



Two winged and one wingless adult yellow clover aphid.

chemical control

insecticides when properly applied will give effective commercial control of pest

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Under conditions of high populations, the yellow clover aphid—easy to kill by insecticide applications—is difficult to control because of rapid reinfestation.

In most cases this is the result of migration of winged aphids from heavily infested neighboring fields or from poor insecticide applications.

For the best control, heavily infested fields must be treated or destroyed. The most effective insecticides must be used—and proper applications made—because any skips in an application create focal points for rapid reinfestations.

In general, sprays are preferred to dusts—except for the use of toxaphene during seed production—in order to reduce the problem of drift. This is to protect man, livestock, nearby crops, and to minimize losses to honeybees.

Malathion and—particularly—parathion are lethal to pollinating insects, and every precaution should be taken in their use. State regulations require that permits be obtained from the County Agricultural Commissioner for applications of parathion and Systox, and some counties require permits for the use of malathion.

Systox is not detrimental to pollinating insects and is less toxic to most other beneficial insects. Its use should be carefully considered by the alfalfa grower.

Proper timing of insecticide applications is largely a matter of experience. It is difficult to base applications on aphid numbers because of the rapid production of this species.

On small seedling alfalfa, treatments must be made at low infestation levels—one or more per plant. On older plants, treatments may be based on the generalized appearance—low quantities of honeydew in the field plus an increasing

population—and later damage may be prevented in this manner. Treatments must not be delayed under these situations.

The alfalfa grower must make frequent inspections—preferably at two- or,

resistant plants

alfalfa variety resistant to aphid attack and adapted to desert areas planned

E. H. Stanford

The principles of genetics—basic to scientific plant breeding—are to be applied in a project in the Imperial Valley to develop a strain of alfalfa resistant to the yellow clover aphid and adapted to the growing conditions in the desert areas of the southwest.

Alfalfa varieties grown in desert valley areas, such as Imperial, Coachella, and Palo Verde, require characteristics different from varieties grown in other alfalfa-producing districts. Plant growth during the low winter temperatures is essential for maximum productivity and year-round feed production. Furthermore, the varieties grown in the desert valleys must be adapted to extremely high summer temperatures.

The varieties, Africa and India, have been used and come nearest—but not completely—to meeting requirements. Probably 80% of the acreage in Imperial Valley is renovated each year when old stands are cultivated and addi-

at the most, three-day intervals—to determine the condition of his fields and possible need for immediate treatment.

For the purpose of simplicity, chemical control is based on three phases of alfalfa production. Many insecticides are effective in controlling the yellow clover aphid; parathion, malathion, and Systox are the most promising.

Parathion may be used at the rate of 2 to 4 ounces of actual material per acre, or malathion at the rate of 8 to 12 ounces of actual material per acre. The lower rates of both materials have been satisfactory when ground equipment was used, and the higher rates when aerial equipment was used. The residual period of control is only a few days in extent.

Systox may be used at the rate of 2 to 4 ounces of actual material per acre, but applications must not be made within 21 days of cutting. Either rate has been effective by air or ground equipment. The residual period of control with 4 ounces of Systox is about 2½ weeks, but with 2 ounces it is about the same as that of parathion.

Parathion at 4 ounces of actual material per acre has been effective, but applications must not be made within 15 days of cutting. Malathion will give

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tional seeding is made to thicken the stand.

The yellow clover aphid—since it became established last year—has damaged thousands of acres of alfalfa. The expense of insecticides and their application have increased production costs by several dollars a ton.

Strains of alfalfa resistant to the yellow clover aphid are known but they are not adapted to the growing conditions of the southwest.

By using an aphid resistant variety such as Lahontan—on which the aphid cannot survive—as one parent strain, and a variety most adapted to meet the growing requirement—such as Africa—it is expected that a series of crosses and backcrosses followed by selection will produce a strain of alfalfa suitable to desert areas and resistant to the yellow clover aphid.

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