



Prescribed Grazing with Goats

Conservation Practice Information Sheet

(IS-MO528gg)

Planning Prescribed Grazing with Goats



USE OF GOATS IN VEGETATION MANAGEMENT

Grazing animals can be used to either promote or reduce weed and brush abundance. Goats are the species of choice for controlling brush in pastures, abandoned farmland and rangeland. Managed defoliation of brush by goats has resulted in substantial increases in vegetative cover of desirable grasses and legumes while reducing or eliminating undesirable shrub species. Goats may be used to reduce woody species such as oak, sassafras, persimmon, buckbrush, blackberry, multiflora rose, locust, sumac, winged elm, cedar and forbs such as greenbrier, honeysuckle, sericea lespedeza, chicory, ironweed, ox eye daisy, curly dock, pigweed, queen Anne's lace, yarrow, thistle, kudzu, and other species.

In one grazing study in West Virginia, goats reduced brush cover from 45% to 15% in one year while sheep took three years to achieve the same results. After 5 years of grazing goats had reduced brush cover to 2%. Grazing management for this type of control involved brush defoliation early in the spring and repeated defoliation during the growing season. Complete defoliation starting in late summer/early fall had no impact on the woody vegetation and re-growth was 100% the following spring. In a study in North Carolina, multiflora rose bushes were practically eliminated after four grazing seasons (97 – 98% dead canes). Defoliating multiflora rose bushes at four to eight week intervals starting in May resulted in a 21% plant death by the beginning of the second year, 78% by the beginning of the third year and 94% by the beginning of the fourth year. Spring and summer proved to be the critical grazing times. Grazing of multiflora rose after the first of August for the first time had negligible effects. Local experience in Missouri has shown similar results with blackberry and dewberry brambles.

By itself, grazing may not give complete eradication of a particular species but can reduce it to a manageable or economic level. However, when a biological control such as grazing is combined with other control methods such as herbicides, mowing or burning, elimination may be possible and less expensive than by one of these methods alone. Use of grazing animals, particularly goats, may be increasingly important in areas where herbicides can not be used, where other means of control are too expensive or where landowners desire biological control methods.

When grazing management is not provided, these grazing animals can cause significant damage to the environment. Overgrazing can reduce desirable plant cover, disturb soils, increase runoff and erosion potential, weaken native plant communities and allow exotic weeds to invade. There is also the possibility of spreading weed seed from one site to another.

STOCKING RATES

The following table should be used as a guide for stocking rates when goats for weed and brush control.

Pasture Type	% Brush Canopy	Cows	Goats	Cows + Goats
Excellent Pasture	<10%	1	6 to 8	1 +(1 to 2)
Brushy Pasture	10 – 40%	1	9 to 11	1 +(2 to 4)
Brush Eradication	>40%		8 to 12	.5 +(6 to 8/ac)
Sustainable Browse Management	Maintaining 10 –< 40 % brush canopy		1 to 3/ac	.25 + (1 to 2)/acre

The stocking rates given for excellent pasture and brushy pasture are not on a per acre basis but a comparison to cattle. With excellent pasture you could stock 6 – 8 goats on the same amount of land it takes to run 1 cow. On brushy pasture you could run 9 – 11 goats on the same amount of land required to run 1 cow. The column with Cows + Goats is a combined stocking rate of cows and goats. It is generally thought that on good to excellent pasture you can add 1 to 2 goats per cow without changing the cattle stocking rate due to differences in diet preferences and grazing habits. With brushy pasture the number of goats added to an existing cattle stocking rate would be 2 to 4 per existing cow.

The stocking rates given for brush eradication are the numbers needed on a per acre basis to eradicate brush and convert to pasture in a short (2 – 3 year) timeframe. When using goats alone the stocking rate would be 8 – 12 goats per acre depending on brush density and how quick the producer wanted to eliminate the brush. The stocking rate for goats could be reduced to 6 to 8 goats per acre and add 0.5 cow units per acre to achieve the same results and diversify income sources, assuming there is still a grass component available under the brush canopy.

The stocking rate given for sustainable browse management is on a per acre basis and is the number that could be stocked to utilize and manage woody species without completely eliminating it or degrading desirable species.

PLANNING

In general the specific weed or brush species of concern and the desirable plant community will determine the number and species of grazing animals as well as the duration and frequency of grazing. A site specific grazing plan should be developed that lists target species for control, owner's objectives, number and type of grazing animal to be used and frequency and duration of grazing. Record the objectives, which will be for **plant reduction** or **sustainability**. The resource inventory shall record the canopy of the targeted species. The forage inventory should reflect the initial forage-animal balance. The grazing plans should also contain a contingency plan to adjust the stocking rates as browse/forage availability becomes limited. This would include provisions for the goats during the "off season" when forage and/or browse are not available.

MONITORING

Develop a monitoring plan that includes appropriate records to measure progress toward goals. This could consist of canopy counts, grazing records, JS-Agron-24, Pasture Condition and Trend Worksheet or other measures that will provide a trend analysis.

CONSIDERATIONS

The client may not want to eliminate the targeted plant from the pasture, particularly if goats are an economically beneficial enterprise. If the objectives of the prescribed grazing are to browse at an intensity that will maintain the species for goats, then plan accordingly. Removal of some woody species may adversely impact wildlife species. If wildlife is a consideration, the objective of prescribed grazing should be to maintain the needed amount of brush for wildlife. If the brush is too tall for the goats, they will eat out the understory, leaving no forage for grazing. The past browsing experience of the goats will influence their choice of forages and browse. If the targeted species is a novel forage, there may be a conditioning period before the goats will consume the desired forage. Goats that have prior experience will more readily begin browsing the targeted plant. The following grazing prescriptions are available to be used with goats to manage problem plants:

Plant Reduction

1. Priority Pasture Method

Knock the target plants down to the goats' browsing level using mechanical, fire or other means if needed. Use two or more pastures (five preferred), designating one as the priority pasture. Use high density grazing that will begin when the leaf of the target brush species is one half to two thirds full size in the spring. Use enough goats to achieve 80% defoliation within 7 to 14 days in the priority pasture. A suggested starting stocking rate would be to stock at 1 goat per acre in the priority pasture for each 1-3 percent of canopy cover. Rotate the goats through the remaining pastures to maintain nutrition until the priority pasture plants have re-grown to about half to two-thirds full size. This should take about 25-35 days. Pull the goats out of the rotation and put them back into the target pasture, again achieving 80 percent defoliation. Repeat this process until the desired level of reduction has been achieved. Depending upon brush species and density, it may take three years to effect a favorable change. Once the reduction has been achieved in the priority pasture, then another pasture can be designated as a priority pasture and the process applied accordingly.

2. Thirty (30) Days In and 30 Days Out or Two-Pasture Switchback Method

The most effective control occurs when new leaves and twigs are browsed in the initial stage of growth. Stock with enough goats to obtain at least 65 percent defoliation in approximately 30 days. After defoliation, rest the pasture for approximately 30 days. This system is a 30-day in and 30-day out grazing system with goats that results in at least 3 months of rest each growing season. Alternate the starting pasture each year. A minimum of 3 years of goat grazing is generally needed to obtain desired control. Calculate stocking rate the same as the Priority Pasture method.

Sustainability

Some client objectives are to manage woody plants, including sericea lespedeza for sustained use. Grazing strategies are different than for plant reduction. There is little precedence for managing woody plants for sustainability in Missouri. Therefore, the following guidelines are to be used along with monitoring for self evaluation and adjustment:

1. Multi-pasture scenario

Utilize one herd of goats in three or more pastures, five or more being preferred. Introduce the goats in the early spring. Defoliate the key species of plants to about 25% of current growth, and then rotate to the next pasture. Set the rest period so that the woody plants are not defoliated any more than twice per growing season. Select a suggested starting stocking rate of 0.25 goats for each one percent of woody cover unless a forage inventory - animal balance analysis suggests a different amount. Monitor the re-growth and goat performance. If excess use is being observed, adjust stocking rate accordingly.



Temporary fencing such as polywire, polytape or electric netting may be used to further sub-divide grazing areas to allow for proper stock density.

2. Thirty (30) Days In and 30 Days Out or Two-Pasture Switchback Method

Stock with enough goats to obtain about 20 percent defoliation in approximately 30 days. After defoliation, rest the pasture for approximately 30 days. This system is a 30-day in and 30-day out grazing system with goats resulting in at least 3 months of rest each growing season. Alternate the starting pasture each year. Calculate the stocking rate as in the multi-pasture scenario.

3. One pasture system

Goats are introduced into the pasture only once per growing season for no longer than a 30 day grazing period. Defoliation should be targeted for 50 percent of the target species.



Grazing should be closely monitored and the animals promptly removed when defoliation of the target species has been achieved and/or before desirable species are impacted.

References:

Missouri Agronomy Technical Note 32 – “Biological Weed and Brush Control with Sheep and Goats”

Oklahoma NRCS, Field Office Technical Guide, Section IV, 528 - Prescribed Grazing Standard, Appendix 3 – “Plant Control with Goats”

Meat Goats in Land and Forage Management. Luginbuhl, J.M., Green, J.T., Mueller, J.P., Poore, M.H., in *Proceedings of the Southeast Regional Meat Goat Production Symposium*. February 1996.

Multispecies Grazing, ATTRA Fact Sheet, Linda Coffey, June 2001.

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