

STUDIES ON ALDRIN, DIELDRIN, AND DDT RESIDUES IN POTATOES

Kenneth C. Walker and B. J. Landis
Entomology Research Division, Agricultural Research
Service, U. S. Department of Agriculture, Yakima, Washington

Two sets of test plots were planted to potatoes, in the spring of 1962, by the Western Vegetable Insects Investigations, U. S. Department of Agriculture. One set of plots was in sandy soil, very low in organic matter, in the Columbia Basin. The other was in a clay loam soil, containing considerable organic matter, in the lower Yakima Valley. Both sets of plots included treatments of DDT, aldrin, and dieldrin at the recommended rates of 20, 5, and 3 pounds per acre, respectively, and treatments at twice these rates (40, 10, and 6 pounds per acre, respectively). The insecticides were applied as granular formulations, broadcast, and disced in prior to planting.

Samples taken at harvest time from the DDT-treated plots were below the tolerance in both locations at both levels of treatment. In the Columbia Basin experimental plots both aldrin treatments produced over tolerance potatoes. Only the 10-pound aldrin treatment produced over tolerance potatoes in the lower Yakima Valley plots. The 3- and 6-pound dieldrin treatments in both locations produced potatoes that were below the tolerance for dieldrin. All treatments in the Columbia Basin experimental plots produced higher residues in the potatoes than the corresponding treatments in the lower Yakima Valley plots.

Samples were also taken from 7 different commercial fields. All of these fields had been treated with 1 1/2 pounds of aldrin per acre applied in bands with the fertilizer at planting time. Two of the 7 samples were above the legal tolerance.

Individual hills of potatoes were sampled in both the experimental plots and the commercial fields. These hills of potatoes were analyzed tuber by tuber to determine the variation in residue within single hills. In the experimental fields, where 5 pounds of aldrin per acre were applied, as high as a 9-fold variation in residue was found in individual tubers within a hill. In commercial fields, where 1 1/2 pounds of aldrin was banded with the fertilizer at planting time, as high as a 20-fold variation in residue was found in individual tubers within a hill.

The use of aldrin as a soil treatment in sandy soil may result in residues in excess of the 0.1 p.p.m. tolerance for aldrin and its conversion product, dieldrin.