Grazing Management to Promote Small Ruminant Health

Heather Glennon

Assistant Professor of Animal Science

University of Mount Olive NC

Gastrointestinal parasites

- Biggest threat to small ruminant producers in (south)east
- Decreased growth and milk production
- Decreased feed intake and feed efficiency
- Increased treatment costs
- Death losses

- Anthelmintic resistance is common

GOAL = reduce the exposure of small ruminants to worms through grazing management

- Increase grazing height
- Increase grazing interval
- Incorporate tannin rich forages
- Increase forage quality
- Decrease resistant parasite populations

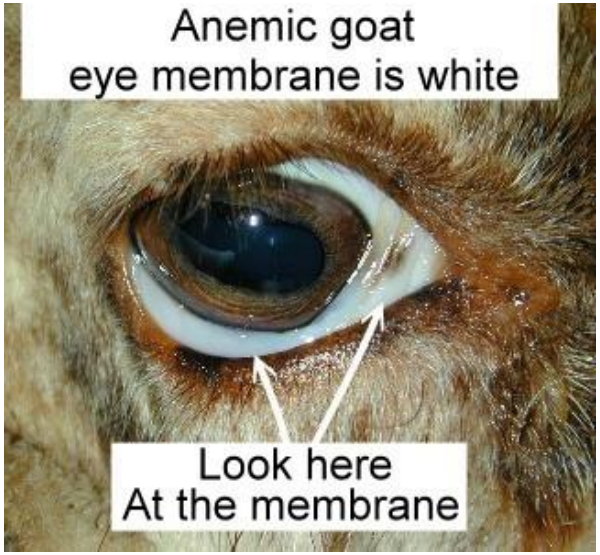
Types of Roundworms

- *Haemonchus contortus* (barberpole worm)
- *Trichostrongylus* spp (hair worm)
- *Telodorsagia circumcincta* (brown stomach worm)

- *Bunostomum* (Hookworm)
- *Cooperia* spp (Small intestinal worm)
- *Nematodirus* sp (Threadneck worm)
- *Oesophagostomum* (Nodule worm)
- *Strongyloides* (Common threadworm)
- *Trichuris ovis* (Whipworm)
- *Dictyocaulus* spp (Lungworms)
- *Paralaphostrongylus tenuis* (Meningeal worm)

Signs of *Haemonchus contortus*

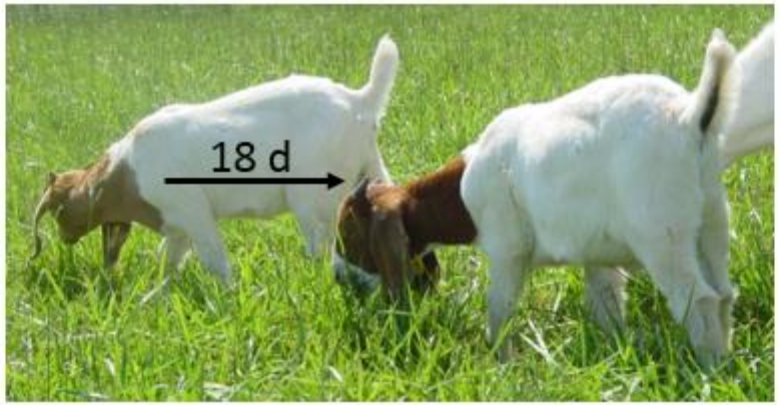
- Bottlejaw



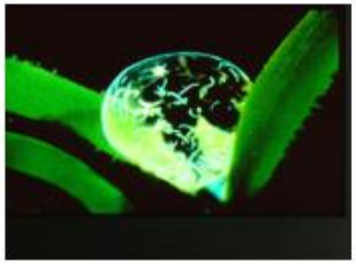
- Weight loss
- Weakness
- Sudden death

Parasite life cycle

Ideal environment 4 -10 days



Eggs pass in feces



Adult worms live in the abomasum and intestines

Can go into hypobiosis during winter/summer

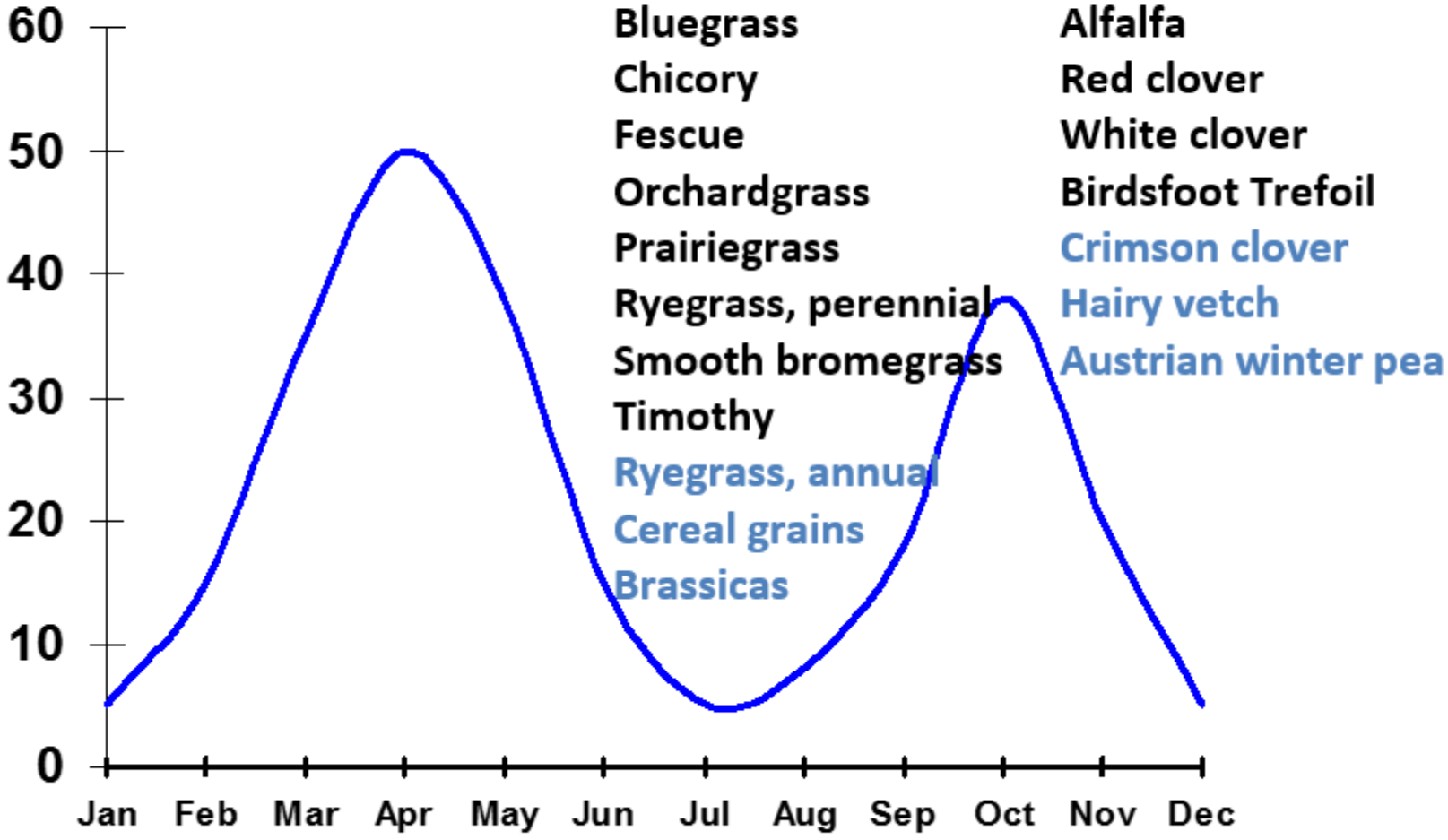
Feces

Infective larvae (L3) move up blades of grass 2-3 inches

Eggs develop into larvae (L1) and (L2) on pasture when the weather is warm and wet

Seasonal Distribution of Growth… (lb/acre/day)

Cool season plants



Grasses

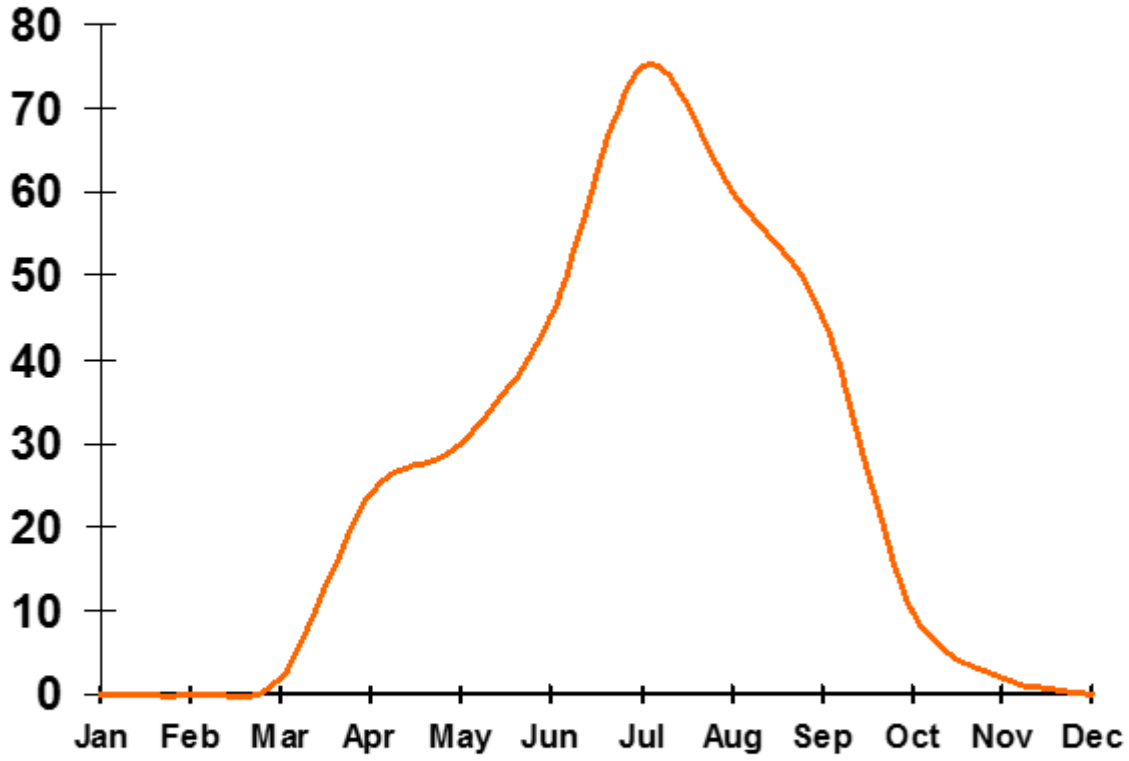
- Bluegrass
- Chicory
- Fescue
- Orchardgrass
- Prairiegrass
- Ryegrass, perennial
- Smooth bromegrass
- Timothy
- Ryegrass, annual
- Cereal grains
- Brassicas

Legumes

- Alfalfa
- Red clover
- White clover
- Birdsfoot Trefoil
- Crimson clover
- Hairy vetch
- Austrian winter pea

Seasonal Distribution of Growth… (lb/acre/day)

Warm season plants



Grasses	Legumes
Bahia	Lespedeza
Bermuda	Cowpea
Bluestem	Soybean
Browse	Sunn Hemp
Dallisgrass	
Gamagrass	
Johnsongrass	
Indiangrass	
Crabgrass	
Corn	
Millet	
Sorghum-Sudan	
Sudan	

Grazing height

- Majority of infective larvae will not be found above 3”
- Species selection
- Browse
- Rotational grazing

Cool season grasses

- Tall Fescue
  Orchardgrass
  Bluegrass
  Ryegrass
- Graze to 4”


Graze warm season annuals to 6-8” tall
Pearl Millet; Sorhum-sudangrass hybrids

Using annual forages

- Lowers parasite risk
  - Disking/spraying herbicide – dessicates land
  - 45 - 60 days between planting and grazing
  - Graze no shorter than 6 – 8”
- Provides high quality forage

Goats and Sunn Hemp

Sheep and Sunn Hemp

Big Bluestem

Eastern Gamagrass

Indiangrass

Native Warm Season Grasses

- Drought tolerant
- Stop grazing at 8-12”
- Bunch grasses

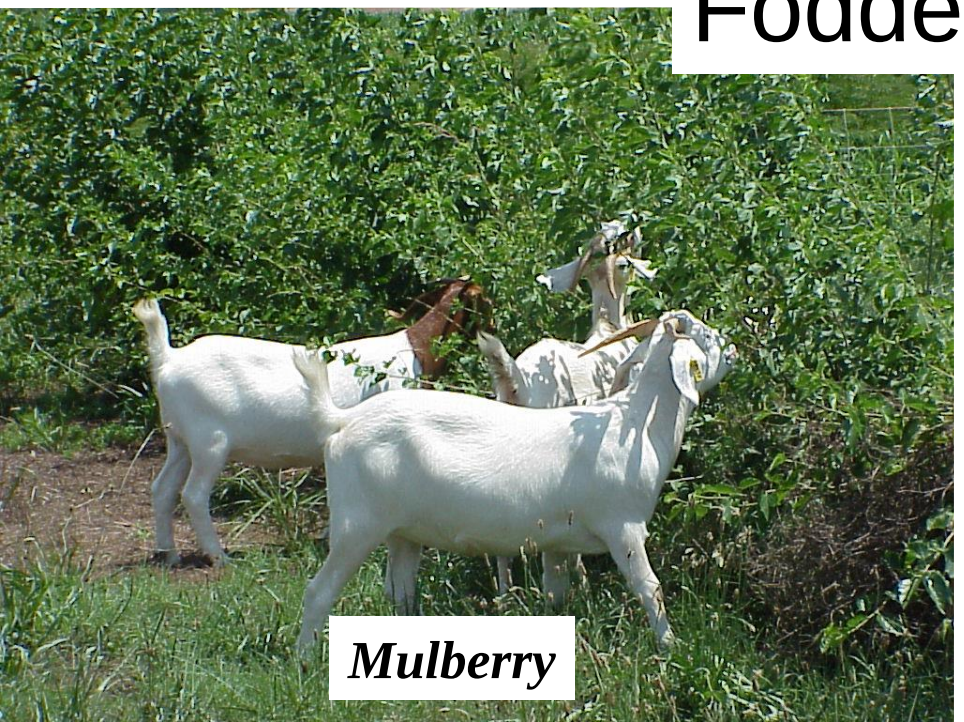
Browse

- Provide shade in summer
- Can not graze too hard

Fodder trees

Black locust

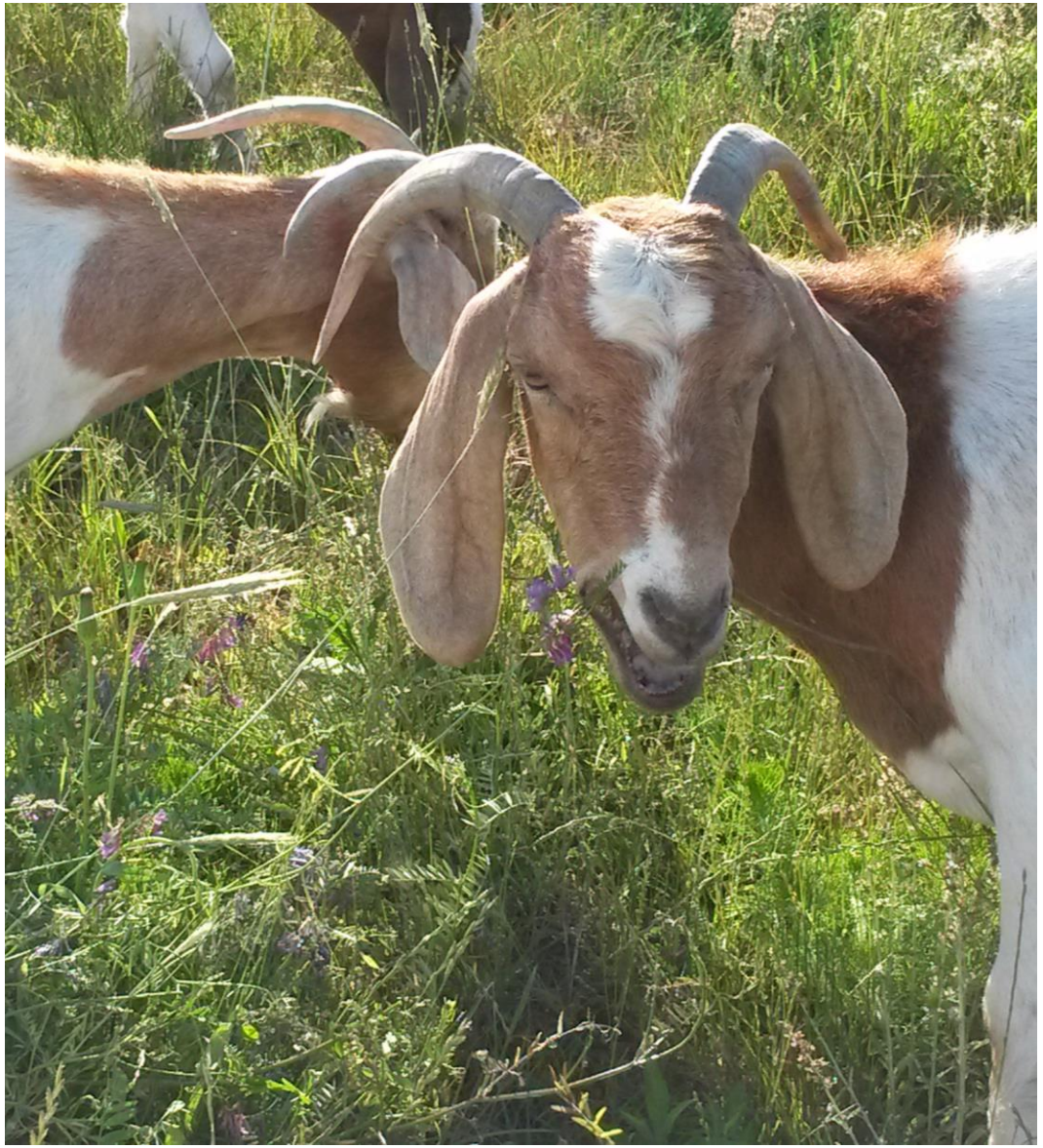
Honey Locust



Mulberry

Mimosa

Questions?



Increase grazing interval/ “Resting” pastures

- Rotational grazing
- Multi-species grazing
- Make Hay
- Utilizing Browse

Rotational Grazing

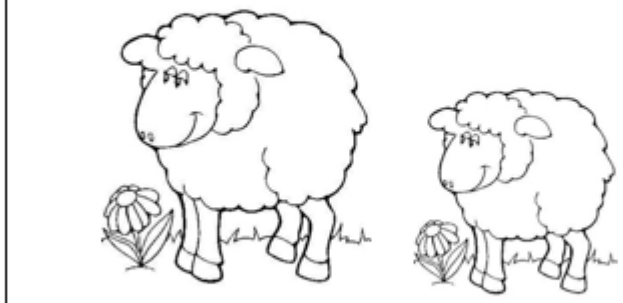
- Change paddocks before reinfection by L3s (4-10 days)
- Extend rest period 30-45 days
- Control forage height

Continuous Grazing/Set Stocking

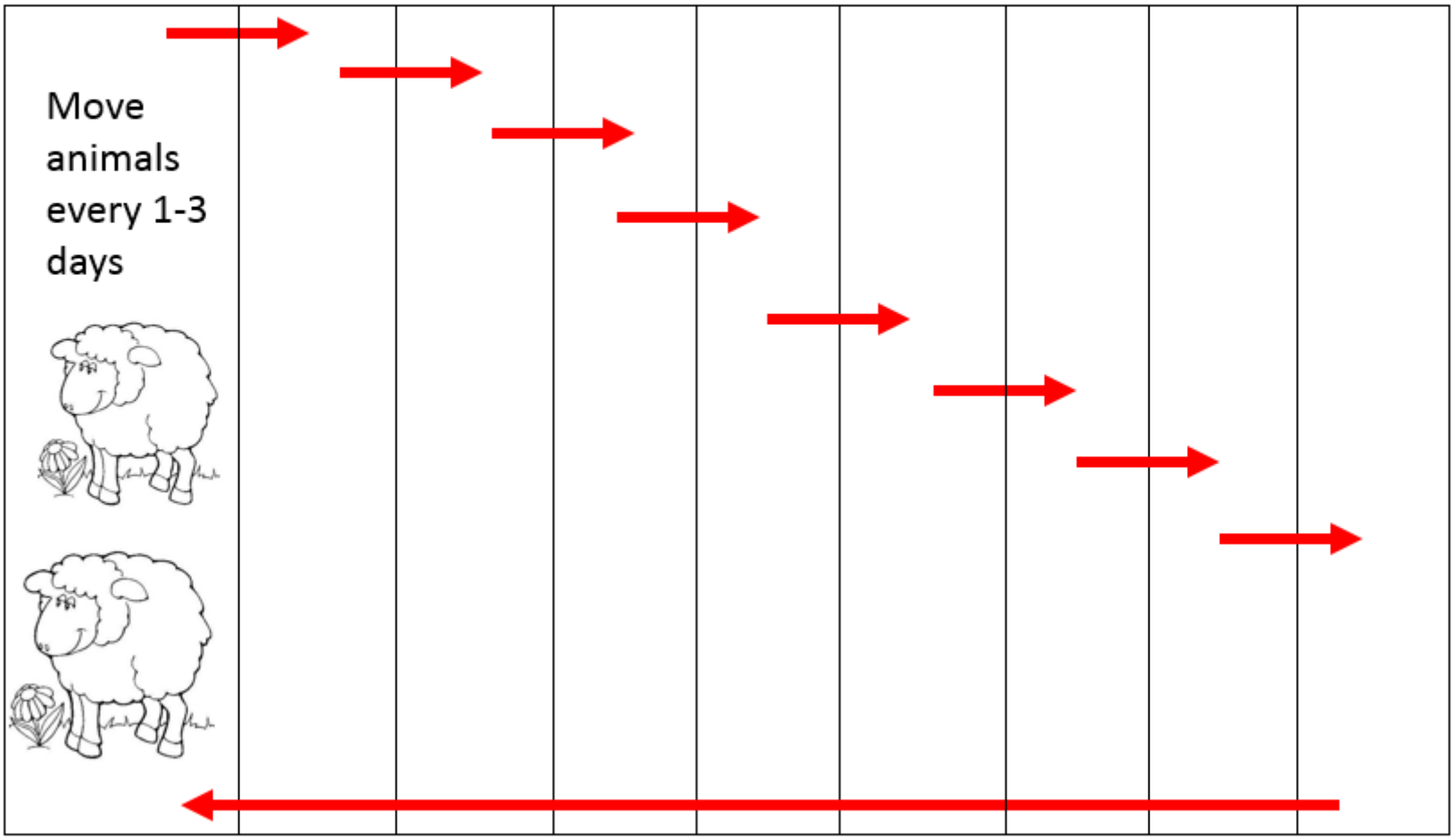
- Animals stay in the same pasture, re-graze desirable plants and deplete their energy reserves

Rotational Grazing

- Animals move through a series of paddocks



Intensive/Strip Grazing



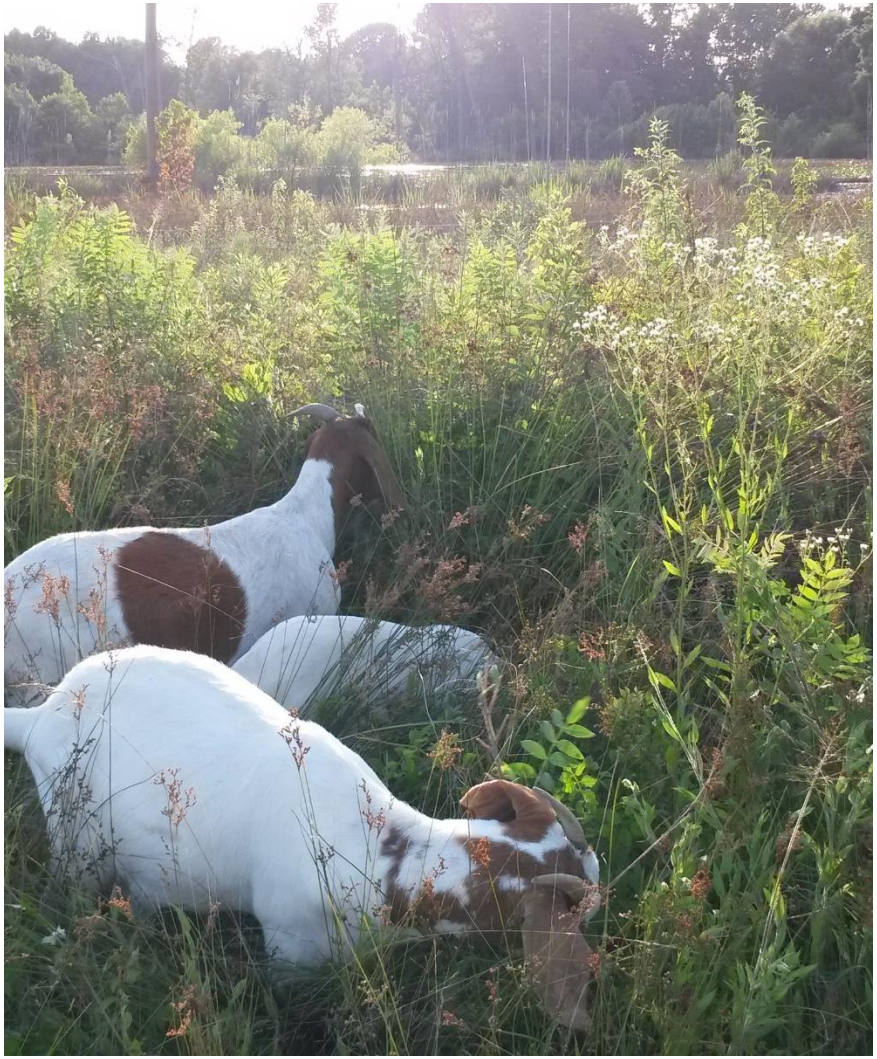
30-45 day Grazing Cycle

Co-species & Multi-species grazing

- Increases time between grazing intervals
- Cattle or horses will consume small ruminant larvae

Grazing Behaviors

- Goat - Browsers
- Sheep - Intermediate
- Cattle - Grazers



Making hay

- Increases time between grazing events – more L3s dead
- Shorter forage may lead to larval dessication

Condensed Tannins

- Increase protein use efficiency
- By-pass protein
- Reduce bloat
- Bind minerals

- In high concentrations (>5%):
- Reduce intake
- Reduce production

Chicory, birdsfoot trefoil, and sericea lespedeza have all been shown to reduce fecal egg counts and/or inhibit larval development.

**Decreased coccidia oocysts

**Browse, tropical legumes

Sericea Lespedeza

- Warm season legume that grows in acidic soils with low fertility and tolerates drought well

- Fed as
  - Fresh Forage
  - Hay/Dried Leaf Meal
  - Pellets

- Must make up >50% DMI

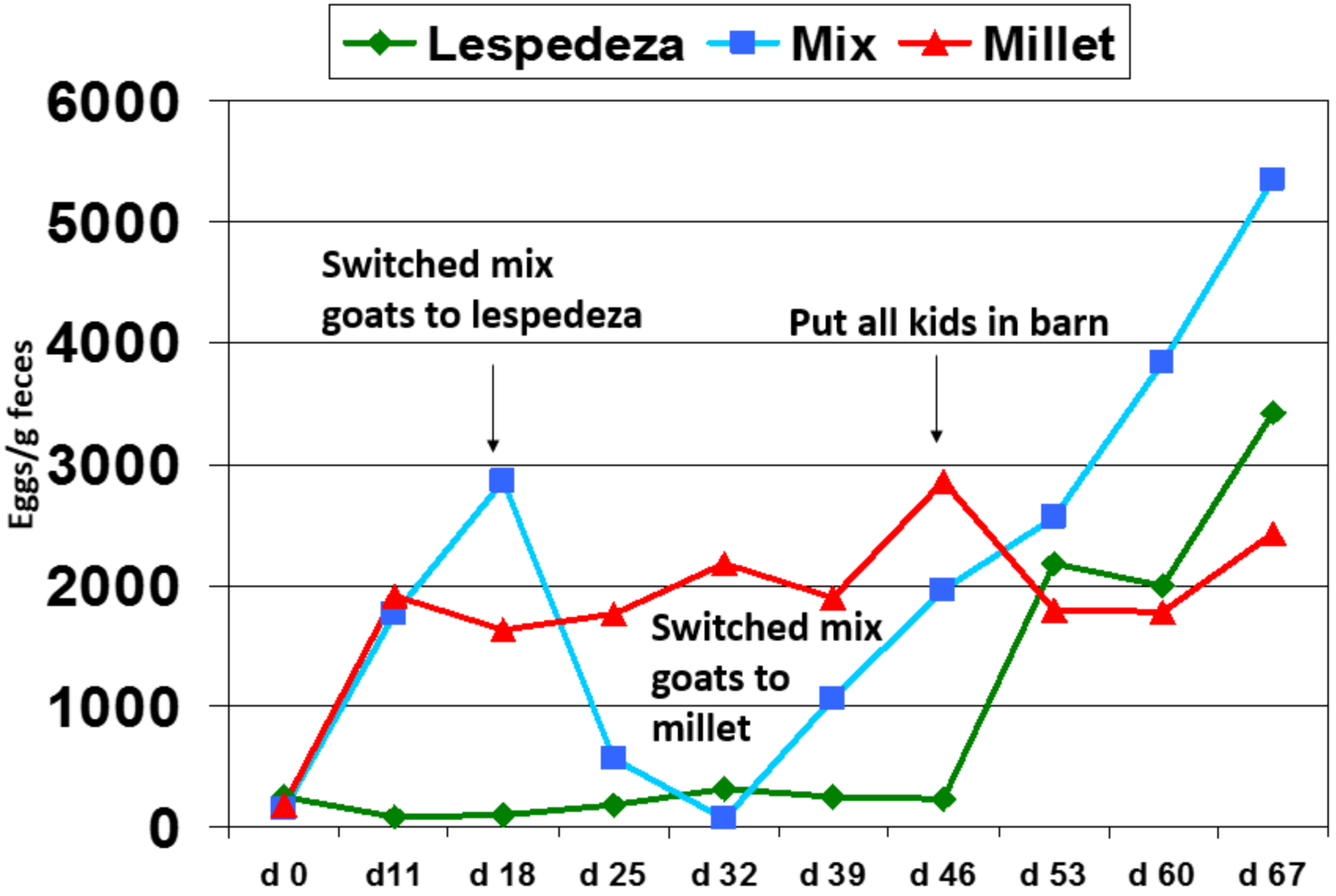
- Goats readily eat it
- Sheep will eat it

- Mineral deficiencies?

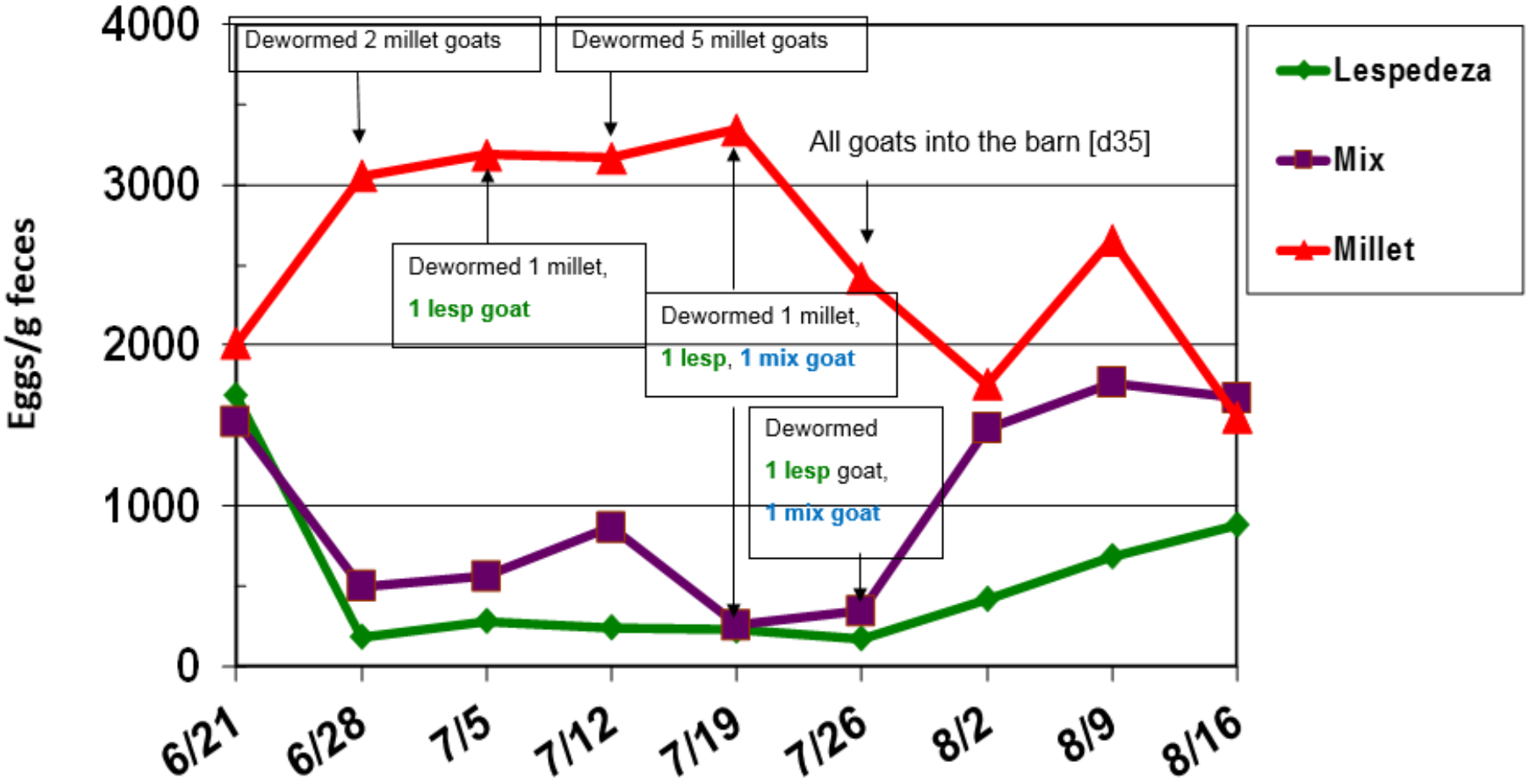
Sericea Lespedeza at NCSU

- 3 year research trial
- Weaned kids grazing
  - '*AU Grazer*' sericea lespedeza
  - Pearl millet
  - Mix; year 1 & 2 – switch back & forth
  - Mix; year 3 – access to both
- ADG yrs 1 & 2 = 0.25 lb/d
- ADG yrs 3
  - Mix = 27% higher than SL
  - Mix = 90% higher than PM

FECAL EGG COUNTS – Year 2

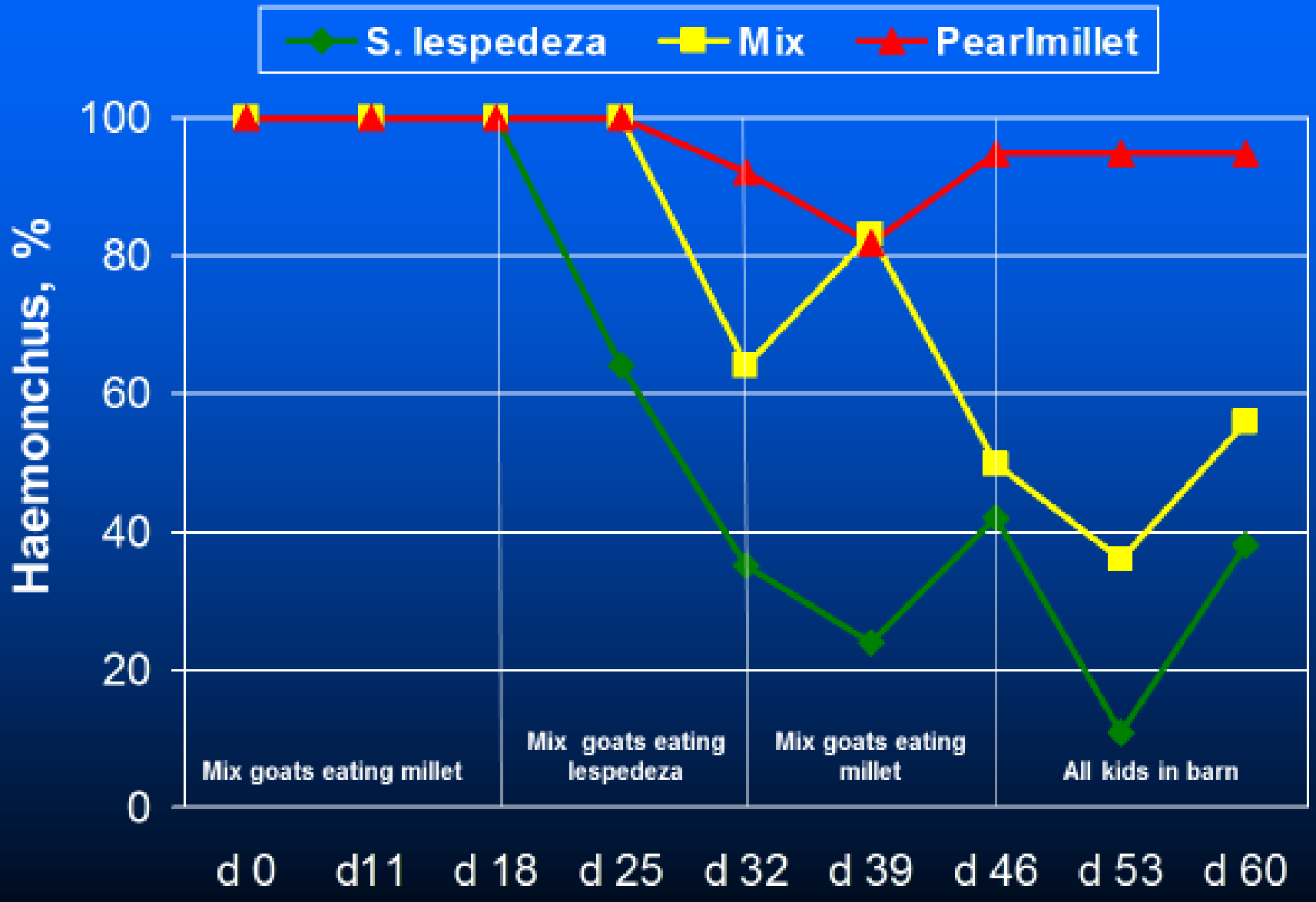


FECAL EGG COUNTS – Year 3



L09-2 Larval Identification

Gaps from 100% are Trichostrongylus



Birdsfoot Trefoil

- Perennial legume
- Low fertile soils
- Poorly drained soils
- Graze from 8” to 4”

Photo: tatiana Stanton, Cornell Sheep and Goat Program

Increase the nutritional plane

- Protein increases resilience
- Young, vegetative plants have higher CP and TDN
- Cool season forages generally higher quality
- Rotational grazing provides desirable forage
- Lime and fertilizer applications

Add legumes

- Clover, Vetch, Alfalfa
- Higher levels of minerals help with parasite immunity

Adding Legumes to Tall Fescue

- Fescue/White Clover = 20-23% CP
- N-fertilized Fescue = 15-16% CP
- Fescue with no N = 12-13% CP

- Increased gain per acre
  - 15% over fertilizer N
  - 90% over no N

Refugia population

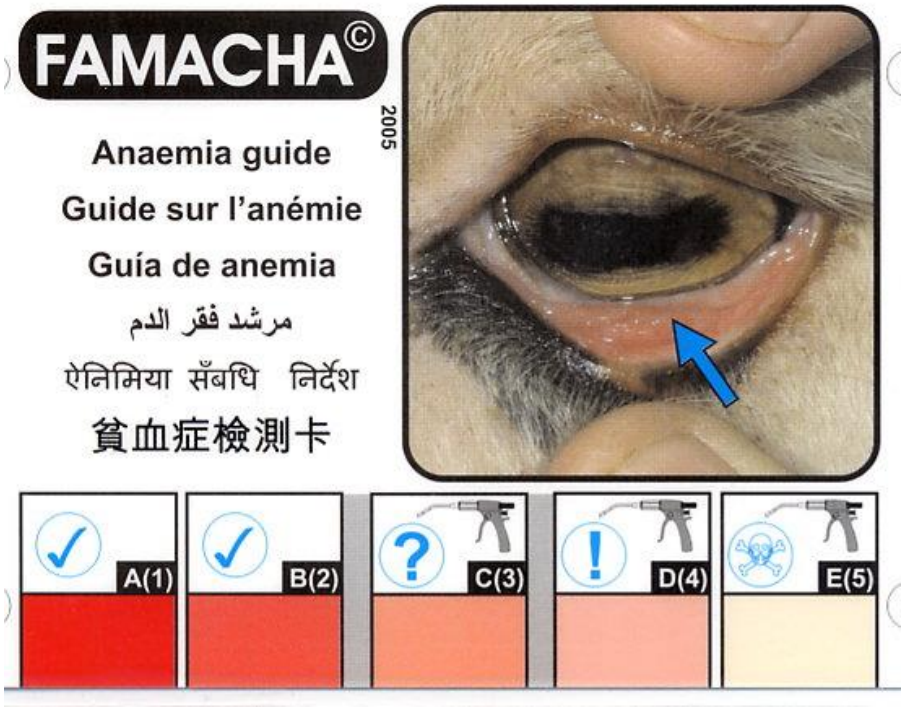
- Less exposure to dewormers
- Less resistance to dewormers
- Mate with resistant worms
- Dilute resistant worm population
- Don’t dose all and move to “clean” pastures

Build refugia population through selective deworming

- Identify most susceptible animals
  - Young weaned animals
  - Periparturient animals
  - Early lactation
  - Females nursing multiple offspring
  - Low body condition score

Build refugia population through selective deworming

- FAMACHA©
- Five Point Check



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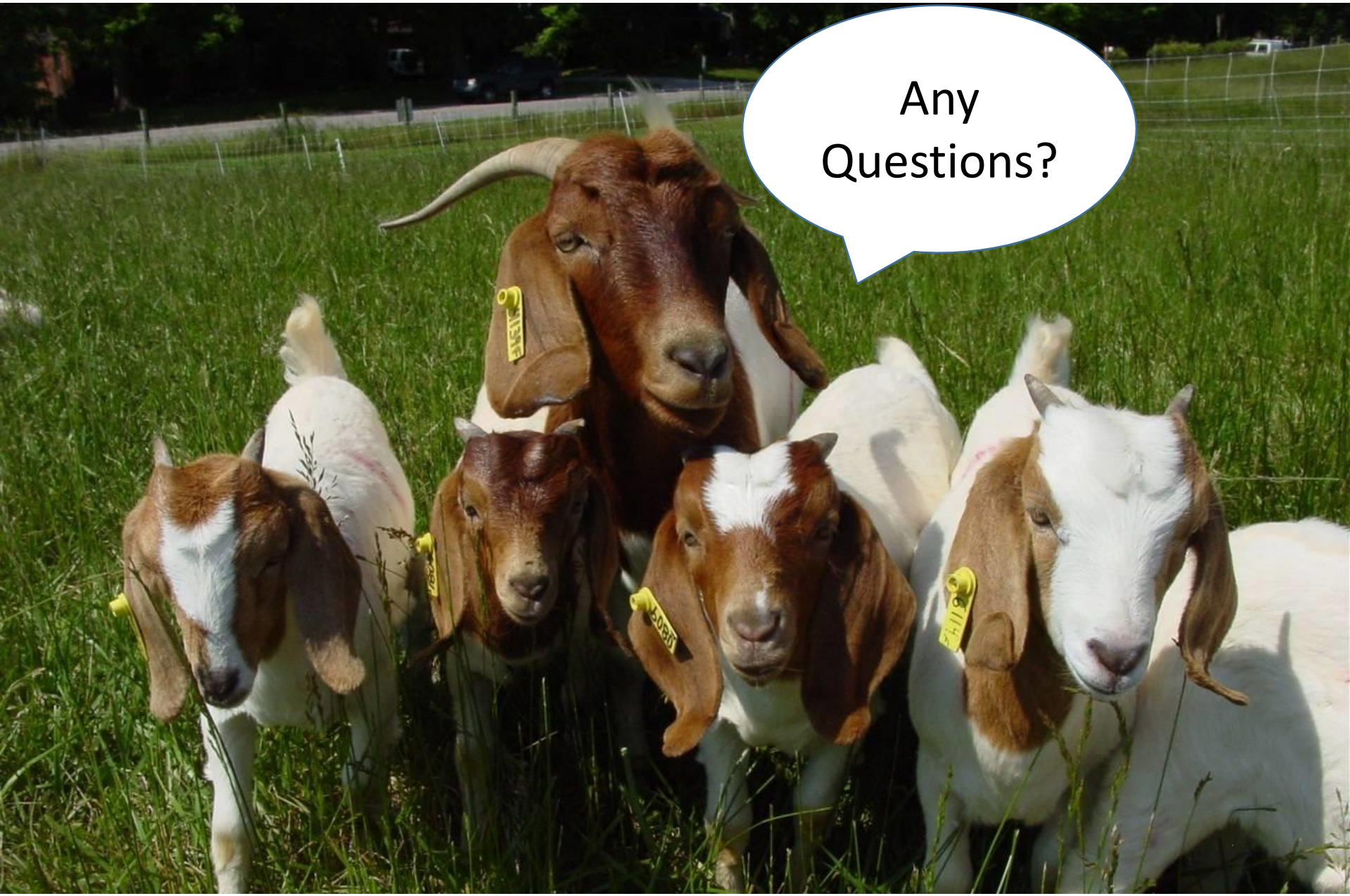

Heather Glennon – University of Mount Olive - hglennon@umo.edu