# EXPERIMENTS IN 1952 FOR CONTROL OF THE CITRUS RED MITE

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In 1952 experiments for control of the citrus red mite *(Paratetranychus citri* [McG.]) were continued in a grove of Temple orange trees at Fort Pierce, Fla. The trees were arranged in 10 blocks with 9 treatments randomized in single-tree plots in each block. The trees had been used in 1949 and 1950 (Spencer and Norman, 1951) and in 1951 (Norman and Spencer, 1952) for earlier experiments.

On February 9, 1952, all trees were sprayed by the owner[2] with a mixture containing 2/3 pound of 40-percent dinitro-*o*-cyclohexylphenol (DN Dry Mix No. 1), 3 pounds each of zinc carbonate and manganese oxide, 10 pounds of wettable sulfur, and 16 pounds of urea (Nugreen) per 100 gallons. The dinitro-*o*-cyclohexylphenol was for the control of the citrus red mite. At postbloom spray time, March 31, a mixture containing 2 pounds of basic copper sulfate, 1 pound of 15-percent wettable parathion, and 10 pounds of wettable sulfur per 100 gallons was applied by the owner to all the trees.

On May 28 a prespray estimate of infestations was made. One unhatched egg or crawling stage was enough to classify a leaf as being infested. On this basis citrus red mite infestations of 20 percent or less require no control. Infestations on leaves and fruits ranged from 76 to 88 percent, but the differences between treatments were not significant, an indication that the 1951 treatments had no influence on the present infestation, and that the dinitro compound applied in February controlled the red mites only until mid-May. The parathion used in the March postbloom spray, together with the basic copper sulfate, may have had a great deal to do with the reappearance of the red mites in heavy infestation during May. Apparently, winter applications of the dinitro compound cannot be depended upon to control red mites through the year on trees that receive copper, zinc, manganese, and/or parathion in winter or in postbloom applications. A summer miticide should be added to the sulfur rust mite spray in June or July for year-around control.

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Included in the 1952 experiments were EPN, *p*-chlorophenyl *p*-chlorobenzenesulfonate (Ovotran), bis(*p*-chlorophenoxy)-methane (Neotran), Aramite, and malathon. Also included was an emulsive oil prepared by adding 38 ml. of Triton B-1956 (a glycerol phthalic alkyd resin) emulsifier per gallon to a standard spray oil having a viscosity of 114 seconds Saybolt at 100° F. and an unsulfonatable residue (A.O.A.C.) of 73.5 percent.

In most of the tests these miticides were used in combination with wettable sulfur and/or parathion. In one treatment only the last two materials were used. Wettable sulfur was included for control of the citrus rust mite *(Phyllocoptruta oleivora* [Ashm.]) and parathion for the purple scale *(Lepidosaphes beckii* [Newm.]). The sprays were applied on June 4 and postspray estimates of infestation by the citrus red mite were taken on July 11. The materials used and the results are shown in table 1.

TABLE. 1.—CONTROL OF CITRUS RED MITES ON TEMPLE ORANGE TREES WITH COMBINATION SPRAYS CONTAINING VARIOUS MITICIDES. 1952.

| Materials (quantities per 100 gallons) | Percent of leaves infested | |
|---|---|---|
| | Prespray | Postspray |
| Emulsive oil 1 gal. | 76 | 1.3 |
| Emulsive oil ½ gal., parathion (15% WP) 1 lb. | 85 | 1.0 |
| EPN (27% WP) 1 lb., parathion (15% WP) 1 lb., wettable sulfur 5 lb. | 87 | .3 |
| *p*-Chlorophenyl *p*-chlorobenzenesulfonate (50% WP) 1 lb., parathion (15% WP) 1 lb., wettable sulfur 5 lb. | 87 | .6 |
| bis(*p*-Chlorophenoxy)methane (40% WP) 1½ lb., parathion (15% WP) 1 lb., wettable sulfur 5 lb. | 87 | 2.6 |
| Aramite (57% Em) ½ pt., parathion (15% WP) 1 lb., wettable sulfur 5 lb. | 85 | 4.0 |
| Malathon (25% WP) 2½ lb., wettable sulfur 5 lb. | 87 | 1.6 |
| Malathon (50% Em) 1 qt., wettable sulfur 5 lb. | 82 | 2.6 |
| Parathion 1 lb., wettable sulfur 5 lb. | 88 | 5.0 |
| Difference required for significance: | | |
| at 5% level | nsd | 3.3 |
| at 1% level | nsd | 4.3 |

In contrast to 1951, when 9.88 inches of rain followed the first experimental sprayings, the rainfall of 1.56 inches during June and 2.36 inches during the first 11 days of July of 1952 was lower than average and the miticide residues remained on the trees longer. For this reason control with the wettable miticides was very much better and differences between materials were not so marked. Although the natural infestations were probably on the decline, infestations were still heavy on adjacent untreated trees early in July.

All the experimental sprays gave excellent reduction of heavy initial infestations, although the spray containing parathion without any of the newer miticides gave significantly less reduction than the other combinations.

The 1952 results indicate that, for summer control of the citrus red mite, one of the following miticides might be added to the rust mite and scale spray of wettable sulfur and parathion: *p*-chlorophenyl *p*-chlorobenzenesulfonate, bis(*p*-chlorophenoxy)-methane, or EPN. The spray containing Aramite was slightly inferior to the others. Malathon added to wettable sulfur gave promising results. Emulsive oil, either alone or with parathion, also gave good reduction of heavy red mite infestations.

## LITERATURE CITED

Norman, Paul A., and Herbert Spencer. 1952. Experiments in 1951 on control of the citrus red mite. Fla. Ent. 35(1): 19-21.

Spencer, Herbert, and Paul A. Norman. 1951. Experiments on control of the citrus red mite (purple mite). Second report. Fla. Ent. 34(1): 3-5.