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# Managing Internal Parasites: Know Thy Enemy



— Presented by —

**Linda Coffey**

NCAT/ATTRA

— Hosted by —

**FACT**

Food Animal Concerns Trust



**ATTRA**  
SUSTAINABLE AGRICULTURE

# Introductions

- **Food Animal Concerns Trust (FACT)** is a national nonprofit organization that advocates for the safe and humane production of meat, milk, and eggs.
- **Larissa McKenna**  
Humane Farming Program Director  
Email: [lmckenna@foodanimalconcerns.org](mailto:lmckenna@foodanimalconcerns.org)  
Website: [foodanimalconcernstrust.org/farmer](http://foodanimalconcernstrust.org/farmer)
- **FACT's services** for livestock and poultry farmers include:
  - Fund-a-Farmer Grants
  - Conference scholarships
  - Free webinars
  - Humane Farming Mentorship Program



# Introductions

- **National Center for Appropriate Technology (NCAT)** is a national nonprofit organization that advocates for small-scale, local, and sustainable solutions to reduce poverty, promote healthy communities, and protect natural resources.
- **Linda Coffey**  
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Website: [www.attra.ncat.org](http://www.attra.ncat.org)
- **NCAT manages** the ATTRA information service for farmers:
  - Free technical advice: 800-346-9140
  - Tutorials, videos, webinars, podcasts, online courses
  - Farmer-friendly publications



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## Master Publication List

The following list contains more than 300 easy-to-read titles covering organic production, livestock, horticultural crops, business and marketing, farm energy, water and pest management and more. Our publications are written by our sustainable agriculture specialists, who are experts in their fields, and are meant to help farmers, ranchers and others involved in sustainable agriculture.

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# Our Presenter



**Linda Coffey**

NCAT/ATTRA and Maple Gorge Farm  
Prairie Grove, Arkansas



# Acknowledgements

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- Dr. Ray Kaplan, Dr. Tom Terrill,
- and the rest of the American Consortium for Small Ruminant Parasite Control (ACSRPC).

We all benefit from their work, see: [wormx.info](http://wormx.info)



# American Consortium for Small Ruminant Parasite Control

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# Part 1: Know Thy Enemy

**Part 2: Outsmart the Enemy**

**Part 3: Attack  
the Enemy**

*Join us for all  
three to get  
the full picture!*





# Why go through all of this?

- Internal parasites are the worst health problem for small ruminants
- Parasites have adapted to our deworming medications
- Deworming medications were always a short term fix
- Knowledge is power!



# Today we will cover:

- The basic life cycle of internal parasites
- Impact of parasites on animals
- Symptoms of internal parasite infection
- Survival mechanisms of parasites



# Parasite life cycle

- Parasite larvae ingested
- Adults make residence in the body
- Adults lay eggs
- Eggs passed in feces
- Eggs hatch and larvae move up blades of grass
- Animals ingest larvae (repeat cycle)

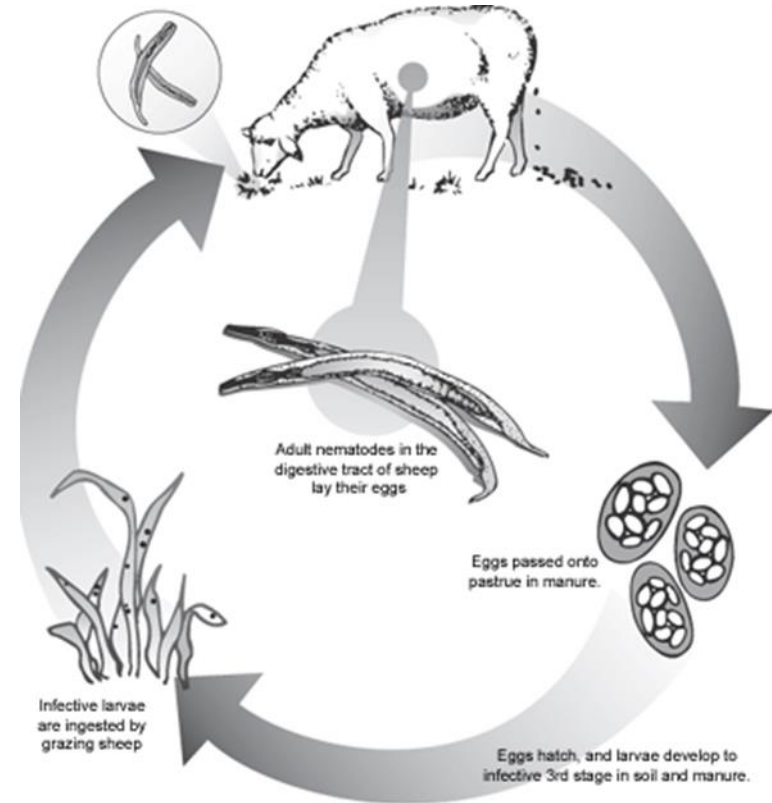


Image courtesy of: [www.sheepandgoat.com](http://www.sheepandgoat.com)

# Parasite life cycle

- Parasite larvae ingested
  - While grazing
  - Near manure
  - Specific to host, mostly
  - Sheep, goats, camelids share; cattle and horses do not

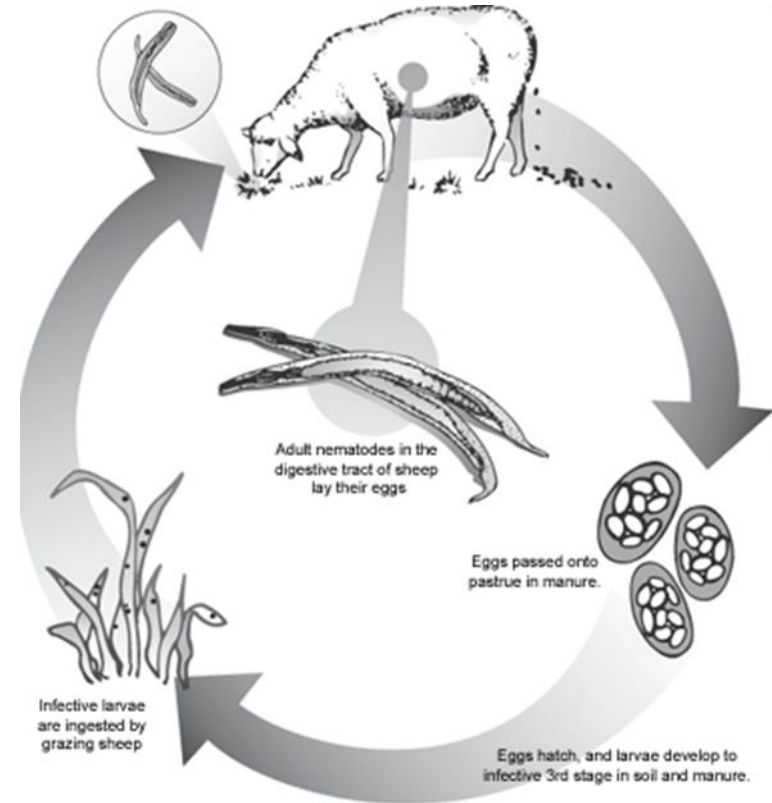


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# Parasite life cycle

- Parasite larvae ingested
- Adults make residence in the body
  - What they do depends on the species of parasite

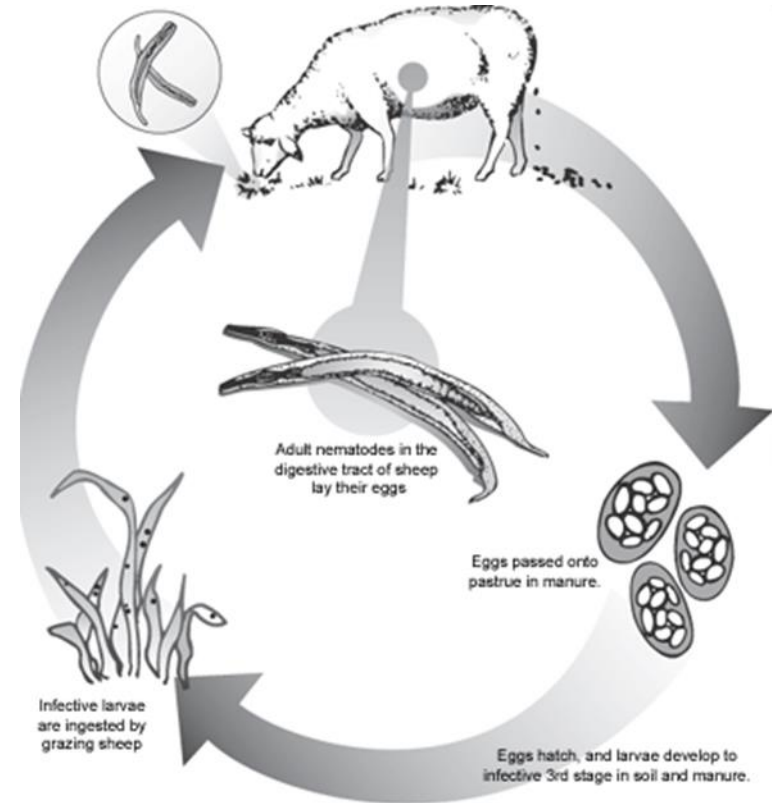


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# Primary parasites

- Barberpole worm
  - *Haemonchus contortus*
- Brown stomach worm
  - *Teladorsagia (Ostertagia) circumcincta*
- Bankrupt worm
  - *Trichostrongylus colubriformis*
- Coccidia
  - *Eimeria sp.*



Photo: [www.sheepandgoat.com](http://www.sheepandgoat.com)

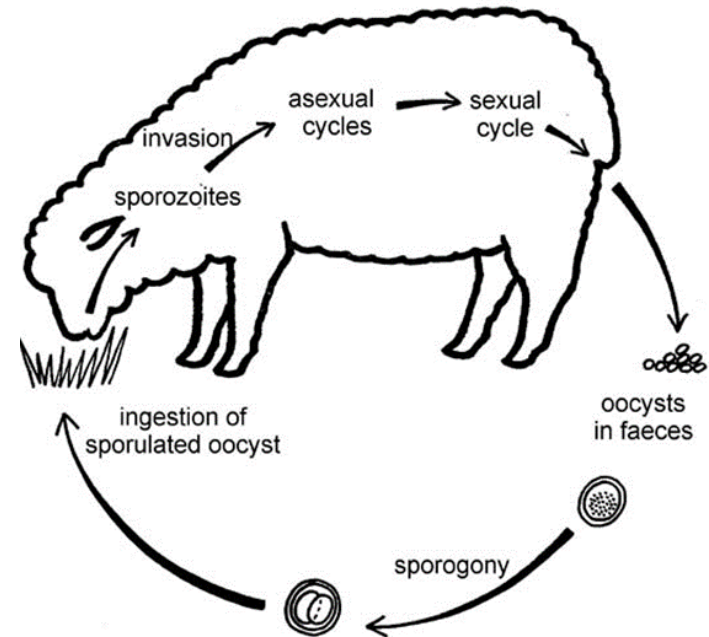


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# Coccidia

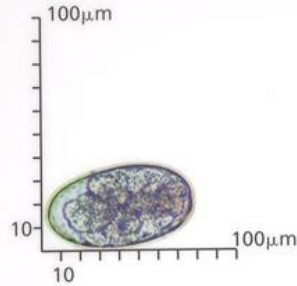
- More complicated life cycle
- Don't respond to the same drugs
- Damage the intestines
  - If not treated, damage may be permanent
- Adult animals usually have immunity
- Young animals under stress may suffer; scours is the first symptom.



ATTRA's [Coccidiosis: Symptoms, Prevention, and Treatment in Sheep, Goats, and Calves](#)

# Guide to Internal Parasites of Ruminants

Sponsored by Intervet—providers of Panacur®/Safe-Guard® to the livestock industry.



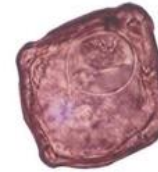
**Ostertagia**  
(brown stomach worm)



**Cooperia**  
(small intestinal worm)



**Moniezia**  
(tapeworm - sheep)



**Moniezia**  
(tapeworm - cattle)



**Bunostomum**  
(hookworm)



**Haemonchus**  
(barberpole worm)



**Nematodirus**  
(threadneck worm)



**Trichostrongylus**  
(bankrupt worm)



**Oesophagostomum**  
(nodular worm)



**Trichuris**  
(whipworm)



**Strongyloides**  
(threadworm)



**Coccidia**  
(a protozoan that causes coccidiosis)



**Dictyocaulus**  
(lungworm)



**Mite Egg** - 1/4 actual size  
(contaminant - often mistaken for worm eggs)



# Symptoms

- All internal parasites will cause:
  - low energy
  - lagging behind
  - low appetite
  - decreased digestion
  - slow growth
  - weight loss
  - lower production of milk, wool, or meat



# Symptoms

- Barberpole:
  - also anemic,
  - may have bottle jaw
- Not barberpole:
  - also diarrhea (scours),
  - not anemic



# Milk goiter



# Five Point Check

- Assess your animal using your eyes and hands:
  - Eyes—use the FAMACHA technique and card to assess anemia
  - Back—feel for body condition score over the backbone and ribs.
  - Tail—is there evidence of scouring? Or is it clean?
  - Coat—shiny? Smooth? Or rough and dull?
  - (nose)—I skip this one and look at energy/vitality instead

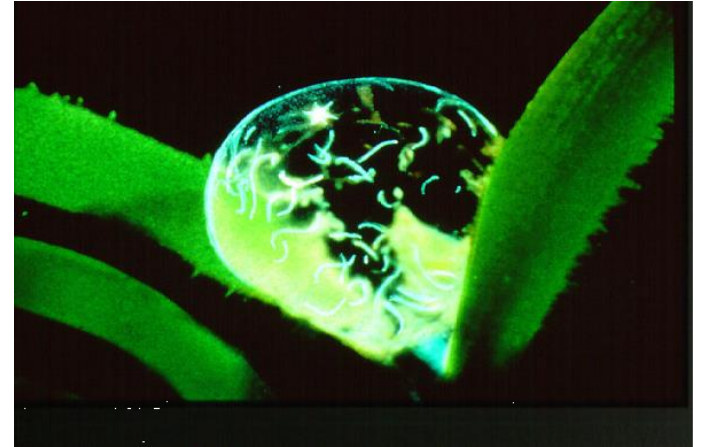


# Five Point Check



# Parasite life cycle

- Adults lay eggs
- Eggs passed in feces
- Eggs hatch and larvae move



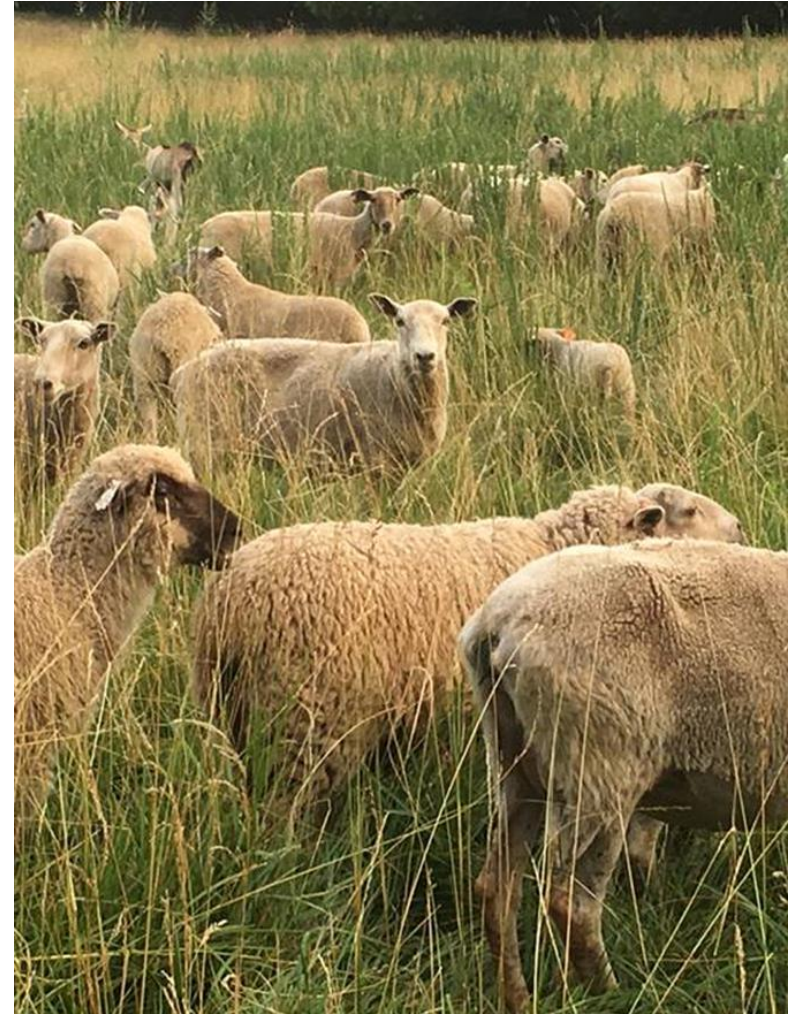
# Eggs and larvae

- Eggs are protected in the manure pellet
- Moisture and warmth allow it to hatch
  - 50 degrees F is enough for *Nematodirus*
  - 60 degrees F for *Haemonchus*, though it really does well at 86-95 degrees F



# How long do eggs and larvae live?

- 6 to 18 months in cool climates
- In hot climates, they develop faster and they die faster: 4-6 weeks
- In Arkansas, 35 days rest helped; longer is better. Dry weather helps kill eggs and larvae.





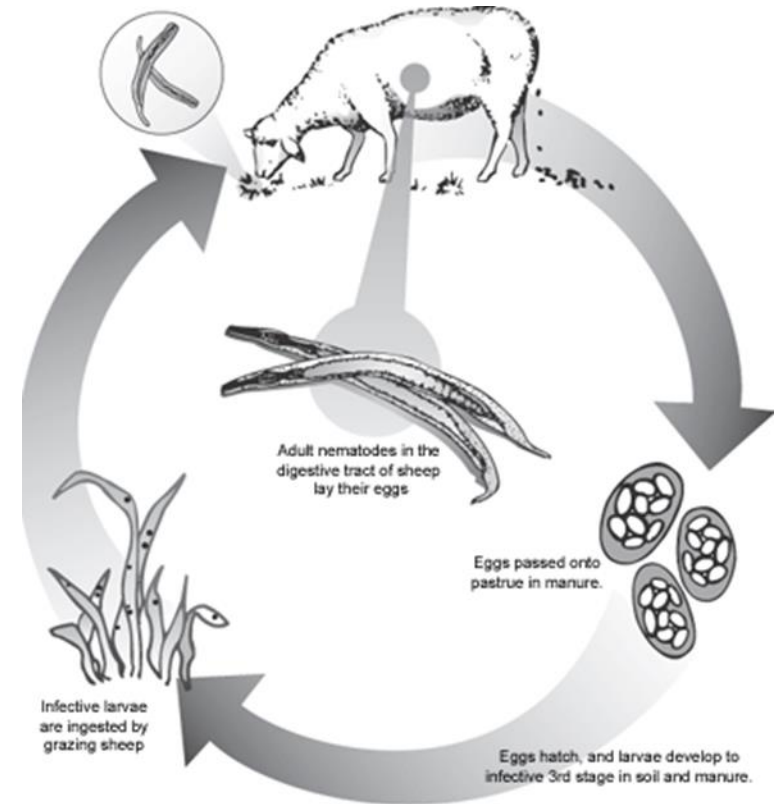
# How larvae move

- In moisture:
  - Up grass blades
  - Down into soil
  - Sideways with rain
- Most will be near the manure



# How long does it take?

- Depends on:
  - moisture
  - temperature
  - animal status
- Eggs to larvae as fast as 4 days in summer
- Larvae to egg-laying in 2-3 weeks in summer



# Animal Status

- **Hypobiosis**—parasites “hibernate” inside the animal, waiting for spring
- **Periparturient rise**—as hormones change in the animal that is about to give birth, the parasites “wake up” and begin shedding eggs.
- The animal is under stress; delivery, lactation, greatly increased nutritional demands: and immune system is temporarily suppressed.



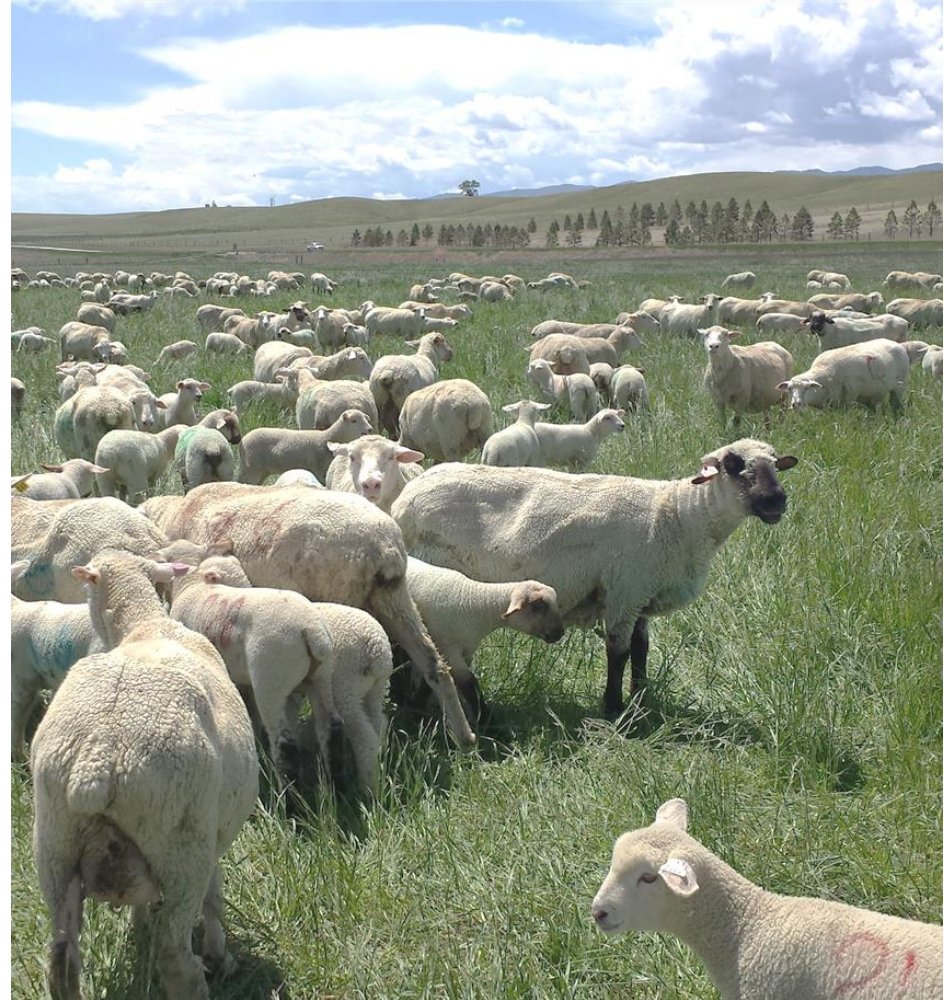
# Opportunistic parasites

- Shelter in the soil, the manure, or the animal
- Slow down metabolism in the cold, waiting for
- Spring, and the periparturient period
- Young animals (no immunity yet)
- Stressed animals
  - Inadequate nutrition
  - Weaning
  - Illness
  - Transport



# Opportunistic parasites

- When conditions are favorable:
  - Warm
  - Wet
  - Lots of host animals present and concentrated
- They mature quickly and multiply at a scary rate.



# Could our animals be in trouble now?



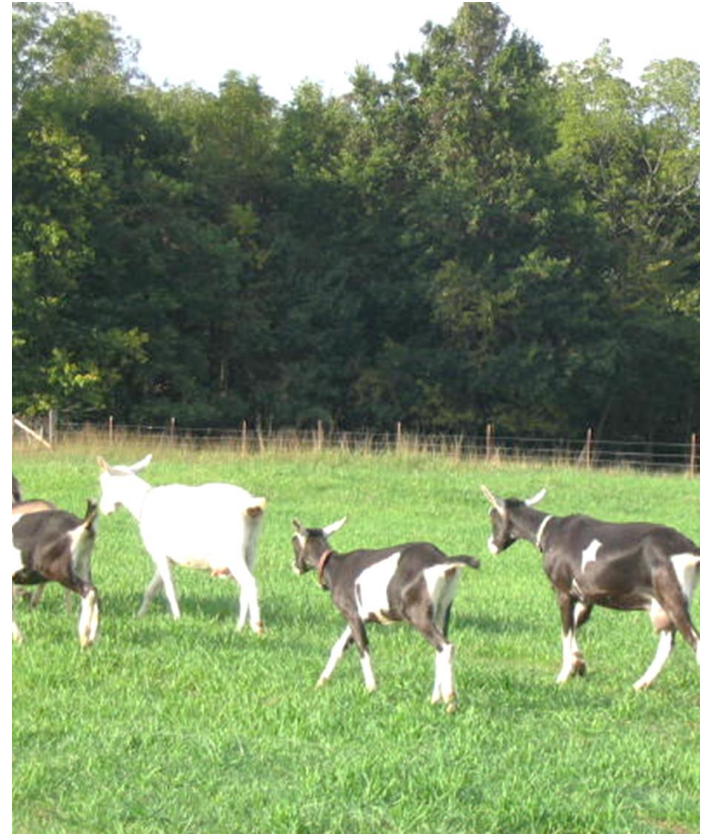
# So much bad news!

- But sheep and goats and parasites have coexisted for thousands of years.
- We just need to be smart, and use a lot of strategies to combat this enemy.
- We also need to know and keep observing our animals, so we see subtle signs of trouble.



# Our goals

- Support animal health
  - Low stress
  - Good nutrition
  - Sanitation
  - Grazing to avoid parasites as much as possible
- Select animals that are well-adapted
- Treat only those animals that need it.
- We will use what we know about these parasites to plan our strategic moves. See part 2!





# Resources

- [www.attra.ncat.org](http://www.attra.ncat.org)
  - Go to “Livestock” and find the sheep and goat section
  - Check out videos from Dave Scott
- [www.wormx.info](http://www.wormx.info)
  - American Consortium for Small Ruminant Parasite Control
- [www.luresext.edu](http://www.luresext.edu)
  - Langston University
- [www.sheepusa.org/Growourflock](http://www.sheepusa.org/Growourflock) [Resources](#)  
[EducationalWebinars](#)
  - American Sheep Industry



# Homework

- Go out on your farm and note:
  - What are sources of contamination?
  - Do you notice any animals with symptoms?
    - Low energy, thin, rough/dull hair coat, scruffy wool, anemia, scours, “poor doers”
  - How susceptible are your animals?
    - About to lamb or kid?
    - Milking?
    - Crowded on a pasture?
  - Is nutrition adequate?



# Questions & Answers


Please type your Q's into the chat bar



Photo: Uwharrie Farm in NC

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  - **February 26:** Internal Parasites Part 3 – Attack the Enemy
  - **March 6:** Making a Living Doing What You Love
  - **March 13:** Pulled Pork: Mobile Housing for Pigs
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