



# Granulate Cutworm: Evaluation of Insecticides for Control

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**T**HE GRANULATE CUTWORM, *Feltia subterranea* (Fabricius), has been considered an economic pest of peanuts in the Alabama-Georgia-Florida area for many years. This cutworm damages peanuts by feeding on the foliage, primarily at night. During the day the larvae usually stay beneath dead foliage under the peanut plants or just underneath the soil surface. Five generations occur in southern Alabama, but only three are present during the peanut growing season. Cutworm populations in peanuts peak in late June, late July, and again in late August. The

**Different stages of the granulate cutworm are shown in the title illustrations (counter clockwise, beginning top right): Egg mass, larva, rolled-up larva, pupa, and adult.**

August generation peak is usually the most noticeable and the most damaging.

Lee and Bass<sup>1</sup> reported good control of this insect in 1970 with monocrotophos sprays at 1 pound active ingredient per acre and with trichlorfon and temephos

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<sup>1</sup>LEE, B. LAMAR AND MAX H. BASS. 1970. Controlling Granulate Cutworms in Peanuts. Auburn Univ. (Ala.) Agr. Exp. Sta. Highlights of Agricultural Research 17(2):5.

<sup>2</sup>MORGAN, L. W. AND J. C. FRENCH. 1971. Granulate Cutworm Control in Peanuts in Georgia. J. Econ. Entomol. 64:937-939.

baits at 1 pound per acre. In 1971 Morgan and French<sup>2</sup> reported good control of the granulate cutworm in Georgia with baits containing temephos, monocrotophos, chlorpyrifos, fonofos, trichlorfon, methomyl, and methamidophos.

The following tests were conducted to obtain current information on the chemical control of granulate cutworm.

## EXPERIMENTAL PROCEDURES

Experiments were carried out on private farms in Geneva and Henry counties, Alabama, to screen insecticidal compounds against granulate cutworm populations in peanuts. Treatments were replicated four times and each replication was randomized. Insecticides were applied to plots which were four rows wide (36-inch rows) and 37 feet long (0.01 acre). Sprays were applied using a CO<sub>2</sub> pressurized sprayer calibrated to deliver 10 gallons of mixed spray per acre. Baits and granules were weighed and distributed by hand down the center of each row in a band approximately 12 inches wide.

Insecticides tested included trichlorfon (Dylox<sup>®</sup> or Proxol<sup>®</sup>), methomyl (Lanate<sup>®</sup> or Nudrin<sup>®</sup>), temephos (Bithion<sup>®</sup>), carbaryl (Sevin<sup>®</sup>), Sevimol<sup>®</sup> (a carbaryl and molasses mixture), chlorpyrifos (Lorsban<sup>®</sup>), leptophos (Phosvel<sup>®</sup>), methamidophos (Monitor<sup>®</sup>), monocrotophos (Azodrin<sup>®</sup>), acephate (Orthene<sup>®</sup>), mexacarbate (Zectran<sup>®</sup>), Stauffer 2596, ethoprop (Mocap<sup>®</sup>), fonofos (Dyfonate<sup>®</sup>), and SN-316. Rates and formulations are presented in tables 1 through 4. All application rates are given as amount of active ingredient per acre.

Live cutworm counts were made about 36 hours after treatment. Counts were conducted between midnight and 5:00 a.m., since previous research had indicated that this insect is most active and most easily counted during this period. Counts were made by randomly selecting 3 feet of row on one of the middle two rows, vigorously shaking the plants, rolling the peanuts back from the middle toward the row, and searching under the

foliage with the aid of a flashlight. This was repeated four times in each plot so that a total of 12 row feet was sampled per plot.

The average number of live cutworm larvae per 3 row feet, 36 hours after treatment, and the average percent control for each treatment are presented in tables 1 through 4. Statistical differences in mean numbers of live larvae per 3 row feet per treatment were determined by the use of Duncan's (new) multiple range test at the .05 level.

## RESULTS

In test 1, plots treated with trichlorfon 5 percent bait at 1 pound per acre, methomyl 1 percent bait at 0.5 pound, and temephos 2 percent bait at 1 pound had significantly fewer live cutworm larvae than plots treated in any other way, table 1. Percent control afforded by these treatments (98, 96, and 94, respectively) was statistically equal. Methomyl 2 percent and 5 percent bait at 0.5 pound per acre and temephos 2 percent bait at 0.5 pound provided acceptable control (about 89 percent in all cases). Other materials tested did not provide acceptable (80 percent or better) control.

In test 2, plots treated with temephos 2 percent bait or methomyl 1 percent bait at 0.5 pound per acre or trichlorfon 5 per-

TABLE 1. NUMBER OF LIVE GRANULATE CUTWORM LARVAE PER 3 ROW FEET AND PERCENT CONTROL 36 HOURS AFTER INSECTICIDAL TREATMENT, TEST 1, GENEVA COUNTY, ALABAMA, AUGUST

Insecticide, active ingredient/acre	No. live larvae <sup>1</sup>	Percent control
Trichlorfon 5% bait, 1 lb.	0.8a <sup>2</sup>	97.9
Methomyl 1% bait, 0.5 lb.	1.4a	96.2
Temephos 2% bait, 1 lb.	2.1a	94.0
Methomyl 2% bait, 0.5 lb.	3.6b	89.9
Temephos 2% bait, 0.5 lb.	3.9b	89.2
Methomyl 5% bait, 0.5 lb.	4.0b	88.1
Trichlorfon 80SP, 1 lb. . .	16.0c	55.2
Trichlorfon 4EC, 1 lb. . . .	18.0c	49.6
Check . . . . .	35.8d	—

<sup>1</sup>Average number of live cutworms per 3-foot sample. Four samples were taken per replicate and each treatment was replicated four times.

<sup>2</sup>Means which share a common letter are not significantly different at the .05 level.

TABLE 2. NUMBER OF LIVE GRANULATE CUTWORM LARVAE PER 3 ROW FEET AND PERCENT CONTROL 36 HOURS AFTER TREATMENT, TEST 2, HENRY COUNTY, ALABAMA, AUGUST

Insecticide, active ingredient/acre	No. live larvae <sup>1</sup>	Percent control
Temephos 2% bait, 0.5 lb.	1.8a <sup>2</sup>	90.4
Methomyl 1% bait, 0.5 lb.	2.0a	89.3
Trichlorfon 5% bait, 1 lb.	2.1a	88.3
Carbaryl 5% bait, 1 lb. . .	3.0b	83.6
Methomyl 3L, 0.5 lb. . . . .	3.8b	79.4
Methomyl 90WP, 0.5 lb. . .	3.8b	79.4
Sevimol <sup>®</sup> 4, 1.5 lb. . . . .	5.1c	71.9
Sevimol <sup>®</sup> 2, 1.5 lb. . . . .	5.9c	67.8
Carbaryl 80S, 1.5 lb. . . . .	9.2d	49.3
Check . . . . .	18.2e	—

<sup>1</sup>Average number of live cutworms per 3-foot sample. Four samples were taken per replicate and each treatment was replicated four times.

<sup>2</sup>Means which share a common letter are not significantly different at the .05 level.

cent bait at 1 pound had significantly greater larval population reductions than any other treatments, table 2. These treatments were statistically equal to each other and all afforded 88 to 90 percent control. Carbaryl 5 percent bait also provided acceptable (80 percent or better) control. No other treatment resulted in control as high as 80 percent.

The only non-baits that provided acceptable control in this series of tests were

TABLE 3. NUMBER OF LIVE GRANULATE CUTWORM LARVAE PER 3 ROW FEET AND PERCENT CONTROL 36 HOURS AFTER TREATMENT, TEST 3, HENRY COUNTY, ALABAMA, AUGUST

Insecticide, active ingredient/acre	No. live larvae <sup>1</sup>	Percent control
Chlorpyrifos 4EC, 0.75 lb.	0.8a <sup>2</sup>	90.2
Temephos 2% bait, 0.33 lb. . . . .	.8a	90.2
Methomyl 1% bait, 0.5 lb.	.9ab	88.5
Trichlorfon 5% bait, 1 lb.	1.0ab	86.9
Leptophos 3EC, 1 lb. . . . .	1.0ab	86.9
Carbaryl 5% bait, 1 lb. . .	1.1ab	85.2
Methamidophos 4EC, 1 lb.	1.4abc	82.0
Monocrotophos 5EC, 1 lb.	1.4abc	82.0
Acephate 5% bait, 0.75 lb.	1.6bc	78.7
Sevimol <sup>®</sup> 4, 1.5 lb. . . . .	2.6cd	65.6
Mexacarbate 2EC, 0.75 lb.	2.9cd	62.3
Acephate 75S, 0.75 lb. . . .	3.5cd	54.1
Check . . . . .	7.6d	—

<sup>1</sup>Average number of live cutworms per 3-foot sample. Four samples were taken per replicate and each treatment was replicated four times.

<sup>2</sup>Means which share a common letter are not significantly different at the .05 level.

TABLE 4. NUMBER OF LIVE GRANULATE CUTWORM LARVAE PER 3 ROW FEET AND PERCENT CONTROL 36 HOURS AFTER TREATMENT, TEST 4, HENRY COUNTY, ALABAMA, AUGUST

Insecticide, active ingredient/acre	No. live larvae <sup>1</sup>	Percent control
Methomyl 2% bait, 0.5 lb.	2.1a <sup>2</sup>	92.6
Trichlorfon 5% bait, 1 lb.	2.5a	91.3
Temephos 2% bait, 0.5 lb.	3.5a	87.8
Stauffer 2596 4% bait, 4 lb. . . . .	3.5a	87.8
Carbaryl 5% bait, 1 lb. . . .	4.0a	86.0
Ethoprop 10G, 1 lb. . . . .	18.0b	37.1
Fonofos 4% bait, 4 lb. . . . .	21.2bc	25.8
SN-316 10G, 2 lb. . . . .	26.5c	7.4
Check . . . . .	28.6c	—

<sup>1</sup>Average number of live cutworms per 3-foot sample. Four samples were taken per replicate and each treatment was replicated four times.

<sup>2</sup>Means which share a common letter are not significantly different at the .05 level.

used in test 3, table 3. These were chlorpyrifos 4EC at 0.75 pound per acre (90 percent control), leptophos 3EC at 1 pound (87 percent control), methamidophos 4EC at 1 pound (82 percent control), and monocrotophos 5EC at 1 pound per acre (82 percent control). The effectiveness of these four sprays was statistically equal to or better than the baits used in this test (trichlorfon, methomyl, temephos, carbaryl, and acephate). No other materials used in this test provided acceptable population reductions.

Plots treated with methomyl, trichlorfon, temephos, Stauffer 2596, or carbaryl baits in test 4, at rates indicated in table 4, produced statistically equal larval cutworm population reductions. These reductions ranged from 86 to 93 percent. No other material used in this test afforded acceptable control.

## SUMMARY

The application of trichlorfon, methomyl, carbaryl, and temephos baits at indicated rates provided acceptable population reductions in several tests. Stauffer 2596 bait was used in only one test but performed acceptably. In one test the application of chlorpyrifos, leptophos, methamidophos, and monocrotophos sprays at rates given in table 3 provided acceptable control.

*Information contained herein is available to all without regard to race, color, or national origin.*