

**Statement of
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Before the
Joint Pennsylvania House and Senate Agriculture and Rural Affairs Committees
Hearing on Chesapeake Bay Ecosystem**

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Chairman Brubaker, Chairman Hanna, and members of the committees, I am Bruce McPheron, Dean of the Penn State College of Agricultural Sciences, and I am pleased to welcome all of you to Ag Progress Days 2010. I hope you are able to spend some time today touring the site, visiting the exhibits and conversing with the attendees. As I noted in a recent blog entry, Ag Progress Days provides – from the Pasto Agricultural Museum, to state-of-the-art equipment demonstrations – an opportunity to learn from our deep-rooted past, yet focus on the potential of our future.

The topic of today's hearing –the Chesapeake Bay Ecosystem – is a prime example of the progress and accomplishments agriculture has made to date, and the changing expectations and challenges we must tackle in the future. In this case, the future is now, and affordable and practical solutions to meet evolving Chesapeake Bay expectations are needed to ensure food security for our citizens, financial security for our food producers, and protection of our ecosystems.

To accomplish the challenges of the Chesapeake Bay will take personal commitment – and commitment of intellectual and financial resources – from all of us. Penn State is partnering with the agricultural and environmental agencies and organizations represented here today – and beyond – to bring to bear the multi-disciplinary expertise of our researchers and educators in the development and dissemination of science-based solutions. We are working at multiple scales across agriculture and forest, in rural and urban Pennsylvania, as this is not simply an agricultural issue; it is a societal issue. Our collective success will be greatest at the community-based scale where farmers, forest managers, municipalities, and household managers are working together with us to identify how within each of their respective spheres of influence – both as land managers and consumers –they can reduce runoff that impacts local water quality and, collectively, influences the Bay system.

Examples of some of the issues we are addressing include topics such as:

- Systematic approaches to balancing food systems, food prices, and environmental protection costs
- Developing and assisting with implementation of agricultural Best Management Practices (BMPs)
- Nutrient management practices such as precision feeding to reduce nutrients from food production processes
- Training of practitioners who are working in the field in support of Pennsylvania's producers – whether it is in nutrient or manure management planning or in the actual design, construction and implementation of facilities and management systems
- Strategies to realize the Chesapeake Bay Commission's BIOFUELS FOR THE BAY policy

Some specific impacts include:

- The College's Agriculture & Environment Center provides frequent educational webinars to keep stakeholders up to date on the latest research and practices
- USDA-ARS/Penn State collaboration resulting in technology to maximize the benefit of no-till practices with the benefit of manure incorporation, practices that were at one time mutually exclusive, to reduce the likelihood of runoff compromising water quality. This will be introduced to the Chesapeake Bay watershed first right here in Pennsylvania and will subsequently be extended out to our neighboring Bay states
- Watershed scale pilot projects, such as the Conewago Initiative, which serve as a "whole watershed" approach that recognizes that farm-scapes, forest-scapes, and urban-scapes are intrinsically linked and that entire communities must work collaboratively to resolve issues and solve nonpoint source problems

These are but a few examples of the collaborative work going on at Penn State around water quality issues. Further details on each of these projects are included in my written testimony.

Let me leave you with one closing thought. Ag Progress Days focuses on just that – progress. Penn State's College of Agricultural Sciences has played a unique role in the evolution of agriculture in our state, and beyond, as one of America's oldest public universities, founded in 1855 as the Farmers' High School of Pennsylvania, and as the sole land-grant institution in Pennsylvania. As the nation's land-grant system approaches its sesquicentennial anniversary in 2012, I hope we can all agree to celebrate the incredible agricultural progress and successes to date and reinforce our continued commitment to address the critical challenges and demands facing agriculture into the future.

Thank you for the opportunity to address you today. Not only am I available to any of you as a resource as you go about your important work of your committees, but you and your staff also have access to all of our faculty, staff, and students in support of your work. It is our pleasure to continue a 155-year tradition of service to the well-being and future of Pennsylvania, from forest to field and from farm to fork.

Enjoy your day at Ag Progress Days 2010!

Following is additional detail on water quality projects in progress in the College of Agricultural Sciences and across Penn State University:

- **National and international food systems scale – SYSTEMIC ISSUES AROUND IMBALANCE – FOOD SYSTEM/CHEAP FOOD/EXTERNALIZED COSTS OF INHERENT POLLUTION PREVENTION**

Science/policy interface:

From Doug Beegle at the July 14, 2010 Chesapeake Manure Summit: Nutrient management planning and plan implementation has had a very positive impact in reducing the delivery of nutrients to the Bay. While progress by agriculture to address nutrient problems in the Bay has been steady, by most accounts it has not gone far enough or fast enough. Many look at this steady progress and extrapolate, concluding that all that is needed is more emphasis on nutrient management planning in Bay cleanup efforts. However, while it is important to continue an emphasis on nutrient management, nutrient management plans do not address the systemic causes of the nutrient problems in the Bay Watershed which are related to the overall structure of animal production and resulting regional nutrient imbalances. In the end, dealing

with the systemic issues will lead to improved nutrient management, but improved nutrient management will not address the systemic issues and thus progress will likely be limited by these constraints. An analysis of the strategic conflict between the economics of food production and protecting the environment would indicate that if nutrient management planning and implementation are to be effective in achieving the goals, this must be accompanied by a strategic recognition that producing food in a way that has less impact on the environment will cost more and thus we must figure out how to internalize the costs of nutrient management to make it possible to achieve the environmental goals.

- **Farm scale - GETTING THE PRACTICES INTO THE FIELD:**

Penn State remains focused on research and Extension that supports and furthers the producer's ability to integrate Best Management Practices (BMPs) into their production and to adopt management systems that will lessen the potential for release of nutrients and sediments to the environment. Penn State researchers and Extension join their partners across agencies and NGOs in recognizing that the bottom line for the farmer's success is the economy of his or her system – how to build it into a sustainable system that ensures production AND ensures protection of the local environment (water and air quality) as well as the health of the Bay through the aggregate impact of many small watersheds and contributing landscapes.

- **PRACTICES-** The Chesapeake Bay Commission's BIOFUELS FOR THE BAY policy guidance continues to be translated by Penn State researchers – both at our own University farms where fuels are grown in the form of canola and other cover crop grains – as well as on Pennsylvania farms where innovative producers seek ways to maximize the economy and conservation benefits through energy production for on-farm needs. Drs. Tom Richard and Heather Karsten and others have provided policy and field level guidance on the implementation of cover crop systems that will provide dual environmental benefits – production of biofuel crops – and the uptake and sequestration of nutrients in the soils.
- **PRACTICES-** Pennsylvania has made HUGE strides in the uptake of no-till farming – well above and beyond all other Bay states. No-till levels increased in Pennsylvania from 20% of cultivated acreage in 2000 to 56% in 2009. Penn State seeks to build on this success – and in recognition that there are huge advances still to be made in adoption of this practice and other core conservation practices that have great payoff for reducing the nutrients and sediments released to the environment, Dr. Sjoerd Duiker and his team have been notified that their project titled “**Without Carrot or Stick: Promoting BMPs on Small Dairy Farms**” – will be funded under the USDA's Conservation Innovation Grant. This project combines the no-till success with cover crops and manure injection – and is expected to increase by 10% to 50% the adoption of these practices – with conservative estimates of reducing nitrogen by 8 million pounds per year, phosphorus by 480,000 pounds per year, and sediment by 320,000 tons per year. To give you some idea of the relevance of this work – an 8 million pound per year reduction of nitrogen per year through implementation of no-till, cover crops, and manure injection on PA's small dairy farms is a significant step towards meeting Pennsylvania's allocated load from ALL sources (including non-agricultural sectors) of an anticipated 76 million pounds per year. We are in the business of helping farmers find

scientifically and economically sustainable ways to meet these environmental goals in a manner that advances and supports their farm production goals.

- **PRACTICES-** Multiple initiatives are underway that are field testing innovations for improved conservation. For example, the USDA ARS/Penn State collaboration will have the “sub-surfer” dry manure injector on the ground within the Conewago Watershed this fall. Up to this point, the inability to incorporate dry manure in no-till environments has resulted in loss of ammonia through volatilization to the atmosphere or runoff from surface application and has put conservation practices in conflict with one another. Researchers needed to ensure that the benefit of no-till was coupled with the benefit of manure incorporation to reduce the likelihood of runoff compromising water quality. The subsurfer manure applicator accomplishes this and will be introduced to the Chesapeake Bay watershed FIRST in PA; it will then be extended out to our neighboring Bay states. These innovations, both in systems approaches and in development of new techniques and equipment, exemplify how the land-grant university addresses real-time issues and challenges through the combination of research and Cooperative Extension.
- **TRAINING-** The training of practitioners who are working in the field in support of Pennsylvania’s producers, whether it is in nutrient management planning or in the actual design, construction, and implementation of facilities or management systems that will aid the farmer, is a major component of Penn State’s work. The State Conservation Commission and Penn State have established a gold bar standard for nutrient management planning training for the technical service providers (public and private sector), who are in great demand to advise producers on best management of excess nutrients on the farm. In addition to web-based, classroom and field training, Penn State also develops innovative tools that will save practitioners time and increase their efficiency in working for the producers. For example, Dr. Rick Day’s work to provide readily accessible, GIS-based platforms for conservation planning at the farm-scale was previewed at last month’s National Manure Expo that was hosted at the APD site by Penn State. Dr. Day and his team’s PaOneStop Online Nutrient Balance Sheet Mapping tool allows farmers and their advisors to create the maps required for the completion of nutrient balance sheets – including on-farm features such as field boundaries, sinkholes, wells, streams, manure setbacks, stream buffers, and staging areas. Having this tool allows farmers to visualize how decisions they make on the landscape are intrinsically linked and increases their ability to exercise adaptive management choices.
- **TRAINING-** Agriculture and Environment Center – ongoing training through Manure du Jour webinars that provide PA conservation practitioners with the research, science and applications for PA’s “Best Practices for Protecting Animal Ag-, Air-, and Water Quality.” Over 700 Pennsylvania practitioners from conservation districts, NRCS, Extension, other agencies, NGOs, and producers have participated to date.

- **Watershed scale – BUILDING WHOLE WATERSHED APPROACHES THAT ACCOUNT FOR AND ADDRESS ALL HUMAN ACTIVITIES ON THE LANDSCAPE THAT CONTRIBUTE TO NUTRIENT AND SEDIMENT LOADS**

- The Conewago Initiative is a pilot “whole watershed” approach that recognizes that farm-scapes, forest-scapes, and urban-scapes are intrinsically linked and that entire communities need to work collaboratively to resolve issues and solve nonpoint source problems. This project was initiated by Penn State in cooperation with the PA Department of Environmental Protection, USDA-NRCS, Dauphin-/Lancaster-/Lebanon County Conservation Districts, Chesapeake Bay Foundation, and a host of other agricultural and environmental interests. At the anniversary of President Obama’s executive order on the Chesapeake Bay, USDA Deputy Secretary Kathleen Merrigan visited the Conewago Watershed and designated it as one of three “showcase” watersheds within the Chesapeake Bay Basin demonstrating that extraordinary partnership efforts lead to increased adoption of practices with expected environmental outcomes.
- The Lower Susquehanna Initiative was launched by Penn State College of Agricultural Sciences, Cooperative Extension, and Penn State Outreach in spring 2010. Led by Matt Royer, Director within the Penn State Environment and Natural Resource Institute (ENRI) and Agriculture and Environment Center, the discoveries underway within the Conewago sub-basin will be scaled up across this critical agricultural region to ensure that successes will be efficiently and effectively transferred.