



Q&A

Scrapie and the National Scrapie Eradication Program

About the Disease

Q. What is Scrapie?

A. Scrapie is a fatal, degenerative disease affecting the central nervous system of sheep and goats. There is no cure and there is no treatment for scrapie.

Q. What type of disease is scrapie?

A. Scrapie is classified as a transmissible spongiform encephalopathy (TSE). Both scrapie and bovine spongiform encephalopathy (BSE; a.k.a. "Mad Cow" disease) are TSEs, as is Chronic Wasting Disease in deer and elk. While research has allowed us to gain a better understanding of the TSEs, there are still many facets of these diseases that are poorly understood.

Q. Why is scrapie eradication important?

A. The U.S. has had some form of a scrapie eradication or control program in place for many years. These were established to help increase animal health status and decrease production losses for producers. Infected flocks that contain a high percentage of susceptible animals can experience significant production losses. In flocks where scrapie is endemic the number of infected animals increases and the age at onset of clinical signs decreases over a period of several years making these flocks economically unviable. As an additional loss, the presence of scrapie also prevents the export of breeding stock, semen, and embryos to many other countries. More recently, increased attention and concern is being paid to all TSEs, including scrapie, as a result of the discovery of BSE in cattle, feline spongiform encephalopathy (FSE) in cats and new variant Creutzfeldt-Jakob disease (nvCJD) in people in Europe. This increased concern has led to the following effects:

- Packers and producers have had difficulty in disposing of sheep offal and dead sheep causing them to incur significant increases in disposal costs,
- Other countries have expressed concerns and have indicated that they may prohibit or restrict certain ruminant products because the U.S. has scrapie,
- Our domestic and international markets for sheep-derived meat and bone meal,

have been adversely affected, and

- The American Sheep Industry Association identified scrapie as a major impediment to the well-being of the U.S. sheep industry.

The combination of all of these factors has led to the decision to develop a strong scrapie eradication program.

Q. Is scrapie a costly disease?

- A. Yes, it is estimated that U.S. producers incur between \$20-25 million annually. Only New Zealand and Australia are recognized as scrapie free, so they are currently the only nations that can freely sell breeding stock to producers in most other countries. Further, their lucrative markets are not available to U.S. producers. Losses can only increase in the future if the disease is allowed to spread.

Q. Can cattle get scrapie from contact with sheep?

- A. **No, scrapie from sheep and goats has not been shown to spread to cattle under natural conditions. Here in the U.S. scrapie isolates were injected into brains of cattle, it caused some spongiform changes, but did not cause the same lesion patterns as BSE and did not cause the same clinical signs. Oral inoculations did not cause clinical signs or lesions in cattle.**

Q. Does scrapie affect human beings?

- A. **There is no evidence that people who consume sheep or goat meat or milk or who work with sheep and goats are at risk of contracting scrapie.**

Q. How did the disease get its unusual name?

- A. **Individual sheep or goats that have scrapie will often rub on objects and *scrape* off their wool or hair.**

Q. Do infected animals show any other clinical signs?

- A. **One or more of the following clinical signs of scrapie may be present in affected animals:**

- Weight loss despite retention of appetite
- Behavioral changes
- Itching and rubbing
- Wool pulling
- Biting at legs or side
- Lip smacking
- Loss of coordination
- High-stepping gait of forelimbs
- Bunny-hop movement of rear legs
- Swaying of back end
- Increased sensitivity to noise & movement
- Tremor
- Down, unable to stand
- Weakness, difficulty getting up
- Death

Q. How widespread is scrapie in the USA?

A. Fortunately, it is relatively uncommon. Since it was first found in the United States in 1947, about 1600 sheep and goats have been diagnosed with the disease. Only seven cases have been found in goats in the last 10 years. It is presumed that some flocks are infected but remain undetected due to the disease's long incubation period (typically two to five years) and difficulty in making a diagnosis, which is usually done with immunohistochemistry on brain tissue. As of August 1, 2001, there were 48 infected or source flocks in the U.S.

Q. Is there a live animal test?

A. A live animal test has been developed and is expected to be available later this year. The test uses a biopsy of lymphoid tissue from the third eyelid. Usually, topical anesthetic and restraint are used for the biopsy procedure, but in some cases the animal may be lightly sedated to collect the tissue. The new test will be used to test suspect and exposed animals for scrapie infection. It is expected to be a valuable tool in identifying and cleaning up infected herds/flocks.

Q. What causes scrapie?

A. An agent that is smaller than a virus causes scrapie. It is either a protein called a prion or it is another substance closely associated with the prion protein. Scientists still have a lot to learn about the scrapie agent and exactly how it works. It is known that the scrapie agent is extremely resistant to heat and to normal sterilization processes. It does not evoke any detectable immune response or inflammatory reactions in host animals. The incubation period is usually two to five years. Eventually, the scrapie agent attacks the brain, leaving holes in it much like swiss cheese or a sponge, hence the name spongiform encephalopathy.

Q. What is a prion (prē'ōn)?

A. A prion is a protein that is closely associated with scrapie infectivity and may be the causative agent. Normal cellular prion protein is found in all mammalian cells. The scrapie agent causes the normal cellular prion protein to be converted to an abnormal form called PrP^{Sc} that unlike cellular prion protein is not removed by the cell, causing it to build up or accumulate.

Q. Are some breeds of sheep more susceptible than others?

A. In this country, scrapie has been primarily reported in the Suffolk breed. However, it has been diagnosed in the U.S. in Suffolk, Hampshire, Cheviot, Southdown, Shropshire, Rambouillet, North Country Cheviot, Dorset, Finnsheep, Corriedale, Merino, Montadale, Columbia, Cotswold, Border Leicester, Texel and crossbreeds. It is believed that most breeds and breed crosses of sheep and goats are susceptible to scrapie.

Q. What is the role of genetics in scrapie?

A. At present, it is generally accepted that scrapie is an infectious, contagious disease with genetics playing an influential role in susceptibility.

U.S. sheep diagnosed with clinical scrapie have had a specific gene pattern. This pattern is

known as QQ at the specific gene location codon 171.

There are still many questions that must be answered before the role of genetics in relationship to scrapie susceptibility is fully understood and these are currently being researched.

Q. What has been done to control scrapie in the U.S. since it was first found in 1947?

A. From 1947 through 1992, regulations for dealing with scrapie-affected sheep in the U.S. underwent several changes in the classes of animals depopulated and the amount of indemnity paid. The number of reported cases of scrapie increased when the indemnity programs were instituted and/or the indemnity was increased. In 1992, the emphasis of the program changed from eradication to scrapie-free certification.

The Scrapie Flock Certification Program (SFCP) is a cooperative effort among producers, allied industry representatives, accredited veterinarians, state animal health officials, and USDA's Animal and Plant Health Inspection Service (APHIS). As of August 1, 2001, the program had 796 participating flocks.

General Questions about the New Eradication Program

Q. What are the key features of the new program, which are likely to make it more successful than previous eradication programs?

A. The key aspects of the new eradication program which will ultimately enable it to be successful are:

- 1. The ability to detect pre-clinical sheep through live animal testing and active slaughter surveillance.**
- 2. The ability to trace infected animals to their flock/herd of origin as a result of the new identification requirements.**
- 3. Providing effective clean-up strategies that will allow producers to stay in business, preserve breeding stock, and remain economically viable. USDA/APHIS will do this by providing the following to exposed and infected flocks/herds that participate in clean-up plans:**
 - Indemnity for high risk, suspect, and scrapie positive sheep and goats, which owners agree to destroy.
 - Live-animal testing.
 - Genetic testing.
- 4. Testing of exposed animals that have been sold out of infected and source flocks/herds.**

Q. Will the new eradication plan replace the current certification program?

A. No, the certification program will simply give its participants a head start on the eradication program. The certification program is still relevant because the U.S. will not be recognized as free of scrapie by international standards until we have had no cases of scrapie for seven years. This means that producers who want to export sheep and goats will need to participate in the certification program in order to export sheep to most other countries.

Q. Can producers continue to use Scrapie Flock Certification Program (SFCP) identification devices?

A. Yes, SFCP identification is official identification for interstate movement.

Q. What are the key requirements of the new eradication program?

A. The key requirements of the new program are:

- 1. That most breeding animals and all sheep 18 months of age and older be officially identified in order to be moved in interstate commerce.**
- 2. That states meet minimum standards for state scrapie control in order to move breeding sheep and goats freely, interstate.**

Q. What are the ID requirements for animals under 18 months of age?

A. Unless they have been bred or aborted, lambs of either sex intended for slaughter are not required to have an identification number or health certificates unless they are scrapie exposed or suspect animals.

Q. Why are most younger animals excluded from the system?

A. There are two reasons: Scrapie is a slow developing disease, which makes it difficult to detect the disease in animals under 18 months of age. The second and most significant reason that finished lambs intended for slaughter can be excluded is that the disease is spread primarily through contact with birthing fluid, making it unlikely that they would have spread the disease.

Q. What will be required of the states?

A. State animal health officials will play a key role in administering and implementing the program. Specifically, they have the responsibility for uniformly placing and enforcing movement restrictions on high-risk animals and animals that are in infected or source flocks/herds.

Q. What is the role of veterinarians in the scrapie eradication program?

A.

They are responsible for:

- Educating their clients about scrapie and the program.**
- Writing certificates of veterinary inspection (health certificates) and applying official USDA ear tags.**
- Reporting the disease to state and federal officials when they suspect it.**

- Assisting producers in developing and successfully completing flock clean-up plans.

Q. Why are goats included in the program?

A. Goats are included in the program because infected goats must be traceable in order to identify exposed, infected or source herds and to provide indemnity to affected goat producers.

Q. Do the new regulations carry the force of law? If so, what penalties are involved for violators?

A. Statutory authorities, including 21 U.S.C. 111, 114, 114a and 134a-134h, authorize the Department of Agriculture to conduct programs for the control of communicable animal diseases and to restrict the interstate movement of animals that may spread disease. Violators of the regulations may be subject to civil or criminal penalties.

Q. What is the projected length of the eradication program?

A. The goal is to eliminate outbreaks of scrapie by 2010, and to have the U.S. officially declared scrapie free by international standards by 2017.

Q. Does the scrapie eradication program provide indemnity to producers?

A. Yes, producers whose flocks or herds are infected with scrapie will be eligible for reimbursement for animals that are depopulated.

Q. Will producers have other assistance if their flocks or herds are infected?

A. Yes, both the state and federal government animal health authorities will help the producer develop a plan to control and finally to eliminate the disease from their flock or herd. The testing required by the plan will be provided by APHIS and cooperating states.

Q. When will the ID requirements become mandatory?

A. Ninety days after the Interstate Movement Rule is published, the ID requirements will go into effect for most sheep and goats. This rule will go into effect in thirty days for all scrapie exposed and affected animals, and in 180 days for commercial whiteface breeding sheep less than 18 months of age.

What Producers Need to Do to Comply with the Identification System

Q. Where does the producer begin?

A. By understanding that all animals need to be officially identified prior to leaving the premises based on the following criteria:

- All breeding sheep.
- All sheep over 18 months of age.

- All scrapie exposed, suspect, test positive and high-risk animals.
- Breeding goats except low-risk commercial goats.
- Animals for exhibition.

Q. What is the second step?

A. Request a flock identification number and free ear tags from the local APHIS Veterinary Services Area Office or the State Veterinarian's Office. If you prefer to use a different kind of official tag, they may be purchased through specified, approved tag companies. A list of these approved tag companies will be maintained on the APHIS scrapie web page.

Q. What will the tags look like?

A. There are two different classes of tags:

- 1. USDA tags that are provided free to producers, which will be white metal or white plastic depending on the state. These will have assigned flock/premises identification number and a production number unique to the farm.**
- 2. Producers can purchase official tags from approved tag companies. These tags will have an assigned flock/premises identification number, and a production number selected by the producer.**

Q. How do producers get tag application pliers?

A. Producers who request USDA provided tags during FY 2001 and 2002 will receive one pair of tag applicator pliers with their first order. They may buy additional pliers directly from the company. Markets will also be provided with pliers.

Q. When should producers tag their animals?

A. As a practical matter, most producers will tag their animals just prior to shipment.

Q. When can paint brands be used?

A. Paint brands may be used for animals from low-risk commercial flocks moving directly to slaughter and for grazing. This form of identification is only allowed in states that register brands.

Q. Can tattoos be used?

A. Individual registry tattoos issued by breed associations may be used as official identification. Holders of registry assigned tattoo prefixes should have these linked to their premises in the Scrapie National Database through their local APHIS Veterinary Services Area Office.

Specifically about Goats and the Eradication Program

Q. Why are goats included but treated differently than sheep under the new regulation?

A. The incidence of scrapie in goats is very low. When cases do occur they are usually caused by contact with infected sheep.

Q. How are the rules different for goats?

A. Goats in slaughter channels will not be required to carry individual identification numbers when they are moved in interstate commerce unless they are scrapie positive, high risk, exposed or from an infected or source herd.

Commercial low-risk goats may be moved in interstate commerce without official USDA

identification. However, many states require a certificate of veterinary inspection for movement

into their state. Commercial low-risk goats:

- are raised for fiber and meat,
- are not registered or exhibited,
- have not been exposed to sheep,
- are not scrapie positive, high-risk, or exposed animals, and
- are not from an infected or source herd.

Sexually intact goats used for exhibitions such as fairs, shows, demonstrations and petting zoos

or that are registered will be required to carry individual identification numbers and have health

certificates to cross state lines. Goats with legible registry tattoos that are registered with a goat

registry and that are accompanied by a copy of a health certificate listing registry information or

a copy of their registry certificate do not require any additional identification.

Q. What are the restrictions on interstate movement of goats?

A. Goats that fall into any of the following categories will need to be officially identified to move interstate:

- Sexually intact registered goats and goats used primarily for milk production moving or sold for breeding or exhibition. Note: registration tattoos are acceptable for ID when the goats are accompanied by their registration certificate.
- Sexually intact goats that have resided on the same premises as sheep.
- Goats that have been exposed to animals that are affected with scrapie.

Goats that do not have to be identified in interstate commerce:

- Castrated goats that have not been exposed to scrapie.
- Goats moving in slaughter channels that have not been exposed to scrapie.
- Low-risk commercial goats.

Q. If a producer doesn't use registration tattoos, how are his/her goats identified?

A. Request a herd ID number from the local APHIS Veterinary Services Area Office or State Veterinarian's Office. Determine whether ear tags or tattoos will work best and either request free USDA ear tags from the local APHIS Veterinary Services Area Office or State Veterinarian's Office, or purchase ear tags from an approved tag company. The APHIS assigned herd ID number and an individual production number can be tattooed in the ear, flank, or tail fold.

Q. If goats are exposed to scrapie, what will happen?

A. A state or federal veterinarian will do an investigation. Based on the exposure risk of the herd, applicable regulations and the owner's needs, the veterinarian will determine what clean-up and monitoring actions will be taken. This may include depopulation of part or the entire herd with indemnity and/or testing at necropsy of the highest risk goats and those found dead at over 14 months of age. If the herd is determined to be infected or a source herd, the goats will be restricted to the premises except direct movements to slaughter until the clean-up plan is completed.

Q. If a goat herd is determined to be an infected or source herd, can that producer participate in a pilot project?

A. No, the live animal test has not been validated in goats and genetic resistance has not been adequately studied in goats, so there is no scientific basis for a pilot project in goats.

Q. Where can additional information be found?

A. Current information on scrapie is also available on the Internet at USDA's official scrapie website, www.aphis.usda.gov/vs/scrapie.htm, contact your local APHIS Veterinary Services Area Office by calling 1-866-USDA-TAG (873-2824), or on the National Institute for Animal Agriculture (NIAA) website, www.animalagriculture.org/scrapie.