

TSEs & Canadian Sheep and Goats

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Overview

- Scrapie/BSE – Where are we at?
 - Scrapie Surveillance in North America
 - What if there is a positive Scrapie on your farm?
 - Scrapie genetics – how does it work?
 - Voluntary Scrapie Flock Certification Program
 - Export
 - Questions
- 

Scrapie – Where are we at?

- CFIA put out a “Notice to Industry” in November 2008 (handout)
- The intent is to collect samples from dead sheep and goats greater than 12 months of age that exhibit:
 - 1)Weight loss
 - 2)Problems standing or walking
 - 3)Changes in behavior



Scrapie - Canada

- Reported first case of Scrapie 1938
 - Introduction of disease associated with sheep imported from UK
- Continued presence of disease
 - Prevalence unknown



TSEs (Transmissible Spongiform Encephalopathies)

- Which TSEs are we talking about
 - Scrapie
 - BSE



BSE - Canada

- Importations from European countries during the 1980s
- Presence of BSE agent confirmed in Canada
 - What potential was there for domestic exposure of sheep / goats
- CFIA
 - Differential testing of some scrapie positives
 - The concern is the detection of BSE in Scrapie positives

BSE/Scrapie – Why more testing?

- Two cases of BSE in goats reported (France)
- These BSE cases are creating interest in Scrapie becoming a potential human health issue
- Scrapie is a reportable disease,
- USDA wants more samples from Canada,
- USDA has an established Scrapie surveillance program already – Canadian equivalence,
- Continued open border to sheep and goats > 12 mo. of age,



Scrapie Surveillance in Canada

- Slaughter samples are being taken across Canada (goal of 4000 per year);
- Manitoba`s share is 40 or more; (this is based on sheep/goat numbers)
- Over the last twelve months we have tested 63 (these are also on farm submissions)

Canada



Identification

- national
- sheep



Infected premises

- national program
- indemnification



Scrapie flock certification program

- national standards
- several pathways
- deadstock surveillance
- only 1 flock currently enrolled

Surveillance

- Post flock clean-up
- sfcpc (limited)

U.S.



Identification

- interstate only
- sheep and goats



Infected premises

- minimum national standards for State programs
- indemnification



Scrapie flock certification program

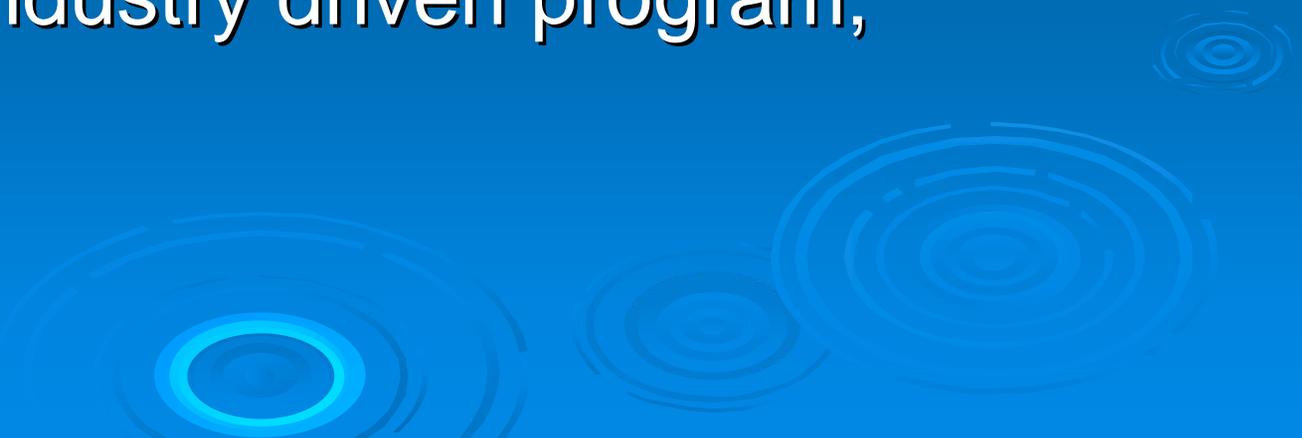
- national standards
- only 1 pathway
- no deadstock surveillance
- has been enrolling flocks for many years (several thousand)

Surveillance

- abattoir (25,000 in 2004)



Scrapie demographics

- 1.3 M sheep in Canada;
 - Prevalence of Scrapie unknown;
 - Voluntary Scrapie Flock Certification Program;
 - Disease Control/Eradication by CFIA;
 - Producer/industry driven program;
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Scrapie Testing by CFIA

Any DEAD sheep/goat: CFIA will come out and collect sample of brain stem;

- Any LIVE sheep/goat with clinical signs suggesting Scrapie , CFIA will come out:
Downer/non-ambulatory: Compensation
Poor doer/ambulatory: Compensation

Surveillance – 4Ds

➤ 4Ds = highest risk population

- Diseased
- Down
- Dying
- Dead



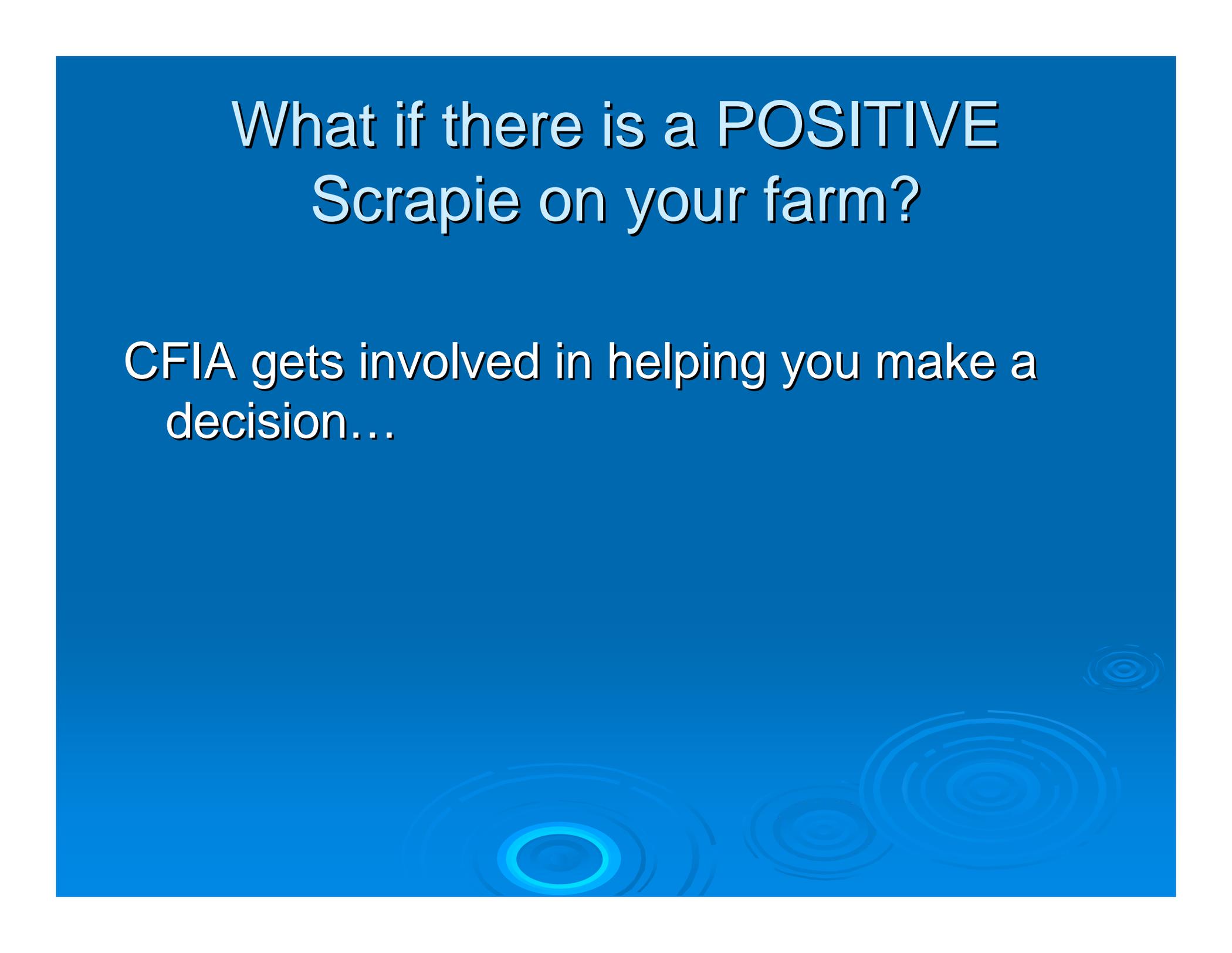
- Moribund animals are representative of the 4Ds
- Similar to the widely publicized BSE criteria

What is CFIA looking at also?

- Differentials for Scrapie when looking at animals on farm:
 - 1) Ectoparasites (lice , mites)
 - 2) Hypomagnesaemia
 - 3) Ovine Ketosis
 - 4) Rabies
 - 5) Listeria
 - 6) Maedi – Visna
 - 7) Pseudorabies
 - 8) Sarcosystosis
 - 9) Starvation
 - 10) Old Age

What if there is a POSITIVE Scrapie on your farm?

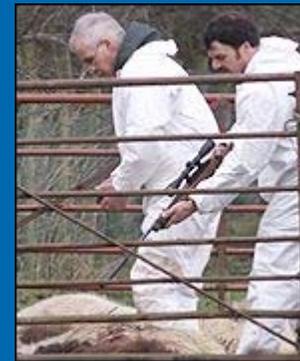
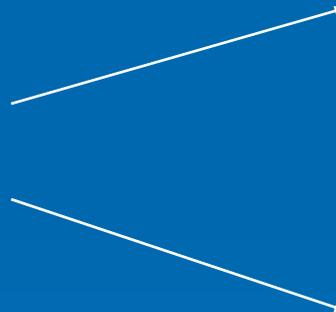
CFIA gets involved in helping you make a
decision...



Infected Premises



Choice



depopulation



genotype

Scrapie genetics – how does it work?

- Flex your brain muscles
- Read...www.scrapiecanada.ca
- And/or www.inspection.gc.ca

Genetics of Scrapie in Sheep

- Differently resistant to the infection based on genetics,
- Presence of certain amino acids on the prion protein results in greater or lesser susceptibility to Scrapie,
- If the prion protein undergoes structural change it causes the disease, by migrating into the reproductive tract of pregnant females,
- At lambing/kidding the Scrapie agent is free to spread (birthing fluids, placenta etc.)
- These amino acids are abbreviated and located at a numeric spot (codon) on the gene (one of 256),
Glutamine: Q; Alanine: A; Valine(V,R) depending on location on the gene,

Which sheep is more likely to get sick?

- Genotype determines this - looking at two locations on the gene (136 and 171) of total of 256 spots (codon),
- NorthAmerican variety of Scrapie

Susceptibility

- Susceptibility

136/171

AAQQ

AVQQ

VVQQ

- Genotype (136,171)

- **HIGH**

Susceptibility

➤ Genotype

➤ Susceptibility

➤ AVQR

➤ Medium



Susceptibility

➤ Genotype

➤ Susceptibility

➤ AAQR

➤ Very Low



Susceptibility

➤ Genotype

➤ Susceptibility

➤ AARR

➤ Negligible



100 head flock example

▪



How many QQ`s?

- E.g.: 100 head flock - you have 34 QQ`s:
- Now, we know: 34 VERY susceptible animals.
- Those are now screened for Scrapie using a test called “third eyelid test”- tissue sample.
- If those are negative, good news;
- Presumably you don`t have active Scrapie infection;
- If some/all those are positive, we slaughter and test the next susceptible bunch: AVQR;

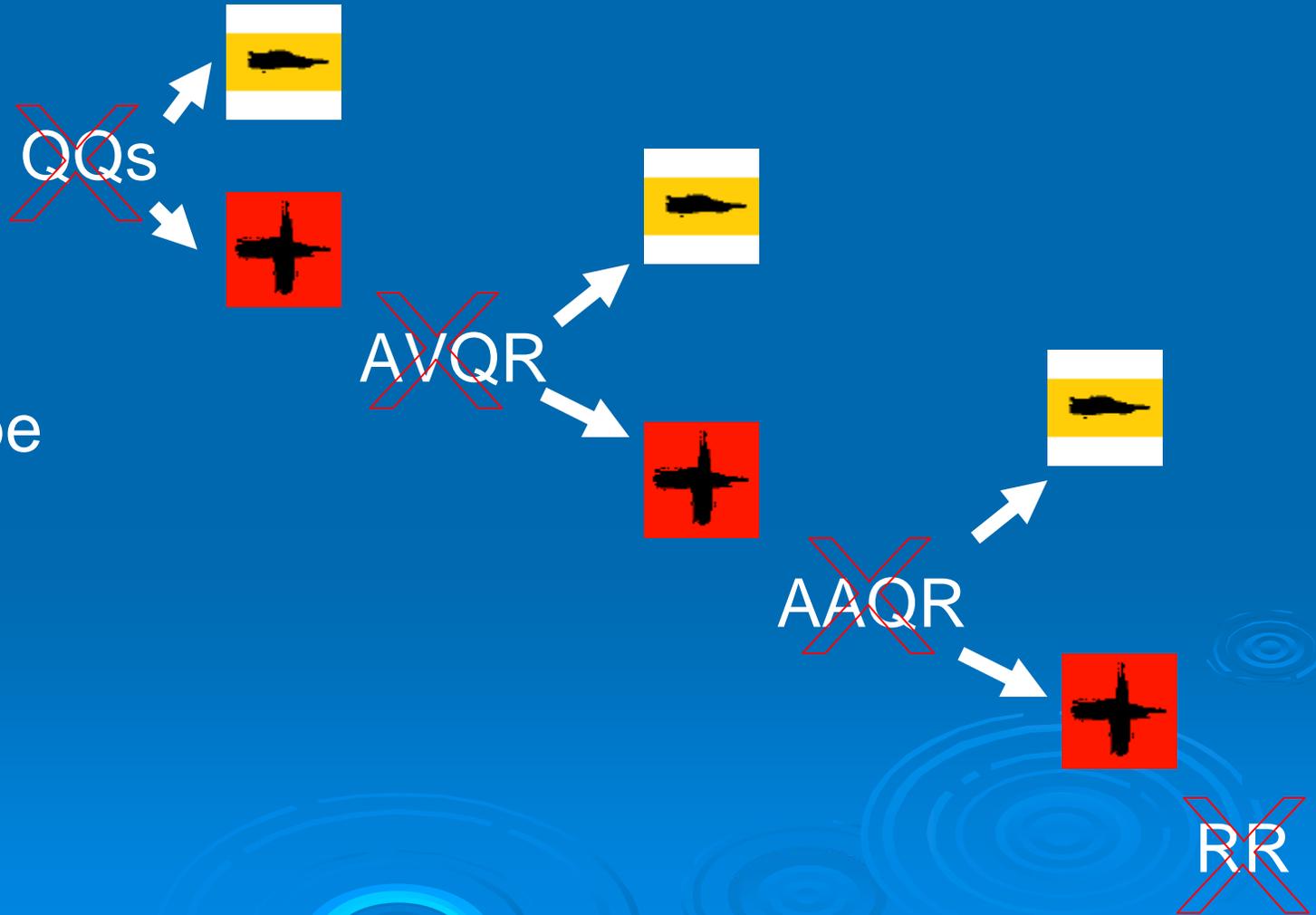
How many AVQR?

- We had 34 QQ`s and 16 AVQR`s
- These are third eyelid tested.
- If all/some are positive, we slaughter;
- If negative , good news;
- Therefore, if we get to stop here, we tested 50 animals with the third eyelid test.

Triage Using Genetics



bleed
genotype



Clear as Mud?

Us CFIA guys will worry about the details



<12m breeding stock



If you would like to keep select breeding stock replacement – can genotype at own cost



genotype

Voluntary Scrapie Certification Program

- More on the websites
www.scrapiecanada.ca and
www.inspection.gc.ca

Voluntary Scrapie Flock Certification Program (SFCP)

- Producer can elect to get involved;
- Accredited Private Veterinarian administers;

Three pathways:

- Pathway 1: For goats : dead stock surveillance only;
- Pathway 2: Sheep only: Third eyelid testing of QQ`s in addition to dead stock testing;
- Pathway 3: Sheep only: QQ`s are removed in addition to dead stock testing;

Administration of SFCP Program

CFIA

➤ **National Standards**

- develop rules
- export certification
- international acceptance

OSMA

➤ **Regional Administrator**

- application
- statistics

OSMA

➤ **Status Assessor**

- advancement decisions
- 2nd level audit

Private Veterinarian

➤ **Delivery**

- oversight on farm
- 1st level audit

Accredited by CFIA

Private

➤ **Testing**

- laboratories

Suspect

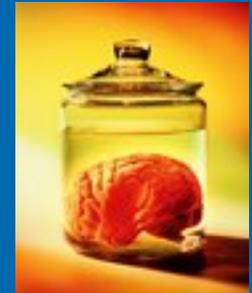


suspect

Clinical suspect



destroy



test

Differential
Diagnosis

1

2

3

Quarantine
observe

Genotype



Surveillance – Mature Deadstock

- Post disease control actions
 - 50+ flocks under surveillance 2003 (647)
 - only 5 flocks currently under surveillance (171)
- Flock certification program
 - Mature deadstock surveillance



Export

➤ To the USA.



US – What was to be allowed

- Sheep and goats <12 months of age:
 - Direct to slaughter
 - To registered feedlots
- Must be identified
 - CSIP tag
 - Hot or freeze brand “c” on right hip
 - Sealed conveyance
 - Documents.....



Contact information for CFIA offices across Manitoba

- Biossevain (204) 534-6288
- Brandon (204) 726-7556
- Carman (204) 745-2292
- Dauphin (204) 638-3322
- Portage la Prairie (204) 239-8420
- Steinbach (204) 326-8331
- Winnipeg (204) 983-2219

Questions

