

**IOWA STATE UNIVERSITY**  
OF SCIENCE AND TECHNOLOGY

College of Agriculture and Life Sciences  
Extension Programs and Outreach  
132 Curtiss Hall  
Ames, IA 50011-1050  
515-294-7801  
FAX 515-294-6800

June 24, 2015

Jeff Prier  
Iowa Department of Natural Resources  
Field Office 6  
1023 West Madison St.  
Washington, IA 52353-1623

Dear Mr. Prier:

Per cooperative agreement number 14ESD-FSB-JPRIER-0015, between the Iowa Department of Natural Resources and Iowa State University Extension and Outreach, attached is a copy of the FY2015 Manure Applicator Certification final project report. The project report covers the period from July 1, 2014 to June 30, 2015. A copy of the final report will also be made available electronically at:  
<http://www.agronext.iastate.edu/immag/mac.html>.

Also enclosed are copy of each of the training DVDs per our contract requirements and a copy of a program CD with program modules and handouts.

If you have any questions regarding this report please feel free to contact me. I look forward to a continued relationship on this project.

Sincerely,



John D. Lawrence  
Associate Dean, Extension Programs and Outreach  
Director, Agriculture & Natural Resources Extension

Enc.

c. Daniel Andersen  
Rachel Klein  
Linda Wilson

**Manure Applicator Certification Program**  
**July 1, 2014 to June 30, 2015**  
**Agreement Number 14ESD-FSB-JPRIER-0015**  
**Final Report**

## **Introduction**

In 1998, the Iowa Legislature passed HF 2494. This bill required certification of commercial manure applicators and confinement site manure applicators with operations of a designated size. Legislative changes (HF 644) again in 2003 required rule changes for the 2004 program. These changes primarily dealt with the administrative changes to the commercial manure applicator program. The new law required manure application businesses to hold business licenses and allowed fees to be set for businesses, managers and employees. The purpose of this project, entered into by the Iowa Department of Natural Resources (IDNR) and Iowa State University Extension (ISUE) was to develop manure certification training and testing materials and to conduct certification workshops for commercial manure applicators and confinement site manure applicators. This annual report covers year 16 of the certification program.

## **Training Material Development**

### **Confinement Site Manure Applicator Program**

Training materials for the confinement site programs were developed into individual modules. The goal of the module concept was that the material could be used again in future programs with minimal time used in development of the presentation of the materials but instead, time focused on updating the subject matter of each module for future use. The modules were identified from email discussion and ideas submitted by Extension Field Specialists and input from the Manure Applicator Certification Advisory Committee. An Extension campus and/or field specialist or IDNR staff member then develops and presents each module. For some modules, other speakers are identified and asked to participate in the program. The materials are developed into a PowerPoint presentation or a video segment and then burned onto a CD for use at the annual workshops. Each module may be modified at the local level by Extension Field Specialists to adapt for regional or county use to meet certain manure application practices, crop, soils, or topography requirements.

A list of modules by year, from 2008-2015 is presented in Table 1(a complete list of modules by year from 2001-2015 is available upon request).

## Commercial Manure Applicator Program

Materials developed for the 2015 Commercial Manure Applicator program were discussed and determined during the annual advisory committee meeting, via email and phone discussions with Extension Field Specialists, IDNR staff, and members of the Manure Applicator Certification Advisory Committee and several commercial manure applicators. The program materials were delivered by pre-recorded video segments at the annual coordinated showing of the Manure Applicator Certification program, which was held on January 6, 2015. A list of modules by year, from 2008-2015 is presented in Table 1 (a complete list of modules by year from 2001-2015 is available upon request).

## Dry Manure Applicator Program

This program is a subset of the commercial manure applicator and confinement site applicator program. The program is designed to meet the training requirements of both types of applicators, but focuses more on dry manure issues and handling. A list of modules for 2015 is included in Table 1.

Table 1. Certification modules developed and presented at training meetings by program and year.

Year	Confinement Site Manure Applicator Program	Commercial Manure Applicator Program
2008	DNR Land Application Rules, Separation Distances and Manure Management Plans 25 Minutes	DNR Land Application Rules, Separation Distances, Spill Training 30 Minutes
	Emergency Mortality Management 27 minutes (Glanville DVD)	DOT Regulations/Weight Restrictions 30 minutes Chris Boswell
	Confinement Site Investigation Scenarios 50 minutes	Review of Land Application Issues from past 10 years 20 minutes Karen Grimes
		DNR Case Studies on Manure Spills and Spill Response 25 minutes Ted Peterson
		Injector effects on soil, odor, residue and manure 35 minutes, (Hanna Video)
2009	Valuing, Pricing and Selling Manure 60 minutes	DNR Land Application Rules, Separation Distances and Manure Management Plans 40 minutes
	Hydrogen Sulfide Safety During Deep-Pit Pump out 25 min (Swestka/Burns DVD)	Economics of Hauling Manure (Leibold video) 33 minutes
	DNR Land Application Rules, Separation Distances and Manure Management Plans 35 min	Hydrogen Sulfide Safety During Deep-Pit Pump out 25 minutes (Swestka/Burns video)
		Road Safety and Personal Protective Gear 60 minutes
		Mole Toolbar (video) 15 minutes
2010	Review of Rules, Land Application Separation Distances, MMP Requirements, Winter Application, Stockpiling Regulations,	DNR Land Application Rules, Separation Distances, Winter Application Rules, Water Quality Impacts, Spill Response, Paperwork, Fees and Recordkeeping Requirements. 60 minutes

	Paperwork, Fees and Recordkeeping Requirements 60 minutes	
	How to Interpret your Manure Analysis 30 Min	
	Pit Explosions, Fires and Foaming 15 Min	Commercial Application of Manure: Case Studies and Tips for dealing with Liability Issues. 35 minutes
	Liquid Dairy Case Study 15 minutes	Drag Hose/Rupture Video 6 minutes
		Infiltration of Manure, Movement to Tiles and Ways to Minimize Risk of Rapid Export from tile 40 minutes
		Safety and Spill Response Trailer Video 10 minutes
		Pump Safety Video 13 min
		Q and A Panel Discussion 20 Min
	<b>Dry Manure Program</b>	
	Review of Rules, Land Application Separation Distances, MMP Requirements, Winter Application Rules, Paperwork, Fees and Recordkeeping Requirements 60 Min.	
	Stockpiling Regulations 40 Min	
	Transport of N and P to Subsurface Drain Water under Layer Hen Manure-Applied Field Plots 60 min	
	Q and A 20 Min	
2011	Review of Rules, Land Application Separation Distances, MMP Requirements, Winter Application, Stockpiling Regulations, Paperwork, Fees and Recordkeeping Requirements 44 min (Prier)	DNR Land Application Rules, Separation Distances, Winter Application Rules, Paperwork, Fees and Recordkeeping Requirements. 45 minutes (Prier)
	Frozen Ground and Winter Application Rules 17 min (Prier)	Manure Nitrogen Availability and Supply 49 min (Sawyer)
	Manure Nitrogen Availability and Supply 49 min	Water Quality Impacts and Spill Response 25 min (Wiklund)
	Video segment of Safety Pumping from Deep Pits 15 min (Arora and Harmon)	Frozen Ground and Winter Application Rules 17 min (Prier)
		Update on Foaming Pits Research 28 min (Schmidt)
		Video segment of Safety Pumping from Deep pits 15 min (Arora and Harmon)
		Frequently Asked Questions 15 min (Rieck-Hinz)
	<b>Dry Manure Program</b>	
	Review of Rules, Land Application Separation Distances, MMP Requirements, Winter Application Rules, Paperwork, Fees and Recordkeeping Requirements 42 Min. (Rieck-Hinz)	
	Frozen Ground Winter Application Rules 17 min (Prier)	
	Manure Nitrogen Availability and Supply 49 min (Sawyer)	
	Stockpiling Regulations 25 min (Rieck-Hinz)	
	Water Quality Impacts and Spill Response 25 min (Wiklund)	
	Frequently Asked Question 15 min (Rieck-Hinz)	
2012	<b>Confinement Site Manure Applicator Program</b>	<b>Commercial Manure Applicator Program</b>
	Review of Rules, Land Application Separation Distances, MMP Requirements, Winter Application, Stockpiling Regulations,	DNR Land Application Rules, Separation Distances, Winter Application Rules,

	Paperwork, Fees and Recordkeeping Requirements 50 (Prier)	Paperwork, Fees and Recordkeeping Requirements. 45 min (Prier)
	Winter Application of manure or not 25 min (Terry Steinhart)	Infiltration of manure, movement to tiles, and ways to minimize risk of rapid export from tiles and runoff pathways 40 min (Matt Helmers)
	Motor Vehicle Enforcement IDOT 17 min (Chris Boswell)	Motor Vehicle Enforcement IDOT 17 min (Chris Boswell)
	Determining when your MMP is Due 13 min (Rieck-Hinz)	Road Damage Study 48 min (Kevin Erb)
		Beef and Poultry Manure Phosphorus Water Quality Issues 31 min (Antonio Mallarino)
	<b>Dry Manure Program</b>	
	Review of Rules, Land Application Separation Distances, MMP Requirements, Winter Application Rules, Paperwork, Fees and Recordkeeping Requirements 50 Min. (Rieck-Hinz)	
	Bulk Dry Animal Nutrient Chapter 200A 30 min (Kevin Klommhaus)	
	Beef and Poultry Manure Phosphorus Water Quality Issues 31 min (Antonio Mallarino)	
	Motor Vehicle Enforcement IDOT 17 min (Chris Boswell)	
	Road Damage Study 51minutes (Kevin Erb)	
<b>2013</b>	<b>Confinement Site Manure Applicator Program</b>	<b>Commercial Manure Applicator Program</b>
	Intro and Program Reminders, Paperwork and Fees, A. Rieck-Hinz 4 min	Intro and Program Reminders, Paperwork and Fees, A. Rieck-Hinz 6 min
	Intro to Nutrient Reduction Strategy, J. Lawrence 4 min	Land Application Rules, Separation Distances, Recordkeeping, Winter Application J. Prier 52 min
	Nutrient Reduction Strategy Science Assessment, M. Helmers, 44 min	Iowa Commercial Manure Applicator Certification Training Legal Liability, E. McAfee, 24 min
	Manure and Nutrient Movement in Soils. D. Andersen, 27 min	Intro to Nutrient Reduction Strategy, J. Lawrence, 4 min
	Land Application Rules, Separation Distances, Recordkeeping, Winter Application Laws, MMPs, J. Prier, 40 min	Nutrient Reduction Strategy Science Assessment, M. Helmers, 44 min
		Iowa One-Call, K. Gregorich, 16 min
		Manure and Nutrient Movement in Soils, D. Andersen, 27 min
		Top Ten List on How to Prevent Manure Spills, R. Rausch and B. Jochum, 10 min
		ICNAA Membership 4 min
	<b>Dry Manure Applicator Program</b>	
	Rules, Separation Distances, Recordkeeping Requirements, Signage, Stockpiling and Spill Reporting. A. Rieck-Hinz 50 min	
	Interpreting and Using Manure Test Results, J. DeJong, 40 min	
	Intro to Nutrient Reduction Strategy, J. Lawrence, 4 min	
	Nutrient Reduction Strategy Science Assessment, M. Helmers, 44 min	
	Manure and Nutrient Movement in Soils, D. Andersen, 27 min	
<b>2014</b>	Introduction A. Rieck-Hinz- 6 min	Introduction, Fees, Forms A. Rieck-Hinz 9:30
	Rules. J. Prier 30 min	Land Application Rules J. Prier 40 min
	Foaming Pits D. Andersen 37 min	Foaming Pits. D. Andersen, 37 min

	PEDV and Biosecurity, B. Baker 30 min	PEDV and Biosecurity, B. Baker, 39 min
	Manure Spill Response. T. Steinhart 22 min	Manure Injection Issues, D. Andersen, 26 min
		Review of Custom Applicator Survey. A-Rieck-Hinz 30 minutes
	<b>Dry Manure Applicator Program</b>	
	Rules, Separation Distances, Recordkeeping Requirements, Signage, and Spill Reporting. A. Rieck-Hinz 50 min Managing Beef Feedlot Manure. Russ Euken 40 min. Solid Manure Sources and Management Practices of the Iowa Nutrient Reduction Strategy, A. Rieck-Hinz 40 min 2014 Stockpiling Regulations, A. Rieck-Hinz 30 min.	
<b>2015</b>	<b>Confinement Site Manure Applicator Program</b>	<b>Commercial Manure Applicator Program</b>
	Introduction, D. Andersen 5 min	Introduction, D. Andersen 5 min
	Rules, J. Prier 10 min	Rules, J. Prier 16 min
	Land Application and Separation Distance Requirements, J. Prier 15 min	Land Application and Separation Distance Requirements, J. Prier 15 min
	How have spills occurred? B. Brenneman and K. Hessenius 25 min	How have spills occurred? B. Brenneman and K. Hessenius 25 min
	Work Plan Agreement between DNR and EPA Region 7, J. Prier 20 min	Work Plan Agreement between DNR and EPA Region 7, J. Prier 20 min
	Understanding what DNR is looking for. Confinement Site, J. Prier and D. Andersen, 12 min.	Understanding what DNR is looking for. Commercial, J. Prier and D. Andersen, 22 min.
	Manure Sampling and Testing, D. Andersen 25 min	Manure Sampling and Testing, D. Andersen 25 min
		What's new in manure application equipment, M. Hanna 35 min
	<b>Dry Manure Applicator Program</b>	
	Rule, Separation Distances, Recordkeeping Requirements, Signage, and Spill Reporting, K. Arora 50 min	
	Stockpiling, A. Rieck-Hinz 23 min	
	Impacts of Poultry Manure Application on Water Quality, M. Soupir, 22 min	
	Work Plan Agreement between DNR and EPA Region 7, J. Prier 20 min	
	Understanding what DNR is looking for, J. Prier and D. Andersen 22 min	
	Manure Sampling and Testing, D. Andersen 25 min	

## **Supporting Training Materials**

A new factsheet was developed to help commercial manure haulers and producers better understand what the DNR looks for while on farms for inspections: DNR 118 *What to Expect when the DNR Inspects*. Also included in the handouts was the publication, PM 1558 *How to Sample Manure for Nutrient Analysis*. The copies of existing DNR 113 *Separation Distances for Land Application of Manure*, and DNR 115 *Commercial Manure Applicator Certification*, and DNR 116 *Confinement Site Manure Applicator Certification* were also distributed at all workshops and video trainings.

## **Certification Workshops**

### **Confinement Site Workshops**

Training workshops for the 2015 Confinement Site Manure Applicator Certification program began in January 2015 and continued through February 2015. A total of 64 Confinement site manure applicator workshops were scheduled for 2015. Confinement site applicators also meet training requirements by watching a two-hour DVD at their local County Extension office.

ISU Extension and Outreach staff has reported 1,398 confinement site applicators attended the certification workshops, while ISUEO has collected 1,050 confinement site application evaluations. The 2015 Confinement Site program was presented by 16 specialists including: 4 Field Agricultural and Bio-systems Engineers, 10 Field Agronomists, and 1 faculty member.

There was also a confinement site certification workshop at the 2015 Iowa Pork Congress on January 19, 2015, in which 16 people attended. A workshop was also conducted on February 4, at the National Animal Disease Center for staff working with animals and manure; 19 people attended that workshop. The DNR requires staff at NADC meet certification requirements.

### **Commercial Applicator Workshops**

The 2015 Commercial Manure Applicator program was delivered via coordinated showing on January 6, 2015. This showing was presented in 72 Iowa County Extension offices, one Minnesota County office, and two Wisconsin County offices.

The ISU Extension and Outreach staff has reported 914 commercial applicators attended the certification meetings, while ISUEO has collected 1,564 commercial applicators evaluations as of the date of this report.

According to the IDNR database, both of the Commercial and Confinement site programs have increased in the number of applicators compared to the past few years. Currently, the number of certified commercial manure applicator businesses has increased to 566. The number of currently certified Commercial manure applicator representatives has also increased. In 2014, there were a total of 2,120 certified

commercial manure applicator representatives compared to, 2179 for this year (by the end of June). As of the end of June, the number of certified confinement site applicators is 2,242 active certificates.

### **Dry Manure Workshops for Commercial and Confinement Site Applicators**

In February, seven dry manure applicator workshops were scheduled in the state of Iowa.

<b>Date</b>	<b>Location</b>	<b>Attendance</b>
February 9, 2015	Orange City	48
February 10, 2015	Thompson	24
February 12, 2015	Storm Lake	24
February 17, 2015	Greenfield	20
February 17, 2015	Washington	30
February 19, 2015	Kamrar	19
February 20, 2015	Clarion	35

The workshops provided the necessary three hours of training for the commercial applicators and subsequently met the required time requirements for confinement site applicators. The topics for the workshops were: rules, separation distances, recordkeeping requirements, spill reporting, Impacts of poultry manure application on water quality, Work plan agreement between DNR and EPA Region 7, understanding what DNR is looking for on farms, manure sampling and testing, and stockpiling requirements.



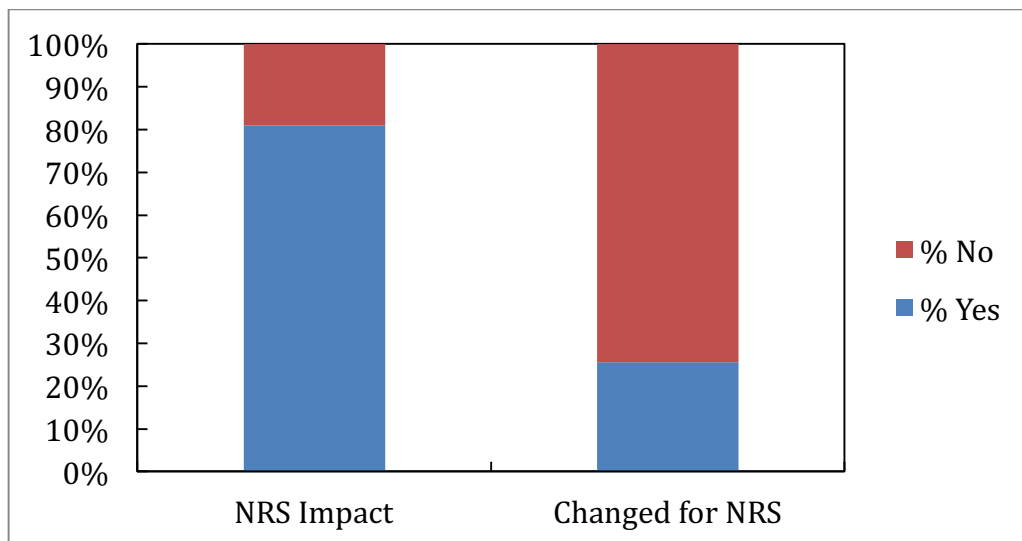
# Certification Workshop Evaluation

## 2015 Commercial Manure Applicator Program Evaluation

An evaluation form was created for the Commercial Manure Applicators pertaining to the material given during the certification process. At the end of each workshop, and at the end of each DVD, the applicators were asked to complete an evaluation on the information presented, overall evaluation of the program, and then the managers or business owners were asked the following questions:

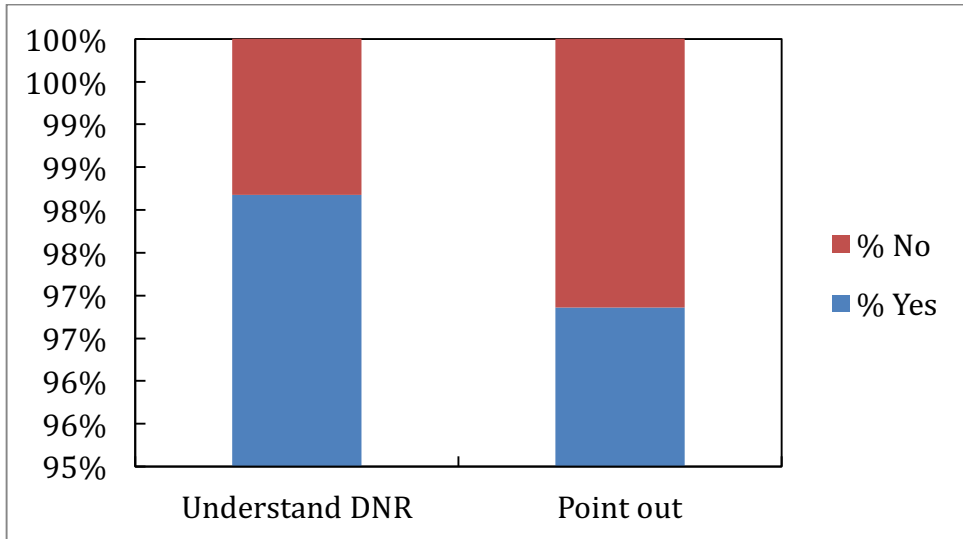
**The Iowa Nutrient Reduction Strategy (NRS) is a science and technology-based framework to assess and reduce nitrogen and phosphorus losses to Iowa waters and the Gulf of Mexico. It encourages adoption of practices to reduce nitrogen and phosphorus losses from agriculture and point sources.**

1. Do you think the Nutrient Reduction Strategy will have an impact?
  - 81% Yes
  - 19% No
2. Have you made any changes to your services/how you perform your job based on the NRS? If yes, what have you changes, services added, attention to water resources changed?
  - 26% Yes
  - 74% No



3. I receive instruction on my company's emergency response plan and assess risk at each from we apply at.
  - 88% Yes
  - 12% No

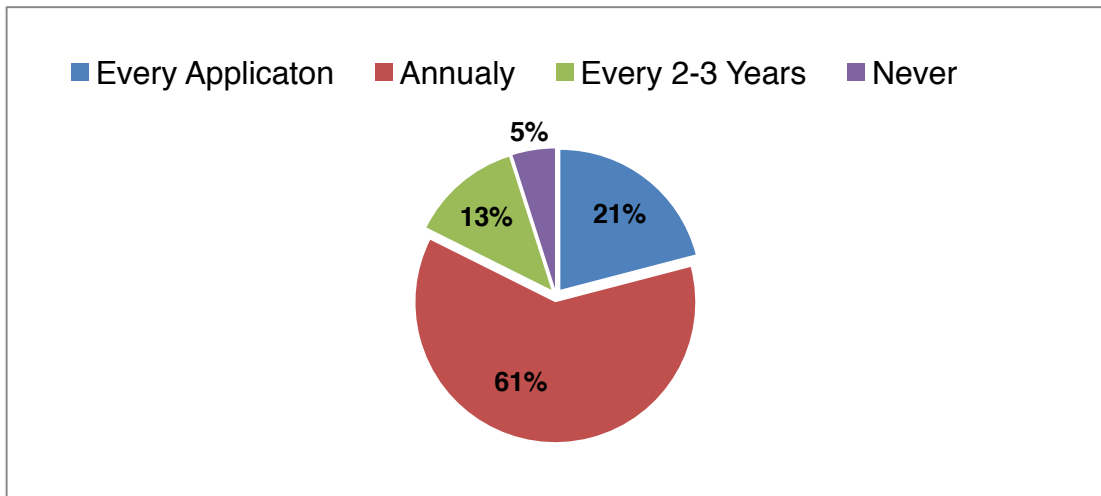
4. I understand what the Iowa DNR is looking for during site inspections.
  - 98% Yes
  - 2% No
5. I'm confident I could point out issues (if any) the DNR is looking for on farms.
  - 97% Yes
  - 3% No



## 2015 Confinement Site Program Evaluation

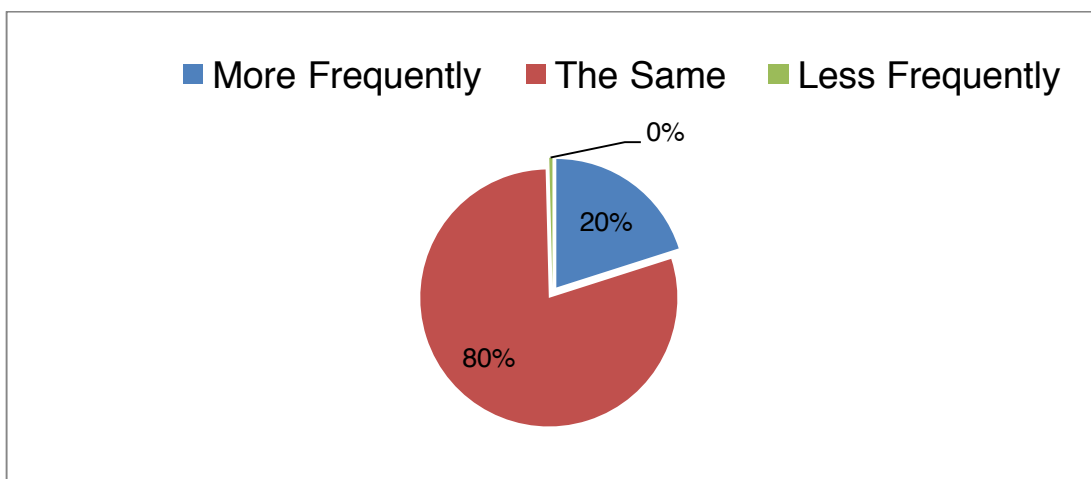
Evaluation forms were created with new questions for the applicators pertaining to the material given during the certification process. At the end of each workshop and at the end of each DVD, the applicators were asked to complete an evaluation on the information presented, overall evaluation of the program, and manure management and equipment used. The following were a few of the responses to selected questions in the 2015 Confinement site program:

### 1. How often do you collect a manure sample?



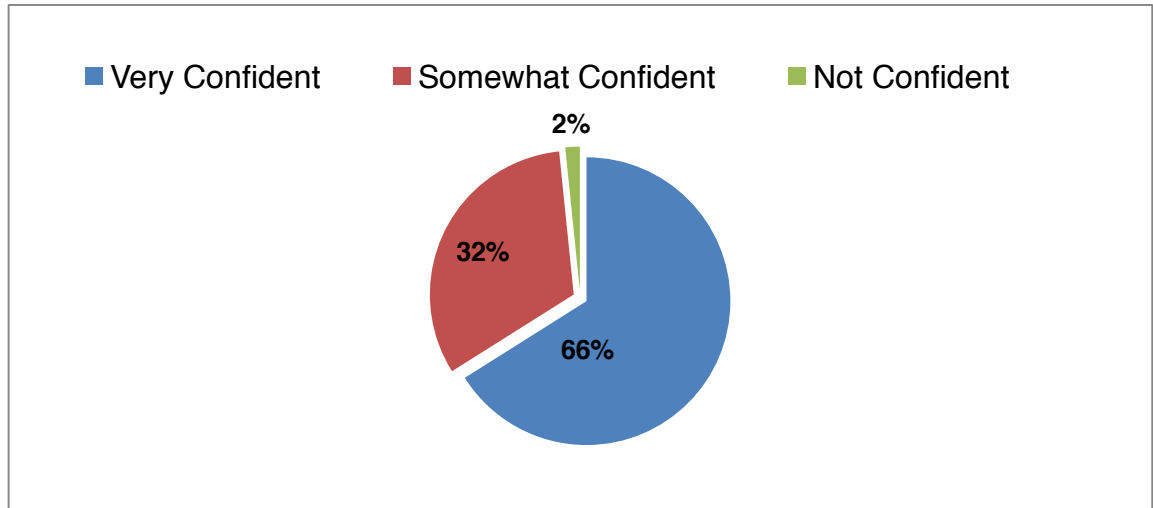
- 21% Every Application
- 61% Annually
- 13% Every 2-3 Years
- 5% Never

### 2. Based on what I heard, I plan to sample.



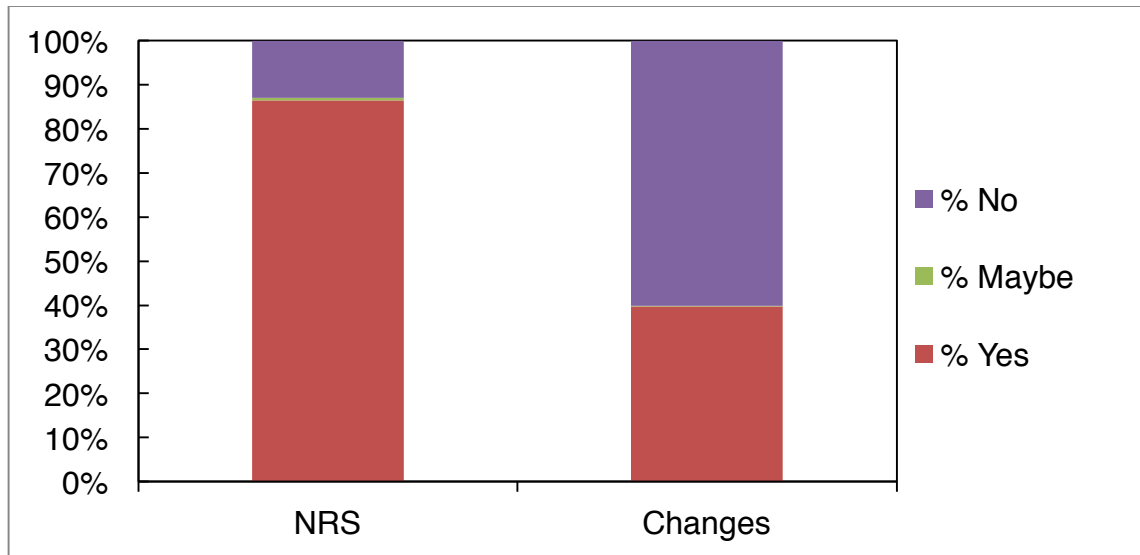
- 20% More Frequently
- 80% The Same

**3. I can use my manure sample results to appropriately adjust my manure application rate**



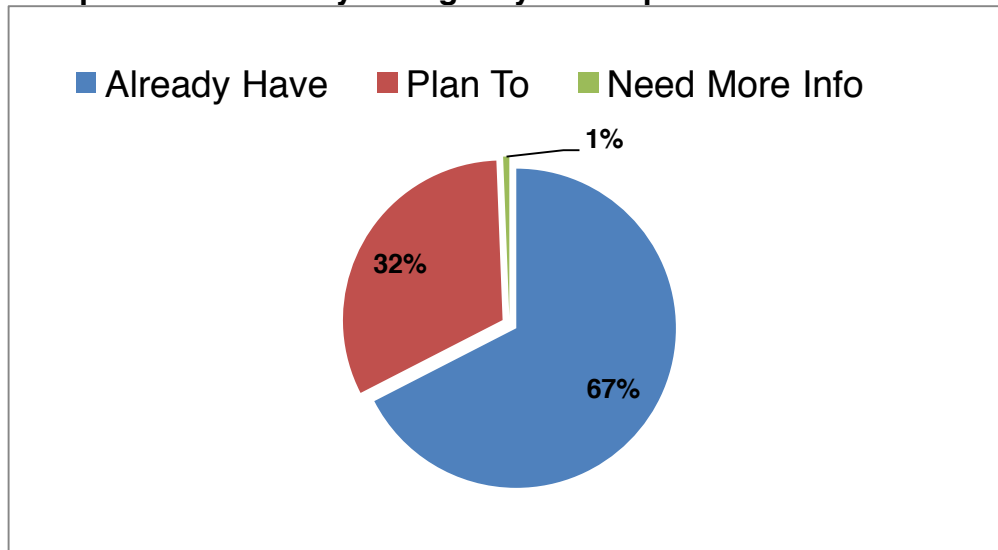
- 66% Very Confident
- 32% Somewhat Confident
- 2% Not Confident

**4. Do you think the Iowa Nutrient Reduction Strategy (NRS) will have an impact? Have you made any changes to your farm based on the NRS?**



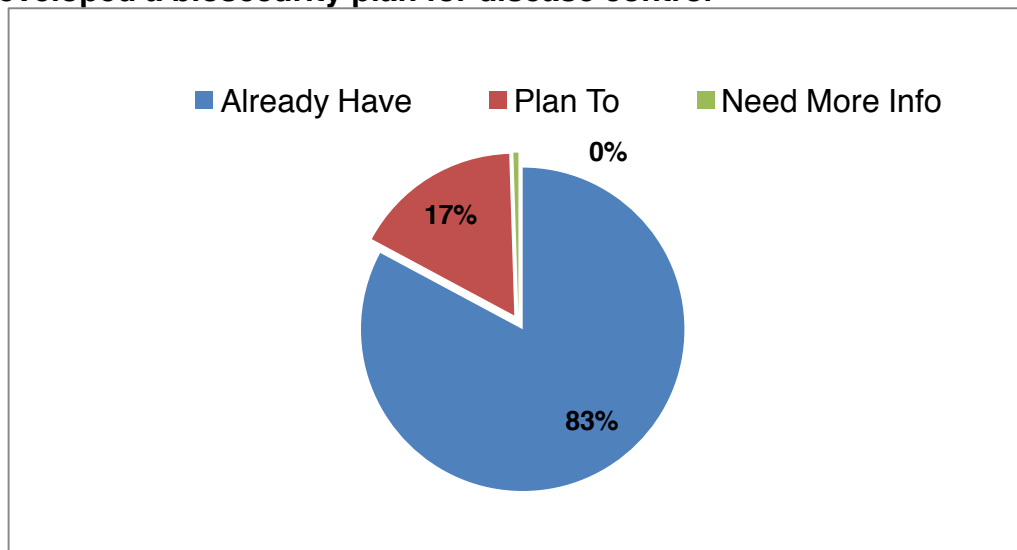
- NRS will have an impact: 87% Yes; 13% No; 1% Maybe
- Changes to your farm based on NRS: 39% Yes; 61% No

### 5. I developed or revised my emergency action plan



- 67% Already Have
- 32% Plan to
- 1% Need More Information

### 6. I developed a biosecurity plan for disease control



- 83% Already Have
- 17% Plan to

Complete results of program surveys can be found at: <http://www.agronext.iastate.edu/immag/maceval.html>. These results are continuously updated as we receive evaluations from County Extension offices. Evaluations from previous years are also available at this site.

## **Advisory Committee**

The 2015 MAC advisory committee gathered on May 8, 2014, at Christy Hall in the Story County Extension Office in Nevada, Iowa. Members in attendance included: Dan Andersen, Kapil Arora, Dan Huyser, Angie Rieck-Hinz, Rachel Klein, John Sawyer, Mark Hanna, Shawn Shouse, Greg Brenneman, Kris Kohl all ISU staff; Jeff Prier and Karen Grimes, IDNR. Aaron Saeugling, Russ Euken, ISU; Tyler Bettin, IPPA, and Colleen Conroy, DNR were online. Brad Jochum and Rich Rausch, ICNAA; Tom Miller and John Lawrence, ISU; Lois Benson and Bill Ehm, DNR were not able to attend. Introductions were made and a discussion about the changes in program leadership was also given. The discussion also talked about the three different delivery systems of the program: live workshops, DVDs, and the addition of on-line learning and how that was progressing. Handouts were given to committee members, which included the agenda and topics since 2008. The committee reviewed the 2014 program year, discussed program ideas and training materials for the 2015 program year.

## **Promotional Materials**

Promotional materials used in the 2015 Manure Applicator Certification programs were similar to that of previous years. Postcards were developed for the January 2015 Commercial program and a brochure was developed for the Confinement Site program to be used as an informational and recruitment tool. Copies of the postcard and brochure were mailed to all currently certified commercial manure applicators and confinement site applicators in December 2014.

Again this year, postcard templates were designed for use by the County Extension offices to remind the Confinement Site Applicators of the upcoming workshops in their area. A set of instructions on how to use the templates was also posted to the MAC "For Staff" Web page. Copies of all brochures and postcards used for recruitment purposes can be found on the enclosed CD titled "ISUEO 2015 MAC Program Applicator Training Materials".

A total of six press releases were prepared and used by County Extension offices for local media. A copy of those press releases can be found in Appendix 1. Workshop dates were maintained on the MAC section of the IMMAG web site (<http://www.agronext.iastate.edu/immag/mac.html>) and were also linked on the Iowa Pork Industry Center's web page <http://www.ipic.iastate.edu/pastevents15.html>. A list of workshop dates was distributed to attendees at the Iowa Pork Congress in January 2015. An article was prepared and distributed through the November 2014 *Iowa Pork Producer Magazine* (p. 33) found at <http://www.iowapork.org/FileLibrary/States/IA/News/Magazine/Nov14mag.pdf>. In addition; livestock commodity groups were provided with information regarding training opportunities that they used in their monthly email newsletters to their members.

All of the public certification materials have been distributed electronically through the IMMAG site. The Manure Applicator Certification Program button on the IMMAG site links users to a site solely devoted to the Certification Program

(<http://www.agronext.iastate.edu/immag/mac.html>). The site contains a description of who needs to be certified, how to get certified and a list of questions and answers most commonly received about the program. The site also has a “staff only” link for ISU Extension and Outreach employees to download program-planning materials. This site serves as the primary location for MAC information in the state of Iowa.

### **Reporting Requirements**

This contract requires quarterly reports and a final project report. This document serves as the final project report.

### **Partnerships**

For FY15 the normal partnerships with IDNR, members of ICNAA, ITF, IPPA, ICA, ISDA and IPA were maintained.

### **Future Needs**

Additional items to consider include developing a policy for training requirements. It is likely that other entities, such as the Midwest Manure Expo, will continue to want to provide opportunities for training. Developing an explicit policy that outlines the expectations and requirements of this program would help these organizations in developing a training that would be appropriate.

**Budget**

A copy of the budget expenditures as of June 30, 2015, is provided via the ISU Office of Sponsored Programs.



**Appendix 1.  
Press Releases**

**Confinement Site Manure Applicator Workshops Scheduled for 2015**

<http://www.extension.iastate.edu/article/2015-confinement-site-manure-applicator-workshops-scheduled>

**2015 Confinement Site Manure Applicator Training Scheduled in -- County**

<https://iastate.app.box.com/ANRCommResources/1/2732128366/23258055432/1>

**Commercial Manure Applicator Training Scheduled for Jan. 6, 2015**

<http://www.extension.iastate.edu/article/commercial-manure-applicator-training-scheduled-jan-6-2015>

**Commercial Manure Applicator Training Scheduled for --County**

<https://iastate.app.box.com/ANRCommResources/1/2732128366/23258057312/1>

**Extension Offers Dry Manure Applicator Certification Workshops**

<http://www.extension.iastate.edu/article/workshops-dry-manure-applicator-certification-offered-extension>

**2015 Dry Manure Applicator Certification Workshops Offered by Extension**

<https://iastate.app.box.com/ANRCommResources/1/2732128366/25943437567/1>