A PRELIMINARY TEST WITH DDT FOR CONTROL OF THE WHEAT MIDGE *Sitodiplosis mosellana* (GEHIN)

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In 1957 the wheat midge, *Sitodiplosis mosellana* (Gehin), caused severe damage to a crop of spring wheat near Kersley, British Columbia (Arrand, 1959). According to the farmer this field had been infested in 1956. The midge is now so well established in the area that spring wheat crops can no longer be grown profitably and farmers are concerned about loss of revenue from what has been a profitable cash crop. Previous recommendations for preventing damage, such as early seeding of quickly maturing varieties of wheat, plowing infested stubble fields before the midges emerge, locating new seedings as far as possible from infested stubble fields or growing fall wheat, are not applicable or not effective in the Kersley area.

In 1962 a preliminary test was carried out to determine whether treatment of spring wheat with DDT could provide practical control. Marquis wheat seeded during the third week of May was used. The treatment and a check were replicated four times using plots 6' x 40'. The treatment consisted of spraying the wheat with DDT 25% emulsion, at the rate of 1 lb. toxicant in 25 gal. water per acre. Treatment was applied on June 12 as the wheat began to head and when the first emergence of midges was noted from infested stubble fields.

The effect on midge infestation was determined by counting the eggs and larvae in six heads collected at random from each plot on July 26. The effect on yield of seed was determined by threshing, cleaning and weighing the seed from plants in two sample areas per plot, each one yard square, on September 4 when the crop approached maturity.

Counts of eggs and larvae showed that on July 26 infestation in the treated plots was 83.6 per cent less than that in untreated plots. (Table 1). Weights of clean seed showed that the yield of clean seed from treated plots was 78.6 per cent greater than that in the untreated (Table 2).

TABLE 1.—Numbers of midge eggs plus larvae in 6 wheat heads per replicate on July 26, after spraying with DDT on June 12, 1962, Kersley, B.C.

	Replicate						% Decrease
Treatment	1	2	3	4	Total	Average	with DDT
DDT	62	19	29	38	148	37.0	83.6
Check	180	185	184	353	902	225.5	

Although the DDT treatment gave fairly good control of midge infestation and a substantial increase in yield over that from the untreated wheat, the yields were only 11.1 bushels per acre in the treated and 6.2 bushels per acre in the untreated. The low yield from the treated wheat is attributed in part to phytotoxic effects of the spray. On July 26 foliage in the treated plots appeared reddish-brown as if burned compared with the fresh green colour in the untreated. On September 4 the average height of plants in the treated plots was 1.5 to 2.0 inches less than the average in the untreated.

Although results of this preliminary experiment have not provided a practical control for the wheat midge they indicate that further tests with insecticides are warranted.

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TABLE 2.—Weight in grams of clean wheat seed from one-yard square samples per replicate harvested on September 4, 1962, Kersley, B.C.

Treatment	Replicate				Total	Average per yd.²	% Increase over check
DDT							
Sample 1	54	54	62	87			
" 2	20	72	64	80	493	61.6	78.6
Check							
Sample 1	28	20	50	31			
" 2	44	27	42	34	276	34.6	

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References

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INHERENT TOLERANCE IN LARVAE OF THE ROOT WEEVILS *Sciopithes obscurus* HORN AND *Nemocestes incomptus* (HORN) TO COMMON SOIL INSECTICIDES[1]

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The strawberry root weevil, *Brachyrhinus ovatus* (L.) and the black vine weevil, *B. sulcatus* (F.), are controlled in strawberry plantings by the soil insecticides heptachlor, aldrin, dieldrin, or chlordane (Eide, 1955; Cram and Andison, 1958). But the indigenous root weevils *Sciopithes obscurus* Horn and three species of the genus *Nemocestes,* which were previously not of economic importance, seriously damaged commercial strawberry plantings in 1954 in soil treated with heptachlor or aldrin at 5 lb, dieldrin at 3 lb, or chlordane at 10 lb of toxicant per 6-inch acre. *S. obscurus* adults were abundant in plantings in soil treated with heptachlor at 5 lb, and *N. incomptus* (Horn) in soil treated with aldrin at 5 lb. In a field treated with heptachlor, larvae of *S. obscurus* caused such extensive damage before the first picking season that the planting was ploughed under. Attacks by *N. incomptus, N.* prob. *montanus* Van Dyke and an unnamed species of *Nemocestes* were not so rapid, and severe damage did not usually occur until the second or third season.

This is a report of experiments in the greenhouse and field with soil insecticides for control of larvae of *S. obscurus,* and in the greenhouse alone for larvae of *N. incomptus.*

Methods

Greenhouse Tests—Coarse, sandy loam (pH 6.0, 10.1% organic matter) was passed through a 4-mesh screen, measured into a box of 0.5 cu ft, then spread 0.5 inch deep on paper. Each insecticide was applied evenly on the soil at a rate equivalent to broadcasting and mixing dust in the top 6 inches of soil in the field. The treated soil was mixed uniformly, then used to pot 9 runner strawberry plants, each in a 6-inch clay pot. When two insecticides were combined one was mixed with the soil first before the other was applied. The materials are detailed in Table 1.

Larvae were obtained from eggs laid by adults collected at night by

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