Biosecurity Basics in Sheep and Goats

NYS Dept. of Ag&Mkts
Division of Animal Industry
OK, now where... and how... do I hide 'em?
Presentation Goals

- Define biosecurity (probably already done – but we’ll do it again)
- Identify some general biosecurity principles for sheep and goat flocks/herds
- Discuss a specific disease example
- Keep >50% of the class awake...
Before I forget…

- Can you say, “zoonotic?” I knew you could; I like the way you say that...

- MANY of the diseases in sheep and goats are of zoonotic concern
  - Orf
  - Chlamydia (Enzootic abortion)
  - Leptospirosis
  - CLA
  - Listeriosis
  - Brucellosis, Q fever, etc…
So, what is biosecurity?

A collection of management practices which protect a herd/flock from the **entry of new diseases** and **minimizes the spread** and/or adverse effects of disease within a herd/flock.
Preventing Entry of New Dz.

- Identify sources of disease risk
  - Incoming animals - #1 source
    - Purchased livestock – breeding genetics #1
    - Borrowed rams/buck – breeding genetics #2
    - Returning ewes/does – breeding genetics #3
    - Visiting does/ewes – breeding genetics #4
Preventing Entry of New Dz.

- Other disease sources
  - Show animals – at the fair or returning
  - Transport vehicles
  - Manure, bedding
  - People
  - Pests, pets, wildlife
  - Feed
  - Water

- Take steps to minimize your risk
Importation Basics

- NYS interstate import regulations
- Sheep: bluetongue if from endemic state
- Goats: brucellosis and TB
- Llamas...huh, llamas?
  - Bluetongue, brucellosis, TB, anaplasmosis
- All: health certificate ‘guarantees’ a physical exam
- Sheep and Goats: USDA scrapie tag
Health Certificate and the Physical Examination

- General condition
  - Thrifty? Well fed?
  - Signs of diarrhea? Coughing?
  - Skin lesions? Coat condition?

- The #1 problem present in all flocks and herds is parasites – various kinds
  - Does the condition of the animals and general mgmt. give you a hint re: parasites?
Health Certificate

Physical Examination

- History – any disease history in herd/flock?
- Eyes, hooves, teats, udders, joints, LN, repro
  - **Eyes:** Pink eye
  - **Hooves:** Foot rot
  - **Teats and udder:** contagious mastitis, retroviral infection, *Mycoplasma spp.*
  - **Joints:** *Mycoplasma spp.*, CAE
  - **LN:** CLA (*Corynebacterium pseudotuberculosis*)
  - **Repro:** *brucella, ulcerative dermatitis*
Scrapie

- TSE of sheep and goats
  - Prion disease
- Transmitted in birthing fluids, placenta
- Long incubation period (2 – 5+ yrs.)
- Signs are neurologic and slow to develop:
  - Behavior, rubbing, lip-smacking, gait abnormalities (hopping), down then dead
- Understand possible causative link to BSE
Scrapie Program

- **Good biosecurity begins with good ID**
- USDA Requirement for sheep and goats moving from the farm:
  - Traceability to farm of origin
- All breeding animals of any age
  - All sheep (even wethers) over 18 mos.
- All animals going to a fair/show
- ADGA tattoos OK, but must register
Testing Incoming Animals

- Interstate regs
- CAE – goat test numero uno
- Mastitis culture – dairy animals
  - Always include *Mycoplasma spp.*, BTC dairy goats
- OPP (retrovirus – related to CAE)
- Other tests: scrapie (3rd eyelid, genetic tests – should now include herd history)
  - Other tests are available but seldom used, e.g. Q Fever, border disease
Prophylactic Treatment of “INCOMING”

- Isolation from flock/herd: 2 wk – 3 mos.
  - Pregnant does/ewes birth elsewhere if poss.
- Transport trailer should be C-L-E-A-N
- Routine deworming – maybe repeated
- Hoof trimming and treatment
  - ZnSO₄, discard trimmings like med. waste
  - Keep own herd off pasture used for 2 wks.
- C+D & T vax incoming animals
- Vaccinate incoming & home herd: Vibrio+Chlamydia
Handling Isolated Animals

- Do chores to handle isolated animals last
- Wash hands, boots, use clean clothing
- Do not dispose of bedding or manure near home herd
- Do not follow new herd on pastures
- Disinfect equipment
One or Two Husbandry Biosecurity Basics

- **Deworming** – before coming in for winter and before putting out on pasture
- **Foot rot** – treat all animals (often repeatedly) – at once – and do not put back on affected pasture for at least 2 weeks
- **Vaccination** – typically given in last trimester of pregnancy to improve colostral antibody content – both on and onto farm biosecurity
Speaking of Vaccination…

What is Vaccination

- According to Taber’s Cyclopedic Medical Dictionary:

“Vaccinate: To innoculate with vaccine to produce immunity against disease.”

“Vaccination:…to establish resistance to a specific infectious disease.”

- Our Goal: to produce immunity and establish resistance
Speaking of Vaccination…
What Vaccination is Not

Immunity and Resistance
Immunity Triad

Animal Health

Stress

Vaccination Program
Speaking of Vaccination…

Some Vaccination Specifics

- Vaccination: producing immunity to establish resistance – Give all annually after boosters
- Sheep and Goats: C+D & T
  - *Clostridium perfringens*: overeating dz.
  - Two toxins: C & D – both included in vax
  - Tetanus toxoid also usually included
- Chlamydial abortion
  - Vaccinate incoming animals and own herd/flock
- Sheep only: EAE (Vibrionic, enzootic abortion ewes)
  - Give before exposure to new ewes or ram
Newborn Biosecurity

- CAE/OPPV – goats/sheep route of infection of newborn via colostrum and milk
  - Have frozen or tested bovine (2 – 4 oz.); heated goat
  - Milk replacer; pasteurized milk
- Colostrum – be aware of dairy colostrum risk
  - Johne’s transmission – insist on fecal tested source
- Clean placentas and birthing area
  - Most causes of abortion, scrapie – USE GLOVES – WASH HANDS - remember zoonosis
Parasites - Start Here for On-Farm Biosecurity

- ALL Sheep and Goats have Parasites
  - #1 problem for these species
- COCCIDIOSIS...all together, now...
  - MAJOR disease concern
  - Many controls available – start young; tx often
- Regular deworming – as discussed
  - Be aware of parasite anthelmintic resistance
**Equipment Biosecurity**

- Disinfect equipment (shears, hoof knives) between uses
- Single use needles, properly disposed
- Don’t re-enter a bottle w/dirty needle
- Milking machines – know your dairy
  - Contagious mastitis, CAE
CAE (CAEV): Caprine Arthritis-Encephalitis Virus

- One of the most common infections in goats worldwide
  - US studies reveal prevalence: 38% - 81%
- Only 35% of infected goats ever show clinical signs
- Production parameters in infected does are negatively affected by infection
- Let’s discuss the disease and control
CAE – What causes it and what does it look like?

- RNA retrovirus of lentivirus group
  - Closely related to OPPV – baa-aad sheep dz.
  - This virus multiplies in mature WBC called macrophages
- Kids: 2 – 6 mos: leukoencephalomyelitis
  - Neurologic disease – rear leg ataxia to recumbant
- Adults: chronic arthritis (synovitis-arthritis)
  - Other systems affected: mammary, respiratory, CNS
Can we know which animals are infected, and how can we know?

- Infected animals produce circulating antibodies
  - Antibodies are not intermittent
  - There is time from exposure to seroconversion

- Blood testing – two tests: AGID and ELISA
  - ELISA test is more sensitive - better choice here
  - Testing starts at 5 – 6 mos. of age

- Of course, there are clinical signs
Which animals are susceptible, and how is it transmitted?

- Animals of all ages and both sexes are susceptible
- Transmission usually has priorities:
  - #1 (2 #1’s here) Colostrum and milk
  - Respiratory transmission – in contact animals
    - It is assumed intimate, long-term contact is req’d (based on viral growth in body); but, this is not proven
  - Birthing fluids (lochia); in utero???
  - Iatrogenic (same needles, equipment) – unsure, but blood contamination makes sense...
  - Venereal – no proof in semen; but does bred to positive bucks more likely to seroconvert
    - Consider respiratory and oral contact
Now you know what it is and how it’s transmitted... control?

1) Stop kids from nursing
   - Pasteurize colostrum and milk; replacer; cow?

2) Separate from doe immediately

3) Wash kids off at birth

4) Segregate + and – animals
   - Feeders, fence line, water, etc.

5) Milk neg. animals B4 + animals
   - Include teat towels, disinfect machines after use
CAEV Control (continued)

- 6) Blood testing every 6 mos. of negative animals for segregation/cull
  - Low prevalence may cull
  - Test *all* incoming animals for disease
- 7) Venereal exposure – bucks? Visiting does?
- 8) Equipment, needles, etc. Hygiene
- 9) Fairs? Shows? What would you do?
What Results Can You Expect?

- 10% of kids will seroconvert in spite of a good CAE program
- However – one study found 60% of negative goats converted after only 10 mos. with an infected herd
  - Know what to expect – and implement biosecurity intervention strategies based on specific disease knowledge
Diseases Galore

- Plenty of infectious dz.
  - *Mycoplasma spp.*
  - Mastitis
  - Scrapie
  - Parasites
  - EAE
  - Pink eye, sore mouth, Q Fever, OPPV, ringworm
  - CLA...
This is CLA; we’re not talking about it, but I have these pics…

- Know what to expect – and implement biosecurity intervention strategies based on specific disease knowledge.
What Results Can You Expect?

- It depends… start with good ID and records
- Understand the basic husbandry and on-farm biosecurity
- Learn about the disease threats, how they enter the farm, and then spread
- If you are daily both diligent and disciplined
- You should have good results
- Or…
Did you understand any of that; like, one word?

Zzzzzz... **huh*  * Any of what?
Questions?

I’m all ears...
Thank you