

# Sheep HEALTH REPORT

A National Institute for Animal Agriculture Publication

Summer 2002

## Search Continues for Improved ID

*No foolproof system available today, expert tells symposium*

Identifying sheep to their last farm of origin is an important goal, but the search continues for the perfect tag or other form of identification that meets the needs of sheep—and shepherds.

That's according to Cindy Wolf, DVM, a small-ruminant specialist at the University of Minnesota College of Veterinary Medicine, who is a sheep producer as well. "Sheep are covered in wool and have tender ears," she told participants at the National Institute for Animal Agriculture's ID/INFO EXPO 2002 in Chicago, a conference and trade show devoted to the issue of animal identification and information systems.

Dr. Wolf pointed out that any form of identification applied to

animals must be legible from a distance; visible and legible for the life of the animal; resist fading, repel dirt and manure, and if not able to do that, then to be easily cleaned.



The ID also needs to be permanent. Ear tags are the main form of identification used by U.S. producers today, though they have limitations. "Tags can break, tear out of ears, and have to be removed due to infection of the ear," she said.

Ear tags have many different sizes and shapes and are made from many different materials. Producers in the Southwest use metal eartags and find them to be a good value, Dr. Wolf said, but in the Midwest, where summers have high humidity, "metal eartags have a high infection rate and producers do not find them to be a good value. At this time, there just isn't a foolproof identification system."

Seedstock flocks that produce primarily breeding stock and commercial flocks producing meat and wool differ significantly in their need for individual sheep ID. Seedstock

flocks use identification to track genetic improvement such as maternal traits, carcass traits and wool selection.

Dr. Wolf pointed out that flocks also use identification for residue avoidance (tracking sick animals that have been treated), and in disease control programs. "The maintenance of the individual animal identification is more critical for the tracing of genetics than in commercial flocks," she said.

Commercial flocks might also use individual ID for residue avoidance, culling animals and monitoring genetic traits. Some electronic identification (EID) is being used, mainly in seedstock operations and flocks enrolled in the Scrapie Flock Certification Program. "But EID has not been widely used due to price and feasibility," Dr. Wolf said.

In September 2001, USDA implemented the accelerated scrapie eradication program for sheep. "The ID component of this program should be used as an example for what is both good and bad with a national identification program for livestock," she suggested.

In one year, the scrapie program has field tested millions of tags in two styles; introduced an ID ordering system; and developed a

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## Future Technology May Boost ID

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targeted educational campaign.

The sheep industry has experienced first-hand the confusion that results from too many choices of ID tags and delays in receiving official eartags.

"The initial nylon plastic tags have been replaced with a much-improved version that has larger numbers and is made of polyurethane, which will last considerably longer," Dr. Wolf said.

Future technologies may be able to supplement ear tags. A new generation of identification devices, placed on the head of the sheep, could help track sheep back to the last farm of residence when sold. The head or neck of sheep is likely to be the most practical area of the sheep to place ID, Dr. Wolf said, because of pelt and meat value, linking ID to diagnostic samples for scrapie and ease of handling.

But ID technologists should test alternative sites other than ears, she pointed out, to find ways to overcome the problems unique to sheep ears, such as their small size, along with the fact that they are tender and prone to infection.

Australia has just launched a National Flock Identification Scheme. Their ID program is a voluntary system that uses permanent, visually readable tags. They have two tags, a "breeder tag" applied on the property of birth that has the

property identification on the tag; and a "property tag" applied to sheep that were not tagged on the property of birth, but are tagged after moving, due to loss of tag, or other reason.

Property tags are pink, while breeder tags are color-coded by year of birth. The breeder tags use a color-of-the-year rotation, a system which alternates eight colors (light green, purple, yellow, red, sky blue, black, white, orange) in a specific order.

For example, sheep born in 2003 would be identified with a light green tag, and that color would not be used again until eight years later. "This scheme allows an animal to be aged at a glance," Dr. Wolf said.

The program assists in maintaining market access, traceback and trace-forward ability and allows Australia to be competitive in export markets, Dr. Wolf said. "For ID to be accepted and routinely used in any country, the reasons to do so must be convincing to the producer," she concluded.



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## NIAA Sets Sheep Health Committee

Cindy Wolf, DVM, St. Paul, Minn., has been re-appointed to another term as chair of NIAA's Sheep Health Committee. Dr. Wolf is a small-ruminant specialist at the University of Minnesota College of Veterinary Medicine and a sheep producer. Appointed vice chair-



*Dr. Cindy Wolf*

man was LaRue W. Johnson, DVM, Ph.D, Ft. Collins, Colo. Dr. Johnson is recently retired from the Colorado State University College of Veterinary Medicine and represents the American Association of Small Ruminant Practitioners.

In making the appointments,

NIAA Chairman of the Board Kenneth E. Olson said, "We are fortunate to have individuals with their knowledge of and expertise in sheep health issues to lead this committee." The appointments are for a two-year term.

NIAA's mission is to provide a forum for building consensus and advancing solutions for animal agriculture and to provide continuing education and communication linkages for animal agriculture professionals. Animal Health serves as one of NIAA's primary areas of emphasis and Sheep Health is one of 15 committees working within the organization.

# ID/INFO EXPO 2002

## NIAA's National Food Animal ID Task Force Goes to Work

A special task force has been formed to facilitate the advancement of animal identification in the United States. The National Food Animal Identification Task Force was established in April by the National Institute for Animal Agriculture (NIAA). It held its first teleconference meeting in May. Task Force members then gathered in Chicago in June, where six working groups met and discussed at length various aspects of a national ID plan.

The task force presented its preliminary report in July during NIAA's ID/INFO EXPO 2002 in Chicago, a conference and trade show devoted to the issue of animal identification and information systems. Feedback was collected from the symposium.

The ID task force was scheduled to meet again and consider any revisions before presenting its final recommendations for a national plan at the U.S. Animal Health Association meeting in St. Louis, Mo.

**Task force mission.** Neil Hammerschmidt, chief operating officer of the Wisconsin Livestock Identification Consortium and chair of NIAA's Animal Identification and Information Systems Committee, said the mission of the task force is "to ensure the United States has an adequate animal identification system that supports the financial viability of animal agriculture."

This stakeholder-based ID task force has the challenge to collectively develop a national animal identification plan that provides the essential elements of a national program that can be implemented

timely and cost effectively.

Hammerschmidt said the task force is a unified effort involving industry and government. More than 30 industry organizations and a few government agencies have

accepted NIAA's invitation to participate on the task force. Approximately 100 individuals are serving on the various working groups.

Several animal ID working groups and entities have made

significant progress during the past year. "The intent of this task force is not to duplicate such efforts, but to incorporate them into a broad plan that provides greater opportunity for a national program," Hammerschmidt said.

### National Food Animal ID Task Force Charge:

1. Determine the immediate needs for animal identification and acknowledge possible long-term requirements.

2. Define a minimal identification system that can successfully address the issues needing immediate action while accounting for flexibility to expand its capabilities to meet anticipated needs of the future.

3. Coordinate efforts among various industry working groups/committees working on animal identification issues.

4. Develop a draft plan for review and discussion at NIAA ID Symposium and finalize plan for presentation at USAHA 2002 Annual Meeting.

5. Finalize an implementation plan in December 2002.



The logo for the ID·INFO EXPO 2002 features the text "ID·INFO" in a large, bold, blue sans-serif font, with a small dot between "ID" and "INFO". Below this, the words "EXPO 2002" are written in a smaller, white, bold, sans-serif font, set against a dark blue rectangular background.

## Drivers of Animal ID Beyond the Farm Gate

*"It just makes sense that all of our food products become traceable. Traceability is part of a protection package expected by consumers when purchasing a product. Consumer confidence is restored if a recall occurs and the contaminated products can be isolated. Consumers can purchase similar products with other brands. Thus, the entire category is not boycotted because of fear."*

—Dr. Karen Penner, food scientist  
Kansas State University

*"Our identification system is not sufficient to meet current and future animal health and disease control needs. A new or upgraded system is necessary. This new system must be adaptable to multiple species and needs. While developing a new ID system, however, we still need to improve the effectiveness of our current system. We should phase in the new system over time."*

—Dr. Robert Hillman  
Idaho Department of Agriculture

*Trust is one of the most important things we sell. Japan and other foreign buyers of U.S. meat products want proof of our production and processing practices. Worldwide, consumers have an increased awareness and desire to know where food comes from, how it was processed and who produced it. They want to be able to trust in that product. Source verification is very key to this.*

—Phil Seng, CEO  
U.S. Meat Export Federation

# Drought Assistance Sign-Up Announced

Sign-up for the Livestock Compensation Program for sheep, goats, cattle and buffalo producers in counties that have received primary disaster designation due to drought in 2001 and/or 2002 is underway. Agriculture Secretary Ann Veneman announced recently that approximately \$752 million has been allocated for the program, which will assist livestock producers who have been impacted by severe drought conditions.

"We commend USDA for this program for sheep producers as it is not only very timely but equitable in terms of payments," said Peter Orwick, executive director of the American Sheep Industry



Association (ASI). "Based on the June 1 inventory of all sheep and lambs, this payment is a major help for growers who are scrambling every day to line up fall and winter grazing and feed."

ASI, which recently changed its bylaws to include representation of goat producers, was successful in its request that this program also include goats.

**Cash assistance** will be made available statewide in Arizona, Montana, Nebraska, New Mexico, North Dakota, South Carolina and Utah. Assistance also will be available in specified counties in 30 other drought-affected states including California, Colorado, Delaware, Georgia, Hawaii, Idaho,

Illinois, Indiana, Iowa, Kansas, Kentucky, Louisiana, Maine, Maryland, Michigan, Missouri, North Carolina, Nevada, New York, Ohio, Oklahoma, Oregon, Pennsylvania, South Dakota, Tennessee, Texas, Vermont, Virginia, Washington and Wyoming.

Payments will be based on standard feed consumption data for each eligible type of livestock. The payment rate is \$18 per animal-consuming unit, which is indexed against beef cattle with all sheep and goats at \$4.50 per head.

"This program will provide immediate assistance to producers who need it the most," Secretary Veneman said.

"The Bush Administration continues to provide every available tool to provide disaster assistance to America's farmers and ranchers who have been struck by severe drought conditions."

Producers in drought-designated states or counties should contact their local county Farm Service Agency office for an application.

## USDA Issues New Scrapie Record-Keeping Guidelines for Markets, Dealers

New compliance guidelines to simplify record-keeping for sheep and goat dealers and markets have been issued by USDA's Animal and Plant Health Inspection Service-Veterinary Services (APHIS-VS) as part of the national scrapie eradication program. The new record-keeping compliance guidelines require only standard business practices of recording buyer, seller, number of animals, date, species and breed or class of animal.

Dealers and/or market operators no longer will be expected to record individual identification information unless individual IDs are inserted or replaced by the dealer/ market operator.

The new guidelines will not significantly affect ID and record-keeping requirements for producers. The change will allow market channels to operate normally and still be in compliance with the program.

APHIS-VS is also expected to issue soon a new national clean-up strategy for scrapie-infected or source flocks based on genotyping to determine which individuals can be retained and which must be removed from the flock.

Additional information about the national scrapie eradication program is available on the Internet at [www.animalagriculture.org/scrapie](http://www.animalagriculture.org/scrapie), or call (866) 873-2824.

## Biosecurity Survey

Farmers and ranchers can provide input about biosecurity needs on the farm through a Web-based survey this fall.

The Extension Disaster Education Network (EDEN) received USDA funds to identify farmers' educational needs on homeland security.

The EDEN survey will be conducted through November. To take the survey, producers may visit the EDEN Web site, [www.agctr.lsu.edu/eden](http://www.agctr.lsu.edu/eden) and then click on "Homeland Security." The survey should take only about 10 minutes to complete.

# Ohio State Tackles Dock Length Question Head-On

Ohio State University researchers with the Department of Animal Sciences and College of Veterinary Medicine joined forces to introduce producers, livestock exhibitors and youth to some optional methods of tail docking sheep during the Ohio State Fair in August.

"The program is meant to be an educational demonstration of industry-recommended practices, and by no means meant to be instituted as policy," said James Kinder, chair of Ohio State's Department of Animal Sciences within College of Food, Agricultural, and Environmental Sciences.



"It's just a way of demonstrating to producers and youth that this is what industry recommends and allow them to make their own decisions," he said.

Tail docking, or shortening the length of the tail, is common management practice in sheep, utilized mainly to help improve hygiene and control diseases. While those in the sheep industry have recognized tail docking as a necessary practice, questions have surfaced over just how much of the tail should be removed.

Over the past several years, some livestock exhibitors and show lamb producers have adopted the practice of severe tail docking, removing it at the point of attachment to the body wall, to improve the visual appeal of the animal.

However, such severe tail docking has been shown to be a contributing factor to an increased incidence of rectal prolapse caused from the severing of nerves that hold the muscles supporting the rectum.

"Over the past few years, we've heard increased concern regarding the incidence of rectal prolapse in lambs

being exhibited in fairs and shows in Ohio," said Henry Zerby, an Ohio State animal science researcher. "We've heard similar reports from other folks in states throughout the country."

As a result, animal organizations around the country have developed resolutions and several states have adopted policies that encourage a longer tail length for sheep.

In a recent unpublished preliminary study by Ohio State, Iowa State and Texas A&M universities and the University of Wisconsin-Madison, researchers found that lambs with short docks (as close to the body as possible) may have a 9-to-10 percent incidence of rectal prolapse.

"The data from this study would suggest that there seems to be a relationship between short-docked tails and rectal prolapse," Zerby said. "However, genetics may also influence the incidence."

Kinder emphasized that other factors are involved in inducing rectal prolapse, including dietary and environmental factors. "But the goal of the program is to get producers to dock lambs long enough so that tail docking is not one of the contributing factors of rectal prolapse.

"I think people in the industry recognize that docking a tail too short could contribute to rectal prolapse, but just what the appropriate length of the tail should actually be is fuzzy, and that's what's being debated," he said.

The industry-recommended dock length is no shorter than the distal end (farthest point from the body)

of the caudal fold. The caudal fold is a flap of skin attached to the underside of the tail near the rectum that is clearly visible when the tail is lifted.

"Our push is not to say that producers need to make the docks longer, but to explain why," said Zerby. "But the challenge is going to be explaining to producers what the distal end of the caudal fold actually means. Producers may not understand that terminology."

Bill Shulaw, an Ohio State veterinarian with the College of Veterinary Medicine, said the caudal fold is a good marker to use because it can clearly be seen in lambs that have not yet been docked.

"The distal end of the caudal fold is an easily recognized landmark," Dr. Shulaw said. "Others will argue, however, that it is not clearly visible in all breeds and it does disappear when the tail is docked shorter than the caudal fold. So it will be a challenge to distinguish that."

In the study conducted by Ohio State and other universities, compared to a short dock, a long dock (sheep whose tail were docked where the caudal fold meets the tail) cut the incidence of rectal prolapse by 80 percent.

"It has become a hot issue across the country where the tails ought to be docked," Dr. Shulaw said. "But that is not for us to tell producers what they should do. We are trying to put ourselves in the position of educators from an animal welfare standpoint and a medical standpoint. If people choose not to follow the practice of longer tail docking, that is their choice."

Sheep producers and youth show officials in states that have implemented longer tail docking policies include West Virginia, California, Utah, Wyoming and Washington. Maryland's 4-H program is scheduled to implement a policy as well.

## Duke Scientists Study Callipyge Gene for Possible Clues to Role of Genes in Humans

Scientists have discovered that a mutated gene, named *callipyge*, that is responsible for producing extra-large muscle in sheep may help illuminate how muscle and fat are deposited in these animals and possibly in humans.

The gene has been rejected by sheep breeders because it produces tough, dry meat. However, the gene could explain specific processes that give rise to obesity and fat metabolism, said Randy Jirtle, professor of radiation oncology at Duke University and co-author of a study published recently in the journal *Genome Research*.

The study was funded by USDA and the National Institutes of Health. The *callipyge* gene appears to be among a rare subset that eludes traditional methods of identification and mapping, according to Brad Freking, Agriculture Research Service geneticist at the Roman L. Hruska U.S. Meat Animal Research



Center, who was the lead investigator for the study.

The Duke cancer researchers believe the *callipyge* gene may help them in their research. The group has been researching and identifying "imprinted" genes, which work differently than normal genes.

The expression of these imprinted genes depends on which parent the gene copy was inherited from.

In sheep, the only offspring that express the unusually large rear leg and loin musculing are those that have a normal copy of a specific gene from their dam, but a mutated (*callipyge*) version of that gene inherited from their sire.

Imprinted genes literally are

stamped with markings that inactivate one parent's copy. They often work only in specific tissues and at defined intervals during an animal's development, Duke researchers said.

Scientists used a complex approach to eventually locate the *callipyge* mutation, and in the process discovered a new gene. "This is the first time in animals where a mutation has been found that leads to the identification of a new gene, rather than analyzing a known gene to find its mutation," said Dr. Jirtle. "As scientists, we are missing many genes and their mutations by using the traditional approach of linkage analysis to locate and analyze candidate genes."

The Duke University researchers say aligning the sheep sequence of this specific region to the human genome might identify previously unknown human genes and assist in researching other imprinted areas of importance in human medicine.

## USDA Announces Lamb Board Appointees

Agriculture Secretary Ann Veneman has announced 13 appointments to the Lamb Promotion, Research and Information Board. The board administers programs to enhance domestic markets for lamb and lamb products.

The 13-member board is composed of six producers and three feeders representing regions east and west of the Mississippi River, one seedstock producer, and three first-handlers. The appointees will serve one-, two- or three-year terms. During each subsequent year, the USDA Secretary will appoint one-

third of all board members for 3-year terms.

Appointed members representing producers are: Nicholas L. Forrest, Ohio, 3-year term; Mary E. Clarke, Colo., 2-year term; Margaret C. Magruder, Ore., 1-year term; John L. Oswalt, Mich., 3-year term; Michael A. Guerry, Idaho, 2-year term; and Thomas A. Kourlis, Colo., 1-year term.

**Appointed members** representing feeders are: Joseph O. Harper, W.V., 3-year term; Spencer Rule, Colo., 2-year term; and David Winters, Texas, 1-year term.

Appointed members representing first handlers are: William R. Brennan, S.D., 3-year term; Teddie R. Crippen, Ore., 2-year term; and

Kevin R. Quam, Colo., 1-year term.

The seedstock producer appointed is Joanne G. Evans, Pa., for a 3-year term.

Established under the Commodity Promotion, Research and Information Act of 1996 and the Lamb Promotion, Research and Information Order, the board will be financed by a mandatory assessment of one-half cent (\$.005) per pound on ovine animals of any age, including ewes and rams, sold by producers, seedstock producers, feeders and exporters.

In addition, an assessment of \$.30 per head must be paid by first-handlers. Assessments began on July 1, 2002. USDA's Agricultural Marketing Service monitors operations of the board.

# Biosecurity Basics for Sheep Operations

Interest has never been greater in keeping food systems secure. The American Sheep Industry Association (ASI) released a new fact sheet in June that details management practices for sheep ranches to maximize biosecurity.

Biosecurity refers to management measures taken to prevent disease agents from being introduced and spreading to—or from—animal populations or operations.

The fact sheet describes biosecurity as consisting of three main components: isolation, the confinement of animals away from other animals; traffic control, or the movement of people, animals, vehicles and equipment; and sanitation/husbandry, the cleanliness and care of animals and their environment.

**The most common** way that new diseases are introduced into a flock is through new animal additions. The ASI publication suggests that new animals and animals returning from exhibitions should be quarantined from resident animals for four weeks to allow for incubation periods of certain diseases. Isolation areas (buildings and pens) should not share the same airspace as resident animals. A distance of 100 feet, if feasible, should separate buildings and pens.

During the isolation period, animals should be observed closely, according to the fact sheet. A veterinarian should promptly examine those showing any sign of illness. Animals also can be tested for specific diseases of concern during the isolation period, and it is an appropriate time to vaccinate and treat for internal and external parasites.

New purchases should not be allowed to join the resident sheep until they have been tested and proven to be free of drug-resistant (anthelmintic) internal parasites or worms. A veterinarian can assist pro-

ducers with this test, also known as the fecal egg count reduction test.

The publication urges producers to follow strict precautions to avoid spreading contaminants. Equipment should not be shared between isolated animal areas and resident animal areas, and persons tending these animals should take precautions to avoid spreading disease agents from the isolated animals to other animals and equipment. Precautions include hand washing, wearing different clothing and footwear, disinfecting feeding and watering equipment and other fomites.



**The publication lists** a number of suggestions for producers to follow before adding animals to a flock.

- The health status of the source flock or flocks should be evaluated. Ask specific questions about the diseases that concern you. Find out specifics about management practices that might affect the flock's health.

- Number of source flocks should be minimized.

- It is best to use a "closed" flock of verifiable good health status as the source for flock additions. A closed flock is defined as one where new animals have not been brought in for three or more years.

The fact sheet also reminds flock owners and employees to avoid taking biosecurity risks with their own livestock. These include:

- Exposure of the owner or employees to other flocks or other livestock.
- Avoid unnecessary animal contact when visiting other livestock facilities.

Take precautions so you don't carry diseases back to your own

place. Change overalls or clothes in between farms. Also, either clean and disinfect your boots before entering and when leaving another livestock premises or wear disposable plastic boot covers.

Dispose of plastic boots at the farm when your visit is finished.

Require all visitors to maintain strict sanitation standards.

Assess risk factors posed by visitors and take steps to limit their contact with your animals.

Disposable boots or boot washing stations should be available for visitors and required to be used, according to the fact sheet. Provide visitors with protective coveralls and disposable boots or make thorough boot washing and disinfection required before and after the visit.

**Poor traffic control**, of both human and vehicle traffic, and poor sanitation of vehicles, equipment and clothing may lead to the introduction of disease and is a breach of biosecurity. Livestock haulers, feed delivery trucks, dead-stock haulers, and others should be allowed limited access, and should be held to strict sanitation standards, the publication states.

It also lists suggestions for sanitation and leads producers through the thought process behind risk management for a sheep operation. Biosecurity is important, the publication concludes, because it not only reduces risk of new disease entering a flock, but it also can help build consumer confidence in the final product.

To view a copy of the publication on-line, visit [www.sheepusa.org](http://www.sheepusa.org).

## New Test May Head Off Inactive Rams

Traditionally, rams in the United States have been selected for breeding purposes on the basis of how quickly they grow and the size they ultimately attain. Soon, however, sheep producers may be able to identify the amount of sex drive in a ram before making a purchase.

Agricultural Research Service (ARS) scientists with the U.S. Sheep Experiment Station in Dubois, Idaho, and their collaborators have developed a test to help identify sexually active male sheep. Between 15% and 25% of all male sheep in the United States may ignore ewes' mating overtures, a statistic that has major ramifications for the U.S. sheep industry.

Breeding rams are usually priced between \$200 and \$400, and their care and maintenance can run up

to \$100 per year. Buying just one sexually inactive breeding ram can therefore cost a farmer up to \$500; the figure goes up even further when considering lost potential.

**Some livestock species** lend themselves to the use of artificial insemination as a way of sidestepping the problem of variable male libido. But this approach incurs additional labor costs, and is not practical for most range and farm flocks that rely on natural matings.

The new test, based on research by ARS animal scientist John Stellflug, colleagues at Dubois and collaborators, is based on the premise that libido is closely linked to the ability to secrete testosterone. It measures testosterone response in sires using an injection of nalox-

one, which blocks certain hormones to stimulate testosterone release. When a male mammal is given an injection, his testosterone response predicts whether he is sexually active or inactive.

This test could impact the sheep industry by helping identify which male sheep are sexually active, thus increasing the reproductive potential of entire flocks. By replacing nonproductive males, the industry could save both time and money.

ARS has obtained a patent on this technology and is seeking a company that may be interested in licensing it and developing a commercial product. Because some researchers have speculated that the technology may be effective for testing other species, its potential impact could be high.

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