



Developing a Comprehensive Nutrient Management Planning Core Training Curriculum

L.B. Moody



Project Team

• Participating institutions and agencies

- Robert Anderson – TN USDA/NRCS
- Robert Burns – Iowa State University
- Jenifer Beddoes – ID USDA/NRCS
- Adam Daugherty – TN USDA/NRCS
- Mike Gangwer – MI USDA/NRCS
- George Grandle – University of Tennessee
- Kristy Hill – University of Tennessee
- Barry Kintzer – USDA/NRCS
- Phil McLoud – USDA/NRCS
- Lara Moody – Iowa State University
- Gary Moore – TN USDA/NRCS
- Natalie Rector – Michigan State University
- Ron Sheffield – University of Idaho
- Vic Simpson – TN USDA/NRCS
- Alan Sutton – Purdue University
- Bruce Wilson – USDA/NRCS

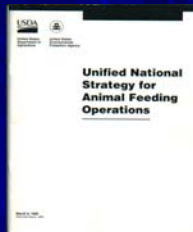


Project is funded by a USDA/CSREES 406 Extension Education Water Quality Grant

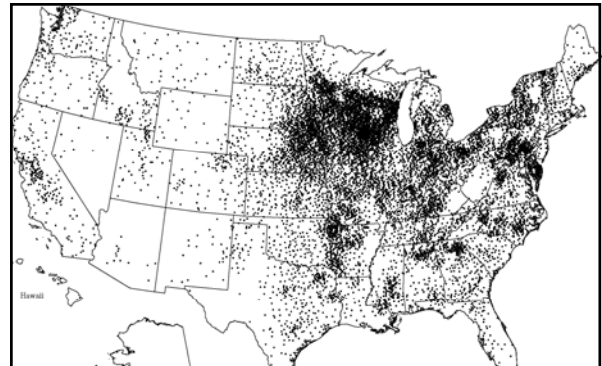


National Issue

EPA & USDA Unified National Strategy to minimize the environmental and public health impacts of AFOs.

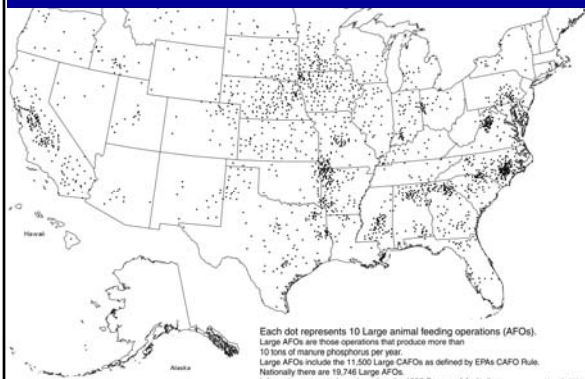


- Supporting Key Element – All AFO owners have a CNMP developed by a certified specialist by 2008.



Livestock Operations Potentially Needing CNMPs (~ 260,000 farms) - USDA - NRCS, 2002

Large AFOs – Required to be permitted as CAFOs Under current Federal Regulation (~ 20,000 farms) - USEPA 2002



Who will prepare all of these CNMPs ?

NRCS

Certified Technical Service Providers



TSP Training Opportunities Needed

- Training course on CNMP preparation required for TSP certification
- Limited CNMP training courses available that include NRCS policy standards
- For states without existing CNMP training starting from zero is inefficient

CNMP Core Curriculum Project

Objectives:

- Develop a CNMP training “Core Curriculum” that includes core topics useful in any location
- Ensure that NRCS policy standards are included
- Share the resulting curriculum and materials with other states that may wish to use it as a starting point in developing their own CNMP programs


Intended Project Outcomes

- Provide background information for understanding content of CNMPs
- Provide examples to demonstrate how the information is utilized to develop a CNMP
- Provide a resource for state educators
 - Not intended to be a substitute for state level training

For Example.....

Phosphorus Management (state specific)

1. Chemical cycling and speciation
2. Environmental concerns
3. Plant removal characteristics
4. Use of inorganic fertilizer
5. Use of organic fertilizer
6. Phosphorus risk assessment
 - a. P-Index
 - b. Soil Test P
 - c. Soil P Thresholds
7. Phosphorus in manure and soil test reports
8. Phosphorus based manure application




National Survey for Intended Use

- Surveyed individuals from 50 states
 - Received 25 responses
- 85% who don't offer a course would like to
 - and are interested in the curriculum
- 92% of the respondents are interested in receiving further information about the curriculum

Curriculum Content

- Contains 10 Sections
 - Conservation Planning
 - Land Treatment Practices
 - Biosecurity
 - Manure and Wastewater Storage and Handling
 - Nutrient Management
 - Feed Management
 - Record Keeping
 - Alternative Treatment/Utilization
 - Air Quality
 - TSP Certification and Registration



Curriculum Training Materials

- Curriculum
- Lesson plans
- Scripted, editable presentations
- Workbook containing in-class exercises
- Example CNMPs
- List of resource materials



Curriculum Outlines

Outline for CNMP Record Keeping	II. Additional NPDES Requirements
I. CNMP Requirements	A. Keep Records On-Site For At Least 5 Years
A. Annual Records	B. Copy of CNMP On Site
1. Soil Testing	C. Mortality Disposal Records
2. Manure and Wastewater Testing Data	D. Annual Records
3. Annual Nutrient Budgets	1. Soil Testing
B. Frequent Records	a. Procedure for Laboratory Analysis
1. Staff Gauge Records	b. Soil Sampling Protocol
a. Dates of Emptying	2. Manure and Wastewater Testing Data
b. Level Before Emptying	a. Procedure for Laboratory Analysis
c. Discharge or Overflow Events	b. Manure Sampling Protocol
d. Levels Before and After Rain Event	3. Annual Nutrient Budgets
2. Operation and Maintenance Inspection	a. Manure Application Rate Calculation
a. Nutrient Application Equipment Calibration	E. Operation and Maintenance Inspection
3. Manure Application Records	1. Inspection Dates of Manure Storage & Handling
a. Time and Date	F. NPDES Annual Report
b. Containment Source	1. Animal Inventory
c. Fields	2. Annual Manure Generated
d. Amount Applied per Acre	3. Annual Manure Exported
e. Weather Conditions During Application	4. Annual Acres Utilized
f. Soil Moisture Condition	5. Acreage Covered under NMP
g. Application Method and Equipment	6. Description of Annual Discharges
4. Cropping Record & Inorganic Fertilizer Application	7. Accounting of Certified Nutrient Management Planner Developing and/or Approving NMP
a. Date Crops Planted and Harvested	III. Example of Different Record Keeping Templates
b. Crops Planted	IV. Record Keeping Example
c. Type & Form of Commercial Fertilizer	
5. Third Party Export Records	
a. Date of Transfer	
b. Recipient of Manure	
c. Amount of Manure Transferred	
d. Manure Nutrient Content	

Lesson Plans

Lesson Topic – I CNMP Requirements

Lesson Objective (Intended Outcomes) – The student should become familiar with good record keeping habits and the logic for keeping high-quality records. The student should become familiar with the record keeping requirements set by NRCS for Comprehensive Nutrient Management Plans. Students will learn which records should be kept daily, weekly, monthly and annually. Students should have a clear understanding of the record keeping requirements for comprehensive nutrient management plans.

Required Course Materials
 USDA/NRCS. Part 600.54 Element Criteria for CNMP Development. National Planning Procedures Handbook, Amendment 4. http://policy.nrcs.usda.gov/scripts/psis.dll/H/H_180_600_E_54.htm

Supplemental Resources
 Koelsch, R. 2003. Fact Sheet #26: What Records Must I Maintain for Land Application? Livestock and Poultry Environmental Stewardship (LPES) curriculum. NWP5 Ames, IA

Lesson Description

- Annual Records**
 Discuss annual record keeping for soil testing (by field or comprehensive treatment unit), manure and wastewater testing and annual nutrient budgets. Some states may require that these tests be taken at more frequent intervals. However, national CNMP requirements require these tests be taken annually. Annual nutrient budgets by field will indicate the crop being grown, the nutrient requirements for the crop (based on the Land Grant University recommendations) and nutrient credits through residue, irrigation water, manure application, mineralization, and legumes to determine inorganic fertilizer application.
- Frequent Records**
 Discuss frequent record keeping for manure storage structures, operation and maintenance inspections for manure and farming equipment, manure application records, cropping records, inorganic fertilizer application records and third party export records. Discuss how many of the records kept are integral to the final nutrient budget for each field. Instructor should discuss the frequency of each record.

Presentation Materials

Annual Records CNMP Requirements

- **Soil Testing**
 - Record testing date and results
 - Perform in accordance with Nutrient Mgmt. Code 590
 - Collect every 1-5 years
 - At minimum analyze for pH, P & K
 - Use Land Grant University methods
 - Use certified or LOU accepted lab
- NPDES also requires reporting lab procedure and sampling protocol

Speaker Notes:
 The speaker should address the need and requirements for soil testing as pertaining to the state or region being addressed. Explain what information is contained in the NRCS Conservation Practice Code 590 and what the state specifics are within the code. Address the additional reporting needs if the records are being kept for the purpose of NPDES reporting. If not addressed elsewhere, provide information about conducting proper soil testing.

Required Course Materials:
 Access to Nutrient Management Conservation Practice Code 590 (state specific or national as required)

Supplemental Resources:
 State specific soil testing and nutrient budgeting information

Suggested Learning Exercise:
 CNMP Core Curriculum

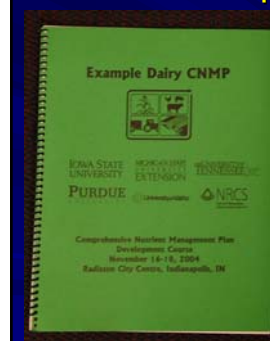
In-class Exercise Workbook

- Examples can be used to teach each section
- Will help attendees gain a better understanding of the materials
- In the process of being developed



Example CNMPs

- Provide an example CNMP that can be used during class exercises
- Provide examples of other CNMPs to be used for demonstrative purposes



Material Distribution

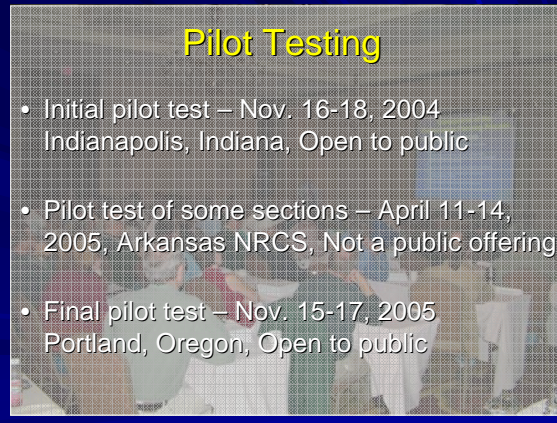
- Will be available free of charge via electronic download from internet
- Will be available for a small fee as a complete package via MidWest Plan Service



Expected Availability:
Spring 2006

Pilot Testing

- Initial pilot test – Nov. 16-18, 2004
Indianapolis, Indiana, Open to public
- Pilot test of some sections – April 11-14, 2005, Arkansas NRCS, Not a public offering
- Final pilot test – Nov. 15-17, 2005
Portland, Oregon, Open to public



Initial Pilot Test

- 98% would recommend course to a colleague
- 97% felt topics were presented order appropriate to understanding the course materials
 - Provide state/national level checklist
 - Provide summary presentation of big picture
- 80% felt class exercises aided in learning
 - More in-class examples
 - Allot more time to them
 - Present them in more organized way



Final Pilot Test

Will take place:
Portland, Oregon
November 15-17, 2005

- Revised format
- Use of In-class workbook
- Will include all sections



If interested in receiving information about the course, email: Lara Moody (lmoody@iastate.edu)

Questions?

If you would like to receive information on the CNMP Core Curriculum when it is complete, please email Lara Moody (lmoody@iastate.edu)

