

Sheep & Goat HEALTH REPORT

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NAIS Sheep Working Group Makes Recommendations

Group ID, Economic Analysis Discussed

A Group/Lot Identification system for sheep and a request for the U. S. Department of Agriculture (USDA) to do an economic analysis of costs and benefits of electronic identification (EID) methods are a few of the major recommendations made by the Sheep ID Working Group following a meeting at the ID/INFO EXPO 2005 in Chicago, Sept. 27-29. The group is designated as an official sheep industry-based advisory group of the National Animal Identification System (NAIS).

ID/INFO EXPO, a National

Institute for Animal Agriculture (NIAA) annual event, has become one of the leading forums for exchange of information and ideas on NAIS implementation and identification technology. This year's event attracted some 530 people from various species groups, state and federal governments, business, science and the international community.

Dr. Cindy Wolf, chair of the working group as well as a Minnesota sheep producer, said the group found that the current National Scrapie Eradication Program (NSEP) ID system, along with an appropriate group/lot identification component, will work in NAIS for the sheep industry. This is because the NSEP's scrapie flock ID number is a unique number in the U.S. Further the sheep industry has more than 73,800 premises that are using official USDA-approved ID devices assigned to the premises in the scrapie program's national database, which is more than any other species.

"The concept of group/lot identification is important because it helps reduce the costs for all segments of the industry, particularly for producers, and can accomplish what's needed for ID and animal movement tracking of feeder and finished lambs," Dr. Wolf reported on behalf of the Working Group. "We have to do everything we can

to make NAIS economically feasible for producers, especially with EID."

The Sheep ID Working Group recommended strongly that USDA undertake an economic analysis of costs and benefits of various EID and animal tracking technologies for the sheep industry.

These recommendations were made in part based on four ID pilot projects in 2004 and 2005 with funding support from USDA's Animal and Plant Health Inspection Service (APHIS), which has ultimate responsibility for NAIS.

The four pilot projects are featured beginning on page four of this special ID issue of *Sheep & Goat Health Report*. ●

by Gale Johnson, contributing writer



Dr. Cindy Wolf addresses the Sheep ID Working Group at ID/INFO EXPO 2005. Results from four sheep-specific pilot projects were presented during this session, in addition to the recommendations that were put forth by the group. A number of species working groups met during the event.

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Privatized Database Discussed at USAHA

A privately held database became a contentious issue at the U.S. Animal Health Association's (USAHA) Livestock Identification Committee in early November. The day-long meeting on Nov. 8, part of the organization's 109th annual meeting, hosted a variety of constituents interested in the future of the private animal tracking database.

A number of industry leaders spoke throughout the day about the various components of animal



identification, ranging from identification technology such as RFID and DNA, to pilot project updates and a state survey on legislation involving animal ID.

USDA also provided an update on federal activities of the National Animal Identification System (NAIS), including the database.

"Privatization of the animal tracking database is a significant issue; one that USDA takes very seriously," said Dr. John Clifford, APHIS deputy administrator for veterinary services. "Privatization of the database will help us achieve our end goal while strengthening our partnership with industry."

The collection of animal movement data, which is essential to achieving full-traceability in 48 hours, is the greatest challenge of the program, according to Clifford. He urged stakeholders to work collectively to resolve the data collection infrastructure questions and to remain focused on advancing premises registration and animal identification.

"While the privatization of the animal movement tracking database is a change from our initial direction, the overall fundamentals of NAIS continue to follow the direction that many of you helped establish over the past several years. The key components as defined in the Draft Program Standards will continue to guide the implementation of NAIS."

During the business meeting, the private tracking database was discussed in depth by a number of committee members, following a pair of motions on the issue.

"We owe it to ourselves, to this debate, and we owe it to the

Secretary to explore if and how this can be implemented," said Matt Brockman, Texas and Southwestern Cattle Raisers Association, who advocated the defeat of a resolution that would recommend that USDA implement the tracking database as outlined in the U.S. Animal Identification Plan (USAIP), but to no avail. Other committee members argued that the industry was not properly represented in the decision to pursue a private database.

"Privatization of the animal tracking database is a significant issue; one that USDA takes very seriously."

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APHIS DEPUTY ADMINISTRATOR,
VETERINARY SERVICES

At the end of the day, the committee had passed a resolution supporting a government-administered animal tracking database, which was in turn debated and passed again in the membership meeting.

Additionally, during the membership meeting, a directive was passed that, essentially, the USAHA president assemble a group of representative stakeholders to meet with the Secretary of Agriculture to discuss solutions for this resolution passed by the USAHA.

Another resolution for USAHA to help develop the necessary components for a privately held database, via a consortium, was tabled during the committee meeting and lacked votes to be brought back to the floor. ●



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Questions Abound at ID/INFO EXPO 2005

ID/INFO EXPO 2005 was an opportunity for industry stakeholders to hear the latest information on animal identification in the U.S. And, the event proved to be an even more important chance for stakeholders to voice concerns and pose questions to industry leaders on the future direction of the system.

Hundreds of questions were posed to the 67 speakers at the one-of-a-kind conference and trade show, held Sept. 27-29 in Chicago.

Approximately 530 individuals attended the event. The record attendance included producers, veterinarians, animal identification companies and service providers, state and federal animal health officials and other allied industry stakeholders.

Since the Aug. 30 announcement by Agriculture Secretary Mike Johanns that the animal tracking database will be developed and implemented by the industry, stakeholders have been attentive to how this portion of the system will move forward.

Dr. John Clifford, deputy administrator for USDA, APHIS,



Dr. John Clifford



Dr. David Thain



Dr. Ken Olson

Veterinary Services spoke to participants about USDA's expectations.

"What USDA is looking for is a single legal entity that represents all species groups and all allied industries that are affected by this program," he said. Clifford added that USDA would plan to enter a Memorandum of Understanding (MOU) with this legal entity to carry out state and federal health officials' needs for an animal movement database. Clifford later clarified that health officials would need a single interface for 24/7 access to the data, indicating that a single, central database is not the only viable option.

Clifford also made it clear that there are no USDA dollars currently available to help establish or operate the private database. An Oct. 12 stakeholders meeting, hosted by USDA, provided an information session on how the system could work, further clarifying the industry's role.

Clifford, who was joined by Deputy Under Secretary for Marketing and Regulatory Programs, Dr. Chuck Lambert, both encouraged progress as USDA would continue with premises registration and the animal identification numbering system (AIN).

Dr. David Thain, state veterinarian for Nevada and president of the National Assembly of State Animal Health Officials, offered a state-level assessment of NAIS, noting that accomplishments have been made with premises registration, as well as some state legislation for animal ID. More importantly, he encouraged stakeholders to maintain a simple mindset to move ahead with animal ID, and to not "squander this opportunity."

Dr. Ken Olson, KEO Consulting, offered an industry perspective on NAIS.

"The public has to trust what we're doing, the international community has to trust what we're doing," said Olson. He noted that some stakeholders were concerned

"What USDA is looking for is a single legal entity that represents all species groups and all allied industries that are affected by this program."

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VETERINARY SERVICES

with credibility of an industry-managed database.

Aside from those concerns, progress is still happening in other facets of NAIS. USDA reported that all 50 states are capable of registering premises, and as of Nov. 15, 147,205 premises have been registered in the United States.

In addition to presentations on premises registration, reports on 20 pilot project reports were presented from across the country, featuring cattle, markets, transporters, sheep, swine and equine. Though many of the projects showed that technology still needs to be improved, many producers appear to be willing to participate and actively engage their operations in the national animal identification effort.

Presentations from the event can be accessed on the Internet at www.animalagriculture.org. ●

Pilot Projects Provide Insight on Sheep ID

The following pilot project updates were presented at ID/INFO EXPO 2005, Sept. 27-29

Colorado Sheep ID Project, "Sheep Radio Frequency Identification Systems Trials 2004-2005"

Funded by the Colorado Department of Agriculture and APHIS' National Scrapie Eradication Program; Conducted by Jay Parsons, Cleon Kimberling, Geri Parsons and Wayne Cunningham.

This project had four phases: discovery, implanting and tagging, tracking and evaluation. A preliminary trial during the discovery phase evaluated the caudal fold of the tail as a possible site for RFID implants. It found that the 12 mm single shot with a syringe implant was feasible and that method became part of the program.

In the implanting and tagging phase, 300 lambs with three different producers (a total of 900) were implanted or tagged. (All 900 had a USDA scrapie tag in their right ear as a second form of identification.) Each flock of 300 head was divided into six treatments—three treatments involved three different brands of RFID implants injected



An RFID implant injected into the caudal fold of the tail on a ewe. The Colorado Sheep ID project tested and compared this method of ID to ear tag methods. The implant fared better in terms of retention in the project.

into the caudal fold of the tail and three treatments involved three different brands of RFID ear tags applied in the left ear.

Tail implants performed somewhat better than other methods with 95.8 percent in place and readable at time of slaughter. EID ear tags came in at 93.5 percent at slaughter and the scrapie tags were at 92.4 percent.

In the tracking phase, a bar code label with 15-digits was placed on a blood sample tube and shipped to the lab to test for ovine progressive pneumonia (OPP.) The lab entered the samples electronically and the results were emailed to the producer, where they were downloaded into a laptop computer and the results are shown with the tag number (For more on OPP, see page 8). Long chutes that held up to 60 sheep were used during the sorting, handling and tag reading aspects of this project. The handlers were able to collect 200 blood samples per hour, while the lab took five days to process. Tag reading, branding and sorting was accomplished at the rate of 420 sheep per hour.

According to Jay Parsons, who presented the results at ID INFO/EXPO their experience shows:

- There is more than one way to ID sheep;
- Long-term retention will be an issue;
- On-farm value-added management tools will continue to grow with implementation;
- "Moving at the speed of commerce" is easier said than done.

In the next phase of

the Colorado program, Parsons and his colleagues will continue looking at retention and readability of RFID devices while beginning the arduous task of reaching "speed of commerce" with RFID systems for sheep identification.

Sheep EID

Funded by USDA, APHIS; Conducted by Cindy Wolf and Eileen Kuhlmann, University of Minnesota.

Conducted in a seed stock flock, this project focused on farm-friendly methods of capturing data using "rugged" laptop computers and wireless wand readers. Specifically they were considering user-friendliness (convenience) of the ear tags and electronic reading equipment, the ruggedness of data collection devices, and the retention, infection/reactivity and readability of electronic identification ear (EID) tags.

Lambs were tagged and scanned as close to birth as possible. Ewes were also tagged and scanned at lambing time. After that, lambs were scanned at normal handling times such as vaccinating, deworming, weaning and other post-weaning practices such as weighing and ultrasound measurement of back fat depth and loin eye area. Ewes were rescanned when dewormed, culled, or sorted into breeding groups.

Wolf and Kuhlmann noted the special challenges faced with sheep

such as body characteristics and behavior. For example, sheep ears are thinner than cattle ears and are more prone to infections. Their ears are also smaller than cattle, swine and most other species. Behaviorally, sheep tend to flock together with their heads down.

Only one tag type – a fold-over tag designed for use in sheep – was used in this study. Infection was detected within the first two to four weeks after tags were inserted which is what the researcher would consider the ordinary time when infection would occur when tagging lambs. During this time period there was a 34 percent infection rate, which was resolved in all but one lamb by July. Note that tags and ears were not disinfected at the time of tag insertion. The range of infection was mild (minor irritation most likely only seen at close inspection – 45 percent), medium

(seen without close inspection – 22 percent) to severe (infection that needed to be treated topically – 15 percent).

The tag performance in lambs from May through November was 97.5 percent retention; 100 percent readability of tags retained.

In the study the Bluetooth™ reader worked very well when used in conjunction with a

laptop computer that was used specifically for collecting and analyzing data. In this case the Panasonic Toughbook® was used due to its ruggedness and internal Bluetooth capability. The use of an external Bluetooth with a laptop

that was used for multiple tasks, such as email, presentations, etc., was much less reliable. After several attempts, they determined the best solution was a Toughbook and wireless handheld reader which overcomes the challenges presented by dust, rain and durability required of a computer being used under every day field conditions.

Use of Radio Frequency Identification (RFID) in Sheep, Wisconsin Livestock Identification Consortium

Funded by USDA and sponsored by Wisconsin Sheep Breeders Cooperative; Conducted by Michael Bishop, MB Genetics, Rio, Wisc., and Dave Thomas, Sheep Extension Specialist, University of Wisconsin.

The objectives of the project were to evaluate:

- RFID read and read/write tags;
- Readers (handheld and stationary); and
- Management software.

Five different tags were tested ranging in size and weight from 3.2 grams to 9.6 grams. All of the RFID tags used in a controlled study conducted at the University of Wisconsin Sheep Research Center were tamper evident and attached to individual dangle tags on a variety of ewes maintained at the center.

In a separate feedlot study, a fold-over variety of RFID tag was used to identify market lambs as they arrived into the commercial feedlot. All of the tags varied in shape, size, RFID frequency and storage capacity for information (read only versus read/write.)

The project tested five different reading systems,

ranging from panels to wands. One of the tags operated at 13.56 megahertz (MHz) while the rest were 134MHz.

In total 903 sheep were used in the project: 203 ewes, 500 market lambs for the Wisconsin State Fair and 200 lambs going into a feedlot.

The objectives with the feedlot lambs were to test the tags' use in inventory management, data recording and tracking. Information on each chip included who the previous owner was, the animals age, health and breed. As the project progressed, the ID tags were used to measure weight performance and harvest yield including retail cuts. This demonstrates how producers can use NAIS tag technologies as management tools as well as document information for direct marketing of their sheep.

Among the five systems used, lost tags ranged from zero to 14.6 percent. In the conclusion section, the researchers stated that the loss of tags in the controlled study conducted at the University of Wisconsin was 9.9 percent which was considered unacceptably high.

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A stationary RFID reader designed for the Wisconsin RFID project. This was one of five reading systems used in the project, including stationary readers and handheld wands. The study found that the technology may not be ready for use by most producers.

Pilot Projects | ID/INFO EXPO highlights

(continued from page 5)

Ear infection and tissue damage was a problem with at least one of the systems and probably contributed to the loss of tags.

Reader distance varied depending on type of tag and reader used. Orientation of the tag to the reader (handheld and panel types) contributed chiefly to reader distance variability. There was one handheld reader that gave the greatest read distance among the types chosen for this study. The final conclusions of the pilot study were that tags and readers were not optimal for use in sheep (at least those chosen for this study) and that tissue necrosis was an undesirable outcome from use of RFID tamper-evident buttons in a sheep's ear.

Commercial and purebred sheep producers would not find mandatory or voluntary use of existing tags and readers acceptable in their operations today. Software that allowed integration of reader/tag information was in its early stages of development and therefore not ready for serious field testing during the time period that this study was conducted.

Tracking of Lambs Through Normal Production Practices, Montana Project

Funded by USDA; Conducted by Rodney Kott, Montana State University.

The objectives of this pilot project were to evaluate and compare branding, metal visual ear tags and electronic ear tagging methods of individual ID as well as tracking the animals in both intrastate and interstate movement. To achieve the latter, the project included cooperation from Wyoming, North Dakota, South Dakota and Iowa.

To replicate real-life situations,

three groups of 120 lambs born in March on ranches in Montana, Wyoming and North Dakota, and South Dakota, respectively, moved to summer range in June and then were commingled in a feedlot in late September. The lambs were individually tagged in October and moved to slaughter in Iowa in December. A second group of lambs born later in the spring (April/May) were commingled and tagged in October and slaughtered in early March.

In addition, another 994 lambs were tagged and tracked at two facilities in Montana. Of those lambs, a total sample of 392 animals were read. Also 1,200 ewes from one ranch (premises) were part of the project.

In the total process of tagging over 2,800 sheep, there was only a problem with one percent of the tags. When reading the tags of 752 lambs, only 0.25 percent of the tags failed to read. Tag losses overall were set at 1.25 percent.

"The biggest problem that we found is cost," said Kott. "We calculated that the annual cost is about \$15.00 per cow equivalent and it goes to \$20-plus when you add ewes in the equation," he stated. That figure is based on five lambs equaling one cow and five ewes producing a total of eight lambs. "That's too expensive for sheep producers, so the problem is who is going to pay?" Kott also lists confidentiality, handling large numbers of sheep, integrating NAIS with the scrapie eradication program ID system, and "...equally important – producer education," as major problems that will have to be solved.

These studies on RFID systems – including tags and readers – will continue in 2006 in a larger, coordinated effort in Wisconsin, Minnesota, North Dakota, South Dakota, Wyoming, Montana, Texas and Colorado. ●

By Gale Johnson, contributing writer



Cost was found to be the top concern in the Montana pilot project. Though the project had success with tags, estimating the loss at 1.25 percent, handling large numbers of sheep could prove to be costly and challenging for the sheep industry.

Retail Sector Increasing Attention to NAIS

As the livestock industry continues to better understand animal identification and the needs for a national system, the retail sector is beginning to gain a greater interest in the issue.

ID/INFO EXPO 2005 provided an opportunity for stakeholders to hear from the retail sector, and how they fit into the design of a national system.

Dr. Rob Cannell, with U.S. Supply Chain Management for McDonald's Corporation, was one of three individuals that addressed "Animal ID—Beyond Animal Health." In his presentation, he talked about the factors that the retail sector may have interest in, such as where it was born, when was it born and where has it been/where is it now.

Retailers typically do have a greater interest in these topics, looking at issues such as country of origin labeling, export requirements and marketing programs. Cannell added that consumer confidence is an important factor for a national system.

"You don't get too far with the

marketing until you cover the assuring," Cannell said.

Paul Clayton, U.S. Meat Export Federation, also discussed animal ID's role from an international perspective. Clayton highlighted a number of programs from around the world that integrate animal identification into various traceability systems or process-verified type programs. He highlighted the differences in animal disease traceability and food safety traceability.

"Consumers, both domestic and international, are demanding assurances of food safety," said Clayton, noting that today's consumers are more knowledgeable. "In addition to safety, consumers want to know where the product was produced, who produced it and is it fresh."



(l-r) Dr. Rob Cannell, McDonald's Corporation, Travis Choat, Smithfield and Paul Clayton, U.S. Meat Export Federation, took time to answer questions during the ID/INFO EXPO session titled "Animal ID—Beyond Animal Health." The panel noted the increased consumer interest in animal ID, and its potential role as more than just disease traceability.

Travis Choat, Smithfield, added some key points on the need for a workable animal identification system. Looking at programs around the world, consumers are beginning to make more choices, as they become more affluent.

"Currently, we can't compete if [consumers] decide to choose 'traceable,'" he said. ●

USDA Offers \$3 Million for NAIS Projects

The U.S. Department of Agriculture's Animal and Plant Health Inspection Service announced on Nov. 9 it will award \$3 million in cooperative agreements to states and tribes for conducting research to develop or test potential solutions for animal identification and automated data collection in support of the National Animal Identification System (NAIS).

Applicants are encouraged to propose research or field trial projects to:

- Enhance the effectiveness of collecting animal identification data in typical production, market and abattoir environments;
- Establish identity validation when official identification devices are lost, removed or malfunction;
- Conduct economic assessments of animal identification systems and technologies in typical production, market and abattoir environments; and
- Evaluate emerging animal identification technologies with advanced data collection systems to

ascertain the adaptability of the technology for use in NAIS.

Funding application packages are available on the APHIS Web site at www.aphis.usda.gov/mrpbbs/fmd/agreements_announcements.html.

Projects applicable to any livestock or animal industry associated with NAIS are eligible for funding. Collaboration with private companies, producer organizations, colleges and universities, or other research organization is strongly encouraged. ●

EID Systems Could Be Key to Controlling, Eradicating OPP and Other Diseases

The opportunity to economically control and eventually eradicate ovine progressive pneumonia (OPP) and its related disease in goats, caprine arthritis encephalitis virus (CAEV), is becoming more of a reality today. This is due in part to availability of electronic identification devices (EID)

and recording systems now being studied to facilitate the National Animal Identification System (NAIS) and the scrapie program, according to Dr. Cleon V. Kimberling, who recently retired



from Colorado State University.

Kimberling reported on his continuing OPP control and eradication project in a 4,000-ewe range operation in Colorado at the the U.S. Animal Health Association's (USAHA) annual meeting in Hershey, Pa., in November. This project has been underway since 2004 and started with drawing blood from all of the 4,000-plus breeding animals on the ranch.

"We did it first on 2,000 ewes, "...the old, hard and expensive way," he explained. "The blood was drawn, the ewe's number recorded (hand written) and samples sent to the laboratory. It took the lab 10 days to get the results back due to all the paper work. The results were returned on a hard copy. Using this copy to ID and mark the seropositive ewes, we found that it took more time to decipher ear tag numbers and paint brands than it had taken us to collect blood. Adding to this irritation was a greater than 10 percent human error in recording numbers," said Kimberling.

"The bottom line is that this

process was just too error-prone and too expensive in terms of labor for real-world situations," he concluded.

But following what Kimberling describes as "that disaster," the balance of the ewes were identified with radio frequency identification (RFID) tags and the process and accuracy improved dramatically.

The key element was that the ID information from

the reading device was printed as a barcode label that was immediately placed on the tube of blood. This eliminated errors and allowed the lab to electronically scan the sample ID rather than input each number from a smudged and difficult to read handwritten label. The results were back in less than three days on the first test, and less than a week on subsequent tests.

With the information in hand, Kimberling said that follow up sorting and testing of the sheep is equally as efficient and accurate.

"The opportunity to control just OPP is a real value-added aspect of NAIS," said Kimberling. "Then add to it, other diseases as well as management information such as weight gain, shot records and the like, and you begin to see how EID as part of NAIS begins to pay for itself."

For a fact sheet on OPP, simply log on to the Internet at www.extension.umn.edu/distribution/livestocksystems/DI5750.html. ●

by Gale Johnson, contributing writer

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