

\$35/acre for a two-quart treatment. Recent studies show the promise of using a lesser rate of Garlan per acre, which would reduce the cost.

Mechanical means provide a third method of control. A rotary brush cutter or a chainsaw are often used to clear the trees. This method is costly and time consuming. For this treatment to be successful the site has to be easily accessible and there has to be a minimum amount of rocks to prevent the chance of breaking a blade.

Manual hand grubbing and chopping of Ponderosa pine is another method of control, but it is definitely hard labor and usually applied on the smaller trees.

In summary, Montana's state tree, the Ponderosa Pine, is a valuable tree to Western Montana's timber industry. But in eastern Montana, the pine tree encroachment into the foothill and mountain rangelands is becoming a major problem facing livestock operators.

The main concern with pine encroachment is the loss of rangeland due to man's control of wildfire. In these areas the pine is overtaking the range and is crowding out the valuable

forage grasses. Ranchers and range management specialists have been able to use the re-taking of old photographs to document tree encroachment into the grassland vegetation.

For example, I received a photo taken in 1910 showing only scattered trees and grassy meadows surrounding the homestead. A comparison picture, taken in 1987, was also sent. Now the homestead is completely surrounded by Ponderosa pine.

In such areas pine encroachment caused a loss in both quantity and quality of grazable forage. Production can drop by as much as 90% and usable forage can drop by as much as 100%.

Landowners with a Ponderosa Pine encroachment problem should look carefully at the options—prescribed burning, chemical control, mechanical control, and hand grubbing—then evaluate the various trade-offs and develop a control plan compatible with their ranching objectives.

In conclusion I hope I have made you aware that in certain areas there are just too many trees! And like George Washington, . . . I cannot tell a lie—Yes, I chopped this pine tree down, but I did it for range sake!

An Evaluation of Common Use Grazing

Carol Bowns



Ever since the first settlers to America began raising sheep and cattle for domestic red meat production, they have faced many advantages and disadvantages with grazing either alone. Sheep are well adapted to many intermountain ranges because they make efficient use of shrubs, are able to negotiate steep, browse-dominated, ranges with limited livestock water. Sheep production is, however, very labor intensive, and predation as well as other factors make sheep production unappealing to some operators. Cattle on the other hand, require much less labor but are not well suited to steep, rough, browse-dominated, poorly watered mountainous ranges.

For the past several summers I have had the opportunity to be involved in an extensive cattle-sheep grazing study in the mountains east of Cedar City, Utah. The project site is at an elevation of approximately 8,500 feet, where it receives about 30 inches of precipitation. The precipitation on the study comes primarily in the winter and summer months.

The vegetation is a mosaic composed of open grass land, snowberry, oak, and aspen. We have 18 pastures that are grazed either continuously all season or under a deferred rotation system. The treatments consist of sheep grazed alone, cattle grazed alone, or a combination of sheep and

cattle grazed together or what we refer to as common use.

It is well known that cattle and sheep prefer and utilize different kinds of plants. When looking at the three main categories of forage we see that sheep grazed alone make the heaviest use of the forbs, lightest uses of the grasses, and heaviest use of snowberry, (*Symphoricarpos oreophilus*) which is the dominant shrub. Cattle when grazed alone make lightest use of the forbs, intermediate use of the grasses and little or no use of the snowberry. In contrast when cattle and sheep are grazed together there is a heavy use of the grasses, with an intermediate use of both shrubs and forbs. Therefore, these utilization data show that cattle and sheep, when grazed together, make more efficient use of all the plants than either grazed alone.

If we were to look closely at a pasture that had been grazed by sheep only we would see that the sheep defoliate the shrubs or strip them of their leaves when they browse alone. A pasture grazed by cattle alone would show heavy utilization of the grasses with little or no use of the desirable shrubs and forbs.

When cattle and sheep graze together we consider the range utilized to its optimum level. With current utilization data optimum use is estimated to be between 50-60% use of the grasses and forbs, and 30-40% use of the shrubs.

We are currently evaluating trends in range condition by changes in our key species. In the common use pastures we

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are seeing a dramatic increase in Kentucky bluegrass (*Poa pratensis*), which is the most desirable and heavily used species on the project. We are also seeing a stable trend in both slender wheatgrass (*Agropyron trachycaulum*) and American vetch (*Vicia americana*), with slight increases in orchard grass (*Dactylis glomerata*) and mountain brome (*Bromus inermis*). When we look at the intermedite species there is a decrease in Lettermans needlegrass (*Stipa lettermanii*), which is an increaser under sheep use and sheep have been the dominant grazing animal on this mountain for nearly a century. In the undesirable category there has been a decrease in willowherb (*Epilobium paniculatum*) and also in the highly undesirable tarweed (*Madia glomerata*).

We are also seeing dramatic weight gains for the animals in the common use pastures. Sheep grazed alone have also made sizeable gains but less than in the common use treatments. Cattle grazed alone have shown smaller weight gains since the start of the study. Reasons for this are not clear but

might be due to the fact that cattle are not as efficient as sheep on this range.

Since the beginning of this project in 1979 we have seen an increase in the number and quality of the elk and deer, which are the two big game species. This is very encouraging because it shows that wildlife and livestock are compatible and one need not exclude the other. This also tells us that good range management is good wildlife management.

It has been my experience that common use grazing improves animal performance, makes more even utilization of the forage, and improves range condition and wildlife habitat.

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