FY 2019 and 2020 Scrapie Investigations

- Pennsylvania
- Indiana
Infected and Source Flocks New Statuses by Fiscal Year - *FY 1997 to 2020*
Percent of RSSS Sheep Samples that Tested Positive for Classical Scrapie - Weighted by Face Color

* FY 2003 – FY 2020*

* As of December 31, 2019. Adjusted to exclude multiple positive animals from the same flock.
Does not include Nor98-like scrapie cases found through RSSS.
Surveillance Samples Collected at Slaughter
FY 2003 – 2019

Other sheep includes hair sheep, and sheep with gray, red, or unknown face color.
Chart includes animals collected for RSSS & CSPS.
Scrapie Cases in Goats
FY 2002 – FY 2019
Comparison by Month of RSSS Samples Collected in FY 2019* to Average of FY 2015 – FY 2018

(Chart 7)
Comparison by Month of RSSS Samples Collected in FY 2020* to Average of FY 2016 – FY 2019

* As of December 31, 2019.
Cumulative Number of Animals Sampled by Month

FY 2019*
Cumulative Number of Animals Sampled by Month - FY 2020*

* As of December 31, 2019.
RSSS & On-Farm Surveillance Sampling by Species

FY 2019*

Slaughter

- 22% Goats
- 78% Sheep
- 33,000 Total

On Farm

- 42% Goats
- 58% Sheep
- 1,730 Total

(Chart 9)
RSSS & On-Farm Surveillance Sampling by Species

FY 2020*

**Slaughter**
- 23% Goats
- 77% Sheep
- 7,641 Total

**On Farm**
- 50% Goats
- 50% Sheep
- 367 Total

*As of December 31, 2019.*
Percent of Sampling Minimum Achieved in FY 2019 - RSSS and On-farm Surveillance Sheep

Percent of Sampling Minimum Achieved:
- ≤ 20%
- > 20 - 40%
- > 40 - 60%
- > 60 - 80%
- > 80 - 100%
- > 100%

States with various percentages indicated:
- Nevada (NV) with ≤ 20%
- California (CA) with > 20 - 40%
- Florida (FL) with > 60 - 80%
- North Carolina (NC) with > 80 - 100%
- South Carolina (SC) with > 100%
Percent of Sampling Minimum Achieved in FY 2020 - RSSS and On-farm Surveillance Sheep

* As of December 31, 2019. Percentage of sampling minimum achieved is based on 22% of the annual sampling minimum.
Percent of Sampling Minimum Achieved in FY 2019 - RSSS and On-farm Surveillance Goats

Percent of Sampling Minimum Achieved:
- ≤ 20%
- > 20 - 40%
- > 40 - 60%
- > 60 - 80%
- > 80 - 100%
- > 100%
Percent of Sampling Minimum Achieved in FY 2020 - RSSS and On-farm Surveillance Goats

* As of December 31, 2019. Percentage of sampling minimum achieved is based on 22% of the annual sampling minimum.
Scrapie Flock Certification Program: Participating Flocks and Herds*

<table>
<thead>
<tr>
<th>Program</th>
<th>Count</th>
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<tbody>
<tr>
<td>Export Certified</td>
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<tr>
<td>Export Monitored</td>
<td>45</td>
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<tr>
<td>Select</td>
<td>145</td>
</tr>
<tr>
<td>Total</td>
<td>232</td>
</tr>
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* As of December 31, 2019
Scrapie Surveillance Changes
FY 2020 National Scrapie Surveillance Plan Changes

• Sample all sheep and goats at least 18 months and under 6 years
  • No longer target older black-faced sheep
  • Sample untraceable sheep and goats
RSSS Genotyping Pilot Project

- Project started in November 2018 to evaluate cost efficiencies of only testing genetically susceptible sheep for scrapie
- Swab used to collected DNA sample from brain
- Rapid test at NVSL to determine genotype at codon 171
RSSS Genotyping Pilot Project

- Obex and retropharyngeal lymph node tissue collected
- Only specimens from genetically susceptible sheep IHC tested
- 68% samples considered genetically resistant or genetically less susceptible
- To date, no samples from genetically susceptible sheep have tested positive.
Scrapie Resistance Genetics in Goats

• Early phase of goat genotyping prevalence study

• Blood samples from:
  • 3,000 goats from slaughter and on-farm sources, and
  • Goats included in 2019 - 2020 NAHMS study (voluntary participation)

• Evaluate codons 146 and 222
Scrapie Program Regulatory changes

• Final Rule and revise Program Standards went into effect April 24, 2019
• Goats now have the same federal ID and recordkeeping requirements as sheep; however, the consistent state ID requirements did not change
• Expanded Use of Owner/Hauler Statements
Scrapie Program Regulatory changes

• All female exposed goats are now considered high-risk animals

• Low-risk animal definition added to:
  • Allow animals to be re-designated when warranted based on epidemiology, and
  • Allow APHIS to establish a policy on genetic resistance in goats and Nor98 like scrapie or other scrapie strains that may be discovered without revising 9 CFR.

• States are required to meet surveillance minimums in FY 2021
## US Nor98-like Cases*

<table>
<thead>
<tr>
<th>Total Cases:</th>
<th>20 since 2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (range in years)</td>
<td>2-16 yrs. old at diagnosis</td>
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<tr>
<td>Mean Age:</td>
<td>5.5 yrs.</td>
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<tr>
<td>Median Age:</td>
<td>5 yrs.</td>
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</table>

* All in sheep
# US Nor98-like Cases

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<thead>
<tr>
<th>Haplotype (^{(136/141/154/171)})</th>
<th>Number</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>AFRQ</td>
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<td>30.77%</td>
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<tr>
<td>ALRQ</td>
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<tr>
<td>ALHQ</td>
<td>4</td>
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<tr>
<td>ALRR</td>
<td>9</td>
<td>23.08%</td>
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<tr>
<td></td>
<td>39</td>
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</table>

<table>
<thead>
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<th>Genotype (^{(136/171)})</th>
<th>Number</th>
<th>Frequency</th>
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<tbody>
<tr>
<td>AARR</td>
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<tr>
<td>AAQQ</td>
<td>13</td>
<td>72.22%</td>
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<tr>
<td></td>
<td>18</td>
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</table>

<table>
<thead>
<tr>
<th>Genotype (^{(141/154)})</th>
<th>Number</th>
<th>Frequency</th>
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<tbody>
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<tr>
<td>LF</td>
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<td>35.00%</td>
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<tr>
<td>FF</td>
<td>3</td>
<td>15.00%</td>
</tr>
<tr>
<td></td>
<td>20</td>
<td>100.00%</td>
</tr>
</tbody>
</table>
Questions?
Thank you

DIANE SUTTON, DVM
Veterinary Services
USDA, APHIS