

# BLUE ALFALFA APHID: A New Pest



Alfalfa plants damaged by the blue aphid (left). Aphid-free plants from an adjacent field (right).

Specimens of this new aphid were unknowingly collected by one of the authors from alfalfa near Bakersfield, California in 1974. The samples were taken to detect lygus bug parasites and the aphids in the samples were not counted. Fortunately, the samples were preserved for other observations. When the new aphid reached outbreak numbers in 1975, the Bakersfield samples were re-examined and specimens of the new aphid were identified by R. C. Dickson, U.C. Riverside.

In 1975, the new aphid was first noticed in Imperial County when commercial field men observed less than satisfactory control of aphid populations with chemicals applied for pea aphid control.

Field surveys showed an aphid of slightly different appearance than the familiar pea aphid was widespread throughout Imperial County and that this smaller, blue-green aphid was inflicting damage to a number of alfalfa fields.

## Field observations

The blue alfalfa aphid closely resembles the pea aphid. However, there are subtle differences: the new aphid is smaller, more blue-green, and has a waxy appearance; the pea aphid is lighter green and more shiny. In the southern desert areas neither aphid can tolerate high temperatures. Both aphids disappeared about mid-May, 1975.

## Damage

The blue alfalfa aphid prefers to feed on the tender succulent parts of the alfalfa plant. The aphid colonies cluster on the terminal growth. As the populations increase they tend to congregate on the tender shoots and beneath older leaves.

Many heavily infested fields were observed in the Imperial Valley during spring, 1975. There was a severe stunting of the stems which is characterized by smaller leaves and short internodes (see photo). Leaf curling, yellowing, and eventual leaf drop are also common symptoms in severely infested fields.

# in the Imperial Valley

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In early spring, 1975, growers in the Imperial Valley attributed the stunting of alfalfa plants to unusually cool weather conditions. However, differences in growth were observed in adjacent treated and non-treated hay fields. Aphid-free alfalfa, although somewhat retarded in growth due to cool weather, had nearly normal leaves and internode characteristics, whereas untreated alfalfa was severely stunted and yellow. Blue alfalfa aphid infestations delayed cutting schedules—or caused the losses of a full cutting or more—in numerous fields.

## Chemical control

Field observations suggest that the new aphid may inject a toxin into the plant, but a virus may also be involved.

A number of chemicals were applied on alfalfa to obtain data on their effectiveness on the blue alfalfa aphid and on the pea aphid. In one replicated experiment, Supracide at 8 ounce ai/acre applied by air gave about 80 to 85 percent control of both aphid species.

In another test, Phosdrin, Methomyl, Furadan, Malathion, Pennncap, Diazinon and Supracide were applied to simulate commercial dosages. The insecticides were applied by a hand sprayer, using CO<sub>2</sub> to give a constant 40 psi. The plot sizes were 15 X 50 feet, and each insecticide treatment and the untreated plots were replicated four times in a randomized complete block design. Five sweep net counts were taken from each plot at 4, 8, and 16 days after application. The areas sampled on each sampling date were avoided on the next sampling date. The samples were collected in alcohol and examined under a microscope to differentiate the winged forms of the blue alfalfa aphid and the pea aphid. Differentiation was based on a difference in size between the two aphid species. No attempt was made to distinguish the nymphal stages of the two aphid species.

All chemicals mentioned above gave good control of the total nymphs and winged and non-winged adult forms of the pea aphid and the blue alfalfa aphid compared with untreated plots at four

days after application. However, Pennncap, Furadan, and Diazinon gave the highest kill. In general these insecticides appeared to give longer control when compared with other insecticides mentioned in this test (see table).

The blue alfalfa aphid appears quite easy to kill with most materials used on alfalfa for aphid control. However, in 1975 rapid reinfestation by aphids of treated commercial fields was common. This gave an impression of poor knock-down. Furthermore, the rapid reinfestation prompted the use of more insecticide which undoubtedly took a heavy toll on

predators and parasites of other pests. This may well have contributed to the high worm populations in mid-summer.

However, until resistant varieties, biological control agents, and possibly cultural control practices become available, insecticides appear to be the only method of suppressing the new aphid to avoid damage to alfalfa.

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CHEMICAL CONTROL OF THE APHID COMPLEX IN ALFALFA HAY

Treatment	ai/acre (ozs.)	mean aphids/replicate		
		4 days	8 days	16 days
Pea aphid control (allate)				
Phosdrin	3	22.6 b	8.9 abc	34.6 a
Methomyl (Lannate — Nudrin)	8	9.0 bcd	9.0 abc	31.9 a
Furadan	8	16.0 bc	4.9 bcd	18.7 a
Pennncap	6	3.5 d	2.7 d	25.4 a
Supracide	8	10.7 bcd	3.9 cd	34.1 a
Malathion	24	19.6 bc	16.5 a	22.2 a
Diazinon	8	7.2 cd	5.8 bcd	39.5 a
Non-treated	—	43.6 a	10.6 ab	14.6 a
Blue aphid control (allate)				
Phosdrin	3	29.4 b	23.0 bc	93.4 a
Methomyl (Lannate — Nudrin)	8	32.1 b	22.9 bc	66.8 a
Furadan	8	22.4 bc	12.3 c	73.6 a
Pennncap	6	9.2 c	10.1 c	46.4 a
Supracide	8	17.4 bc	21.1 bc	90.1 a
Malathion	24	32.2 b	37.1 ab	69.0 a
Diazinon	8	23.1 bc	14.9 c	48.9 a
Non-treated	—	68.4 a	56.5 a	50.9 a
Total nymphs (pea + blue)				
Phosdrin	3	104.3 b	86.3 bc	780.5 ab
Methomyl (Lannate — Nudrin)	8	170.0 b	40.5 cd	1073.7 a
Furadan	8	61.8 b	12.4 de	280.4 c
Pennncap	6	56.5 b	4.1 e	219.7 c
Supracide	8	130.9 b	28.1 de	714.9 ab
Malathion	24	209.6 b	116.1 b	954.4 a
Diazinon	8	110.3 b	20.6 de	591.2 b
Non-treated	—	1100.1 a	270.6 a	713.0 ab

Treatment means with no letters in common are significantly different at the 5% level (Duncan's test).