scoured at the Davis Wool Laboratory.

A summary of the various lots of wool studied is given in the accompanying table. While grease weights differ from clean weights according to the shrinkage of each lot of wool, side sample estimates in four lots showed fairly close agreement with actual clean weights. Estimates from machine reading vary with lots, most being lower, but with some higher, than actual clean values. Correlations calculated within grades, and over all grades within flocks, between each of the various measures and actual clean weight of fiber per fleece showed the side sample estimate was more accurate than other methods for estimating clean fleece weight. This correlation ranged from .73 to .92 within grade and flock and from .89 to .92 over all grades within flocks.

Grease fleece weight correlations with actual clean weight showed that this estimate differed little in accuracy from machine estimates when clean yields were 50 per cent or higher, but at yields below 50 per cent the squeeze machine was more accurate. Grease fleece weight correlations from high yielding lots were .59 to .92 within grade and flock and .63 to .90 within flock alone. Correlations involving squeeze reading on all machines and on all lots ranged from –.61 to –.89 within grade and flock and from –.66 to –.90 within flock alone.

Only one comparison (with the Sonora rams in 1958) can be made of the results of squeezing fresh shorn wools and the same wools in the conditioned state by the same machine. The comparison of correlations between squeeze reading and actual clean weight for the two operations showed only a small difference (–.82 and –.80).

Fresno and Bakersfield lots were each squeezed in both the California and Texas machines by different operators. The results were nearly identical.

Regressions of clean fleece weight on squeeze readings from this study based on data from all fleeces squeezed freshly shorn (497 fleeces) indicated that the equation $Y = 16.23 - .153\ X$ (where Y = estimated clean weight and X = squeeze reading) would provide a more accurate estimate of clean fiber content than previously used tables.

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TEDION

for Control of European Red Mite on Apples

HAROLD F. MADSEN · LOUIS A. FALCON

Field trials have shown that Tedion is best used as a preventative spray, not as a curative treatment when mites are at treatment level. Seasonal programs should be planned for individual situations. If materials applied for other pests hold mites in check, Tedion can be used later in the season. If not, the material is best applied early, when weather conditions are less favorable for rapid mite increase.

REPORTS OF RESISTANCE to the acaricide Tedion have been received with increasing frequency the past two seasons. Along with these reports, there were indications that the time of application influenced the performance of Tedion.

Plots were established in 1961 to investigate the effect of Tedion on mites in an orchard where poor control with the compound had been reported. Red Delicious apples were used as the test trees, and plots consisted of single trees with five replications in a randomized design. All spray applications were made with a conventional power sprayer and hand guns.

One test plot received a spray early in the season as a preventative treatment, a second when the mites began to increase, a third when the population reached a peak, and a fourth when damage was extensive and mites were declining.

Biweekly mite counts were made throughout the season and all stages were kept separate in the counts including eggs, nymphs, adult males and adult females. The table shows a portion of the seasonal mite counts. The treatment on April 25, applied as a preventative spray, held the mites below treatment level until late in August. After this time, the mites increased rapidly, and continued to increase until the last count. This was in contrast to the other plots which showed a decline in mites in early September. Each tree in the plot was rated as to amount of foliage damage in September,

1961 TEDION PLOTS FOR CONTROL OF THE EUROPEAN RED MITE

PLOT NO.	DATE OF APPLICATION*	AVERAGE NUMBER OF MITES PER LEAF									
		4/24	5/5	6/13	6/27	7/11	7/24	8/14	8/25	9/5	9/12
1	April 25	2.6	0.1	0.04	0.1	0.05	0.4	2.6	7.8	33.5	44.1
2	July 3	3.1	1.5	0.8	2.7	0.7	6.6	18.8	26.2	35.3	22.1
3	July 31	..	..	1.2	2.8	6.5	17.7	17.5	20.0	30.9	20.0
4	August 16	..	..	..	..	8.7	14.5	23.7	28.2	42.8	20.2
5	Check	..	..	..	..	10.2	20.7	42.6	52.2	51.6	37.8

* Tedion applied at 1 pound 25% per 100 gallons.

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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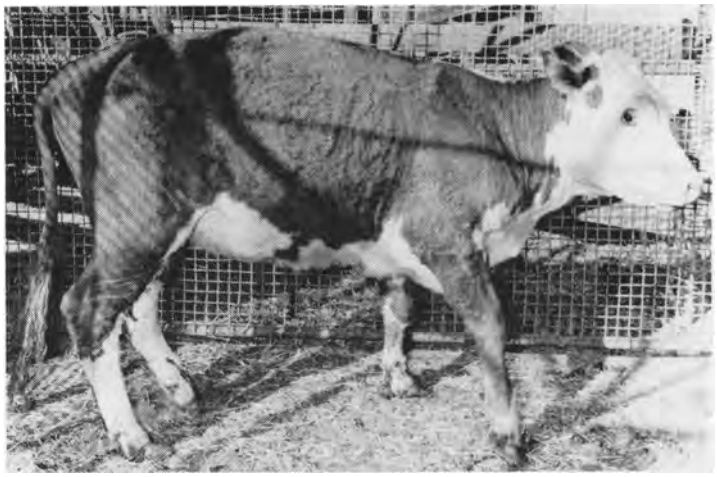

Cattle in control group presented an unthrifty appearance with much scouring.

RICHARD N. EIDE

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.

R. N. Eide is a Farm Advisor in Fresno County. *Professional assistance from L. C. Witcosky, D.V.M., and K. L. Johnson, D.V.M., both of Fresno, is gratefully acknowledged.*

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

Farmer cooperators were Tony Mendes and Jerome Harlan, Jr.