National Scrapie Eradication Program

Fiscal Year 2012 Report

October 1, 2011 to September 30, 2012

United States Department of Agriculture
Animal Plant Health Inspection Service
Veterinary Services
National Center for Animal Health Programs
Ruminant Health Programs

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A Note on Navigation

This presentation has hyperlinks for navigation. Text in blue is a hyperlink to the slide or website being discussed. Additionally, the Adobe navigation bar has been activated to help readers move through this document with greater freedom. The navigation bar is located along the upper left hand border of the page. Below is a description of the action of each button activated on the navigation bar.
Introduction

The National Scrapie Eradication Program focuses on seven primary areas:

- Education and prevention
- Animal identification and compliance
- Surveillance [Regulatory Scrapie Slaughter Surveillance (RSSS) and on-farm]
- Tracing and testing positive and exposed animals
- Cleanup of infected and source flocks through genetic susceptibility testing and indemnification of susceptible exposed animals
- Monitoring of previously infected and exposed flocks
- The Scrapie Free Flock Certification Program (SFCP)

Program Successes

The National Scrapie Eradication Program continued to make excellent progress in FY 2012. In FY 2012, the percent of cull sheep found positive at slaughter, adjusted for face color, decreased to 0.0057 percent (Chart 1). This measure of prevalence has decreased 96.2 percent since slaughter surveillance started in FY 2003 and 24.7 percent since FY 2011. There was also a 47% decrease in the number of infected and source flocks identified during FY 2012 compared to FY 2011. (Chart 2)
In FY 2010, APHIS updated its National Scrapie Surveillance Plan to include sampling minimums for sheep based on their state-of-origin to ensure adequate geographical representation to document scrapie freedom. It also outlines the proposed approach to conducting ongoing slaughter surveillance in nonclinical goats. The plan can be viewed and downloaded at the following address:


The percentage of the sampling minimum achieved by each state is depicted in Figure 1; a State’s percentage is based on the total number of sheep and goats sampled through Regulatory Scrapie Slaughter Surveillance (RSSS) and on-farm surveillance. Sampling minimums are based on the number of breeding sheep in each state. Calculation of the sampling minimums is described in the surveillance plan.
Regulatory Scrapie Slaughter Surveillance (RSSS)

RSSS started April 1, 2003. It is a targeted slaughter surveillance program which is designed to identify infected flocks. Samples have been collected from 354,864 animals since April 1, 2003. There have been 461 NVSL confirmed positive animals (453 classical cases and 8 Nor98-like cases) since the beginning of RSSS. In FY 2012, 40,792 samples were collected at 163 sites in 37 states; 3,610 of these samples were collected from targeted goats. Collection site locations and the states that comprise the Eastern and Western Regions are shown in Figure 2. The number of RSSS samples collected for FY 2012 by month and by region where collected is shown in Chart 3. A monthly comparison of RSSS collections by fiscal year is displayed in Chart 4. Chart 5 depicts RSSS collections by region of collection and by region of eartag origination from FY 2003 through FY 2012. Percent of RSSS samples collected by face color and species from FY 2003 through FY 2012 is plotted in Chart 6. The map in Figure 3 shows RSSS sampling by state of collection; Figure 4 shows RSSS sampling by state of origination (application).

Six RSSS cases tested positive for scrapie in FY 2012 [5 black-faced and 1 mottled-faced sheep (10 – 40% black)]. The distribution of positive cases by state of tag origination (application) is depicted in Figure 5. Chart 7 and Chart 8 show the percent of samples that have tested positive for each face color from FY 2003 through 2012; Chart 1 shows the percent of cull sheep found positive at slaughter and adjusted for face color. Positive animals from the same flock and Nor98-like cases are not included in these charts. A retrospective 6 month rolling average of the percent positive, black-faced sheep sampled at RSSS collections sites is shown in Chart 9. Success in tracing RSSS positive animals to flock of origin is shown in Chart 10. The increase in traceability is not statistically significant due to the small numbers involved.
On-Farm Surveillance

Testing of animals in the field has always been part of scrapie surveillance (regulatory field cases and live-animal testing). As the National Scrapie Eradication Program moves closer towards meeting the goal of identifying the last remaining cases of classical scrapie by 2017, finding and testing all sheep and goats meeting targeted sampling criteria is even more important. In FY 2012, 1,074 sheep and 433 goats were tested through on-farm surveillance. Of those, 5 white-faced sheep (4 Finns and 1 Katahdin) and 10 black-faced sheep tested positive for scrapie. These 15 cases were found as a result of RSSS trace backs and a suspect animal investigation. The number of animals tested on-farm by month and by species for FY 2012 is shown in Chart 11.

Scrapie Testing

In FY 2012, 42,299 animals were sampled for scrapie testing: 40,792 RSSS samples and 1,507 on-farm samples [includes regulatory testing (necropsy and live-animal) and on-farm surveillance](Chart 12). Distribution of sampling by type (RSSS or on-farm) and by species is shown in Chart 13.
Positive Scrapie Cases
In FY 2012, 21 cases of classical scrapie in sheep were confirmed by the National Veterinary Services Laboratories (NVSL); 6 were Regulatory Scrapie Slaughter Surveillance (RSSS) cases and 15 were field cases (Table 1 and Figure 6). No goats were diagnosed with scrapie in FY 2012. Thirty one cases of scrapie in goats have been confirmed by NVSL since implementation of the regulatory changes in FY 2002 (Figure 7). Field cases are positive animals that were tested as part of a disease investigation including potentially exposed, exposed and suspect animals and other animals sampled on-farm.

Infected and Source Flocks
At the beginning of FY 2012, there were 3 flocks with open infected or source statuses (Table 2 and Figure 8). During the year, 7 new source flocks and 1 new infected flocks were reported (Figure 9) and 8 flocks completed a clean-up plan and were released (Figure 10). As of September 30, 2012, 3 scrapie infected and source flocks had open statuses (Figure 11). The ratio of infected and source flocks released to newly identified infected and source flocks for FY 2012 = 1 : 1. New infected and source statuses from FY 1997 to FY 2012 are shown in Chart 2.

Indemnity
Approximately 215 sheep and goats were indemnified in FY 2011. A breakdown by species and registration status is depicted on Chart 14. The average cost for indemnity and disposal was approximately $311 per animal.
Scrapie Flock Certification Program
At the end of the FY, there were 1,316 flocks enrolled in the SFCP—688 complete monitored, 560 certified, 51 export monitored, 10 export certified, and 7 selective monitored (Figure 12). SFCP open statuses by fiscal year from FY 1997 to FY 2012 are depicted in Chart 15.

Sheep and Goat Premises in Scrapie Database Compared to NASS 2007 Census Data
Figure 13 and Figure 14 are maps showing the percent of sheep and goat flocks/herds by state that have been assigned premises/flock identification numbers in the scrapie database.

RSSS Genotyping Study
In 2002-2003, VS assessed the genotype frequency of U.S. sheep as part of the Scrapie Ovine Slaughter Surveillance (SOSS) study. Between 2010 and 2011, VS again assessed the genotype frequency of U.S. sheep to determine if there has been a measurable shift in the scrapie genetic susceptibility of the US sheep population. Overall, the study indicates that the percentage of genetically resistant sheep (171 RR) has increased and the percentage of genetically susceptible sheep (171 QQ) has decreased in the past 8 years. In 2013, VS intends to publish a full analysis of the results.

This report is based on data available in the database and test results reported at the time final year-end reports were generated. As a result this report is not identical to the September 2012 monthly report since it contains updates to data not available at the time the monthly report was generated. RSSS positives are reported based on collection date and may have been confirmed after September 30, 2012.
Percent of RSSS Samples that Tested Positive for Classical Scrapie
Weighted by Face Color

Fiscal Year (2003 – 2012)

Adjusted to exclude multiple positive animals from the same flock. Does not include Nor98-like scrapie cases found through RSSS (2 in FY 2007, 1 in FY 2008, 4 in FY 2010, 1 in FY 2011).
Infected and Source Flocks
New Statuses by Year
FY 1997 – FY 2012

(Chart 2)
Percent of Sampling Minimum* Achieved in FY 2012—RSSS and On-farm Surveillance

* Percent of sampling minimum is based on the total number of sheep and goats sampled through Regulatory Scrapie Slaughter Surveillance (RSSS) or On-farm Surveillance.
RSSS Sample Collections FY 2012

163 collection sites in 37 states & sent to 15 laboratories

(Figure 2)
Slaughter Surveillance Samples Collected by Month, VS Region Where Collected, and Total

FY 2012

(Chart 3)
Slaughter Surveillance Samples Collected by Month

Fiscal Years 2008 to 2012

Month

(Chart 4)
Percent RSSS Samples
FY 2003-2012

(Chart 5)
Surveillance Samples Collected at Slaughter

FY 2003-2012

*Other Sheep: Hair sheep, and those with gray, red, brown, or unknown face color.

(Chart 6)
Regulatory Scrapie Slaughter Surveillance

Number of Samples Collected, FY 2012

BY STATE OF COLLECTION

(Figure 3)
Regulatory Scrapie Slaughter Surveillance

Number of Samples Collected, FY 2012

BY STATE OF TAG ORIGINATION

(Figure 4)
Regulatory Scrapie Slaughter Surveillance

Number of Positive Samples, FY 2012
BY STATE OF TAG ORIGINATION

(Figure 5)
Percent of RSSS Samples that Tested Positive for Classical Scrapie by Face Color during each Fiscal Year (2003 – 2012)

Adjusted to exclude multiple positive animals from same flock. Mottled and white-faced combined. Does not include Nor98-like scrapie cases found through RSSS (2 in FY 2007, 1 in FY 2008, 4 in FY 2010 and 1 in FY 2011).
Percent of RSSS Samples that Tested Positive for Classical Scrapie by Face Color during each Fiscal Year (2008 – 2012)

*White includes sheep with < 1% black on the face.

(Chart 8)
* Through September 30, 2012. Includes only sheep with test results reported. Includes multiple positives from same flock.
Investigations of RSSS Positive Animals

FY 2003 – FY 2012

(Chart 10)

* April – September, 2003
On-Farm Surveillance Testing by Month and Species—FY 2012

(Chart 11)
Number of Animals Sampled for Scrapie Testing by Quarter—FY 2012

![Bar chart showing the number of animals sampled for scrapie testing by quarter for FY 2012.](chart12)

(Chart 12)
RSSS and On-Farm Surveillance Testing by Species—FY 2012

RSSS

91% Sheep
9% Goats

On-Farm

71% Sheep
29% Goats

(Chart 13)
Classical Scrapie
Confirmed Cases in FY 2012

<table>
<thead>
<tr>
<th>STATE</th>
<th>SHEEP</th>
<th>GOATS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>RSSS</td>
<td>On-Farm</td>
</tr>
<tr>
<td>KY</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>MI</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>IN</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>OH</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td>OK</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>PA</td>
<td>0</td>
<td>4</td>
</tr>
<tr>
<td>UT</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>TOTAL ALL STATES</td>
<td>6</td>
<td>15</td>
</tr>
</tbody>
</table>

No Nor98-like cases reported in FY 2012.

(Table 1)
Scrapie Confirmed Cases* in FY 2012

<table>
<thead>
<tr>
<th>Type of Scrapie</th>
<th>RSSS Cases</th>
<th>Field Cases</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classical (Nor98-like)</td>
<td>6</td>
<td>15</td>
<td>21</td>
</tr>
<tr>
<td></td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>15</td>
<td>21</td>
</tr>
</tbody>
</table>

*Reported by State of ID tag. Collected in FY 2012 and confirmed by EOY reporting date. Note: Field cases include animals removed from infected/source flocks, so state totals often include several animals from the same flock.
Scrapie Cases in Goats FY 2002 – FY 2012

<table>
<thead>
<tr>
<th>Type of Scrapie</th>
<th>RSSS Cases</th>
<th>Field Cases</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Classical</td>
<td>0</td>
<td>31</td>
<td>31</td>
</tr>
<tr>
<td>(Nor98-like)</td>
<td>(0)</td>
<td>(0)</td>
<td>(0)</td>
</tr>
<tr>
<td>Total</td>
<td>0</td>
<td>31</td>
<td>31</td>
</tr>
</tbody>
</table>

* Last herd with infected goats designated in February 2011.
### Scrapie Infected and Source Flocks FY 2012 Overview

<table>
<thead>
<tr>
<th>Description</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infected/Source flocks with an open status at the start of FY 2012</td>
<td>3</td>
</tr>
<tr>
<td>New Infected/Source flocks in FY 2012</td>
<td>8</td>
</tr>
<tr>
<td>Infected/Source flocks released in FY 2012</td>
<td>8</td>
</tr>
<tr>
<td>Infected/Source flocks currently with an open status at the end of FY 2012</td>
<td>3</td>
</tr>
</tbody>
</table>

(Table 2)
Scrapie Infected and Source Flocks: Open Statuses as of October 1, 2011

Open source flocks—3

(Figure 8)
New Scrapie Infected and Source Flocks
FY 2012

New source flocks—7
New infected flocks—1

(Figure 9)
Released Scrapie Infected and Source Flocks
FY 2012

(Figure 10)
Scrapie Infected and Source Flocks:
Open Statuses as of September 30, 2012

Open source flocks—2

(Figure 11)
Total number of animals indemnified: 215 (ER-78, WR-137).
Total amount spent: indemnification and disposal $66,933. (ER-$20,984.; WR-$45,949.)
The average cost: $311. per animal.
Scrapie Flock Certification Program: Participating Flocks—EOY 2012

Total Enrolled Flocks—1,316
- Complete Monitored—688
- Certified—560
- Export Monitored—51
- Export Certified—10
- Selective Monitored—7

(Figure 12)
SFCP Open Statues
by Fiscal Year
FY 1997 to FY 2012*

(Chart 15)

(Figure 13)

(Figure 14)