Tests for the Control of Corn Flea Beetles

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Description and Importance

During July 1947 a heavy infestation of the corn flea beetle (*Chaetocnema pulicaria* Melsh.) occurred on sweet corn seedlings near Franklin, Indiana. This insect is one of the common species of small black, stout-bodied flea beetles attacking corn, alfalfa and garden crops in the spring and early summer. About 1/16 inch long *C. pulicaria* is distinguished from similar species by not having pits on the head. The basal three segments of the antennae are reddish-yellow, the legs are brownish-yellow, and there are rows of pits on the elytra.

When abundant the corn flea beetle causes severe injury to young corn seedlings. The beetles swarm onto the young plants. The green portion of the leaf is eaten, giving the whole plant a bleached appearance. Growth is retarded, the leaves wilt and an entire crop may be devastated. However, once vigorous growth sets in the corn plant is able to sustain the beetle with little danger of the insect causing severe injury through feeding.

Of tantamount importance, *C. pulicaria* is also the vector of Stewart's disease in corn. Since *Phytomonas stewarti*, the causal organism of this disease, can overwinter only in the body of the insect, control of the beetle is a stark requisite where the disease is prevalent.

Dusting for Control

Tests for the control of the corn flea beetle were initiated in a heavily infested corn field where the beetles had laid waste to nearly fifty percent of the crop. Two experiments involving different materials were conducted. Various dust concentrations of DDT, DDD (dichloro-diphenyl-dichloroethane), benzene hexachloride, chlordane, Toxaphene (chlorinated camphene), Methoxychlor (methoxy analog of DDT), parathion (O,O-diethyl O-p-nitrophenyl thiophosphate, an experimental compound supplied by American Cyanamid Company), and cryolite were applied.

Sweet corn seedlings having two to five inches of growth received one application of dust applied with a hand knapsack duster. Each treatment was replicated six times. Plots were three rows wide and twelve feet long. Forty-eight hours after treatment data were taken by counting the surviving beetles on ten consecutive plants in the middle row of each plot.

These data show all materials to be superior to cryolite or parathion. Serious foliage burning resulted where cryolite was used. None of the other materials caused any injury. Highest control was obtained from benzene hexachloride and chlordane.

Data: Experiment I (Treated July 17)

Treatment	Average Beetle Survival per Plot	% Control
Control	26	0
Benzene hexachloride: 1% gamma isomer	0.3	98.8
Toxaphene: 2.5%	3.1	88.0
DDT (dichloro-diphenyl-trichloroethane): 2:5%	4.1	84.2
DDT (dichloro-dipheny-trichloroethane): 5.0%	4.3	83.4
DDD (dichloro-diphenyl-dichloroethane): 5.0%	7.3	71.9
Cryolite: 33.3%	8.8	66.1

Data: Experiment II (Treated July 22)

Treatment	Average Beetle Survival per Plot	% Control
Control	26.	0
Chlordane (Dowklor): 2.5%	3.0	88.4
Benzene hexachloride: 0.25% gamma isomer	4.3	83.4
Benzene hexachloride: 0.5% gamma isomer	6.9	73.4
Methoxychlor: 2.5%	5.5	78.8
Toxaphene: 2.5%	7.0	73.0
DDT: 2.5%	8.0	69.2
DDT: 1.25%	11.5	55.7
DDD: 2.5%	9.3	64.2
Cryolite: 40%	11	57.6
Cryolite: 33.3%	14	46.1
parathion: 1%	19.5	28.8

From these data it may be concluded that a 1% gamma isomer of benzene hexachloride dust and a 2.5% chlordane dust effect higher control of the corn flea beetle than a 5% DDT dust.