

SCRAPIE: ERADICATE IT

The sheep industry's scrapie eradication efforts.



American Sheep
Industry Association

June 2018

The goal of the American Sheep Industry Association and the U.S. sheep industry is to eradicate scrapie from our borders. In addition, it is ASI's objective to have the United States recognized as scrapie free in accordance with the World Organization for Animal Health. This 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 email kyle@sheepusa.org.

New Tool to Protect Goats

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Scrapie eradication requires a joint effort in sheep and goats. Genetic scrapie resistance has been an important tool available to the sheep industry but not to goat industries – until recently.

Two goat prion gene alleles have now been shown to confer resistance to classical scrapie. They are S146 (serine [S] amino acid at prion protein position 146), and K222 (lysine [K] at position 222). Goats bearing just a single copy of either one of these alleles have been strongly resistant to infection during natural outbreaks, as well as direct challenge experiments.

In the last 15 years (2002-2017), the European Union has recorded more than 10,500 cases of scrapie in goats. To address this problem for eradication, the European Commission formally requested that the European Food Safety Authority evaluate the strength of evidence for genetic scrapie resistance in goats. The EFSA brought together a panel of European experts to conduct a comprehensive review of research. In its recently published review, the panel concluded that today's evidence for genetic resistance conferred by the S146 and K222 alleles in goats exceeds the evidence that was available for R171 when it was recommended for resistance in sheep. Thus, the commissioned review recommended the use of genetic scrapie resistance in goats to augment eradication programs.

Rules for implementing goat genetics in scrapie eradication programs were left to each European country to develop, but final rules are not yet available. While scrapie resistance alleles in goats have not been formally recognized in the United States, the National Scrapie Eradication Program is considering conducting a herd cleanup pilot project in goats based on S146 and K222 goat alleles similar to that done for sheep in the early days of genetic resistance in sheep.

Goat DNA testing services for S146 and K222 alleles are available at the Veterinary Genetics Laboratory of the University of California-Davis. Details may be found at <https://www.vgl.ucdavis.edu/services/GoatScrapie.php>. Reduced pricing has been arranged for testing done through VGL for members of two of the largest goat organizations

(the American Dairy Goat Association and the American Boer Goat Association).

Similarly, testing services are in development at NeoGen Genomics, Inc. (GeneSeek). Service details will be available at this website: <http://genomics.neogen.com/en/research-and-development-genomic-discovery#sheep-and-goat>. The U.S. Department of Agriculture has not established an approval process for laboratories to conduct official scrapie susceptibility genotyping in goats, so testing at either lab would not be considered official testing for regulatory purposes.

Both S146 and K222 are naturally occurring alleles in American goats. The S146 allele is common in American goats and has been identified in seven of 10 breeds of both meat and dairy types, including: Boer, Tennessee fainting goats (myotonic), Nubian, Alpine, Saanen, LaMancha and Pygmy goats. Among these breeds, the S146 allele is particularly common in Boer and Nubian goats. S146 is probably present in additional breeds and will likely be found as larger numbers of goats from those breeds get tested.

The K222 allele is most often observed in dairy breeds. One United States study identified it in Toggenburg and LaMancha goats. Other studies have identified K222 in most European descended breeds, including Alpine, Saanen and Anglo-Nubian. The K222 allele is probably present in additional breeds, too, and will be found as larger numbers of goats from those breeds get tested.

As with sheep, goat producers are encouraged to maintain overall herd health, productivity and reduce inbreeding by selecting goats superior for many traits (not only scrapie resistance) and from diverse families. By using such measures, goat producers can boost or add scrapie resistance while continuing to improve all other aspects of goat breeding quality. Overall, breeding for strong scrapie resistance in goats, as well as in sheep, will provide one more tool to combat scrapie.

Mention of trade names or commercial products in this publication is solely for the purpose of providing specific information and does not imply recommendation or endorsement by the USDA to the exclusion of others that may also be suitable. USDA is an equal opportunity provider and employer.

To view the National Scrapie Eradication Program current Monthly Report, prepared by the U.S. Department of Agriculture's Animal and Plant Health Inspection Service's Veterinary Services, go to https://www.aphis.usda.gov/animal_health/animal_diseases/scrapie/downloads/monthly_scrapie_report.pdf

Animals Sampled for Scrapie Testing Sheep and Goats

In Fiscal Year 2018, as of May 31, 2018

29,078 animals have been sampled for scrapie testing: 27,703 RSSS and 1,375 on-farm samples
22,770 sheep and 6,308 goats.
0 sheep and 0 goats have tested positive for classical scrapie

Regulatory Scrapie Slaughter Surveillance (RSSS) Statistics

Since April 1, 2003

588,011 samples collected
471 NVSL* confirmed positives

*National Veterinary Services Laboratories

In FY 2018 (as of May 31, 2018)

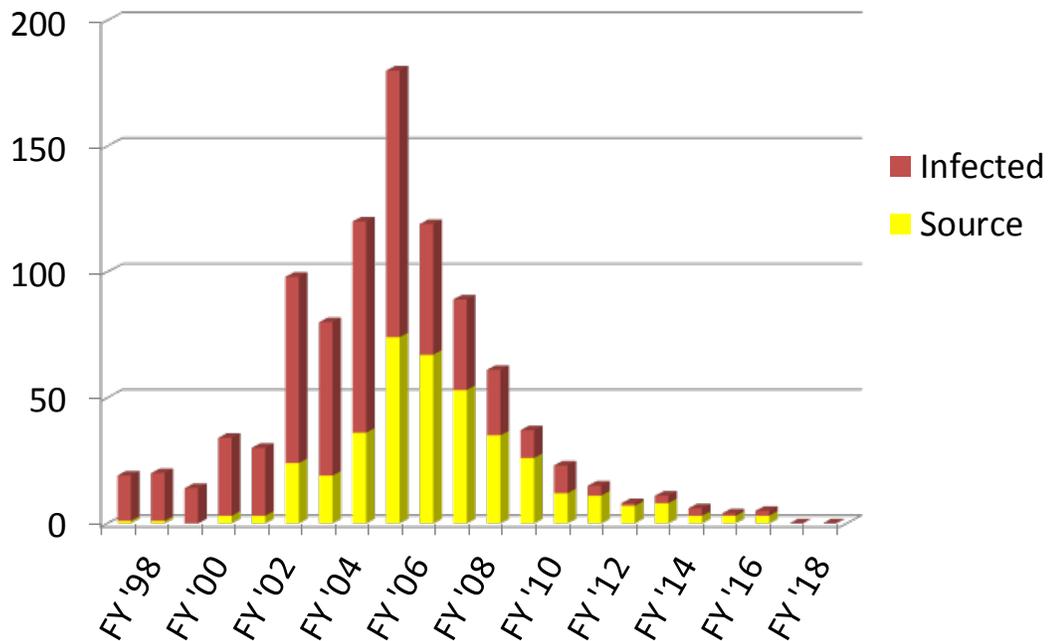
27,703 samples collected (5,834 from goats)
0 NVSL confirmed positive

On-Farm Surveillance

In Fiscal Year 2018, as of May 31, 2018

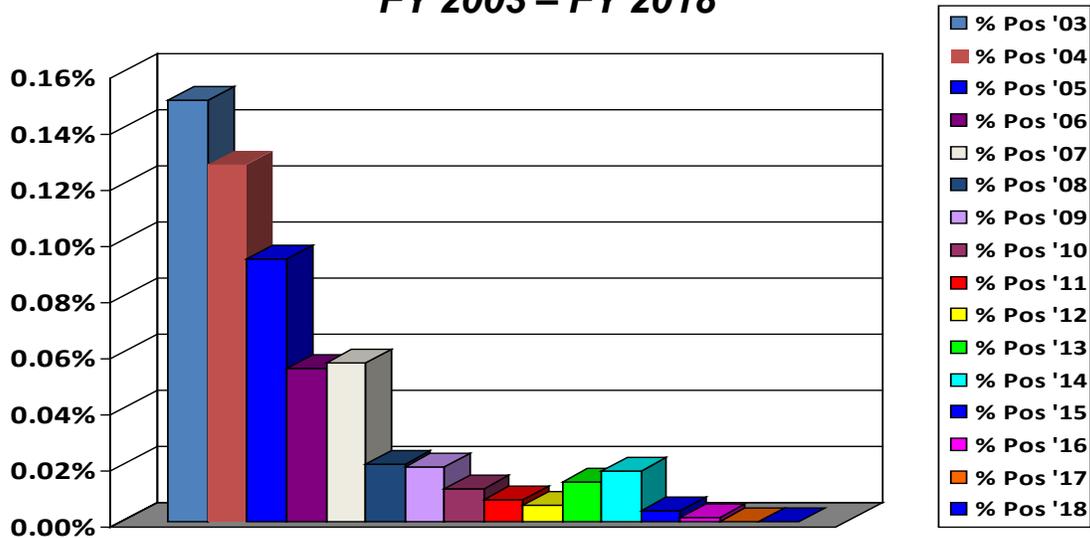
1,375 animals have been tested on farm – 901 sheep and 474 goats

Infected and Source Flocks New Statuses by Year – Fiscal Years 1997 to 2018*



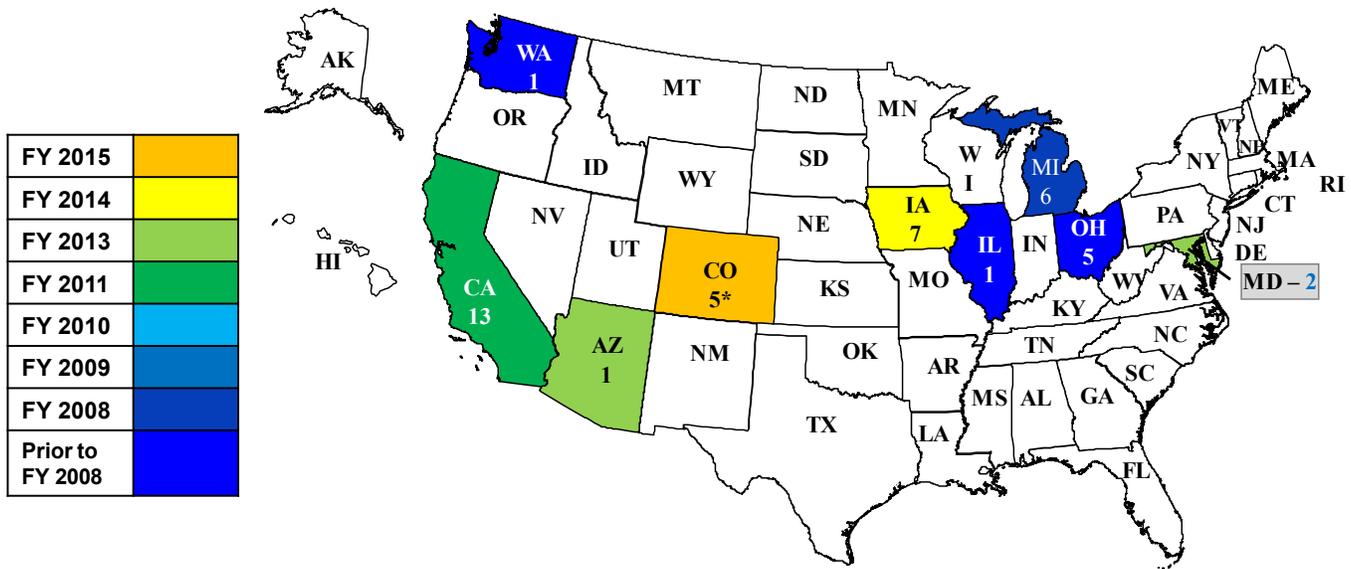
* As of May 31, 2018

Percent of RSSS Sheep Samples that Tested Positive for Classical Scrapie - Weighted by Face Color FY 2003 – FY 2018*



* As of May 31, 2018. Adjusted to exclude multiple positive animals from the same flock. Does not include Nor98-like scrapie cases found through RSSS.

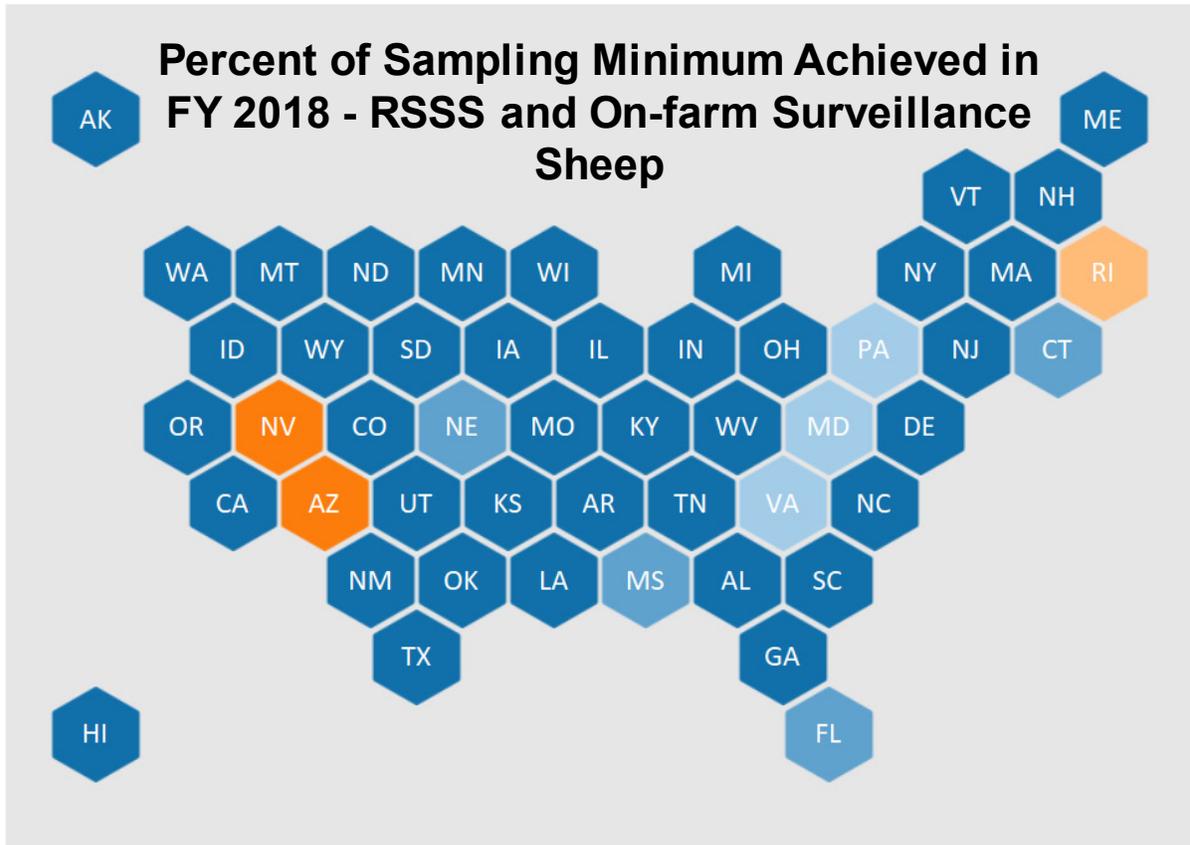
Scrapie Cases in Goats FY 2002 – FY 2018



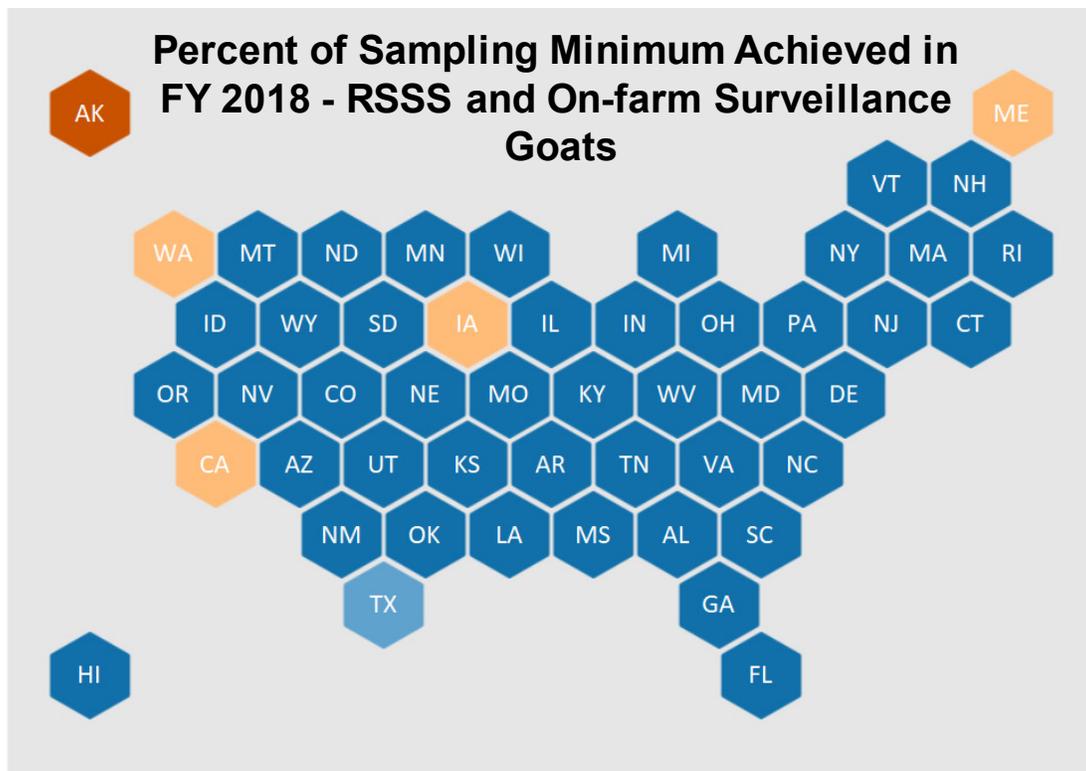
* Only RSSS positive goat, identified in November 2014. 41 total cases. The goat from the long term quarantined herd in CO that tested positive in July 2017 is not included. Color code indicates fiscal year of last case by State.

State Sampling Minimums

The National Scrapie Eradication Program establishes annual sheep and goat sampling minimums for each state, and tracks the states' level of compliance with meeting these minimums. These state minimums help ensure adequate geographical representation, so that APHIS can find the last remaining cases and document freedom from scrapie. State sampling minimums are established based on the population demographics of mature sheep in each state. The calculations used to derive the sampling minimums are described in the National Scrapie Surveillance Plan. Progress toward meeting these minimums in FY 2017 is shown in the following two slides.



* As of May 31, 2018. Percentage of sampling minimum achieved is based on 63% of the annual sampling minimum.



* As of May 31, 2018. Percentage of sampling minimum achieved is based on 66% of the annual sampling minimum. AK and RI have a sampling minimum of 1 and DE has a sampling minimum of 2.

RSSS and On-Farm Surveillance Testing by Species FY 2018*

Species	Type	Age Group			Grand Total
		< 2 Yrs	2 to < 6 Yrs	6+ Yrs	
Goats	Dairy	34	1,452	46	1,532
	Fiber	1	25	13	39
	Meat	137	2,374	117	2,628
	Multipurpose	92	1,475	64	1,631
	Unknown	7	470	1	478
	Total		271	5,796	241
Sheep	Black Face	513	6,237	1,828	8,578
	Mottled <1% Black	2	2,198	23	2,223
	Mottled >1% Black	131	2,164	59	2,354
	White Face	182	8,017	70	8,269
	Other Sheep	102	1,119	92	1,313
	Unknown Sheep		31	2	33
	Total		930	19,766	2,074
Grand Total		1,201	25,562	2,315	29,078

* As of May 31, 2018. Darker shading represents greater number of animals tested that met targeting criteria.

Submitting Mature Heads

APHIS provides shipping boxes and labels for the submission of heads for scrapie testing at no cost to producers. Many veterinary diagnostic laboratories also accept heads for scrapie testing. To request a box or more information on sample submission, contact the veterinary services field office for your state. State contact information is available at www.aphis.usda.gov/animal_health/downloads/sprs_contact/field_office_contact_info.pdf. VS field offices can also be reached through the toll free number, 866-873-2824.

Free ID For Producers

The National Scrapie Eradication Program provides scrapie program metal tags free of charge to producers (call 866-USDA-TAG to get tags). Contact your state or local VS office for more information.

Websites Dedicated to the Eradication of Scrapie

Animal and Plant Health Inspection Service: <http://www.aphis.usda.gov/animal-health/scrapie>

Maryland Small Ruminant Page: <http://www.sheepandgoat.com/updatescrapie>

National Institute of Animal Agriculture: <http://www.eradicatescrapie.org/>

Scrapie SharePoint: <https://share.aphis.usda.gov/sites/vs-sgh/>

(Federal and State employees can access this password-protected site by emailing Diane.L.Sutton@aphis.usda.gov if you need assistance.)

