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## The role of livestock in integrated leafy spurge management

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The concept of shifting paradigms is presently a hot topic for improving management and human effectiveness. We believe this idea of examining and critically evaluating our paradigms can result in major improvements in our dealing with noxious weeds such as leafy spurge. Steven Covey a current guru in management theory and author of "Seven Habits of Highly Effective People" depicts paradigms as being analogous to maps. Maps represent our understanding of the spatial relationship of different locations just as paradigms represent our understanding of the relationships that determine how nature works. Our effectiveness or ability to reach our goals is dependent upon the accuracy of our paradigms or maps. If your paradigm is inaccurate then better technologies will simply move you in the wrong direction faster just as having a faster car will only move you away from your intended destination faster if the map is wrong.

In science significant breakthroughs have always been breaks with old ways of thinking. This line of reasoning is self evident, but the hard question is how do we recognize when it is time to change paradigms?

Covey suggests two tests:

First, is your present way of thinking solving your problem? That the area infested with leafy spurge is doubling every the 7-10 years in spite of significant control efforts would suggest the answer is no.

Second, does your present paradigm result in dilemmas? By this question, Covey means are the solutions suggested by your current paradigm incompatible with your long-term goals. While there are many goals or desired conditions for rangeland, its use for profitable livestock production is a predominant one. Because the cost of controlling leafy spurge on rangelands is often greater than the value of the land, there is an obvious dilemma. Furthermore, in a society that is increasingly suspicious of agri-chemicals, the broadcast use of herbicides on the hundreds of thousands of infested acres will not be acceptable particularly if that land is in the public domain.

Thus, it appears that according to these two tests it is time to change paradigms. We suggest that it is time to stop considering leafy spurge as a noxious weed and instead consider it as a plant that is extremely competitive and can displace other species in many plant communities. It may appear that we are taking the easy out by denying that a problem exists; however, this is not what is being suggested. The competitiveness of leafy

spurge has often been attributed to its extensive root system and prolific seed production. However, the real advantage of this plant is that in North America there are few pathogens or herbivores (invertebrate or vertebrate) that feed on it. It has been shown that when herbivores are found that feed on leafy spurge, it quickly loses its competitive advantage. We have shown that goats display a preference for leafy spurge compared to other herbaceous species in the community and that sheep, although they show a relative avoidance, will consume leafy spurge. We suggest that it is time to shift paradigms and rather than try to change the landscape to adapt to our management we should adapt our management to suit the landscape. We are not suggesting that herbicides should not be used in certain situations; however, we are suggesting that the areas where they are appropriate is limited. We believe there are currently ample herbivores available to make use of leafy spurge converting it to food and fiber products and that such an approach should not be viewed as a last resort when all other options are exhausted. We believe that ranchers should realize they are land managers and livestock are a tool for harvesting solar energy stored in the form of plant biomass. As with any job, it is important to pick the appropriate tool for the job.