

# Multi-species Grazing for Economic and Environmental Sustainability



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# WHY add sheep and/or goats to a cattle enterprise?

- Utilization of more plants in a pasture
- Increased carrying capacity
- More total pounds of gain per acre
- More uniform grazing (grazing around dung and urine patches)
- Reproductive efficiency
- Efficient foragers
- Vegetation control
- **More profit potential**



# Want to sell Multiflora rose, Buckbrush, Sericea or Ironweed for \$500.00/ton?

- Get goats!
  - It takes about 5 pounds of intake to get 1 lb. gain
  - Current 60 – 70 lb kid prices = \$1.25/lb
  - $\$1.25/5 = \$0.25$
  - $\$0.25 \times 2000 = \$500$



# Vegetation Management

- **Sheep and goats are being used to reduce fuel loads to reduce wildfires and are being used to control unwanted vegetation on public lands & environmentally sensitive areas where chemicals cannot be used, where mechanical means are too expensive and where landowners or the public desire an environmentally friendly alternative**



# Goats in Land and Forage Management

- In a NC State study, after 4 years of goat grazing pastures containing herbaceous weeds, vines, multiflora rose, blackberry and hardwood sprouts, pastures became dominated with grass and clover
- In a West Virginia study goats reduced brush cover from 45% to less than 15% in one season.

# Goats in Land and Forage Management

- In an Ohio State University study, goats eliminated 92% of the multiflora rose in 1 season, however it took up to 4 years for total elimination

Dead multiflora rose  
1 grazing season



Dead buckbrush  
1 grazing season



# Controlling Sericea Lespedeza with Goats

- Research and field experience in OK & KS
  - Reduced seeds per stem from 960 to 3
  - No new seedling spread
  - Reduction in stem count (25 – 30%)
- Research at Langston University in OK
  - Stocked at 6-8 goats/ac year 1, 4 – 6/ac. year 2, 3 – 4/ac. year 3
  - End of 3<sup>rd</sup> year virtually no live sericea plants
  - Left 1 goat/ac. thereafter to control germinating seedlings
  - Weaned goats gained about .3 lb/hd/day during the summer on Sericea

# Personal Experience

- I have eliminated buckbrush, ironweed, multi-flora rose, musk thistle and blackberry from pastures in 1 grazing season when that was my goal



# Sheep for Weed Control

- Sheep naturally prefer forbs over grasses and grasses over shrubs, so they make good candidates for consuming weedy forbs in a weed-control context.
- In the West, sheep effectively control spotted knapweed (*Centaurea maculosa*), and other aggressive rangeland invaders that are displacing native plant species.



# Match animals to resources

## *The First Step*



- Sheep and goats are not miniature cows
- And they're certainly not pigs or chickens



# Match animals to resources

- A lot of the health and other problems with sheep and goats is directly related to not letting a goat be a goat or a sheep be a sheep!
- Use animals that fit your land and forage resources



# Comparisons to beef cattle

*Besides the obvious ones.*

- Vary in their grazing behavior.
- Are more selective foragers; select a more nutritious diet.
- ➔ Sheep and goats have higher nutritional needs.  
(goats > sheep > beef cattle)
  - Higher maintenance requirements due to their smaller size (weight)
  - Much greater reproductive potential
- **Rotate sheep and goats ahead of cattle**



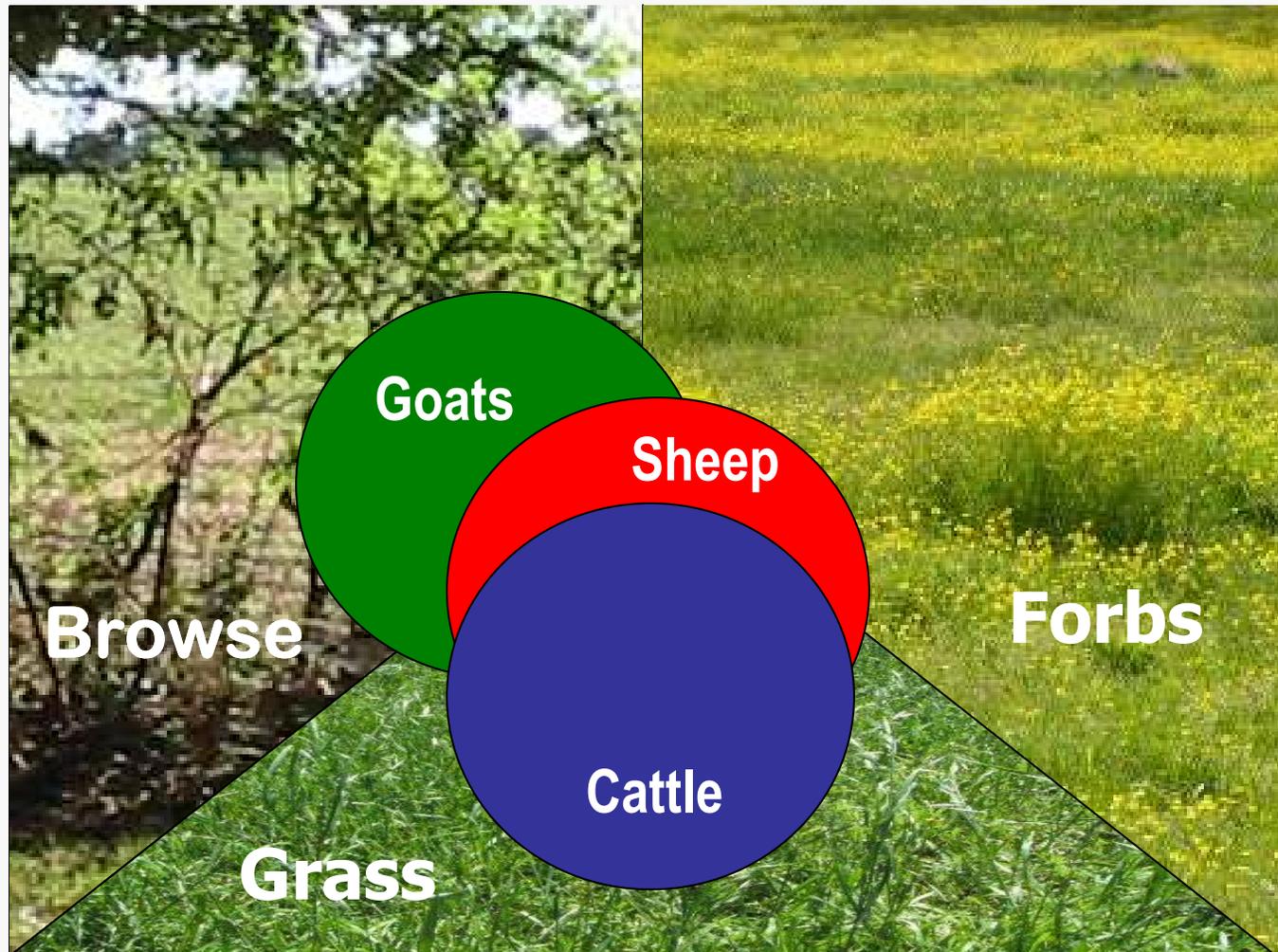
# Sheep and/or goats (vs. other livestock)



1) What is your forage-base?

- Sheep prefer forbs (weeds) and are probably the most efficient grazers.
- Goats prefer to browse, but will graze.
- Cattle and especially horses eat mostly grass.
- Goats are more selective grazers than sheep, who are more selective grazers than cattle.
- Diverse pastures favor small ruminants and multi-species grazing.

# Multi-Species Grazing Preferences



However, there is regular crossover among the 3 types of feeders as diet preferences and food availability changes throughout the year.

# What's the best sheep or goat to raise?



- The one that fits your system, matches your resources, and makes you the most money.
- There is as much difference within breeds as between breeds.
- Crossbreeding is the recommended breeding practice due to hybrid vigor and breed complementarity.
- The “best” sheep or goat is not necessarily the one that looks the best, it's the one that produces the best (and makes you the most money).
  - Record keeping !!!

# How many sheep/goats can you raise?

- It depends upon your management system and resources.
  - Each farm has a different set of resources to use to raise livestock.
    - Land, labor, management and capital



$$\text{Carrying Capacity} = \frac{\text{Forage Production} \times \text{Seasonal Utilization Rate}}{\text{Daily Intake} \times \text{Length of the Grazing Season}}$$

# Stocking Rate Guidelines

Pasture Type	Cows	Sheep	Goats	Cows + Goats
Excellent Pasture	1	5 - 6	6 - 8	1 + 1 - 2
Brushy Pasture	1	6 - 7	9 - 11	1 + 2 - 4
Brush Eradication			8 - 12 / ac	.5 + 6 - 8/ac
Sustainable browse mgmt.			1 - 3 / ac	

*Kennedy - 2002*

# Economic Comparison

- Cattle

- 1 cow/calf unit/3 ac
- 95% calf crop
- 500 lb. weaning weight
- 475 lbs. weaned/ 3ac
- \$1.30/lb.
- \$617.50 gross/3 ac
- 158.3 lbs./ac
- **\$205.83 gross/ac**

- Goats

- 8 goat/kid units/3 ac
- 150% kid crop
- 60 lb weaning weight
- 720 lbs. weaned/3 ac
- \$1.30/lb.
- \$936.00 gross/3 ac
- 240 lbs./ac
- **\$312.00 gross/ac**

# Economic Comparison

- Sheep
  - 6 ewe/lamb units / 3 ac.
  - 150% lamb crop
  - 120 lb. selling weight\*
  - 1080 lbs. produced/3 ac.
  - \$1.10/lb
  - \$1188.00 gross/3ac.
  - 360 lbs. produce/ac
  - **\$396.00 gross/ac**



\*May require supplemental feed from weaning to selling

# Increasing Inventory/Equity

## *Reproductive Efficiency*

- Goats/Sheep
  - Start with 1 doe
  - Save all females for 5 years - sell all males
  - 150% kid crop
  - 50/50 doe/buck kids
  - At the end of 5 years:
    - **24 females in herd**
    - **24 males sold**
- Cattle
  - Start with 1 cow
  - Save all females for 5 years - sell all males
  - 95% calf crop
  - 50/50 heifer/bull calves
  - At the end of 5 years:
    - **5 females in herd**
    - **5 males sold**

# Top 10 Reasons Not to Raise Sheep & Goats



1. You have to be smarter than everything that wants to kill them.
2. You have to be smarter than sheep and goats
3. Parasite Problems
4. Predator Problems
5. Fencing
6. Hoof problems
7. Weather problems (kidding, parasites)
8. Lack of infrastructure (marketing, shearers, veterinary expertise, animal health products, feed products, knowledge, research)
9. Higher labor requirements (lambing, kidding, shearing, hoof care, parasite control, slaughter)
10. You're not going to get rich quick

# Predator Control



- Guard Animal + Effective Predator Fencing
- Guard dog, Llama, donkey - dogs best on larger and brushier farms. Llamas and donkeys work well on smaller operations.
- Fencing - 7 - 8 wire HT power fence for perimeter

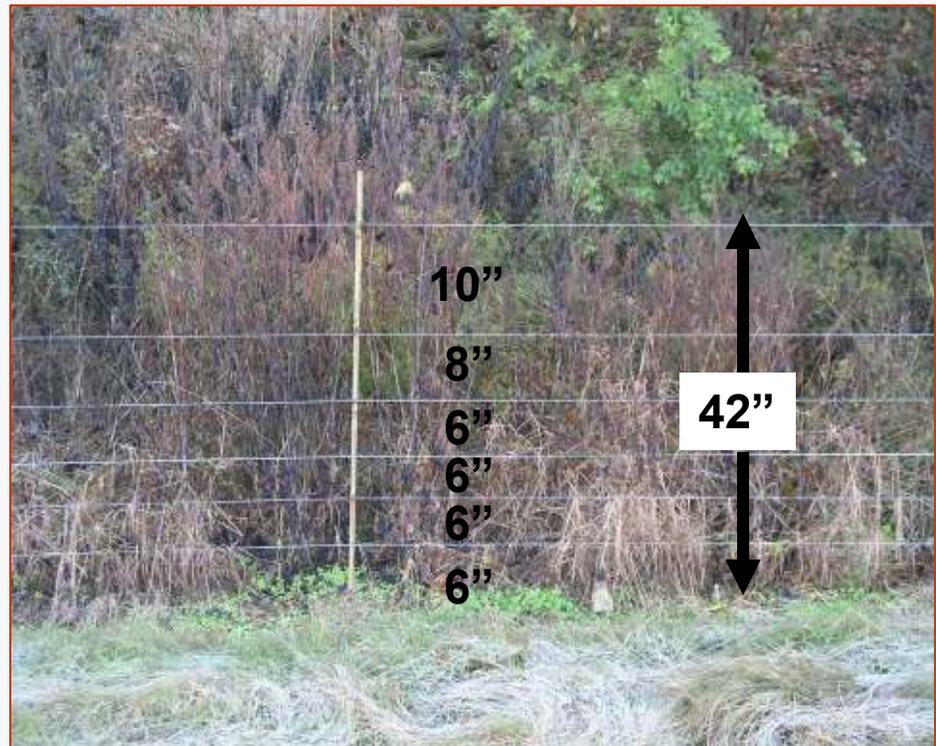
# Fencing for Sheep & Goats



- HT electric/power
  - 6 - 8 wire perimeter
  - 2 - 6 wire interior
- Woven wire
  - 39" + 1-2 barbed or electric
  - Wider mesh preferred

# Electric Fencing

- Both sheep & goats can be trained to respect electric fencing
- Perimeter should be 6 - 8 wires at least 42" tall
  - bottom wire 6 - 8" from the ground
  - 6 to 12 inch spacing between wires
  - alternating hot and ground wires

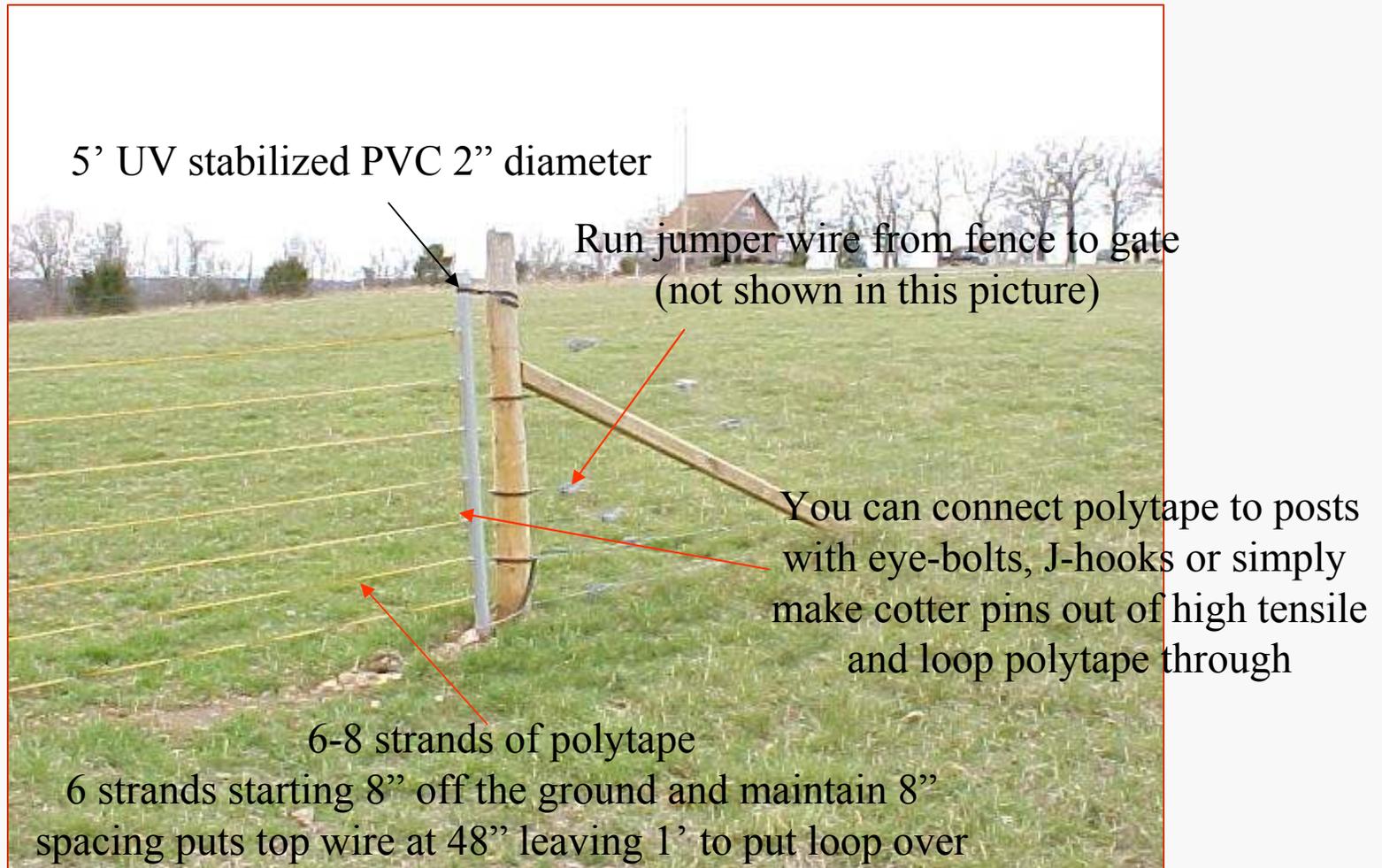


- **Sheep & Goats can be controlled with 3 or more strands of HT electric wire for subdivision fencing**
- **2 polywires have been successful for stripgrazing as long as forage supplies are adequate**
- **Electric netting is also available for temporary fencing**



# Electric Gate – Ozark Style

utilizing 6 - 8 strands of polytape and UV stabilized PVC pipe



# Conventional Fencing

- Woven wire is effective but expensive
  - 6 x 12" mesh is preferred to minimize horned goats getting caught
  - Wider spacing (24" – 36") 12.5 ga. HT now available, can be electrified, cheaper



# Conventional Fencing

- May run an electric offset wire 12 - 15" from the ground to reduce animals getting caught or climbing on fence
- 6 - 8 strand barbed wire can work or 4 - 5 strand with at least 2 electric offset wires.
- Conventional fencing is generally more expensive and less flexible



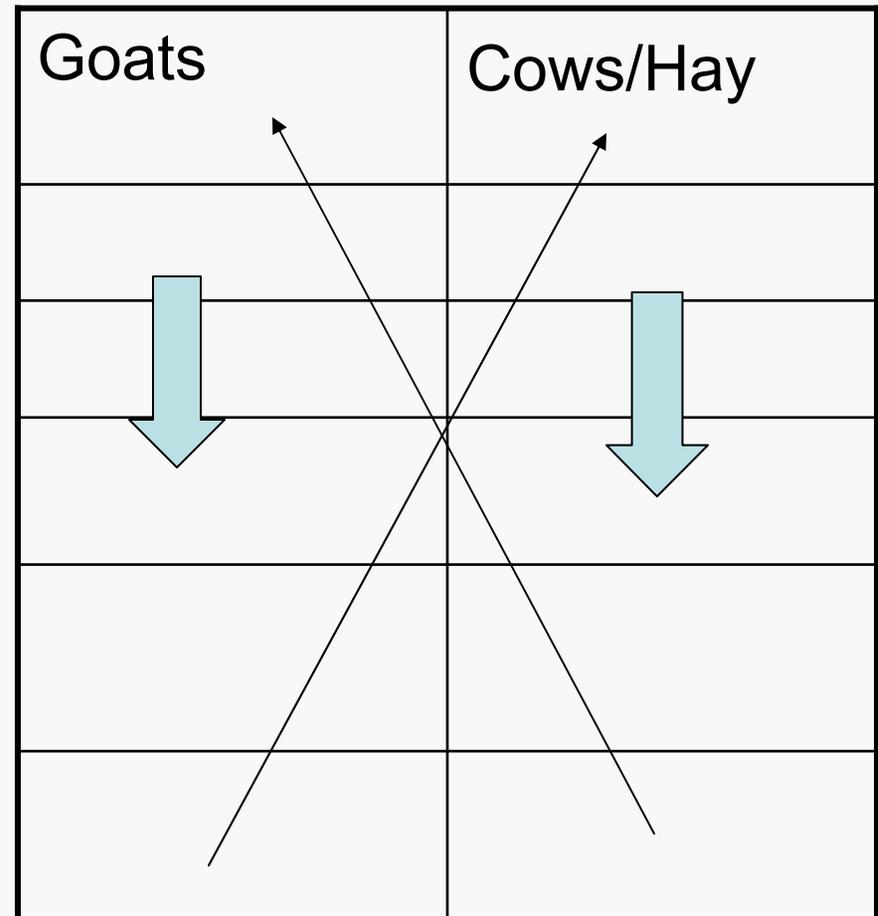
# Parasite Control/Prevention

- Parasites are a major problem
- Control and Prevention need to be planned
  - Select animals for parasite resistance
  - Grazing management
    - Watch grazing heights – not less than 4”
    - Longer rest periods to help break cycle (>40 days)
    - Grazing cattle in rotation with sheep or goats
  - Haying in rotation
  - Cropping in rotation
  - Strategic Deworming program
    - FAMACHA & FEC



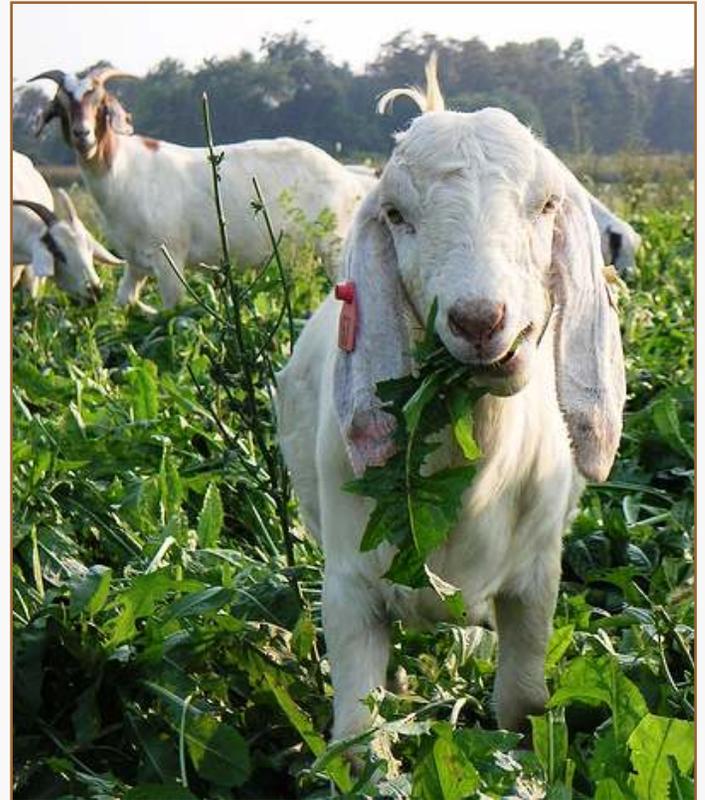
# Rotation during Spring

- Move every 3 – 5 days
- Gives each pasture a 15 – 30 day rest
- Gives double that for each species of livestock
- Helps maintain forage quality & clean up pastures
- Can be done with hay also



# Utilize grazing behavior to an advantage

- Utilize plants high in tannins
  - Goats tend to intake higher levels of tannins than other ruminants



# Utilize goat grazing behavior to an advantage

- Include browse plants in grazing system

- **Goats love browse**

- Hinge cut cull trees from woods for goats to browse



- The higher from the ground they eat the less likely they are to pick up parasite larvae
  - A lot of browse plants are higher in tannins
  - High tannin diets reduce reproduction of internal parasites

# Marketing Sheep and/or Goats

## (vs. other livestock)

- **Know what your marketing options are**
  - Direct marketing to consumers
  - Marketing direct to processor
  - Auctions
  - Pooled/graded sales
- **What the market wants**
  - Size and age
  - Timing – ethnic holidays
- **Where the markets are**
  - Local
  - National – can be found on the internet
    - <http://www.ams.usda.gov/lsmnpubs/GAuction.htm>



# Keys to a successful sheep and/or goat enterprise



- Define success
  - Profit
  - Show winners
  - Enjoyment
  - Land management
- Determine success
  - Record keeping
- Evaluate
  - Find the weak points in your production and marketing system and be willing to make changes in feeding, breeding, and management.

# Pitfalls to avoid

→ Too many livestock!

- Too much emphasis on show animals, purebreds, and registered animals.
- Over-management
  - Using drugs to cover up management problems.
  - Using too much feed to cover up management problems
- Poor selection decisions
  - Appearance vs. performance
  - Grade vs. profitability
  - Lack of culling



# Pitfalls to avoid



## → Lack of record keeping

- You don't even know if you're making a profit.
- You don't know which females are making you a profit and which ones aren't.
- You don't know which buck/ram is doing a better job.

## • Production extremes:

- Pasture/no grain vs. too much grain.
- Do what's profitable.

## • Lack of a business focus.

# Online Resources:

American Sheep Industry Association - <http://www.sheepusa.org>

Appropriate Technology Transfer for Rural Areas (ATTRA) – <http://www.attra.org>

Missouri Alternatives Center – [www.agebb.missouri.edu/mac](http://www.agebb.missouri.edu/mac)

Boer and Meat Goat Information Center – [www.boergoats.com](http://www.boergoats.com)

Langston University Goat Research and Extension –

[www2.luresext.edu/goats/index.htm](http://www2.luresext.edu/goats/index.htm)

Maryland Small Ruminant Page – [www.sheepandgoat.com](http://www.sheepandgoat.com)

Missouri Meat Goat Producers Association – [www.meatgoatproducers.com](http://www.meatgoatproducers.com)

North Carolina State University Meat Goat Research and Extension –

[www.cals.ncsu.edu/an\\_sci/extension/animal/meatgoat/](http://www.cals.ncsu.edu/an_sci/extension/animal/meatgoat/)

Fort Valley State University Goat Center Publications –

[www.ag.fvsu.edu/html/publications/GoatCenter/Publications.htm](http://www.ag.fvsu.edu/html/publications/GoatCenter/Publications.htm)

Breeds of Livestock – OSU – [www.ansi.okstate.edu/breeds/](http://www.ansi.okstate.edu/breeds/)

Sheep & Goat markets - <http://www.ams.usda.gov/lsmnpubs/GAuction.htm>

Premier 1 Supplies: sheep and goat supplies, electric fencing –

[www.premier1supplies.com/](http://www.premier1supplies.com/)

Gallagher Power Fencing – [www.gallagherusa.com](http://www.gallagherusa.com)

Kencove Fencing Supplies – [www.kencove.com/](http://www.kencove.com/)

Tru Test – Speedrite/PEL Power Fencing, livestock scales, supplies –

[www.tru-test.com/](http://www.tru-test.com/)

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# Thank You

Questions?  
Comments,  
Discussion?

