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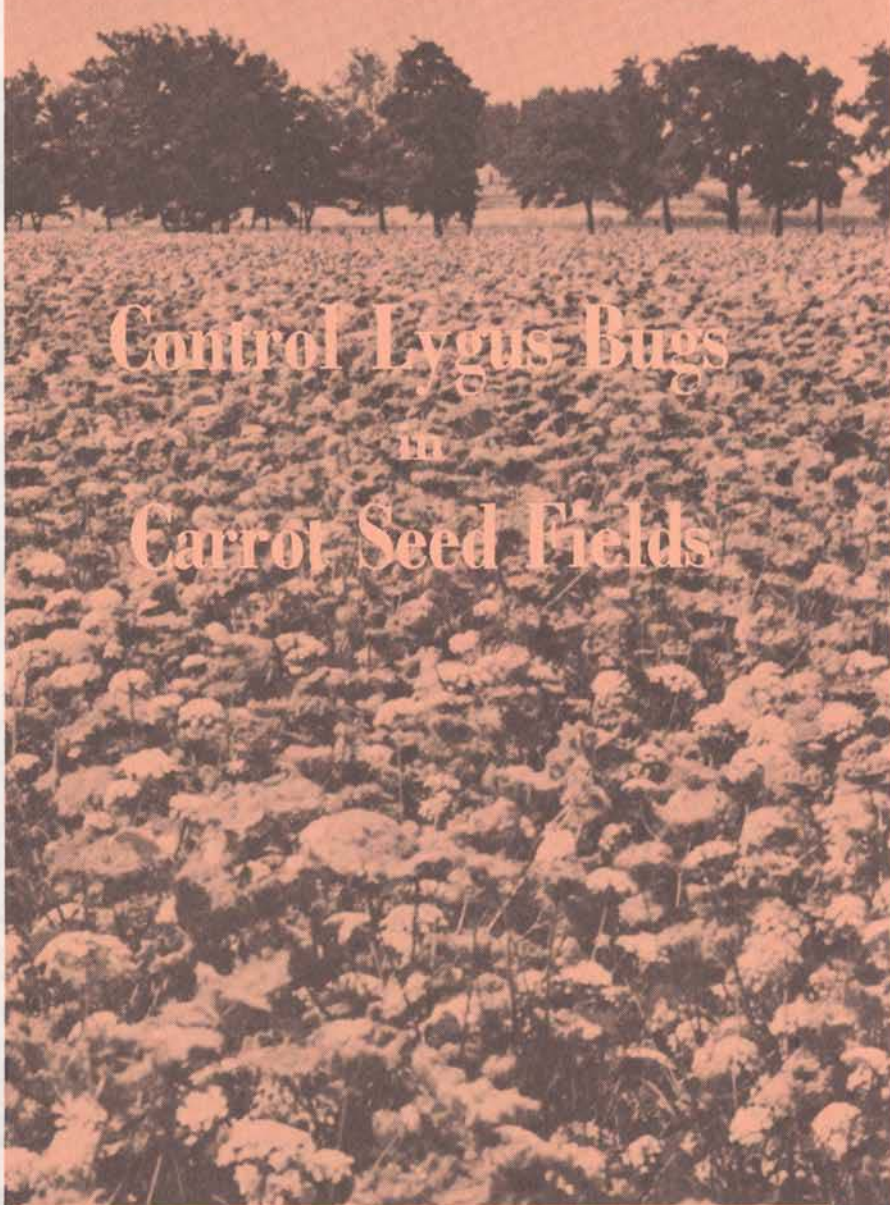
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Control Lygus Bugs in Carrot Seed Fields

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Control Lygus Bugs

in

Carrot Seed Fields

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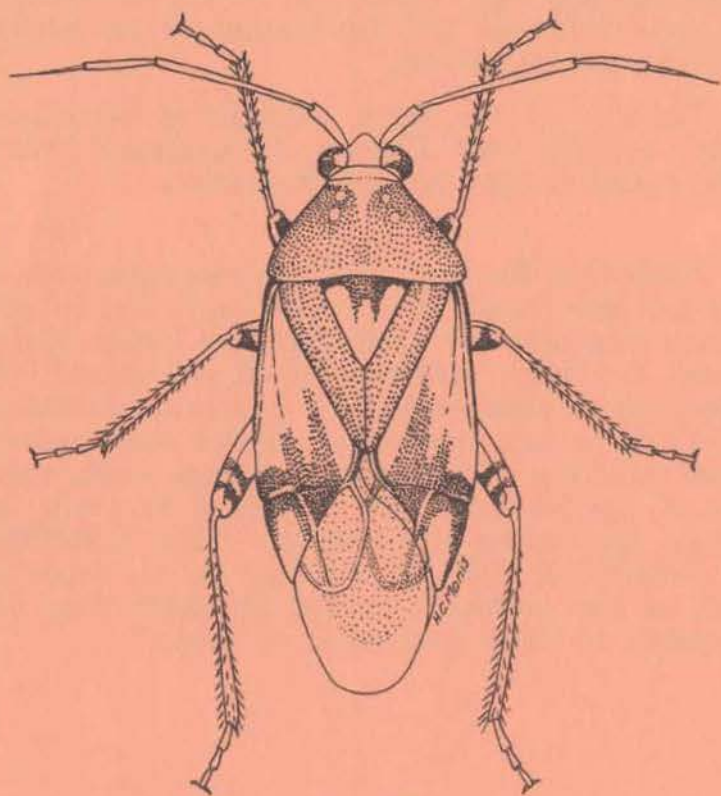
Carrot seed yields in Idaho vary from season to season. One of the causes of this seasonal fluctuation is insect damage to the carrot seed plant. Probably the most important insect pests of the carrot seed plant in this state are lygus bugs. These insects damage plants by sucking sap from the stems, leaves, fruit or seeds.

On the carrot seed plant, lygus bugs are commonly found feeding on the ovaries of the flowers and on developing seeds. Feeding injury to the ovaries results in blasted flowers and reduced seed yields. Feeding injury to the developing seeds may destroy the embryo, resulting in lowered germination rates.

DESCRIPTION AND BIOLOGY

Description. Two species* of lygus bugs are involved. Adults of both species are winged and about 1/4 inch long. One species is pale green with no outstanding color markings, whereas the other is light tan to brown with a triangular yellow area (the scutellum) on the back between the bases of the wings. The upper center of this area is black, thus giving the appearance of a yellow "V". The immature forms, or nymphs, resemble the adults except that they are smaller and wingless, and both species are pale green. Adults and nymphs are very active.

* *Lygus elisus* Van Duzee and *Lygus hesperus* Knight



ADULT

Life History. Lygus bugs pass the winter as adults in protected places such as ground litter, field trash and buildings. They become a nuisance in homes. They are active on warm days in late winter. In the spring, the adults feed on various plants and begin to lay eggs. The female inserts the eggs into plant tissues. When carrot umbels develop, more than 99 percent of the eggs laid on the carrot plant are inserted into the stems of the individual flowers, or flor-ets. In about ten days the eggs hatch into nymphs, which reach maturity in a month.

A complete generation usually takes 35 to 45 days, depending on the temperature. The nymphs that hatch from these eggs usually develop on the same umbel where the eggs are laid. The time required for the eggs to hatch and the nymphs to mature is about equal to that required for the carrot seed to mature.

Usually, one generation a year develops on carrot seed plants, but different "broods" of this generation develop in the umbels of different orders. However, there may be four to five generations a year, produced on a variety of other host plants in southwestern Idaho.

Host Plants. The two species of lygus bugs are general feeders and are found on many plants. The cultivated crops usually damaged in Idaho are alfalfa, beans, and carrots grown for seed. Common weed hosts include mustard and lambs-quarter.

Population Trends. Because alfalfa is an excellent host plant, lygus bug numbers increase on this crop during spring. When alfalfa is cut for hay the adults fly to other fields. Because of this migration, lygus populations may increase rapidly in carrot seed fields at this time.

Until late June, most of the lygus bugs in carrot seed fields are adults. During late June and July, nymphs predominate. In late July and early August, the ratio of adults to nymphs changes and adults again outnumber the nymphs.

Eggs are laid in the floret stems during the flowering season when the umbels are in the petal fall stage of maturity. Since about 10 days are required for the eggs to hatch, umbels in the green spiny stage of maturity harbor the most lygus. The population peak in each year may vary from one or less to six or more per umbel.

DAMAGE TO CARROTS

Lygus bugs will feed on any succulent tissue of the carrot plant. However, after the carrot umbels appear, feeding is concentrated first on the flower buds, then the flowers, and finally the developing seed. As mentioned earlier, 99 percent or more of the eggs are inserted into the stems of individual florets; therefore, upon hatching, the young nymphs will be found in the umbels. Feeding of lygus bugs on the ovaries of flowers results in blasted flowers and reduced seed yields. Feeding on the developing seed may kill the embryo, resulting in a lower germination rate. Population levels of one lygus per umbel will reduce seed yields about 40 per cent and germination about 25 per cent. Greater numbers of lygus will cause greater losses.

CONTROL

Pollinator Considerations. DDT applications to carrot seed fields in full bloom reduce pollinator activity by 75 to 80 percent within 24 hours and by 90 percent within five days. Pollinator activity never completely recovers from this low point and many carrot flowers go unpollinated. Lygus bug control studies in other seed crops indicate that other insecticides may have the same effect.

Thus, in the past, carrot seed producers apparently had a choice between loss of yield because of poor pollination resulting from insecticidal application for lygus control or reduced yield and quality because of lygus feeding. One possible solution is the use of an insecticide that won't reduce pollinator activity. However, since many of the pollinators are not honey bees and since little is known as to the effect of insecticides on these other pollinators, the grower should use every possible precaution in his selection of a lygus bug control. He should select an insecticide that is effective against lygus and that has the least adverse effect on honey bees. Such an insecticide should be applied when the first order umbels are in bloom so as to reduce lygus damage as much as possible. An abundance of honey bees must be provided to replace native pollinators which may have been killed by the insecticide.

Recommendations. Trichlorfon (Dylox)* will give effective lygus bug control without materially reducing the bee population. One and one-half pounds of actual material per acre will control lygus for ten to fifteen days. It should be applied after sunset to minimize bee loss. Best results are obtained if the first application is made at the time of early flower of the first order umbels, usually about June 20. A second application may be required if the lygus bug population reaches one per two umbels any time during late June or early July.

* The information given here is for educational purposes only. Reference to commercial products or trade names is made with the understanding that no discrimination is intended and no endorsement by the Agricultural Extension Service is implied.

Care should be exercised to avoid drift to pastures and hay crops. A 14-day interval is required between the application of trichlorfon and the harvest of hay.

Because of the rapid changes in insecticide uses, consult your County Agricultural Extension Agent for the latest information.

Pesticides Residues: "These recommendations for use are based on the best information currently available for each chemical listed. If followed carefully, residues should not exceed the tolerance established for any particular chemical. To avoid excessive residues, follow recommendations carefully with respect to dosage levels, number of applications, and minimum intervals between application and harvest. **THE GROWER IS RESPONSIBLE** for residues on his crops as well as for problems caused by drift from his property to other properties or crops."

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