Nutrient Management

Illinois Job Sheet - 590 ***APRIL 2003***

Definition
Nutrient management is managing the source, rate, form, timing, and placement of nutrients.

Purpose
Nutrient management effectively and efficiently uses scarce nutrient resources to adequately supply soils and plants to produce food, forage, fiber, and cover while minimizing environmental degradation.

Where Used
Nutrient management is applicable to all lands where plant nutrients and soil amendments are applied.

Conservation Systems
Nutrient management may be a component of a conservation. It is used in conjunction with Crop Rotation, Residue Management, Pest Management, conservation buffer practices, and/or other practices needed on a site-specific basis to address natural resource concerns and the landowner's objectives. The major role of nutrient management is to minimize nutrient losses from fields, thus helping protect surface and ground water supplies.

Nutrient Management Planning
Nutrient management components of the conservation plan will include the following information:

- field map and soil map
- crop rotation or sequence
- results of soil, water, plant, and organic material samples analyses
- expected yield
- sources of nutrients to be applied
- nutrient budget, including credits of nutrients available
- recommended nutrient rates, form, timing, and method of application
- location of designated sensitive areas
- guidelines for operation and maintenance

Nutrient management is most effective when used with other agronomic practices, such as cover and green manure crops, residue management, conservation buffers, water management, pest management, and crop rotation.

General Nutrient Management Considerations

- Test soil, plants, water and organic material for nutrient content.
- Set realistic yield goals.
- Apply nutrients according to soil test recommendations.
- Account for nutrient credits from all sources.
- Consider effects of drought or excess moisture on quantities of available nutrients.
- Use a water budget to guide timing of nutrient applications.
- Use cover and green manure crops where possible to recover and retain residual nitrogen and other nutrients between cropping periods.
- Use split applications of nitrogen fertilizer for greater nutrient efficiency.

Guidelines for Operation and Maintenance

- Review nutrient management component of the conservation plan annually and make adjustments when needed.
- Calibrate application equipment to ensure uniform distribution and accurate application rates.
- Protect nutrient storage areas from weather to minimize runoff and leakage.
- Avoid unnecessary exposure to fertilizer and organic waste, and wear protective clothing when necessary.
- Observe setbacks required for nutrient applications adjacent to waterbodies, drainageways, and other sensitive areas.
- Maintain records of nutrient application as required by state and local regulations.
- Clean up residual material from equipment and dispose of properly.

Nutrient Management Assessment

Make a site-specific environmental assessment of the potential risk of nutrient management. The boundary of the nutrient management assessment is the agricultural management zone (AMZ), which is defined as the edge of field, bottom of root zone, and top of crop canopy. Environmental risk is difficult to assess beyond the AMZ.

Within an area designated as having impaired or protected natural resources (soil, water, air, plants, and animals), the nutrient management plan should include an assessment of the potential risk for nitrogen and phosphorus to contribute to water quality impairment.

The Leaching Index (LI), Nitrogen Leaching and Economic Analysis Package (NLEAP), the Phosphorus Index (PI), erosion prediction models, water quality monitoring, or any other acceptable assessment tools may be used to make risk assessments.

Evaluate other areas that might have high levels of nutrients, produced or applied, that may contribute to environmental degradation. For example, areas with high livestock concentrations or large areas of high-intensity cropping, such as continuous potatoes, corn, or specialty crops, may be contributing heavy nutrient loads to surface or ground water.

Conservation practices and management techniques will be implemented with nutrient management to mitigate any unacceptable risks.

Nutrient Management Plan

Crop Year _____

Producer: _____ Planner: _____ Date: _____

Tract: _____ Field: _____ Acres: _____ Soil(s): _____

Soil P Supplying Power _____ Planned P Buildup Level _____ Lime Group _____

Crop and Yield Information						
Crop Rotation: (circle planned crop)				5 Yr. Average Yield		Yield + 5%
Current Soil Test Levels (use lb/ac on P and K)						
Soil Test Date	CEC	pH	N	P	K	Other
Total Recommended Nutrients (per acre) to Meet Expected Yield						
		Lime	N	P2O5	K2O	Other
Buildup						
Maintenance						
Total						
Nutrient Credits						
Credits			N	P2O5	K2O	Other
Nitrogen credit from previous legume crop						
Manure applications						
Other						
Total Credits						
Additional Nutrients to be Applied						
		Lime (tons)	N	P2O5	K2O	Other
Amount to be Applied (lb/ac)						

Specify Rate Form Method and Timing of Nutrient Applications

WHEN APPLYING NITROGEN IN THE FALL: USE AN INHIBITOR WHEN SOIL TEMP. IS LESS THAN 60° OR WAIT UNTIL SOIL TEMP. IS LESS THAN 50° IF NOT USING AN INHIBITOR

Other Recommendations:

Previous Fertility Program										
Field Information			Last 5 Yields					Total Fertilizer Normally Applied		
Tract	Field	Crop	Year 1	Year 2	Year 3	Year 4	Year 5	N	P	K

In addition to nutrient rates shown on the front side of this sheet, the following requirements are needed to meet NRCS's Nutrient Management Standard:

- Rate, timing, and placement of nutrients are based on current University of Illinois (U of I) recommendations.
- Nutrient management plan shall comply with all applicable federal, state, and local laws and regulations.
- Realistic expected yields will be calculated using the following method:
  - ♦ Use the actual yields for each field from the past 5 years
  - ♦ Discard any yields that differ more than 25% from the average yield
  - ♦ Average the remaining yields and multiply by 1.05 and record on front of this sheet
- Nutrient management plans will be based on soil tests no older than 4 years. Soil samples will be collected using U of I guidance and analyzed in an approved soil test laboratory. At a minimum, soil tests will include pH, phosphorus, and potassium.
- No maintenance phosphorus fertilizer is recommended when soil test Phosphorus is > 70, 65, or 60 lb/ac on Low, Medium, and High phosphorus supplying soils respectively.
- If soil test Phosphorus values are > 300 lb./ac., manure should not be applied. If manure is applied, phosphorus applications from all sources will not exceed crop removal rates
- Fall applications of nitrogen will be delayed until:
  - ♦ Soil temperature is less than 60 degrees when a nitrification inhibitor (e.g. N-Serve) is used
  - ♦ Soil temperature is less than 50 degrees when a nitrification inhibitor is not used
- Nitrogen applications will be delayed until spring on all coarse textured soils i.e. sand, loamy sand, and sandy loam
- Nutrients will not be applied to frozen, snow covered, or saturated soil if the risk for runoff exists.
- Nutrient values of manure and organic by-products will be determined prior to land application based on laboratory analysis or acceptable 'book values' recognized by NRCS.
- This plan was developed based on NRCS nutrient management requirements and applicable federal, state, and local regulations. This plan may need to be revised if any of these requirements change.
- This plan should be reviewed and revised, at a minimum, with each soil test cycle.

I agree with this nutrient management plan and I intend to follow the plan as prepared. I will consult with my planner or NRCS before making any changes in this plan.

I certify that implementation of this plan will meet NRCS's Nutrient Management Standard.

_____ _____ _____ _____

Landowner/Operator Date NRCS Employee Date

_____ _____

Planner Date