

Ag Council Hosts Summer Research Tour

(Continued from Page A1)

ences.

At the swine research lab, Ken Kephart, professor in the department of dairy and animal science, highlighted several environmental research programs.

In the summer of 1999, for example, researchers working on a swine odor research program evaluated three odor-reducing technologies on eight farms and surveyed the neighbors to determine the effectiveness of the technologies. Biofiltration, exhausting air from the swine facility through a pile of wood chips, seems to show the most promise, he said.

Researchers have also been evaluating swine production sites since 1999 and making recommendations to producers to help mitigate odor problems. Kephart also highlighted a Manure Hauler Certification Program, begun in 2000, and an environmental certification program for producers, the Pennsylvania Environmental Agriculture Conservation Certificate of Excellence (PEACCE).

Eileen Wheeler, associate professor in the department of agricultural and biological engineering, described a project involving the use of wetlands in odor control at the swine facility.

The project includes separating the solid and liquid manure, then running the liquid manure into eight wetland tubs at a rate of 3,000 gallons per week. The tubes empty into an effluent tank. Based on prior, smaller

studies, the researchers expect a 50-80 percent reduction of odors in the final liquid manure.

Microbes in the wetlands, explained Wheeler, convert the organic matter into carbon dioxide and water. The project uses disciplines such as horticulture to set up the greenhouse, an example of the collaboration necessary on many of the university's research projects.

Rick Day, an assistant professor of soil science and environmental information systems, described the use of Geographic Information Systems (GIS) in agriculture, land use, and commerce.

The AgMap program, said Day, includes more than 55 businesses that have registered online with a listing of their products and services. In the program the user can search by commodity and service for agriculture businesses in specified locations.

Gretchen Kuldau, assistant professor in the department of plant pathology, spoke about the university's study of mycotoxins, which are present in food, feed, and the indoor environment.

"Mycotoxins take a number of different tolls in the ag sector," said Kuldau. Mycotoxin in feed, for example, can cause productivity losses, veterinary costs, and testing costs. One project dealing with mycotoxins is to investigate their presence, and detrimental effect to cattle, in corn silage.

The incident and distribution in Pennsylvania is not well understood, she said. "Our hope is

that at the end of the project we will be able to make recommendations on management practices that seem to be able to prevent mycotoxin formation," she said.

Another research project includes classifying and defining mycotoxins and putting the information into a web-accessible database.

At the Toftrees site, Todd Bowersox, a professor of silviculture at the school of forest resources, and Lisa Kelso, also from the school of forest resources, spoke about a program that irrigates the university's treated wastewater.

Since 1983, Penn State has recycled all of its wastewater by irrigating 520 acres of farm crops and forest areas. The project operates at approximately 70 percent of its four million gallons a day capacity. According to Bowersox, researchers have experimented with clear cutting, then either planting or letting the forest naturally reseed the area.

They have found that certain types of trees have adapted better to the high-moisture environment, said Kelso, who described the planting efforts of attempting to develop a plant community compatible with the irrigation system. They plan to reharvest the trees in 10-12 years.

Also at Toftrees, Bryan Swistock, extension associate in the school of forest resources, taught tour participants about well construction and safety. Private wells serve more than three million people in Pennsylvania, accord-



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ing to Swistock. However these wells, if not properly constructed or maintained, may be host to coliform bacteria from insects, mice, or groundwater coming in contact with well water.

Research projects included disinfecting and fitting wells known to be contaminated with sanitary well caps. The second study focused on testing new wells with a sanitary well cap but no grout seal, a second component important in sanitary wells, Swistock said.

Jack Schultz, professor of entomology, presented his research on plant responses to their environments. Wounded plants emit responses (color or growth) that "fingerprint" what their attacker was. Researchers then decided to use plants as environmental reporters for pest attack or biochemical warfare.

Magnetoelastic sensors capable of sensing plant emissions will report the results, said Schultz. Plants can be used to locate and identify crop pests, pollutants, nutrients, etc. "Our overall goal is to deal with sensing and help augment the plant's responsive

ability," he said.

At the Pennsylvania Animal Diagnostic Lab, veterinarian Patricia Dunn spoke about the lab's role in agriculture, in particular the recent avian influenza outbreak. Because of rapid detection and reporting of cases, aggressive biosecurity, and coordinated tracking and monitoring of the virus, the outbreak was quickly contained.

The animal Diagnostic Lab has worked on vaccine development and educational programs for the agriculture industry. Nine veterinarians work at the lab.

During the luncheon, Bruce McPherson spoke about agriculture biosecurity, which he defined as the effort to prevent the entry of a pathogen or pest into a susceptible population of plants or animals.

"This is the same question that we've been dealing with in various guises for years," he said. Agriculture has always been interested in making safe food, it's not anything new. Protecting the food supply is the "same sort of issues that we've always faced," he said.

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PENNSYLVANIA'S Equine Industry Needs Your Help



Economic Impact Study of the Pennsylvania Equine Community to be Conducted

- **THE PA DEPARTMENT OF AGRICULTURE**, through the State Horse and Harness Racing Commissions, has contracted with The Pennsylvania State University to conduct the survey.
- **KNOWLEDGE** of the current scope of the equine industry is important for enhancing government and citizen understanding.
- **THE SURVEY** will assess the composition and nature of Pennsylvania's horse industry including its direct and indirect impact on the state's economy.
- **IN FALL 2002** written questionnaires will be mailed out to randomly selected individuals throughout all sectors of the equine community.
- **PARTICIPATE** if you receive a survey by completing the questionnaire. Your information will be kept completely confidential.

For more information on the survey contact:

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