

# SCRAPIE: ERADICATE IT

*The sheep industry's scrapie eradication efforts.*



American Sheep  
Industry Association

June 2008

The goal of the American Sheep Industry Association (ASI) and the U.S. sheep industry is to eradicate scrapie from our borders. In addition, it is the objective to have the World Organization for Animal Health, OIE, declare the United States scrapie free by 2017. This quarterly publication is created specifically for those of you in the field who are also working to achieve this goal.

This newsletter brings together, into one spot, current information from all 50 states, as well as from the U.S. Department of Agriculture and any other organization providing scrapie news, and reports it back to the field.

If you have first-hand accounts that you believe would be relevant for others to read or have information that you would like included in this newsletter, please let us know at [becky@sheepusa.org](mailto:becky@sheepusa.org).

## **Scrapie: Notice the Signs for Eradication**

By BECKY TALLEY  
Sheep Industry News Associate Editor

As the target date for scrapie eradication nears, the National Scrapie Eradication Program (NSEP) and the Regulatory Scrapie Slaughter Surveillance (RSSS) programs are continuing to evolve and tighten in order to ensure progress, and will continue to do so until eradication of the disease is realized.

Producers have played a crucial component in the eradication process by their continued participation in the NSEP and dedication to ridding the United States' sheep and goats of the disease.

However, as the final stage of eradication approaches, producers are being called on to continue to contribute by being vigilant observers of their sheep and goats for any signs of the disease and to report them to a veterinarian. Early detection on the farm is essential to the final push to rid the national flock of scrapie for good.

"As we reach the final stages of eradication, it is more important than ever that producers be aware of the signs of the disease," says Diane Sutton, DVM, national scrapie coordinator for the U.S. Department of Agriculture (USDA).

### **Clinical Signs of Scrapie in Sheep**

The clinical signs of scrapie can vary widely among animals and include severe itching, tremors and incoordination, to name a few. Scrapie gradually affects the central nervous system and loss of normal muscle control and cognitive abilities may be a contributing factor to other causes of death such as aspiration, pneumonia or the inability to avoid accidents. However, it is also possible for a scrapie-infected sheep to simply die with no outward symptoms, which in itself should raise a red flag for producers.

"Certainly, animals found dead are a concern. Especially those without many sickness signs," says Katherine O'Rourke, Ph.D., USDA's Agriculture Research Service's (ARS) Animal Disease Research Unit (ADRU).

According to O'Rourke, scrapie is an insidious disease that develops slowly, but there are animals that will exhibit early signs of the disease that should be watched for.

One of the earliest signs, she says, will be a change in their behavior within the herd.

"It's a change from normal social behavior, and it tends to come a lot sooner than other signs," she relates.

Producers need to be observant in this situation, as flock members display different social behaviors depending on their environment, etc. If sheep are fed, there may be one that will not come to the feed with the others. In a range situation, a sheep may isolate itself or be seen following behind the rest of the flock. Mostly, producers need to be aware of the normal social dynamic to be able to sense when something is off.

According to Jim Logan, DVM, chair of the American Sheep Industry Association's Animal Health Committee, those animals in a range or larger grazing situation may be harder to observe, but the signs are still there.

"There are many signs of scrapie, but a lot of the time, the signs of the disease are very subtle," he says.

Logan says that in a range-type situation, a chronic loss of weight, especially in the face of a sheep with a normal appetite or in a 3 to 5 year old, is an important early sign to watch for; however, this is also true of all scrapie-infected animals, no matter their environment.

Once these more subtle signs are noticed, other, more noticeable ones may occur. These include scratching and rubbing against fixed objects, loss of coordination, a nibbling behavior of the mouth (especially when scratched on the back), and a bunny-hopping type gait of the hind legs. To see videos of these clinical signs in live animals (both sheep and goats), please visit [www.aphis.usda.gov/animal\\_health/animal\\_diseases/scrapie/](http://www.aphis.usda.gov/animal_health/animal_diseases/scrapie/).

For animals in a range-type setting, wobbliness, trouble standing up and trouble walking are especially recognizable signs to watch for, says Logan.

Because there are other diseases that can cause similar symptoms in sheep, it is important to contact your veterinarian if any of these signs are noticed. Alternatively, to report a scrapie suspect you may contact your state veterinarian's office or you may call 1-866-873-2824.

### **Clinical Signs of Scrapie in Goats**

Though scrapie cases have been most commonly confirmed in sheep, it is important to note, according to Sutton, that it can and does occur in goats. APHIS initiated the Caprine Scrapie Prevalence Study in May 2007 to estimate the national prevalence of scrapie in adult goats at slaughter. At the time of its termination, no goats tested positive as part of the study after 3,000 were sampled.

However, field investigations have yielded a few cases of confirmed scrapie in goats. One of the most recent was confirmed in December of 2007. The USDA diagnostic lab in Ames, Iowa, found that a 3-year-old Nubian goat from Michigan was infected with scrapie, the 19<sup>th</sup> case to be confirmed in goats in the United States since fiscal year 2002.

The animal was brought to a veterinary clinic by its owners after it began to exhibit strange behavior.

"In early October 2007, I was contacted by a private practice veterinarian, who was treating a 3-year-old Nubian goat that the owners had since July," says Jean Ray, DVM, Ph.D., USDA Veterinary Services area epidemiology officer and designated scrapie epidemiologist in Michigan.

According to Ray, the veterinarian noticed that the goat had some hair loss and thickened skin on its head from rubbing and seemed unusually sensitive to stimuli. In addition, it behaved aggressively toward the veterinarian during examination and tried to bite her.

At the owner's request, the veterinarian started a treatment plan with medication for possible skin disease.

After 30 days of treatment with no improvement, the goat was purchased by the USDA for scrapie testing.

When the goat arrived at the USDA-approved testing facility, it was observed to have hair loss on the head with skin thickening and darkening, but it did not exhibit any obvious behavioral or central nervous system signs.

However, samples from the animal did come back positive for scrapie. Following traceback to the herd of origin, 48 goats were purchased and sent to the ARS' ADRU lab in Washington for further research on scrapie occurrence in goats. Goats which were traced out of the herd of origin were also purchased for research at ADRU.



It is crucial that producers are aware of the clinical signs of scrapie which include severe itching, tremors and incoordination, to name a few. An early sign of scrapie in a sheep or goat is a change in its behavior in the herd or flock. Above are signs of scrapie in sheep.

According to Ray, "The herd of origin had a scrapie prevalence of approximately 10 percent based on testing conducted at the ARS research facility. There was historical evidence of at least one other goat sold from this herd having died after exhibiting signs of scrapie."

"There had not been sheep present in the herd of birth for approximately 6 years. Scrapie is generally spread during the birthing process due to ingestion of fluids or other birthing by-products. None of the dams (that were available for test) of scrapie-positive goats in this herd were themselves scrapie positive. The pregnant goats were not separated from the rest of the flock for kidding, and the goats kidded together as a group," says Ray.

Of the goats sent to the Washington ARS facility, a few were euthanized and tested, while others have been kept for further research on the genetic resistance of the disease in goats and on the age at which biopsied goats will yield accurate scrapie test results.

"That is the best thing we can do for the industry right now," says O'Rourke. "We learn best from these natural cases."

According to O'Rourke, scrapie-infected goats may exhibit the same early signs as sheep, such as weight loss or social behavior changes; however, it is important to remember that goats can be more social with humans than sheep (especially if they have been hand fed), so a behavior change may include an unwillingness to socialize with humans. In addition, goats with scrapie may be more aggressive than usual.

Like sheep, they may also scratch and rub because of itch, have a bunny-hop type gait, lose coordination and exhibit a nibbling behavior of the mouth, to name a few signs.

Studies in Europe have found clinical signs of scrapie in goats also include excess salivation and the regurgitation of rumen contents, which would present as green staining of the chest and front legs, says Ray. Also pica (eating of non-food items) and cannibalism have been noted in scrapie-infected goats.

According to Ray, there are some precautions producers can take against the disease in goats.

"The best thing to do would be to house, lamb and kid sheep and goats separately particularly if scrapie is suspected to exist in either species. If the premises previously housed sheep, disinfecting and cleaning of the lambing area should be done before repopulating with sheep or goats. All bedding and afterbirth should be removed and properly disposed of after lambing or kidding," she relates. "As with sheep purchases, producers should only purchase goats from reputable sources."

O'Rourke reminds all producers that scrapie is a reportable disease and producers need to be vigilant in contacting a veterinarian if they see any clinical signs or suspect scrapie in either goats or sheep.

"If your flock or herd has scrapie, you've got it, and it isn't likely that you have it in only one animal. There are ways to deal with it, and producers will be compensated. It benefits you as well as the entire industry to continue with scrapie eradication."

## **New Live-Animal Scrapie Test Approved**

A new scrapie detection test for sheep and goats that can be performed on live animals has been approved by the U.S. Department of Agriculture's (USDA) Animal and Plant Health Inspection Service's (APHIS) Veterinary Service. The rectal biopsy test was approved in January.

In recent research, it was discovered that disease-associated prion protein accumulates in the lymphoid tissue of the rectal mucosa in a high percentage of scrapie-infected sheep. Rectal biopsies have the advantages of providing high numbers of lymphoid follicles for testing and are considered to be relatively easy to perform.

The intent is that the rectal biopsy will be used for all of the same purposes as the third eyelid test. With a sensitivity level reaching into the 87th percentile for detecting scrapie-positive sheep, the rectal biopsy is proving to be as effective as the third eyelid test. It is also anticipated that there will be a lower risk of receiving a 'no-test' result.

"This newly approved test is as good or better for diagnosing scrapie in live sheep and goats than the third eyelid test for a number of reasons," states Diane Sutton, DVM, coordinator for the National Scrapie Eradication Program. "It is less invasive and less stressful for the animal so producers should like it better, and it is a faster and easier test to perform for the veterinarian."

The rectal biopsy is currently only being used by USDA and state personnel for scrapie testing but is expected to be available to accredited veterinarians in the future after training and guidance have been provided.

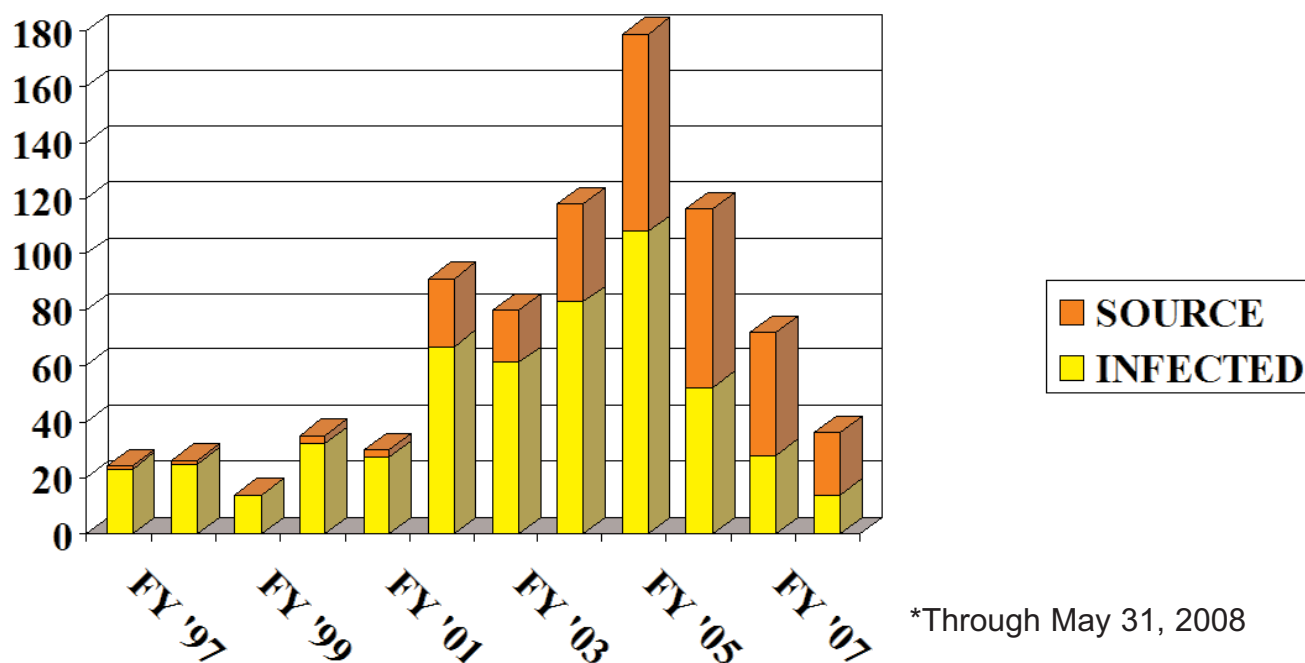
## Animals Sampled for Scrapie Testing

*Sheep and Goats*

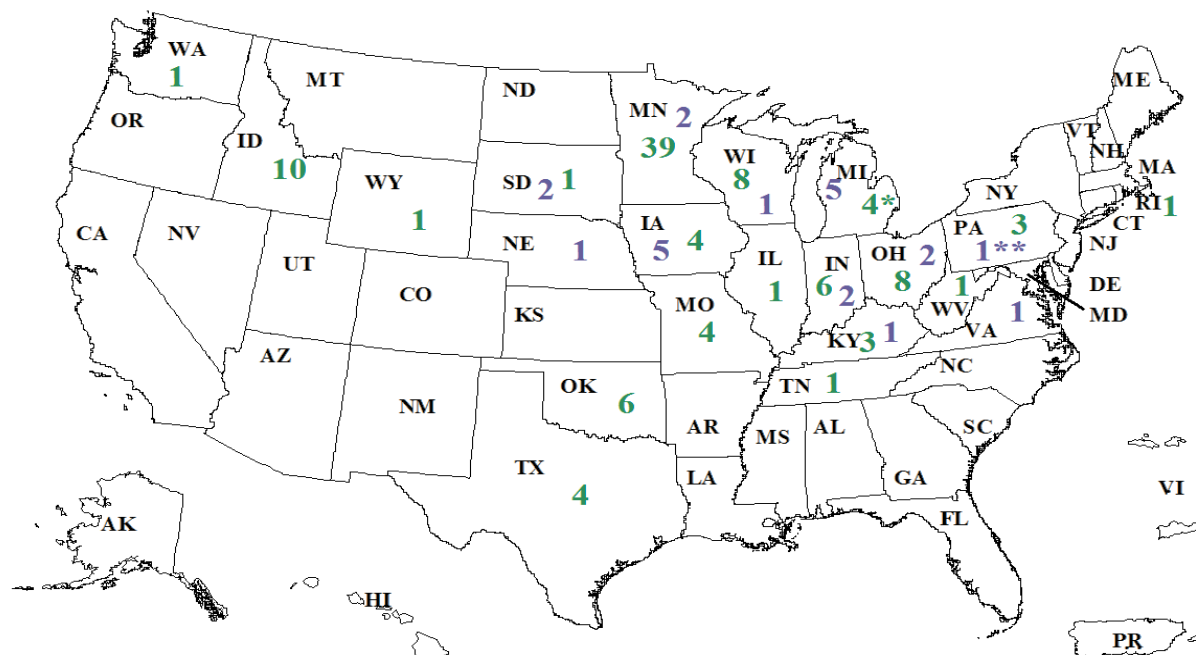
**As of May 31, 2008**

31,536 animals have been sampled for scrapie testing: 27,999 RSSS; 1,517 goats for the CSPS study; 1,594 regulatory field cases; 272 regulatory third eyelid biopsies; and 154 regulatory rectal biopsies.

## Infected and Source Flocks New Statuses by Year FY 1997 – 2008\*



## Scrapie Confirmed Cases in 2008



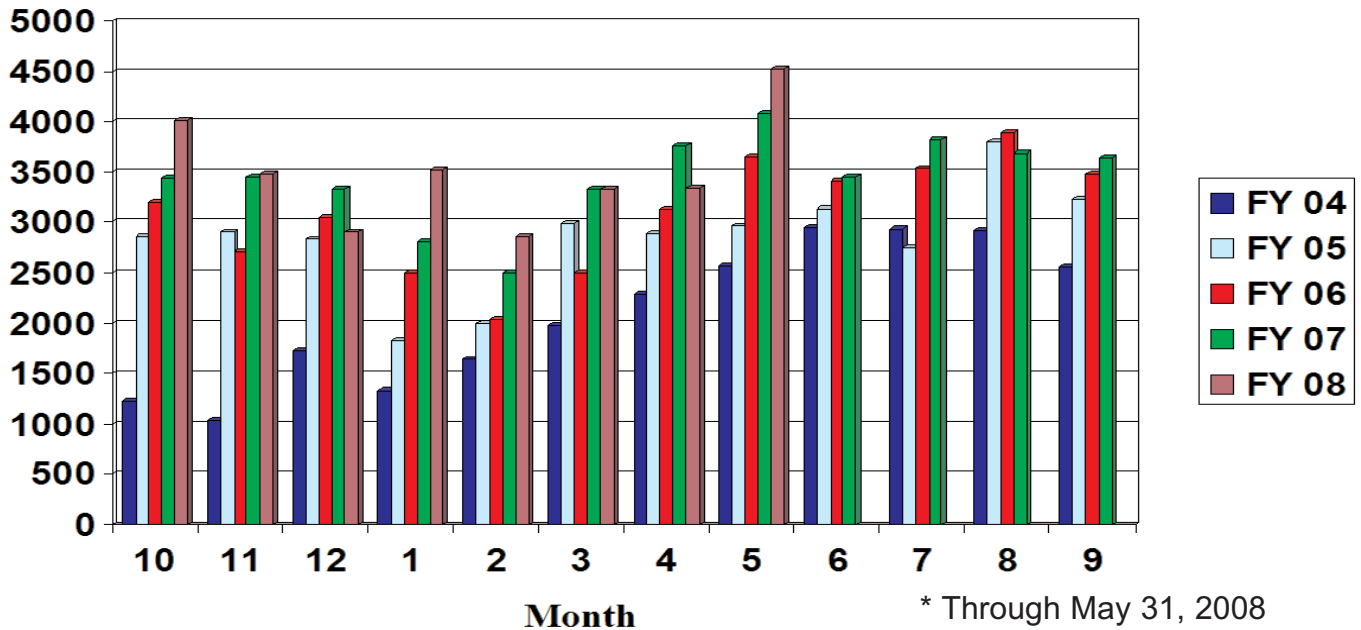
**Scrapie Cases as of May 31, 2008 = 132**

106 field cases, including 4 goats\*; 26 RSSS cases (Reported by State of ID tag. Collected in October-May and reported as of June 18, 2008. 3 cases—state of ID unknown, 1 Nor98-like case\*\*.)





## Slaughter Surveillance Samples Collected by Month, FY 2004 to FY 2008\*



The Animal and Plant Health Inspection Service's goal is to collect 4,000 slaughter surveillance samples each month from around the United States.

## Regulatory Scrapie Slaughter Surveillance (RSSS) Statistics through May 31, 2008

Since April 1, 2003:	In FY2008:
173,214 samples collected 368 NVSL* confirmed positive	27,999 samples collected 26 NVSL confirmed positive

\*National Veterinary Services Laboratories

## Web Sites Dedicated to the Eradication of Scrapie

Animal and Plant Health Inspection Service  
[www.aphis.usda.gov/vs/naahps/scrapie](http://www.aphis.usda.gov/vs/naahps/scrapie)

Maryland Small Ruminant Page  
[www.sheepandgoat.com/scrapie.html](http://www.sheepandgoat.com/scrapie.html)

National Institute of Animal Agriculture  
<http://www.animalagriculture.org/scrapie/Scrapie.htm>

Scrapie QuickPlace  
<https://qp01.aphis.usda.gov/QuickPlace/scrapie/Main.nsf?OpenDatabase>  
*State and federal employees can access this password-protected site by e-mailing  
Earl.T.Thorpe@APHIS.USDA.gov to receive a password.*



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