

Swine HEALTH REPORT

A National Institute for Animal Agriculture Publication

Spring 2002

Disease Eradication: 'Let's Go'

SDEC leader says new technology could boost eradication efforts.

Disease eradication: Should we go there?

That was the title of the presentation that Dr. Carlos Pijoan gave to the Swine Health Committee at the recent annual meeting of the National Institute for Animal Agriculture.

There's no question that Dr. Pijoan, who heads up the Swine Disease Eradication Center (SDEC) at the University of Minnesota, thinks the pork industry should "go there" and set a goal of eradicating a number of swine diseases.

"Disease eradication is the mirage that we have all been chasing for many years," Dr. Pijoan said. "The benefits of eradication are obvious and justify all of our

continued efforts in this arena."

He pointed out a number of reasons why disease eradication is a worthy goal:

- Disease-free populations have higher biological production and much lower cost of production than populations where common endemic diseases are present.

- Disease-free animals require few, or no, antibiotics supply as growth promotants in feed. "This is a positive way for the pork industry to address an important emerging social issue," he said.

- Disease negatively impacts the welfare of animals. Steps to eradicate disease represent some of our most effective measures to improve animal welfare.

- Disease can be hard on the morale of workers in swine units. "Personnel motivation is sorely tested when endemic disease is present and represents a continuous daily struggle," Pijoan said. "Personnel dealing with disease-free pigs can use more time in looking after the animals, instead of treating them."

Producing completely disease-free animals remains an impossible dream—for now. There are a number of normal flora microorganisms with pathogenic potential that we cannot eradicate at this time, he said.

Such organisms include *S. suis* and *H. parasuis*, along with cytomegalovirus and endogenous



retrovirus. "It also includes pathogens such as circovirus that we have not studied enough to understand how to eradicate it," he said.

However, it appears the pork industry is ready to leave behind many difficult diseases, at least in the Americas.

It may be possible to eradicate PRRS, *M. hyopneumoniae* and *A. pleuropneumoniae*, Dr. Pijoan said. Together with the near disappearance of swine dysentery, progressive rhinitis and TGE, the nearly completed eradication of pseudorabies and the absence of such exotics as classical swine fever and foot-and-mouth disease, the pork industry could produce a nearly "disease-free" animal.

He pointed out that it has been many years since disease eradication has been discussed and implemented as a production strategy. The 1960s and 1970s saw "a tremendous surge of interest in disease eradication," Dr. Pijoan said. "This was then centered on the SPF technique, which promised to result in farms where the major disease pathogens were eradicated."

Although the SPF program continues today and is very important in countries such as Denmark, "We have to accept that it has largely failed to capture the

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NIAA ID/INFO EXPO 2002

National Food Animal ID Symposium to address ID issues

Advancement of individual animal identification is the focus of a summer symposium and trade show sponsored by NIAA.

ID/INFO EXPO 2002 will take place July 28 through Aug. 1 at the Sheraton Chicago Northwest, Arlington Heights, Ill. It will feature the National Food Animal Identification Symposium, the first-ever National Equine Identification Symposium, plus a trade show



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showcasing manufacturers and service providers in the animal ID and information systems business.

NIAA has previously facilitated three livestock identification conferences in 1998, 1994 and 1988.

Neil Hammerschmidt, chair of the NIAA Animal ID and Information Systems Committee, said the committee's goal is to continue the work from previous ID symposiums and extend new efforts into advancing a National ID Plan.

The National ID Task Force, which is made up of representatives from some 30 animal agriculture organizations, will bring a preliminary draft National ID Plan to the 2002 ID Symposium. The Task Force report will be delivered on Thursday morning, Aug. 1. It will

be followed by a break-out group session where particular ID issues, such as standardization of ID tags, numbering systems and premises, ID will be addressed.

"It's a hands-on opportunity to advance the National ID Plan," said Hammerschmidt. "We will basically tell participants, 'Here's the plan, here's more background information. Now, let's roll up our sleeves and move forward.'"

**ID•INFO
EXPO 2002**

The National Food Animal ID Symposium objectives are to offer the latest information on database management, information systems, ID technology, National ID programs in other countries, and emerging technology and application. It also will feature panel discussions with livestock producers as well as market operators and packing plant managers.

ID/INFO EXPO program and registration information are available at the NIAA Web site: www.animalagriculture.org.

ASAS Announces Annual Meeting

The 2002 Joint Annual Meeting of the American Dairy Science Association, American Society of Animal Science, and the Canadian Society of Animal Science will be held in Quebec City, Canada, July 21-25. This meeting will bring together 3,500 scientists, researchers and students from some 50 countries to exchange new information and developments in animal agriculture.

John P. Oliver, president of Maple Leaf Bio-Concept, will headline the opening session of the 2002 ADSA-ASAS Joint Meeting.

The information-packed symposia will highlight numerous research topics, including:

- Application of Functional Genomics in Animal Breeding/Genetics;
- Bioterrorism/Ag Security;
- Food Safety;
- Assessment of Low Input Tech-

nologies for Animal Production Systems in Developing Countries;

- Nonruminant Nutrition: Phytase;
- Environmental Stress on Livestock and Economic Implications.

For more information, go to: www.fass.org/quebec02.

The 2002 International Symposium on Swine Disease Eradication will be held Sept. 14 at the Radisson Riverfront Hotel in St. Paul, Minn.

Keynote speakers include Dr. Hank Harris, who will discuss biosecurity; Dr. Jens Peter Nielsen will address disease eradication; and Dr. Scott Dee will discuss issues surrounding disease transmission.

For more information, contact the Swine Disease Eradication Center at the University of Minnesota, 1988 Fitch Ave., St. Paul, Minn. 55108. Phone (612) 625-1233, or visit the SDEC Web site:

www.cvm.umn.edu/sdec

Animal Health Protection Act Featured in New Farm Bill

Updated, modernized statutes help animal industry deal with disease threats

Consolidation, modernization and clarity. That's what the Animal Health Protection Act (AHPA), passed recently as a part of the Farm Security and Rural Investment Act of 2002, offers to the U.S. animal agriculture industry.

It consolidates animal health statutes that had been scattered throughout 20 various codes that date back as far as the 1880s.

This new legislation updates regulatory language to reflect today's modern agricultural and transportation system. It also provides a single statutory framework and allows transparency of animal health statutes as desired by U.S. trading partners.

The Animal Agriculture Coalition (AAC) said a new statute was needed "to fill gaps in existing laws, clarify the areas of uncertainty, standardize USDA's responsibility and authority, and enhance the Secretary of Agriculture's ability to carry out the mission of APHIS."

The updated statute allows APHIS "to deal expeditiously with serious animal disease outbreaks that may threaten animal health and the economic viability of the \$107 billion U.S. animal agriculture industry," said AAC.

Bernadette Dunham, assistant director of governmental relations for the American Veterinary Medical Association, said the new Animal Health Protection Act will benefit AVMA members and the entire ani-

mal agriculture industry.

"It ensures animal health protection and that we can move quickly in the case of a serious disease outbreak," said Dunham.

Another important reason for updating AHPA was the emergence of new diseases and new types of disease agents in recent years.

"Prions didn't even exist in anything that was in the books," said

Dunham. "We needed to update statutes and make sure that current disease issues, especially prions, are acknowledged."

The act also enhances flexibility to address the changing needs in technology and policy, enhancing the Secretary's ability to carry out the mission of USDA-APHIS.

In addition, the AHPA helps to fill gaps in existing law that were pointed out in the recent Animal Health Safeguarding Review performed for APHIS.

For example, there are foreign animal diseases with long incubation times that may not be detected until after numerous infected or exposed progeny are born. The new legislation provides for such situations by treating progeny the same as the imported animals.

Long time coming. USDA began discussions about consolidating and revising animal health statutes more than a decade ago. The House Committee on

Agriculture, Subcommittee on Department Operations, Research, and Foreign Agriculture held two hearings on the need for integration and synthesis among APHIS' numerous plant and animal authorities in 1983 and 1988.

The result was two draft parallel bills, the Plant Protection Act and the AHPA. After almost 18 years, the consolidated and modernized plant protection legislation was passed as a part of the Agricultural Risk Protection Act of 2000.

Both the PPA and the AHPA boosted penalties for such activities as smuggling because of the threat of bringing damaging pests and diseases into the U.S.

Industry perspective. Barb Determan, a National Pork Producers Council board member and Iowa pork producer, said AHPA could help improve U.S. response in the face of an emergency disease.

"In the event of an outbreak of an animal disease, response time and clear lines of authority are critical components of a successful containment strategy," Determan said. "By updating and simplifying statutes relating to animal health issues, more precisely defining the powers and responsibilities of the U.S. Secretary of Agriculture and ensuring that compensation to livestock owners would be available, our ability to quickly respond to and contain an outbreak will be significantly enhanced."



Farm Bill FYI

The new Animal Health Protection Act is found under Section X, Miscellaneous, of the Farm Security and Rural Investment Act of 2002.

For more information, visit the USDA Web site, www.usda.gov/farmbill.

PCR Techniques May Boost Disease Eradication Efforts

Continued from page 1

interest of the majority of the swine industry," Dr. Pijoan said.

In the decade of the 1990s, segregated-early weaning (SEW) techniques (also known as MEW, MMEW, or Isowean techniques) were "again touted as the cure-all for the disease problems that plague us," he said.

In the Americas, Dr. Pijoan said, SEW "has been incredibly successful, the engine that has pushed the industry forward."

It helped reduce the incidence of dysentery, rhinitis and APP.

However, as a disease eradication scheme it has also failed, since the level of disease, though admittedly from different pathogens than before, has remained the same, he said.

He warned the audience that, before the industry gets too excited about eliminating disease, it should consider some of the reasons that previous eradication attempts have fallen short:

- They relied on signs and lesions for disease monitoring, instead of concentrating on detection of pathogens.

- They failed to understand the problems of maintaining disease-free herds in infected regions, the "area spread" of disease.

- They developed eradication solutions for pathogens that scientists don't fully understand, especially with regards to their pathogenesis and epidemiology.

- They applied information from small-scale experimental trials to large swine populations.

He also said that evidence is starting to show that indirect monitoring measures may prove fatal to an eradication scheme. "Although it is true that the vast majority of animals will develop signs and lesions and seroconvert following infec-

tion," he said, "we only need a few exceptions, or a prevalence below our sampling size, to end up having infected animals in the population that can later spread the organism and initiate a disease outbreak."

He said evidence of this can be found on the reemergence of *A. pleuropneumoniae*, which was believed to have been eradicated by SEW techniques. "The reality is that the organism has remained lurking in many of our herds, only to raise its ugly head when the circumstances allow," he said. "*M. hypopneumoniae* is probably quite similar. We now believe that *M. hypopneumoniae*-infected animals that show no signs or lesions and do not seroconvert are common and play an important role in late-finishing outbreaks."

He believes that veterinarians will have to be more aggressive in the use of monitoring techniques that detect a pathogen. The recent emergence of PCR-based techniques allow a more complete monitoring job than ever before.

"The evolution of PCR techniques may well prove to eventually be the difference between our current efforts at disease eradication and those attempted before," he said.

Dr. Pijoan also talked about the difficulties of controlling area spread of disease. "One of the most frustrating things that can happen in a disease eradication strategy is to have the population be reinfected from a seemingly unknown source, the so-called 'area spread,'" he said.

Area spread is still poorly understood and may have different causes for different pathogens. "The obvious and easy answer of airborne spread does not explain the majority of the outbreaks seen, at

least in the climate prevalent in most of the Americas," he said. "We should stop using airborne spread as a shield to explain our failed attempts and instead try to understand exactly what is happening."

Dr. Pijoan also pointed out that the eradication toolbox is fairly small. The tools range from gilt acclimatization (although not an eradication strategy per se) to partial depopulation; nursery depopulation; complete depopulation/repopulation; test and removal; herd closure; and SEW.

But he insisted that those tools are adequate for the industry to "go there" when it comes to eradication. "Undoubtedly, the answer is yes. We need more research to understand better some odds-and-ends, but the basic technology is there," Dr. Pijoan said. "It is begging to be applied."

NAHMS Releases Swine Study Part II

The USDA's National Animal Health Monitoring System (NAHMS) recently released the second descriptive report for its Swine 2000 study. Called Part II: Reference of Swine Health and Health Management in the United States, the study provides valuable information on industry trends. Some key findings in this second of three reports are:

- Top three diseases in suckling pigs were colibacillosis, *Streptococcus suis* and greasy pig disease.

- Autogenous vaccine for PRRS was used in 5.6 percent of females.

- Ileitis was the disease most commonly found in grower-finishers, reported on more than 75 percent of all large sites.

- About two-thirds of sites with grow-finish pigs used some type of injectable antimicrobial in the previous six months. More than 88 percent used an antimicrobial in feed.

For more information, visit www.aphis.usda.gov/vs/ceah/cahm.

Light Touch for Heavily Muscled Hogs

New study confirms link between handling and number of downer pigs.

Pork producers who raise heavily muscled market hogs should take notice of a new study unveiled at the American Society of Animal Science annual meeting held in Indianapolis. It shows clear benefits of using gentle methods to move pigs from farm to market—methods that may eliminate downer animals altogether.

Dr. Harold Gonyou, a swine researcher and animal behaviorist at the Prairie Swine Center in Saskatchewan, Canada, was a primary investigator in the study.

"This benchmark study was devoted to developing a model to understand why pigs go down and finding ways to prevent the problem," he said. "Because of this work, we can now do other reliable studies to look at the metabolic and physiological effects aggressive handling has on pigs."

For this unique study, researchers collected data on two groups of pigs. Under the supervision of a

humane treatment committee, one group was moved aggressively and the other gently. Aggressively was defined by the multiple use of an electric prod and yelling; and gently defined by the use of a hollow, plastic tube and quiet talking. In each group, researchers moved pigs up and down an aisle repeatedly while measuring physical responses to each method.

"We created this model to simulate what could be experienced by pigs in a commercial setting," Gonyou said. "We knew using electric prods, bunching pigs up and using a steep

loading ramp would create stress in the aggressively handled group. "We didn't know what percentage of pigs would become downers."

As the test began, pigs in the aggressive group began to show signs of stress very quickly: blotchy skin, panting, vocalization and shaking. "Within five minutes the pigs became very hot and showed clear signs of distress," says

Gonyou. "These pigs experienced the familiar 'fight or flight' syndrome talked about in humans."

Gender and halothane/stress-gene status did not have an impact on the study's outcome, but handling certainly did. In the strictly handled group, 20.4 percent of the pigs were classified as downers. None of those handled gently became downers.

Aggressive handling practices can result in significant stress to the pig. Not only does this represent significant animal welfare concerns it also results in direct losses through declining meat quality and downer animals that cannot be marketed.

"One possibility why modern, heavily muscled pigs seem to be more prone to a severe reaction to stress may be that more muscle mass can create more lactic acid and generate more heat," Gonyou said. "These variables can lead to greater incidences of pigs becoming downers. Using an electric prod to hurry pigs along and crowding them can have a severe effect. You need to know how your pigs are being handled on your operation, on the trucks and at the plants to ensure proper care."



How to Handle, Transport Today's Pigs

In conjunction with the National Institute for Animal Agriculture (NIAA), animal handling experts have created a tip sheet to help producers and anyone who must handle and move pigs. Pocket-sized versions of this checklist are available in English and Spanish from NIAA or Elanco Animal Health.

The checklist includes a comprehensive list of good management practices for moving and transport-

ing pigs with minimal stress.

Preparing pigs for moving and transport is a key. The checklist recommends that handlers walk slowly within each pen for 1 minute each day or for 5 minutes once per week during the finishing period to help pigs become accustomed to human contact, as well as to teach them to move quietly around the handler.

The checklist suggests the following techniques for handling and moving pigs:

- Rely on the natural tendency of pigs to follow "leaders" into strange areas rather than forcing the entire group to move along together.

- Ensure that lighting over and ahead of moving pigs is bright and evenly distributed, so that there are no distracting shadows.

- Use panels, paddles or large flags to move pigs. Avoid caning, clubbing, kicking and slapping, which can cause injury. Minimal electroshock is used only as last resort.

The checklist also recommends that producers open building curtains 15 minutes before loading to equalize temperature and lighting.

To view the checklist or order videotapes that demonstrate good handling practices, visit the NIAA Web site at www.animalagriculture.org.

States Continue March Toward PRV Eradication

The U.S. continues its inevitable march toward the eradication of pseudorabies (PRV). All states, with the exception of Iowa, have now reached Stage IV or Stage V status. Iowa remains at Stage II/III, but is poised to move up to Stage IV before the end of 2002, according to Dr. Arnold Taft, national PRV program director, USDA-APHIS-VS.

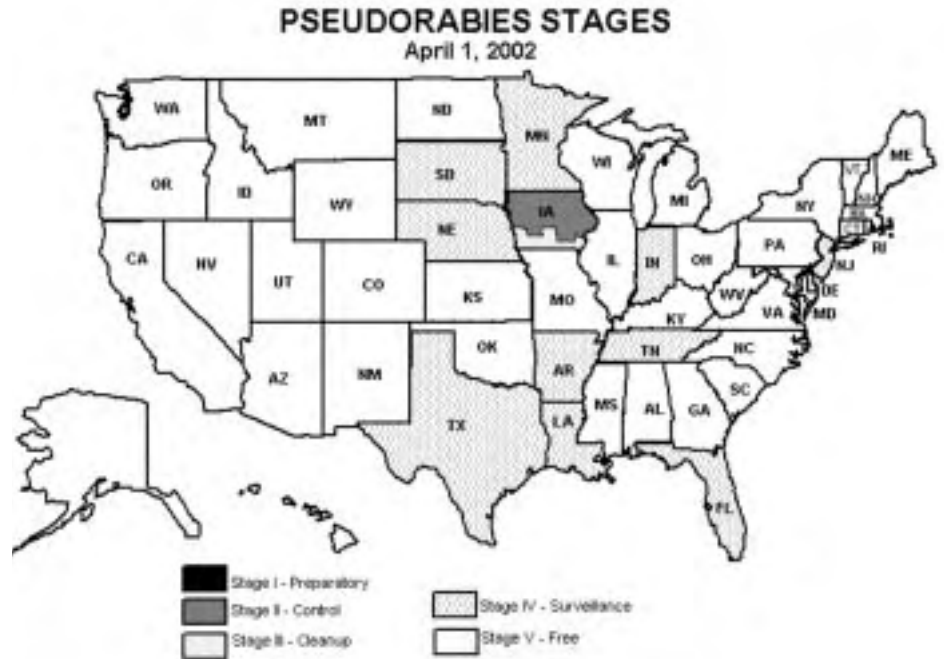
The National Pseudorabies Control Board reported following its March meeting that Louisiana and Minnesota were granted Stage IV status, and Tennessee was approved for Stage V.

Continued monitoring did turn up a positive animal in southwest Minnesota this spring. However, it was on a finishing site with a very low prevalence of positive pigs that had been imported from Iowa. Dr. Paul Anderson with the Minnesota Board of Animal Health said all farms within 6 miles of this site were tested and found no infection. The site in Iowa was tested and no infection was found. The affected finishing site was depopulated.

All counties in Minnesota remain in Stage IV.

Dr. Taft pointed out that the national goal is to have all states at Stage IV or higher by the end of 2002, and to have all states reach the Stage V, or Free Status, by Dec. 31, 2003.

"An aggressive surveillance program that will identify any remaining infected herds will be necessary to complete the program," Dr. Taft said. The national goal is to survey 20 percent of the swine breeding herd each year. Since the U.S. culls about 40 percent of the herd each year, testing half of all cull sows and boars by collecting blood at time of slaughter would allow the pork industry to meet this goal.



PRV Progress State by State (Stage and Number of Infected Herds)

STATE	STAGE*	6/30/01	9/30/01	12/31/01	3/31/02
Florida	IV	0	0	0	0
Indiana	IV	0	0	0	0
Iowa	II/III	22	9	2	0
Louisiana	IV	0	0	0	0
Minnesota	IV	0	0	0	0
Nebraska	IV	17	3	0	0
New Jersey	IV	1	0	0	0
South Dakota	IV	0	0	0	0
Texas	IV	0	0	0	0
TOTALS		40	12	2	0

*Stage V states not listed. Bold states report no cases of PRV for at least nine months. Source: USDA

USDA Secretary Addresses NIAA Annual Meeting

Secretary Veneman: 'Extraordinary Focus' on Protecting Agriculture

"We are engaged in looking at the entire food supply with the idea of protecting it— not just against unintentional threats, but also against intentional threats." That's according to USDA Secretary Ann Veneman, who was the keynote speaker at the National Institute for Animal Agriculture annual meeting held March 25-28 in Chicago.

Secretary Veneman explained USDA's stepped-up prevention programs March 26 at the NIAA recognition banquet. She emphasized how Sept. 11 has strengthened the working partnerships among state and federal government, universities and industry.

This type of cooperative model was used at the California Department of Food & Agriculture,



where she worked as Secretary of Agriculture prior to taking the national office. She credited Dr. Richard Breitmeyer, the California state veterinarian and NIAA board member, for teaching her the value

of cooperation.

"USDA is now working closely with Gov. Tom Ridge and the Office of Homeland Security staff in understanding the whole issue of protecting our food supply," Secretary Veneman said.

USDA will continue to look for ways to strengthen its partnerships and efficiently use resources. She commended NIAA for bringing different parties to the table to talk about how to improve our food and agricultural systems.

"That's the type of cooperation we need throughout all of our programs," Secretary Veneman said.

"It's important to address agroterrorism and other industry issues and look to the future of animal agriculture."

The annual meeting was attended by more than 200 stakeholders in the animal food and fiber industry.

APHIS Proposes CSF Rule Changes, Develops Revised Risk Analysis

The Animal and Plant Health Inspection Service is proposing to amend its regulations by adding the Mexican states of Baja California, Baja California Sur, Chihuahua and Sinaloa to the list of regions considered free of classical swine fever (CSF, or hog cholera). APHIS has conducted a series of risk evaluations and has determined that these four states have met the requirements for being recognized as free of CSF. The proposed action would allow these states to import pork, pork products, live swine and swine semen into the U.S.

Comments on this proposed action must be postmarked, commercially delivered or e-mailed to APHIS on or before July 12. Please send an original and three copies of postal or com-

mercial delivery comments to Docket No. 01-074-1, Regulatory Analysis and Development, PPD, APHIS, Station 3C71, 4700 River Road, Unit 118, Riverdale, Md. 20737-1238.

You can e-mail comments to regulations@aphis.usda.gov. Your comments must be contained in the body of the message; do not send attached files. Please include your name and address in the message and use "Docket No. 01-074-1" on the subject line.

The agency also has announced the availability of a revised analysis of the risk of introducing CSF virus through swine and swine products imported from the European Union. USDA also is requesting comments

on the revised analysis.

A copy of the revised analysis can be requested from the APHIS regionalization evaluation service staff at (301) 734-4356.

Comments on the revised analysis must be postmarked, commercially delivered or e-mailed on or before July 2. Please send an original and three copies of your comments to Docket No. 98-090-2, Regulatory Analysis and Development, PPD, APHIS, Station 3C71, 4700 River Road, Unit 118, Riverdale, Md. 20737-1238. If you use e-mail, address your comments to regulations@aphis.usda.gov. Your comments must be contained in the body of the message; do not send attached files. Please include your name and address in the message and use "Docket No. 98-090-2" on the subject line.

National Pork Board's Dr. Lautner Receives NIAA Meritorious Service Award

The National Institute of Animal Agriculture has awarded Dr. Beth Lautner its 2002 Meritorious Service Award.

Tom Wenstrand, a member of the awards selection committee and last year's recipient, made the presentation to Dr. Lautner at the NIAA annual meeting held March 25-28 in Chicago. "This is in recognition of the leadership, dedication and many contributions you have given to NIAA and the animal industry," he said.

Dr. Lautner is vice president of science and technology at the National Pork Board. She is responsible for developing and coordinating programs that concern food safety, swine health, pork quality, diet/health, animal welfare, and worker health and safety.

Her duties also include oversight of the pseudorabies eradication program and emergency disease management activities.

NIAA President and Chief Executive Officer Glenn Slack said that, in addition to Dr. Lautner's service as vice chair of NIAA's

Emerging Diseases Committee, she has supported the organization in many other ways.

"She makes her staff available to serve on committees, she engages

the pork industry leadership in NIAA activities, and she has allocated financial support and sponsorship of NIAA educational programs and activities," he said.

NIAA Chairman of the Board Ken Olson said Dr. Lautner's efforts benefit not only the pork industry, but all of agriculture. "I have always found her to be knowledgeable, a voice of reason and one who is willing to make the extra effort needed to make a project successful," he said. "She is truly deserving of this recognition."

With the theme of, "Animal Agriculture—Dealing with New Realities," NIAA's annual meeting drew approximately 200 participants, including livestock producers, veterinarians, business executives, scientists, academicians, state and federal animal health officials and other stakeholders in the animal food and fiber industry. Presentations and discussion focused on food and agricultural security, bioterrorism, animal health safeguarding and emerging diseases.



Dr. Beth Lautner

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