Leaf Curl Plum Aphid Control

tests in 1954 season developed spray treatments against insect pest of sudden economic importance

Harold F. Madsen and James E. DeTar

An outbreak of the leaf curl plum aphid —*Anuraphis helichrysi* Kalt.—occurred in 1953 in Placer County, where a considerable acreage of plums was severely attacked. The aphid—in California for many years but not as a pest of major importance—curls the leaves of the tree in early spring, and new leaf growth is tightly curled during the early summer. As a result of the leaf damage, fruit does not properly develop, and shoot growth is severely stunted.

A study of the biology and control of the leaf curl plum aphid was started in 1953 and continued through the 1954 season.

The aphid overwinters as an egg on the tree, with the eggs placed between the buds in new growth or on the bark and twig crotches of older limbs. Eggs are not numerous and are difficult to locate. The stem mothers hatch in early spring—about the time buds begin to swell—and feed on the developing buds.

As soon as the first leaves emerge, they are attacked, and succeeding generations infest the new growth as it develops.

The aphids curl the leaf very tightly and multiply within the curled leaves.

Apparently there is little migration of the aphid from tree to tree during the spring and early summer, as uninfested trees next to a severely affected tree may not be attacked at all. Infestations do develop on trees which were free of aphids in the early spring, but only a limb or two may be involved. This pattern of infestation suggests that wind or birds may be responsible for transferring the aphids rather than a flight by the aphids themselves.

In June or July, winged forms appear, and shortly thereafter the aphids leave the plums for a secondary host. After the aphids leave the trees, subsequent leaf development is normal, but leaves curled early in the year remain in this condition for the rest of the season, even though no aphids are present. The summer host of the leaf curl plum aphid has not as yet been found in Placer County.

In November, winged forms return to the plum trees, where they give rise to small, brown, apterous, sexual forms. The sexual forms mate and lay the overwintering eggs to complete the cycle.

Control of Leaf Curl Plum Aphid—Auburn 1954

Material	Dosage	Time applied	No. of curled leaves	No. of curled leaves infested	No. infested new shoots		
			April 12	April 12	April 26	May 18	June 7
Dormant oil & dinitro phenol	3 gals. 1 lb.	Jan. 13	0	0	0	13	18
DN 289	1 qt.	Feb. 2	0	0	0	2	7
Parathion	1 lb.	Mar. 2	0	0	0	0	3
Malathion	2 lbs.	Mar. 2	0	0	0	3	8
Lt. medium oil & nicotine sulfate	1.5 gals. 1 pt.	Mar. 2	6	3	0	0	4
Parathion	1 lb.	Mar. 23	85	13	21	143	268
Malathion	2 lbs.	Mar. 23	52	14	29	184	329
Demeton	1 pt.	Mar. 23	60	11	22	225	359
Check	.....	.....	159	141	241	860	1184

In the winter of 1953 and spring of 1954, a test plot was set up in an Ace plum orchard near Auburn where the trees had been severely attacked by the leaf curl plum aphid. Dormant, delayed dormant, cluster bud, and petal fall treatments were applied and control obtained.

The above table illustrates that both the dormant and delayed dormant treatments were very effective in destroying the overwintering eggs. Parathion, malathion, and oil nicotine during the cluster bud period were also effective in controlling the early aphids which were hatched by that time.

The petal fall treatments, however, were not effective, as by the time these treatments were applied, the leaves were already curled and complete control of

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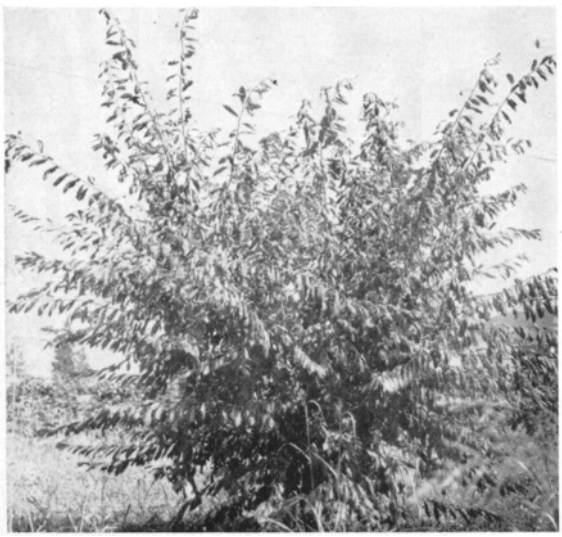
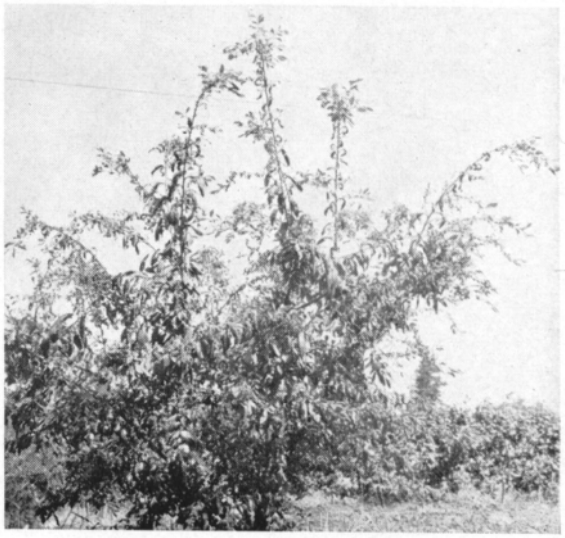
Normal plum tree.



Leaf curl plum aphid damage. Lower leaves curled, subsequent normal growth.

Infested plum tree.



External Parasites of Poultry

tests indicate malathion may prove to be effective control for common external parasites of poultry

Deane P. Furman, Lloyd E. Vincent, and W. Stanley Coates

External parasites most commonly infesting poultry in California include the northern fowl mite, the common poultry mite, several kinds of lice—and the chicken tick, which is often called the blue-bug in spite of the fact that it is a true tick.

In some of the warmer dry areas of the state, stick-tight fleas and western hen fleas become troublesome. Losses suffered from such parasites are often hidden but are reflected in the form of decreased egg production, slow weight gains, and generally poor condition.

The northern fowl mite usually spends its entire life on the bird, although in heavy infestations, large numbers of it may be found roving about the premises. Sulphenone and neotran dusts and sprays are effective for control of this parasite, although for most situations sulphenone is more suitable. A thorough application of either material to the birds is required for adequate control.

Malathion Tested

Extensive field and laboratory tests to develop more effective and easily applied control procedures against the northern fowl mite were conducted during the past year in southern and northern California. One of the materials most successfully used was malathion—an organic phosphate compound with an unusually low toxicity to mammals and birds.

Effective and immediate control was obtained with dilute emulsions containing less than 0.5% of malathion. Applications were made with hand-operated pressure sprayers and with power-driven sprayers using a coarse driving spray. One gallon of emulsion spray was applied per 100 birds for young, heavily feathered stock. For older birds, however, one gallon gave effective control for 150 birds.

A 4% malathion dust also provided effective control when applied by hand to individual birds or when dusted on individually caged fowl by means of a puff duster.

Great reduction, though not eradication, of northern fowl mite infestations was also obtained by merely dusting litter and nest boxes with 4% malathion dust at the rate of one pound per 20 square feet of litter plus a small handful in each nest.

The duration of residual effectiveness of malathion appears to be approximately four weeks, although in the field tests, no mites were found occurring naturally on birds for up to 12 weeks following the direct application of sprays or dusts. When placed on treated birds at intervals of one to three weeks after treatment, the mites died; but a few were able to survive and reproduce when placed on treated birds four weeks after treatment.

The common red mite—poultry mite—superficially resembles the northern fowl mite. However, it is easily distinguished by its habits. During the day, it hides in crevices about the poultry house and usually sucks blood from birds only at night. Control methods must therefore be directed toward treatment of the housing by sprays, dusts, or fumigants.

In preliminary field tests conducted in southern California, the common poultry mite was effectively controlled in litter houses by sprinkling 2% malathion dust over the litter surface at the rate of one pound per 20 square feet of floor, together with a thorough house spray of a 1% malathion emulsion.

The effectiveness of malathion in controlling poultry lice has been demonstrated elsewhere, and similar tests—using sprays to treat the roosting areas of poultry houses—are underway in California, although it is still too early to assess their value.

Field tests with malathion remain to be conducted on the chicken tick and fleas infesting poultry.

There has been no indication of a toxic effect of malathion on poultry when used by any of the methods described above. Birds dusted thoroughly with a 25% malathion dust showed no adverse effects, nor have off-flavors been detected in eggs or poultry flesh in preliminary taste tests following treatment. Similarly, in feeding tests conducted for a three-week period—in which 50 parts of malathion per million of feed constituted the diet—no off-flavor in eggs was detected by a taste panel of 18 persons.

When further tests are conducted, it is hoped that malathion will show a range of effectiveness broad enough to control all of the common external parasites of poultry.

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the aphids within the curled leaves was not obtained. Since the aphid can multiply so rapidly, almost 100% reduction is necessary to prevent buildup by early summer.

The experimental plots show that timing of treatments must be in the dormant or prebloom stage to obtain control. Certain varieties of plums are subject to injury by the dinitro compounds, and in those cases, the cluster bud treatments should be with parathion or with malathion.

Some of the test plots which were free of aphids in the early season developed a few infested shoots by the middle of May. In these cases, however, only a relatively few shoots were involved, and the pattern of infestation did not indicate that aphid flights from heavily infested trees were responsible. Indications are that once the aphids are controlled in an orchard, reinfestation will not occur to any major extent from adjoining unsprayed orchards.

The life-cycle of the leaf curl plum aphid—with a secondary host involved and migration back to plum trees in the late fall—indicates a yearly spray may be necessary to hold this pest in check.

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