

**NATURAL RESOURCES CONSERVATION SERVICE
CONSTRUCTION SPECIFICATIONS**

NUTRIENT MANAGEMENT

1. Scope

Manage the amount, source, placement, form, and timing of the application of nutrients and soil amendments. To supply nutrients for plant production. To properly utilize manure or organic by-products as a plant nutrient source. To minimize agricultural non-point source pollution of surface and ground water resources. To maintain or improve the physical, chemical, and biological condition of soil.

2. Minimum Specifications

The following components shall be included in the nutrient management plan. Those items marked with an asterisk will be recorded as minimum documentation requirements.

- *Document resource concerns, problems, and practice objective.
- *Aerial photograph or map and a soil map of the site.
- *Extent in acres.
- *Current and/or planned plant production sequence or crop rotation.

The crop sequence or rotation should describe the sequence of crops for at least five years. Start with last year's crop and project the crop rotation for the next four years. Circle the current crop.

- *Results of soil sample analyses.

Follow guidance in standard for soil sample collection. Enter the soil test values for N, P, K, and other constituents as given on the report from the soil test laboratory. Indicate whether the nutrient values are in parts per million (ppm) or lbs./ac.

- Results of manure or organic by-product sample analyses. (Required if land applied.)

Follow guidance in standard for additional criteria applicable to manure or organic by-products applied as a plant nutrient source.

- Results of plant or water analyses.

Follow guidance in standard for plant tissue testing. See Table 1 for irrigation water nutrient credits. See Table 2 for legume nitrogen credits.

- *Realistic yields goals for the crops in the rotation.

Determine a realistic expected yield using historical records using the guidelines in the standard. It is important not to overestimate yields to minimize potential pollution sources and excess fertilizer costs.

- *Quantification of all nutrient sources.

Record all sources of nutrients and the amounts to be applied to supply the requirements of the crop. This will include total nutrient credits, amounts of commercial fertilizer applied, and manure or organic by-products, if applied. If the NRCS/Kansas State University (KSU) Nutrient Management Planning Job sheet is used, all nutrient sources will be recorded in the Crop Nutrient Requirements, Timing, and Sources section of the job sheet.

- *Recommended nutrient rates, timing, form, method of application and incorporation

When using the NRCS/KSU Nutrient Management Planning Job Sheet, NO₃-N will be recorded in lbs./ac. Profile NO₃-N will be soil sample collected from the 0- to 24-inch soil depth. Nutrient credits for P will be converted to P₂O₅ by multiplying P times 2.29. K will be converted to K₂O by multiplying K times 1.2. Consider application methods and timing that reduce the risk of nutrients being transported to ground and surface waters, or into the atmosphere. Suggestions include:

- If soil NO₃ leaching potential is HIGH or INTERMEDIATE, it is recommended to split-apply nitrogen or use a nitrogen inhibitor to provide nutrients at the times of maximum crop utilization.
- Avoiding winter nutrient application for spring seeded crops.
- Subsurface band applications of phosphorus near the seed row.
- Applying nutrient materials uniformly to application areas or as prescribed by precision agricultural techniques.
- Delaying field application of animal manure or other organic by-products if precipitation capable of producing runoff and erosion is forecast within 24 hours of the time of the planned application.
- Applying nutrients as close as possible to time of use to reduce potential for surface and ground water contamination.
- Consider negative impacts, when soil pH is not in balance for proper nutrient interactions in the availability of nutrients in the soil solution, and other plant growth needs.

- *Field Risk Assessment

Follow guidance in standard for field risk assessment. Nutrients shall not be applied to frozen, snow covered, or saturated soil if the potential risk for runoff exists. Potential runoff risk will be determined using the Revised Universal Soil Loss Equation (RUSLE) with site specific cropping system data. Procedures for RUSLE can be found in Section I of the Field Office Technical Guide (FOTG). If ephemeral and gully erosion are present, they will be included as all forms of water erosion. Soil NO₃ leaching potential will be documented in the conservation plan. Procedures for determining soil NO₃ leaching potential can be found in Section II of the Field Office Technical Guide (FOTG).

- *Location of designated sensitive areas or resources and the associated nutrient management restriction.

When using the NRCS/KSU Nutrient Management Planning Job Sheet, designated sensitive areas will be recorded in the Environmental Risk Assessment section of the job sheet. As a minimum the sketch map section of the NRCS/KSU Nutrient Management Planning Job Sheet will be used to locate sensitive areas, but an aerial photograph is preferred.

- Guidance for implementation, operation, maintenance, and record keeping.

Follow guidance in standard for implementation, operation, maintenance and record keeping.

3. Recording Procedure

The minimum specifications for this practice will be recorded in the conservation plan narrative, appropriate jobsheet or the conservation assistance notes

Table 1.**NITROGEN CONTRIBUTION FROM IRRIGATION WATER**

N IN WATER (PPM)	Water Application Rate (ACRE-FEET)			
	0.5	1.0	1.5	2.0
	LBS N/ACRE			
2	3	5	8	11
4	5	11	16	22
6	8	16	24	32
8	11	22	32	43
10	13	27	40	54

Table 2.**Suggested Nitrogen Credits for Various Legume Crops**

Legume Crop	Nitrogen Credit – lbs./ac.
Alfalfa – 80 –100% stand	100 – 140
60 – 80%	60 – 100
Less than 60%	0 – 60
Second Year from Alfalfa	(Use ½ of first year N credit)
Sweet Clover* - (Green Manure)	0 –120
Red Clover*	0 – 80
Soybeans** (Credit 1 lb. N for each Bu. Yield of Soybean)	0 – 60
Dry Beans	20 -30

*Based on excellent stand and good management

**For wheat following soybeans, no credit is given due to N not being in an available form during the time it is needed in the growth cycle of the winter wheat.