MSU Extension Publication Archive

Archive copy of publication, do not use for current recommendations. Up-to-date information about many topics can be obtained from your local Extension office.

Comprehensive Nutrient Management Plans (CNMP)
Michigan State University
Michigan State University Extension
Best Environmental Management Practices, Farm Animal Production
Charles Gould, Michigan State University; Al Sutton and Don Jones, Purdue University
Issued 2002
2 pages

The PDF file was provided courtesy of the Michigan State University Library

Scroll down to view the publication.
Maintenance and Application Records

Inputs to Animals

• Other records:
- Acres used and area of field applied on
- Manure/wastewater quantities produced and
- N-credit from previous year's manure application
- Field conditions during application of manure (wet, dry, frozen, etc.)
- Weather conditions during application
- Date and rate(s) of other nutrients applied
- Source and rate of manure/wastewater applied
- Date(s) of manure/wastewater application(s)
- Soil test reports
- Location of drainage tile vents, streams, etc. with respect to spreading areas
- Record of manure/wastewater sold or given away
- Inspection and maintenance records
- Plant tissue sampling and testing reports (where applicable)
- Crop advisor or decision maker's name or business
- Copies of all records needed for the application of manure

Outputs from Animals

• Minimized amount of (excreted) nutrients
• Reduced nutrient excess
• Best economical use of feed materials
• Optimum production and/or animal health
• Location of drainage tile vents, streams, etc. with respect to spreading areas
• Record of manure/wastewater sold or given away
• Inspection and maintenance records
• Plant tissue sampling and testing reports (where applicable)

Emergency Action Plan

• Plan should be readily available to all employees
• Specific plans for training farm employees how to respond if an emergency occurs
• New processes, procedures or equipment
• New employees

Schedule of CNMP Implementation

• Implement in the fall
• Plan for addressing water quality concerns identified
• Plans for annual review and updating of the CNMP
• New components that are planned and the implementation schedule for each component
• Employee responsibilities
• New processes, procedures or equipment

Comprehensive Nutrient Management Plans

• Feeding Strategies to Lower N&P in Manure
• Manure Applicator Calibration
• Disposing of Farm Medical Wastes
• Environmental Stewardship project funded by the U.S. EPA, Purdue University, and Michigan State University.
• It was adapted in part from the Livestock and Poultry Environmentally Sensitive Field Characteristics.
• This material may be available in alternative formats.
• Purdue University is an Affirmative Action employer.
• Published by the Purdue University Cooperative Extension Service.
• It is the policy of the Purdue University Cooperative Extension Service, and all other Purdue bureaus, to make all programs and activities available to all people without regard to race, color, sex, religion, national origin, disability, political beliefs, sexual orientation, or family status.
What is a CNMP?

A Comprehensive Nutrient Management Plan (CNMP) is a total planning tool that details the animal production related activities for a specific farming operation. A CNMP describes a farm’s production practices, as well as the equipment and structure(s) used. It combines conservation practices with management activities to create a system that addresses animal production operations, from feed inputs to the utilization of animal manure.

CNMP Components

A CNMP is a confidential document that allows livestock producers to develop a custom plan for the operation while complying with regulatory guidelines by addressing items such as manure management, field crop nutrients, and storm water runoff in a coordinated manner. Producers evaluate their whole farm through a CNMP, taking a comprehensive look at their entire farm operations, from feed inputs to the utilization of animal manure and organic by-products of the operation, and minimize negative impacts to the environment and public health.

Best Environmental Management Practices

Comprehensive Nutrient Management Plans (CNMP)

Don Jones, Alan Sutton, Purdue University, and Charles Gould, Michigan State University

A CNMP can help farm managers comply with regulatory requirements as well as protect water quality, obtain more benefit from the animal manure and organic by-products of the operation, and minimize negative impacts to the environment and public health.

Farm Headquarters Map

A site map showing the location of farm buildings, animal housing, manure storage structures, other sources of manure and wastewater, feed storage, farm house(s) and any other relevant physical features.

Production

• Species, weight, production level, etc. of livestock (herd/flock inventory)
• Amount, location and characteristics of all wastewater generated and any existing water control devices:
  - Manure and wastewater nutrient content and volume
  - Milkhouse and parlor wastewater
  - Water from milk plate coolers/ supplemental cooling systems
  - Runoff from feedlot/barnyard and stored manure areas
  - Leachate from silage storages
• Animal mortalities management - i.e., compost, render, burial, incineration, etc.
• Veterinary waste management
• Location of manure collection points
• Volume of stored manure

Manure Collection

• Manure and wastewater collection method(s)
• Location of manure collection points
• Schedule of manure collection
• Equipment and/or structural facilities used for collection

Manure Storage

• Type, location and size (dimensions) of storage facility(s)
• Storage capacity:
  - Volume
  - Storage time available
• Site suitability for storage (existing and planned)
• Method of measuring freeboard, where applicable, for storage

Manure Transfer

• Method, frequency/schedule, structures, and equipment used for the movement of manure and wastewater between collection, storage, and utilization locations.

Manure Treatment (where applicable)

• Type, function, capacity and location of any treatment facility or equipment

Conservation Practices in Manure Application Areas

• Evaluation of potential for nitrogen or phosphorus transport to surface and/or ground water. Provide a complete description of the following:
  - Soil in application areas
    • Soil hydrologic group
    • Soil management group
    • Percent slope
    • Topography
    • Soil test P value (Bray P1 in lbs/acre)
    • Nitrogen leaching index for soil hydrologic group
  - Water quality issues
    • Location of concentrated runoff flows or surface inlets to tile lines
    • Location of risers and outlets and monitoring outlets during and after manure application
    • Setback requirements from surface water, wells, etc.
    • Divert clean runoff from upslope areas and roof gutters to reduce the volume of contaminated material
  - Surface cover in application areas
    • Residue cover/cover crops
    • Vegetative buffer width available

Land Application Management

• Nutrient budget for nitrogen, phosphorus, and potassium from all sources (include form, source, amount, timing and method of application)
• Calibration procedures for equipment
• Application schedule (estimated dates)
• N, P and K levels in the manure to be applied. Take samples from storage at the time of application, and account for losses due to method of application used.
• Manure application rates, for each field, based on:
  - Crops to be grown
  - Realistic crop yield goals
  - Crop nutrient needs
  - Soil test results (within last three years)
  - Previous year’s crops and manure application to estimate N nutrient credits
  - Manure and wastewater nutrient content
    • IS N or P the limiting nutrient
  - Winter spreading may require special provisions to control runoff. Check state requirements for applying manure on frozen or snow-covered areas
  - At the time of application, consider field-specific conditions (wet, dry, frozen, etc.) and adjust application rates accordingly
  - P build-up or removal, acres of land needed for sustainability