CHEMICAL CONTROL OF THE SEED-CORN MAGGOT, 
HYLEMYA PLATURA (MEIGEN), AND SEED-PIECE 
DECAY IN POTATO SEED PIECES1,3

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ABSTRACT

When captan was applied to freshly-cut potato seed pieces to control seed-piece decay, it prevented infestation by the seed-corn maggot, Hylemya platura (Meigen), which may otherwise cause extensive damage during cool, wet springs. In 1969, diatomaceous dust mixtures and seed-piece soaks containing 5% captan, methiocarb, or phoxim applied at a rate of 1 lb/acre gave effective control of the seed-corn maggot and seed-piece decay. In 1970, in similar tests, captan, TD-1771 (dimethyl 4,4'-O-phenylenebis/3-thio-~allophanate/), and TD-5056 (2-methyl sulfonyl 6-nitro benzo thiazole) gave significantly better control of the maggot and of seed-piece decay than methiocarb or phoxim and than five other treatments.

Seed-corn maggots, Hylemya platura (Meigen), can be economically important to the production of potatoes during cool, wet springs in many irrigated areas of the Northwest (1, 11, 12). Their damage is invariably associated with seed-piece decay because adult flies in the act of ovipositing spread blackleg, Erwinia phytophthora (Appel) Holland, which causes missing hills and weakened plants (2, 3, 13). These losses are usually overlooked or attributed to some other agency but they can be severe enough to necessitate replanting (14).

Seed-corn maggot larvae and the organisms associated with seed-piece decay seldom attack well-suberized potato seed pieces (15). However, the proper suberization of cut seed before planting is costly and time-consuming, and few growers go to this trouble because freshly-cut potato seed pieces that are planted in moist, warm soil suberize quickly and are not affected by seed-piece decay or maggots. Thus in favorable years, good crops can be grown without suberization or treatment of the cut seed with chemicals (10). No insecticide is recommended for control of the seed-corn maggot on potatoes in Washington, but captan is applied to freshly-cut seed to reduce seed-piece decay, and prompt planting is recommended (9). If planting is delayed for a few days and the cut seed pieces are not ventilated or if wounds are made by pic-type planters, seed-piece decay may start (9), and the infected material becomes attractive to the maggot. Therefore, the planting of freshly-cut, untreated seed pieces entails some risk. However, potatoes can actually tolerate more injury from the maggots than most other crops because the seed pieces are usually large enough both to support several growing maggots and to nourish the grow-

1In cooperation with the College of Agriculture, Research Center, Washington State University, Pullman 99163. Accepted for publication March 16, 1971.
2Mention of a pesticide or a proprietary product in this paper does not constitute a recommendation of this product by the USDA.
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ing plant. Also, seed pieces that weigh less than 2 oz, and particularly the occasional “slivers” produced by machine cutting, will probably produce low yields of potatoes no matter how favorable the conditions.

Reid et al. (15) tested applications of sulfur, sand and kerosene, hydrated lime, carbon disulfide emulsion, mercuric chloride, bordeaux-oil emulsion, and formaldehyde to seed potatoes before and after cutting for control of the seed-corn maggot, but most of the materials injured the seed pieces somewhat, especially when he treated cut seed. Moreover, the seed pieces that had the greatest chemical injury on the cut surfaces also contained the heaviest infestations of insects. No treatment he used was effective in controlling the seed-corn maggot. Bonde (4 & 5) and Bonde and de Souza (6) tested various antibiotics and Duncan and Gallegly (8) reported that although many antibiotics, fungicides, and insecticides inhibited or killed bacteria, fungi, and the seed-corn maggot, some of the treatments severely injured the seed pieces. Interestingly, the reductions in stand caused by streptomycin seed soaks reduced the stands much less if the soak was used in combination with captan or dieldrin. In other tests, Duncan and Gallegly (8) found that stands were not reduced when aldrin, phorate, or disulfoton were used in combination with Agrimycin 100® (streptomycin sulfate) or with captan. Although Duncan and Gallegly (8) were testing the insecticides for control of the seed-corn maggot, the insect was not sufficiently abundant to be considered during the tests.


**Materials, Methods, and Results**

**Experiment 1, 1963.** Experiment 1 was made near Othello, Washington, in a corner of a field of Russet Burbank potatoes that was being severely damaged by the seed-corn maggot and seed piece decay. This field had been planted to potatoes in 1962, but the barnyard grass, *Echinochloa crusgalli* (L.) (Beauv.), got out of hand, and the field was abandoned before harvest. In late autumn that year, the grower plowed down the heavy grass and remnants of crop and irrigated heavily to hasten their decomposition. Then the next spring, he planted the potatoes during an unusually cool, rainy period ending April 23, 1963. The mechanically cut seed potatoes, treated with 0.75 lb dichlone in dust form, were hauled to the field in burlap bags, but showers interrupted the planting for periods lasting as much as several hours to 1 day, and during this time, a slimy coating developed on some lots of the cut seed. A check of the plant stand made May 14 showed only 66% normal stand, and an examination of the seed pieces in the missing hills revealed as many as 12 seed-corn maggots per seed piece. About 5% of the insects had pupated.

Since the grower planned to replant potatoes that year, we obtained permission to use a corner of the field for tests even though the weather had moderated and conditions for growing a good crop of potatoes had improved. The hilled rows and old seed pieces from the early planting were not disturbed in our corner. On May 23, we planted new, treated Red