

Goats In The Woods Workbook

A manual for practitioners to safely and productively
use meat goats in forest vegetation



Colleen Parsons, tatiana Stanton, and Peter Smallidge

Cornell University, Department of Natural Resources, Ithaca, NY
www.dnr.cornell.edu/ext/goatsinthewoods

June 2002
[revised October 2003]

Introduction

Welcome to the *Goats in the Woods Project*! This workbook was developed to aid research and extension collaborators, both goat producers and woodlot owners, in their efforts as a team member on the project. The project initiated in 2001 and will culminate in December 2003. *GIW* has involved research at the Cornell University Arnot Forest and demonstration & observation through collaborative teams in the twin tiers area of NY and PA. Teams include a forest owner, a livestock producer, and representation from a public agency such as Cornell Cooperative Extension or USDA RC & D. This workbook will also be useful to practitioners, people who are interested in using the knowledge developed through this project. People interested in using goats in woodlands - either producers or woodlot owners - should check for current findings on the project web page at www.dnr.cornell.edu/ext/goatsinthewoods

The teams have provided critical evaluation of the protocols developed through research based on their real-life circumstances. A key resource provided to teams was access to trained and knowledgeable project staff and veterinarians. Practitioners should become acquainted with their local small ruminant veterinarian.

The goal of the project is to assess the use of meat goats in the woods relative to: (a) reduced costs and increased revenue for meat goat producers relative to feedlot or pasture production; (b) effectiveness as compared to herbicides to control interfering woody forest vegetation; (c) reduced management costs to maple producers and woodlot owners through improved access and enhanced forest regeneration; and (d) encouraged relationships among and between goat producers and woodlot owners. Team member participation is critical to an understanding of the potential use of meat goats as an enterprise that provides a management tool for landowners who desire control of woody saplings or shrubs. Team members provide verification of research observations collected at other sites and are the key resource to "extend" the research-based knowledge to others.

This workbook is designed as a supplement to other educational materials on goat herd management and goat health. Readers are cautioned to not rely solely on this document for veterinary care. In fact, this document only provides a structured assessment of animal conditions that teams can use to guide their discussion with a veterinarian. No specific health information is provided or implied. With the current, and likely continued condition in the US surrounding biosecurity with livestock, your attention to personal and livestock hygiene is critical. Do not wear the same clothes to more than one farm without washing, keep bleach solution available to rinse rubber boots, and frequently wash hands. For the latest information on appropriate hygiene and biosecurity contact your local Cooperative Extension office.

Funding for this project, and this workbook, are made possible through USDA NE SARE, the National Agroforestry Center, the Cornell University Agricultural Experiment Station, and the Cornell University Arnot Forest.

The project team, listed below, appreciates your interest, enthusiasm, and commitment to the project.

University Partners:

Mike Ashdown, Cornell University
Jessica Austin, Cornell University
Dan Brown, Cornell University
Kate Duyssen, Cornell University
Jim Finely, Penn State University
Ch'aska, Huayhuaca-Frye, Cornell University
Mike Jacobson, Penn State University
Colleen Parsons, Cornell University
Anne Pfeffer, Cornell University
Peter Smallidge, Cornell University (Project Director)
tatiana Stanton, Cornell University
Jamie Wisniewski, Cornell University

Research Collaborators

Charlie & Marian Mowatt, Cattaraugus
Don Wild, Cattaraugus

Joann Kurtis and Family, Cattaraugus
Joann and Elizabeth Cockle, Cattaraugus
Jeff Gardner and Ann Muldune, Schuyler
Marc and Sue Jaffe - Sullivan
Jim Ochterski - Schuyler / Tompkins
Joern Seigies - Tompkins
Robert Lieberman - Tompkins
Joe Walsh - Sullivan
Paul and Alex Dench-Layton - Sullivan
Chris Tcimpidis - Sullivan

Table of Contents

Introduction.....	2
Emergencies.....	6
Project Overview	6
Team Tasks	8
On site visit.....	Error! Bookmark not defined.
Daily Chores for GIW Teams	9
Feeding Goats in Paddocks	10
Watering Goats in Paddocks	10
Offering Mineral Supplements.....	11
Daily Log.....	11
Weekly Chores for GIW Teams.....	13
Weekly Summary Sheet.....	Error! Bookmark not defined.
Arrival Instruction Sheet & Poor Health Symptoms.....	13
Arrival Worksheet	16
Individual Goat Record Sheet	17
Goat Health/Goat Illness	18
Goat Weigh Days.....	19
Taking the Vital Signs of a Goat	21
Possible Health Problems.....	22
Medications	26
Parasites	28
Sick Goat Worksheets	32
Emergency Fax -- Sick Goat	36
Sick Goat E-Mail Template.....	37
Assessing Woodland Conditions for Goats	38
Setting Up A Woodland Paddock	39
Building Portable Shelters.....	40
Fencing Bucket and Fence Troubleshooting.....	41
Goat Bucket.....	42
Training Goats To Electric Fence	44
Catching Goats.....	44
Forked Trees	46

Emergencies

Practitioners should have ready access to telephone numbers and the protocol for anticipated emergencies. Unforeseen things do occur which we expect will be handled with common sense and from previous goat related experiences, as the situation allows. Note, however, that medications ("natural", over-the-counter, or prescribed drugs) are not to be administered without a directive of a qualified veterinarian.

Project Overview

"Goats in the Woods" is an ongoing project, coordinated through Cornell University and Penn State University, that started in 1997 and expanded to it's current scope in 2001. This project is designed to benefit goat producers who seek additional opportunities for production and to optimize their profit potential. The project further seeks information on goat feeding regimes that allow goats to control woody brush in the understory of sugar bushes and forests without damage to mature trees. The "home-base" of the project is the Arnot Teaching and Research Forest (part of Cornell University) in Van Etten, NY. See also <www.dnr.cornell.edu/ext/goatsinthewoods>

The purpose of the integrated research and extension project is to assess and demonstrate: goat weight gain in woodland settings, how goats affect desired and undesired forest vegetation, and the working relationship that might exist between woodlot owners and goat producers. Many goat producers lack the land base to keep a larger herd through the summer. At the same time, many forest owners and maple producers would like a cost-effective and environmentally sensitive management strategy to control understory woody brush without damage to their mature trees. This project blends these two needs.

When goats are in the woodlots, we use well maintained electric net fencing with good fencers, well-charged deep cycle marine batteries and adequate grounding rods to keep the fence "hot". This prevents the goats from wandering off, and keeps predators at bay. Fence lines were checked and maintained daily. The goats are observed and given supplemental feed and fresh water daily. Salt and mineral blocks are always readily available. Each woodland paddock also has a portable "shelter pen", designed to protect the goats from heavy rain and provide an "emotional" connection to a "home". The research paddocks cordon off a quarter acre and hold 20 goats. Twenty

goats is a manageable number and likely sufficient for paddocks up to an acre or two in size. The frequency of moving the goats to a new paddock is dependent on many factors, including the purpose of the treatment to the woodland area, the quality of underbrush available in that paddock, and the type and amount of supplemental feed offered to the goats.

While in the woods, the goats readily consumed the leafy underbrush and stripped the striped maple of bark. In fact, they typically girdle 100% of the striped maple stems larger than 0.5 inches in diameter. They haven't girdled nearly as much American beech, with a 2001 season average between 30 - 60% of the stems girdled for the paddocks with higher stocking rates. Each paddock is also monitored daily to assess any harm to the mature trees by the goats. The 2001 research paddocks were reassessed in the summer of 2002 to determine effects of those treatments. While the goats did experience minimal to modest rates of gain in 2001 for the 10 weeks while in the research paddocks, they bloomed nicely and grew rapidly during four weeks out on pasture after the research concluded. The compensatory gains were considered excellent and all of the goats were sold as good quality market animals. In 2001, the average weight gain among the goats of the daily supplement feeding treatment was 0.21 pounds per day overall (23 pounds average total gain) with an average of 0.14 pounds per day in the woods and 0.31 pounds per day compensatory in the pasture.

For the 2002 season, we explored feed trails and paddock treatments with the goats that differ from the preceding years, looking for reasonable weight gains of healthy, market-ready meat goats. In 2003 we will continue to evaluate different feed trials to compare similarities to previous years and rations that are comparable to typical private meat goat producers. We will also compare mature (1+ year) and juvenile goats.

"Goats in the Woods" has collaborative research teams in place, each consisting of a woodlot owner, a goat producer, and a Team Leader. Teams will ideally be in the twin-tiers region of southern NY and adjacent PA identifying the practical application of the project.

Funding for this project is provided through USDA Northeast SARE, the National Agroforestry Center, the Cornell University Agricultural Experiment Station, and the Arnot Teaching and Research Forest. 2003

promises to be an exciting year rich with valuable information for all meat goat producers.

Tasks - Maintenance and Health

DAILY

- Measure feed - feed will be weighed according to defined prescription; mineral salt bricks will be provided
- Feed - sweep debris from feed pans and pour feed in equal parts
- Provide clean water - check for cleanliness of existing water, clean bucket if necessary, allow for at least $\frac{1}{2}$ gallon of water per goat
- Monitor health - allow enough time (approximately 1/2hour) to observe health of individuals and group
- Walk fence lines - assess integrity of fence and connections
- Check battery - must have at least 3,000 volts moving through fencing; check connections
- Complete log entry - fill in log and notify Team leader of anything abnormal

WEEKLY

- Set up new paddock (as necessary) - establish new paddock and string fence; set new ground rods if necessary; move battery and TEST fence BEFORE moving goats
- Move goats to new paddock - lead or transport goats to new paddock; check battery connections; feed goats if necessary
- Move equipment - scrub water buckets with brush and supply clean water; move feed pans, shelter, mineral block;

Monthly

- Weigh goats - weigh and record weights as described below before moving goats into new paddock. This helps assure goats are gaining some weight, which is especially important if you're using juvenile animals.

Daily Chores for GIW Teams

Each of the following must be done daily, and practitioners should record information in a journal as a "completed SOP" as a dated log entry. Documentation helps you adjust the methods through time to changing conditions.

- Measure feed
feed will be weighed according to defined prescription; mineral salt bricks will be provided [see "Feeding Goats in Paddocks" sheet]
- Feed
sweep debris from feed pans and pour feed in equal parts [see "Feeding Goats in Paddocks" sheet]
- Provide clean water
check for cleanliness of existing water, clean bucket if necessary, plan for approximately $\frac{1}{4}$ to $\frac{1}{2}$ gallon of water per goat [see "Feeding Goats in Paddocks" sheet]
- Monitor health
allow enough time (approximately 1/2hour) to observe health of individuals and group [see "Well-Goat Checklist"]
- Walk fence lines
assess integrity of fence and connections [see "Fencing Bucket" sheet]
- Check electrical energy moving through fence
must have at least 3,000 volts moving through fencing; check all connections [see "Fencing Bucket" sheet]

- ❑ Complete log entry
fill in log and notify Team leader of anything abnormal [see "Daily Log" sheet]

Feeding Goats in Paddocks

For a 20 goat paddock:

(5) Round Pan feeders

OR

(2) 6 foot long feeders

- Clean feeders of debris. Feeders must be clean of all manure.
- Line feeders up for easy access.
- Bring feed into pen, distributing it among the feeders. This can be difficult, and is best done quickly. One technique is to put a small amount of feed into each pan. While the goats are nibbling, it's easier to distribute the rest of the feed.
- Carefully watch the goats while they eat, assessing for illness or injury. Most often a sick goat won't eat.
- Mealtime is the easiest time to catch a goat for treatment. Plan ahead.

Watering Goats in Paddocks

For non-lactating, unbred young (less than one year):

- Plan on approximately $\frac{1}{4}$ to $\frac{1}{2}$ gallon of water per day per goat during normal summer weather. During hot weather, when pastured in an open field, on the day of being moved, vaccinated or stressed they will need up to one gallon each.
- Clean the buckets of debris every day.

- Smaller (3 gallon) water buckets work best for younger goats. Several water buckets work better than one larger one - they are easier to transport in the woods and if one gets soiled the others will remain fresh.
- Scrub the buckets with a brush to clean them of algae, dirt or scum at least once a week.
- Add only clean water. Goats will not drink well if water is less than clean and fresh. Unclean water promotes illness - especially urinary calculi, and contributes to poor weight gains.

Offering Mineral Supplements

- Each goat paddock will have at least one (1) red mineral/salt brick available to the goats at all times. These bricks will be kept clean and free of debris.
- Goats will also have a mineral supplement added to their feed ration daily.
- No other salt or mineral is recommended, aside the Selenium injection given upon arrival.

Daily Log

There should be a daily entry for each goat herd. The record must include that the goats were fed and watered. It also should include if they were moved, weighed, and whether anything abnormal was noted, and if so, what action was taken. The Daily Log can be kept as a journal in a 3-ring binder, and the journal is to be kept in an easily accessible and safe place.

Below are examples of Daily Log entries from previous years. The style of documenting the information is not as important as the fact that all information is documented.

(SOP = Standard Operating Procedure: a document of how specific things are to be done.)

(The entry is to be initialed by the person who cared for the goats that day.)

= = = = =

6/11 - All goats fed and watered per SOP.

- In AM 18 goats processed per arrival protocol.
- Goat Barn water bucket scrubbed.

Several goats in barn with runny noses and coughs. Clear mucous and temps within normal limits. All eating and drinking and appear well. Will continue to observe.

CGP

6/26 - All goats fed and watered per SOP.

- Remaining goats were weighed with CD/T's given as recommended. No problems noted

CGP

7/29 - Goats fed, watered and checked as per SOP. No problems noted.

JLW

8/3 - Goats fed and watered per SOP. Incredibly hot day. Goats watered AM & PM.

- #14 of 20RA appeared lethargic, brought to goat barn. Drank approx. 1 quart of Electrolyte Solution. Passing manure and urine without difficulty. Eating with other goats. Temp 105.1 @ 11AM; 104.6 @ 1 PM; 104.9 @ 5 PM. Weight is 31 lbs. Will continue to observe.
- [Herds] 5RA&B returned to woods [paddocks] TOH 42 & TOH 43.

CGP

8/21 - Goats fed and watered per SOP.

- #114 still lame on R front leg.
- #127 of [paddock] 20RB is lame in R front leg. No heat, no swelling.
- #137: eye clear with small amount of exudate
- #9, 21, 35, 63 & 91 were sold. Weights recorded.

CGP

Weekly Chores for GIW Teams

The following are to be done on a weekly basis.

- ❑ Set up new paddock (as assigned and appropriate)
establish new paddock and string fence; set new ground rods if necessary; move battery and TEST fence BEFORE moving goats [see "Setting Up A Goats in the Woods Paddock" sheet]
- ❑ Move goats to new paddock (as assigned and appropriate)
lead or transport goats to new paddock; check battery connections; feed goats if necessary [see "Catching Goats" sheet]
- ❑ Move equipment (as assigned and appropriate)
scrub water buckets with brush and supply clean water; move feed pans, shelter, mineral block;
- ❑ Check battery for remaining charge with appropriate battery tester using battery tester, determine the remaining charge available for the upcoming week, and recharge or replace the battery if lower than 50% charge is available.

Arrival Instruction Sheet & Poor Health Symptoms

Each goat should receive a Well-Goat Exam upon arrival to your farm. The purpose of the exam is to ensure that only healthy goats are used in the project and to provide for interaction between project staff and goat producers. Goats will also receive vaccinations and medications as prescribed by a qualified veterinarian.

The instructions below to inspect goats being purchased was approved by the Cornell University Center for Research Animal Resources in compliance with IUACAC and thus reviewed by university veterinary faculty and staff. While this procedure was useful for project purposes, producers and

practitioners should consult their local veterinarian to determine their own check-in procedure.

- Goats will receive an ear tag with their project number. Goats will receive a NYS Ag and Markets approved Scrapie Tag.
- All information will be recorded on the arrival worksheet and transcribed into the computer data records.
- Under the heading DOB, the goat's approximate date of birth will be recorded. If the actual DOB is unknown, the dates 1st = first week of month, 7th = second week of month, 14th = third week of month, 21st = last week of month. If the vendor is unsure of week, a guessimate will suffice.
- The gender will be noted: M = male F = female W = wether
- The goats will be weighed on the same scale they will be weighed on throughout the project.
- Their "likely breed" will be recorded as: D = dairy B = high percentage boer S = spanish X = a composite cross (mutt). (ex: DxB will denote a dairy boer cross of less than $\frac{1}{4}$ Boer.)
- Their inner eyelid color will be identified subjectively as +4 = highly pink; +3 = moderately pink; +2 = moderately pale; +1 = very pale; 0 = white.
- All four feet will be examined, and the condition noted. If trimming is required, a sign of injury, hoof rot or evidence of thrush is present the goats will be treated as prescribed by protocol or Ambulatory Care.
- Goats coming into the project should be clean and dry under their tails. Their manure should form pellets. If not, these goats should be treated as prescribed by a veterinarian.
- Each goat will receive a CD/T vaccination 2cc SQ (subcutaneously) on the day of arrival and again 21-28 days from that date.

- ❑ Each goat will receive BoSe 1cc/40lbs bwt (body weight) SQ upon arrival.
- ❑ Each goat will be orally drenched with Sulfadimethoxine at a dose of 1cc/5lbs bwt upon arrival and receive individual oral drenching of Sulfadimethoxine at the dose of 1cc/10lbs bwt for the next 4 consecutive days.
- ❑ Each goat will be orally drenched with Ivermectin 1% injectable for cattle & swine at a rate of 1cc / 50lbs body weight.
- ❑ Each goat will be dusted with a delousing powder according to label instructions.
- ❑ Each goat will also be evaluated for any other physical ailment or symptom and such findings recorded under the heading "Other notes".

Some symptoms to note include but are not limited to:

Runny eyes

Runny nose and type of mucous

Abnormalities of mouth or jaw

Ear debris or abnormalities

Abscesses, swellings or wounds

Skin abrasions or hair loss

Evidence of lice

Evidence of an elevated body temperature

Evidence of dehydration

Abnormalities of the penis

Urinary difficulties

Testicle abnormalities

Conformation abnormalities

Gait abnormalities

Goat Health/Goat Illness

It is important to observe all of the goats every day, looking for the first signs of trouble. Catching an illness, injury or parasite infestation early can prevent problems, weight loss and perhaps potentially life threatening situations. A Well-Goat Exam can be done in just a few moments.

If based on the Well-Goat Checklist (below) a goat is not in good health do the following (see also the section on "Emergencies"):

1. Complete the checklist and "Sick Goat Worksheet".
2. Discuss your observations with your team partner. If the condition seems at all concerning, contact your team leader at Cornell/PSU and/or the project leader Peter Smallidge at the phone numbers listed above. They will guide you through the necessary steps.
3. If no one on the project is available at work or home, contact the Cornell University Ambulatory Care unit at (607) 253 - 3140 or the Center for Research Animal Resources (607) 253 - 3351.
4. Record all data and any actions or treatments and the date & time on the individual goat record sheet.

Well-Goat Checklist

- Behavior - does the goat act normally; is he eating readily and participating with the herd?
- Elimination - is he urinating and passing normal looking fecal pellets?
- Movement - is he walking and trotting normally and comfortably? Does he stand normally and comfortably?
- Nose - is his nose clean and dry?
- Eyes - are his eyes bright and clear? Is the hair around his eyes dry? Does he seem to see clearly?
- Inner Eyelids - are his inner eyelids at least moderately pink in color?

- Ears - is he holding his head and ears normally? Do the insides of his ears look clean and free of debris? Is the skin around his ear tag healthy looking?
- Coat - is it shiny? Is his coat free of bite marks or rubbed areas? Is his hair free of dander (dandruff) and nits or lice?
- Fitness - when you run your hands down along his ribs, back and hips, does he feel "filled out" and fit?
- Skin - is it elastic feeling? Is he free of cuts, abrasions, abscesses, and scabs?
- Rumen - can you feel it gurgling? Does his rumen appear normal in size? Is it soft to the touch?
- Feet - are his hooves a good length? Are his feet dry and injury free?
- Under the Tail - is this area clean and dry?

If you notice anything unusual or abnormal with any of the above - immediately move to the Sick-Goat Checklist and use the worksheet designed to help you gather necessary information.

Goat Weigh Days

On the days you go out to move or weigh goats, don't forget to take along:

- Scale
- Sling
- Tripod
- Livestock Marker
- Pen
- Paper
- Clipboard

- Collars and leads
- Enclosed truck or plan to move goats
- Goat Bucket
- First Aid Bucket
- Planned vaccinations or medications

The days you move or weigh goats are a perfect opportunity to give the goats another brief health exam. Use the Health Check List and be sure to note any abnormalities.

= = = = =

- 1) Set up tripod, hang scale and set scale to zero with sling hanging from hook.
- 2) Gather goats.
- 3) Catch goat and apply collar and lead if necessary.
- 4) Carry or lead goat to the scale.
- 5) Fit goat in sling.
- 6) Read number off, weigh goat, record weight.
- 7) Examine, vaccinate, medicate or whatever is necessary.
- 8) Mark goat with livestock marker.
- 9) Place goat in new paddock or truck.

(see "Carrying Goats" for safety tips)

The process of catching, weighing and transporting 20 goats is a two person job and takes about an hour if all goes well. That, however is rare, and the process averages 1.5 hours - plan on two hours. Remember that the goats will be stressed and will drink more for the next 24 hours, up to one gallon of water.

There are times that it works better to gather the goats into the truck, and set up the weighing equipment at the new paddock, weighing them as they come off the truck before putting them into the new paddock.

Taking the Vital Signs of a Goat

(Note: goat producers practice taking vital signs on healthy goats, well in advance of when they need to use these skills in an emergency situation. Consider having an experienced producer or your veterinarian help you assess your first goat or two.)

=====

It is important to capture the goat in as quiet a way as possible. A frightened animal or one who has been running will register much higher vital signs than one that is calm. Also, goats chased for capture become increasingly difficult to catch in the future.

Secure the goat to a fixed object (wall or fence) using a collar and lead rope, in a corner if possible. Calm the goat by using slow but deliberate movement. (Many goats seem calmer after having their face or throat "petted".)

Temperature: Using a digital thermometer, or glass veterinary thermometer with a string tied to the end (loop provided), or even a glass human thermometer that will register at least 107°F, lubricate the end with petroleum jelly or water based lubricant like K-Y Jelly. Straddle the goat, if possible, so that you are looking at his hindquarters. Lift his tail and insert the thermometer into his rectum. Press the "record" button on a digital thermometer or time two minutes with a veterinary thermometer. Remove thermometer and read the results. Normal is 101.5 to 103.5°F and higher during hot weather. Note that a low or very high body temperature indicates that the goat is in a life threatening situation and needs immediate intervention.

This all sounds easier than it is. There are two glands near the rectum that can mislead you in adverse conditions. If the thermometer doesn't slide in well and easily, you are in the wrong place. Also, in does or doelings, it is easy to slip the thermometer into the vagina (oops! wrong orifice!), especially if the goat is being uncooperative or your vision is obstructed. Double-check where you have inserted the thermometer. Even the most experienced producers have goofed.

Respirations: With the goat as calm as possible, placing a hand on its side if necessary, count each inhalation, or expansion of the chest wall. Normal is about 12-24 breaths per minute. Notice the quality of the respirations.

Heart Rate: Use a stethoscope or your hand, placing it on the left side of the chest wall until you hear or feel the heartbeats. Count them for one full minute. (There are usually two different sounds when using the stethoscope, count the louder first sound only.) Normal is 70-80 beats per minute.

Rumen sounds: keep your hand over the rumen (the area on the left side of the goat near the spinal column between the ribs and the hip) for one full minute. A churning or rumbling should be felt once or twice.

Possible Health Problems

While this list is not all encompassing, it describes some of the health problems a producer with goats on woodlots is most likely to encounter. Most illnesses or injuries need to be treated or diagnosed by a veterinarian, or at least require a consultation. This list is a tool meant to help producers with a basic understanding of goats. Please remember to always take the body temperature of the goat in question BEFORE consulting a veterinarian (See "Taking the Vital Signs of a Goat") and to fill out the "Sick Goat Worksheets" designed to save time and frustration.

Abscesses are subcutaneous lumps filled with exudate or pus. They are caused by a large variety of things, environmental as well as systemic. Most vigilant producers will notice an abscess long before it bursts open. On rare occasions an abscess will burst and have a bloody discharge that looks like the goat has been shot with a gun. Some abscesses near the face or jaw will be an indication of Caseous Lymphangitis, a hematoma (internal bloody pocket from an injury) or a bacterial infection stemming from a wound, sliver or thorn. Use caution when examining or treating an abscess as some fluids and exudates are contagious. Wear disposable gloves! Discuss treatment of abscesses with your veterinarian well in advance of treatment. Different vets feel differently about treatment.

Biting self, rubbing or scratching may indicate lice, insect bites or mites. If a goat is biting at his left side that may be an indication of a rumen problem, and bloat should be ruled out. If the goat has "rubbed raw" a spot, further evaluation for *P. Tenuis* (deer worm) is indicated.

Blindness or vision impairment may indicate a thiamine deficiency. Check the eye carefully and note if it pink and/or cloudy like in pinkeye. Carefully examine the eye to see if there is an ulcer or abrasion or any foreign substance in it. Injuries to the eye are not uncommon among goats in woodlots. Do not remove a foreign body without veterinary direction.

Bloody discharge can be a cause for alarm and usually indicates an injury. If the discharge is from a wound, see the section on First Aid. If the discharge is coming from the nose, the sinus cavity may be involved, especially if goats have been crashing heads together; check to see if the goat has a loose horn. Blood tinged mucous, or bloody mucous from the nose may indicate a pneumonia or other lung problem or injury. Bloody discharge from the rectum may indicate a gastrointestinal disease process, especially if the goat has scours. (Wear disposable gloves!)

Coughing is something goats do ON OCCASION. Sometimes a wad of cud, hay or bit of grain gets stuck. Goats that are sensitive to an allergen may have a mild but chronic cough. Excessive coughing needs to be evaluated. Coughing accompanied by other symptoms signals a need for concern. And while a noticeable cough is a symptom of pneumonia, there is a type of pneumonia that doesn't produce a cough. An untreated cough may cause long term respiratory and production problems for a goat.

Crying out, especially in a low "pitiful manner" often indicates that the goat is in pain or distress. Some goats are more verbal about pain and distress than others.

Diarrhea needs immediate attention. Diarrhea or scours is loose, runny, and possibly watery manure and will cause rapid dehydration. Possible causes are toxic reactions, a digestive disturbance, a high parasite load (worms or coccidia), and Johne's Disease.

Discharge, with few exceptions, is abnormal. Note where it is, what it looks like and whether it's coming from an abscess or body part. Blood tinged or bloody discharge may be of little concern or an emergency depending on where it's coming from and how much there is. Clear or white discharge from a goat's nose, may indicate a mild cold or allergy and should be monitored. Thick yellow, white, green, green-tinged, or black is not good, no matter where it's coming from. Very thick (like toothpaste) drainage may indicate a burst abscess. Do not touch a discharge that is coming from an abscess with your bare hands (wear disposable gloves!), as it may be contagious. Besides from an abscess, a discharge may also weep from or around a penis or vagina (may be very normal at the beginning or end of a doe's heat cycle), eyes, ears, teats and between the toes. It is not normal for a goat to be wet under its tail or on its belly.

Drooling, foaming at the mouth or saliva draining from the mouth may be caused by several things. The worst of them would be a neurological disease, such as rabies, so the producer needs to protect herself accordingly. It may also indicate listeriosis, goat polio, or an injury to the head or mouth. Such symptoms may also indicate that the goat has eaten a toxic substance. Foaming and drooling is seen in a goat that is choking on grain; this will often occur within moments of feeding whole corn or other larger whole grain and will be accompanied by the goat shaking its head from side to side. The least problematic reason for drooling or foaming from the mouth occurs when the goat has just been drenched with an oral medication and he doesn't like the taste.

Grinding teeth usually indicates pain, especially of the abdomen, and has multiple possibilities for diagnosis.

Head pressing as in finding the goat in a corner or against a tree, pressing his forehead to the hardened object. This often indicates that the goat is experiencing pain, and could be a headache or abdominal distress.

Hunched stance and standing off by self indicates that the goat doesn't feel well. His coat may have a "puffy" appearance. This goat may be running a higher than normal body temperature and have a bacterial or viral infection (pneumonia is one of several possibilities). Without a fever, this behavior may indicate that he is cold (low in body fat on a cold day), or that there is

some type of rumen involvement like ruminal acidosis. A lower than normal body temperature and hunched stance may indicate that the goat's system is shutting down and may be nearing death. Such a stance may also mean that the goat is having difficulty with his eyesight, something often initially missed when assessing the goat's symptoms. A hunched stance, aloof behavior or acting like it is constipated are also symptoms of urinary blockage, especially in a male goat. (However, sometimes a male goat will hunch for a quick moment in order to expose his penis.)

Lameness must be investigated. If a goat is not bearing weight on that leg, he may have a broken bone that requires splinting, and should heal well. Swollen knees, hocks or pasterns may indicate that the goat was injured (fell) or was caught (like in a tree fork) and was able to pull himself loose. These can take several weeks to heal, and may do so without medical intervention. It is important to evaluate for heat at the site. On occasion a goat may also have an infection to that joint. Monitoring his body temperature will help with that diagnosis. A goat be lame because his hoof needs trimming, there is an infection (bacterial or fungal) of his foot (thrush, "rain rot" or "foot rot" - though these are seldom seen in a goat being frequently moved to clean ground).

Mucous draining from the nose, especially when it is thick and yellowish in color indicates a probable bacterial infection and perhaps pneumonia. Clear or white drainage may mean a viral pneumonia, a "cold" or allergy. If there also appears to be impairment to breathing, like more rapid than normal respirations from a calm goat, a cough, wheezing, raspy or "wet" sounds in the lungs - accompanied by an increased body temperature - you have a very ill goat and emergency treatment is indicated.

Pale mucous membranes are an indication of shock, or anemia caused by blood loss or a high parasite load (such as worms or coccidia). Immediate treatment is necessary with nearly white mucous membranes and these goats will often have a low body temperature.

Shaking its head at irregular intervals may indicate that the goat has an ear infection, debris or injury to the ear, lice, ear mites or neurological involvement, depending on the other symptoms.

Soft manure may be present in the early stages of a disease process, an indication of a high parasite load (worms or coccidian), a mild toxic reaction, ruminal acidosis accompanying too much grass, a change in feed, too high a protein content in the feed, or an introduction to a new food or plant.

Staggering, especially a "drunk-like swagger" may indicate a thiamine deficiency (such as goat polio) or toxic reaction.

Stiff neck, leaning to one side, inability to stand or wandering haphazardly and similar symptoms may indicate listeriosis, thiamine deficiency (goat polio), selenium deficiency (white muscle disease), a *P. Tenuis* (deer worm) infestation, toxic reaction, injury, rabies, tetanus or other neurological problem. Note any preceding symptoms. Care for the goat using protective precautions (clothing and disposable gloves) and get professional veterinary assistance immediately.

Swollen penis may indicate that the goat has a urinary obstruction, especially if there are sandy feeling crystals or dampness indicating leaking urine. Other possibilities are a bug bite or a thorn in the skin covering the penis. Make certain you know what a healthy goat penis looks like. With the pizzle (worm-like thingy at the end of the penis) a goat penis surely looks different than that of most other mammals.

Weight loss, especially sudden, may indicate that the goat hasn't been eating well, is dehydrated, has parasites, a mouth or tooth problem or that a disease process has taken hold. Make certain to note whether or not there is or has been diarrhea, apparent anemia or other symptoms associated with the weight loss. Weight loss in absence of other symptoms may indicate that the quality of nutrition isn't enough to keep the goat on a plane of maintenance, or that the rumen has been damaged in some way, preventing proper digestion.

Medications

[note -all medications should be approved through a qualified Veterinarian before they are administered to project animals]. It is

important to have on hand the medications your veterinarian is most likely to prescribe. Have a conference with your veterinarian and make certain you know the name, amount, route, frequency, and duration of administration, any possible side effects and the meat withdrawal time for EVERY medication. Because these are goats intended for meat, most medications should be given SQ (subcutaneously = under the skin) rather than IM (intramuscularly = in the muscle). Make certain you follow your veterinarian's instructions for dose per bwt (body weight). Weighing the goat is highly recommended. Of course following the vets directions including giving the complete prescription is important.

The medications most frequently recommended by veterinarians for use on goats are:

Aqueous Penicillin-G may be given SQ at a dosage of 3 to 7 cc per 100lbs bwt once or twice a day depending on the severity of the illness. PCN-G has multiple uses for goat diseases, but must be kept refrigerated. Obtain specific indications and dosages from your veterinarian.

Oxytetracycline Long Acting (LA-200) may be given SQ at a rate of 4cc per 100lbs bwt every other day times three doses. Depending on the diagnosis, daily administration of this medication may be required for a goat. Does not require refrigeration. This is often not "the drug of choice" for meat goats, and it leaves a very dark spot in the muscle when injected IM. Veterinarians are specific about when and why it should be used.

Excenel or Naxel may be given SQ for goats with respiratory infections or other infections and is often prescribed at 4cc per 100lbs bwt once daily for 5 days. Naxel has a very short shelf life after mixing and must be refrigerated or frozen in individualized doses.

Neomycin Sulfate is often prescribed for e-coli infections and given as an oral drench at a rate of 3cc's for smaller kids and 5cc's for larger kids given every 12 hours for 4 days.

Sulfadexamethoxine (trade name: Albon) is frequently used in goats to control coccidiosis. It can be given as an oral drench on Day One of treatment at a dose of 10cc/50lbs bwt followed for Days Two through Five

at a dose of 5cc/50lbs bwt. Or your veterinarian may recommend that it be added to the SOLE source of water to treat the goat herd at the rate labeled for the treatment of cattle.

BoSe may be prescribed if your veterinarian feels the goat is Selenium deficient. Vets usually will prescribe 1cc per 40lbs bwt given SQ. Note that there have been cases of anaphylactic reactions to BoSe and epinephrine should be readily available.

Thiamine is prescribed as the first medication to try in a goat with specific neurological symptoms indicating a Thiamine deficiency at a rate of 3cc's per 100lbs bwt given SQ every 8 hours until symptoms improve. Some vets are much more aggressive with Thiamine, depending on the severity of symptoms. This drug is noted to cause anaphylactic reactions in goats and epinephrine should be readily available.

B-Complex if straight Thiamine isn't available, or the goat has other symptoms indicating a need for multiple B vitamins, B-Complex may be prescribed at a rate of 6cc per 100lbs bwt SQ. Make certain that the vet is aware of how much actual Thiamine is available per cc of the B-Complex you have on hand as different brands provide differing strengths. As with Thiamine, high doses of B-Complex may cause anaphylactic reactions in goats and epinephrine should be readily available. B-Complex is also recommended for other goat ailments.

Dexamethasone is a drug that your vet may want you to keep on hand, but the prescription is variable and you must call prior to using it. Never give Dex to a pregnant goat as it may cause abortion.

Parasites

Putting goats in the woods includes putting them in areas considered "clean" (meaning goats have not been there in the past 4 months, or perhaps never), goats browsing woodlots should have a low incident of parasite infestation.

However the initial placement of goats into woodlots causes some stress for the goats. If they are already carrying a parasite load, it may become worse and/or symptomatic. It is highly recommended that goats be treated for

internal and external parasites three days prior to going into the woods, and monitored carefully thereafter. The producer will need a veterinary prescription, as most dewormers are "extra-label" for goats. Make certain that the veterinarian includes a meat withdrawal time, as these are meat animals.

Goats should be treated externally for mites and biting lice; and internally for worms, mites and sucking lice upon arrival, and may need to be retreated in three weeks.

Symptoms of external parasite infestation:

Goats that have a "raggedy" coat with chewed patches or "worn" hair spots from rubbing or scratching may have lice or mites. Nits (tiny white lice eggs) clinging to goat hair or adult lice may be seen.

There are a few livestock powders and liquid "pour-on" drenches that will help control lice, but they are best used every 10 days until no more evidence of lice is present, as they cannot kill eggs.

Symptoms of internal parasite infestation:

The most troublesome internal parasite of goats is *Haemonchus Contortus* a.k.a.: barber pole worm or stomach worm. A mere one thousand larvae can suck up to 800 cc (more than 26 ounces!) of blood from a goat per day. The primary symptom of an infestation is anemia and can be detected by pale mucous membranes of the inner eyelids, inside the mouth, or inside the edge of the rectum or vagina. Inner eyelid color may be identified subjectively as +4 = highly pink; +3 = moderately pink; +2 = moderately pale; +1 = very pale; 0 = white. Soft, clumping manure without formed pellets is often present, and scours (diarrhea) may develop. Other symptoms include weight loss, poor growth, and general unthriftiness. In severe cases, the goat looks unwell, will lag behind the herd when moving and will withdraw during feeding times rather than risk "confrontation".

It is common practice for veterinarians in the northeast to prescribe Ivermectrin 1% injectable for cattle and swine, at a prescription of 1cc per 50lbs of body weight to be given as an oral drench. Such administration helps prevent the parasites from building a resistance to the dewormer.

Moving the goats into "clean" woodland paddocks as frequently as once week may aid in keeping a low parasite infestation.

Coccidiosis

Coccidiosis has several consequences including acute diarrhea, constipation, dehydration, weight loss and long-term damage to the gut mucosa. It is possible that a severe case of coccidiosis can cause a gastrointestinal hemorrhage in a goat. Coccidiosis and its complications can cause death. Young goats, raised in crowded environments, are much more prone to complications of a severe coccidia outbreak. Given how paddocks are structured for "Goats in the Woods" it is unlikely that caretakers will see such problems. However, coccidiosis may come on as a secondary symptom to a primary problem. Stress or disease in a goat can lower its natural ability to keep coccidian under control, or a goat may come into the program with an undetected problem.

"Goats in the Woods" includes a protocol for coccidia control upon arrival that includes a 5-day administration of Sulfadimethoxine. If a goat is scouring once in a woodland paddock, a fecal should be obtained so coccidiosis can be ruled out or treated.

Tape Worms

Tape worms are not generally a problem for the goat, unless there are so many that they cause an obstruction. If "rice-like" segments are seen in the goat manure, report it to the vet or Team Leader.

P. Tenuis or Deer Worm

P. Tenuis, a.k.a.: brain worm, deer worm, meningeal worm, etc., can be a serious problem for goat producers with goat herds in areas also populated by white-tailed deer. A simplistic explanation is as follows: White-tailed deer are carriers of this parasite that sheds its eggs in the manure of the deer. Snails become infected when they feed on larvae ridden deer manure. The goats (and other ruminants) accidentally consume the snails while grazing and browsing. The larvae don't respond the same way in goats (or other ruminants) as they do in deer. They become "confused" and can cause

neurological damage as they migrate toward the spinal column of the goat rather than the brain.

The first sign of a *P. tenuis* problem in a goat is often just a slight lameness of one hind leg, especially at a trot. (It will look as if the goat is dragging his foot.) This lameness may be difficult to differentiate from other possible causes, but it will generally become progressively worse over the next several days. Other symptoms may include rubbed areas on the neck or sides. As the parasite migrates toward the spinal column it stimulates nerves causing severe itching. Goats have been known to rub themselves "raw and bleeding" trying to satiate that itch. There usually is a progressive nature to the affected skin area, sometimes a line starting low and heading toward the spinal column or the area just becomes larger and larger. These rubbed areas may be followed by paralysis as described above. The goat will appear normal in every other way, eating and drinking well, and without an elevated body temperature. If left untreated, the goat may become paralyzed to the point of death. With early intervention, the progressive paralysis may be arrested, and the goat may regain some or most of the use of that limb. (He may always be partially lame.) Occasionally, goats are diagnosed with *P. Tenuis* based on symptoms that are quite similar to other neurological infections involving the head and neck. Again, early intervention and aggressive treatment has saved many such goats.

There have been different prescriptions for successful treatment of *P. Tenuis*, all are aggressive and some are expensive. A veterinarian may prescribe a high dosage combination of Dexamethasone (Azium), Fenbendazole (Panacur), Ivermectrin 1% injectable for cattle and swine (Ivomec). Because of the lengthy meat withdrawals of "extra-label" medications recommended for treatment, early slaughter of the goat may make the most management sense.

It is recommended that you discuss your options for treatment prior to actually putting any goats into wooded paddocks.

Sick Goat Worksheets

For male goats

When examining a goat that appears to be unhealthy, it's important to gather data in a way that will allow you to communicate the information to your assigned veterinarian. These worksheets are only an aid and are in no way meant to be complete. Keep a copy of these worksheets, with a pen, in a zip-loc bag in your First Aid Bucket.

These worksheets have been designed for male goats, only.

Start the worksheet by gathering the goat's medical history and observing him for at least a few minutes unless you immediately see that you're looking at a medical emergency.

Today's Date: _____ Time: _____

What is the name or number of this goat?

Gender: doe buck wether

Breed? _____ **Age?** _____ **Weight?**

Last illness?

What are his **feed rations** and his **feeding program**?

grain hay mineral pasture

What vaccines, medications or "home remedies" has he been given and when?

What are his **presenting symptoms**?

How is he standing, lying down? Does he seem weak? Does he seem lethargic or listless (of low energy, sluggish and apathetic)? Anxious? Nervous? Restless? Confused? Describe his **behavior**:

Have you seen his **manure**? Is there an unusual smell?

Describe: color, consistency and frequency

pellets clumpy mushy dark diarrhea clear diarrhea blood tinged
hard&dry pellets

Is he **urinating**? Does he seem to be having any difficulty when doing so? Is he acting like he might be constipated? Describe:

Can he walk? What is his **movement** like? Is he walking and trotting uncomfortably? Does he stand in a hunched way? Is he staggering or acting "drunk"? Is he holding his head tilted? Is he walking in circles? Is he leaning? Is he refusing to move? Describe:

Does he appear to be in **pain** or discomfort? Is he grinding his teeth, pressing his head against the wall, or rolling on the ground? Is he biting at his side? (which side?) Is he drooling? Is he crying out at all? Describe:

**Having observed most of this from afar,
now it's time to catch the goat and finish your worksheet.**

What is his **body temperature**: _____ (normal is usually 101.5 - 103.5°F)

What is his **respiratory rate**? _____ (normal is about 12-24 breaths per minute)

Breathing: Does his nose have mucous on or in it? If so, what color and consistency is the mucous? Is he coughing or sneezing? Does he seem to be having difficulty breathing? Breathing in or out? Describe:

Can you feel or hear his **heart rate**? _____ (normal is about 70-80 beats per minute)

Eyes: Are his eyes dull, pink or cloudy? Is the hair around his eyes wet? Is there mucous? Does he seem to have trouble seeing? Is there an ulcer on the eye? Is he **blind**? Describe:

Inner Eyelids: Do his eyeballs appear yellow? Is he moderately or severely **anemic**? What color are his inner lids? Inner eyelid color may be identified subjectively as +4 = highly pink; +3 = moderately pink; +2 = moderately pale; +1 = very pale; 0 = white. Describe:

Ears: Is he twitching or repeatedly scratching at one ear? Is he holding his ear in a "cocked" position? Does the inside of his ears look dirty? Do they smell bad? Does the skin around his ear tag look infected or bloody? Describe:

Coat: Does his coat look dry, dull or thin? Does he have bite marks or rubbed areas? Does he have dander or nits or lice in his hair? Describe:

Fitness: When you run your hands down along his ribs, back and hips, does he feel thin or bony? Do you feel he's lost weight? Describe:

Skin: Does he feel **dehydrated**? When you pull out his skin does it lag snapping back in place? Do you see any cuts, abrasions, abscesses, and scabs? When you run your hands over his skin, do you feel any lumps under it? Describe:

Rumen: placing your hand on the left side of the goat, in the triangle below the backbone, behind the rib cage and in front of the hipbones, can you feel his rumen gurgling at least twice a minute? Does his rumen feel hard, tight, **bloated** or distended? Is he biting at his rumen area? Is he chewing his cud? What does his cud smell like? Describe:

Legs: running your hands down each of his **legs**, do you feel any bumps, lumps or areas of warmth/heat? Describe:

Feet: Are his **hooves** over-grown? Looking between his toes, do you see any blackish material? Do you see any lumps or abscesses? Do you see skin blisters or "cold sore" looking areas indicating foot scald? Are there any wounds? Is the wall of any hoof separating from the body of the hoof? Do you smell a strong odor? Describe:

Penis: examining the male external reproductive area, is there any swelling to his scrotum or penile sheath? In the area immediately around the sheath opening do you see or can you feel any crystals, swelling or leaking of urine? Is the hair wet or damp around this area? Is there any discharge? Is there an odor to the discharge? Are you able to flip the goat into a "sitting position" and extend the penis? (Ask for a veterinary demonstration.) Is the pizzle swollen, purplish in color, or inflamed? Is the penis swollen, purplish in color, or inflamed? Does urinary flow appear to be blocked?

Is there anything else you'd like the vet to know?

Emergency Fax -- Sick Goat

TO:	FROM:
Name	Address
Phone number	
Fax number	City State Zip
	phone number
	fax number
	e-mail address

Date:	Time:	Number of pages sent:
--------------	--------------	------------------------------

Goat Name or Number:	Gender:	Age:	Breed:
Grain: Amount:	Hay: Amount:	Pasture access: Type:	Mineral: Type:
Recent feed changes: Date made:			
Temperature:	Heart Rate:	Respiratory Rate:	Rumen sounds? Y or N
Cudding? Y or N	Urinating? Y or N	Manure? Y or N	Anemia? Y or N
Presenting symptoms:			
Vaccines, medications or "home remedies" administered? (times and amounts given)			

Thank you!

Sick Goat E-Mail Template

Having already used the Sick Goat Worksheets to gather information, fill in this form and e-mail it to the appropriate people.

Goat Name or Number:

Gender (sex):

Age:

Breed:

Grain: Amount:

Hay: Amount:

Pasture access: Type:

Recent feed changes:

Date made:

Body Temperature:

Heart Rate:

Respiratory Rate:

Rumen Sounds? Y or N frequency

Cudding? Y or N

Urinating? Y or N amount

Manure? Y or N consistency

Anemia? Y or N

Presenting symptoms:

Vaccines, medications or "homel remedies" administered:

Assessing Woodland Conditions for Goats

Goats are potentially highly effective at controlling the abundance and vigor of saplings and shrubs that develop in forests or other areas. Goats will typically consume all leafy material and all seedlings, excluding most ferns. Thus, goats should not be used in areas that include large numbers of stems the landowner doesn't want browsed. Goats, like other "broadcast" treatments, are most appropriate in areas that are dominated by undesired species and stems. Left unchecked, goats will damage mature and valuable trees in the treated areas. Vegetation should be assessed daily, and goats moved before they begin to extensively damage desired crop trees. Initial damage typically occurs as gnawing on the root collar of mature trees with relatively smooth and thin bark (e.g., red maple)

Currently, no protocol predicts the amount of time a given parcel of forest cover will support a herd of goats. This depends in large part on the quality and quantity of leafy material present, the health and vigor of the herd, and the quality and quantity of supplemental feed. Research areas have focused on very dense (several thousand stems per acre) seedling and sapling thickets of beech and striped maple. Under these conditions, 4 to 6 month old male goats will reside as a herd of 20 per quarter-acre for 7 to 9 days. Adequate goat forage in woodlands will have at least 9,000 stems per acre with stems that are more than 2 feet and less than 8 feet tall. Density of stems can be assessed by using a 3.7' stick as the radius of randomly placed circles throughout the treated area and counting all stems that could be browsed by goats. Multiply the average number of stems in each circle by 1000 to estimate the number of stems per acre.

Several websites list plants that are toxic to goats. Please consult with your County Cooperative Extension Livestock Specialist or the web sites for additional information on plant toxicity.

Setting Up A Woodland Paddock

for 20 goats of about 150 feet by 75 feet requires:

(3) lengths of 42" high by 150ft. long electric netting fence	Ground wire pipe clamps
(1) four-foot galvanized pipe ground rod (may need 2)	(6) four-foot sections of welded wire panels
(1) fencer	(1) 5'x 9' tarp
(1) adequately charged Marine deep cell 12v battery	(4) three-gallon water buckets
Battery leads to the fencer	(4) round feed buckets
Connector from the fencer to the fence	(1) mineral/salt brick and holder
Ground wire	Fencing Bucket with supplies

Helpful Hints: When setting up an electrified fence for goats in the woods, several things are important to remember.

- The electrified netting is a visual barrier that the goats learn to stay away from because the electricity is painful. Goats WILL test the fence; some will test it daily.
- To keep goats IN, the fence tester must read at least **3,000 volts** when tested near the end furthest from the battery connecting clip. Electricity must be running through the fence in high enough voltage for the goats to perceive it as a pain barrier. 5,000 volts seems best when there is a concern for predators as well.
- Make certain that the bottom neutral string of the fence is in contact with the ground (or no further off the ground than an inch). Because this string isn't electrified, small logs or rocks can be used to help secure it, as well as plastic tent stakes. Don't leave any gaps.
- Make certain that the fence isn't droopy. Extra polls, stakes or string tied to a tree or branch can help. Because the fence isn't a physical barrier, it doesn't need to be stretched tight. You can use dry dead branches to stabilize the fence. Remove loose bark if possible. These should be available in most woods.

- Make certain that the ends where two lengths of fence come together aren't touching. A 1-2 inch gap is preferable, with twine securing the ends in such a way that the goats won't try to squeeze through. Tying the end posts together seems to weaken the voltage.
- Make certain nothing is touching the fencing, especially live trees. Some grass is acceptable, but live trees will short the circuit and weaken the voltage tremendously. (That's especially important when fencing in the woods.)
- If more than one ground rod is used, they should be at least 10 feet apart and as deep into the ground as possible, connected to each other by a highly conductive wire (copper).

Building Portable Shelters

"Catch Pens"

Most of the goats born in the Twin Tiers area had a barn or shed that their dams felt was "home". Providing a portable shelter may offer a similar feeling of safety for the goats while in the woods. Consistency, in as many ways as possible, helps the goats settle into a new territory with every move.

20 young goats fit comfortably in a portable shelter measuring approximately 4' by 8' by 4'. Securing an inexpensive blue tarp, preferably no larger than 5'x10' to the top of the shelter has been proven successful. (Caution must be used when securing tarps as there have been documented cases where goats have become entangled in tarps and strangled or smothered.) Constructing the shelters of welded wire panels insures that the goats won't smother if stuck in a corner, and are less likely to be injured if the walls collapse. These panels are reasonably simple to move through the woods.

The tarp-roofed portable shelter actually provides several services for goats. They protect the goats from rain, shade them from intense sun, and offer a familiar sense of "home" even when moved as often as every three days. They can also be used as "catch pens" when gathering the goats for weights, transport or health treatments.

Taking welded wire panels (livestock or cattle), use bolt cutters to create more portable panels of approximately 4'x4'x4' sizes. This size will vary, depending on the size starting panels. (ex: a 16 ft. long cattle panel will make 4 of these "cut" panels) A portable shelter for 20 young goats will require 6 of these cut panels.

Anchor at least one panel to a sturdy tree with baling twine or rope. (Anchoring two panels will significantly reduce the probability of the pen collapsing.) Connect and stabilize the 4'x4' panels by tying the ends together with baling twine, cotton string or metal snap clips. Leave one short end open (unattached) to the rest of the pen to function as a door. (For safety, the door should be anchored to a tree, or swung back to anchor on the pen.) Attach and secure the tarp to the top of the pen.

If possible, feed the goats in or around the pen.

Check the portable shelter daily, inspecting the security of the tarp as well as the panels. Strong winds, playful goats and weird events can collapse the pens. Dump the water from the tarp which may pool after heavy rains.

Fencing Bucket and Fence Troubleshooting

- Fence Tester
- Battery Tester
- Fence Repair kit (extra wire, tape, clips, nylon string)
- Cotton string
- Baling twine
- Pliers
- Knife
- Rubber mallet (small)
- =====

Check voltage that fencing is pushing through the fence at least once per day, looking for a minimum of 3,000 volts.

If less than 3,000 volts registers on the Fence Tester one of the following things might be wrong:

- The battery may be low and require recharging/replacement. Check it with your battery tester. (Battery should be tested no less than once per week, and should be recharged at least every three weeks, depending on draw and weather conditions. Make sure to refill battery with distilled water per battery directions before attempting to recharge.)
- The fence may be grounding out on live trees, high wet grasses, or other object. Check your fence line.
- The fence line may be dislodged and lying on the ground. Check your fence line. (Sometimes wild animals, such as turkeys, deer, raccoons, etc., get caught in the fence and pull out the stakes. Well trained goats will usually stay in the paddock.)
- The fence is drooping, or the bottom hot wire is touching the ground. Check the fence line. (This will happen if the ground is soft or "hilly". Use the cotton string or baling twine to secure the top line to a higher branch or tree.)
- The ends of two lines of fence are too close. Separate the ends by at least two inches.
- There is a break in the fence's hot wire. Repair the fence according to directions.
- There isn't a sufficient ground. Add another ground rod, connecting it to the other ground rod(s) with copper (or other highly conductive) wire using appropriate pipe clamps.

Goat Bucket

When going to visit your "*Goats in the Woods*" we highly recommend that you take along the following items. Putting together a Goat Bucket saves time and frustration every day. Keep a copy of the bucket's inventory in the bucket so that you can check your supplies before you head out.

Fence tester
 Fence repair kit
 Collar and lead

Small rubber headed mallet
String (small ball)
Baling twine
Electrician's tape
Scrub brush
Knife
Pruning clippers

= = = = = = = = =

You may choose to take this with you when you visit your "*Goats in the Woods*". While it isn't a complete package of everything you might need, it contains the supplies we most often found immediately useful when away from the barn. We keep our First Aid Kit in the Goat Bucket. You can use an old purse or backpack with a big **red cross** + to keep your First Aid Supplies safely together.

First Aid Kit

Digital Thermometer or veterinary thermometer
Small tube of petroleum jelly
Tube of Triple Antibiotic Ointment
Bottle of Rubbing Alcohol
Bottle of Hydrogen Peroxide
Small Amount of Blood Stop Powder
Latex Gloves
Approved Veterinary Fly Spray
Vet wrap
Small flashlight
12-inch ruler
Collar and lead
Hoof trimmers
Zip-loc bag of cotton balls
Small notebook
Pen
Sick Goat Worksheets
(other items or medications as recommended by your veterinarian)

Training Goats To Electric Fence

Training goats to electric fencing should be done in a CONTROLLED AREA. With the first "shock" a majority of goats will run THROUGH the fence, and have been known to "keep on running". Many goats will need to "hit the fence" and be "shocked" twice, and some need three lessons. After that, most goats will "test" the fence with their whiskers, at least occasionally, and some on a daily basis. A few won't care about a weak shock if there is grain or something else they want on the other side.

When introducing goats to electric fence for the first time, two people make it easier, as goats often get caught in the woven netting. One person can disconnect the battery, and the other can free the goat, saving both the goat and the fence.

There are several ways to "bait" a goat into touching the fence for training purposes. Wrapping strips of aluminum foil baited with peanut butter is one way. Tying a bottle cap (drilled with a small hole) that is filled with peanut butter is another way. Probably the best way is to tempt the goats with grain right along the fence line, WHILE UNDER SUPERVISION.

Some have such heavy coats that they won't feel a shock at all, unless they touch a wire with a nose or ear.

If a goat is consistently putting its head through the fence (some small bottle babies will do this) dampening its neck, especially just before feeding time will allow for greater conductivity and a more effective lesson.

Catching Goats

Whenever goats need to be caught and/or transported, planning for safety of the humans and goats takes precedence. 15 minutes of pre-planning can save an hour of time or money for vet fees, doctor fees or losses. With time and conditioning, goats can be trained to the process. That is by far, the wisest resort.

The safest way of catching goats is to lure them into a small well ventilated "catch pen", (see: "Portable Shelter " page) lock them in, and remove one goat at a time.

There are often one or two goats that avoid being lured into the catch pen, and will require a more strategic "catch plan". Do NOT chase goats. Chasing brings out their best "predator avoidance" instincts which may eventually cause harm to you or the goat. Chasing goats does nothing to instill trust. Attempt to identify and secure those goats that will be most difficult to catch, **FIRST**. Catching difficult goats during their regular feeding time, using their regular feeding method and the same people who normally feed them, prevents them from being wary and allows for greatest success.

Catching goats can be dangerous to the person and the goat. Using caution is important. The anatomy of a goat leg is very similar to that of a dog and can be easily damaged. While catching a goat by the lower leg is often easiest, it's important to capture and shift your hold as quickly as possible to avoid injury. Be sure to shift your hold to the upper leg (above the hock) then secure the goat around the neck as soon as possible.

Catching and moving goats by their horns also seems easy for a human, and horns are often referred to as "goat handles", but caution must be used in young goats as the horn bases aren't stable and they can be easily dislodged. It is also true that goats don't *like* to be handled by their horns. They find it threatening. Securing a goat with a "quick clip" dog collar is easy and safe. Using short two-foot dog leads works well.

Goats under 35 lbs. are often easier to carry than "drag" by a lead, especially if the lead isn't fitted well to their neck size. Hold a small goat by wrapping your right arm around the goat's hind legs, threading your left arm between his front legs, and tucking his head **under** your left arm. This secures the goat and prevents your face and neck from being "horned". Carrying the goat in this manner allows the goat to feel safe, thus reducing his need to struggle, allows you to see clearly, and allows you to utilize correct body mechanics when lifting, holding and carrying the animal.

Goats can be carried using the weighing sling, if they are secured and balanced in it. Be aware of using proper body mechanics when doing so.

Forked Trees

It is not uncommon for a goat to get hung up by a leg in the fork of a tree. Hanging there, by a leg will cause injury and even death. Goats, on rare occasions have been known to get their heads or horns entangled in branches. If goats are only being checked once a day, it's imperative to assess the paddock for such traps. Inspecting for trees with stiff, heavy (not easily bent) limbs or trunks that are forked from the ground to about 5 feet up (some goats have a leg reach of over 5 feet). When you find such trees, you can:

- ❖ Cut the tree down.
- ❖ Cut half of the fork off.
- ❖ Block the fork with a rock or small log.
- ❖ Inspect that area at least twice a day for trapped goats.

There may be a different solution for each problem tree or paddock.

If a goat is found caught in a tree and is still alive, remove it (of course). If it's in good shape, and hasn't been trapped long, it may just run off with the herd. If trapped for a few hours, there may be poor circulation and some limping or lameness for a short time. If it's been trapped awhile, it may to be in shock. If so it needs to be re-hydrated and to receive veterinary attention so transporting it to an "infirmary" is necessary. Covering the goat with a blanket or coat during transportation may be helpful. Once at the infirmary, offer the goat water, or an electrolyte solution if available, good hay and then begin to fill out the "Sick Goat Worksheet".

Accurate vital signs will be very important. You will also need to note if the goat is eating and drinking. Can the goat stand? Can he bear weight on the leg(s) involved? Can he walk? Can he trot? Are any joints swollen and/or

warm to touch? Are all of his hoofs the same temperature? Does the goat seem to be in pain?

Add this information to the *Sick Goat Worksheet*, and notify your assigned veterinarian and Team Leader.