



Benefits

- Economic savings by proper application of nutrients.
- Utilize manure or organic by-products as a plant nutrient source.
- Minimize agricultural nonpoint source pollution of surface and ground water resources.
- Maintain or improve the physical, chemical, and biological condition of soil.

Guidelines

- Test soil and manure for nutrient content. Test plant and water nutrient content as needed.
- Set realistic yield goals.
- Apply nutrients according to soil test recommendations.
- Account for nutrient credits from all sources.
- Utilize cover and green manure crops whenever possible to recover and retain residual nitrogen and other nutrients between cropping periods.
- Use split applications of nitrogen fertilizer for greater nutrient efficiency.
- **Develop a Nutrient Management Plan.** Contents should include:
 - ◇ Aerial map and soil map.
 - ◇ Crop rotation or sequence.
 - ◇ Results of soil, plant, water, manure and organic by-product test.

- ◇ Realistic yield goals (average yield 3 out of 5 years).
- ◇ Sources of nutrients to be applied.
- ◇ Nutrient budget for nitrogen, phosphorus, and potassium, including credits of nutrients already available in the soil.
- ◇ Recommended nutrient rates, timing, form, and method of application and incorporation.
- ◇ Location of designated sensitive areas or resources (e.g., sinkholes, water bodies).
- ◇ Guidelines for implementation, operation, maintenance, and recordkeeping.

Example for converting a fertilizer analysis:

Given: How much 6-12-12 fertilizer is needed to supply a recommended fertilizer rate of 30-60-60 pounds of N, P₂O₅ and K₂O per acre?

$$N = 30/6 \times 100 = 500 \text{ pounds}$$

$$P_2O_5 \text{ or } K_2O = 60/12 \times 100 = 500 \text{ pounds}$$

Therefore, apply 500 pounds of 6-12-12 per acre to supply 30-60-60 pounds of N, P₂O₅ and K₂O per acre.

Animal Manure: The Tennessee Department of Environment and Conservation (TDEC) requires that a nutrient management plan be developed to obtain coverage under a general permit for all existing and new large animal feeding operations. Some medium-sized animal feeding operations (AFO's) located in drainage areas of streams designated as impaired due to livestock operations also must develop a nutrient management plan. Contact your local conservation office for information regarding the requirement for permits.

Maintenance Items

- Nutrients should not be applied before predicted heavy rainfall or on frozen ground.
- Make applications at time of seedbed preparation or when crops or forages are **actively growing**.
- Make adjustments to plans after each soil test cycle.

Nutrient Management

- Calibrate application equipment to ensure uniform distribution of material at planned rates.
- **Records** should be kept annually and maintained for a period of five years. Records should include:
 - ◇ Soil test results and recommendations for nutrient application.
 - ◇ Quantities, analyses, and sources of nutrients applied.
 - ◇ Dates and method of nutrient applications.
 - ◇ Crops planted, planting and harvest dates, yields, and crop residues removed.
 - ◇ Results of water, plant, and organic by-product analyses.
- ◇ Adjustments to the nutrient management plan based on records and changes in farming operations as appropriate.
- Protect fertilizer and organic by-product storage facilities from weather and accidental leakage or spillage.
- Wear protective clothing to avoid unnecessary contact with chemical fertilizers and organic by-products. Extra caution must be taken when handling **ammonia** sources of nutrients or organic wastes stored in unventilated enclosures.
- Excess material generated by cleaning nutrient application equipment should be collected and stored or field applied in an appropriate manner. Excess material should not be applied on areas of high potential risk for runoff and leaching.

USDA cost share program participants must comply with contract requirements. This jobsheet may not meet contract requirements. Other job sheets are available from the Natural Resources Conservation Service. For additional information, contact your local USDA Service Center, Natural Resources Conservation Service office or your local County Soil Conservation District office.

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