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**Kerr Center for Sustainable Agriculture**

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## Introduction

The Kerr Center seeks to find alternatives to conventional methods of pasture maintenance and reclamation. The grazing of goats for brush management has been used extensively in Texas and other areas of the southwestern United States. Goats consume large amounts of browse from shrubby plants and graze a wider variety of plants than other livestock species (Scifres, 1980). Only a few studies address the plant preferences and management needs of goats used for brush control in regions with more humid, botanically diverse conditions.

We initiated an investigation of goats as replacements for chemical and mechanical control of brush. The project began in spring 1988 and continued through fall 1993. Our goals were to: (1) determine the brush species goats eat, (2) monitor plant species that increase as brush cover is removed, (3) assess the initial stocking rate, (4) evaluate different types of fencing, (5) determine animal management requirements, and (6) initiate multispecies grazing with goats, cattle, and sheep.

During and after the course of our project, we received numerous requests from ranchers and farmers who were trying to obtain written information about the use of goats for brush control. After talking with several of these individuals, we felt there was a need for a nontechnical publication that addressed low-input management and care of goats used for brush control. In the following pages, you will find information we gleaned from observations and day-to-day trial and error.



## Fencing

Fencing is the key component of a system using goats for brush control. Goats must be contained before they will control brush. We experimented with barbed, woven, and electric wire and combinations of the three.

Electric fencing is effective at voltages greater than 4000 volts. At lower voltages, goats can crawl through a fence. Electric fencing provides predator protection if the lowest wire is no higher than 6 inches from the ground and a high voltage is maintained. Depressions under fences are filled to keep predators out and goats in.

Our initial perimeter fence consisted of six high-tensile wires: four hot and two ground. We learned that this was more fence than was necessary. This fence controlled the goats, but was difficult to maintain in rough, brushy areas. We did not want to spray the fencerow with chemicals regularly, and cutting weeds along several miles of fencerow two to three times a year was not practical. A large energizer was used to overcome the drain of voltage from heavy vegetation. This was effective but increased the fencing cost.

As we added and fenced new pastures, the number of wires was decreased, and the spacing was varied to find the minimum requirements for containing goats. A four-wire fence consisting of three hot wires and one barbed wire stretched tightly 4 to 6 inches from the ground was effective. The highest hot wire was set 33 to 36 inches from the ground. It discouraged goats from jumping over the fence. If the goats had been serious jumpers, another high-tensile wire would have been necessary. The remaining hot wires were spaced evenly between the top wire and the barbed wire. All three high-tensile wires were hot. The barbed wire kept goats from crawling under the fence and forced them on a hot wire if they tried to go through it. Using barbed wire instead of electric hot wire near the ground helped reduce the drain from heavy vegetation on the fence. Three hot wires without the barbed wire were not effective; we were unable to space three wires so the goats could not pass through, under, or over.

An electric fence is a mental barrier, not a physical one. To be effective, goats must be familiar with it. The fence needs to be at a peak output when goats are introduced. Some animals may run through the fence a few times before they learn to respect it. Even newly purchased goats accustomed to electric fence require an adjustment period.

Woven wire topped by two barbed wires contains goats and provides better predator protection than other types of fencing. Woven-wire fence, however has several disadvantages. When you add the cost of materials and labor, it becomes one of the most expensive choices. If the main goal is brush control

and production is secondary or if the terrain is rough, this may not be the best fencing choice.

Horned goats can get trapped in standard woven wire. A goat with its head stuck in a fence becomes a loud coyote call if it is not discovered and released promptly. Woven wire specifically designed for sheep and goats prevents entrapment. If your goal is to raise goats, woven-wire fence may be a good investment for the perimeter. If woven wire is already present, the addition of an offset hot wire will discourage goats from sticking their heads through the fence. Goats will crawl through holes beneath the fence. Fill in holes, even if an offset hot wire is added. If goats can use them to escape, predators can gain entry through them.

Barbed wire was beneficial to us in several ways. The cross fence in the initial study area was eight-strand barbed wire strung tightly. Posts were eight to ten feet apart with two stays between. Goats did not go through the fence, but found several depressions that allowed them to crawl under the fence. Once we blocked the gaps, goats stayed put. The goats did not acknowledge standard five- or six-strand barbed wire fences until two offset hot wires were placed 6-8" and 12-18" inches from the ground. These spacing intervals prevented goats from going under or through the fence without being forced on a hot wire. If you have an existing five- or six-wire fence, goats can be added with slight fencing modifications.



## Facilities

Goats do not like to be wet. Generally, it will not harm them, unless they also get cold. Wet and cold is often used to describe winter in southeastern Oklahoma. To provide shelter for the goats, we constructed a three-sided shed between two of the pastures and placed three small portable sheds, originally built for sheep, in another pasture. Goats used the shed when it was cool. During the summer months, they took shelter under trees when it rained unless it rained for an extended period. One of our pastures only contained trees for shelter. During winter, the goats used this pasture in conjunction with one that had shelter.

We built a lot using stock panels and 3-inch treated wood posts around the three-sided shed. This served as a place

to corral goats. The holes in the stock panels could trap a goat with horns; therefore, goats were seldom left in the lot for extended periods. The wood posts were expensive. Steel T-posts would have been sufficient. If we needed to catch the goats while they were in the pastures furthest from the shed, we used an old set of cattle corrals as a lot. We modified the corrals with woven wire and stock panels.

We set up working pens in part of the shed. Working pens should be stout. Goats are rough on facilities and equipment. We began with stock panels tied to T-posts. This did not work well. Goats push and shove when crowded. They bent the panels and knocked them loose. Most stock panels have sharp edges that can injure goats. We eventually built pens from stock panels welded to a one-inch tubing. The tubing provided a framework the goats could not bend. Sharp edges were rounded to prevent cuts.

## Type of Goat

What kind of goat makes the best brush goat? Meat, dairy, Angora, or crossbreeds; young or old; male or females; all goats eat brush. If this is your only requirement, any goat with teeth and good health is adequate. If you have additional goals, it pays to be more selective.

Dairy goats are a source of milk. They require more attention than other types of goats, but this is not necessarily a drawback. Keep dairy goats away from areas with heavy brush when they are lactating to avoid udder damage.

Mohair from Angora goats provides a source of additional income. Vegetable matter reduces the value of the clip. This may be a problem if brush is heavy with briars and burrs. The additional income from the mohair may not be enough to compensate for the extra management needs. The availability of a shearer is another consideration.

A meat goat refers to an animal whose main purpose is meat production, rather than milk or hair. Spanish and Boer goats and some Nubian crosses fit this description. Dairy goat wethers are also butchered for meat, but depending on the breed, the carcass may not have as much meat on it as a Spanish or Boer goat.

Spanish goats are a type, not a breed. They have been used for brush control for many years. Several breeders have selected them for size and meat production.

The Boer goat has a meaty carcass in comparison with most other types of goats. At this time, purebred animals are very expensive, and availability is limited. It is economically unfeasible to release them in heavy brush knowing that a coyote may make them his next meal. Cost will decrease as the number of Boer goats in the United States increases. Depending on production goals, they will work well in crossbreeding and upgrading programs.

In addition to the type or breed of the goats, age, sex, and length of ownership require consideration. Does can be run year-round and provide a kid crop that will help to offset herd maintenance costs. If the level of management required for a breeding herd is

unwanted, wethers are an option. Wethers kept year-round act as brushhogs, and like a piece of equipment, they have a maintenance cost. Producers can compare the wethers' costs to the amount of labor they eliminate when they no longer need to drive a tractor.

Keeping a permanent group of goats has several advantages. Training is only required once. The risk of importing disease with new arrivals is eliminated. The presence of goats in early spring ensures that vegetation does not have a chance to get ahead of them. Goats kill or retard the growth of trees and shrubs during winter by damaging the bark. Overwintering goats has some disadvantages, though. They are more likely to try to break out of a fenced area, because forage is limited. Shelter that would not be required for summer grazing may be needed during the winter.

Young wethers can be purchased, pastured for a time, and sold when they reach butcher weight. It is usually a good idea to retain a few wethers to train the next group. Young kids bought in the spring and sold at heavier weights before winter can also provide a return and control brush. Variations in market prices at the time of purchase and sale and weight gain during the grazing season affect profits. The young age of the goats is also a drawback. Kids have a lower forage intake and a lower browse line, and are more susceptible to predation, than large mature animals.

We purchased approximately 25 dairy-cross goats and about 60 Spanish goats at the beginning of our project. We used does, because we felt they would hold

their value and the production of kids would help to offset variable expenses. Some of the goats we bought were wethers. We sold them at a local sale barn before the first winter.

Choosing the right type of goat is important, but buying a healthy goat is even more important. A healthy goat has bright and clear eyes, not glassy or glazed. A shiny coat and an interest in its surroundings are also good characteristics. Teeth should meet the dental pad properly without any loose, broken, or short ones. Flaws in the mouth can lead to trouble eating brush and to maintaining body condition. A limp may indicate a chronic foot problem or an injury that would make the goat susceptible to predators.

*Goat management influences stocking rate. Rotating goats from pasture to pasture is more effective than set stocking an area. Concentrating goats in one pasture increases their impact. When brush is reduced, goats can be moved to a new pasture.*



## Stocking Rates

You need to consider the type and amount of existing brush and the amount of time for brush reduction to determine stocking rates. Established guidelines are unavailable.

At the beginning of our project, we stocked the pastures with 1.5 goats per acre. We were ready to adjust the stocking rate if necessary. Before the end of the second growing season, the goats in one of the pastures were out of browse. This pasture was 32 acres and initially had brush cover of 43%. The other pasture had 24 acres with 62% brush cover. The percentage of brush cover and the number of acres need to

be considered when determining stocking rate. One goat per acre per percent brush cover is a good minimum beginning rate.

Brush cover is accessible goat food. Depending on the size of the goat, "accessible" refers to the area from the ground up to seven feet. Treetops out of a goat's reach are inaccessible, and plants they dislike are ruled out. Goats have a reputation for eating everything, including tin cans. Contrary to popular belief, they are picky eaters. Time of year, stage of plant maturity, and region affects their diet. Our goats consumed winged elm, hickory, buckbrush, greenbriar, blackberry, different kinds of locust, yucca, sumac, and a variety of other things. They ate oak early in the growing season, but stopped after it reached a certain stage of maturity. The goats killed all but the largest cedars. They did the most damage to cedars in fall and winter. Branches were stripped to head height, and all of the bark was removed from the trunks. Cedar may be affected by region. Further west, goats apparently find it less appetizing. The goats ate persimmon, but it was an unfavored food.

Goat management influences stocking rate. Rotating goats from pasture to pasture is more effective than set stocking an area. Concentrating goats in one pasture increases their impact. When brush is reduced, goats can be moved to a new pasture. Brush in the first pasture can recover. Rotation also keeps goats happy and healthy by constantly supplying favored forage. Goats are returned to the first pasture when the browse is sufficient to support them.

In our study, the goats stayed in the pastures for shorter periods as the project progressed. The percentage of brush that recovered was reduced with every rotation. If we had started with only one 32-acre pasture, we would have been forced to sell our goats and restock when the brush recovered. The goats lost condition at a time of the year when they should have gained. We realized that brush would be a recurring problem in these pastures. Eliminating most of the brush and selling the goats only to restock when brush returned was an undesirable option for our purposes. It could create a cycle in which the cattle carrying capacity of the pasture would go up and down depending on brush cover. A management strategy that reduced brush to an acceptable level but still provides enough browse to support fewer goats was more appropriate for our needs.

As the project continued, we added more acreage and reduced the number of goats. Stocking rate dropped to 0.5 goats per acre. Stock density ranged from a high of 3 to a low of 1.5 goats per acre. This stocking rate was near what was needed for maintenance.



## Animal Management

The management system used depends on the type of goats and the goals of your operation. Since our main goal was brush control, we designed our system to meet this requirement and maintain herd health with as few inputs as possible.

When we purchased our goats, we dewormed, eartagged, and weighed them and gave them a series of eight-way clostridial vaccinations. We also trimmed their feet. Age was determined by teeth. A record listing age, weight, identification number, and observations was started for each animal.

Not long after buying the dairy-cross goats, one developed pinkeye. She was separated from the herd until we thought she was healed. None of the goats purchased at the same time became ill. Shortly after that, we purchased the Spanish goats and immediately put the two groups together. During the next month, nearly half of the Spanish goats developed pinkeye. Many were temporarily blind in both eyes and needed help finding food and water. If the animals had been separated for a short time, the problem might have been avoided. A better

option would have been to sell the infected animal after she healed, never returning her to the herd.

Our goats foraged through all seasons, including winter. Pasture can be supplemented with hay, when necessary. Heavy supplementation was unnecessary in our project. The most hay our goats ever consumed during winter was four round bales. They preferred hay with briars and weeds to bermudagrass hay. A loose salt and mineral mix was offered free-choice year-round. Grain supplements were not needed. Goats that did not maintain good body condition were culled into a separate group, supplemented with grain until they regained weight, and sold.

Exercise caution when feeding round bales. Goats eat around the base of the bales, making them resemble large mushrooms. Then they jump on top of unstable bales, sometimes causing them to fall over, and any animal standing in the way is crushed. We learned this the hard way. Round bale feeders prevent the bales from toppling, but goats can get pinned between the bale and feeder. The best solution is to push bales over before they become too unstable.

We bred does in December. The buck was taken to a veterinarian for a breeding soundness exam before being placed with the does. We limited the breeding season to 30 days for several reasons. Keeping labor requirements and feed inputs to a minimum were major considerations. Nutritional needs of does peaked when high-quality new growth browse and forage were available. It also took advantage of weather conditions for kidding. In May

we receive rain, but the temperature is usually warm enough to prevent any harm to kids. Since kids were close in age, we could work and wean all of them at the same time. We also weaned early enough during the growing season to allow the does to gain weight in preparation for winter.

In April before kidding, does were dewormed, deloused, and given an eight-way clostridial booster and had their feet trimmed if necessary. Individuals with white feet needed trimming on a yearly basis.

Kidding occurred in May. It was not "managed." Does were allowed to kid where they chose. The kids were not tagged, weighed, etc. Does that required assistance and had low mothering instinct were noted for culling. Kids found abandoned or malnourished were removed from the pasture and fed on a bottle or sold. Male kids not kept for breeding were castrated in early June. All goats were dewormed through the summer as needed.

During kidding in spring 1990, the weather was cool and more than 15 inches of rain fell. Many does preferred to hide in brush for several days after they kidded. This behavior exposed kids to the elements and many perished. Several kids were also lost due to the accumulation of mud and water in a shed that we had provided for shelter.

We weaned kids in late July or early August. At weaning we lotted the does without water for 12 to 24 hours to help stop lactation and reduce the chance of mastitis. We sold wethers and doe kids not kept as replacements. The majority were sold direct. The rest were

marketed through a local sale barn. We separated replacement doe kids from their mothers for four to six weeks and then returned them to the main herd.

In October we weighed and dewormed the goats again. As the amount of available browse was reduced in the pastures, goats began to consume more grass. The number of internal parasites goats collected increased; consequently, the number of dewormings required each year multiplied.

We also culled does at this time. We examined each doe individually. They were expected to meet stringent criteria. Does were evaluated on udder condition, disposition, mothering instinct, general body condition, and teeth. Does were required to give birth and raise their kids without assistance. We also evaluated their feet. Foot rot was introduced to our goats by sheep. Animals with the worst cases had their feet trimmed and were given antibiotics. A footbath was impossible, because there was no water source. A negative in any area was a reason for culling. By using such stringent culling practices, we could create and maintain a herd that would produce and survive under a low-input management system.

We separated replacement does from the breeding herd before a buck was introduced. Since they were not supplemented for maximum growth, they were not bred to kid as yearlings. This reduced feeding because of poor condition, kidding problems, and the need to buy new bucks each year. The replacements were returned to the herd in January. Any replacements that required more feed supplements than

the adults during winter were culled due to lack of hardiness.

Our management system will not work in every situation. It was set up to allow does to do the most they could with the least possible supplement. Our goal was to reduce inputs, not maximize production. The system hinges on having enough high-quality browse and forage at the right times. By having does kid in May, they have approximately 30 days of high-quality spring growth to eat while the fetus is making its heaviest demands. After weaning they have plenty of time to recover before winter sets in. Frequent observation of condition was necessary to ensure the system worked and to stop problems before they got out-of-hand.



## Predators

Predation can be a major problem. Predators can be anything from bears and mountain lions to foxes and eagles. Coyotes and domestic dogs are probably the most common predators; they were our major problem. Over time, coyotes can make a large financial impact by repeatedly dining on goat kids. In contrast to coyotes, dogs do a lot of damage in just one encounter. They seldom eat what they kill.

Many different methods can be employed to control predators. Electric fencing and nightly lotting are deterrents. Trapping, shooting, and poisoning are lethal methods. In addition or as an alternative, many producers have used other species of animals to control predators. Several individuals use donkeys to protect stock. Donkeys seem to instinctively hate canines and will aggressively confront them. The challenge is finding a donkey that bonds with your herd. Another animal that is gaining popularity is the llama. We have used a llama with sheep but not with goats. One of the biggest advantages to donkeys and llamas is that they do not require special food. They graze with the livestock they protect and little training is required. Guardian dogs, however, are the most commonly used animals for livestock protection.

We have used Great Pyrenees dogs for many years. In spring 1987, we purchased a four-month-old puppy and raised him with 12 goats. Many guardian dog breeds do not reach physical or behavioral maturity until they are two years old. We wanted our dog to be well on his way to maturity when we began our project.

No goats were lost to predators during the first year, and we never lost any animals after weaning. Predation by coyotes started with the onset of kidding. The rough terrain covered with brush combined with the goats' tendency to scatter and hide their kids was lethal. The dog was effective at night, but high temperatures during the day drove him to shade, and coyotes took advantage of the opportunity. Many does left their kids with the dog

while they foraged. These kids were well protected. Does that chose to hide their kids were lost. Coyotes denning in the area and teaching pups to hunt were the biggest culprits. Predation usually stopped by the time the kids were several weeks old and traveling with their mothers.

At times we used more than one dog. An 18-month-old spayed Great Pyrenees female was added in 1990. We felt the goats could use additional protection and anticipated a greater need in the next year when sheep would be added to the pastures. We were forced to remove this dog when her health declined after 18 months. A five-year-old male used to guard sheep at another Kerr project assisted the goats' guardian dog in summer 1992. Predation of lambs ceased when this dog was introduced to the herds. He was attentive to sheep and any goats that were nearby, but he did not guard goats unless they stayed near the sheep.

Predator protection is difficult in rough terrain. The scattering behavior of goats increases the problem. Guardian dogs are good tools, but not foolproof. Each dog works differently. For example, the first dog in our project did not work during the hottest parts of the day. He was effective at night and when the weather was cool. The third dog we used was always active, but worked best when animals stayed close together.



## Project Notes

Our project area consisted of four brushy ridge pastures totaling approximately 120 acres. Pastures were dominated by blackberry, greenbriar, winged elm, hickory, buckbrush, and western red cedar. Bermudagrass, rescuegrass, broomsedge, and ragweed were the most abundant grass and forb species on the slope. Tall fescue dominated the wetter base of the ridge. We discovered more than 50 other species of grasses and forbs in the pastures. Most of the brush was regrowth from earlier eradication attempts with aerial spraying in the late 1970s and early 1980s. Brushhogging was not a practical option for control in this area due to rocks and a sloped terrain.

We started with two pastures (Pasture 1 and Pasture 2) totaling 56 acres. Sampling to monitor existing plants and their condition was done in June 1988 and 1989. In each pasture, four 100-meter transect lines were chosen randomly. They extended from either the top or the bottom of the slope. A 0.50-meter frame was placed at each meter mark, and the percentage of the area covered by trees, brush, forbs, and grasses was estimated using a grid of 100 squares within the frame. The

presence and condition (grazed or ungrazed) of each plant species within the frame was also noted.

In winter 1990, Pasture 3 with approximately 30 acres was added. A final, 40-acre pasture (Pasture 4) was made available in December 1992. There was no transect line monitoring in Pasture 3 before goats were introduced. A visual estimate of the pasture indicated the initial brush coverage was 15%. Pasture 4 was estimated to have 21% brush cover. This figure was determined by recording brush species at the meter marks along four 100-meter transect lines.

Predominant brush species varied between pastures. Brambles were dense in Pasture 1. Many of the hickory, elm, and cedar were 5 feet. Pasture 2 contained more short, shrubby hickory and elm. The blackberry and greenbriar patches were not as large. Many small cedars were present in Pasture 3. Buckbrush, which had not been noted in any quantity in the initial area (Pasture 1 and Pasture 2), existed in large patches. Vegetation in Pasture 4 was mainly winged elm and cedar with patches of briars and buckbrush. Hickory was almost nonexistent.

Photographic reference points were chosen in all four pastures. These points were monitored at least once a year to provide visual evidence of changes in brush coverage and distribution. Pasture 1 and Pasture 2 contained six 16' x 16' exclosures. These areas allowed visual comparison of brush reduction on grazed versus ungrazed pasture. The exclosures were removed in 1990. As brush around the exclosures was reduced, the panels used to form them

became an entrapment problem for goats as they attempted to reach the vegetation inside. Due to the potential for entrapment, the exclosures were not repeated in the other two pastures.

In May 1988, Pasture 1 was stocked with goats only. Brush cover was reduced from 62% to 38% by fall 1989. In Pasture 2, 10 to 14 cows were stocked with goats in the spring and summer. Brush cover went from 43% to 16%. Because the pastures differed in initial brush cover, only descriptive comparisons between them are possible. We were surprised by the percentage of brush cover reduction achieved by the goats in just two growing seasons. In 1989 goats in Pasture 2 were short on browse as winter approached. They were allowed access to Pasture 1. Through visual observations and vegetation sampling, we noticed that Pasture 2 showed trampling by cattle of brush stems stripped or browsed first by goats. This effect may speed up the reduction of brush cover by goats and aid nutrient cycling.

In 1990 we placed less emphasis on intensive vegetation monitoring. We developed a rotational system to address the management of grasses and forbs, as well as brush. Cattle grazed all of the pastures during the growing seasons. We rotated them according to management needs and forage availability.

The goats and cattle were not using many forb species growing in the pastures. Since sheep like western ragweed, one of the most prolific species in the pastures, we moved 40 lambs and 6 ewes from another project to the site in early summer 1991. They grazed with

the goats for one month and then were removed. We returned a small flock of ewes to the project in the fall. They were bred to lamb in April 1992. In summer 1992, 63 ewes and lambs grazed with the goats. In the fall, we sold the lambs and returned the ewes to the other project.

The production and economic data from our project are summarized in Table 1

and Table 2. We did not credit the goats economically for brush control. Costs and returns are not included for 1988 or 1993, because the project was not in existence for a full year at either time. Variable expenses from these years do not reflect true annual costs because of the reduced time period, and no income was produced because there was no kid crop.

**Table 1. Production data for goats at the Kerr Center from 1988 to 1992**

	1988	1989	1990	1991	1992
Does at start of year	77	74	83	76	64
Replacement does	2	26	19	5	0
Does that died	1	6	6	3	2
Does culled	4	11	20	14	3
Does at end of year	74	83	76	64	59
Total number of kids weaned	4	76	56	40	41
Total pounds weaned	NA	2584	1973	1315	NA

**Table 2. Summary of costs and returns for goats at the Kerr Center from 1989 to 1992 (\$)**

	1989	1990	1991	1992
<b>Income</b>				
Kid sales	772.00	678.00	713.50	732.00
Cull doe sales	313.00	569.00	540.00	90.00
Buck sales		79.50	48.00	
<b>Total income</b>	<b>1085.00</b>	<b>1327.00</b>	<b>1301.50</b>	<b>822.00</b>
<b>Variable costs</b>				
Feed and mineral				
Goats	142.92	74.00	284.55	102.00
Dogs	193.06	366.99	457.28	241.69
Veterinary and medicine				
Dewormer	165.00	152.30	143.84	81.30
Vaccines	27.00	14.80	13.00	12.60
Other				
Goats	224.95	84.38	60.81	158.98
Dogs	19.00	97.00	112.08	110.97
Supplies/maintenance	107.29	62.02	52.66	61.35
Interest on variable (10% @ 6 mo.)	43.96	42.57	60.71	38.44
<b>Total variable costs</b>	<b>923.18</b>	<b>894.06</b>	<b>1274.93</b>	<b>807.33</b>
<b>Net return</b>	<b>161.82</b>	<b>432.94</b>	<b>26.57</b>	<b>14.67</b>

Variable expenses show a drastic increase in feed costs in 1991. This

resulted from a bulk purchase of mineral supplement. The cost per bag

was reduced by purchasing in bulk. An increase in consumption is also reflected. The new mineral was more palatable; and as a result, animals consumed the recommended amount, which they had not done previously. The costs incurred for dogs varied, because at times there were two dogs instead of one. The variation makes yearly comparisons difficult.

In fall 1993, we sold the goat herd with the Great Pyrenees dog. They are still being used for brush control.

## References

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At the end of the project, goats had reduced the brush in Pasture 2 and Pasture 3 to less than 10%. We considered this an acceptable level. The brush cover in Pasture 1 and Pasture 4 had been reduced by more than 50% of the original levels. Goats were an effective way to biologically control brush. The biggest obstacle was fencing. If it is feasible to fence a site, goats make great low maintenance brushhogs.