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# **Management perspectives for grazing sheep on leafy spurge infected acres**

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## **History**

Early research dating to the 1930's by the North Dakota Agricultural Experiment Station (Helgeson, 1938) indicated that one of the answers to invasion of North Dakota grasslands by the noxious weed leafy spurge was to include sheep in the grazing management plan. As late as the 1980's an aerial flight over the Hurdsfield hills area of North Dakota during the height of the leafy spurge flowering season was clear evidence of the impact of sheep on those acreage that had some history of grazing sheep, as opposed to those who did not. A difference in the intensity of the yellow color against the green background was very detectable from the air. Changes in demographics, the availability of new herbicides and increased tillage of previous grasslands have caused a movement away from using sheep as a control technique through the 1980's. The presence of trees in the landscape, cost of herbicides, the growth of the problem in total acreage, and most importantly a greater consciousness of the long term impact on the environment has caused us to re-evaluate the earlier control methods as a potential for the future. This has forced us to develop new methodology to include numerous integrated control methods to solve the problem caused by leafy spurge through (IPM), Integrated Pest Management. When comparing the potential of goats to sheep as components of IPM the basic differences are; there is the presence of an adequate market infrastructure for sheep and wool and the fact that sheep utilize more of the grass component of the range resource than goats to adequately control leafy spurge.

Both species are very susceptible to predation. There is excellent research efforts presently being conducted at numerous sites of the north central region of the United States. Those utilizing sheep as a method of control would typically indicate, similar to those works dating back to the 1930's, that sheep should be considered as a potential component to an IPM system.

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There is much research suggesting the addition of 20% (Nelson, etal. 1992) of the stocking rate in the form of grazing sheep to an already fully stocked range site by beef cattle is acceptable based on the concepts of the additive effect of multiples of species in the grazing system and that they prefer different components of the range resource.

## Management

If we at least agree in concept that the grazing of sheep does offer potential as a component in an IPM system that may address the leafy spurge problems in Theodore Roosevelt National Park and the Little Missouri National Grasslands, Custer National Forest. We must first evaluate the pros and cons of such a management plan.

## Concerns

1. Safety of domesticated livestock from predation.
2. Health security of domesticated livestock.
3. Health security of wildlife.
4. Impact of grazing sheep on the rest of the plant community.
5. Differences may exist relative to chemical composition of spurge varieties, chemical composition of spurge according to growing conditions and differences in sheep's aggression towards leafy spurge.
6. The transfer of leafy spurge seed by the grazing animals.

To address the listed concerns, the following should be considered for a test in either the Roosevelt Park or the National Grasslands.

1. Find a suitable cooperator who raises sheep and is willing to become involved in a trial effort. Test the animals for diseases of concern for the wildlife. Continue the testing process to monitor impacts of wildlife on the domesticated livestock. Require stringent health requirements for any inshipments to the cooperators base flock. Resources of the park or grasslands should be prepared to reimburse the cooperator for up to the full value of the flock which should be agreed to in advance and be revalued every three months. Only mature sheep should be utilized for the grazing effort to reduce the impacts of predation. This requires the cooperator to lamb early and wean the lambs prior to the anticipated grazing season or to supply mature wethers for grazing. It might be considered to contact the Home on the Range at Sentinel Butte as a potential cooperator.

2. The agency involved could serve to be the cooperator also through purchase of animals, acquiring the use of adequate facilities and the hiring of a suitable manager.

3. Two different management structures could work.
  - a. Stock the test unit with sheep at 20% of the proven carrying capacity for the period May through September. The sheep would graze at random. (This is a scenario suggested to private operators with leafy spurge infestations)

- b. Utilize a herder with high density-short duration grazing of high spurge population areas. The sheep would then return to the base flock periodically to be called upon again at the sign of another flowering of the spurge plants. This system requires additional transportation so it would be beneficial if the test unit was of close proximity to the cooperator or base flock. (At the Missouri River Correctional Institute at Bismarck we have an excellent example of complete control with high density grazing however we are grazing at random and this would negatively impact the wildlife component.)
- c. The sheep utilized should be relatively short fleeced to control the potential of spurge seed transfer from site to site and to the cooperators own operation. The animals involved should be purged by feeding hay for seven days past spurge grazing to minimize transfer of undigested spurge seed.

The use of leafy spurge specific insects should be considered in concert with grazing animals. Work at the Raynesford site in Montana certainly suggests this possibility.

An IPM team approach consisting of producers, park managers, veterinarians, and grasslands managers would be very important to success of a project of this nature because of the varied professional points of view involved. There was a high level of skepticism when the first semi-load of sheep stepped off the chutes at the Missouri River Correction Institute and now those same people are very proud of the city park look of their land holding on the banks of the Missouri River at Bismarck.

## Summary

The answers to this complex problem are not easily attained. If they were, we would be moving on to other issues. Sheep have integrated with most forms of wildlife for 100 plus years in the intermountain west area of the United States with a minimum of disease problems documented as being traceable from domesticated to wild animals or visa versa. The health status of domesticated animals is much more closely regulated than that of wild animals. There are many very fine examples of solving similar problems with grazing animals in concert with the environment. These examples are backed by research findings that strengthen the justification of trying to approach this problem with grazing by sheep as a form of biological control. Grazing mature ewes post weaning or wethers may keep losses due to predators to an acceptable level. Some states have reported a resistance of sheep to actively graze leafy spurge, this has not been the case in North Dakota. In my opinion sheep may be the safest, most economical, most environmentally acceptable method of biological control of leafy spurge available today.

## Literature cited

Nelson, J., D. Landblom, S. Silky and T. Conlon. Multi Species Grazing of Native Range in Western North Dakota. Western Dakota Sheepday Publication, 1992 p 42-46

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