

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>
- <https://meatgoats.ces.ncsu.edu>



Meat Goats

[Basic Management](#) | [Health](#) | [Marketing & Economics](#) | [Nutrition/Forages](#) | [Parasite Control](#) | [Reproduction](#) | [Spanish Corner](#) | [Dairy](#)

- [Agent Resources](#)
- [Web Resources](#)
- [Books](#)
- [Crop Science Extension](#)
- [Animal Science Extension](#)
- [Photo Gallery](#)



FEATURED CONTENT



Organic Grower School Spring Conference

There is a Livestock Track and I will be discussing 'Ecosystem Management with Meat Goats' on Saturday and Sunday morning from 9:00AM to 10:30AM. The Spring Conference offers practical, regionally-

[READ THE REST »](#)

- [XII International Conference on Goats](#)
- [Welcome to the NCSU Meat Goat Website](#)
- [NCSU Small Ruminant Educational Unit](#)
- [Organic Grower School Spring Conference](#)
- [XII International Conference on Goats](#)

Tweets from our team

NC NC Coope...
@ncce_news

RT @NCSUExtForestry: North Carolina's Arbor Day is just around the corner. We have the event to help you celebrate!
fb.me/4nMNYNDhT

02 Mar

NC NC Coope...
@ncce_news

Automated greenhouses, UAVs touted as vital tools in feeding the world
bit.ly/1oN1CNT via @FarmPress

01 Mar

NC NC Coope...
@ncce_news

RT @pgmckenzie: Ext Master Gardeners learn various veg garden methods; cloth containers, straw bales, more.



01 Mar

NEWS View All

Regional Goat and Sheep Producer Training – A SUCCESS STORY popular

- 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 »](#)

Posted: 2/9/16

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 [MORE »](#)

Posted: 8/21/15



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 »](#)

Posted: 8/26/15

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 »](#)

Posted: 8/20/15

History of the NCSU Meat Goat Program

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

EVENTS View All

Organic Growers School Spring Conference

Sat Mar 12, 2016 @ 7:30 AM - Sun Mar 13, 2016 @ 5:30 PM

Where: UNC Asheville Career Center, 1 University Heights, Asheville, NC 28804, United States

— 3 days away

XII International Conference on Goats

Sun Sep 25, 2016 @ 8:00 AM - Fri Sep 30, 2016 @ 5:00 PM

Where: Kervansaray Lara Convention Center - Antalya, Turkey

— 7 months away

Web Resources

Books

Crop Science Extension

Animal Science
Extension

Photo Gallery



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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.

- Agent Resources
- Web Resources
- Books
- Crop Science Extension
- Animal Science Extension
- Photo Gallery

Print Content Only

Parasite Control

Gastrointestinal Parasites



- FAMACHA Info Guide
- FAMACHA System



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Automated greenhouses, UAV's

EXTENSION FACTSHEET

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

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Web Resources

[American Consortium for Small Ruminant Parasite Control](#)¹⁵

[American Dairy Goat Association](#)¹⁶

[Boer Goat Association of North Carolina](#)¹⁷

- [Facebook link](#)¹⁸

[extension's Goat Resources](#)¹⁹

[International Goat Association](#)²⁰

[Langston University Training and Certification Program for Meat Goat Producers](#)²¹

[National Sustainable Agriculture Information Service - ATTRA](#)²²

- [Livestock and Pasture](#)²³

[NC Choices](#)

- NC Choices is a [CEFS](#)²⁴ initiative that promotes the advancement of local, niche and pasture-based meat supply chains

[North Carolina 4-H Youth & Livestock](#)²⁵

[North Carolina Department of Agriculture & Consumer Services](#)²⁶

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.

Components of an Electric Fence

- Wire
- Posts
- Insulators
- Connectors and Switches
- Charger or Energizer
- Grounding System (Ground Rods)
- Surge Protector, lightning diverter

The components of an electric fence: each color denotes a different component.



**12 1/2 gauge
high tensile, class 3
galvanize steel d wire**

**Distance from soil
surface (inches)
6, 14, 22 (24), 32, 42**

Self-explanatory

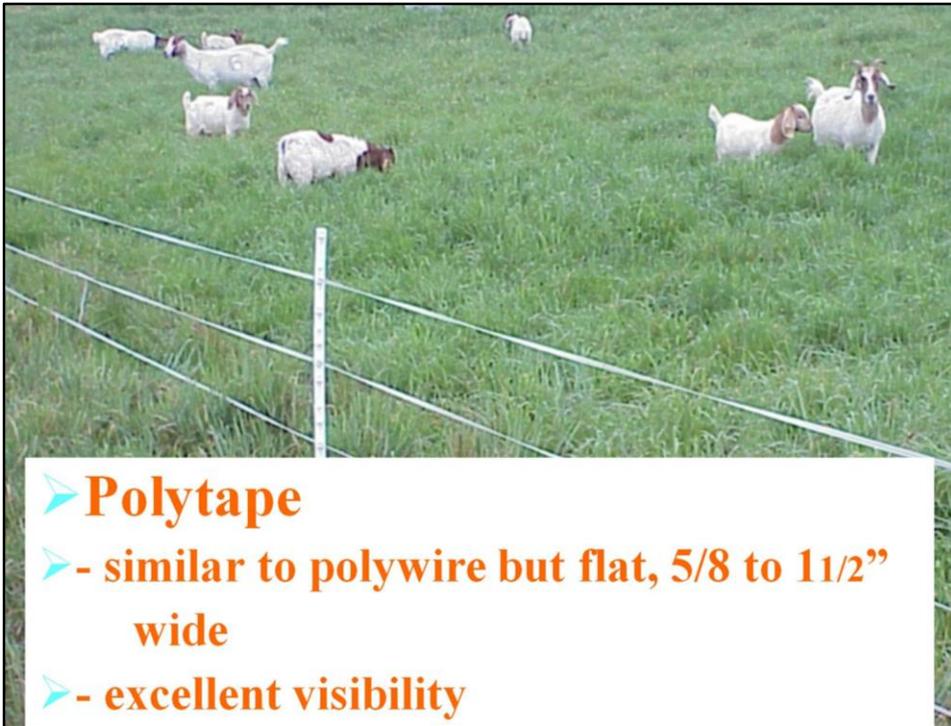


- **Electric netting**
- - braided poly-steel filaments woven into a net wire fence
- - very effective temporary fence



➤ **Polywire**

- - braided, UV-stabilized polyethylene plastic interwoven with 3 to 9 stainless steel, copper or aluminum filaments



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 lightning 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

Diet preferences % of diet

Plant	Horse	Cattle	Sheep	Goat
Grass	90	70	60	20
Weed	4	20	30	20
Browse	6	10	10	60

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

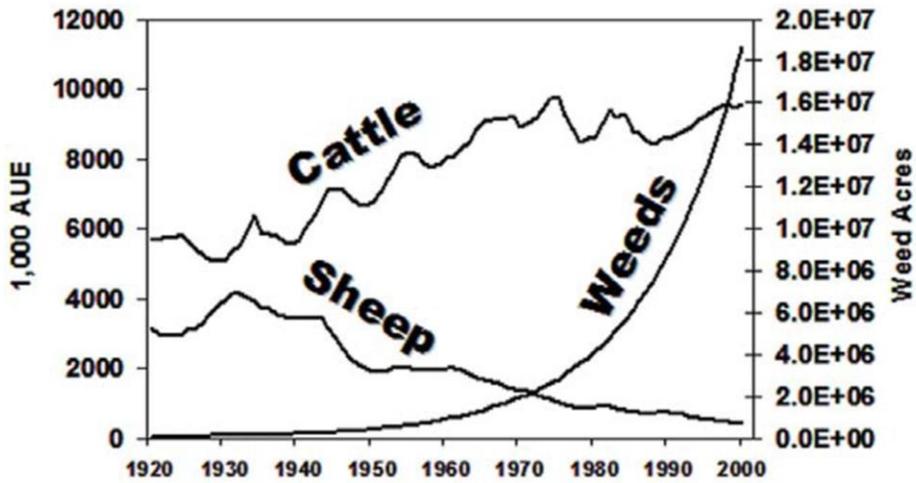
- Active foragers
- Small mouth and split upper lip
- Access to highly digestible plants or parts of plants
- Will travel farther than cattle or sheep in search of feed

Self-explanatory



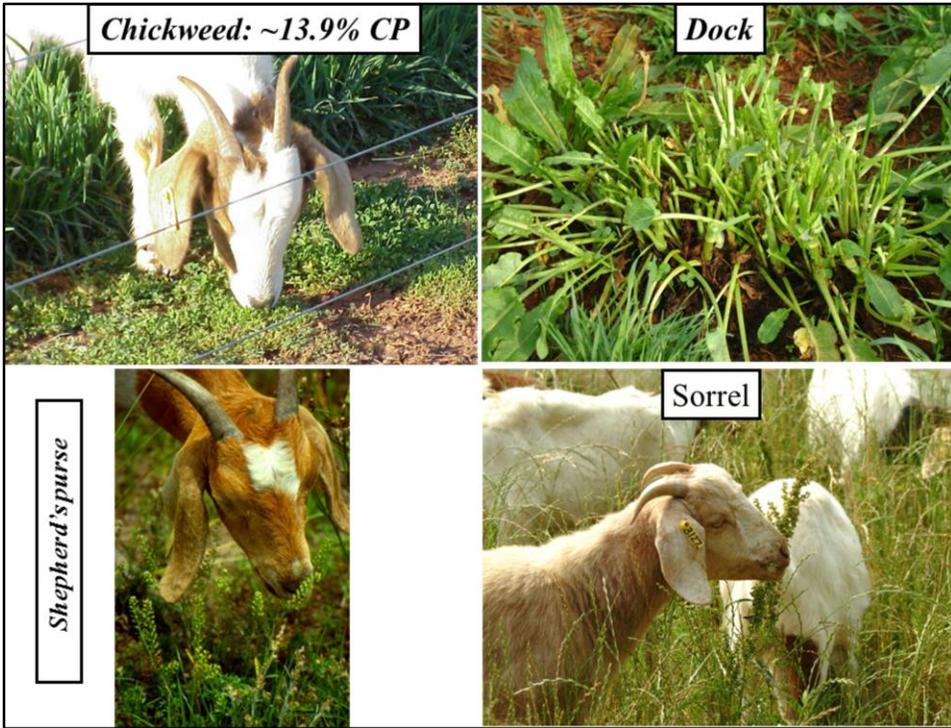
Goats do well in woodlot situations and those should be managed as a valuable resource for the summer months as they can provide good forage in the form of browse and shade.

Western USA

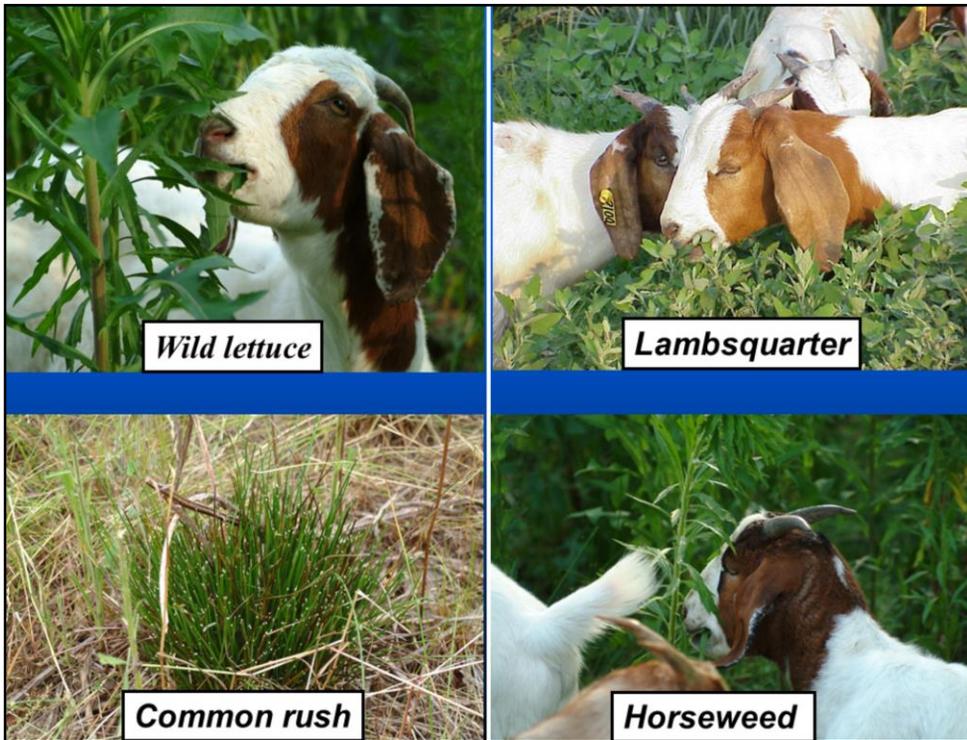


In the west, sheep have been instrumental in keeping weeds down
As sheep populations have declined, weeds increased rapidly

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





**Bamboo grass,
Japanese stiltgrass**

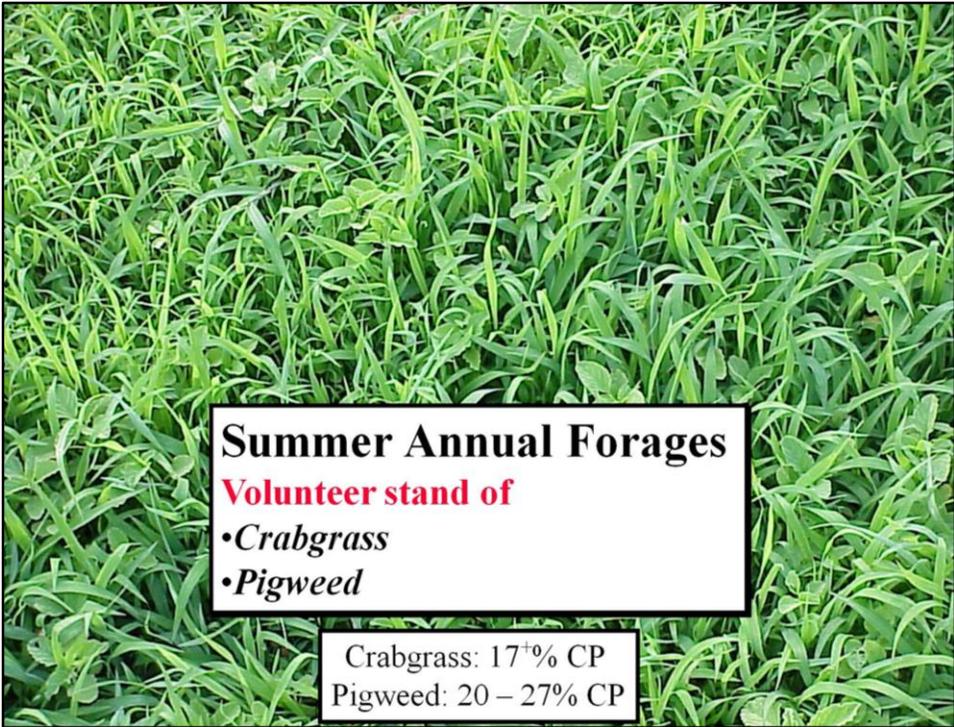
Microstegium vimineum



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

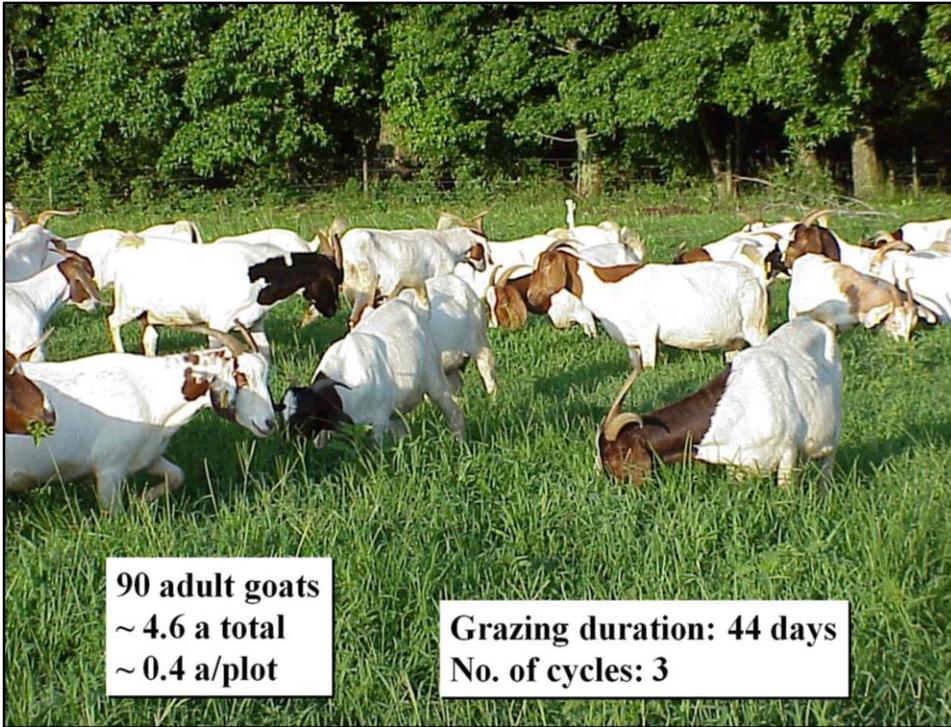


Summer Annual Forages

Volunteer stand of

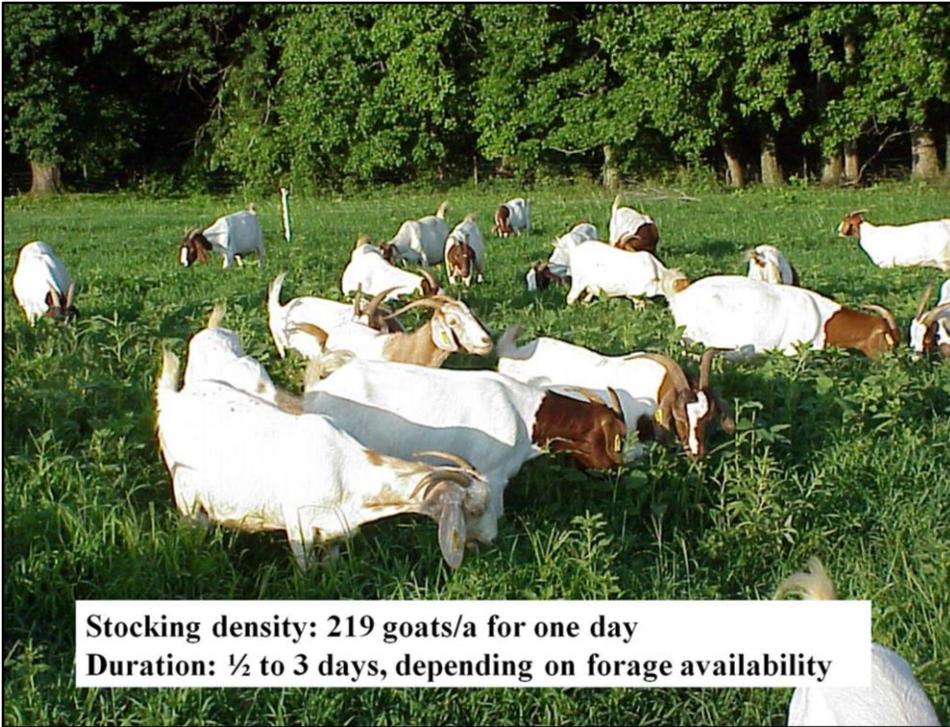
- *Crabgrass*
- *Pigweed*

Crabgrass: 17⁺% CP
Pigweed: 20 – 27% CP





Average forage availability: 1960 lb dry matter/acre
Range: 1020 to 3336 lb dry matter/acre

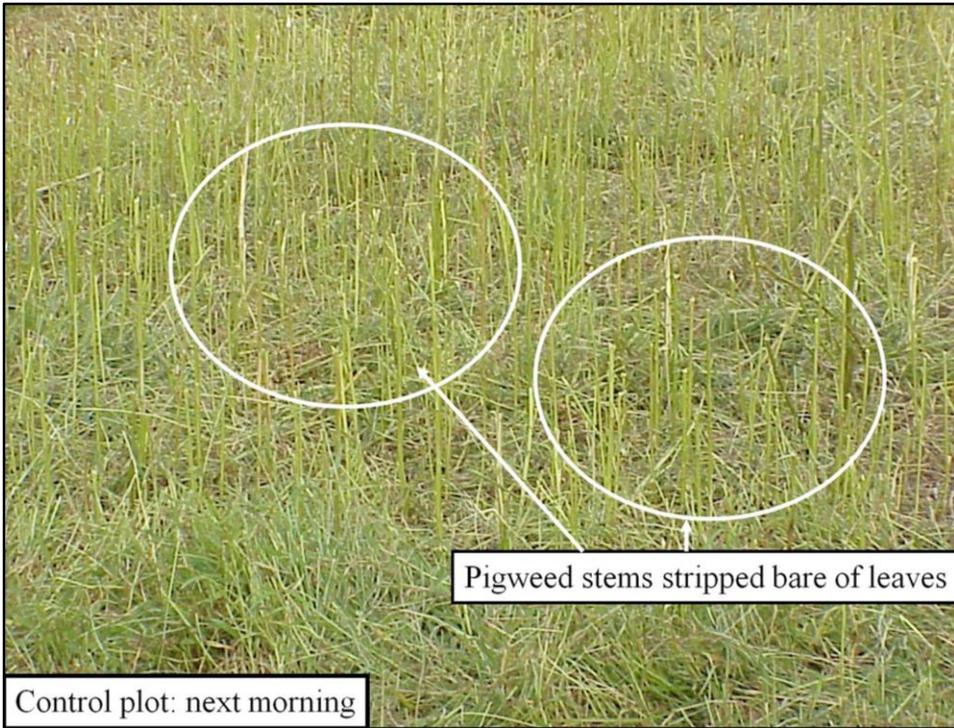


Stocking density: 219 goats/a for one day
Duration: ½ to 3 days, depending on forage availability



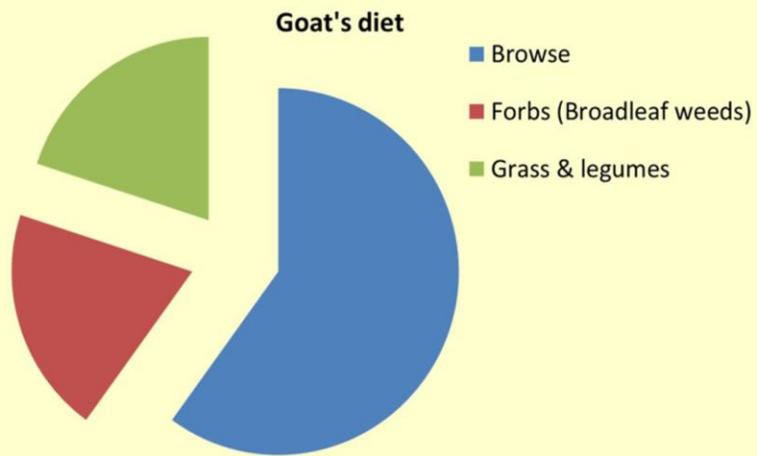
Control plot strip grazed/browsed during the 3rd cycle





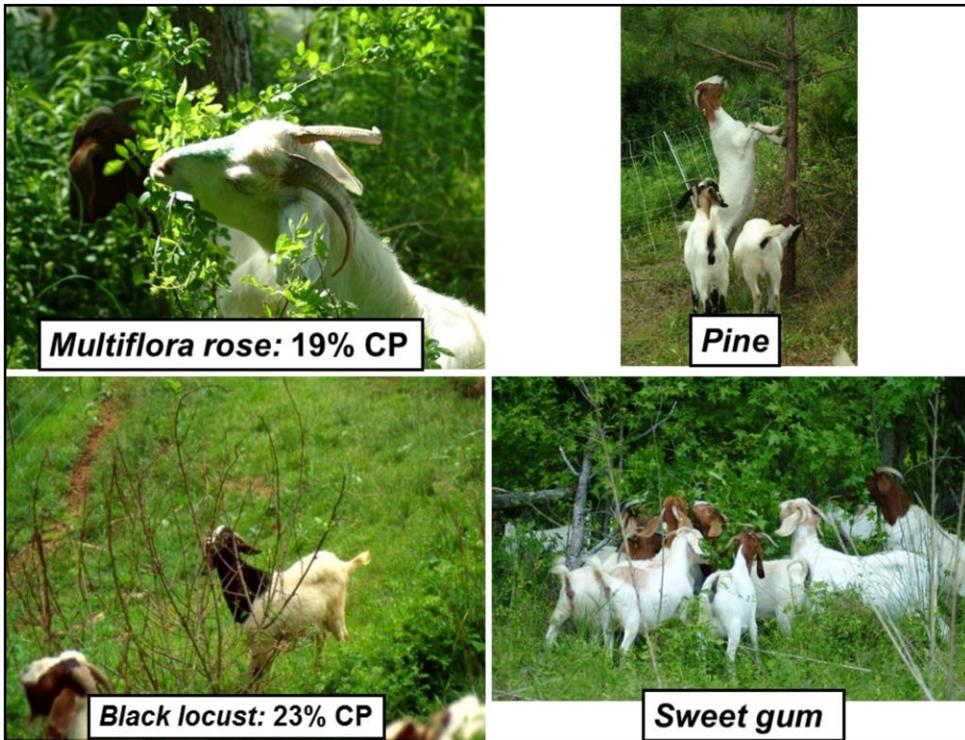
Goats only left the stems of the pigweed plants

Goats love buffets!





Browse plants consumed by goats

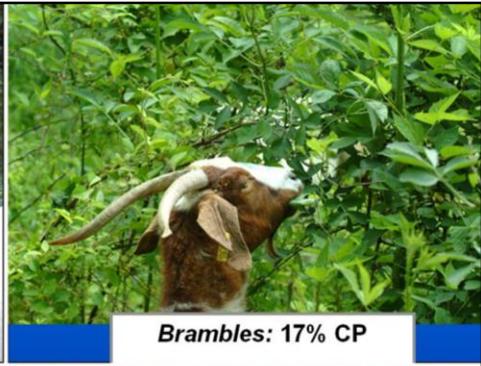


Browse consumed by goats.

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 (%)

Browse type	Crude protein	Neutral detergent fiber	Calcium	Phosphorous
<i>Multiflora rose</i>	18.8	34.5	0.99	0.32
<i>Black locust</i>	23.0	44	1.26	0.21
<i>Honeysuckle</i>	12.8	34.5	1.21	0.30
<i>Brambles</i>	15.9	24.5	0.23	0.84
<i>Privet</i>	18.0	26.8	0.89	0.34
<i>Green briar</i>	17.0	39.5	0.60	0.18
<i>Kudzu leaves</i>	23.7			
<i>Trumpet creeper</i>	16.7	43.1	0.42	0.22

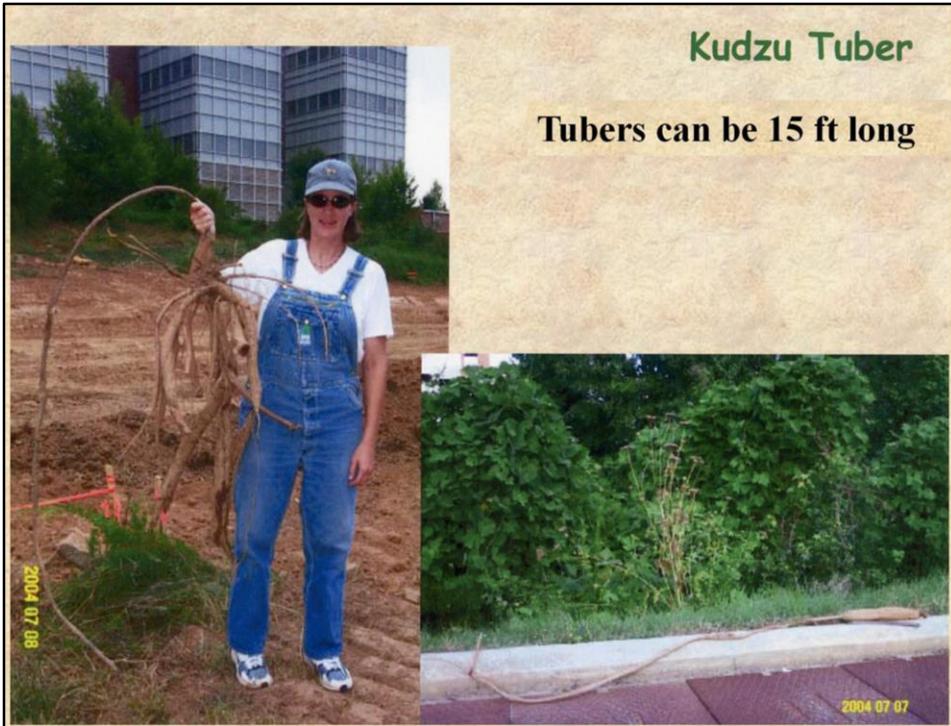


Goats can be flash-grazed (grazed or browsed fast) along stream banks or irrigation ditches.
Roadsides can also provide good browse/forage during the summer months

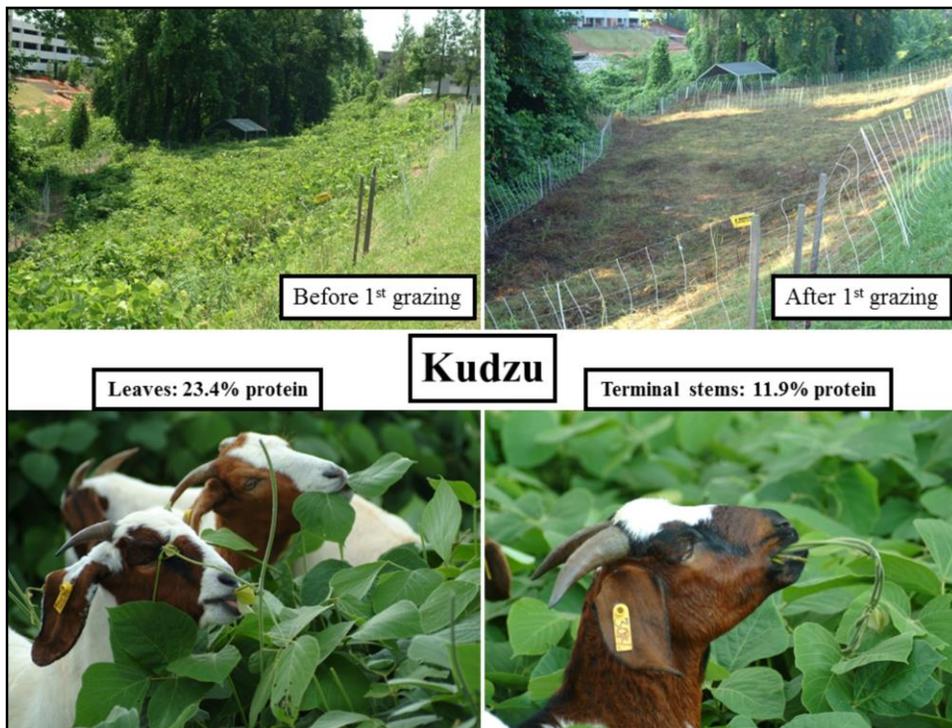




Kudzu sites browsed by goats on NCSU Centennial campus



...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



Kudzu - Site 2 - 2004



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