



USDA-TSP Feed Management Certification Options

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Agricultural and Biosystems
Engineering

Project Team

Participating institutions and agencies

IOWA STATE
UNIVERSITY

MICHIGAN STATE
UNIVERSITY
EXTENSION

PURDUE
UNIVERSITY

THE UNIVERSITY of
TENNESSEE | UT

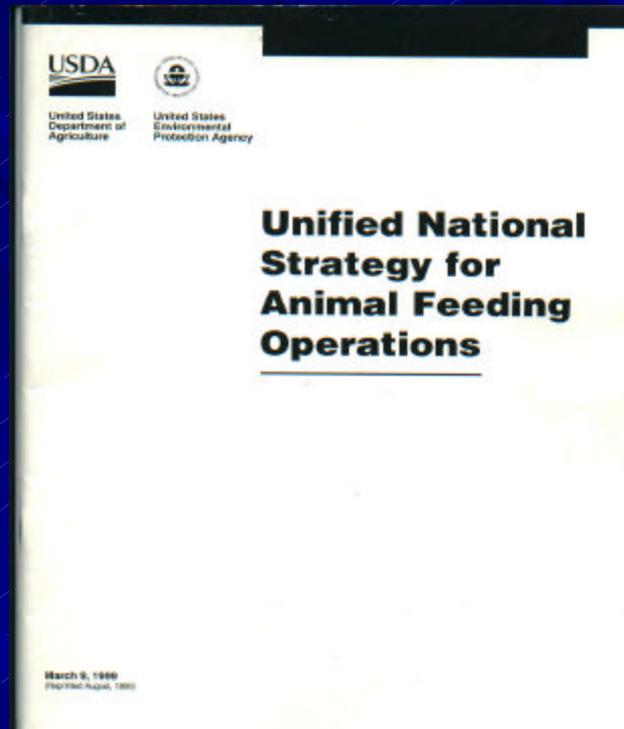
 University of Idaho

 NRCS
Natural Resources
Conservation Service

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

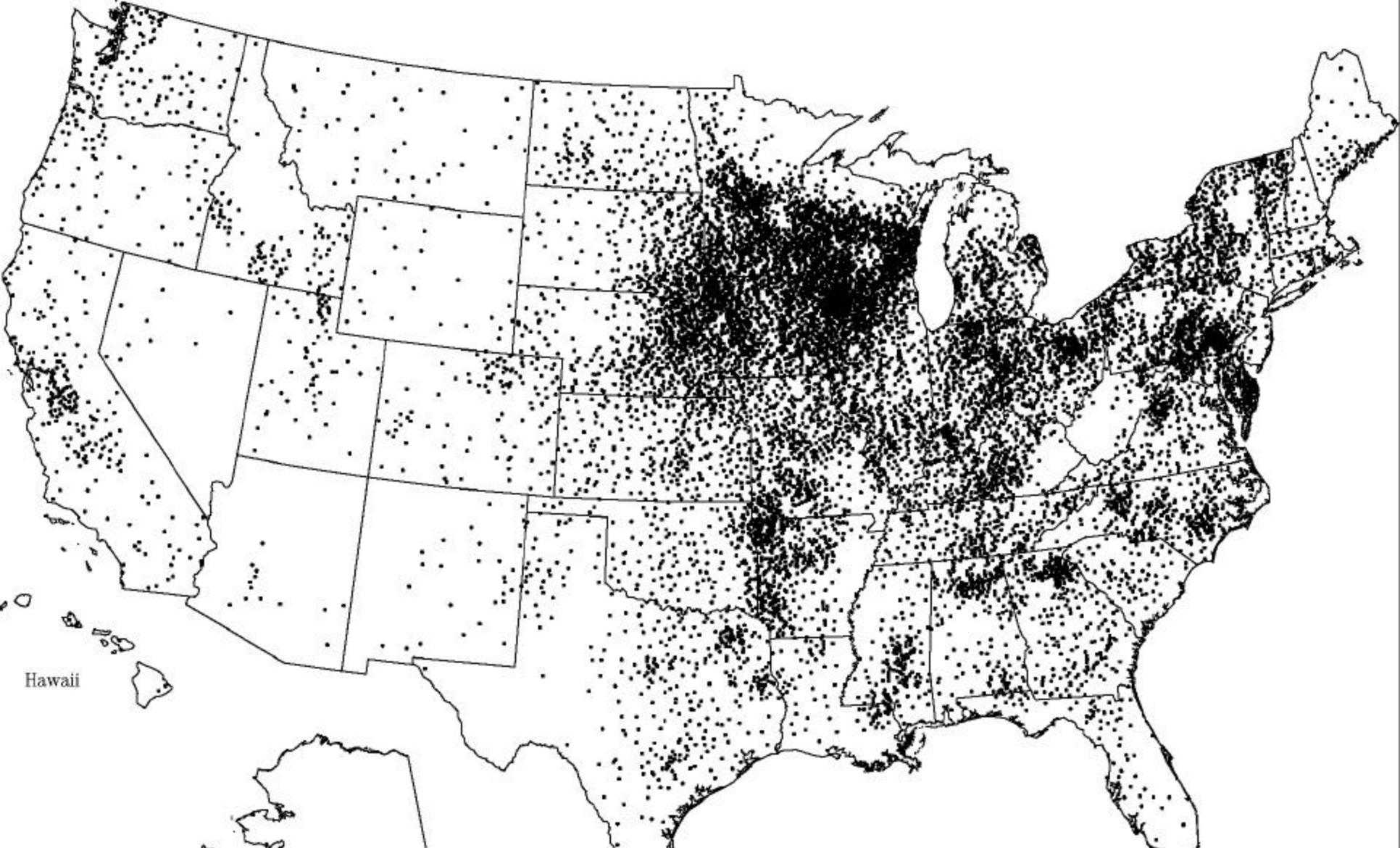
National Issue

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



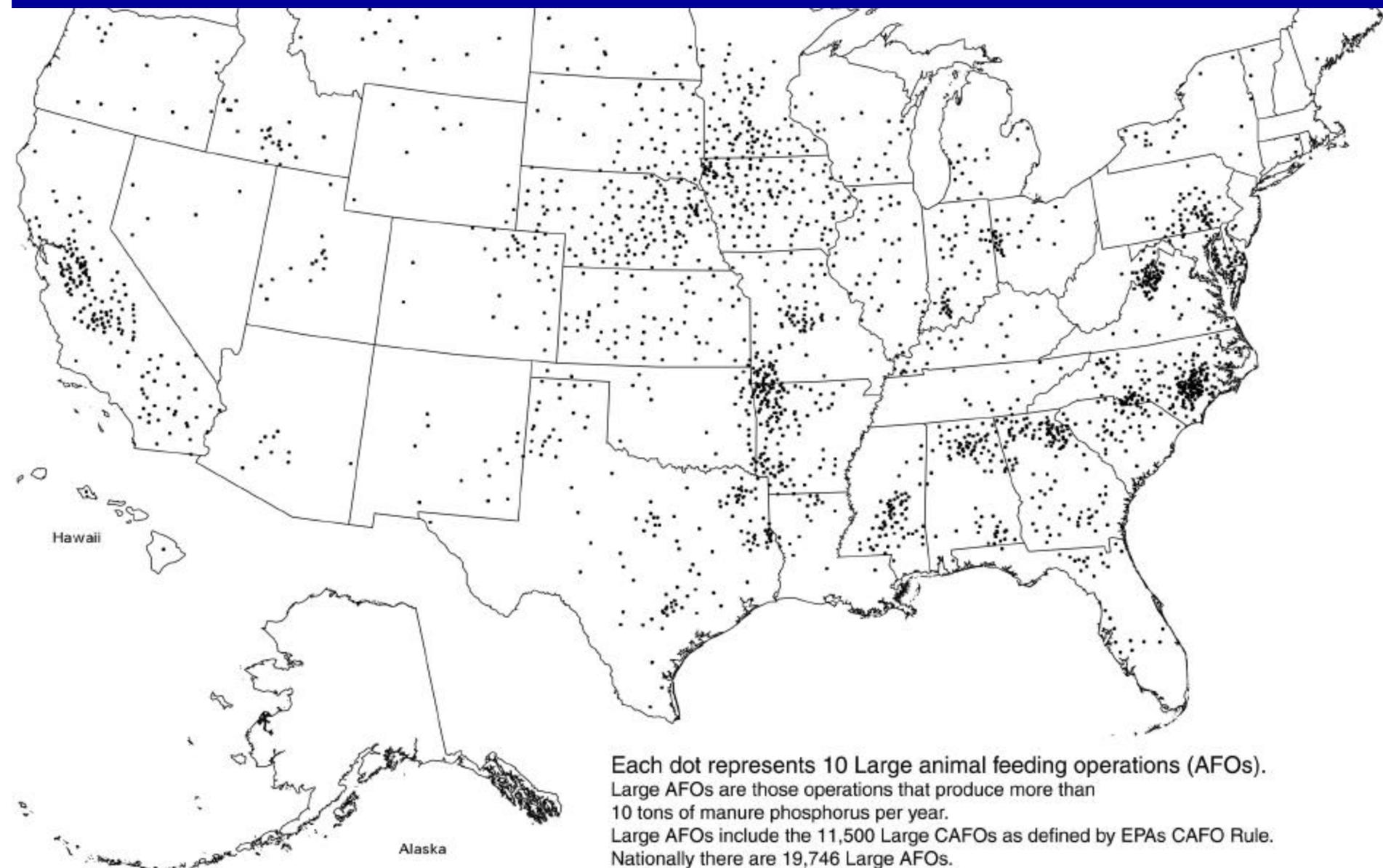
- Supporting Key Element –

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

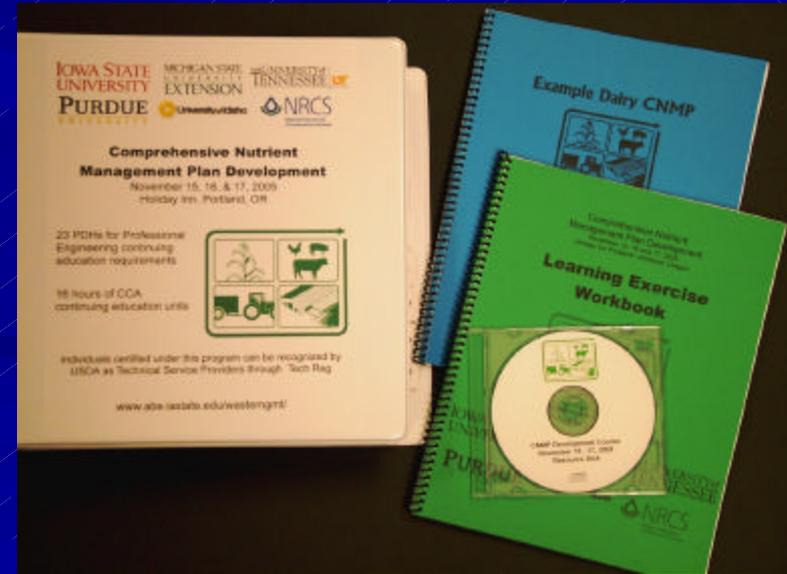
Curriculum Content

- Contains 10 Sections
 - Introduction to a CNMP
 - Conservation Planning & Biosecurity
 - Land Treatment Practices
 - Manure and Wastewater Storage and Handling
 - Nutrient Management
 - Feed Management
 - Record Keeping
 - Air Quality
 - Alternative Treatment/Utilization
 - 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

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

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/lpsiis.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. MWPS Ames, IA

Lesson Description

A) 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.

B) 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 LGU 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.

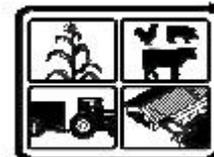
Required Course Materials:

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

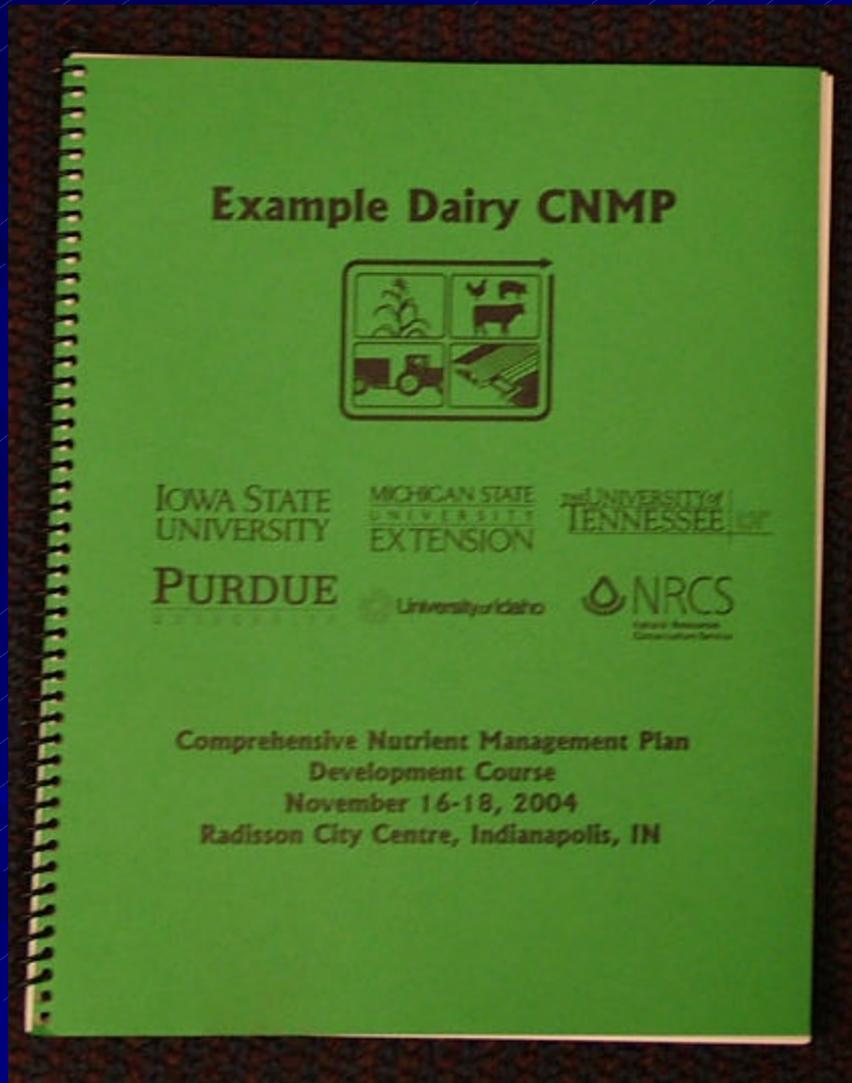
Supplemental Resources:

State specific soil testing and nutrient budgeting information

Suggested Learning Exercise:



Example CNMPs



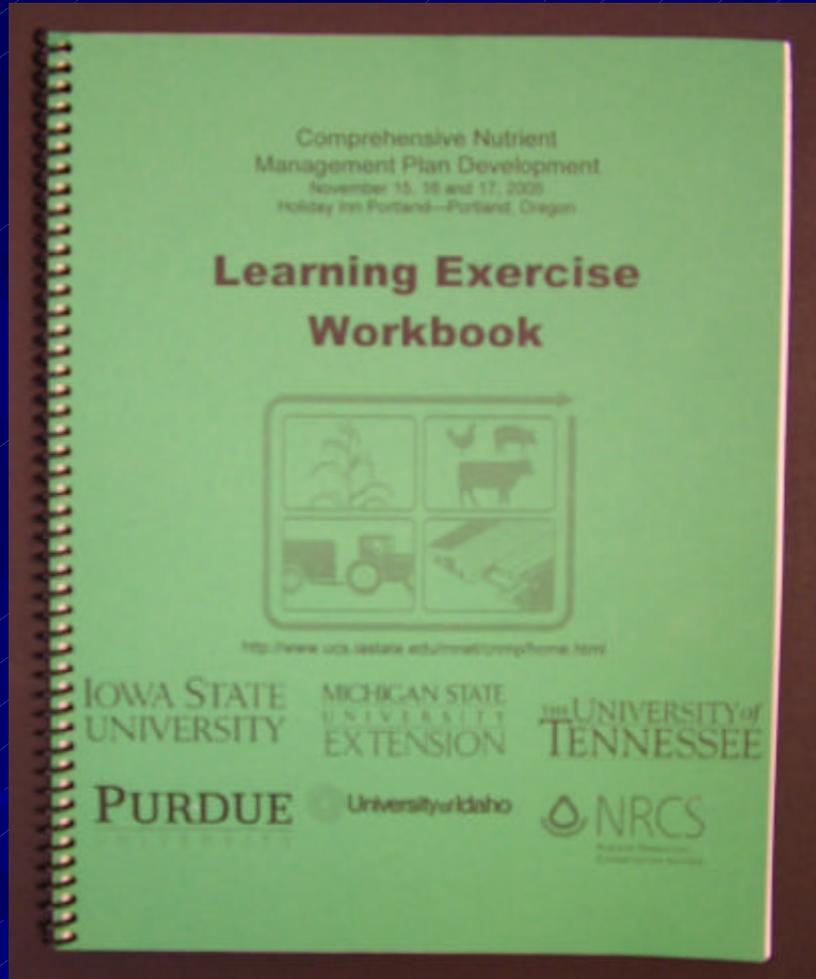
- Gives users an idea of what should be included in a CNMP
- Example is referred to throughout the presentation materials

Curriculum Exercise Workbook

- Each Curriculum section has several in-class exercises
- Examples can be used to teach each section
- Were included in help users gain a better understanding of the materials



In-class Exercise Workbook



Section 3: Manure and Wastewater Storage and Handling

Waste Storage System Closure

Problem Statement

Calculate the nutrients to be land applied in the 10,000 ft³ of sludge stored in the bottom of the Example Dairy CNMP holding pond.

Supplemental Information

Estimate Sludge Nutrient Content Using AWMFH Chapter Table 4-7

Table 4-7 Dairy waste characterization - lagoon

Component	Units	-----Lagoon-----		
		-----Anaerobic-----	Aerobic*	
		Super- natant	Sludge	Super- natant
Moisture	%	99.75	90.00	99.95
TS	% w.b.	0.25	10.00	0.05
VS	lb/d/1000 gal	9.16	383.18	1.67
FS	"	11.66	449.82	2.50
COD	"	12.50	433.16	1.25
BOD ₅	"	2.92		0.29
N	"	1.67	20.83	0.17
NH ₄ -N	"	1.00	4.17	0.10
P	"	0.48	9.16	0.08
K	"	4.17	12.50	
C:N ratio	"	3	10	

*Milk house and milking parlor waste only.

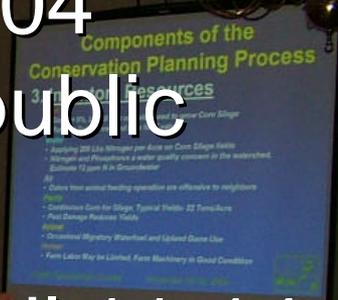
Using AWMFH Chapter Table 4-7:

Estimate Dairy Sludge Nutrient Content

- N 21 lbs / 1000 gallons
- P 9 lbs / 1000 gallons
- K 13 lbs / 1000 gallons

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



Pilot Tests

- 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



Material Distribution

- Will be available free of charge via electronic download from internet
<http://www.abe.iastate.edu/cnmp/>
- Will be available for a fee via MidWest Plan Service



Expected Availability:
April 2006

MWPS CNMP Core Curriculum Catalog Listing

NEW...April 2006

*CD-ROM (PC or Macintosh®)
and Printed Supplements*



- **Comprehensive Nutrient Management Plan (CNMP) Core Curriculum**

- **CD-ROM, CNMP-CD: \$125.00**

(Printed materials: 8 1/2 x 11, illus., plastic spiral bound):

- **Example Dairy CNMP**
CNMP-ED: 60 pp., \$30.00

- **Learning Exercise Workbook**
CNMP-LE: 156 pp., \$25.00

- **Course Lesson Plans & Outline**
CNMP-LP: 120 pp., \$30.00

- **CNMP Core Curriculum Package**
(CD plus all printed materials)
CNMP-PKG, \$195.00

- Will be available April 2006
- Available as complete package or by piece
- Can order in bulk quantities if you are planning a training

MidWest Plan Service

- The 2006 MWPS catalog and CNMP products may be ordered:
 - **on-line** at www.mwpsdq.org
 - **by e-mail** at mwps@iastate.edu
 - **by phone** at 800-562-3618 or 515-294-4337
 - **by fax** at 515-294-9589
 - **by writing** MWPS, 122 Davidson Hall, Iowa State University, Ames, IA 50011-3080.

Curriculum Release Announcements

- Will be made a relevant professional meetings
- Will be WebCast as part of the Livestock Poultry Environment National Learning Center

CNMP Development Course
February 13-15, 2006
The Intercontinental
Kansas City, Missouri

IOWA STATE
UNIVERSITY



Questions?

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

