

CATTLE HEALTH REPORT

A National Institute for Animal Agriculture Publication

Spring 2007

Tick Eradication Program 100 Years+ and STRONG

At the turn of the 20th century, the Southern cattle tick, *Boophilus microplus*, and the cattle-fever tick, *Boophilus annulatus*, transmitted blood parasites that caused the cattle disease known as "Texas fever," "cattle fever" or bovine *babesiosis*. The disease wiped out 90 percent of cattle herds in affected areas and brought an end to historic cattle drives. It also prompted the U.S. Department of Agriculture (USDA) to establish the Cattle Fever Tick Eradication Program (CFTEP), one of the first cooperative state-federal eradication efforts which has been in place since 1906.

This July, the Cattle Fever Tick Eradication Program will have served the industry 101 years. Annual savings to the U.S. livestock industry due to the eradication of these tick vectors and of bovine *babesiosis* is estimated to potentially exceed \$1 billion annually.

Although the ticks were eradicated in the United States by 1943, they are

still found in Mexico and also in some of the U.S. Territories in the Caribbean. Keeping the ticks from crossing the border requires constant vigilance. That's the key reason the Cattle Fever Tick Eradication Program is still going strong.

"The goal of the program is to prevent the re-introduction and establishment of cattle fever ticks, *Boophilus microplus* and *Boophilus annulatus*, and of bovine *babesiosis* in the continental United States," points out entomologist Dr. Jo-Ann Bentz-Blanco, USDA Animal Plant Health Inspection Services/ Veterinary Services (APHIS/VS).

She adds that if ticks were re-introduced into the United States, the ticks and cattle fever organisms that they carry could have severe adverse economic effects on the beef and dairy industries in the southwestern U.S.—southwest Texas to Virginia and southern California.

History

In 1938, a permanent quarantine area, or buffer zone, was established as part of the USDA's CFTEP. The permanent quarantine was a narrow 500-mile area that stretched along the Rio Grande River in southern Texas from Del Rio to the Gulf of Mexico. The international border within the quarantine area was patrolled by tick force personnel on horseback who would intercept stray or smuggled animals entering from Mexico. Patrol riders also were on the lookout for fever ticks on American cattle.

Eradication, prevention and surveillance today still involves "tick riders." In addition to looking for ticks on feral, stray or smuggled cattle, the tick riders are also focusing on deer and exotics as tick carriers.

Since the buffer zone was created, the number of fever tick incursions has

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varied from year to year. In recent years, however, a dramatic increase in incidences of fever tick infestations has been identified in the quarantine zone and across the quarantine zone line into Fever Tick Free Areas of Texas. A historic high of 117 fever tick infestations were identified in federal fiscal year 2005. During FY 2006, only 65 infested premises were discovered.

This increase in fever tick infestations in and across the quarantine area of Texas is attributed to several factors, such as more exotic livestock—elk and antelope—ranches without the necessary high fencing; the unrestrained movements of wild animals that are infested with ticks; the wettest season in 30 years that enabled ticks to live longer; a continued reduction of river patrols since 2003 due to workforce being deployed to other emergencies; infested strays that get through the border from Mexico; favorable climatic conditions; and appearance of

acaracide-resistant ticks.

New Strategies

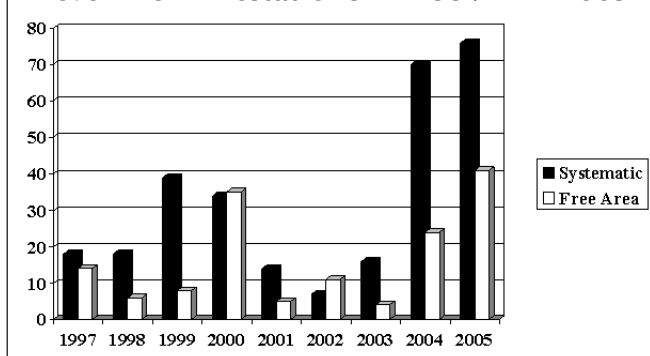
USDA/APHIS/VS has developed a five-year strategic plan to address the increased incidence of ticks. This plan was developed in collaboration with several national centers with the Agency and with the USDA's Agricultural Research Service's (ARS) U.S. Livestock Insects Research Laboratory, the Texas Animal Health Commission (TAHC), Texas A&M University's Department of Pathobiology and the University of Georgia's Southeastern Cooperative Wildlife Disease Study.

"Implementation of the strategic plan will allow APHIS to accomplish five program goals with objectives and action items to accomplish each goal, necessary to achieve complete eradication of the cattle fever tick," Dr. Bentz-Blanco states.

The goals and action items include 1) preventing the entry of cattle fever ticks into the United States from Mexico; 2) maintaining an effective surveillance program to rapidly detect any cattle fever tick incursions by working with the TAHC to develop comprehensive standards; 3) preventing the establishment of cattle fever tick infestations by developing, enforcing and updating standards to quickly eradicate infestations; 4) identifying and procuring the tools and knowledge necessary to maintain the United States as free of cattle fever ticks, together with ARS, TAHC and other cooperators; and 5) collaborating with Mexico to eliminate cattle fever ticks in areas of Mexico that impact the United States.

Mexican and U.S. officials have established the Tick Bi-National Committee (Tick-BNC) comprised of tick experts from both countries. The Tick-BNC meets regularly to exchange information and identify mutually agreeable solutions to issues of concerns as they arise.

Fever Tick Infestations FY 1997 - FY 2005



Support

The ARS at Knipping-Bushland Livestock Insects Research Laboratory in Kerrville, Texas and its satellite worksite at Moore Field in southern Texas have been providing technical support to the CFTEP for almost 50 years. Recent work includes adapting a "4-poster" device for use against cattle fever ticks on deer and creating an alternative to acaracide.

The "4-poster" device developed by Kerrville scientists to combat the lone star tick, *Amblyomma americanum*, and the deer tick, *Ixodes scapularis*, which spreads Lyme disease, is being tested for use against cattle fever ticks on deer. The device features a bin in the center where small amounts of whole-kernel corn enter feeding ports located near each end of the device. When a deer inserts its muzzle into a port to feed, its head and neck are forced to make contact with a pair of paint rollers saturated with pesticide. Later, when the deer grooms itself, the pesticide spreads enough to protect its entire body.

A ban on many organophosphate chemicals and a growing prevalence of resistance in many Mexican tick populations to organophosphates have researchers looking for effective alternatives to coumaphos, the organophosphate acaracide currently used to treat livestock. Moore Field researchers are testing a formulation that uses spinosad which is derived from a soil organism. Current work shows that the tick population declined in cattle treated with spinosad by 0.05 percent and 0.08 percent



Cattle Health Report

Spring 2007

Cattle Health Report provides the latest information on issues pertinent to cattle health initiatives, strategies, research and regulatory action. It is a communications initiative of the NIAA Cattle Health Committee and is produced in cooperation with USDA-APHIS. Reprinting is encouraged.

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at three-week intervals while the tick population increased in untreated cattle.

Another technology developed at the Kerrville laboratory is a method of feeding deer whole-kernel corn treated with ivermectin or other systemic acaricides. This method has been used successfully on ranches to eradicate ticks on deer once the cattle have been moved to another location.

"Use of ivermectin-treated corn and 4-poster technology is vital to the



ongoing campaign to eradicate cattle-fever ticks introduced to southern

Texas on hosts such as cattle, horses, white-tailed deer or exotic ungulate wildlife that come across the Rio Grande from Mexico," says entomologist John George who leads the research at Kerrville. "By using all our resources and knowledge, it will be possible to minimize or eliminate ticks on white-tailed deer and other ungulate wildlife, keeping U.S. cattle free of Texas fever." ●

NAIS a Valuable Tool During Blizzard Recovery

Knowing the locations of livestock operations proved extremely valuable during back-to-back holiday storms that stranded thousands of animals on open range in Colorado, Wyoming, Kansas, and Nebraska as well as the Oklahoma and Texas Panhandles. The information provided through Colorado's Premises Registration System, the foundation component of the National Animal Identification System (NAIS), enabled animal health officials to work with producers to maintain the health of their animals.

Blizzard I began Dec. 20 and was the fourth largest storm in Colorado recorded history. The blizzard engulfed the central High Plains and adjacent Rockies, dumping up to 32 inches in places. Blizzard II struck a week later and dropped a swath of heavy snow from New Mexico through Colorado and on to North Dakota. Severe wind and snow conditions resulted in 10-foot drifts.

The Colorado Department of Agriculture's State Veterinarian's Office realized the severity of these consecutive storms and concluded that starvation and dehydration were real possibilities

and required addressing. That's when the office turned to a state held list of premises that had been registered in a voluntary program.

"When a voluntary premises registration program was initiated, some people viewed it as part of a disease trace-back system, but I saw this as a tool to help farmers and ranchers trapped in an animal health crisis," states Colorado State Veterinarian John Maulsby. "The storms became an animal health issue when animals did not have access to feed and help might be needed to keep animals alive."

Dr. Maulsby says the state veterinarian's office focused its efforts on a particularly hard-hit six-county area. This area had about 350 voluntarily registered premises: beef, dairy, sheep and horses.

"About four hours of phone calls were placed directly to ranchers in southeast Colorado to evaluate the safety of those ranchers' families and the well being of Colorado livestock during the recent blizzard recovery operation. Our access to this list of premises made this process possible," Dr. Maulsby says.



"Information on file gave us access to phone numbers, names and livestock information, and this information was used with strict confidentiality."

Dr. Maulsby explains that the phone calls helped to determine if the animals had access to feed. If help was wanted, help was given.

"Having the information about the livestock owners that were in dire need of assistance gave us the opportunity to quickly assess the situation," states Colorado Division of Emergency Management Director George Epp. "Protecting the health of Colorado livestock is a top priority to this operation, and the list of registered premises was a big help." ●

After the Storm

The snow, ice and wind associated with the winter storms wreaked immediate havoc on thousands of cattle producers and feedyard owners and managers in Colorado and surrounding states. But the devastation extends beyond immediate death losses and fighting the aftermath of the storms.

"We're hearing reports related to

the acute stress for the extended period of time," tells Dr. Jack Whittier, extension beef specialist and professor, Colorado State University. "Highly stressed cows are aborting or having weak calves. Cattlemen are also reporting frost damage to the udders and teats.

"A higher level of concern are the colostrum challenges, scours and the

mud now that the snow is melting."

Dr. Whittier advises beef producers to have a breeding soundness exam performed on all of their bulls before turning them out for spring breeding.

"The continual cold weather and snow depths could harm scrotums," Dr. Whittier states. "Every bull should be checked for semen quality and for physical soundness."

NAHMS Gathering Valuable Dairy Data

United States Department of Agriculture/Animal Plant Health Inspection Services' (USDA/APHIS) National Animal Health Monitoring System (NAHMS) launched its fourth national study of the U.S. dairy industry, Dairy 2007, in January.

"Each NAHMS dairy study takes a slightly different look at the U.S. dairy industry," states Jason Lombard, NAHMS dairy specialist. "These studies are needed simply because the industry keeps changing, and we need to keep up with changing practices. For example, in the 1996 study, NAHMS took its first look at Johne's disease. During the 2002 study, within-herd prevalence and a risk assessment of Johne's was undertaken. For Dairy 2007, we will estimate the herd-level prevalence of Johne's disease.

"However, Johne's disease is just one of many areas of the industry that Dairy 2007 will look at."

A check of the Dairy 2007 objectives include eight key areas of interest:

- 1) Trends in dairy cattle health and management practices.
- 2) Management factors related to cow comfort and removal rates.
- 3) Dairy calf health and nutrition from birth to weaning and evaluation of heifer disease prevention practices.
- 4) Prevalence of herds infected with bovine viral diarrhea virus.

- 5) Current milking procedures and estimate the prevalence of contagious mastitis pathogens.
- 6) Herd-level prevalence and associated costs of *Mycobacterium paratuberculosis*.
- 7) Current biosecurity practices and producer motivation for implementing or not implementing biosecurity practices.
- 8) Prevalence of specific food safety pathogens and antimicrobial resistance patterns.

Three-Phase Study

During the first phase of Dairy 2007, Jan. 1-31, representatives from the USDA's National Agricultural Statistics Services (NASS) contacted dairy producers in 17 states and asked specific face-to-face questions. The 17 states involved in the study—California, Idaho, Indiana, Iowa, Kentucky, Michigan, Minnesota, Missouri, New Mexico, New York, Ohio, Pennsylvania, Texas, Vermont, Virginia, Washington and Wisconsin—represent 79.3 percent of U.S. dairy herds and 82.0 percent of U.S. dairy cows.

"NASS data collection is complete," Lombard states. "NASS enumerators did an excellent job, and our database for Dairy 2007 is quite similar in numbers to our 2002 survey."

Eligible producers—those with 30 or more dairy cows—were then asked

to participate in the second phase of the study which will commence in late February and run through the end of July. Producers who choose to continue in the study will be visited by veterinary medical officers (VMOs) and/or animal health technicians (AHTs) who will delve deeper into on-farm practices. A questionnaire will be administered, and biological and environmental samples will be obtained. Producers will receive testing results at the conclusion of the study.

At the producer's discretion, VMOs and AHTs will make a second visit between May 1 and July 31.

"The NAHMS Dairy 2007 study is a grassroots effort to gather valuable health data about the most important asset on America's dairy farms—the dairy cow and her offspring," states Dr. Bill Wales, department head, Animal Sciences Extension Dairy Specialist, Colorado State University. "This study will greatly benefit both the scientific community and U.S. dairy producers."

Because NAHMS studies rely on voluntary participation, APHIS protects the privacy of every participant. Only those collecting the data know the identity of the respondent. No name or address is recorded in any APHIS database, and no data is reported on any individual or in a manner that would allow the identification of any individual. ●

Variation in the U.S. Bovine Prion Gene Identified

Agricultural Research Service (ARS) scientists want to know more about bovine spongiform encephalopathy (BSE), also known as mad cow disease. Specifically, the scientists want to know if some cattle are more susceptible to this fatal neurological disease and if a genetic component might be involved.

To address these concerns, ARS scientists at the U.S. Meat Animal Research Center (USMARC) at Clay Center, Neb., are focusing on the bovine prion gene region. The work,

partially funded by a grant from USDA's Cooperative State Research, Education and Extension Service, involves sequencing the bovine prion gene in 192 cattle representing 16 beef and five dairy breeds common in the United States.

"Prions are proteins that occur naturally in mammals," explains Dr.



Michael Clawson, a molecular biologist working on the project with Dr. Michael Heaton and research leader Dr. William Laegreid. "Much is unknown about the disease, but scientists recognize a correlation between variations in the *PRNP* gene in some mammals and susceptibility to transmissible spongiform encephalopathies, such as scrapie in sheep. Evidence indicates that this could also be true in cattle.

"A thorough characterization of variation in the U.S. cattle population will provide a reference framework for researchers to use in analyzing *PRNP* sequences from cattle afflicted with BSE."

BSE is characterized by abnormal deposits of a protease-resistant isoform of the prion protein. Dr. Clawson notes that characterizing variation within the bovine prion gene is important for two reasons: 1) testing rare or common *PRNP* alleles for association with BSE; and 2) interpreting any association of *PRNP* alleles with BSE susceptibility.

From the 192 *PRNP* genes sequenced, Dr. Clawson and his colleagues have identified 388 variations or polymorphisms and 287 of the 388 had not been previously reported. Ongoing studies with European collaborators are testing the newly identified variants for asso-

ciation with BSE.

"If these studies show some cattle to be genetically less susceptible to the disease, this information could shed light on BSE's transmission and development," Dr. Clawson states.

In addition to comparing the *PRNP* sequence from BSE-infected cattle to healthy cattle, the team is sequencing several genes closely related to *PRNP*. These, too, will be tested for their association with BSE.

"Well-characterized gene markers that correlate to resistance could improve our understanding of the disease and prepare the cattle industry to respond if another prion disease arises," Dr. Clawson concludes. ●

Canadian Bluetongue, Anaplasmosis Policies Changed for U.S. Livestock

Canada has adjusted its bluetongue and anaplasmosis requirements for U.S. cattle, sheep, goats and other ruminants. On Feb. 2, the Honourable Chuck Strahl, Minister of Agriculture and Agri-Food, announced three changes in import regulations that allow live trade to flow a bit easier to northern neighbor Canada:

- 1) Effective immediately, all classes of U.S. cattle can enter Canada year round without any bluetongue-related import requirements.
- 2) Bluetongue restrictions have been lifted for sheep, goats and other ruminants imported to Canada for breeding purposes.
- 3) Testing requirements for cattle for anaplasmosis have been reduced.

The Canadian Food Inspection Agency (CFIA) has reviewed and revised its bluetongue import controls for animals from the United States several times prior as more was learned about the disease and the relevant risk factors present in Canada. This is the first across-the-board removal of bluetongue testing for decades.

"This is the first time since

January 2004 that the door has been open at all for sheep and goat breeding animals," states Dr. Debbie Barr, Canada's national manager of imports and exports, animal health division. "In the past, sheep and goats were allowed to cross the border for slaughter and for feeding for slaughter but breeding animals were banned until now."

Canada's new regulations center on a science-based permit system for most ruminant animals imported from the United States. Terry Stokes, chief executive officer of the National Cattlemen's Beef Association, states that the CFIA's new permit-based system will eliminate unnecessary costs and procedures that impact the bottom line of U.S. producers of breeding stock.

The CFIA notes that its bluetongue surveillance program will be enhanced as a precaution. The CFIA will move from triennial to annual monitoring coupled with ongoing research and risk assessments.

National livestock organizations and APHIS deserve credit for helping U.S. livestock producers gain greater access to Canadian markets.

In FY 2002, APHIS' Center for

Epidemiology and Animal Health conducted a bluetongue surveillance pilot project in collaboration with three states and USDA's Agricultural Research Service. During a two-year study, up to 65 cattle in each of 120 herds in North Dakota, South Dakota and Nebraska were bled twice to detect antibodies to bluetongue viruses. During the summer of 2002, traps were set on 27 farms in North Dakota and South Dakota to collect *Culicoides*, the biting gnat which transmits the viruses. The farmers were selected based on prior vector trapping experiences in the three states.

Very few animals in North Dakota were positive for bluetongue virus antibodies. The distribution of *Culicoides sonorensis*, the primary U.S. vector of bluetongue viruses, was limited to Nebraska and the southwest parts of South Dakota and North Dakota, similar to the distribution found in 2001.

APHIS also supported related bluetongue studies in a joint Montana-Alberta (Canada)-USDA project testing for the prevalence of bluetongue virus antibodies to evaluate the prevalence of virus exposure in selected states. ●

Foot-and-Mouth Disease Focus of UC Davis Research Study

A nationwide research study aimed at protecting the livestock industry from the consequences of foot-and-mouth disease (FMD) has been undertaken by the Center for Animal Disease Modeling and Surveillance (CADMS) in the University of California Davis, School of Medicine. The study, conducted in collaboration with the National Center for Foreign Animal and Zoonotic Diseases and supported by the USDA and Department of Homeland Security, seeks to expand a 2004 statewide FMD study that concentrated on just California.

In the new study, livestock producers from across the United States are being asked to participate in an online study regarding animal movement and husbandry practices. Information will then be used in a simulation model developed in the previous study to characterize the size, duration and economic impact of an FMD epidemic anywhere in the United States.

"Our model will provide decision-makers with a valuable tool for rapid response and will help determine the best strategies, including vaccination to contain an outbreak and minimize impact to the livestock industry," states Dr. Tim Carpenter, School of Veterinary Medicine professor and director of the study.

The online survey of producers went live last October and will be ongoing. Data collected by June of this year will

be analyzed with additional data analyzed periodically from that point forward.

"We're after information from producers of all cloven-hoofed animals," Dr. Carpenter adds. "The more producers who participate, the better the data—and the better the model predictions."

"At present, the data set is a bit weak for pigs and dairy, and that is ironic as these two groups could be the hardest hit should an FMD epidemic strike."

The producer survey is simple, educational and takes very little time to complete. Questions are answered with a click of the mouse. The questionnaire starts with such questions as "primary type of livestock raised," "state and county of primary livestock" and "number of animals" and proceeds to animal movement questions and such.

Information provided by producers is kept confidential and is used only for modeling purposes.

Individuals can participate in the survey at www.cadms.ucdavis.edu and clicking on the "U.S. Livestock Disease Survey" button located in the upper left hand corner of the CADMS home page. This click results in a page asking if the person is a livestock producer and explains the importance of participating in the survey.

The next step is to click on the "Start US Livestock Disease Survey" button located in the upper lefthand corner or on "Start Survey" at the bottom of the page.

"The response from the livestock industry from California during the initial study was outstanding, and we are hoping to get the same response from the rest of the country," Dr. Carpenter states.

Ongoing survey results can also be viewed at the CADMS website. The steps to view the results include clicking on the "US Livestock Disease Survey" button located in the upper left hand corner of the CADMS home page, then clicking on the "View Ongoing Survey Results" button in the upper left hand corner of the next page.

Participation results are updated daily and can be viewed by several different variables by state, livestock operation type, operation subtype, aggregated herd size, receive animals from out of state and/or ship animals out of state.

"Because FMD spreads so quickly and is easily transmitted, the threat of FMD to the U.S. is very serious, and we need to be prepared," Dr. Carpenter summarizes. "This model will help us be better prepared."

Participants by species as of Feb. 6, 2007

Dairy cattle	6.4%
Beef cattle	31.7%
Swine	2.1%
Sheep	45.7%
Goats	8.3%
Calf or heifer ranch	1.6%
Total	100% ●

DHS Funds Non-Virus Manufactures FMD Vaccines

To date, available foot-and-mouth disease (FMD) vaccines have been cultured from foot-and-mouth viruses. This technology, however, may become outdated and unnecessary. On Feb. 1 the Department of Homeland Security (DHS) signed a three-year contract with GenVec, Inc. to support the development and manufacturing of adenovector-based foot-and-mouth disease vaccines that do not require use of live FMD viruses which are prohibited on the U.S. mainland.

"Put simply, the current FMD vaccine is the virus itself. The new vaccine

under development contains only specific protein pieces of the actual FMD virus which allows us to safely manufacture here," states Dr. Rick King, GenVec's senior vice president of research.

Dr. King adds that another benefit of the new vaccines—and a key difference between standard FMD vaccines and the novel molecular-based GenVec vaccines—is that one can tell the difference between vaccinated animals and animals infected with foot-and-mouth disease.

"We're talking exciting, novel vaccines that have the potential to change

the FMD vaccine landscape," Dr. King adds.

The Department of Homeland Security is providing GenVec with up to \$6 million the first year and has a total of \$15 million available over the next three years if the Department elects to exercise its annual renewal options. Under the agreement, GenVec will be in charge of the development, production and regulatory approval of the vaccine. The Department of Homeland Security will be responsible for conducting animal studies at the Plum Island Animal Disease Center.

GenVec, located in Gaithersburg, Md., is engaged in cutting-edge research and development of gene-based therapeutics and molecular-based vaccines for humans and animals. Other infectious disease vaccines in development include an HIV vaccine in collaboration with the National Institute of Allergy and Infectious Diseases and a malaria vaccine in collaboration with the U.S. Navy and PATH's Malaria Vaccine Initiative.

"The FMD vaccines use front-line technology similar to the difficult disease vaccines we are developing for HIV

and malaria," Dr. King elaborates. "The vaccines we are developing—including the FMD vaccines—utilize GenVec's proprietary adenovector technology. The FMD vaccines utilize a novel production cell line capable of producing antigens that would normally inhibit production."

Dr. King notes that the agreement between the Department of Homeland Security and GenVec "is an important step forward in the development of U.S. production of a foot-and-mouth disease-marked vaccine to protect the U.S. food

supply against a very virulent disease."

The goal of the Department of Homeland Security funding is to have vaccines safely manufactured in the United States that can protect animals from infection resulting from bioterrorism or accidental exposure to the disease. The importance of this goal is underscored by the USDA's Inter-Agency Working Group's January 2003 Final Report which states that a FMD outbreak in the United States could have more than a \$100 billion impact on the U.S. economy. ●

News Briefs News Briefs News Briefs News Briefs News Briefs

NIAA Selects Vise-Brown as New CEO; Reorganizes and Makes Other Staff Changes

Michele Vise-Brown was appointed Chief Executive Officer (CEO) of the association by the NIAA Board of Directors effective January 1, 2007.



Michele Vise-Brown

In making the announcement, NIAA Board Chair Scott Stuart said, "We believe we've selected the ideal person to head NIAA. Michele Vise-Brown has been with NIAA since 2003 serving as Director of Member Relations and Committee Operations; she has done an outstanding job for us. Of particular note is the leadership she has provided this year in the absence of a full-time CEO. Nowhere was that more evident than with ID/INFO EXPO 2006 in Kansas City last August. She and the staff made the 2006 event the most successful in history."

Stuart went on to say that he and the rest of the Board of Directors believe that because Vise-Brown knows NIAA so well, her selection as CEO assures a virtually seamless transition and eliminates any need to relocate the office.

Vise-Brown replaced Dr. Nevil Speer who had been the acting CEO

since June. "The association owes Dr. Speer a huge debt of gratitude for his leadership for the past six months," said Stuart. "I'm sure it has been a burden to him as he has many responsibilities at the Department of Animal Science at Western Kentucky University."

"He's been a joy and inspiration for me and the rest of the staff to work with," added Vise-Brown. "We've all learned a lot and grown under his direction and I know I'll be relying on him for help as I start this new challenge."

In other staff changes

Pamela Meador, formerly NIAA's part-time accountant, has joined the staff full time and is responsible for accounting and operational functions.

"Her understanding of NIAA, financial support, agriculture knowledge and exceptional customer service is much welcomed to NIAA staff and members" said Vise-Brown.

Gale Johnson is serving as NIAA's Director of Communications on a contract basis. "Gale has worked with NIAA on numerous projects over the years including the Eradicate Scrapie! outreach program, last year's ID/INFO EXPO and a number of other projects. He is a huge asset because of his familiarity with NIAA and his very extensive background in all phases of agricultural communications," stated Vise-Brown.

Two Western Kentucky University students, senior **Cora Newsom** and junior **Jenna Brown** are working as

staff assistants. Newsom, who joined NIAA last summer, is majoring in Economics with minors in Agriculture, Finance, and Business Administration. Brown joined the staff at the beginning of this year and is studying Agriculture Business with an emphasis in Agriculture Communications. Both women have extensive personal animal agriculture backgrounds raising and showing livestock, 4-H, and activities at the University.

Kelly Gill is a graphic designer under contract. She is a past employee of The Liberty Group, NIAA's printing house. She is on call to design promotional material or complete layout for NIAA publications.

Julie Jones is now a Registered Nurse and is working full time at the Vanderbilt University Burn Unit, but she is still involved with NIAA. She is maintaining the NIAA, Scrapie and Johnes websites and helps train her replacements on her day off.

Nevil Speer, even though he has taken on more duties at Western Kentucky University, has agreed to help NIAA as needed.

Ken Olson will continue to work on the Johnes Education Initiative. Launched in the summer of 2005, the program is a collaborative effort between industry and government to educate producers, veterinarians and others involved in beef and dairy production about Johnes disease.

Peggy Logsdon resigned from NIAA effective December 31, 2006. ●

JDIP Works Toward Johne's Answers

By Ken Olson, Ph.D.

Researchers, veterinarians, industry representatives and government officials met recently in College Station, Texas for the 3rd Annual conference of the Johne's Disease Integrated Program (JDIP).

It has long been known that *Mycobacterium avium subsp Paratuberculosis* (MAP) causes Johne's disease, but much remains to be learned about the organism, its diagnosis, control and elimination.

The annual conference provides a forum for the unique consortium of Johne's experts who make up JDIP to share research results and discuss plans for the coming year. They recognize that the best opportunity to achieve their goal of providing producers with new or improved tools to combat Johne's disease is through sharing ideas and expertise as well as coordination and integration of basic biological research with animal modeling and field studies.

During the meeting Drs. Scott Wells and Cecille Ferronillet presented initial results from a Minnesota demonstration herd project. In the beginning of the study, 13.5 percent of

the animals were found positive by serum ELISA and 12.9 by fecal culture. Clinical signs were observed in 3.4-to-20 percent of the animals.

The analysis compared the impact of changes in the herd risk assessment score with animal "survival." Herds whose risk assessment score decreased (meaning they improved their management) had a reduction in the incidence of Johne's in the herd. Those with little change in the score had little change in the disease. Conclusions included

- Implementation of the recommended Johne's program reduced new infections in the herds.
- The disease was not eradicated from the herds over this time period.
- Recommended management changes have an effect on animals up to a year of age.
- The greater the reduction in the risk assessment score, the better the results for the herd.

Dr. Eran Raizman provided initial economic insights from a study of two Minnesota herds. The objective was to evaluate the monetary impact of cows shedding MAP prior to calving and those culled with clinical signs of Johne's during the subsequent lactation. Cows were sampled every 14 days between January 2002 and March 2003.

In these herds, it was found that fecal positive cows were more likely to be culled than fecal negative cows and there was a loss of \$280 associated with each fecal positive cull, primarily due to their lower body weight. Fecal positive cows produced less milk and had \$750 less income over feed cost than fecal negative cows in the study.

Reproduction costs were higher for fecal negative cows because the fecal positive animals were often culled prior to breeding. The bottom line was that lower lactation performance and early culling of fecal positive cows had a substantial economic impact in these herds.

Dr. Robert Whitlock, University of Pennsylvania, discussed "Characteristics of MAP Super-Shedders." Super-Shedders are defined as animals that shed MAP organisms at extremely high

levels (10,000 to 10,000,000 colony forming units (cfu)/gram of manure). The presence of "Super-Shedders" in a herd raises the potential for the "Pass Through" concept, that is animals who are not truly infected appear to be positive due to consumption of organisms present in their environment from the "Super-Shedders." The study concluded that in these herds, 10-to-15 percent of all positives were "Super-Shedders." The rate at which they become a "Super-Shedder" is highly variable, ranging from a few months to a few years. The impact of these animals on the environment can be significant. In these herds it was determined that 30-to-70 percent of the fecal culture positive animals were actually in a "Pass Through" situation. When the "Super-Shedders" were removed, these animals were no longer culture positive. Work will continue in this area in the coming year.

On the more basic science side, Drs. Luiz Bermudez, Oregon State, and Adel Talaat, UW-Madison, reported on genetic mapping efforts to identify specific genes and/or conditions that allow MAP to survive and establish infections in animals. This has helped to identify new targets for vaccine development. As a result of this work, several new vaccines will be tested during the coming year.

The potential link between MAP and Crohn's disease remains an area of substantial interest. Dr. Saleh Naser, Central Florida University, reviewed literature going back decades that assessed potential links between the diseases.

The international interest in Johne's was also evident. Dr. Douwe Bakker, EU, reported that during the past year the European Union has initiated a project funded under its food safety program that is similar to JDIP.

In closing the conference, Dr. Vivek Kapur, leader of JDIP, said, "The science behind the work that has been reported at this meeting is outstanding, but the greatest benefit of JDIP is the networking and sharing of ideas that are occurring as a result of the project."

Visit <http://www.jdip.org/> to learn more about JDIP, its projects and plans.

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