

# *Parasites in Sheep and Goats*

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TEXAS A&M  
**AGRILIFE**  
**EXTENSION**

# 1. Know Your Enemy

## Most Common Internal Parasites

- ⊙ Round Worm
  - Barber Pole Worm
  - Brown Stomach Worm
- ⊙ Tape Worms
- ⊙ Coccidia
- ⊙ Others
  - Flukes
  - Meningeal Worm
  - Nose Bots

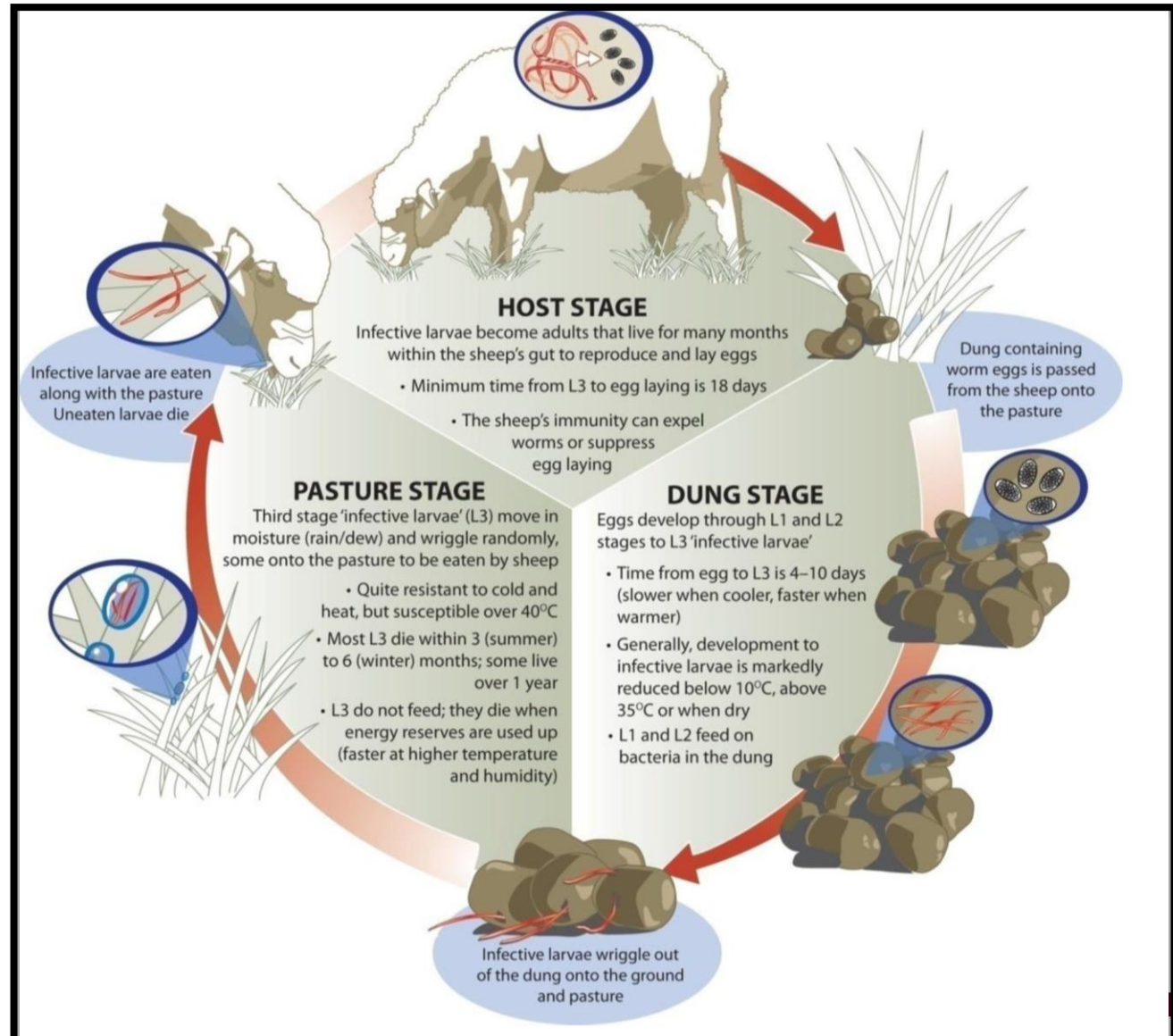
# 1. Know Your Enemy

- ⦿ Signs and Symptoms of the Barber Pole Worm
  - ☐ Pale Eyes & Gums
  - ☐ Bottle Jaw
  - ☐ Weak
  - ☐ Short of Breath
  - ☐ Diarrhea (Nope)
  - ☐ Worms in Feces (Nope)

# 1. Know Your Enemy

[www.WormBoss.com.au](http://www.WormBoss.com.au)

[www.wormx.info](http://www.wormx.info)



# 1. Know Your Enemy

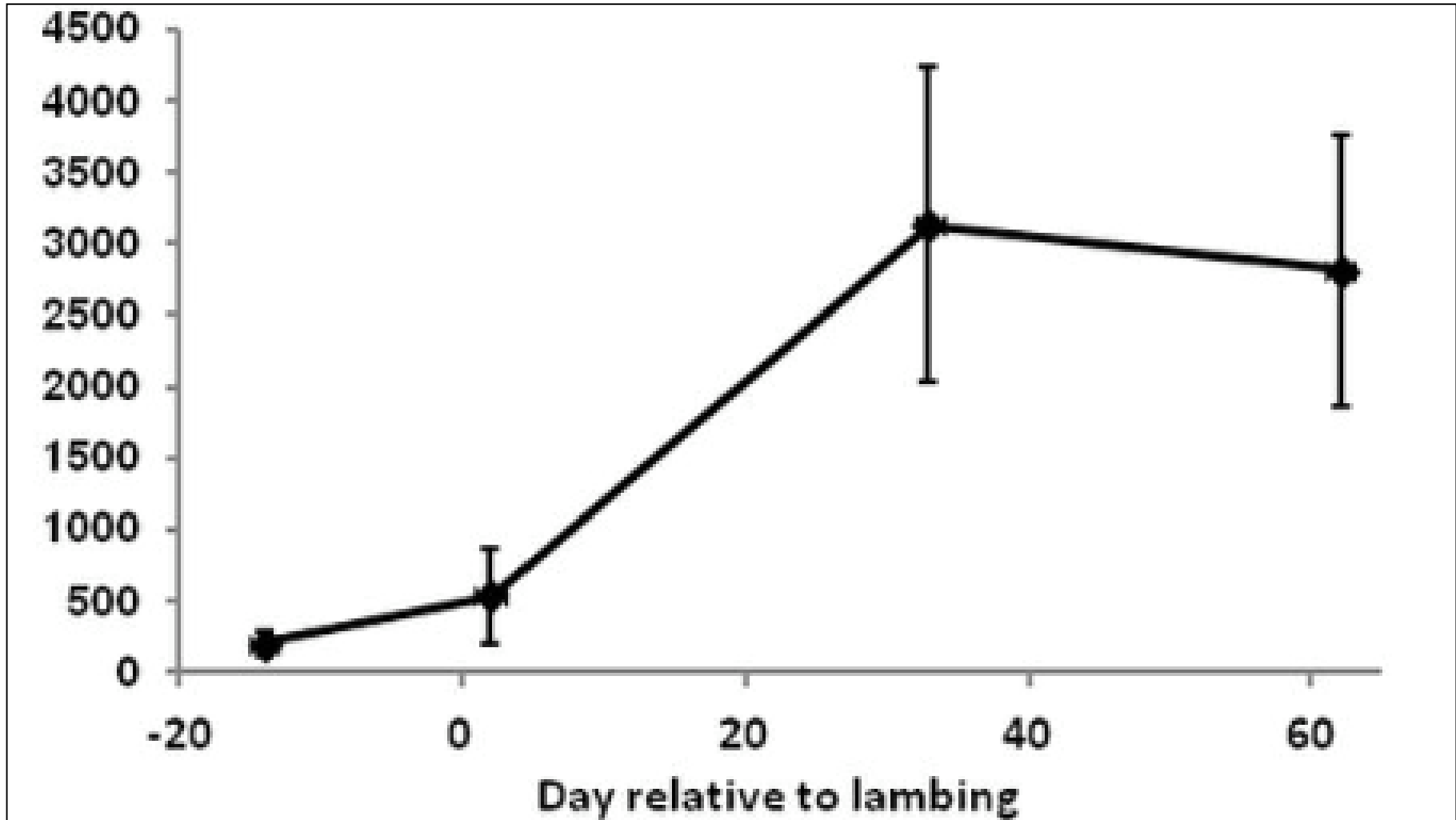
- ⊙ Target Susceptible Animals
  - Young
  - Weak
  - Lactating

## 2. Pasture Management

- ⊙ Prepare Low Risk Pasture for Ewes and Lambs
  - No Grazing (Small Ruminants) for:
    - 1-3 months in Summer
    - 3-6 months in Winter
  - Graze with Cattle/Horses
  - Burn Pasture
- ⊙ Rest and Rotation
- ⊙ Mob Grazing
- ⊙ Forage Crops or Crop Residue



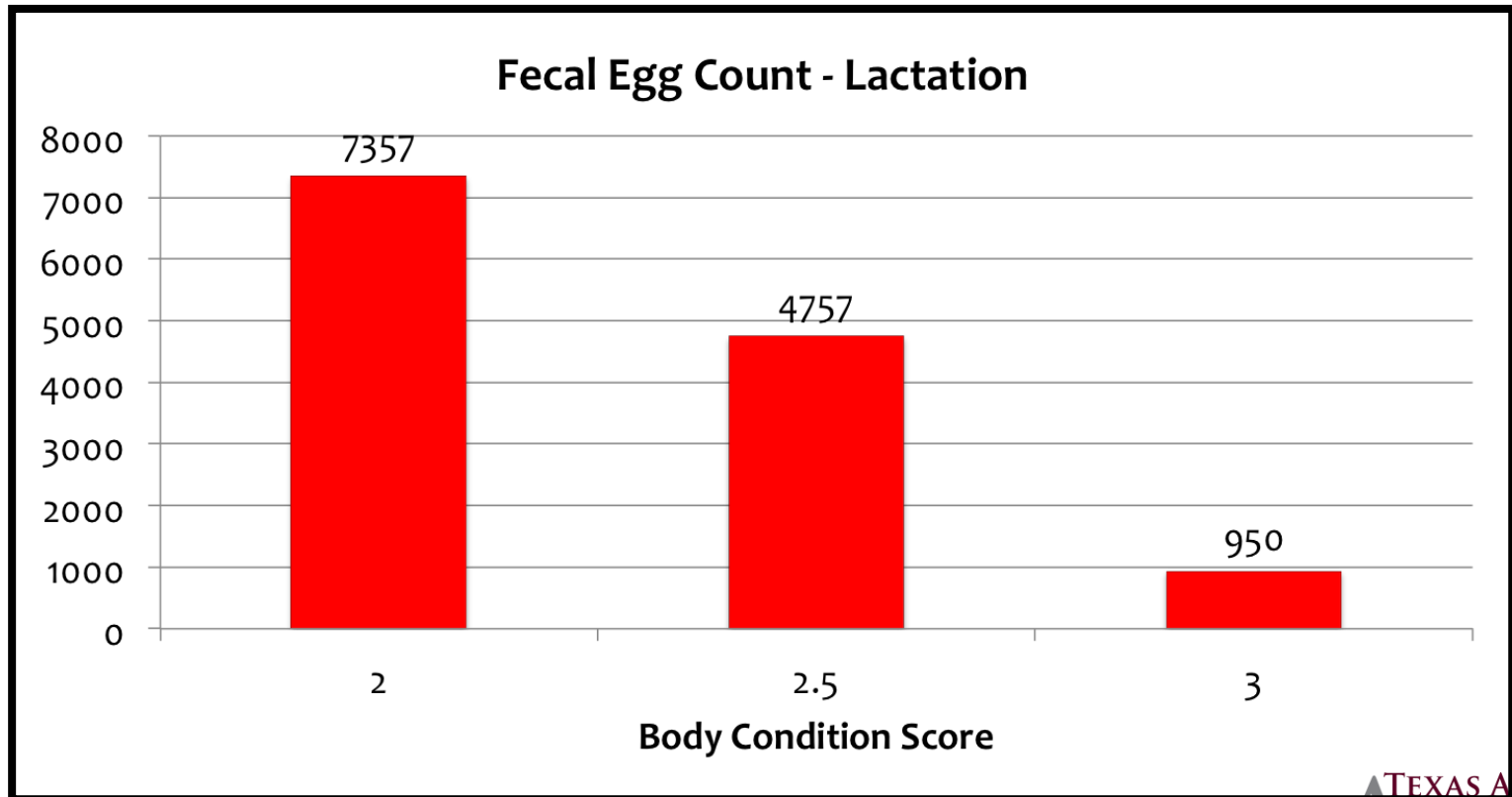
# 3. Flock/Herd Management



<http://www.wormx.info/riskfactors>

# 3. Flock/Herd Management

- ⦿ Maintain Good Body Condition





# 3. Flock/Herd Management

## ⊙ Sheep Breeds

- St. Croix, Florida Native, Barbado (Resistant)
  - Katahdin, Royal White
- Dorper (Resilient)
- Genetically Selected Animals (EBVs)

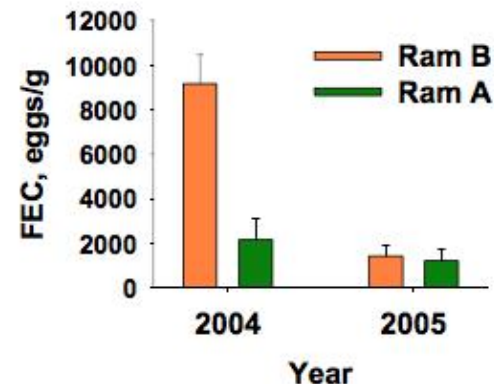
## ⊙ Goats Breeds

- Pure Boer are most susceptible
- Spanish/Kiko least susceptible

# 3. Flock/Herd Management

## Genetics

- **An animal's ability to resist parasites is heritable ( $\sim 0.2 - 0.5$ )**
- **USDA, ARS sires are selected based on parasite resistance (low FEC) and tolerance (lack of anemia; low FAMACHA scores)**



# EBVs (Don't buy bucks without it)

# 4. Smart Drenching

## Know the Different Classes of Dewormers

- BZ: Benzimidazole
  - Valbazen, Safeguard
- LV: Levamisole
  - Prohibit, LevaMed, Tramisol
- ML: Macrocylic Lactone
  - Ivomec, Cydectin
- AD: Amino-Acetonitrile Derivative
  - Zolvix (new generation, unapproved)
- SI: Spiroindole
  - Derquantel (new, unapproved)



# 4. Smart Drenching

Get the Most from Your Drench

wormx.info

- ❑ Full Dose or More
- ❑ Empty Stomach
- ❑ Repeat Dose
  - ❑ 12 to 24 hours
- ❑ Oral Products Only

**\*Important --Please read notes below before using this chart\***

1 ml = 1cc	Valbazen (albendazole) <b>ORALLY</b>	SafeGuard (fenbendazole) <b>ORALLY</b>	Ivomec Sheep Drench (ivermectin) <b>ORALLY</b>	Prohibit (levamisole) <b>ORALLY</b>	Cyductin Sheep Drench (moxidectin) <b>ORALLY</b>
Weight Pounds (lbs)	7.5 mg/kg 0.75 ml/ 25 lb	5 mg/kg 0.6 ml/ 25 lb	0.2 mg/kg 2.9 ml/ 25 lb	8 mg/kg 2 ml/ 25 lb	0.2 mg/kg 2.3 ml/25 lb
20	0.6	0.5	2.3	1.5	1.8
25	0.75	0.6	2.9	1.8	2.3
30	0.9	0.7	3.4	2.2	2.7
35	1.1	0.8	4.0	2.6	3.2
40	1.2	0.9	4.5	2.9	3.6
45	1.4	1.0	5.1	3.3	4.1
50	1.5	1.1	5.7	3.7	4.5
55	1.7	1.3	6.2	4.0	5.0
60	1.8	1.4	6.8	4.4	5.4
65	2.0	1.5	7.4	4.7	5.9
70	2.1	1.6	8.0	5.1	6.3
75	2.3	1.7	8.5	5.5	6.8
80	2.4	1.8	9.1	5.8	7.2
85	2.6	1.9	9.7	6.2	7.7
90	2.7	2.0	10.2	6.6	8.1
95	2.9	2.1	10.8	6.9	8.6
100	3.0	2.2	11.4	7.3	9.1
105	3.2	2.3	12.0	7.7	9.5
110	3.3	2.5	12.5	8.0	10
115	3.5	2.6	13.1	8.4	10.5
120	3.6	2.7	13.7	8.8	10.9
125	3.8	2.8	14.2	9.1	11.4
130	3.9	2.9	14.8	9.5	11.8
140	4.2	3.0	15.4	10.2	12.7
150	4.5	3.1	16.0	11.0	13.6

# 4. Smart Drenching

- ⊙ FAMACHA – Anemia Scoring Training
  - Individual Animal Management
  - YouTube Video – Univ. of Rhode Island
  - Online Certification



# 4. Smart Drenching

## ⊙ Fecal Egg Counts

- Seasonal Monitoring – Thresholds - 1,000 to 1,500 epg
- Drench Test – 10 day follow-up
  - “Monitoring Internal Parasite Infection in Small Ruminants”
- Genetic Selection

# 4. Smart Drenching

## ◎ Multiple Active Ingredients

- Full-Dose of Different Classes given Simultaneously
- “There now is very strong evidence that using combination treatment is the best method for using dewormers and should be instituted on all farms immediately” Dr. Ray Kaplan, Professor of Parasites, U. of Georgia
  - <https://wormx.info/combinations>
- Don't Overuse
- Manage for Refugia





**Table 1: Impact of using dewormers in combination on the efficacy of treatments.**

The increases in efficacy are due to a simple additive effect as per the equation below:

Where D1 = efficacy of dewormer 1, D2 = efficacy of dewormer 2, D3 = efficacy of dewormer 3, C2 = efficacy of D1+D2, and C3 = efficacy of D1+D2+D3

$$C2\% = D1\% + (100-D1\%)*D2\%$$

$$C3\% = C2\% + (100-C2\%)*D3\%$$

Drug 1 (%)	Drug 2 (%)	Drug 3 (%)	Combination (%)
80	80		96
80	80	80	99.2
90	90		99
90	90	90	99.9
60	95		98
60	60	95	99.2
99	99		99.99
60	60	60	93.6
50	50	50	87.5
40	40	40	78.4

# Refugia

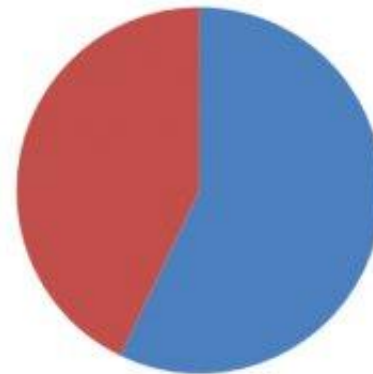
- ⊙ Intentionally, allowing naïve parasite to persist
- ⊙ How?
  - 20% Untreated (or more)
    - BCS, Dry, FAMACHA
    - Age Class
  - Return to Dirty Pastures

**green pasture**



■ worms within sheep  
■ worms on pasture

**dry pasture**

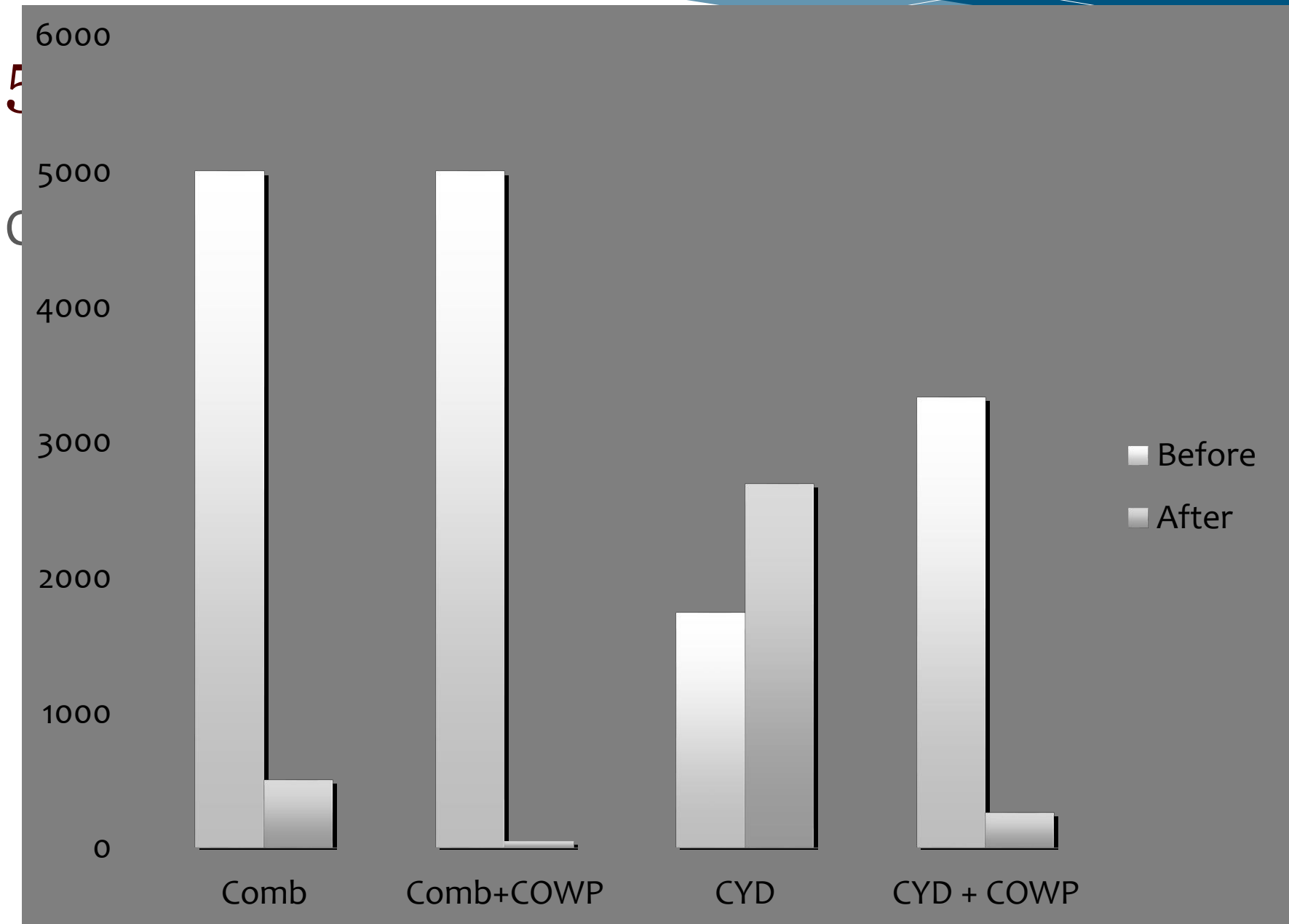


■ worms within sheep  
■ worms on pasture

# 5. Alternative Products

- ◎ Condensed Tannin Forages

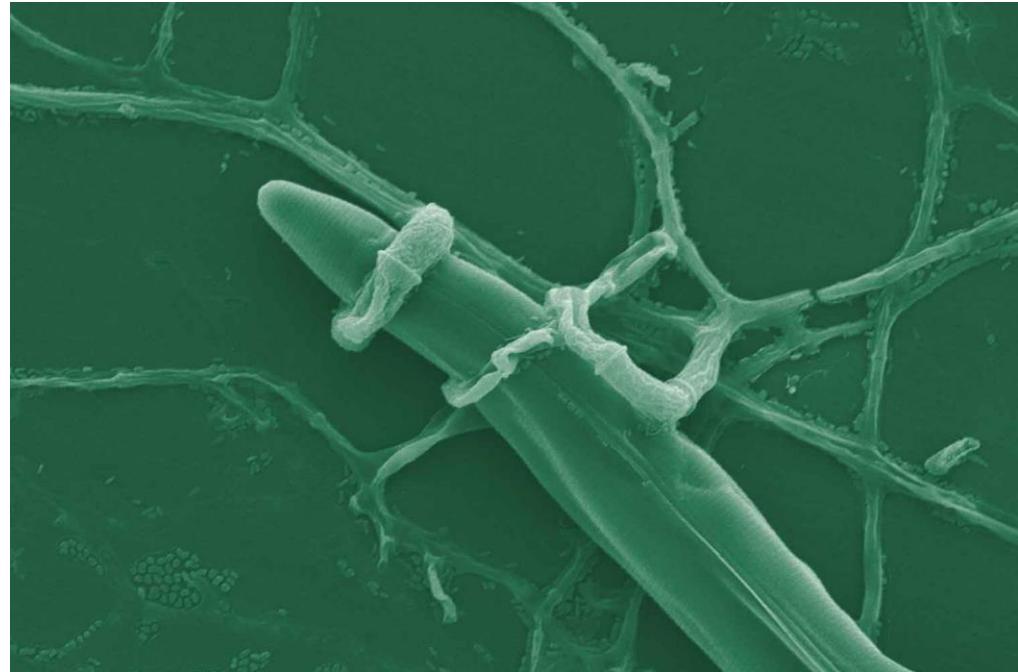
- Sericea Lespedeza, birdsfoot trefoil, chicory, sainfoin
- Juniper (Cedar) - additive effect of ivermectin



# 5. Alternative Products

## ⦿ Duddingtonia Flagrans (BioWorma)

- Larva trapping fungus
  - 68% Reduction - Sheep
  - 81% Reduction - Cattle
  - 84% Reduction - Horses
  - 86% Reduction - Goats
- Must be fed daily
- \$0.25-0.75 per day



# 5. Alternative Products

## ⊙ Barbervax

- Vaccine for barber pole worm
- 75-95% effective
- 6 weeks of protection
- Requires 3 shots, 3 weeks apart
  - Booster every 6 weeks, as needed

# Parasite - Take Home Message

1. Know Your Enemy
  - Barberpole Worm
2. Pasture Management
  - Low Stocking Rate, Pasture Rotation
3. Flock/Herd Management
  - BCS, Birth Time, Genetics
4. Smart Drenching
  - Treat Effectively, Refugia
5. Alternative Products
  - COWP, BioWorma, CT forages