# **Facilitating Development of Certified Nutrient Management Plans** with Undergraduate Interns: A University-USDA Collaboration

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#### Introduction

West Virginia has an increased need for certified nutrient management plans (CNMPs) for farmers entering into cooperative agreements with USDA-NRCS.

To help meet this need an agreement between WV NRCS and WVU Division of Plant and Soil Sciences & WVU Extension Service provided funding for one graduate student and five undergraduate summer interns to assist



#### Outcomes

In 14 weeks five undergraduate interns

- Assisted over 35 different landowners
- Collected samples on more than 20 beef, dairy and poultry farms.
- Identified and collected data from three farms that will be part of the graduate student research projects.
- Completed preplan data entry for >4000 acres
- Gained valuable software experience

with the development of CNMPs.

Interns were placed in USDA Service Centers in or near their home counties and

- Collected soil and manure samples, farm records, and other field data from participating farms for NRCS records and graduate student research.
- Used computer programs like ArcMap, RUSLE2, and Manure Management Planner (MMP) to format and summarize sample data

Learned to communicate with farmers and other agricultural professionals.

Technical references necessary for USDA-NRCS staff training were developed. Training is scheduled for early December, 2015.

#### Challenges

- Intern placement locations did not necessarily correspond with areas where NRCS needed CNMP assistance.
- USDA NRCS staff were not always adequately trained in software used to develop CNMPs and thus could not train interns.
- Updated software was not always available on field office computers and can be difficult to install.
- USDA's geospatial nutrient tool is poorly integrated with ArcMap making it difficult to develop stream setback shape files.
- Prolonged wait time associated with USDA background screening to receive computer credentials.

### **Objectives**

- Implement Manure Management Planner (MMP) into the USDA-NRCS certified nutrient management planning process.
- Develop technical references to be used for training NRCS staff on MMP and associated programs.
- Assist NRCS planners with the development of CNMPs.
- Train the next generation of agricultural professionals.
- Provide WVU undergraduate students with valuable work experience.

Figure 1: Interns worked in 13 of West Virginia's 55 counties.

Image 1: Intern using ArcMap to view topographical maps of a participating farmer's land. Slope length and slope percentages are needed for RUSLE2 calculations. Slope information from these maps is also used to calculate areas of slope that are considered "non-spreadable" through the 590 standard.

Image 2: Two interns working together to collect samples. Interns were able to share techniques and methods to make farm visits effective and informative.

**Image 3**: Intern packaging a feed sample to ship for analysis. Feed samples were collected as part of graduate research project.

## Approach

Prior to placement interns receiver training from WVU Faculty and Extension Specialists in:

- Proper field sampling techniques for forage, soil, and manure
- Basic data manipulation skills and a general understanding of MMP, RUSLE2, and ArcMap
- USDA NRCS requirements for CNMPs
- USDA Rules and Procedures
- Proper professional conduct

Interns were placed in five counties and provided CNMP planning assistance in 13 of the 55 West Virginia counties (Image 1).

Once acclimated to their new positions and field supervisors, interns collected data for MMP development using a spreadsheet, which included fields for

- Soil and manure samples
- Animal head number, type, and physiological maturity
- Manure type (liquid, semi-solid, etc.), generation estimates, and storage capacity



## **Continuing Efforts**

- Interns from 2015 have shown internet in participating again in 2016 and one new undergraduate has already been selected for participation in 2016
- We are actively recruiting up to four new interns and will attempt to assign interns to areas of highest need although that may require a reallocation of funds to provide housing assistance.
- Another graduate student will begin in January 2016.
- Because the project was viewed favorably by interns, WVU and Extension faculty, and NRCS field

#### • Vegetation rotations, yield goals, and feed storage methods

Information used in the MMP files was also used for graduate student research. The graduate research project will map the distribution and movement of phosphorous in farms that have roofed manure storage facilities funded with NRCS assistance.

#### office staff we will try to extend our Cooperative Agreement.



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