Ecosystem Management with Meat Goats

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NC STATE UNIVERSITY
The Swiss valley where I grew up on a farm. View of the Swiss Alps
- [http://go.ncsu.edu/jmluginbuhl-ogs2016](http://go.ncsu.edu/jmluginbuhl-ogs2016)
- [https://meatgoats.ces.ncsu.edu](https://meatgoats.ces.ncsu.edu)
Regional Goat and Sheep Producer Training — A SUCCESS STORY

- Pictures by Lauren Langley, Extension Agent, Livestock and Forages, Alamance. The Regional Goat and Sheep Producer Training held on Saturday January 30, 2016 at the Guilford County Extension Office in conjunction with more.

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The NCSU Meat Goat Program & the Status of the NC Meat Goat Industry

In July 1994, the NC general Assembly approved a budget that included $200,000/year in recurring funds for the development of a meat goat program at NCSU. Following that appropriation, NCSU established in 1995.

2015 — Year of the Goat

The Goat (Chinese: 羊; pinyin: yáng) is the eighth sign of the 12-year cycle of animals that appear in the Chinese zodiac related to the Chinese calendar. The Year of the Goat starts more.

Is There a Market for Goat Meat in the US? Yes, There Is!

Although the current US market picture is disjointed and confusing, there is large and an unfilled demand for goat meat in the major cities of the United States, and especially in the population more.

History of the NCSU Meat Goat Program

1987-1989 Drs. Jim Green and Paul Mueller from the Department of Crop Science arranged Brush goats (see picture...
Nutrition/Forages

EXTENSION FACTSHEET
Nutritional Feeding Management of Meat Goats
Goats raised for meat need high quality feed in most situations and require an optimum balance of many different nutrients to achieve maximum profit potential. This publication covers nutritional requirements...

EXTENSION FACTSHEET
Poisonous Plants to Livestock
A guide to many of the plants, shrubs, and flowers that are poisonous to animals.

Forages/Grazing

EXTENSION FACTSHEET
Co-Grazing Meat Goats and Beef Cattle Has Many Advantages
This factsheet presents several advantages to co-grazing meat goats and beef cattle.

EXTENSION FACTSHEET
Forage Needs and Grazing Management for Meat Goats in the Humid Southeast
This factsheet offers information on forage needs for meat goats, as well as typical grazing behavior.
Parasite Control

Gastrointestinal Parasites

- FAMACHA Info Guide
- FAMACHA System

Modified McMaster's Fecal Egg Counting Technique
A guide to counting fecal eggs in meat goats, modified from the McMaster Procedure

- Goat Dewormer Dosages
- Goats Dewormers – Withdrawal Times
- Internal Parasite Egg Pictures
- Low Cost Fixes to Decrease GIT Parasites
- Sheep Dewormer Dosages
- Sheep Dewormers – Withdrawal Times
- FAMACHA ANEMIA SCORES SHEET
Web Resources

American Consortium for Small Ruminant Parasite Control®

American Dairy Goat Association®

Boer Goat Association of North Carolina®
  • Facebook link®

extension’s Goat Resources®

International Goat Association®

Langston University Training and Certification Program for Meat Goat Producers®

National Sustainable Agriculture Information Service - ATTRA®
  • Livestock and Pasture®

NC Choices
  • NC Choices is a CEFS® initiative that promotes the advancement of local, niche and pasture-based meat supply chains

North Carolina 4-H Youth & Livestock®

North Carolina Department of Agriculture & Consumer Services®
Goat Services

Ecosystem
- Clean-up pastures, woodlots, road sides, stream banks lost to woody and broadleaf plants, nutrient cycling
  - what class of animals: does, kids, castrates?

Other
- Meat/milk for home consumption
- Extra income
- Easier to handle (smaller) than cows
- To teach my children animal husbandry principles
Have you thought of?

- I have cattle fences: can they contain goats?
- How much would it cost me to upgrade my existing fences?
- Do I have an adequate fence charger to contain goats?
- What is the predator/dog pressure?
- Will I need guard animals? Most probably
- Is there a market close-by?
- Selling animals at farm gate: is it an option?
- How much do I know about caring for goats?
Fence Types

- Physical Barrier
  - woven wire
  - wood
  - barbed wire
- Mental Barrier
  - any fence that distributes an electric shock when animal comes in contact

Self explanatory
Example of a woven wire, high tensile fixed knot fence that bounces back. This one has a 12 x 6 inch opening. Many different openings can be found on the market: I prefer smaller openings (3 x 3 inch) at the bottom to contain kids and lambs in, and keep predators out. The openings get larger with the height of the fence.
The components of an electric fence: each color denotes a different component.
Self-explanatory
➢ Electric netting
➢ - braided poly-steel filaments woven into a net wire fence
➢ - very effective temporary fence
Polywire
- braided, UV-stabilized polyethylene plastic interwoven with 3 to 9 stainless steel, copper or aluminum filaments
Polytape
- similar to polywire but flat, 5/8 to 1 1/2” wide
- excellent visibility

Self-explanatory
The fencing systems is made up of several components:

2. Chargers or energizers to deliver electricity...

Examples of two solar chargers and one charger plugged into the electrical grid.
The fencing systems is made up of several components:
3. a grounding system...
The fencing systems is made up of several components:
4. a lighting diverter system.
Excellent publications can be found online
Depending on the situation and location, a predator control maybe needed such as donkeys, guard dogs, llamas or alpacas. Guard dogs a have a herding instinct, and will try their best to keep the animals together, whereas a donkey or llama or alpaca may stay with one sub-group only. In addition, dogs bark, a strong deterrent.
Depending on the environmental conditions, animals will need shelters. Goats do not like the combination of cold weather and rain because they only have a thin layer of subcutaneous fat. Shelters need to be well ventilated to prevent the accumulation of ammonia, especially for the young that are closer to the ground, as young animals could develop pneumonia in the presence of too much ammonia. In the winter months, shelters may need to be cleaned out periodically of manure, straw-soaked urine, hay wastage, etc.
Mismanaged wood lot: no more browse, goats are debarking trees
Goats are natural browsers because they evolved in arid regions of the world where browse provided the bulk of the feed. Goats can even stand on their hind legs to reach higher in the canopy. Horses are at the other extreme with a preference to grass, and cattle and sheep are in the middle.
Goat Foraging Behavior

- Active foragers
- Small mouth and split upper lip
- Access to highly digestible plants or parts of plants
- Will travel farther than cattle or sheep in search of feed

Self-explanatory
Goats do well in woodlot situations and those should be managed as a valuable resource for the summer months as they can provide good forage in the form of browse and shade.
In the western US pastures, the proportion of weeds increased dramatically as the sheep population decreased below a certain density.
Broadleaf plants browsed by goats when in a young, lush stage of maturity
Broad leaf plants relished by goats
Other broadleaf “weeds” consumed by goats
Broadleaf plants browsed by goats when in a young, lush stage of maturity. CP is the acronym for crude protein. Compare the crude protein of some of these plants to the nutritional requirements of different classes of goats in earlier slides, shown in a graph form.
Phytolacca americana
Pokeweed, pokeberry, poke, inkberry, pigeonberry

Poisonous parts of plant: roots (most toxic), shoots, leaves, and berries
Animals poisoned: cattle, horses, hogs (roots), causes abortion in cows. No observed problems with goats
Pictures below were taken at the NCSU research unit when browsing young, lush plants

What was left of the pokeweed plants
Japanese stiltgrass is an invasive plant that grows in disturbed areas. Goat may eat it, but will not control it.
Goats usually do not browse yellow crownbeard
Summer Annual Forages
Volunteer stand of
• Crabgrass
• Pigweed

Crabgrass: 17% CP
Pigweed: 20 – 27% CP
90 adult goats
~ 4.6 a total
~ 0.4 a/plot  
Grazing duration: 44 days
No. of cycles: 3
Average forage availability: 1960 lb dry matter/acre
Range: 1020 to 3336 lb dry matter/acre
Stocking density: 219 goats/a for one day
Duration: ½ to 3 days, depending on forage availability
Control plot strip grazed/browsed during the 3rd cycle
Control plot: 2:00 PM
Goats only left the stems of the pigweed plants
Goats love buffets!

Goat's diet

- Browse
- Forbs (Broadleaf weeds)
- Grass & legumes
Brose plants consumed by goats
Browse consumed by goats. CP means crude protein. The nutritional requirements for CP are 15-16% for growing goats and lactating goats. Most browse and broadleaf weeds (forbs) contain protein concentrations that are above nutritional requirements. Nevertheless, some browse contain concentrations of tannins that can bind tightly to proteins and make them unavailable for enzymatic digestion in the small intestines.
Virginia creeper: 17% CP
Brambles: 17% CP
Walnut
Cedar
### 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><em>Multiflora rose</em></td>
<td>18.8</td>
<td>34.5</td>
<td>0.99</td>
<td>0.32</td>
</tr>
<tr>
<td><em>Black locust</em></td>
<td>23.0</td>
<td>44</td>
<td>1.26</td>
<td>0.21</td>
</tr>
<tr>
<td><em>Honeysuckle</em></td>
<td>12.8</td>
<td>34.5</td>
<td>1.21</td>
<td>0.30</td>
</tr>
<tr>
<td><em>Brambles</em></td>
<td>15.9</td>
<td>24.5</td>
<td>0.23</td>
<td>0.84</td>
</tr>
<tr>
<td><em>Privet</em></td>
<td>18.0</td>
<td>26.8</td>
<td>0.89</td>
<td>0.34</td>
</tr>
<tr>
<td><em>Green briar</em></td>
<td>17.0</td>
<td>39.5</td>
<td>0.60</td>
<td>0.18</td>
</tr>
<tr>
<td><em>Kudzu leaves</em></td>
<td>23.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><em>Trumpet creeper</em></td>
<td>16.7</td>
<td>43.1</td>
<td>0.42</td>
<td>0.22</td>
</tr>
</tbody>
</table>
Goats can be flash-grazed (grazed or browsed fast) along stream banks or irrigation ditches. Roadsides can also provide good browse/forage during the summer months.
Biological Control of Kudzu Using Goats

- Please do not feed the goats
- Beware electric fence

This control mechanism is part of a stream restoration project in North Creek using natural chemical design techniques. Kudzu is an invasive non-native plant that is threatening North Creek here on Centennial Campus. Other Kudzu controls will occur in July. Stream restoration begins in winter 2003-2004.

In addition, the sign suggests that the goats will be monitored for signs of toxic plants and that the public is asked to report any sightings of such plants.
Kudzu sites browsed by goats on NCSU Centennial campus
...the reason why kudzu is difficult to eradicate with herbicides.
To eliminate kudzu, the strategy is repeated defoliation with a high stocking density as soon as there is adequate regrowth. It may take several years to eradicate. In that particular, the leaves from the first defoliation averaged 23.7% crude protein. Goats also relished the terminal stems that averaged 11.9% crude protein. Experimental site was defoliated 6 times starting 6 June and ending 8 October 2003. Summer was extremely wet, favoring fast regrowth.

Site 1 SIZE: 0.3 acre - Grazed: 6/2 - 6/6 * 6/23 - 6/26 * 7/16
7/17 * 8/4 - 8/6 * 9/2 - 9/4 * 10/6 - 10/7
Initial grazing height in June: 30 - 55 inches (approximate average 3.5 ft)
Regrowth grazing height = 13 inches
Leaf size was smaller after each successive defoliation
*20 adult does – last grazing with only 10 does
2004 Grazing Season

Started: 5/25/04
Ended: 9/27/04

No. goats: 20
Acreage: 5.3
Total animal grazing days = 2450
Seasonal stocking rate ~ 3.77 goats/acre
Right: Area where goats did not browse
Left: Area where goats browsed – one year later