

Cucumber Beetles

insecticides tested for control on melons in northern California

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Melon fields—if left unprotected from the cucumber beetle—are likely to be damaged and some will be completely destroyed.

Cucumber beetles—the western spotted cucumber beetle, *Diabrotica undecimpunctata* Mann. and the western striped cucumber beetle *Acalymma trivittata* (Mann.)—injure melons in four ways. Adults feed upon the foliage or scar the fruit, stems and crown; larvae feed upon the roots or upon that portion of the melon in contact with the soil.

Serious infestations of cucumber beetles arise from their breeding within a field or through migrations. Beetles migrate from other crops that are being harvested or from fields where harvest has been completed and which are drying up or are being disked or plowed under. Large movements may occur from alfalfa fields that are being cut for hay.

Cucumber beetles like moisture and are particularly attracted to melon fields during and just following irrigation. This response is most pronounced during periods of hot weather.

Although serious migrations may occur to melons of any variety, honeydew seems to be preferred. The crenshaw and casaba varieties are also very attractive. Melons covered with a netting such as the Persian variety appear to be the least attractive.

Natural enemies rarely are sufficiently effective to reduce the cucumber beetle population to a level where control with insecticides is not required. The most effective materials such as DDT are likely to result in an increased spider mite or melon aphid population. Therefore it is desirable to obtain economic control with the fewest applications and lowest dosage possible.

Where vine growth has completely covered the rows, a 3% DDT dust, at 30 pounds per acre—or its equivalent as a spray—adequately controls cucumber beetles and other melon pests against which DDT is effective.

On honeydew—one of the few melons not injured by sulfur—DDT, where feasible, should be combined with 50% sulfur. Serious infestations of spider mites seldom develop where this mixture is applied before the mites become evident.

Where DDT is used on other varieties and a serious spider mite infestation is

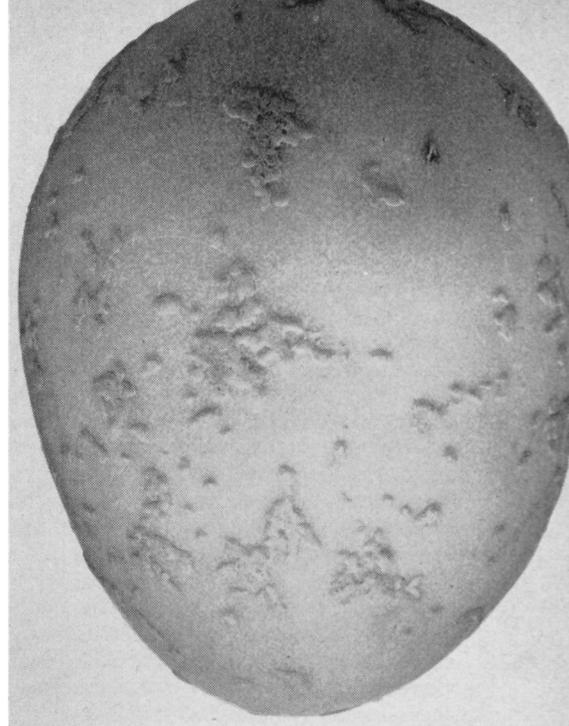
suspected it can be combined with 3% aramite, or with 7.5% ovotran. If possible these mixtures should be applied before destructive spider mite populations have developed. Where DDT is applied as a spray, aramite can be incorporated at the rate of at least one pound of actual material per acre to forestall a serious spider mite infestation. Where the spider mite population is held in check no acaricide need be added with all DDT treatments. Where the mixture is used, a single application for spider mite control is sufficient in most cases if the treatment is timely and thoroughly applied.

Although a cryolite dust is not nearly as effective as DDT it is used during the early stages of growth to avoid the adverse effects of too much DDT. A 40% or 50% cryolite dust, applied by ground equipment, will give satisfactory control if only the beetles are present. If thrips are abundant or the melon leafhopper is threatening, the young plants should be lightly but evenly treated with a 3% DDT dust.

Control of cucumber beetles has also been obtained on seedling stands by applying undiluted calcium arsenate of low soluble arsenic content with a fertilizer attachment at time of cultivation. The calcium arsenate is allowed to dribble out over the rows.

A 2% parathion dust at 30 pounds per acre was used successfully in controlling cucumber beetles during the entire growth of a crop. Single applications remained effective for periods up to three weeks. Control of the beetles was also obtained where a stable 1% tetraethyl pyrophosphate dust was applied at the rate of 30 pounds per acre. A 5% malathion dust at 25 pounds per acre also showed promise.

Dieldrin at 0.5 pound, aldrin at one pound, or heptachlor at one pound per acre resulted in excellent control of cucumber beetles. Of these three insecticides only dieldrin has been released for use on melons. However, a residue or taste problem with the other two is not anticipated. These insecticides, along with others used in the melon insect control program are extremely toxic to bees and treatments should be applied at night or in early morning before the blooms open. Dieldrin, aldrin, and heptachlor all have a tendency to increase the spider



Adult cucumber beetle injury as it appears on a mature honeydew melon.

mite population. If these materials are all released for use on melons, best results will probably be obtained where they are combined with an effective acaricide. Dieldrin—used most extensively in the present investigations—appears to be more effective than the other two. With the exception of the melon leafhopper and spider mites, it has given good control of the principal pests of melons.

Treatments—particularly during the early stages of growth and melon formation—should be applied as soon as cucumber beetles become noticeable. The best time to search for them is in the morning shortly after it begins to warm up as they remain quiet when it is cold or hot. It is not uncommon to find a portion of a field heavily infested while the population in the rest of the field may be below an economic level. Where fields are large it may be necessary to treat only that portion which is severely infested. Because large populations can not be tolerated, it is often necessary to treat melon fields when cucumber beetles are the only pest present in sufficient numbers to justify the treatment. If possible, however, treatments should be timed so that several pests are controlled at the same time.

On the more susceptible varieties of melons such as honeydew as many as three to four applications of DDT or other effective insecticides may be needed to give adequate protection during the growth of a crop.

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