

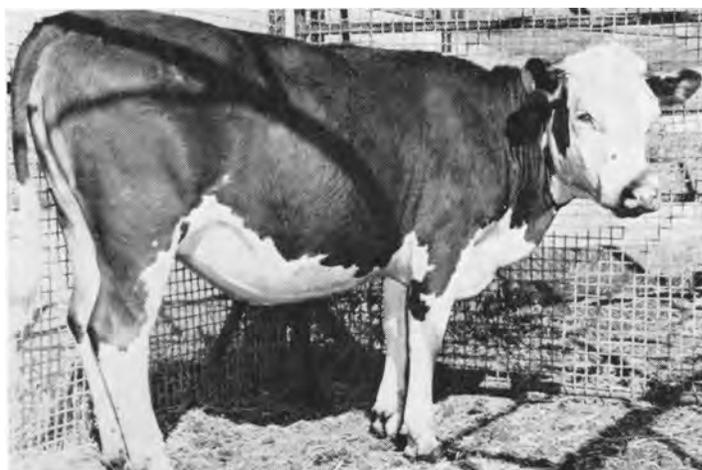
Controlling Molybdenum Toxicity in Livestock

RUST RESISTANCE IN RYEGRASS

CROWN RUST is the major disease of the ryegrasses in California. It is particularly serious in the Coastal areas, and can be quite prevalent in the Central Valley in late spring.

A breeding program to develop a perennial ryegrass resistant to crown rust is underway. Several sources of crown rust resistance have been discovered. The most useful source is in perennial ryegrass itself—in the breed strain developed by New Zealand workers. Two other sources are known in annual ryegrass. One is an introduction from Uruguay, and another is a single plant discovered among individual plants of the commercially grown Oregon annual ryegrass.

Resistance in annual ryegrass can be used in the development of a resistant perennial strain, because the annual and perennial ryegrasses can be intercrossed readily. Such a transfer between species would presently seem unnecessary, however, because resistance to rust seems to be quite common in both of the ryegrasses. The inheritance of the resistance of some of the plants of the perennial source is being studied, and a perennial ryegrass resistant to crown rust will be developed for use in irrigated pastures.—*W. E. Nyquist, Department of Agronomy, U. C., Davis.*



Treated animals were thrifty and normal appearing.

BEEF TRIAL

September 5, 1958 to June 4, 1959—a total of 274 days

PASTURE ANALYSIS

Plant species	% of pasture	Molybdenum PPM
Ladino Clover	40	13
N. L. Trefoil	30	18
Grasses	30	3

WEIGHT GAINS

Treatment	No. of animals	Starting weights	Daily gain
Controls	10	426	0.43
Injected 168 days	14	428	0.64
Injected 0 days	22	401	0.57
Injected 0 days and 168 days	15	343	0.74

Cattle in the control group displayed the symptoms of molybdenum toxicity while the injected group was thrifty in appearance with glossy hair coats and good color.

DAIRY HEIFERS, 1959

March 20, 1959 to October 12, 1959—a total of 205 days. The self-fed mixture was made up of: 100 lb ground barley; 100 lb ground salt; 2½ lb powdered copper sulfate. Intake was limited to an average of 1/6 lb per head per day.

PASTURE ANALYSIS

Plant species	% of pasture	Molybdenum PPM	Copper PPM
Ladino Clover	60	11-16	2-5
Grasses	40	2-6	3-14

WEIGHT GAINS

Treatment	No. of animals	Starting weight	Daily gain
Control	12	411	0.84
Injected 130 days	10	422	0.97
Injected at 0 days	23	434	0.93
Self-fed mix	22	415	1.17

Cattle in control group presented an unthrifty appearance with much scouring. The treated animals were thrifty and normal appearing.

DAIRY HEIFERS, 1960

March 26, 1960 to October 26, 1960—a total of 208 days

PASTURE ANALYSIS

Plant species	% of pasture	Molybdenum PPM	Copper PPM	Inorganic Sulfate PPM
Ladino Clover	30	9-21	11-15	600-2500
Grasses	70	3-8	5-8	1000-3300

WEIGHT GAINS

Treatment	No. of animals	Starting weight	Daily gain
Control	5	672	0.90
Injection (0-day)	10	586	0.90
Injection (0-92 days)	16	590	1.00
Injection (0, 92, 133 days)	16	591	1.03

This response was not as clear cut as the previous trials, because of the high copper content of the clover. The trends, however, are in the same direction.