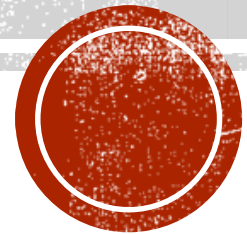


SCRAPIE

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USDA VS Field Operations
Missouri – District 4



WHAT IS SCRAPIE?

- A fatal slow progressing degenerative disease that affects the nervous system of sheep and goats
- Transmissible Spongiform Encephalopathy (TSE)
 - Oldest TSE known
 - First diagnosed 250 years ago in Europe
 - First diagnosed in US in 1947
 - Related diseases: Chronic Wasting Disease (deer, elk, moose),
Bovine Spongiform Encephalopathy (cattle)



AGENT

- Caused by a PRION
 - A PRION is a **protein particle that is the agent of infection in a variety of neurodegenerative diseases**
 - Prions are the only known infectious agents that do not contain DNA or RNA
 - Infected proteins are referred to as PrP^{Sc} , PrP^{TSE} , PrP^{d}



CLASSICAL SCRAPIE VS NOR98

- “Classical”: the infectious form of scrapie
 - Discovered 250 years ago
 - Occurs world wide
 - First case in 1947, sheep flock in Michigan
 - 2 cases in US goat herds in 2019
- “Nor98” or “Atypical” : a non-infectious form sporadically reported in sheep and goats
- Scrapie is not zoonotic
(transmissible to humans)



TRANSMISSION

- Once infected, the animal remains infected for life.
- Transmission of the classical scrapie agent is not completely understood,
- Healthy sheep and goats infected with the agent can transmit disease to lambs/ kids during birth (placenta, and fetal fluids); colostrum and milk
- Adult sheep and goats can become infected by contact with placentas and fluids of infected sheep/goats.
- Scrapie agent is resistant to heat and normal sterilization
- NO VACCINE
- NO TREATMENT

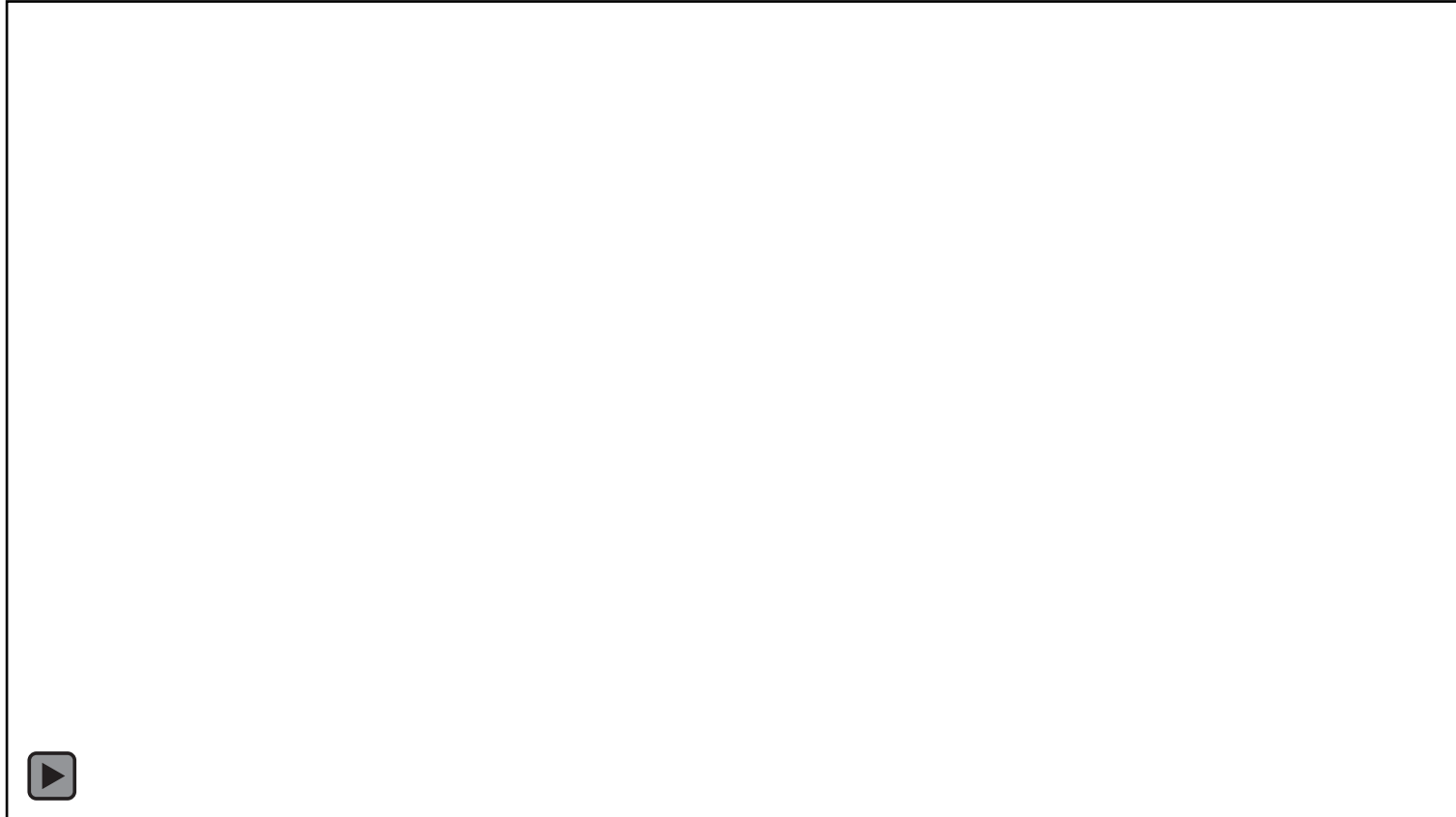


SYMPTOMS

- Infected goats can appear normal
- Symptoms appear 2-6 years after infected
- Symptoms can mimic other diseases initially
- Early signs present as changes in behavior and temperament
- Progresses to tremors involving the head and neck,
- Persistent scratching or biting at sides, poll, hind end, abdomen
- Advancing to lack of coordination and inability to walk
- Scratching or rubbing on fixed objects
- Loss of coordination
- Weight loss despite a good appetite
- Biting at feet, legs,
- Lip smacking
- High-stepping (goose stepping), hopping, swaying of hind end



CLINICAL GOAT



You-Tube.com





You Tube Beth Miller May 24, 2013



SURVEILLANCE

- Slaughter surveillance (RSSS)
- On farm surveillance
 - Adult sheep or goats between 2 years to 6 years of age
 - Tissue sampling on mortalities
- Genetic genotyping
 - S146 and K222 alleles
 - Not all breeds carry alleles – requires more testing to validate prevalence
 - Goats possessing one copy of either allele identified as S146 or K222 have shown significant resistance to Classical Scrapie infection naturally or by experimental means.

USDA ARS Pullman, WA Stephen Smith, PhD and David A. Schneider, DVM, DACVIM, LAIM)
 - Specific labs Veterinary Genetic Testing Lab at UC Davis
NeoGen Genomics, Inc.
 - Testing has not been approved by USDA for regulatory purposes yet.
 - Genetic testing is encouraged for selective breeding of Scrapie resistance in goats



WHY WORRY ABOUT SCRAPIE?

- Cost to industry is \$10-20 million annually due to production losses, increased costs and loss of international export revenue
- Canada and European Union countries ban importation of sheep and goats from the US unless the animals come from farms enrolled in the Voluntary Scrapie Certification Program



WHAT DOES SCRAPIE FREE MEAN?

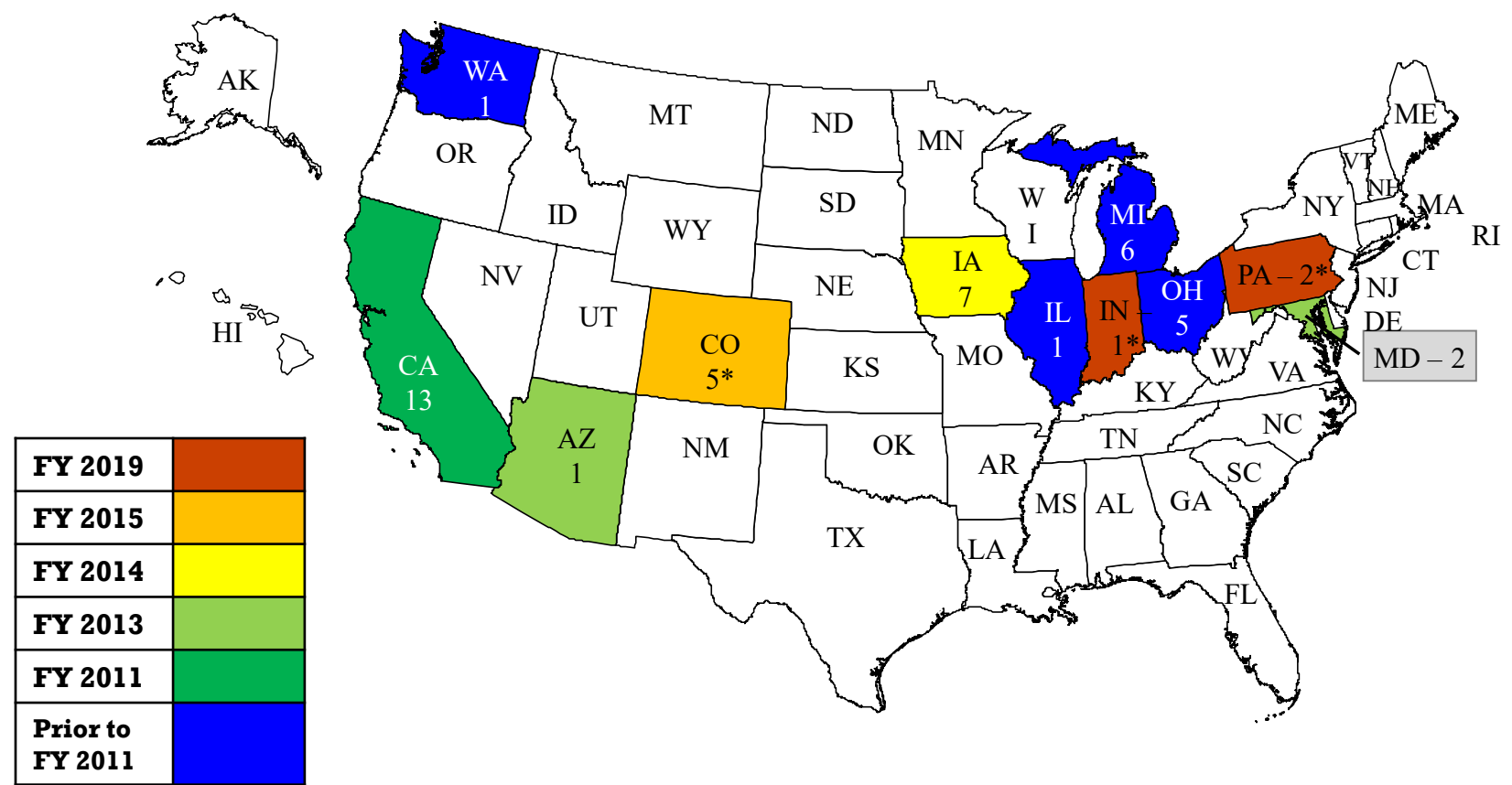
- US sheep or goats must not be diagnosed with classical scrapie for 7 years
- Extensive surveillance testing and outreach activities to encourage producers to report animals with clinical signs
- Currently: No classical scrapie cases identified in 2020.





SCRAPIE CASES IN GOATS

FY 2002 – FY 2020



(Figure 1)

Color code indicates fiscal year of last case by State. 44 NVSL confirmed cases.

** States with 1 RSSS positive goat; samples collected November 2014, July 2018, and June 2019*



RESISTENCE TESTING IN GOATS

- Information from an ongoing 10 year study by USDA-ARS (Animal Disease Research Unit) into resistance to scrapie in goats has identified two potential alleles (genetic markers) that indicate resistance:

S146 (serine at amino acid 146)

K222 (lysine at amino acid 222).

- Goats with one copy of either of these alleles have shown resistance to natural infection and experimental exposure
- Use as selection criteria in breeding



TESTING

- UC Davis offers genetic testing for these markers, and both the American Boer Goat and American Dairy Goat Associations offer discounts on the tests to their members. Another laboratory, Neogen, is expected to offer testing in the future.
- Will not be considered official for regulatory purposes until the USDA offers laboratory approval for scrapie resistance testing of goats, the testing is similar to testing that allowed the sheep industry to select for scrapie resistance. This tool gives goat producers a chance to get a head start on cleaning up their herds



WHAT CAN YOU DO:

- Educate yourself on the clinical signs of Scrapie
- Report any clinical signs by calling your farm Veterinarian or State Veterinarian
- Test and select resistant animals for breeding programs
- Participate in Voluntary Scrapie Certification Program



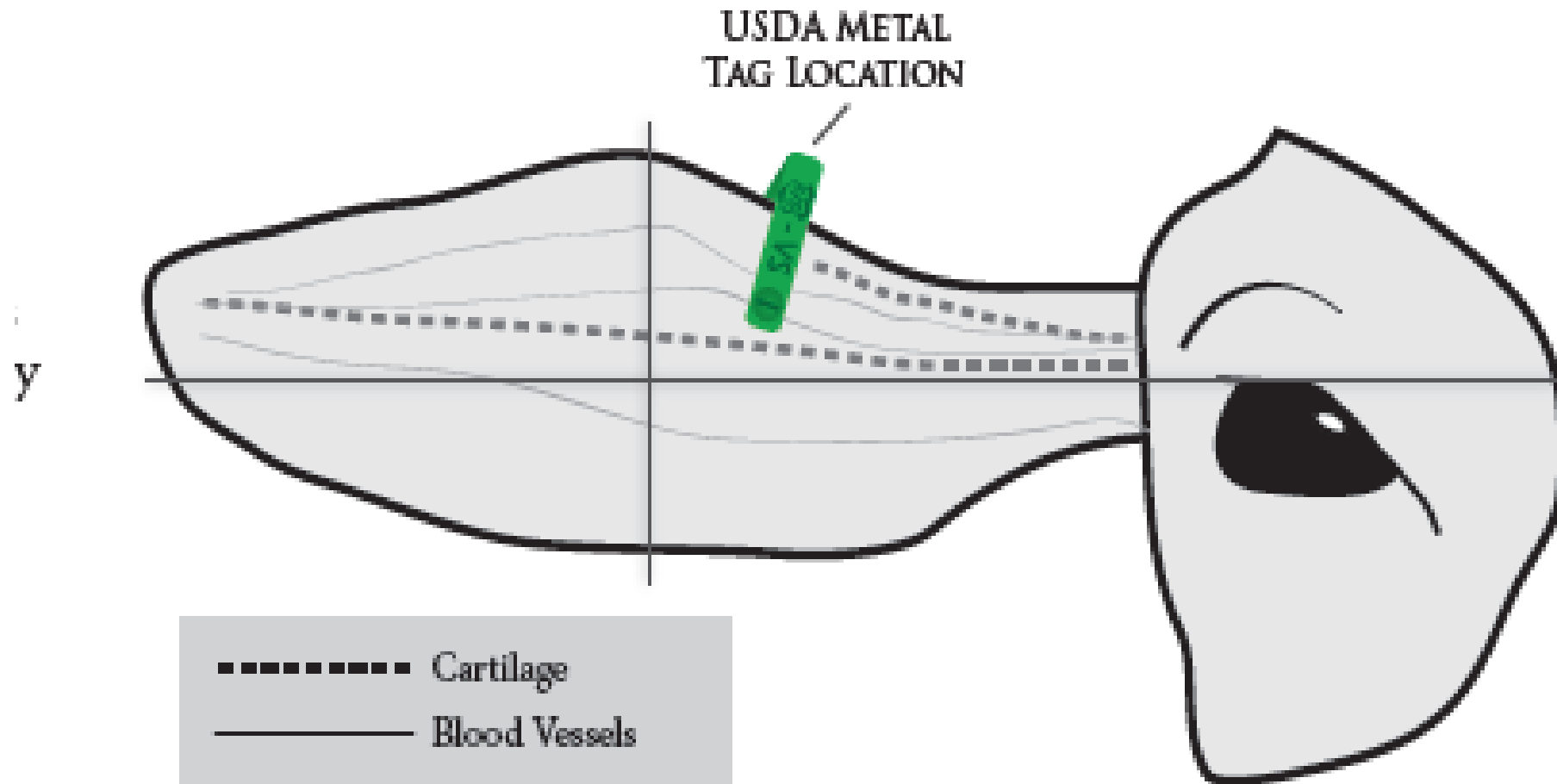
SCRAPIE TAGS

- APHIS discontinued the availability of no-cost metal tags for producers on 8/31/19
- Dealers and markets can still receive metal tags to the end of FY2020
- New producers can receive 100 free plastic scrapie tags until the end of FY2020 or until supply is depleted
- **To request these official sheep and goat tags, a flock or premises ID or both, call 1-866-USDA-Tag (866-873-2824).**
- **All sheep or goats leaving the farm of origin should have a Scrapie Tag**
 - **Exception: wethers under 18 months of age in slaughter channels or headed to federally approved market (This may vary from state to state, check state regs)**



PROPER TAG PLACEMENT

Tagging Cattle



SCRAPIE TAG PLACEMENT



LIVESTOCK MOVEMENT

- Animal Disease Traceability
- <https://www.interstatelivestock.com>
 - Interstate livestock movement requirements
 - ICVI (Interstate Certificate of Veterinary Inspection)

- Owner Hauler Statement

<https://americangoatfederation.org/scrapie-the-program>

Sample Owner/Hauler Statement

Bob Doe

123 East ST
Wood, MI 12345
876-987-0987

4-19-19

Must also contain
Hauler name &
Address if different
from Owner

Group/Lot ID

IN16345, Lot IN16345-041919-1

Number and Type of Goats in Group

6 meat does, 4 dairy does

Name/Address of Destination

The End Facility
1111 Slaughter Lane
Ender, IN 46900

These animals are in slaughter channels

Bob Doe



OHS REQUIRED WHEN

- Goats in slaughter channels (except wethers under 18 months of age)
 - Eartag goats 18 months of age or older unless moving them as a single source group/lot.
- Goats not in slaughter channels that do not have an official eartag or other official ID (except wethers under 18 months of age)
- Goats not in slaughter channels that are moving from your premise to another for grazing that is not included in your records in the National Scrapie Database.



ICVI FOR MOVEMENT

- Exceptions:
 - 1) wethers under 18 months or age*,
 - 2) goats in slaughter channels and accompanied by an Owner/Hauler Statement
 - 3) goats moving to another premises of the same flock that is listed in the National Scrapie Database,
 - 4) goats moving to a federally approved market



RESOURCES

- <https://www.aphis.usda.gov/aphis/ourfocus/animalhealth/animal-disease-information>
- <https://americangoatfederation.org>

