



# *Tennessee's Goat and Sheep Grazing/Browsing Planner*

*By An Peischel and Greg Brann*

Develop goals addressing:

Quality of Life, Types of Production  
Management and Vision for the Farm



## Body Condition Scoring (BCS) Guidelines for Goats

	Thin (1 – 3)			Moderate (4 – 6)			Heavy (7 – 9)		
Trait	1	2	3	4	5	6	7	8	9
Visible Ribs	All	All	Most	Some	Smooth	Smooth	None	None	None
Visible Spine	All	All	Most	Some	Smooth	Rounded	None	None	None
Sternum Cover	None	None	Minimal	Minimal	Moderate	Moderate	Smooth	Round	Round
Tail Head Cavity Fill	None	None	None	None	Minimal	Moderate	Smooth	Filling with Fat	Fat Filled
Muscle Loss	Atrophied	Emaciate	Wasting	Obvious	Minimal	None	None	None	None

- In general, if does are too thin (condition score 4 or less), they are likely to have trouble re-breeding and need improved browsing/grazing or a supplement.
- Does with BCS 5 need additional supplementation or high quality browse before breeding season and during the winter months.
- Does rating BCS 6 or 7 need minimal adjustment in nutritional management.
- Heavy goats, BCS 8 or 9 are too fat and prone to kidding and health problems.

## Recommended Minimum Levels on Mineral Supplement Tags for Forage-Based GOATS



Element	Level
Calcium	11 to 13%
Phosphorus (min.)	8%
Salt	9 to 10%
Magnesium (min.)	1%
Manganese (min.)	3500 ppm
Copper*	1700 to 2100 ppm
Zinc (min.)	8,000 ppm
Cobalt (min.)	40 ppm
Iodine (min.)	200 ppm
Selenium (min.)	80 ppm
Vitamin A (min.) IU/lb	500,000
Vitamin E (min.)	1,000 IU/lb

• Calculations based on 0.25 to 0.31 ounces consumed per head per day

• Free choice loose mineral supplementation is recommended year round

• Select a product with multiple sources of cobalt, zinc, manganese and copper

• A free choice seaweed product (kelp meal) is beneficial year-round and especially when grazing tall fescue

• Sulfur is generally in excess in TN and can be antagonistic to copper, zinc, iron and manganese absorption

## Gestation Table Based on 149 Days

Breeding Date	Birth Date		Breeding Date	Birth Date		Breeding Date	Birth Date
01-Jan	30-May		07-May	03-Oct		10-Sep	06-Feb
08-Jan	06-Jun		14-May	10-Oct		17-Sep	13-Feb
15-Jan	13-Jun		21-May	17-Oct		24-Sep	20-Feb
22-Jan	20-Jun		28-May	24-Oct		01-Oct	27-Feb
29-Jan	27-Jun		04-Jun	31-Oct		08-Oct	06-Mar
05-Feb	04-Jul		11-Jun	07-Nov		15-Oct	13-Mar
12-Feb	11-Jul		18-Jun	14-Nov		22-Oct	20-Mar
19-Feb	18-Jul		25-Jun	21-Nov		29-Oct	27-Mar
26-Feb	25-Jul		02-Jul	28-Nov		05-Nov	03-Apr
05-Mar	01-Aug		09-Jul	05-Dec		12-Nov	10-Apr
12-Mar	08-Aug		16-Jul	12-Dec		19-Nov	17-Apr
19-Mar	15-Aug		23-Jul	19-Dec		26-Nov	24-Apr
26-Mar	22-Aug		30-Jul	26-Dec		03-Dec	31-Apr
02-Apr	29-Aug		06-Aug	02-Jan		10-Dec	07-May
09-Apr	06-Sep		13-Aug	09-Jan		17-Dec	14-May
16-Apr	13-Sep		20-Aug	16-Jan		24-Dec	21-May
23-Apr	20-Sep		27-Aug	23-Jan		31-Dec	28-May
30-Apr	27-Sep		03-Sep	30-Jan			

## Recommended Minimum Levels on Mineral Supplement Tags for Forage-Based SHEEP

Element	Level	Element	Level
Calcium	12 to 14	Zinc (min.)	8500 ppm
Phosphorus (min.)	6%	Cobalt (min.)	40 ppm
Salt	11 to 14%	Iodine (min.)	70 ppm
Magnesium (min.)	3%	Selenium (min.)	50 ppm
Manganese (min.)	3500 ppm	Vitamin A (min.)	300,000 IU/lb
Copper*	none added	Vitamin E (min.)	1,000 IU/lb

**\* Caution: high levels of copper are hazardous to wool sheep; hair sheep are more tolerant to copper**

*Cover photo by A. Peischel*

## Water

- Install overflow pipe into drainageway
- To reduce freezing, 1/16" of water flow through overflow pipe
- Open water troughs are preferred, 12" – 18" in depth for safety
- Set water level within 2" from top of trough
- Ball waterers (not recommended), if used set slight gap around balls
- Frequent cleaning of troughs recommended

## Business Management Planning:

Three Secrets for Increasing Profit

- **Reducing Overhead Costs:** Costs that don't change much as livestock numbers change
- **Improve Gross Margin Per Unit:** Measure of economic efficiency of your livestock (subtract the direct costs of production from gross product)
- **Increase Turnover:** Number of animal units carried



Target Body Condition Score of 3 or 4 going into winter. Score by feel.

### Body condition Score 2 (thin)

- Thin
- Spine and ribs visible
- Sternum protruding
- Skin on bone
- "V" cavity at tailhead

### Body Condition Score 4 (moderately heavy)

- Spinous processes not visible
- Frame not visible
- Sternum covered
- Hooks and pins rounded
- Flat between hooks

## Business Plan

- Overall description: mission/goals/future
- Management overview: labor/insurance
- Description of products planned to market
- Market analysis/development of marketing strategies- target/methods/opportunities
- Financial plan: historical statements/balance sheet/financial plan/enterprise budgets/start-up costs

## Feeding — Forage test for hay quality

- Fermented feed can cause listeriosis
- Kidding or lambing when grass isn't growing can lead to Pregnancy Toxemia and Ketosis
- Supplemental feed to balance nutrients not present in forage
- High energy supplements: e.g. Distillers dried grain, soyhulls, corn, beet pulp

## Sheep Body Condition Score (BCS)

1



2



3



4



5



BCS-0 unthrifty, weak, isolates self from flock  
BCS -1 spinuous processes prominent, no fat cover, remains with flock  
BCS -3 spinuous processes rounded, limited fat cover, hip bone remains visible  
BCS – 5 spinuous processes not detectable, extremely fat, potential for ketosis

## Livestock- See Gestation, Mineral, and BCS tables

- 100 lb. goat eats ~4 lbs/day, 120 lbs/mo., 1440 lbs/yr
- Animal Unit Equivalent (AUE) = 5 sheep or 6 goats = 1,000 lb cow
- Safest time to kid with nature is March and/or April
- Birthing outside in winter, provide suitable shelter
- Important records: Birth status (single, twins or triplets), birth weight, birth date, weaning weight, weaning date and BCS of does and wean-offs and dam and sire numbers
- Monitor body condition trend: up, down, or stable

## **Seeding-** (Excellent month for tree planting too)

- Evaluate pasture - do you need more tannin containing forbs (chicory, annual lespedeza, plantain, sericea lespedeza, multiflora rose, burdock)
- Renovate with forbs/legumes, broadcast/frost seed a mixture of 4 lbs. red clover, plus 8 lbs. of kobe lespedeza per acre. Alone/ac.: 8 lbs. red clover or 25 lbs. of kobe lespedeza or 1.5 to 6 lbs brassicas (turnips, kale, mustard)  
Sericea lespedeza is best seeded alone in May; interseed novel endophyte or low endophyte tall fescue the following fall
- Tillage for annual crops reduces parasite loads on pasture
- No-till crops on steep erosive soils

## **Feeding**

- Feed 300' or more away from sensitive areas (i.e. drainage ways, water areas, depressions, erosion prone areas)
- Move feeders at least once a week to improve manure distribution, reduce coccidia, and prevent denuding an area
- Feed on weedy areas and spots of bermuda
- Heavy Use Area runoff into water can cause disease; provide clean water source for goats in troughs
- Determine fertilizer and seeding needs based on acreage, hay, feed and livestock needs
- Quality hay - Crude Protein 10% or higher, Total Digestible Nutrients 58% or higher



## **Kidding Preparation-**

- Vaccinate does 3 weeks before kidding with clostridium perfringens C and D with tetanus (CDT)
- Order kid milk replacer, amino acid complex, electrolytes
- Plan to avoid coccidiosis: cleanliness, pasture kidding
- Check body condition score, desirable BCS 6 (see chart in front)
- Prepare area for inclement weather and creeping area
- Creeping area with multiple access areas and set up prior to kidding
- Kidding box- water proof record book, space pen, iodine, ear tags, ear tagger, weigh scale, weigh slings, scissors, binoculars, watch, latex gloves, bander and bands if used to castrate.
- Vaccinate kids with CDT at 6 to 8 weeks, booster at 12 to 16 weeks of age. Leptospirosis vaccination at 12 weeks and booster at 16 weeks of age
- Emergency box- flashlight, AI sleeves, lube, tube feeder with syringe, milk bottle with nipple, leg pullers, kid puller

## **Forage Fertility**

- Soil test fields not tested in the last 3 years
- When stocking rate is high, fertility inputs become more important
- Plan fertility program, split nitrogen (N) and potash (K) applications for better forage distribution and utilization
- Expect a very high response to potash (K) and phosphorous (P) application when soils test low in P or K
- In the growing season apply N to pulse growth
- Organic fertility sources (manure, rock phosphate, gypsum) slowly release nutrients

Fence woods separate from pasture to prevent overgrazing woodland. Browse plants need a minimum rest of 90 days or more for re-growth. Winter annuals like wheat, oats, turnips, cereal rye or ryegrass provide excellent winter forage. Stockpiled tall fescue provides cost effective grazing. Browse plants for winter are privet and honeysuckle, both invasive plants which should not be planted but utilized.

## **Browsing/Grazing-** Limit graze and/or fence out streams and other sensitive areas

- Slight trampling of soil 1/2" or less can encourage legumes and forbs
- No-tilled winter annuals support animals better
- Plan pasture utilization (water, fence, feed, mineral, shade)

## **Livestock Guardian Dog (LDG) Selection**

- Akbash- medium hair, built for speed and stamina, keen eye sight and hearing
- Anatolian- short hair, agile, high speed, rugged and strong
- Great Pyrenean- long hair, more people tolerant, deep voice, shear in late spring
- Kangal- short hair, agile, intimidating, high speed and courageous (pictured)
- Other: Sharplanic, Kuzvac, Maremma, Karakachan



## Seeding or Renovation

- Thoroughly clean and calibrate drill
- Drill or use light tillage (aerate, disk, or harrow) prior to broadcasting seed in March
- Smooth and re-seed hay feeding areas and heavy traffic areas

- Evaluate forage stands for reseeding

- Place small seed at 1/4 and no deeper than 1/2 inch deep

- Planting too deep is a common problem

- Plan up to 30% of pasture for warm season plantings such as native warm season grass (eastern gamagrass, big bluestem and indiangrass), but not switchgrass due to it possibly causing photo-sensitivity in goats

- Plant Prairie Persister or Matua Bromegrass (Rescuegrass) does especially well in shaded manured areas

- Plan to seed or vegetatively establish bermudagrass in heavy use areas only

## Fertility - composted manure distribution can replace most of the commercial fertilizer requirements

- Apply 0 to 60 pounds of nitrogen to hay fields with less than 30% legumes, vary rate depending on desired production, earliest date to effectively fertilize is March 1
- Typically best to apply fertilizer or composted manure to pasture in fall and for hay fertilizer is best applied in the spring
- Typically 1 actual pound of nitrogen will produce approximately 40 lbs. more forage
- Apply maintenance phosphorus and potassium using soil test recommendation guidelines

## Livestock

- Easily accessible high quality free choice loose mineral/vitamin supplement (see table pg. 1)

- Young learn from mother, exposing kids to forage or feed with mother improves intake

- Sea kelp (organic vitamin and mineral source) minimizes effect of fescue toxicity, helps maintain higher body condition score, helps maintain core body temperature and livestock shed off better. Best fed fresh and separate from mineral/vitamin mix

- Introduce new stock to new vegetation slowly

- Caution: Feed minimal levels (1 cup/doe) high starch feed (e.g. corn, barley)

**Grazing/Browsing-** leave residual height of five to six inch minimum stubble to help minimize internal parasite infestation. Browsing is preferred for goats; tannin containing species add additional protection (Sericea lespedeza, Kobe and Korean annual lespedeza, Chicory, Arrowleaf/Berseem clover, Crownvetch)

- If rotation stopped during the winter, begin pasture rotation before forage gets ahead of goats

- Limit graze winter annuals (winter annuals cost less than hay) - annual ryegrass, cereal rye, wheat

## Heavy Use Areas - plan to seed bermuda on heavily used areas

- Clean winter feeding areas and barns

- Spread composted manure and hay on rested pasture or hay fields 300' or more away from water areas

- Rest pastures a minimum of 90 days following composted manure application





## Livestock- Castration options (CDT vaccination given to mothers 3 weeks prior to birthing) :

- Banding: early within 3 weeks of birth, be sure both testicles are within the band
- Burdizzo: clamp (30 seconds) each testicle individually, (artery and spermatic cord), don't cross septum
- Cutting: cut just enough to pop out individual testicle, then hold spermatic cord and artery with one hand near the body, then pull individual testicle with the other hand. In lieu of pulling testicles you can use an emasculator. Ideally by 8 weeks of age.

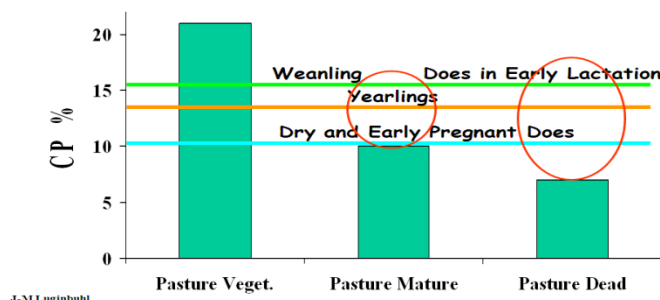
## Graze/Browse

- Rotate faster when growth is rapid
- Greater leaf area residual allows vegetation to capture sunlight for quicker re-growth
- Manage to prevent shading of desirable vegetation
- 8" forage height at turn in, aids in the reduction of internal parasitism
- Keep forages in a vegetative state to early reproductive stage
- Goats select higher quality plant parts at various times of year
- Selectivity depends on plant diversity, stock density, learned behavior, timing, and duration of stay

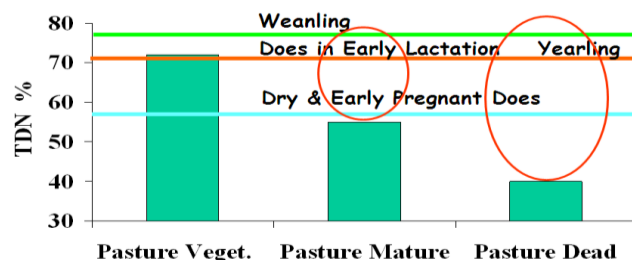
## Animal Behavior

- Small pens are easier when sorting goats
- Zig zagging in front of the herd slows them down
- Livestock guardians are moved prior to or along with goats to new area
- Settle (calm) animals after moving them to a new area, allow to graze or browse area you want animals to settle in
- Apply pressure and release pressure to keep animals grazing/browsing in the desired area
- Disbudding: as you just begin to feel horn buds

## Forage Quality & Goat Requirements **PROTEIN**



## Forage Quality & Goat Requirements (TDN- Total Digestible Nutrients)



## Goat Plant Preference

Goats eat pastures from the top down, reducing or eliminating mowing.

Goat preference is for:

1) Woody plants:

Briars  
Sumac

Multiflora rose  
Privet

Honeysuckle

2) Forbs:

Ragweed

Lambsquarter

Ironweed

Sericea lespedeza

Amaranth

Goldenrod

3) Grasses:

Orchardgrass

Prairie Brome

Tall fescue

## Paddock Layout

- Layout paddocks based on topography, vegetation, and animal behavior
- Minimize the number of herds for simplicity of grazing/browsing management
- 70+ days between grazing minimizes internal parasites; 6 months rest is ideal in dry summer, 12 months + for ideal reduction of internal parasites
- Locate water so paddocks can be subdivided
- Place valves on lateral water lines

## Handling Facility- best in well drained area

- Gathering Pen- Ideally situated adjacent to multiple fields. Can be electro-flexinet/portable panels/permanent. Designed to handle entire herd. Minimum of 30 sq.ft./doe
- Holding area- Designed half the size of the gathering pen with a 4' exit gate into funnel alley
- Funneling alley- four foot wide alley funnels to a 2' gate opening into an 8' x 8' crowd box or a circular tub
- Working area- Design crowd box or tub for 3-way sort
- Sorting pens- A minimum of 3 pens, goat panels work great
- Headgate optional: adjustable width, caution with squeeze



- Seeding-** Seed, sprig, or vegetatively establish warm season forages
- Typically 30% of the forage system should be in warm season forages
  - Bermuda is typically not a preferred forage but good for heavy use areas
  - Native warm season grass can't be grazed close and requires less fertilizer
  - Switchgrass can cause photo-sensitivity in goats and sheep

**Fertility-** earliest date to increase warm season forage fertility

- Over 32% of fertilizer is wasted if soil pH is 5.5 or lower, too many fields in TN are below the desirable pH of 6.5. Soil test!!!
- Where a second cutting or grazing is expected on cool season grass fields, apply additional up to 45 lbs. nitrogen in early May



May  
Inventory Vegetation

A. Peischel Cheatham Co.

Goats grazing spread out in a non-stressed grazing situation due to livestock guardian dogs on duty. Bunched stock is a sign of intrusion.

### **Grazing/Browsing**

- Continue to rotate fast to keep forage vegetative or in early reproductive stage, don't allow undesirables to go to seed
- Now is a good time to heavily graze/browse broomsedge fields for eradication

**Weed/Forb Management** - Goats are the ultimate in biological weed control

- Goat foraging preference varies according to past experience, plant species presence, exposure with mother and peers, stage of plant growth, and environmental conditions
- Weeds typically not consumed by goats due to toxins: e.g. perrilla mint, horsenettle
- Multi-species, high density grazing and browsing and duration of stay helps control weeds. Base rotation on palatability
- Small ruminants are excellent nutrient recyclers since they consume plants that are deep rooted, then deposit nutrient rich pelletized manure on the surface
- Goat manure analysis has a ratio of 16-6-14/100 lbs. body weight and varies by feed source

**Forage Harvest**-watch for wildlife nesting in hay fields; cutting fields from the center out allows escape routes

- Due to cost, most producers should buy hay in lieu of harvesting it themselves
- Although blackberry, sericea lespedeza, ragweed, lambsquarters and ironweed are good forage for goats, stems in hay decrease quality. Best to harvest forage in a vegetative state. Don't allow weeds/forbs to shade out desirable grasses, therefore, browse before haying
- Sericea lespedeza, harvest 12"-18" tall, cut 1 day and bale the next. Sericea is a natural dewormer for goats and sheep. Au-Grazer is the most improved variety and has a moderate tannin level. Sericea lespedeza can be invasive spreading to other fields
- Take core forage samples from bales
- Forage test recommendations: not only report energy and protein but supplementation needed to balance a ration for livestock
- Target percent Crude Protein (CP) of hay is 10% or higher and Total Digestible Nutrients (TDN) is 58% or higher



## **Livestock**- Continue to monitor internal parasites by fecal egg counts and FAMACHA

- Evaluate does and bucks; sell inferior animals
- If you supplement feed make sure troughs are clean
- Clipping pastures can help reduce eye problems

## **June Internal Parasite Management**



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JM Luginbuhl, NCSU

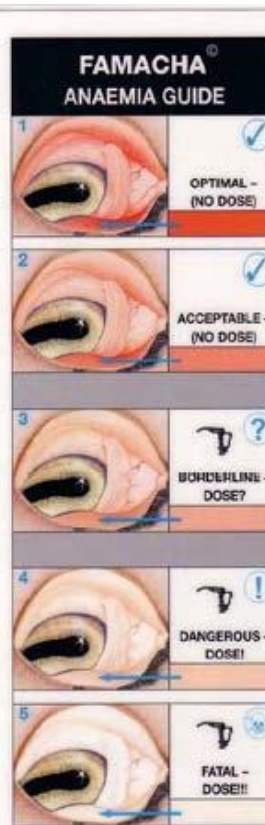
Starting top left going clockwise: dew droplet with internal parasite larvae, goat with bottle jaw, under eye lid anemia (FAMACHA level 5), emaciated dehydrated goat exhibiting internal parasitism

## **Grazing**-grazing close will stimulate crabgrass, dallisgrass and forbs

- Maintain grazing height above 5" or 6" for reduced internal parasite infestation and re-growth
- Separate water, shade, feed and mineral/vitamin mix for better animal distribution
- Training livestock to gather in a confinement area prior to turn out can aid in low stress herding
- Supplementing in different locations will aid in grazing, manure distribution, reduces internal parasitism
- Creep grazing kids, excellent way to extend grazing of quality forage which increases average daily gain of kids and improves condition of does. Increased condition = improved conception rates
- High density short duration grazing reduces clipping needs, increases biodiversity, improves manure distribution, and animal health

## **Animal Behavior** -Best to have biodiversity in forages

- Sericea and annual lespedeza, mulberry, multiflora rose, plantain, sumac: concentrated tannins improve animal health by minimizing internal parasitism
- Introduce new animals to tall fescue slowly to prevent future avoidance behavior
- Best if plants containing concentrated tannins make up 3% of the goats diet



## **Manage AGAINST Internal Parasitism**

- First: don't buy auction barn goats. Buy from someone using the same management protocol as you who has a healthy herd.
- Pasture management is key. Keep them moving! Move every 3-4 days
- Leave a minimum of 5" of residual when exiting a grazing/browsing area and a minimum of 90+ days before returning.
- Monitor:
  - Fecal egg counts (FEC) / packed cell volume (PCV)
  - Strategically deworm if necessary
  - Eyes (FAMACHA) looking for healthy bright pink color
  - Rumen (left side of the body; it should look full at the end of the grazing/browsing day)
  - Body condition score (moderate BCS 4-6) based on BCS 1 to BCS 9
  - Behavior (should look lively and alert)
- Cull all the problem animals for meat
- Minimally, sort off last animals through the gate, they are the most likely ones needing attention
- Provide a quality chelated loose free choice mineral mix and feed kelp meal.
- Pay attention to quality of the vegetation. Mixture of alternative plants and some high tannin varieties.
- Low stress. Work animals calmly/quietly.
- Clean, fresh water daily, clean water tanks, maintain dry area around watering sites.
- The higher the head browsing, the lower the load of internal parasites.
- Alert: eyes clear with bright red blood vessels, goats tail up, base of ears erect, gums pink, skin supple, fecal pellets, smooth hair, moist nose and a good appetite



# July - warm season forage management

Browse type	% Crude protein	% Neutral detergent fiber	% Calcium	% Phosphorus
Multiflora rose	18.8	34.5	0.99	0.32
Honeysuckle	12.8	34.5	1.21	0.30
Brambles	15.9	24.5	0.23	0.84
Privet	18.0	26.8	0.89	0.34
Green briar	17.0	39.5	0.60	0.18
Kudzu leaves	23.7	25.7	0.90	0.60
Trumpet creeper	16.7	43.1	0.42	0.22



G. Brann Macon Co.

Forb type	% Crude protein	% TDN	% Calcium	% Phosphorous
Alfalfa	20.1	63.9	1.58	0.37
Dandelion	25.0	80.9	1.04	0.33
Lambs quarter	31.7	85.6	1.10	0.39
Plantain	19.6	64.4	1.84	0.26
Curly dock	32.7	77.8	0.83	0.37
Chicory	19.5	63.5	0.89	0.31

Information compiled from various sources. Consumption is based on forage availability, animal experience and vegetative state.

**Grazing** -Inventory grass/browse and estimate how long forage will last in drought conditions

- ❖ Evaluate forage conditions and inventory findings
- ❖ Consider clipping noxious weeds that goats don't eat, prior to them going to seed will reduce those weeds as well as promote growth of desirable forage
- ❖ Most plants are eaten when animals are maintained at high animal density ~2000 lbs/ac (20 head of 100 lb animals/ac). Don't graze below 5"
- ❖ Consider creep grazing / browsing allowing kids to forage ahead of does

**Native Grasses** - Primary nesting season for quail/turkey is April 15 through August 15

- ❖ Excellent nesting area for birds and other wildlife
- ❖ Minimum 45 day rest from grazing improves grass production and nesting
- ❖ Cost share programs are available for establishment of wildlife habitat
- ❖ Eastern gamagrass (a primitive corn), is a high yielding, lower input grass alternative to bermudagrass
- ❖ Switchgrass is not recommended for goats, sheep and horses as it can cause photosensitivity

**Weed Control-** Goats tend to prefer a majority of weeds/forbs at later maturity

- ❖ High density grazing increases weed consumption
- ❖ Consider mowing weeds not consumed when blooming before seed forms

**Watering Facility-** Water consumption increases as temperature increases

- ❖ Keep water troughs clean and water fresh
- ❖ Portable water troughs allow most flexibility
- ❖ Forage intake drops when water intake drops
- ❖ Taste of water affects intake the most (sediment, algae, chlorine and fluoride)





*G. Brann, Macon Co.*

Identify field edges, dormant hay fields and odd areas that can be used for foraging and browsing during times of drought. These areas should be identified at least 60 days prior to anticipated drought. Portable temporary polywire with tread-in posts and solar energizer. Portable mobile water is reasonable for small ruminants but not for large stock.

## Conservation Programs

- Contact local USDA/NRCS office about available payments for conservation practices
- A number of cost share programs are available: CSP, CRP, EQIP, TDA, WHIP and others
- Contact TDA for TN Agric. Enhancement Program cost share: livestock handling facilities, genetics, hay storage, working facilities, milk equipment and producer diversification (1-800-342-8206)

## Grazing- stockpile grass pasture for winter feeding

- Mixed forage species pasture allows the animal a more balanced diet, reduces stress, increases intake and efficiency
- Old disk blade great to cover water line access or for floating fence brace
- Placing gates so livestock enter straight or at a 45- degree angle turn reduces wear of the gate area, enhances stock flow
- Goats browse continuously during a 24 hour period
- Cross fence for cattle 36" high allows goats to forward browse

## Drought- forage management should have started 60 or more days prior

- Inventory grass and predict how long grass will last, determine need for fertilizing, seeding and paddock subdivision prior to Oct.
- Close gates, feed hay or supplement in one field until other fields recover
- Multiple paddocks conserve forage for slow growth periods

## Water- placing water central in fields allows maximum cross fencing, water availability and health

- Properly planned placement of water points improves forage utilization and water quality
- Goats with a suppressed immune system require more water
- Rotational grazing and proper placement of water improves waste distribution by the animal
- Most manure is dropped around shade, water, and hay areas
- Separating shade, water, hay and mineral improves manure distribution
- Trough height ideally less than 12 inches

## Seeding- Seed cool season grasses between August 15 and October 1. Seeding rate for tall fescue: pasture (12- 18 lb/ac); critical area (50 lb/ac);

lawns (250+ lb/ac). Seed legumes such as clovers and annual lespedezas in late winter

Seed sericea lespedeza between March 15 to June 1. Last date to harvest or browse sericea lespedeza to maintain stand is August 30



**Grazing**

- ◆ During drought confine animals to one paddock or continue to rotate slowly and feed hay until other paddocks recover
- ◆ Do not graze/clip sericea lespedeza or native warm season grass fields until after frost unless you want a reduced stand
- ◆ Important to have an increasing body condition score for breeding and winter conditions, may need to supplement

**September  
Stockpile forage for winter**



*A. Peischel*



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Goat meat: Kkal 144, Fat 3.0%, Saturated Fat 0.93%, Protein 27.1%, Cholesterol 67 mg

Lamb meat: Kkal 276, Fat 18.8%, Saturated Fat 8.6%, Protein 25.9%, Cholesterol 99 mg

**Water Quality**

- ◆ Stocker goats and replacements gain over 10% more on high quality water
- ◆ Water quality can affect growth, lactation and reproduction
- ◆ Poor water quality increases chance of diseases: Coccidiosis, Cryptosporidia, Salmonella, E. Coli and Leptospirosis. Kids are affected most
- ◆ Leptospirosis increases rate of abortion within 2-5 weeks of infection
- ◆ Foot rot, foot scald and foot abscesses are caused by wet conditions
- ◆ Chronic illness - poor weight gain, poor appetite, high susceptibility to infection and abortion
- ◆ Excess sulfur causes copper and selenium deficiency
- ◆ High iron in water contributes to copper deficiency
- ◆ Test water if animals have a rough hair coat, unexplained illness, or breeding problems

**Livestock-**

- ◆ Criteria for culling:
  - ◆ Barren females
  - ◆ Bad teats or udders
  - ◆ Foot problems
  - ◆ Bad mouth (teeth)
  - ◆ Structural defects
  - ◆ Bad testicles
  - ◆ Unthrifty (disease)
- ◆ Begin flushing does and bucks. Flush with fresh green pasture or 1/2 pound of feed/head/day for 2 to 3 wks before and after breeding season

**Fertility**- Soil test same time of year to monitor trend

- ◆ Fall is an excellent time to soil test, best to apply lime in the fall although anytime is okay
- ◆ Stockpiling: apply 0 - 180 lbs. of ammonium nitrate to tall fescue; defer grazing until after frost or later
- ◆ Stockpile 1 ac/6 does
- ◆ Avoid stockpiling on poorly drained soils
- ◆ Tall fescue holds its forage quality better than any other perennial forage in winter
- ◆ Strip graze allowing animals access to 2-4 days of forage at a time

**Seeding-** Shape and seed eroded areas, clean out ponds, and perform other earth work

- ◆ Inventory existing plants, many times it's best to manage existing forages
- ◆ When planting tall fescue, seed no more than 20 lb./ac. of wheat as a companion; best to seed tall fescue alone
- ◆ Seed tall fescue now and overseed with legumes in February
- ◆ Chicory can be seeded at a rate of 3 to 4 lbs/ac or hairy vetch at 20-25 lbs./ac. If mixed adjust seeding rate down
- ◆ Seed winter annuals in warm season forage or where fescue is less than a 50% stand
- ◆ No-till is an excellent planting method: don't plant too deep, no deeper than 8 times the seed diameter



**Livestock-** Breed does now to kid in March

- Doelings should be 85 percent of their adult weight at breeding time and bred at 18 months of age to kid as two year olds
- Consider vaccinating does for leptospirosis 3 weeks before breeding
- Breeding does/bucks should have a BCS of 6 (0-9 scale)

**Grazing** - Plan for strip grazing

- Be aware of prussic acid (cyanide poisoning) from grazing sorghums and johnsongrass after frost. Grazing is safe 10-14 days after frost unless re-growth and freezing occurs again. Wild cherry and other stone fruit trees when wilted have prussic acid
- Nitrate poisoning, nitrate remains in hay, most common in a drought year, test for nitrates, nitrate concentration is highest in the base of the plant (e.g. sorghums, bermuda)

**Fencing** - Portable electric (polywire/electronet), High tensile electric, Woven wire, Welded wire

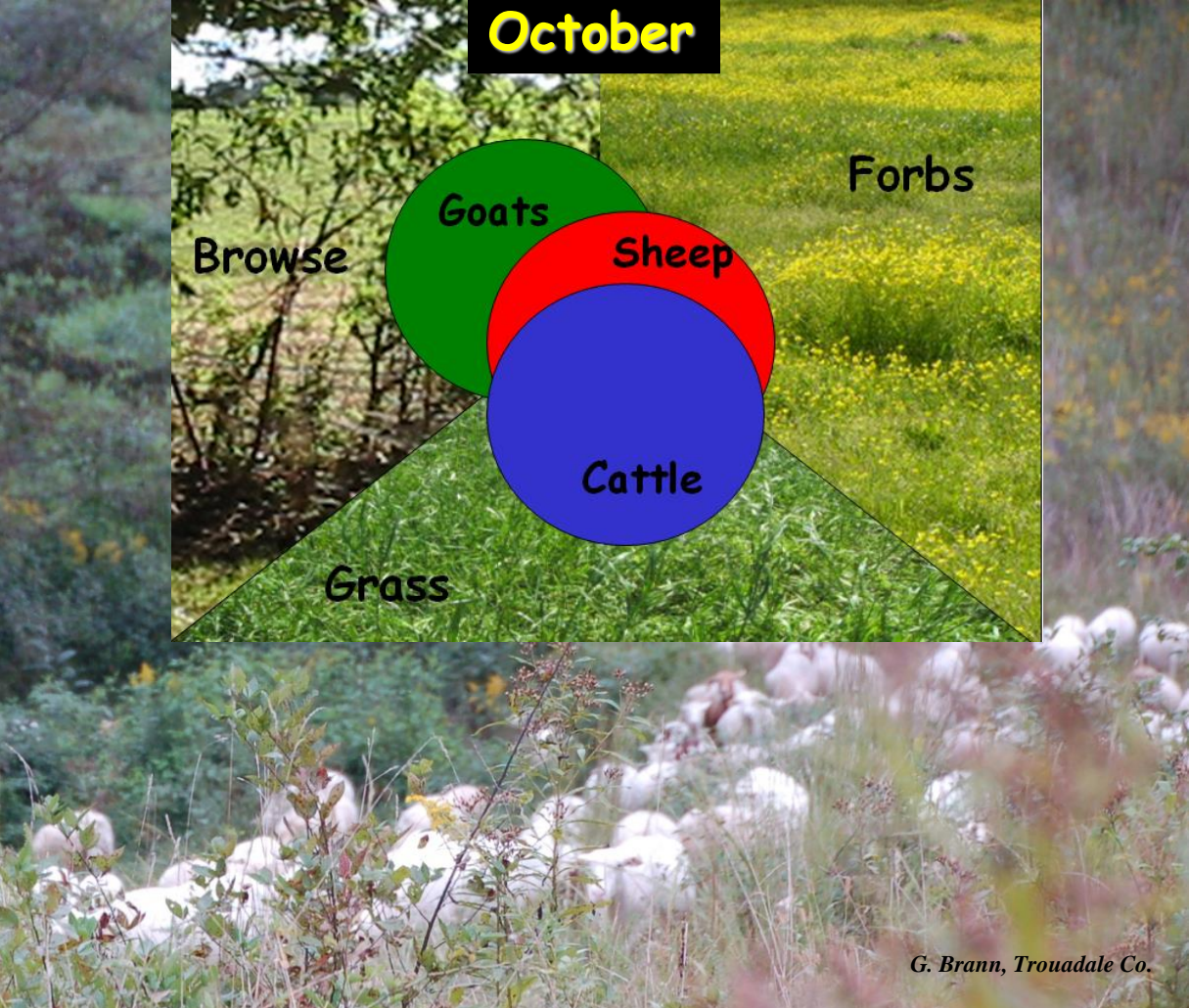
- Energizer - solar and mains (plug ins)
- Electric wire spacing (inches) for 6 strand Perimeter: Bottom 4" to 8", 2<sup>nd</sup> - 6", 3<sup>rd</sup> - 6", 4<sup>th</sup> - 8", 5<sup>th</sup> - 10", 6<sup>th</sup> - 12"
- Electric wire spacing (inches) for 4 strand Cross fence: Bottom 4" to 8", 2<sup>nd</sup> - 6", 3<sup>rd</sup> - 8", 4<sup>th</sup> - 10" to 12"

**Water-** the most important nutrient

- Winterize equipment, pumps, tanks and buildings
- If building a pond install a 2" or larger supply pipe under the dam with a trough below the pond
- Check springs during low flow period, may need increased water storage if flow is low, septic tank works great
- Animal's weight - 50-80% water, milk is approximately 83% water

**Drought Management** - cull

- Close gates or slow down rotation
- Early weaning based on BCS of does and/or begin creep feeding kids high quality hay
- Offer hay or other supplement source
- Lease pasture or contract graze
- Evaluate forage supply prior to: April 1, July 1 and October 1 to make seeding and fertility decisions



G. Brann, Trouadale Co.

Maintaining a higher stubble height improves: animal intake, minimizes internal parasitism, regrowth, stand life, soil health and reduces wear/tear on equipment, and reduces runoff

**Diet Selection** - Type of Diet (%)

Animal Species	Grasses	Broadleaf forbs	Shrubs
		and legumes	and Trees
Cattle	65-75	20-30	5 - 10
Horses	70-80	15-25	0 - 5
Goats, Deer	20-30	10-30	30 - 50
Sheep	45-55	30-40	10 - 20
One goat or 0.33 sheep can be stocked for every cow without competing for the same forages			



NOVEMBER Ethnic Holiday Calendar (examples)				
Target Market	Target Market Specifications	Ethnic Holiday 2017	Ethnic Holiday 2018	Ethnic Holiday 2019
Greek	3-4 mo. of age, 45 lbs	April 16	April 8	April 28
Hispanic	Young bucks 4-5 mo. of age, 65 lbs	May 5, September 4	May 5, September 5	May 5, September 4
European	Cull females and wethers 6-7 mo. of age 75 lbs	December 25	December 25	December 25
Muslim	Cull bucks and wethers 110 lbs, carrying flesh, differences between and within religious groups	September 21, 22	Ethnic Holiday 2016	September 1
Jamaican	Yearling bucks or older, 140 lbs, strong flavor and odor	First week of December	First week of December	First week of December

Basic Cooking Methods (example)	
Rump, Top Side Round, Eye of Saddle	Roast- sear before roasting Sauté, Grill, Braise
Rolled boneless leg and Saddle	Roast- sear and baste, season lightly Braise
Rolled boneless Shoulder	Roast- sear, versatile cut, can be stuffed Braise

### Comparison of the chemical composition of goat & other species (per 100g)

Species	KKal	Fat (%)	Saturated Fat (%)	Protein (%)	Iron (mg)	Cholesterol (mg)
Goat	144	3,0	0,93	27,1	3,8	67
Beef (trimmed)	211	9,3	*	29,9	3,4	86
Beef	288	18,8	8,0	27,1	3,0	>86
Pork (trimmed)	212	9,7	*	29,3	1,1	86
Pork	364	28,2	10,2	24,7	1,1	>86
Lamb	276	18,8	8,6	25,9	1,6	99
Chicken	190	7,4	*	24,7	1,2	>89
Chicken (skinned)	141	4,1	1,3	28,9	1,8	76
	170	5,0	*	29,3	1,8	76
Ostrich	142	2,8	*	26,9	3,2	83
Veal	158	3,2	*	30,2	4,5	112

### Ice Cream (Pone Creek Caverns)



- 1) Heat ½ gallon of milk to almost boiling, stop the heating process
- 2) Mix in a separate bowl: 9 egg yolks, ½ cup sugar (or 1/3 cup agave or 1/3 cup honey) and 6 tablespoons of pure vanilla extract (or prepare two vanilla beans)
- 3) Fruit of choice: mash (unfrozen) in a separate bowl
- 4) Add #2 (egg mixture) and #3 (mashed fruit of choice) to #1 (warm milk) while #1 is still warm
- 5) Cover mixture and refrigerate overnight
- 6) Prepare ice cream churn (hand crank or electric), 10 pound bag of chipped ice and one pound bag/box of rock salt
- 7) Pour mixture from the refrigerator into the ice cream churn canister along with the mixing paddle and add two pints of heavy whipping cream. If adding nuts, this is the time to put them into the mixture.
- 8) Begin churning while alternating chipped ice and rock salt around the outside of the canister
- 9) Once stiff (hard to churn), pull mixing paddle and let canister sit in churn about one hour before serving

## Grazing System Guidelines

- ❖ Rotate prior to impacting any resource (forage, animal, water, or soil)
- ❖ Follow landscape lines for paddock boundaries
- ❖ Locate water so paddocks can be further subdivided or use portable troughs
- ❖ The paddock ahead should be of higher quality than the one animals are leaving
- ❖ Rotate weekly, preferably more often
- ❖ Rest pastures minimum 45 days, 90 + is best

## Grazing

- ❖ Strip graze stockpiled tall fescue
- ❖ Fence off 3 to 4 days of grazing at a time
- ❖ Adjust fencing as needed
- ❖ Winter annuals should be limit grazed

## Forestry- fencing prevents livestock from escaping and decimating the woods

- ❖ Fencing allows for natural regeneration of tree seedlings / vegetative understory
- ❖ Grazing/browsing can be used to remove invasive and noxious plants and create disturbance for regeneration
- ❖ Goats/ Sheep are a good combination for Agroforestry / Silvopasture practices
- ❖ Soil compaction is reduced

## Livestock

- ❖ See Gestation, Mineral and Body Condition Score Tables in front
- ❖ Monitor does body condition score trend up, down, or stable. Put hand on spinal column and rib cage
- ❖ Although one big group is easier to manage, if needed divide the herd into groups for winter feeding
- ❖ Immediately cover dead animals with hydrated lime, ultimately bury dead animals 30" deep, reduces predator problems
- ❖ Review the years kid crop records and start plans for next years breeding season

## Summary- Take time to enjoy the fruits of your labor

- ❖ Small ruminants are challenging to manage but rewarding
- ❖ Grazing management and culling can reduce inputs significantly
- ❖ Utilize condensed tannins "medicinal pasture"
- ❖ Don't allow long term shading of desirable forages
- ❖ Utilize high density short duration grazing/ browsing
- ❖ Set grazing/browsing can cause some environmental problems
- ❖ Water, fence and culling give you control of livestock
- ❖ Match stocking rate to inputs and rest /recovery for plants
- ❖ Ancillary pasture management benefits can be significant

## Shelters

- ❖ Birthing season dictates shelter needs
- ❖ Too little shelter causes: smothering, disease, behavioral problems, denuding landscape
- ❖ Natural sheltering is preferred over portable shelters

## December - Mustering (herding)





**Tennessee Grazing Coalition- partners interested in promoting the benefits of grazing management.**

**Groups Committed to Livestock Production and a Healthy Environment are:**



**Tennessee State University (TSU)** is a historical 1890's institution providing education through extension, teaching and research. Dr. An Peischel, small ruminant (goat and sheep) extension specialist, 615-963-5539 or [apeischel@tnstate.edu](mailto:apeischel@tnstate.edu) Tennessee State University is an AA/EEO employer.



**Natural Resources Conservation Service** – Grazing Lands Mission: Coordination, and transfer of technology that meets the needs of grazing land resources, landowners, managers, and the public. Strive to develop Total Resource Management Plans that address all resource concerns. Contact local field offices: <http://www.tn.nrcs.usda.gov/contact/directory/index.html>



**Tennessee Department of Agriculture**- The goal of the Tennessee Department of Agriculture, through Agricultural Enhancement Program, benefits livestock producers throughout the state. <http://www.state.tn.us/agriculture/>



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**Tennessee Farm Bureau Federation**- To develop, foster, promote and protect programs for the general welfare, including economic, social, educational and political well-being of farm people of the great state of Tennessee." adopted February 15, 1923. <http://www.tnfarmbureau.org/index.html>



**Tennessee Farmers CO-OP** remains a cornerstone in the Tennessee communities in which retail outlets and TFC facilities are located. Because its roots reach back into the soil farmed by its organizers, Co-op always has the best interest of its patrons at heart. A knowledgeable, well-trained, and dedicated staff stands ready to serve the needs of each and every customer. Remember: Co-op offers quality products for everyone! <http://www.ourcoop.com/main/home.asp>

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**References:** USDA/NRCS Field Office Technical Guide Section IV; USDA/NRCS Range and Pasture Handbook; Tennessee Farmers CO-OP, Agronomy, Forage Management Calendar; The University of Tennessee: Sheep Management and Health Calendar; Field Crops Seeding Guide (PB378), Grazing Land & Livestock Resource Inventory- Edition II; Minimizing Losses in Hay Storage and Feeding, and Southern Forages, Don Ball and Associates, and Master Meat Goat Producer Manual, TSU/UT; American Sheep Industry, American Goat Federation.

Langston University: [www2.luresext.edu/goats](http://www2.luresext.edu/goats);

Maryland Small Ruminant Page: <http://sheepandgoat.com>

Google: FAMACHA score card

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# SMALL RUMINANT SHEEP and GOAT PRODUCER PROGRAM



[illegible]

## Pasture Record: USDA/NRCS programs like EQIP and CSP require grazing records for participation

[illegible]