Management Practices Reduce Cattle Loss to Locoweed on High Mountain Range

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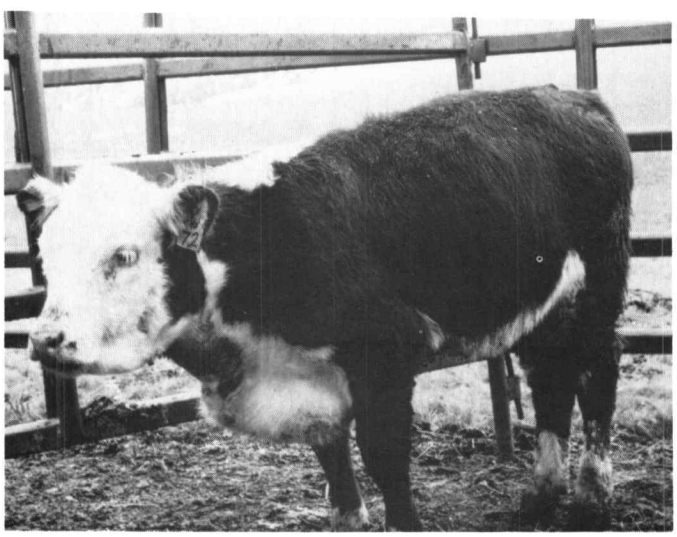
Locoweed poisoning of livestock was identified early in the history of grazing of western rangelands. The first published account of locoweed poisoning appeared in the Year Book of Agriculture in 1873. In 1906 Marsh (1909) conclusively demonstrated that species of the *Astragalus* and *Oxytropis* genera produced locoism in livestock. Despite much research effort, locoweed poisoning remains one of the major poisonous plant problems on western ranges. In a recent issue of *Rangelands*, James (1983) presented a concise summary of locoweed toxicity, symptoms, conditions of poisoning from desert locoweed species and preventive measures.

Locoweed poisoning at high elevations has an added dimension. Locoweed poisoning has been implicated as a predisposing factor of congestive right-sided heart failure or brisket disease on some high elevation ranges (James et al. 1983). Early investigators of locoweed poisoning in cattle also observed heart enlargement, swelling under the jaw, and a "dense liver." They suggested that fatalities in cattle poisoned on locoweed were greatest at elevations of 10,000 feet or above.[1] On some high mountain ranges, symptoms of locoism and congestive right heart failure may combine to reduce livestock production by:

1) reduced gains or weight loss in affected calves
2) abortions and reduction in fertility from locoism
3) deaths from congestive right-sided heart failure (Brisket Disease)
4) inefficient utilization of the forage resource.



Brisket disease in calf fed locoweed at high elevation.

Distribution and Ecology

White pointloco *(Oxytropis sericea)* occurs along the eastern slope of the continental divide from Montana to northern New Mexico. It is a component of the vegetative communities of the western plains and foothills of the Rocky Mountains. In southeast Utah, northwest Nevada, northwest Utah, and southern Idaho, it occurs on rocky, wind-swept mountain ridges up to 11,000 feet.

Payne (1957) concluded that white pointloco was present in the climax vegetative community, but increased with heavy livestock grazing. The foothill and mountain ranges were heavily grazed early in the century by transient sheep bands and large numbers of local livestock, resulting in increased densities of white pointloco. Through improved management the ranges have slowly improved, but the poisoning problem has continued and has been a severe management problem in localized areas since the 1920's.

Description of Study Area

A specific forest allotment is used to illustrate the magnitude of the locoweed poisoning/right-sided heart failure

Pasture infested with white pointloco before spraying 1981.

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Editor's Note: This paper brings up a very good reason for practicing good range management.

[1]Unpublished data, USDA Poisonous Plant Research Lab, 1875-1935.

syndrome and the management steps which were taken to reduce the problem. Three permittees were allotted 728 cow months. Prior to the change in management, the grazing season ran from July 6 to September 15. Management of the allotment improved substantially during the 1960's. National Forest boundaries and allotments were fenced. Internal fences were constructed and a deferred grazing system was implemented. The first intensive range analysis conducted by the Forest Service in 1966 indicated that 49% of the Forest Service land and 67% of the private land fenced within the National Forest boundaries were in poor condition. In 1967, a rest rotation grazing system was implemented and 3 of the 4 pastures were sprayed with 2,4-D between 1969-1971. The fourth pasture was sprayed in 1981. Most of the sagebrush was killed and the forbs were greatly reduced. Locoweed was eliminated for a period of time.

Pasture after spraying 1983. White pointloco was temporarily eliminated and replaced by Idaho fescue and Poa spp.

General improvement in range condition followed. A large majority of the land classified in poor condition in 1966 improved to fair condition and the areas in fair and good condition were stabilized. However, locoweed began reappearing by 1975 and reached densities sufficient to cause livestock losses in 1977. The heavy utilization of the three grazed pastures in the rest rotation system may have increased the livestock poisoning problem by forcing more complete utilization of all forage.

Magnitude of Livestock Loss

In an average year, the ranchers estimated that 15-20% of the calves on the Forest allotment were sick. Half of these usually died. In dry years when grass was limited, the locoweed poisoning right-sided heart failure syndrome increased and affected up to 66% of the calves. Generally, calves, old cows, and new cattle were most affected. A preliminary economic analysis of the locoweed problem in 1978 estimated that the ranchers were losing a total of $30,689 in direct and indirect livestock loss to locoweed (Barnard 1984). Losses included: (1) deaths of calves and cows; (2) more heifers kept to replace severely poisoned cows; (3) reduction in calf crop from abortions and reduced fertility; (4) reduced weight gains on calves; (5) costs of increased feed to recuperating calves; and (6) additional labor required to ride through cattle looking for sick calves. Similar losses were reported on Wyoming and New Mexico cattle ranches experiencing locoweed problems (Nielsen 1984).

Management Strategies to Reduce Loss

Prior to 1966, the general management practice was to ride the mountain pastures 2 or 3 times a week and drive the sick calves and their mothers into the canyons where locoweed was not prevalent and let the mother cows slowly take the sick calves down the mountain. There was some hesitation against taking too many animals off the top of the mountain early because of lack of fall feed at the lower elevations.

One rancher gathered his cattle after August 1st and moved his entire herd to a locoweed-free pasture at a lower elevation. He contended that loco problems didn't begin until late in the season when cattle ran out of grass and water became limited.

In 1966, ranchers started carrying terramycin with them and injected antibiotics into sick animals. This may have helped reduce the pneumonia component of the disease complex.

In 1981, the fourth pasture was sprayed to control locoweed. Also in 1981, the grazing system was changed to a Merrill 3-herd, 4-pasture deferred rotation grazing system and the grazing season was reduced from 71 to 47 days. Animal numbers were increased to maintain the same number of AUM's. One third of the animals were placed in each of 3 pastures for the entire length of the season and one pasture was rested.

These practices have greatly reduced the locoweed poisoning-congestive right-sided heart failure problems during the last 3 years. The number of sick calves was reduced from 20% to 3%. It was possible to reduce the frequency of checking for sick calves from 2-3 times a week to once a week. The factors thought to be contributing to the reduction of losses were:

1) Grazing pressure was reduced in each pasture. With only 1/3 of the herd in each pasture, there was abundant grass and other palatable forage and cattle were not forced to consume locoweed.

2) Cattle were spread out and not moved during the grazing season, which may have resulted in less stress. Furthermore, their dietary patterns were not interrupted by moving from a heavily utilized pasture to a fresh pasture with abundant but mature forage as in the rest rotation grazing system.

3) The season was shortened and all animals were removed from the allotment before intoxication became serious.

4) Demand on the limited water supply in each pasture was reduced.

5) Spraying the one pasture with 2,4-D reduced locoweed and other less desirable forbs and shrubs and significantly increased grass production. Increased grass production was an important secondary benefit in helping to justify the cost of treatment.

The effective lifetime of the herbicide treatment (length of locoweed suppression) must be known to determine its eco-

nomic feasibility. The control of locoweed following herbicide treatments in the early 70's lasted 5-7 years under rest rotation grazing. The pasture sprayed in 1981 will be intensively monitored and adjustments made to determine if the deferred-rotation grazing system can extend the effective lifetime of the treatment.

Summary

Livestock loss to locoweed was substantially reduced by a change of grazing systems and range improvement practices. The Merrill 3-herd 4-pasture deferred rotation grazing system reduced grazing pressure and utilization of all forage species, including locoweeds. The shortened grazing season permitted removal of animals to locoweed-free pasture at a lower elevation before poisoning became serious. Reduction of locoweed by spraying eliminated the poisoning problem in the treated pasture, though the effects may be temporary. It is difficult to assess the contribution of each of the management changes to the overall reduction in livestock loss. However, the change of grazing system and reduced length of the grazing period substantially reduced the number of livestock poisoned in the unsprayed pastures without any capital expenditure.

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Youth Range Forum:

Can't Afford Those Lowdown' Range Bandits

Tom Lechner

Editor's Note:

This paper finished second in the Youth Forum at the 1984 Annual Meeting, Society for Range Management, in Rapid City, S. Dak. Tom, who lives in Winifred, Mont., became very interested in range management and public speaking through activities in the local Chapter of the Future Farmers of America and has attended countless contests in both categories at various levels of competition. He is frequently one of the top finishers. After completing high school, Tom plans to attend Montana State University and major in agricultural economics.

Today, north central Montana ranchers are being ripped off by the amount of approximately 30 million dollars annually. Who are the culprits? Bank Robbers? Cattle Rustlers? Fortunately it's neither. The bandits in this case are lowgrowing sodforming species such as dense clubmoss and blue grama. These lowgrowing and densely rooted species compete with the taller-growing deeper-rooted grasses not only by using up nutrients in the soil, but more seriously, by restricting the infiltration of water into the soil.

What can be done to apprehend these costly bandits? One method is chiseling. Chiseling is the ripping up of these mat formers, which allows water to infiltrate into the soil profile. This increases the production of more desirable species such as western wheatgrass and green needlegrass. Chiseling is widely used because the equipment is readily available. Toolbars incorporated with spikes set at 11 to 12-inch spacing are sufficient. A minimum cutting depth of 5 inches is necessary to achieve the needed soil disturbance. Pulling old tractor tires behind the plow helps insure that the clubmoss will not re-root. In addition, the soil that is shaken from the roots produces a smothering effect on the unchiseled clubmoss. The best time to chisel is either in early spring or late fall. Chiseling at these times insures that the resulting plant growth will have a full growing season to develop and build reserves for dormancy.

What are the results of chiseling? On a non-chiseled site the surface is densely matted clubmoss with a poorly developed root system. After the mat is ripped up, water infiltra-