0	300	Surface applied		84			
		212										
		Crop										
		Yield										
		Crop										
		Yield										
		Crop										
		Yield										