

COMPREHENSIVE NUTRIENT MANAGEMENT PLANS



A Comprehensive Nutrient Management Plan (CNMP) is a strategy for making a wise use of plant nutrients to enhance farm profits while protecting water resources. It is a plan that looks at every part of your farming operation and helps you make the best use of manures, fertilizers, and other nutrient sources. Successful nutrient management requires thorough planning and recognizes that every farm is different.

The type of farming you do and the specifics of your operation will affect your CNMP. The best CNMP is one that is matched to the farming operation and the needs of the person implementing the plan.

THE PARTS OF A CNMP

A CNMP takes into account how nutrients are used and managed throughout the farm. It is more than a nutrient management plan that looks only at nutrient supply and need for a particular field. Nutrients are brought to the farm through feeds, fertilizers, animal manures, and other off-farm inputs. These inputs are used and some are recycled by plants and animals on the farm. Nutrients then leave the farm in harvested crops and animal products. These are nutrient removals. Ideally, the amount of nutrient inputs and removals should be roughly the same. When nutrient inputs to the farm greatly exceed nutrient removals from the farm, the risk of nutrient losses to groundwater and surface water is increased. When you compare nutrient input and nutrient removals, you are creating a mass balance. This nutrient mass balance is an important part of a CNMP and important to understand for your individual farming operation.

BMPs also are important to a successful CNMP. BMPs, such as soil testing and manure analysis, help you select the right nutrient rate and application strategy so that crops use nutrients efficiently. This not only reduces nutrient losses and protects the environment but also increases farm profitability. BMPs may include managing the farm to reduce soil erosion and improve soil tilth through conservation tillage, planting cover crops to use excess nutrients or using filter strips and buffers to protect water quality.

THE BASIC STEPS

CNMPs consist of five major parts:

- Evaluation of nutrient needs
- Inventory of nutrient supply
- Determination of nutrient balance
- Preventive maintenance and inspection
- An emergency response plan

EVALUATION OF NUTRIENT NEEDS

Maps and Field information

You will need a detailed map of your farm. The map should include:

- Farm property lines
- Your fields with the field identification
- The location of all surface waters such as streams, rivers, ponds or lakes

- Direction of surface flows
- Arrows showing the direction that streams of rivers flow
- A soils map, if available

This map will serve as the basis for the entire plan, so each field should have a unique identification. In addition to the map, prepare a list of the crops to be grown in each field with a realistic yield goal for each crop. Most of this information is available at your local USDA Farm Service Center.

LOCATE CRITICAL AREAS

Certain areas on your farm such as streams and rivers, wellheads and lakes or ponds are sensitive to nutrient overload. You should create buffer zones around these areas on your map where nutrient use will be reduced or eliminated. By buffering these areas, water quality problems may be decreased. Areas such as roads, off-site dwellings and areas of public gatherings should be noted on your map. To reduce complaints about odors, you may want to limit the use of manures near these types of areas.

INVENTORY OF NUTRIENT SUPPLY

Many of the nutrients needed to grow your crops are already present on your farm in the soil, in animal manures or in crop residues. Knowing the amounts of nutrients already present in the sources is important so that you do not buy or apply more nutrients than needed.

DETERMINING NUTRIENT BALANCE

Balance Between Supply and Need

Once you have determined both the supply and need of nutrients for each of your fields, a critical aspect of CNMPs is balancing the two. This can be done in several ways. Most CNMPs are developed based on nitrogen, but other factors such as phosphorus or metals could control how much poultry litter or manure can be applied under certain conditions. A phosphorus index has been developed to help producers determine when nutrient management based on phosphorus would be advisable.



msucares.com

Copyright 2005 by Mississippi State University. All rights reserved. This publication may be copied and distributed without alteration for nonprofit educational purposes provided that credit is given to the Mississippi State University Extension Service.

By **Terry Holder**, Extension Associate, **Jimmy Bonner**, Ph.D., Associate Extension Professor, and **Larry Oldham**, Ph.D., Associate Extension Professor
 This material is based on work supported in part by the Cooperative State Research, Education and Extension Service, U. S. Department of Agriculture, National Integrated Water Quality Program, under Agreement No. 00-51130-9752.

Mississippi State University does not discriminate on the basis of race, color, religion, national origin, sex, sexual orientation or group affiliation, age, disability, or veteran status.

Publication 2342

Extension Service of Mississippi State University, cooperating with U.S. Department of Agriculture. Published in furtherance of Acts of Congress, May 8 and June 30, 1914. JOE H. MCGILBERRY, Director

(1M-03-05)