

carpets, some heavy sweaters, and other materials that require strong, fire-resistant, water-resistant fibers.

Angoras are smaller than both dairy goats and sheep. Their thick, curly coats are good protection, and for most of the year, bad weather doesn't bother them. Right after they have been sheared, however, they need shelter from the rain. Because of their heavy coats, Angoras dislike being out in the heat of the day and will seek shade anywhere they can find it.

Angoras are sheared twice a year. The hair gained from the first two clippings is worth approximately six dollars a pound. The next two are worth about four dollars a pound, and from then on the hair's worth about two dollars a pound. The current mohair incentive payments can just about double that.

Adult Angoras are comparable to sheep in both the amount and the worth of the fiber they produce. Goats are good mothers and are fiercely protective of their kids. Although sheep will also eat spurge, goats are more efficient at utilizing the weed.

Most of you know how dramatic fence line contrasts can be, but "creek bank" contrasts, where goats have been turned onto spurge infestations on one side of a creek and not the other, can also tell a clear story. Goats prefer the bracts and flowers, but they will eat the entire plant if they are concentrated on an area where the tops have already been grazed off. They prefer shrubs and forbs to grasses, eating leafy spurge, sagebrush, and other "undesirable" plants and leaving the grass for other stock. This gives the grass a chance to compete with the spurge, and keeps the spurge so busy sending up new

shoots that it is unable to spread either by seed or by expanding its extensive root system. Because goats do leave a lot of grass, they can be grazed with or in a system complementary to cattle. Goats also get along very well with sheep, and they can be grazed together easily and effectively. Angoras are versatile, useful, fun-loving, and frustrating.

Naturally, there are other drawbacks. Goats are more difficult to shear than sheep are because they lack natural oils in their hair and the clippers must be oiled frequently. The warehouses that purchase mohair are in Texas, and if you have kids, they may be difficult to sell. (The best market for goats in Montana is to people who have leafy spurge problems.) Goats *can* be difficult to control. They do respect electric fence (particularly electric netting) however, and with a relatively small amount of portable fence, they can be rotated through a large infestation of spurge. And of course, a lot of people just aren't thrilled with the idea of owning goats. But no one has to just rush out and buy a bunch of goats. Some county weed boards have started programs to control leafy spurge with goats. There are other options as well. Simply looking into these would require neither a great deal of time or money, but we *can't* just sit by and do nothing. The problem *won't* just go away and Montana's ranges are truly in danger. Leafy spurge is spreading out of control and chemicals, plowing, and insect controls are just too costly for many of today's ranchers. Angora goats, with their yearly hair and kid crops, could indeed prove to be the way to make "cents" out of the source of leafy spurge!

Weighted Roller Chopper Re-establishes Root Plowed Turf

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When the settlers of the early 1900's first settled in the West Texas area, mesquite trees were not to be found. Over the years more and more trees have migrated into West Texas from South Texas and Mexico. At first, mesquite trees were a welcomed sight on the bare Rolling

Plains, but now they are becoming a nuisance. Because of their durability, mesquite trees spread rapidly and take over rangelands.

The honey mesquite, *Prosopis glandulosa*, is one kind of mesquite tree in the Legume Family that grows in dry or arid rangelands. The tree can be identified by thorny, crooked, drooping branches, and a round crown. The seeds of honey mesquite may lie dormant in the soil for

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periods of 10 to 40 years. This dormant period contributes to the problems caused by the honey mesquite. The root system of the honey mesquite spreads rapidly and grows very deep into the earth. The size of the trees can range from a small brush to 40 feet tall, depending on the amount of water that is available. If water is available, the root system will take as much water as it needs according to its size. Many times the grass and other plants surrounding the mesquite tree will be robbed of the water and many nutrients.

A lawn is an adequate place for this type of tree because it provides lovely shade. In landscaping, a honey mesquite is often recommended for planting in small yards. Nevertheless, the tree produces thorns that are detrimental to bare feet and lawn mower tires when the branches fall off. Mesquite can be controlled in a yard where there are no large livestock or wildlife to eat the bean pods and deposit them over the small area. A rancher's primary enterprise is livestock that enjoy the tender foliage and pods during the spring and summer. The seeds are passed through their digestive tract and begin growing where their stools fall.

This is one reason for the mesquite's rapid growth and spread. Because of the rapid spread caused by seeds fed on and digested by the animals, a rancher must take precautions to control the growth and further establishment of the honey mesquite. If a mesquite tree is not controlled, it can cause problems leading to dense brush areas which would limit production efficiency of rangeland. Controlling mesquite will allow native grasses to grow and provide the nutrition that livestock and wildlife need to survive.

There are many ways to control this problem plant, but the only sure way of controlling it is to "dig it up". Using chemicals to control this brush is another common method used among ranchers in Texas. With chemical sprays applied to honey mesquite at a specified time, a rancher can only insure himself of approximately 30-85% root kill. As previously mentioned, digging the mesquite up is the only way to assure a 95-98% root kill. There are two mechanical methods used for digging up honey mesquite: mechanical grubbing and root plowing. Although both are effective, I have concentrated this topic on root plowing followed by treatment of the area with a weighted roller chopper.

The root plow is used to clear dense areas of trees. The root plow blade can vary from 10 to 16 feet wide and is pulled behind a crawling tractor, such as a caterpillar. This blade cuts a minimum of 18 inches below the soil's surface. The reason for this depth is because the bud zone of the honey mesquite is 8 to 10 inches underground. The mesquite roots must be severed below the bud zone to prevent the regrowth or crown sprouting of the tree. Although this method can assure a higher percentage of root kill, it also has disadvantages.

One disadvantage is that the turf is disturbed, causing a large portion of the grass to die. After the plow goes through the ground, the grass roots are left uncovered,

unsettled, and unprotected, causing the roots to dry out from the wind and heat of the sun. Since the majority of the grass is killed, the soil must be reseeded. Reseeding costs \$20 to \$35 an acre. It will be 2 to 3 years before the root plowed area will have an ample amount of grass to support a very large herd of cattle.

Another disadvantage of the root plow, is the roughness and unevenness that occurs when the grass roots are turned up and the soil loosened. It would take years before the ground would be smooth enough for cattle or horses to travel over. Even though this is a way to insure the rancher of a high percentage of mesquite root kill, it is a costly procedure. Root plowing on the Rolling Plains area varies from \$30 to \$50 per acre, depending on the density of the mesquite.

On the other hand, the roller chopper does not disturb the ground, nor does it cut below the bud zone. The chopper does just as its name implies: it chops the brush. Chopping the brush into small particles will help speed up the decaying process. A cylinder drum 5 feet in diameter and 10 to 16 feet long with 8-inch blades, 18 inches apart, running parallel to the axis of the roller chopper, travels on top of the ground chopping down anything in its path. The blades penetrate into the ground 6 to 8 inches. The depressions made in the soil serve as small trenches and help improve water absorption into the soil. Choppers are available in various shapes and sizes, and when used require being pulled by a crawling tractor. Roller chopping alone only stunts the growth—it does not root kill a mesquite tree.

The roller chopper that was used on the test plots weighs 18,000 pounds. Adding 2,000 gallons of water to the chopper gives it a total weight of 34,680 pounds. By running the weighted roller chopper after the root plow, the ground can be resealed and most of the turf saved. The weighted chopper will also smooth and level the rough soil that was left by the root plow. Re-sealing the soil allows the grass to reset and continue to grow. By combining the root plowing and weighted roller chopping process, a rancher can, within 1 to 2 growing seasons, re-establish a good coverage of turf to support grazing of livestock without the added cost of reseeding.

Benefits of controlling honey mesquite are the following: (1) less labor required for working livestock, (2) more gentle livestock, (3) less injury to livestock, (4) fewer breeding males required, (5) less mesquite bean poisoning, (6) percentage offspring crops usually higher, (7) increased grazing capacity, and (8) reduction in supplemental feeding. Livestock prefer grazing in mesquite controlled areas. Properly stocking the controlled area will allow it to obtain a moderated use of available forage and sustain a high forage production. A systematic plan for deferred-rotation grazing with moderated and flexible stocking rates will postpone the need for retreatment of mesquite and improve range conditions for a sustained yield.

To get a realistic idea of the effectiveness in combining root plowing and the weighted roller chopping process, I

observed two sites on a local ranch. The Cross H Ranch, near my home town of Post, Texas, was my observation site and provided me with hands-on experience. To determine the range condition of a Clay Loam site, Gary Dean, Range Conservationist for the USDA Soil Conservation Service, assisted me in plotting 14 sites using a 9.6 square foot plot size. In the 14 plots, using 7 plots in each site, we determined the percentage of covered ground (live turf) and bare ground (dead turf). In the first area that we plotted, a root plow had been run—79% of the ground was bare and 21% covered with turf.

In the next 7 plots, the root plowing and weighted roller chopping process was combined. After the area had been root plowed, it was chopped and packed within 1 to 3 days of plowing. This time period is vital in determining the percentage of grass roots that are saved. By leaving the grass roots unsealed for longer than 3 days, the roots would dry out and die. On this site the percentages of covered ground improved tremendously. The ground showed 77% covered and 23% bare.

These two areas were plowed during December, 1987, allowing them one year of growing season. The areas on the Cross H Ranch have been improved from land once covered with mesquite and producing only moderate amounts of forage for livestock grazing to areas where ample vigorous grasses are now growing through the root plowing and weighted roller chopping process.

Although mesquite trees are just now becoming commercially marketed for such as things as wood for barbecue, jelly, and fodder for livestock, this aspect does not

offset the damage that is done to rangelands. The trees have served their purpose for the ranchers, but now they are abusing their welcoming site that they had 40 to 50 years ago. Since new land cannot be developed, we must continue caring for the land that we do have. One way to care for our land is controlling noxious plants like the mesquite and re-establishing the turf by using the root plow and weighted roller chopper process.

In conclusion, root plowing has been shown to be an effective mechanical method for controlling honey mesquite on the Rolling Plains area of Texas. But it has been found that a follow-up treatment with a weighted roller chopper can serve to re-establish a grass cover in a shorter time span. This will aid the rancher in controlling soil erosion, reviving the old forage base without reseeding, and turning his rangeland back into a profitable enterprise. The costs of these methods are high and must be weighed by the landowner to ensure that the goals of landownership are met.

References

- Brush Management** by Charles J. Scifres.
Control and Management of Mesquite of Rangeland by Garlyn O. Woffman
Integrated Brush Management Systems for South Texas: Development and Implementation by T.G. Welch, R.P. Smith, and G.A. Rasmussen
Landscaping with Native Texas Plants by Sally Wasowski and Julie Ryan
Mesquite by C.E. Fisher, H.T. Wiedemann, C.H. Meadors, and J.H. Brock
Trees, Shrubs, and Woody Vines of the Southwest by Robert A. Vines

A Little TLC Will Keep This Pioneer Going Strong

Kelly Bott

Everyone is affected directly or indirectly by our rangeland and its management. I am sure only a small percent of the total population realize this. Even ranchers who's livelihood is directly affected by rangeland often take it for granted. I would like to help create an awareness of the importance of rangeland and its management at the

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grass roots level by relating through the plant Bluebunch wheatgrass.

A little over one-hundred years ago, word spread fast—"Montana Territory was excellent grass country." Montana became the final destination of thousands of cattle drives from as far away as Texas. It was the beginning of Montana's livestock industry.

As Montana celebrates its centennial year, the sale of livestock produced on Montana's range remains the "number one" industry for the state.