Halogeton—Concern to Cattlemen

ALLEN D. BRUNER AND JOS. H. ROBERTSON
Graduate Research Assistant and Range Ecologist, University of Nevada, Reno, Nevada.

Cattle losses due to halogeton (*Halogeton glomeratus* C. A. Mey) poisoning have been small through the years compared with sheep losses. The Bureau of Land Management reported one of the highest yearly losses during the 1961-62 winter season (Reno Evening Gazette, April 12, 1962). During this period 3,692 sheep and 148 cattle were lost in Nevada, Idaho and Utah.

In the fall of 1962, two ranchers in north central Nevada reported losing 150 cattle in one day. This motivated an investigation to determine what conditions made this particular day unique.

Circumstances Attending Losses

On November 29, 1962, Stanley Ellison lost 120 cattle on the last of three cattle drives over the same trail during the month. Twenty thousand sheep had trailed through this range prior to the death of the cattle. As late as November 28, sheep had been in the area where the cattle deaths occurred, but only normal trail losses of sheep were reported. Seventy-nine of the dead cattle were readily found three weeks later. The first and second herd of 300 and 1,000 cattle respectively had been moved down the 35-mile trail, under clear skies. The third herd of 1,100 head was moved on a foggy morning. The vegetation was covered with frost, and a trace of snow was on the ground. No deaths occurred in the first two herds, while ten percent of the third died. During the week prior to the last drive, cattle had been gathered on a crested

wheatgrass field. The first day of the drive the cattle were driven twenty miles to a holding corral where they were fed, watered, and held over night. It was impossible to ascertain the quantities of water and hay offered.

The distance from the holding corral to the next well was approximately six miles. Only the first 1.6 miles was through an area of light to moderate halogeton infestation. The latter 4.5 miles to the water was through alternating big sagebrush *(Artemisia tridentata* Nutt.) and shadscale *(Atriplex confertifolia* Wats.) with no halogeton present.

Halogeton was present, again, around the well and throughout the remainder of the drive. The cattle were watered in the early afternoon while the riders had lunch. After leaving this area and beginning the final leg of the drive, cattle began staggering out of the herd less than one-fourth mile from the well. Dead animals were strewn from there to the pasture where the drive terminated, a distance of approximately six miles.

The smaller loss of 30 young cattle the same day occurred along a creek in a field of crested wheatgrass. Halogeton occupied the trampled zone along the stream.

Table 1. Botanical analysis of rumen contents of three dead yearling cattle.

	Distance from water		
	3 miles	6 miles	6 miles
	(Percent)		
Halogeton	30.5	12.5	4.0
Grass	26.5	40.0	28.0
Browse	0	0	0
Unidentified	43.0	47.5	68.0
	100	100	100

Animal Examination

The herd having the major losses contained about 40 percent cows and 60 percent yearlings and two-year-olds; however, the 79 dead animals observed were of the younger age classes. Two animals examined were six miles and one was approximately three miles from the water (Figure 1).

Halogeton and grass counts were made microscopically on the rumen contents of these three animals. Two hundred grid points were recorded from the ingesta of each animal. Samples from the two animals six miles from water contained 12.5 and four percent identifiable halogeton. The sample from the animal nearer water contained 30.5 percent identifiable halogeton (Table 1). More digestion had occurred at the greater distance from the water. Presence of grass in the three rumens indicates that some of the poisoned stock had a partial fill of hay in the corral. Further, some hay remained in the corral after the drive.

A rumen sample of one animal six miles from the water was analyzed by Dr. W. B. Dye, Research Agricultural Chemist of the Nevada Agricultural Experiment Station. It showed the oxalic acid content to be 33.2 grams, based on an estimated rumen content of 100 pounds. This is not considered a lethal dose; however, some oxalate ions would have been absorbed into the body by the time of death.

Drs. Binns and Shupe[1] examined a kidney from one of the dead animals. Calcium oxalate crystals, diagnostic of halogeton poisoning, were found in large quantities. The death was attributed directly to the poisonous weed.

FIGURE 1. Dead heifers found three miles from water. A rumen sample was taken from one of these animals.

Discussion

It seems evident that the animals died from halogeton poisoning. The possibility of grass tetany is remote. No grass tetany on crested wheatgrass is known to have occurred in the fall in Nevada. Further, only pregnant or nursing cows are known to have died of grass tetany.

[1] *Binns, Wayne and LeGrand Shupe, Research Veterinarians, Agricultural Research Service, of the Animal Disease and Parasite Research Division, Logan, Utah.*

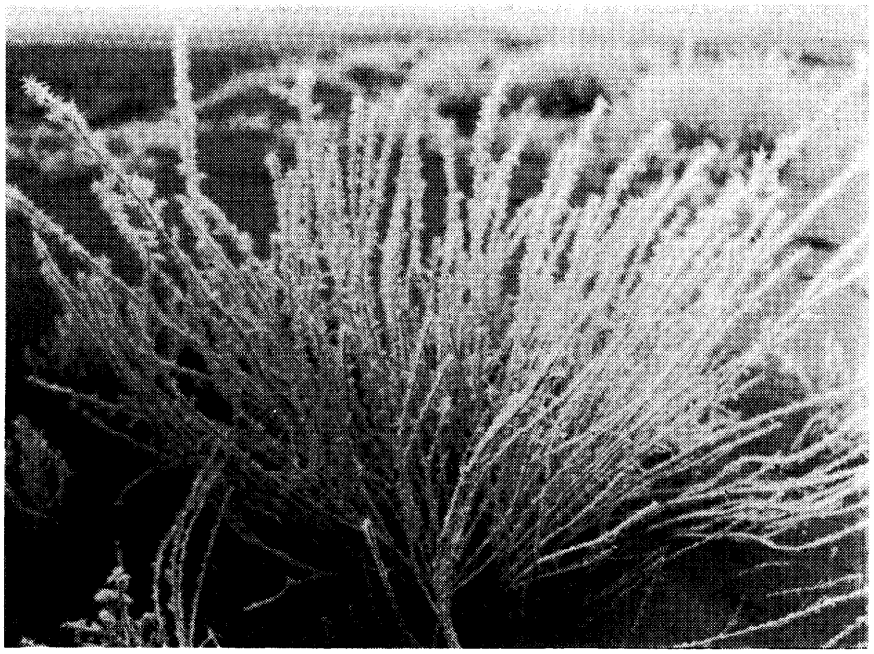

FIGURE 2. Hoar frost on Tetradymia comosa. When the vegetation is in this condition, halogeton seems to be especially palatable to cattle.

The interesting thing to note is that a lethal dose of the poison weed was grazed while the animals were being driven through only 1.6 miles of the lightly infested area. Springfield (1951) reported that cattle graze less discriminately when plants are wet from rain or heavy dew. Frost might have induced the stock to eat halogeton. It was found that a sample of air-dry, mature halogeton collected in May absorbed moisture from a saturated atmosphere and increased its weight by 56 percent. Mature crested wheatgrass under the same conditions increased 33 percent in weight. Thirst was suspected as a contributing factor to the eager grazing of frost-covered plants. However, both ranchers reported that their herds were well-watered.

While the cattle were being held in the corral they were fed native meadow hay without dicalcium phosphate. The presence of rabbitfoot grass *(Polypogon monspeliensis* (L.) Desf.) indicated that the hay was grown on poorly drained land. A sample of the grass hay contained only 0.12 percent calcium. Shipley (1948) reported calcium content of wild hay in Elko County, Nevada. The lowest percentage obtained was 0.72. Low calcium content may be characteristic of hay from overly wet areas. Daniel and Harper (1934) have reported that the calcium content of native grasses decreased with increases in soil moisture. Lawton (1945) found aeration inhibited by waterlogging decreased the amount of calcium absorbed in corn plants.

The low quality of the native hay that was fed before the cattle trailed through halogeton probably did not meet the normal requirements of the animals, much less provide protection against soluble oxalates. Pelleted dicalcium phosphate might have increased the calcium to an adequate level. It is evident that special precautions are essential when young cattle are in the herd. Hoar frost indicates an especial hazard (Figure 2). It is apparent, also, that repeated trailing over the same range intensifies the hazard by removing the more desirable forage.

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