Sheep and Goat Parasites in Western Canada

Michel Lévy, DVM

Alberta Goat Breeders Association
Grande Prairie
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Discussion points today

- Review of the important GI parasites
- The essentials of a parasite control program
- On going project at the University of Calgary Veterinary Medicine:
  - parasite situation in Western Canada
  - how our research can help sheep and goat producers

Parasites of importance

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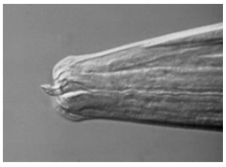
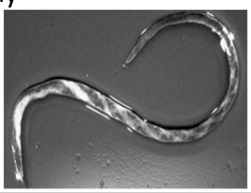
Parasites of importance

- Abomasum
  - Haemonchus
  - Teladorsagia
  - Trichostrongylus
- Small intestine
  - Trichostrongylus
  - Cooperia
  - Nematodirus
  - Strongyloides
- Large intestine
  - Oesphagostomum
  - Chabertia
  - Trichuris

Haemonchus contortus

- "Barber's pole"
- Blood sucker
- Prolific egg producer
  - 5000-10,000 eggs/day
- Pasture contamination
- Acquires resistance fast

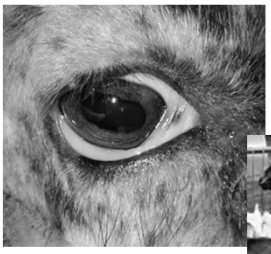




Barber's pole: Signs

- Young goats
  - Sudden death
  - Weak and anemic
  - End of summer
- Does
  - Weak and anemic
  - Bottle jaw: low protein in blood
  - Reduced production: most common form

Barber's pole: Signs

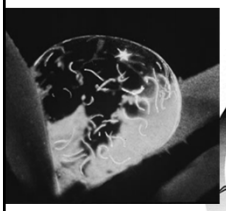


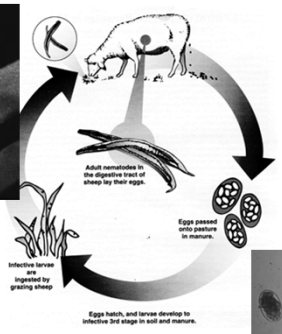
Teladorsagia circumcincta

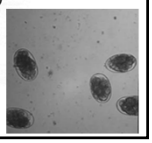
- Puncture wall of the glands of the abomasum
- Prevent proper digestion
- Suck proteins from the goat

- Cause
  - Bottle jaw
  - Diarrhea
  - Poor growth

Cycle of the parasites







Typically:
70% on pasture
30% in the sheep

Survival in pasture

- Over-Wintering of larvae on pasture
  - Teladorsagia well adapted to cold and snow
  - Haemonchus less adapted but…
- Survival during grazing season
  - Depends on temperature and humidity
  - Hot temperature shorten survival
  - Cool temperature prolong survival of L3

Worms adaptation

- Hypobiosis /Arrested development
  - Development arrested at the L4 stage
  - No adult-> no eggs-> no disease
  - Fall (cold climate)
  - Dry season (hot climate)
  - Re-emerge in the Spring
    - Contaminate pastures

Worms adaptation

- Periparturient rise
  - Around kidding time
  - 2-4 weeks before up to 8 weeks after kidding
  - Lowering of immunity
  - Major increase in egg production, pasture contamination and kid infection.
  - Strategy: deworming and nutrition

Diagnosing Parasitism

Clinical signs + Fecal egg count

Diagnosing the Barber's pole

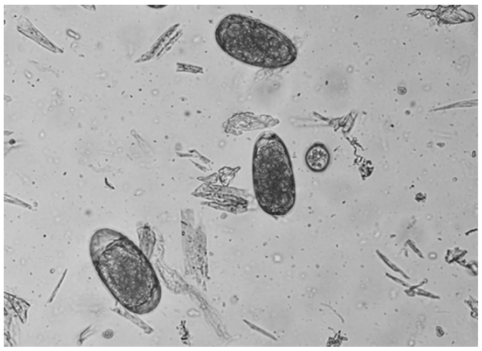
Diagnosing Parasitism

Clinical signs + Fecal egg count

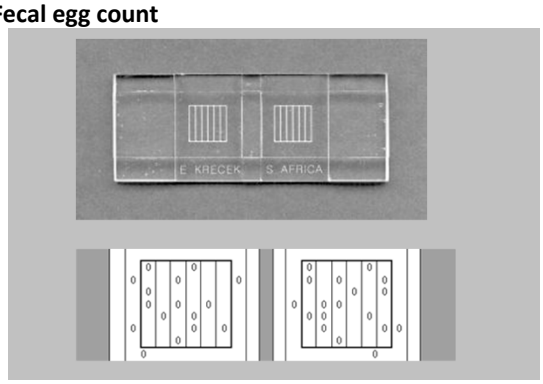
How to get "poop" samples

- ✓Goat in corner of pasture/from rectum or from the ground
- ✓Collection in "Ziploc bags". **Take the air out**
- ✓In a cooler
- ✓Kept cool (not frozen or on ice) -> lab overnight
- ✓Pooled sample vs individual samples

Diagnosing parasitism



Fecal egg count



The Essentials of a Parasite Control Program for Sheep and Goats

Goals of the program

Controlling parasites without allowing for the development of dewormer resistance

Control of parasites

2 concurrent approaches

Judicious use of dewormers

Management of pastures and animals

Anthelmintics

Dewormer	Sheep dose	Goat dose
Ivermectin drench (Ivomec)	0.2 mg/kg	0.3 mg/kg
Albendazole (Valbazen)	5 mg/kg	7.5-10 mg/kg
Fenbendazole (Safe Guard)	5-10 mg/kg	10 mg/kg
Closantel (Flukiver)	10 mg/kg	10 mg/kg
Derquantel/abamectin (Startect)	2 mg Derquantel 0.2 Abamectin/kg	
Levamisole (Prohibit)	7.5 mg/kg	12 mg/kg (goats are sensitive)
Moxidectin (Cydectin)	0.2 to 0.5 mg/kg	0.5 mg/kg

Anthelmintics

- **Abamectin/Derquantel: *Startect*, (Zoetis) approved in CANADA since February 2018**
  - **No studies on effective dose**
  - **No study on toxicity**
  - **No study on withdrawal time**
  - **Not to use in goats (yet)**

Drench, injection or pour-on?

- Drench is probably best when possible (best if 24h fast before)
- Injections: faster but concern about persisting low levels
- Avoid Pour-on: Absorption is variable

Combinations of drugs, not Rotation

- Strongly recommended in the U.S. in the last 3-4 years.
- Advantages:
  - ✓the effects are additive so efficacy ↗
  - ✓less resistant worms ➡ dilution of resistant worms on pastures.
- Application to this strategy in Canada???
- Talk to your vet

Judging Treatment Efficacy

- Does and kids look better
- Fecal egg Count reduction test (FECRT)
  - FEC pre and post treatment
  - FEC should decrease by 95%
  - Time of sampling is important
    - 10-14 days BZ
    - 7 days LEV
    - 14-16 days IVM, MOX

Drench "Failure"

- Insufficient dose
  - Underestimation of animal weight
  - Faulty equipment
  - Poor administration technique
- Inactive medication
  - Out of date
  - Incorrect storage
  - Poor quality products (Generics)

Drench "Failure"

- Inappropriate drug for target parasite
- Rapid re-infection on heavily contaminated pasture
- If all the conditions above have been verified then think about

Resistance to the dewormer you are using

Resistance

- Resistance is a **heritable** reduction in efficacy of a drug against a particular species and stage of parasite
- Testing for resistance:
  - Fecal Egg Count Reduction Test
  - Resistance when the reduction in FEC is less than 95%

Control of parasites

2 concurrent approaches

Judicious use of dewormers

Management of pastures and animals

Management of Pastures and Animals

- Safe pastures
- Pasture management
- Animal management
- Targeted selective treatment (FAMACHA)
- Refugia

Pasture Management

Safe pastures include:

- Tilled fields or burned pastures
- Harvested hay fields
- Not grazed yet or left idle for 90 days in summer or 180 days in fall/winter
- Seasonal forages

Pasture Management

- Reduce stocking rates
- Use rotation through pastures
- Don't graze too close
- Leave a pasture vacant as long as practical
- Co-grazing with cattle or horses or rotate species
- Avoid sheep and goats or lamas grazing together

Animal Management

- Group susceptibility:
  - Kids
  - Late Gestation does
  - Lactating does
- Graze susceptible animals on safer pastures

Animal Management

Targeted Selective Treatment

Do not treat every animal

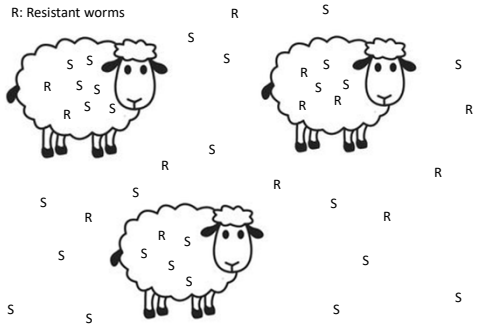
Use **FAMACHA**

Animal Management: use of the FAMACHA

- Do not treat categories 1-3 in sheep
- Treat categories 4-5 in sheep
- It is only a guide, not 100% accurate
- Together with record, FAMACHA can help make culling decisions

Refugia (Worms in refuge)

S: Susceptible worms
R: Resistant worms



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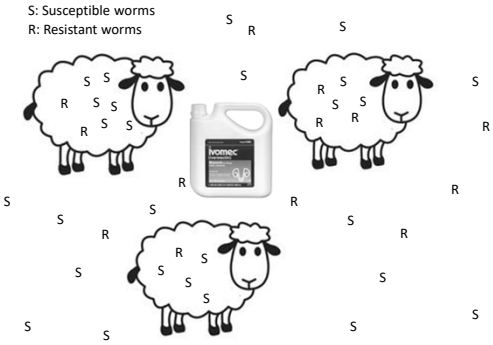

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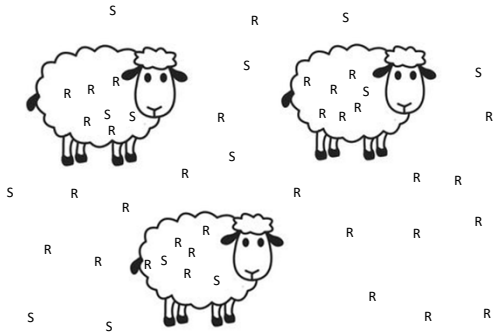
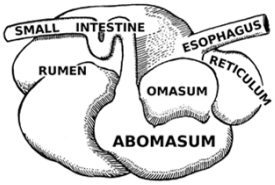
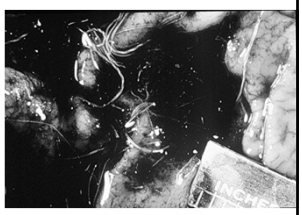


Check for adult worms

- If a doe or a kid dies, for whatever reasons why not do a necropsy and look in the 4th stomach?





Animal Management

Don't buy resistant worms

- All new additions should be quarantined and aggressively dewormed upon arrival
- Should remain in quarantine for 10 - 14 days
- Perform FEC to confirm that no eggs are shed

In summary

Work with your veterinarian to customize and implement control programs that include components such as refugia, surveillance, treatment with effective drugs along with best practice for sustainable management

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