Title: Water Quality Education for Farms and Cities

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Abstract

Recent water quality legislation in Delaware mandates that individuals involved in animal agriculture, or that apply nutrients to more than 10 acres of land, participate in a certification program. The amount of class time required ranges from six to 12 hours depending on the type of operation. Classes started in January, 2001 and will continue through December, 2003. As of September, 2003 more than 2000 individuals have attended at least three hours of training. It is anticipated that nearly 3000 individuals will complete their training requirements by January 1, 2004. This certification program addresses both urban and rural audiences, offering an unprecedented opportunity to expose these audiences to the important issues facing their counterparts. This paper will outline the development of the nutrient management program, update progress to date, and discuss plans for the future.

Key Words: Nutrient management, water quality, state regulations, Extension education
Background

Water quality is a critical environmental, social, and political issue in Delaware. The majority of water bodies in the State are considered “impaired” due to pollution from a variety of sources (DNREC, 2002). In June 1999, the Delaware General Assembly unanimously passed the Nutrient Management Act. This Act amended Title 3 of the Delaware Code by adding Chapter 22: Nutrient Management (DC 3; Ch 22, 1999).

What is the purpose of the Nutrient Management Act?

The purposes of the legislation are to:

1) regulate those activities involving the generation and application of nutrients in order to help improve and maintain the quality of Delaware’s ground and surface waters and to meet or exceed federally mandated water quality standards, in the interest of the overall public welfare;

2) establish a certification program that encourages the implementation of best management practices in the generation, handling or land application of nutrients in Delaware;

3) establish a nutrient management planning program, and

4) formulate a systematic and economically viable nutrient management program, which will both maintain agricultural profitability and improve water quality in Delaware.

Who is affected?
The Act states that all persons who "...operate an animal operation in excess of eight animal units" (an animal unit = 1,000 pounds live weight) or "...apply nutrients to lands in excess of 10 acres or waters as components of a commercial venture or lands that he or she owns, leases, or otherwise controls" will be affected by this Act.

This means that in addition to agricultural operations, many other entities are included. Examples include school districts, golf courses, lawn care companies, and even the University of Delaware. The Nutrient Management Program has estimated that at least 3,000 individuals will be impacted by the legislation.

**Who do these individuals have to do?**

There are two basic requirements for affected individuals; completing a certification program and obtaining a certified nutrient management plan. Nutrient management plans can only be written by individuals certified as “Nutrient Consultants” and must adhere to specific guidelines. For more information regarding Delaware nutrient management plans see: http://www.state.de.us/deptagri/nutrients/nm_guidehtm.

**What is the Delaware Nutrient Management Certification Program?**

One of the stated purposes of the legislation is to establish a certification program. In October, 1999 University of Delaware Cooperative Extension submitted a proposal to the Nutrient Management Program (NMP) for developing and conducting certification classes. Since January, 2000 the NMP has provided financial support for the purchase of materials, travel for conducting certification classes and for field demonstration projects, and two Extension
associates. Course materials have been developed and presented primarily by Dr. David Hansen and Dr. Greg Binford, with input from specialists from various disciplines.

Cooperative Extension, working with the Nutrient Management Program, has also developed a series of information sheets, Delaware Nutrient Notes, which explain the Nutrient Management Act, and various other associated topics. These Notes can be accessed through the Delaware Department of Agriculture website at:

http://www.state.de.us/deptagri/nutrients/nm_news1.htm.

What is the structure of the Certification Program?

Regulations developed in support of the Nutrient Management legislation specify four different categories for certification:

- **Nutrient Generator**: a person who operates a facility that produces organic or inorganic nutrients (generally, a person who manages an animal or poultry operation).
- **Private Nutrient Handler**: A person who applies organic or inorganic nutrients to land he or she owns, leases, or otherwise controls.
- **Commercial Nutrient Handler**: A person who applies organic or inorganic nutrients to land as a component of a commercial or agricultural business in exchange for a fee or service charge.
- **Nutrient Consultant**: A person who is engaged in the activities of advising or consulting regarding the formulation, application, or scheduling of organic or inorganic nutrients within the State of Delaware.

What are the requirements for each certification category?
Nutrient management classes are offered in 3-credit “blocks”, or approximately 3 hours for each class. This means that each individual will attend a minimum of two certification classes, and some attend as many as four (Table 1). Classes are referred to as Session I, Session II, Session III, and Session IV.

Table 1. Requirements for Delaware Nutrient Management Certification

<table>
<thead>
<tr>
<th>Certification Category</th>
<th>Number of credits required</th>
<th>Continuing Ed. Credits</th>
<th>Test?</th>
<th>Fee?</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrient Generator</td>
<td>6</td>
<td>6 in 3 years</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Private Nutrient Handler</td>
<td>9</td>
<td>6 in 3 years</td>
<td>No</td>
<td>No</td>
</tr>
<tr>
<td>Commercial Nutrient Handler</td>
<td>12</td>
<td>9 in 3 years</td>
<td>Yes</td>
<td>$150/3 yr</td>
</tr>
<tr>
<td>Nutrient Consultant</td>
<td>12</td>
<td>8 each year</td>
<td>Yes</td>
<td>$100/yr</td>
</tr>
</tbody>
</table>

There also is a “special” category of individuals who have been certified under another program that has reciprocity with the Delaware program, such as Certified Crop Advisors or Consultants from the Maryland Nutrient Management Program. These individuals are required to attend one 3-credit class that has been developed to provide them with an overview of the Delaware law, cost share programs, etc.

**Agricultural and Non-Agricultural “tracks”**

In order to make the information presented to each group as useful as possible the certification program is divided into two main tracks; agriculture and non-agriculture. Basic information covered in the certification classes is similar for the two tracks. The objective is to
provide a description of the relationship between water quality and nutrients, an overview of the nutrient management law and requirements, and discuss best management practices for the protection of water quality in Delaware. An important part of the presentation is to show that any operation has the potential to adversely affect water quality- it’s not simply someone else’s problem.

**Agriculture track**

Within the “agriculture” track classes have been developed to address the major types of agricultural operations in Delaware. This was accomplished by offering a total of four different versions of Session II; Poultry, Large Animal, Non-Animal (inorganic), and Equine (shown schematically in Figure 1). There also are two versions of Session IV, depending on whether the individual is a Commercial Nutrient Handler or a Nutrient Consultant.

All individuals attend Session I. Then they can choose the version of Session II that fits their operation or interests, but they only need attend one version of Session II, not all of them. Then everyone required to attend a third class will attend Session III, and individuals required to be certified as Commercial Nutrient Handlers or Nutrient Consultants would attend the appropriate version of Session IV. University of Delaware Cooperative Extension began offering classes in the agriculture track in January, 2001.

**Non-Agriculture track**

Within the “non-agriculture” track there currently is only one type of class offered for Sessions I, II, and III. However, as in the agriculture track there are two versions of Session IV,
depending on whether the individual is a Commercial Nutrient Handler or a Nutrient Consultant. Classes in the non-agriculture track began in summer, 2002.

![Diagram of Delaware nutrient management classes for the agriculture track.]

**Summary of class options**

A total of 12 different classes have been developed for this certification program. (Note that Session IV is the same for both agriculture and non-agriculture.) The number of times each class has been conducted and attendance are summarized in Table 2. As of September, 2003 more than 2,000 individuals have attended nearly 200 certification classes.
The Future of the Delaware Nutrient Management Certification Program

The legislation includes a timetable for implementation. The important timelines are;

- January 1, 2003. The DNMC shall begin official review of the nutrient management plans. One fifth of the plans will be reviewed each year between 2003 and 2007.
- January 1, 2004. Certification of all affected individuals must be completed.

Table 2. Summary of Delaware Nutrient Management classes conducted and attendance.

<table>
<thead>
<tr>
<th>Session</th>
<th>Number of classes</th>
<th>Number attending</th>
</tr>
</thead>
<tbody>
<tr>
<td>I: Agriculture</td>
<td>49</td>
<td>1850</td>
</tr>
<tr>
<td>I: Non-Agriculture</td>
<td>7</td>
<td>182</td>
</tr>
<tr>
<td>II: Poultry</td>
<td>41</td>
<td>1113</td>
</tr>
<tr>
<td>II: Non-Livestock</td>
<td>13</td>
<td>261</td>
</tr>
<tr>
<td>II: Other Animal</td>
<td>7</td>
<td>275</td>
</tr>
<tr>
<td>II: Equine</td>
<td>3</td>
<td>39</td>
</tr>
<tr>
<td>II: Non-Agriculture</td>
<td>5</td>
<td>138</td>
</tr>
<tr>
<td>III: Agriculture</td>
<td>32</td>
<td>1068</td>
</tr>
<tr>
<td>III: Non-Agriculture</td>
<td>5</td>
<td>131</td>
</tr>
<tr>
<td>IV: Nutrient Consultants</td>
<td>1</td>
<td>8</td>
</tr>
<tr>
<td>IV: Commercial Nutrient Handlers</td>
<td>1</td>
<td>10</td>
</tr>
<tr>
<td>Consultant Session (special)</td>
<td>3</td>
<td>50</td>
</tr>
</tbody>
</table>
University of Delaware Cooperative Extension is currently working to complete the required certification of affected individuals. At the same time we are changing our focus from initial certification to continuing education. Approximately 3,000 individuals are expected to be certified under the program, each of which will be required to attend a minimum of two credits (approximately two hours) of continuing education each year.

**Additional Information:**

University of Delaware Nutrient Management website:

http://www.rec.udel.edu/nutrient/index.html

Delaware Department of Agriculture Nutrient Management website:

http://www.state.de.us/deptagri/nutrients/index.htm

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**References:**


http://www.state.de.us/deptagri/rules_reg/code/Chapter_22.htm

Delaware Department of Natural Resources and Environmental Control (DNREC). 2002. State 303(d) list.