

STATUS AND CONTROL OF THE CORN STEM WEEVIL IN THE FLORIDA EVERGLADES¹

M. J. JANES AND W. G. GENUNG²

University of Florida, Everglades Experiment Station, Belle Glade 33430

ABSTRACT

The corn stem weevil, *Hyperodes humilis* (Gyllenhal), has been a pest of sweet corn in the Florida Everglades since 1959. The combination of soil applied insecticides for wireworm control and aerial sprays for budworms may keep this insect in check. In recent tests the most effective experimentally applied insecticides for controlling this pest were Furadan® (2,3-dihydro-2, 2-dimethyl-7-benzofuranyl methylcarbamate), Azodrin® (dimethyl phosphate ester with *cis* 3-hydroxy-N-methylcrotonamide), GC 6506, (dimethyl p-[methylthio] phenyl phosphate), and the following combinations: azinphosmethyl+DDT, toxaphene+DDT, parathion+methyl parathion, and diazinon+DDT.

The corn stem weevil, *Hyperodes humilis* (Gyllenhal), was first reported attacking cultivated crops by Harris (1960) who described and illustrated the injury and life stages. In 1959 he found larvae mining the lower stems of young sweet corn plants in the Everglades, producing stunting, withering, or break-over. Some damage also resulted from egg punctures and adult feeding. Most injury occurred in the region of the soil line during the first five weeks in the growth of the corn.

STATUS AS A SWEET CORN PEST:—Normally the corn stem weevil infests 50% or more of young sweet corn plants, severely injuring about 1/3 of these. During the cropping season, which extends from September to June, the weevils are most abundant during late spring and on into late fall. Chemicals used in the control of other pests reduce the incidence of this insect so that under a full pesticide program special treatments for the corn stem weevil often are unnecessary. However, the abundance of these insects varies and in some years substantial losses may occur in fields receiving customary insecticide applications. Harris and Orsenigo (1961) attributed reduced corn stem weevil populations in sweet corn plots treated with preemergence herbicides to discouragement of oviposition. Harris (1960) found DDT and azinphosmethyl most effective for control of the corn stem weevil in applications made at 4 day intervals for approximately 1 month beginning on the day of seedling emergence. Later Harris (1961, 1962) reported control of the weevil with DDT and parathion.

In the present tests it was found that preemergence soil applied chemicals for wireworm control combined with foliage insecticides for budworm often hold the insects in check. During heavy infestation additional treatments must be made specifically against the weevil. Assessing the effectiveness of these materials has been the objective of the present tests.

CHEMICAL CONTROL.—Insecticides of the type used to control budworms in sweet corn were evaluated for control of the corn stem weevil during the fall of 1966 and 1967. The insecticides were evaluated in field plot tests

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²Assistant Entomologist and Associate Entomologist, respectively.

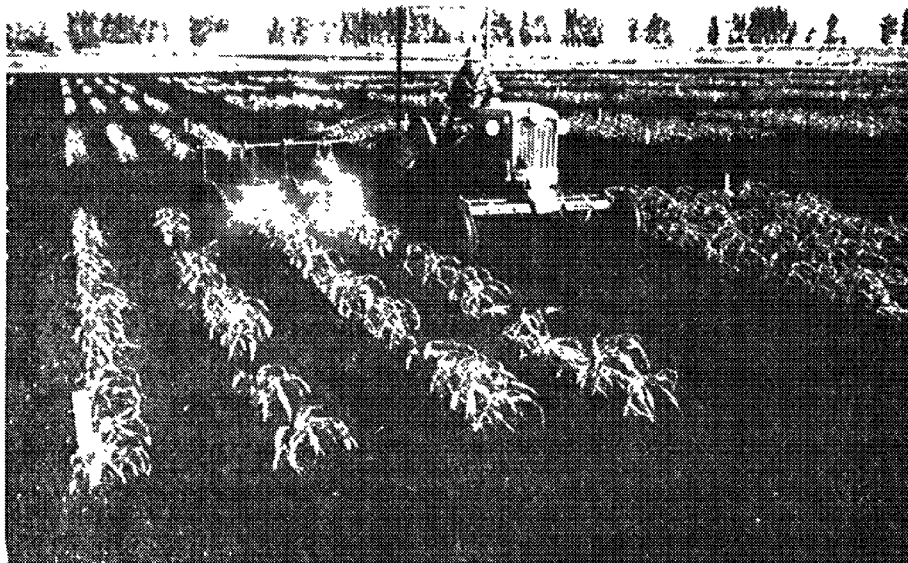


Fig. 1. Sweet corn of the stage of growth attacked by the corn stem weevil, and showing plot arrangement.

using randomized complete blocks, with 5 replications. Each plot was 4 rows, 25 ft long and surrounded on all sides by an alleyway (Fig. 1). Spray applications were made twice weekly.

TABLE 1. CONTROL OF THE CORN STEM WEEVIL, *Hyperodes humilis* (GYLLENHAL), ON SWEET CORN AT EVERGLADES STATION, EARLY FALL 1966.

Insecticide & Formulation	Lb. actual insecticide per acre	% injury free plants*
Azinphosmethyl (2E) + DDT (2E)	0.5+1.0	88 a
GC 6506 (4E)	0.5	87 a
Toxaphene (6E) + DDT (2E)	1.0+2.0	81 a
Azinphosmethyl (2E)	0.5	70 b
Thuricide® 90TS**	1 qt.	69 b
Toxaphene (6E) + TDE (2E)	2.0+1.0	63 bc
Stauffer R-3422-s† (4E)	0.5	61 bc
Trichlorfon (80 WP)	3.0	61 bc
Check	—	52 cd
TDE (50 WP)	2.0	46 d

* Means followed by the same letter are not significantly different at the 5% level using Duncan's multiple range test.

** Thuricide 90TS, 15 billion spores/g.

† Ethyl (2-mercaptoethyl) carbamate, O,O-diethyl phosphorothioate.

TABLE 2. CONTROL OF THE CORN STEM WEEVIL *Hyperodes humilis* (GYLLENHAL), ON SWEET CORN AT EVERGLADES STATION, LATE FALL 1966.

Insecticide & Formulation	Lb. actual insecticide per acre	% injury free plants*
GC506 (4E)	0.5	100 a
Furadan® (50 WP)	0.5	100 a
Azinphosmethyl (2E) + DDT (2E)	0.5 + 1.0	99 a
Azodrin® (3.2 E)	0.5	97 ab
Toxaphene (6E) + DDT (2E)	1.0 + 0.5	97 ab
Toxaphene (6E) + DDT (2E) + methyl parathion (4E)	1.0 + 0.5 + 0.25	96 ab
Stauffer N-4543** (2E)	0.5	95 ab
Gardona®† (75 WP)	0.75	91 ab
Carbaryl (50 WP)	1.25	88 b
Check	—	75 c

* Means followed by the same letter are not significantly different at the 5% level using Duncan's multiple range test.

** *O*-isopropyl *s*-(phthalimidomethyl)ethyl phosphonodithioate.

† 2-chloro 1-(2,4,5-trichlorophenyl)vinyl dimethyl phosphate.

TABLE 3. CONTROL OF THE CORN STEM WEEVIL, *Hyperodes humilis* (GYLLENHAL), ON SWEET CORN AT EVERGLADES STATION, FALL 1967.

Insecticide & Formulation	Lb. actual insecticide per acre	% injury free plants*
Furadan® (10 G)	2.0**	94 a
Parathion (6E) & methyl parathion (3E)	0.34 + 0.16	89 ab
Diazinon (4E) + DDT (2E)	0.75 + 0.5	88 ab
Azodrin® (3.2E)	0.5	86 ab
Azodrin® (3.2E)	0.5†	84 bc
Carbaryl (2E)	1.5	84 bc
Diazinon (4E) + carbaryl (2E)	0.75 + 0.5	81 bc
Thuricide®‡ + m-parathion (4E)	1 qt. + 0.25	81 bc
Furadan® (10 G)	1.0**	77 c
Check	—	69 d

* Means followed by the same letter are not significantly different at the 5% level using Duncan's multiple range test.

** Placed in band and incorporated in soil with seed at time of planting.

† Contained wetting agent S - Allied Chemical - 4oz./100 gal. water.

‡ Thuricide SS, 15 billion spores/gram.

In the early fall 1966 test, when the infestation was fairly heavy, azinphosmethyl+DDT, GC 6506 (dimethyl p-[methylthio] phenyl phosphate), and toxaphene+DDT produced the greatest percentage of injury free plants (Table 1). Several other materials tested were considerably less effective. In the late fall 1966 test, with a light population, most of the nine materials were highly effective (Table 2). In 1967 Furadan® (2, 3-di-

hydro-2, 2-dimethyl-7-benzofuranyl methylcarbamate), parathion+methyl parathion, diazinon+DDT, and Azodrin® (dimethyl phosphate ester with *cis* 3-hydroxy-N-methylcrotonamide) were the most effective materials, although carbaryl, diazinon+DDT, and Thuricide® (*Bacillus thuringiensis* Berliner)+methyl parathion also gave good results.

It is interesting to note that classes of compounds other than chlorinated hydrocarbons are showing effectiveness against the corn stem weevil.

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