Grazing Preference is dependent on forages available and animals experience

- Desirable
  - Ironweed
  - Ragweed
  - Lambsquarter
  - Sericea
  - Spiny amaranth
  - Pigweed
  - Privet
  - Kudzu
  - Buckbush
  - Multiflora rose
  - Briars
  - Honeysuckle

- Unpalatable
  - Fall panicum
  - Yellow foxtail
  - Crabgrass
  - Millet
  - Bermuda

Grazing Preference if diverse diet is available:

<table>
<thead>
<tr>
<th>Animal Species</th>
<th>Type of Diet</th>
<th>Browse 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle</td>
<td>65 – 75</td>
<td>20 – 30</td>
</tr>
<tr>
<td>Horses</td>
<td>70 – 80</td>
<td>15 – 25</td>
</tr>
<tr>
<td>Sheep</td>
<td>45 – 55</td>
<td>30 – 40</td>
</tr>
<tr>
<td>Goats</td>
<td>20 – 30</td>
<td>10 – 30</td>
</tr>
<tr>
<td>White-tail deer</td>
<td>10 – 30</td>
<td>30 – 50</td>
</tr>
<tr>
<td>Elk, red, and fallow deer</td>
<td>30 – 60</td>
<td>40 – 50</td>
</tr>
</tbody>
</table>

1 Shrubs or trees


Chemical composition of various plants browsed by goats (%)

<table>
<thead>
<tr>
<th>Browse type</th>
<th>Crude protein</th>
<th>Neutral detergent fiber</th>
<th>Calcium</th>
<th>Phosphorous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiflora rose</td>
<td>18.2</td>
<td>34.5</td>
<td>0.99</td>
<td>0.32</td>
</tr>
<tr>
<td>Black locust</td>
<td>23.0</td>
<td>44.0</td>
<td>1.26</td>
<td>0.21</td>
</tr>
<tr>
<td>Honeysuckle</td>
<td>16.0</td>
<td>34.5</td>
<td>1.21</td>
<td>0.30</td>
</tr>
<tr>
<td>Brambles</td>
<td>17.1</td>
<td>24.5</td>
<td>0.23</td>
<td>0.84</td>
</tr>
<tr>
<td>Privet</td>
<td>20.0</td>
<td>28.8</td>
<td>0.89</td>
<td>0.34</td>
</tr>
<tr>
<td>Green briar</td>
<td>16.1</td>
<td>39.5</td>
<td>0.60</td>
<td>0.18</td>
</tr>
<tr>
<td>Trumpet creeper</td>
<td>16.7</td>
<td>43.1</td>
<td>0.42</td>
<td>0.22</td>
</tr>
</tbody>
</table>

Digestibility (IVDMD) of “WEEDS”

<table>
<thead>
<tr>
<th>Crop/weed</th>
<th>vegetative</th>
<th>boot</th>
<th>mature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fall panicum</td>
<td>72</td>
<td>63</td>
<td>54</td>
</tr>
<tr>
<td>Yellow foxtail</td>
<td>73</td>
<td>66</td>
<td>57</td>
</tr>
<tr>
<td>Crabgrass</td>
<td>79</td>
<td>72</td>
<td>63</td>
</tr>
<tr>
<td>Millet</td>
<td>59</td>
<td>55</td>
<td>50</td>
</tr>
<tr>
<td>Bermuda</td>
<td>58</td>
<td>51</td>
<td>43</td>
</tr>
</tbody>
</table>

NCSU
When considering multi-species grazing, goats and cattle have very different preferences for forages. However when forage diversity is not present all species will compete for similar forages. Typically one goat stocked for every cow will not create competition for forage and actually they improve forage for the other species since goats do not prefer grass or clover and cattle do not prefer many of the forbs and browse plants that goats prefer.

**ANIMAL HUSBANDRY AND FORAGE**

Trimming feet, deworming, meningial worm, listeria, are all common disorders that can affect your profitability. Hoofs typically need to be trimmed two or more times per year. In wet conditions hoofs grow faster. Goats on wet soil or in thick wet forage will increase hoof growth and thus the need for hoof trimming. Producers use different techniques to try and reduce hoof trimming. Some pile large rock, others use ramps faced with sandpaper or raised expanded metal to assist in trimming hoofs.

Worms in goats have rapidly become immune to a number of commercial dewormers. Many producers and researchers are very excited about forages with concentrated tannins acting as a natural dewormer. Sericea lespedeza, chicory, and birdsfoot trefoil are a few of the more common species that have high concentrated tannins. Many of the browse species may also have concentrated tannins. Utilizing these forages in a grazing system could be very beneficial.

If a leader follower grazing system is implemented cattle and goats, goats would be the lead animal.

**Goat Requirements for TDN and Protein**

<table>
<thead>
<tr>
<th>Forage Quality &amp; Goat Requirements</th>
<th>TDN %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pasture Veget.</td>
<td>70</td>
</tr>
<tr>
<td>Pasture Mature</td>
<td>60</td>
</tr>
<tr>
<td>Pasture Dead</td>
<td>50</td>
</tr>
</tbody>
</table>

**Forage Quality & Goat Requirements PROTEIN**

<table>
<thead>
<tr>
<th>Forage Quality &amp; Goat Requirements</th>
<th>CP %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pasture Veget.</td>
<td>18</td>
</tr>
<tr>
<td>Pasture Mature</td>
<td>15</td>
</tr>
<tr>
<td>Pasture Dead</td>
<td>10</td>
</tr>
</tbody>
</table>

**Forages:**
If voids are present in your forage system consider the following species.

**FORAGE SPECIES**
- **COOL SEASON**
  - Orchardgrass
  - Matua bromegrass
  - Reed Canarygrass
  - Tall Fescue
  - Winter annuals
  - Alfalfa
  - Brassicas (i.e. Rape, Kale, Turnips)
- **WARM SEASON**
  - Eastern gamagrass
  - Big bluestem
  - Indiangrass
  - Crabgrass
  - Pearl millet
  - Sudan grass
  - Sorghum x
  - Sericea lespedeza
**Water Requirements:**
Goat’s water requirements are much lower than cattle. Non-lactating goats and weanlings only need 0.5 gal/day, whereas heavy lactating does need 1.5 to 2 gal/day. Fresh clean water is important for goats. Portable water is a practical option for goat producers.

**Shelter:**
The primary need for shelter is at kidding time and for mature animals during cold wet conditions. Shelter can range from a barn to round rolls of hay placed as a windbreak. Some producers prefer portable shelter because of affordability, nutrient and health management, and due to is lowering the need for cleaning. Wagons can be used but be aware that kids cannot climb into wagons until they are a week or more old. A skirt can be put on wagons for young kids to get under.

**GUARDIAN ANIMALS**
Predators are a concern particularly with the large population of coyotes now in the area. Another predator that is becoming a growing concern is black headed vultures. People use a number of different guardian animals: miniature donkeys, llamas and dogs are the most commonly used. In our area, guardian dogs are mostly used partially because they are nocturnal which aids in predator control. Some of the more common guardian dogs are: Great Pyrenees, Commodore, and Anatolian Shepard’s. Gelded donkeys or Jenny’s are recommended, not Jack’s.

**FENCING**
Goats are not as difficult as most people think to control with fencing, especially if a good forage base is available. Goats tend to go under a fence more than jump over it. Fencing is the hurdle that keeps many producers from considering goats. Cattle fences can be retrofitted to control goats. Each type of fence has benefits and short comings. It is often best to use permanent fencing on the perimeter and use portable temporary electric fencing for cross fencing, allocating grazing as needed.

Consider livestock management, handling, watering, shade, feeding and resource impacts when locating fences. Locate watering facility so fields can be cross-fenced with water accessibility.

The minimum number of paddocks recommended is 3 however 5 and even 8 or more paddocks are desirable for:

- Improved parasite control
- Calmer livestock
- Increased Carrying capacity
- Reduced hay fed
- Increased animal gain per acre
- Improved persistence of forages
- Increased forage consumption
- More uniform grazing
- Improved forage utilization
- Higher production
- Better distribution of excreta
- Reduced runoff and erosion
- Improved water quality
- Increased streambank stability
- Improved use of excess pasture as hay
**Permanent Fencing:**

**Non-electric Fencing:**

- **Woven wire**

Woven wire is a reliable but expensive form of fencing, place woven wire on the inside of post. No climb horse fence or 4 inch mesh works well for goats. The 6\" mesh is sometimes called goat killer wire because goats with horns often get their heads hung in it. The 12\" mesh wire works well for mature goats; they typically can get their heads out of 12\" mesh wire. Goats tend to walk beside non-electric wire rubbing their side, stretching the wire, lowering the integrity of the fence, thus shortening the fence life expectancy. It is recommended to place an offset electric wire approximately 12\" off the ground and 6\" or more away from the non-electric fence. The offset wire will stop goats from rubbing on the fence and provide an electric charge for cross fencing.

**Barb wire**

Barb wire, non-electric high tensile, and board fence are not typically recommended however they can be used if two offset high tensile electric wires are run at approximately 8\" and 18\" off of the ground. Offset wires should be 6\" or more from the original fence.

**Electric Fencing:**

Goats have small feet so they aren't grounded as well as cattle. However, goats are very sensitive to electricity and respect electric fences once they are properly broke to it. The recommended voltage for control of goats is 4,000 volts or more.
Training goats to respect electric fencing:
Place goats in a small secure pen (approximately 100 sq. ft. per animal) constructed of non-electric fence such as woven wire, place an offset electric wires 8" and 16" off the ground. Offset wires should be 6" to 10" from the non-electric fence. Leave animals in the area for 5 days or more prior to turning into incrementally larger paddocks.

Recommended Wire Spacing and Charge

<table>
<thead>
<tr>
<th>Wires</th>
<th>Animal Type</th>
<th>Spacing from Ground (Inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Cattle, Sheep, Goats</td>
<td>8, 16, 28</td>
</tr>
<tr>
<td>4</td>
<td>Cattle, Sheep, Goats</td>
<td>8, 16, 24, 32</td>
</tr>
<tr>
<td>5</td>
<td>Cattle, Horses, Sheep, Goats</td>
<td>8, 14, 20, 30, 40</td>
</tr>
<tr>
<td>6-8</td>
<td>Predator Control</td>
<td>6, 12, 18, 26, 34, 44, 56, 68</td>
</tr>
</tbody>
</table>

Typically best to electrify all wires to reduce shorts, during dry conditions every other wire grounded improves shock.

Grounding electric fencing:
Proper grounding is the most common problem with electric fences. Grounding systems should be separated by 25’ or more. A minimum of 3 ground rods should be installed for an electric fence charger (energizer). Test voltage of ground rods; if 500 or more volts are present at the ground rod add additional ground rods. Ground rods should be a minimum of 10’ apart.

Lightning protection:
For lightning protection plug the charger into a surge protector, install an induction loop (lightning choke) with a lightning arrestor or spark gap attached to a ground rod system with at least one more ground rod than the charger has. Ground rods of the lightning ground should be 65’ or more from other ground systems.

Install switches on different electric fence lines or paddocks to manage voltage and allow easier maintenance. Short finders are a valuable tool for hard to find electrical shorts. It is recommended to start at the far end of the fence line and test amperage with short finder. Short finders point in the direction of the short. I find it best to start using short finder at the far end of the fence.

Bracing
Bracing is one of the most important components of a fence, all wires are dependent on the brace assembly. Extent of bracing needed depends on number of wires, soil stability, soil depth, and materials used. It’s best if end posts lean 2” to 4” away from the direction of pull. To improve the integrity and life of the fence tie off wires at corners and major dips.

Types of braces recommended:
- H brace – standard good for all types of fence, where the post depth is 36” or more or 30” in concrete
- Double H brace – post depth is 24 to 30”
- Floating brace – good for all fences where post are 36” deep or 30” in concrete. Materials include 6” post with 4” leaning brace with 12.5 gauge wire and tensioner from end of brace to bottom of the post.
- When tying to trees use a 6” lag eye bolt 5/16” diameter, only attach to trees that are expected to live 20 or more years and are low quality timber specimens.
Gates or Gaps
Panel gates are typically best. Electric gaps can also be constructed using recommended wire spacing and connect horizontal wires with a vertical wire every 10’ or so. Three electric handles are typically needed.

Predator Fencing
Predator fencing can be 4” x 4” woven wire with a barb “rust” wire on the ground or buried 2” to keep animals from burrowing under the fence. High tensile electric wire above woven wire on 6” spacing to the height needed to discourage predator from entering. For general predator control a height of 68” is recommended. See “Recommended wire spacing and Charge” table for wire spacing of high tensile wire.

If only a small area is fenced for predator control night penning is another option to reduce predator problems. Be aware that goats graze at night as well as the day time so night penning will reduce grazing time and animal performance may be compromised.

Temporary Electric Fencing
Several types of temporary fence are available: polywire (9 strand stainless steel is recommended), electro-netwire (poly woven wire with a bottom ground wire and post included), 17 gauge wire (good durable wire but not as user friendly as polywire types). Consider replacing temporary fence with a permanent fence if it stays in one location over 6 months.

SUMMARY
Goats offer many opportunities for producers and land managers. Goats are the species of choice particularly for producers that have early successional growth, “grown up farms”. Improved forage management, improved utilization, less clipping, and more production per acre are all possible when goats are added to the forage management system. Producers need to realize that goats are not simply small cows they require as much or more labor input than stocker cattle. Trimming feet commonly takes a lot of time. Before even considering goats, improved fences, predator control and parasite control are all essential. Have shelter available prior to kidding. Construct a fence that controls livestock and provides peace of mind. For perimeter and primary cross fences construct permanent fence with temporary fencing used for strip grazing or temporary cross fences. An exciting challenge is managing what you once considered weeds as forage.

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