

and most of the replicates in the above plot fell into the light to moderate category.

The July 3 spray, applied when mites were increasing, showed a reduction but within a month the mites rapidly increased to damaging numbers. The July 31 spray held the mites at the pre-treatment level for a short period, but did not provide any reduction. The August 16 spray showed no reduction in mite numbers and the population continued to increase. When compared to the unsprayed check, the above sprays reduced the mites in varying degrees, but none provided acceptable commercial control. When the trees were rated as to leaf damage, all of the replicates fell into the moderate to heavy leaf damage category.

The data obtained raises several questions as to why Tedion performed in this manner. Data obtained in past seasons indicated that Tedion did not control adults, but seemed to be toxic to the early nymphs after they hatched from the eggs. By keeping the stages separate in the 1961 plots, it was evident that Tedion was not providing control of the nymphal stages. Eggs and young nymphs were always present in the post-spray counts.

Speculation on why the early season spray provided control, in contrast to the later treatments, raises the possibility that Tedion is more effective against nymphs hatching from overwintering eggs than those from summer eggs. However, reports and observations in other orchards indicated that Tedion was effective late in the season—if mites had been held to a low level by some other compound such as Guthion or Karathane. In these cases the mite populations may have been regulated by the other treatments so that overlapping generations were not as prevalent.

If the toxicity of Tedion is limited to a single developmental stage, it would be more effective following sprays which hold mites in check than on populations with all stages present. Another explanation is that resistance has developed, but not to a level that would allow all of the mites to survive. In this case, the lower the population when Tedion was applied, the fewer mites would escape to give rise to a high population within a short time.

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Cattle in control group presented an unthrifty appearance with much scouring.

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Copper glycinate injections for control of molybdenum toxicity in livestock must be given at least twice (early and again at mid-season) during pasturing to be effective, according to Fresno County trials with beef and dairy cattle. The older method of adding copper sulphate to a self-fed mix was again proven satisfactory.

CATTLE AND SHEEP grazing native or irrigated pastures in the old flood areas of the Kings and San Joaquin rivers often develop scouring, roughened hair coat, and reduced rate of gain resulting from molybdenum toxicity. If unchecked, the animals affected will show a progressive loss of coat color, severe weight losses and eventual death. For several years the treatment has been either to add copper sulfate to the drinking water or to feed it in a self-fed mix.

In 1958, treatments by injection with copper glycinate were found effective in controlling molybdenum toxicity and the new material was released for field trials. The dosage level was 2 cc per animal for the copper glycinate, injected subcutaneously.

Trials were conducted in Fresno County during 1958, 1959, and 1960 to determine the number of injections required for normal weight gains, as well as the stages of pasture season these injections would prove most effective. Beef steers and dairy replacement heifers were used in the tests on irrigated pastures. Local veterinarians diagnosed symptoms

of molybdenum toxicity and donated materials and professional assistance. All animals were individually ear tagged and weights followed overnight stands without feed and water. Cattle were gate-cut into separate groups and treatment was established for each.

Conclusions

Conclusions from the three trials, further detailed in the tables presented with this article, included: (1) When the injection method of treatment is used, at least two injections are needed with the first given early and the second near the middle of the pasture season. Under severe conditions three injections, evenly spaced, are probably required.

(2) If only one injection is to be given then it makes little difference whether the injection is given near the start or near the middle of the pasture season.

(3) The self-fed mix containing copper sulfate is a satisfactory method of treatment.

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Richard G. Jones, former Farm Advisor, Fresno County, conducted the beef trial in 1958-1959.

Farmer cooperators were Tony Mendes and Jerome Harlan, Jr.