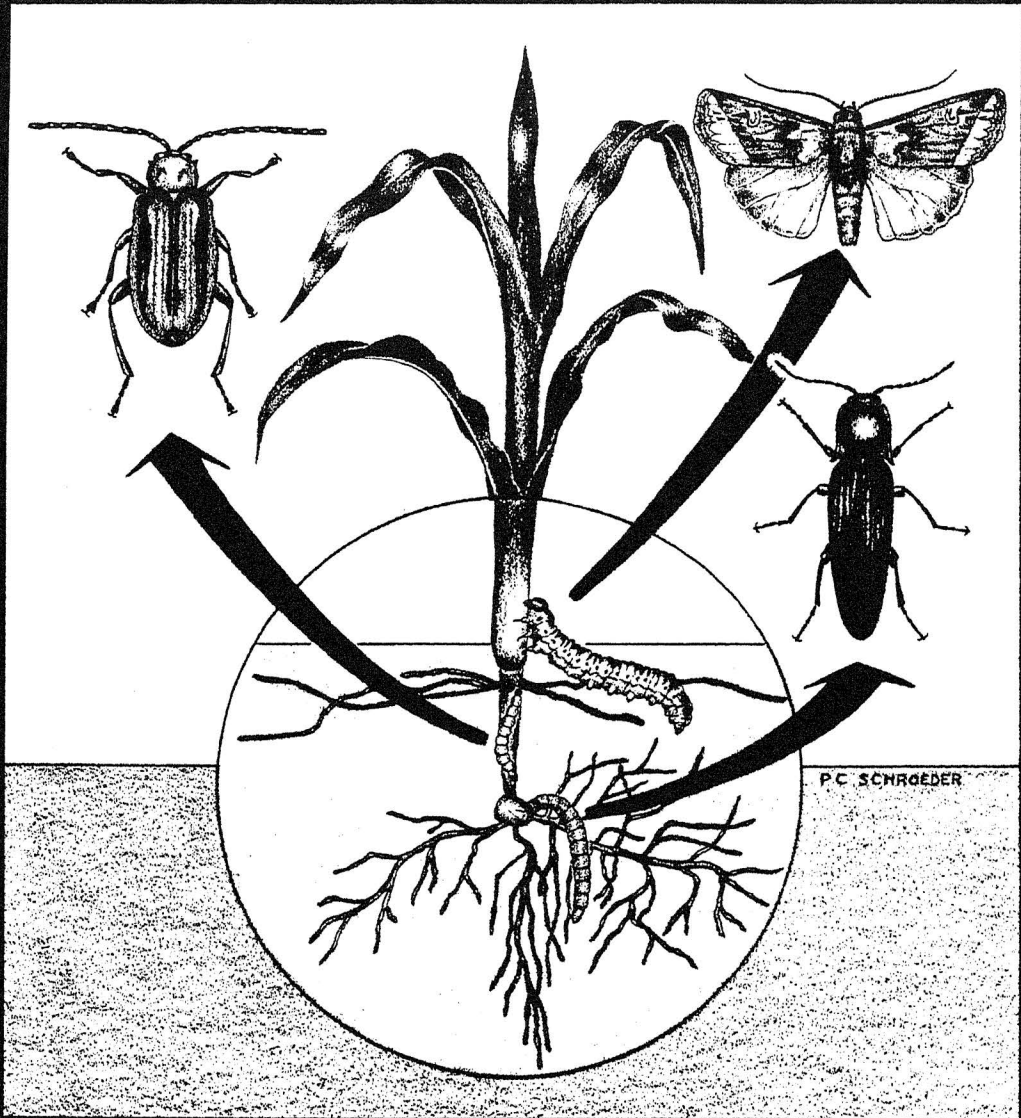


# Corn Soil Insects Research

## 1986 Insecticide Evaluations



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CORN SOIL INSECTS RESEARCH  
1986 INSECTICIDE EVALUATIONS

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Soil insecticide evaluations are conducted to compare the relative efficacy of labeled and experimental compounds for control of corn soil insect pests. This report contains data on the efficacy of these compounds for control of western and northern corn rootworms (Diabrotica virgifera LeConte and D. longicornis (Say)), black cutworm (Agrotis ipsilon (Hufnagel)), and wireworms (Melanotus spp.).

This report and the data contained within are presented for purposes of information only to agribusiness industries and to University of Missouri extension and research personnel. The data do not reflect nor constitute a recommendation of specific compounds. The 10-year comparisons of performance for rootworm compounds do, however, provide a basis for comparison of efficacy for control over a period of time. The five-year comparison for cutworm control was discontinued because valid comparisons of insecticide efficacy cannot be made unless all compounds occur within the same test. Economic and labor constraints do not permit us to provide this service. For specific recommendations for control of corn soil insects, see UMC Agricultural Guides 4150 (Corn Cutworm Control), 4151 (Corn Rootworm Control), 4154 (Control of Wireworm and Other Corn Soil Insects) and 4906 (Soil Insect Control in Reduced Tillage Cropping Systems).

CORN SOIL INSECTS RESEARCH  
1986

ROOTWORM INSECTICIDE EVALUATIONS

Rootworm Insecticide evaluations were conducted at two locations: near Fairfax in Atchison County and at the University of Missouri Greenley Research Center in Novelty, Knox County. The plots near Fairfax were located in a corner of a 100-acre field planted to corn in 1984 and 1985. This field had an "organophosphate history" of Counter use on corn from 1981-84 and exhibited a decrease in Insecticide efficacy in 1984. Plots at the Greenley Center were part of a 7 acre block that has been in continuous corn for seven years. This location is known to have a carbamate aggressive soil but has no actual history of repeated applications of carbamate class insecticides.

A two-row John Deere model 7100 max-emerge planter with a mounted V-belt seeder was used for the 7-inch band (7" B), in-furrow (IF) and behind the press wheel (BPW) treatments. Pre-weighed insecticide granules were placed uniformly along the V-belt seeder and directed through banders or tubes to obtain the desired placement. Banded sprays were applied at 30 pounds per square inch (psi) and 11 gallons per acre (gpa) with a tractor-mounted compressed-air sprayer. Insecticides were applied to two 35-foot rows and replicated four times. A randomized complete block design was used. A 15-foot alleyway separated each replication. Cultivation treatments (cult) were applied with an International cub tractor equipped with a one row cultivator and a compressed air sprayer. The sprays were applied at 30 psi in 14 gpa.

The efficacy of the treatments within each test was determined by digging 16 plants from each treatment (2 plants per row x 2 rows per plot x 4 replications). The root systems of the plants were washed free of dirt and evaluated as follows:

- A. General Root Rating - The entire root system was taken into consideration when assigned a rating according to the amount of visible rootworm damage. The ratings were assigned as follows: 1) no feeding damage, 2) light feeding damage with no pruning, 3) occasional pruning, 4) moderate to severe pruning (one node of roots destroyed), 5) severe pruning (two nodes of roots destroyed) and 6) three nodes of roots destroyed.
- B. Damaged Root Rating - The percentage of the roots showing rootworm damage in the second and third nodes below ground level was estimated and assigned to five categories as follows: 1) no injury, 2) 1-25%, 3) 26-50%, 4) 51-75% and 5) 76-100%.



- C. Pruned Root Rating - The same root systems evaluated under A and B were rated where only the percent of the roots pruned in the second and third nodes below ground level were estimated. Ratings were as follows: 1) no pruning, 2) 1-25%, 3) 26-50%, 4) 51-75% and 5) 76-100%.
- D. Combined Analysis Rating - The combined analysis rating is the average of the pruned root rating, damaged root rating and general root rating. Only the general root rating and the combined analysis ratings are reported herein as indicators of insecticide performance.

TABLE 1. Comparison of Soil Insecticide Efficacy for Control of Western and Northern Corn Rootworm Larvae (Commercial Test), Fairfax, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	General Root Rating Means <sup>1</sup>
Dyfonate 20G	1.00	7" B	2.87 a
Thimet 20G	1.00	7" B	2.87 a
Counter 15G	1.00	IF	2.93 a
Aastar 15G	1.00	7" B	2.93 a
Lorsban 15G	1.00	7" B	3.00 a
Broot 15GX	1.00	7" B	3.00 a
Lance 15G	1.00	7" B	3.06 a
Lance 15G	0.75	7" B	3.25 ab
Mocap 15G	1.00	BPW	3.75 ab
Furadan 15G	1.00	7" B	3.93 b
Control	-	-	4.75 c

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

TABLE 2. Comparison of Soil Insecticide Efficacy for Control of Western and Northern Corn Rootworm Larvae (Commercial Test), Fairfax, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	Combined Analysis Rating Means <sup>1</sup>
Counter 15G	1.00	IF	3.08 a
Dyfonate 20G	1.00	7" B	3.10 a
Lorsban 15G	1.00	7" B	3.14 a
Broot 15GX	1.00	7" B	3.16 a
Aastar 15G	1.00	7" B	3.16 a
Thimet 20G	1.00	7" B	3.18 a
Lance 15G	1.00	7" B	3.45 ab
Lance 15G	0.75	7" B	3.52 ab
Mocap 15G	1.00	BPW	3.91 bc
Furadan 15G	1.00	7" B	4.10 c
Control	-	-	4.79 d

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

TABLE 3. Comparison of Soil Insecticide Efficacy for Control of Western and Northern Corn Rootworm Larvae (Commercial Test), Novelty, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	General Root, Rating Means <sup>1</sup>
Aastar 15G	1.00	7" B	2.75 a
Counter 15G	1.00	IF	2.93 a
Lance 15G	1.00	7" B	3.00 a
Lorsban 15G	1.00	7" B	3.00 a
Furadan 15G	1.00	7" B	3.06 ab
Lance 15G	0.75	7" B	3.12 abc
Thimet 20G	1.00	7" B	3.12 abc
Dyfonate 20G	1.00	7" B	3.25 abc
Broot 15GX	1.00	7" B	3.62 bc
Mocap 15G	1.00	BPW	3.68 c
Control	-	-	4.50 d

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

TABLE 4. Comparison of Soil Insecticide Efficacy for Control of Western and Northern Corn Rootworm Larvae (Commercial Test), Novelty, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	Combined Analysis Rating Means <sup>1</sup>
Aastar 15G	1.00	7" B	2.91 a
Counter 15G	1.00	IF	3.10 ab
Furadan 15G	1.00	7" B	3.27 abc
Thimet 20G	1.00	7" B	3.29 abcd
Lorsban 15G	1.00	7" B	3.33 abcd
Lance 15G	1.00	7" B	3.37 abcd
Lance 15G	0.75	7" B	3.43 abcd
Dyfonate 20G	1.00	7" B	3.58 bcd
Broot 15GX	1.00	7" B	3.85 cd
Mocap 15G	1.00	BPW	3.89 d
Control	-	-	4.70 e

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

TABLE 5. Comparison of Soil Insecticide Efficacy for Control of Western and Northern Corn Rootworm Larvae (Test 2), Fairfax, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	General Root Rating Means <sup>1</sup>
Counter 15G	1.00	IF	2.43 a
67825 20G	1.00	7" B	2.56 ab
67825 20G	0.75	7" B	2.68 abc
Dyfonate 20G	1.00	7" B	2.75 abcd
PP993 1.5G	0.075	7" B	2.75 abcd
PP993 1.5G	0.125	7" B	2.75 abcd
PP993 1.5G	0.100	7" B	2.81 abcd
PP993 1.5G	0.075	IF	2.93 abcd
PP993 1.5G	0.125	Cult	2.93 abcd
PP993 1.5G	0.100	IF	2.93 abcd
Dyfonate 4.6MS	1.00	Cult	3.00 abcd
Furadan 15G	1.00	7" B	3.00 abcd
Dyfonate 20G(NF)	1.00	7" B	3.06 abcd
67825 20G	1.00	Cult	3.06 abcd
67825 20G	0.75	Cult	3.06 abcd
PP993 1.5G	0.125	IF	3.18 bcd
Broot 15GX	1.00	Cult	3.18 bcd
PP993 1.5G	0.075	Cult	3.31 cd
UC27BF24 50W	1.00	Cult	3.37 d
PP993 1.5G	0.100	Cult	3.37 d
Broot 15GX	1.00	7" B	3.37 d
Dyfonate 4EC	1.00	Cult	3.37 d
UC27BF24 50W	1.00	7" B	4.12 e
Control	-	-	4.18 e
Control	-	-	4.31 e

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

TABLE 6. Comparison of Soil Insecticide Efficacy for Control of Western and Northern Corn Rootworm Larvae (Test 2), Fairfax, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	Combined Analysis Rating Means <sup>1</sup>
Counter 15G	1.00	IF	2.75 a
67825 20G	0.75	7" B	2.85 ab
67825 20G	1.00	7" B	2.89 abc
PP993 1.5G	0.125	7" B	2.91 abc
Dyfonate 20G	1.00	7" B	3.02 abc
PP993 1.5G	0.100	7" B	3.02 abc
PP993 1.5G	0.125	Cult	3.16 abcd
PP993 1.5G	0.100	IF	3.18 abcd
PP993 1.5G	0.075	7" B	3.20 abcd
PP993 1.5G	0.075	IF	3.22 abcd
Dyfonate 20G(NF)	1.00	7" B	3.27 abcd
67825 20G	0.75	Cult	3.29 abcd
Broot 15GX	1.00	Cult	3.33 abcde
Dyfonate 4.6MS	1.00	Cult	3.39 bcde
Furadan 15G	1.00	7" B	3.50 cde
67825 20G	1.00	Cult	3.52 cde
PP993 1.5G	0.125	IF	3.52 cde
Dyfonate 4EC	1.00	Cult	3.68 def
UC27BF24 50W	1.00	Cult	3.72 def
PP993 1.5G	0.075	Cult	3.72 def
PP993 1.5G	0.100	Cult	3.79 defg
Broot 15GX	1.00	7" B	3.93 efg
UC27BF24 50W	1.00	7" B	4.22 fgh
Control	-	-	4.35 gh
Control	-	-	4.64 h

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.



TABLE 7. Comparison of Soil Insecticide Efficacy for Control of Western and Northern Corn Rootworm Larvae (Test 2), Novelty, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	General Root <sup>1</sup> Rating Means
Counter 15G	1.00	IF	2.81 a
67825 20G	1.00	7"B	2.81 a
PP993 1.5G	0.075	IF	2.87 a
67825 20G	0.75	7"B	2.87 a
PP993 1.5G	0.100	IF	2.93 a
PP993 1.5G	0.125	IF	2.93 a
PP993 1.5G	0.100	7"B	3.00 a
PP993 1.5G	0.125	7"B	3.00 a
Dyfonate 20G(NF)	1.00	7"B	3.00 a
Dyfonate 20G	1.00	7"B	3.00 a
67825 20G	0.75	Cult	3.06 a
PP993 1.5G	0.100	Cult	3.12 a
PP993 1.5G	0.075	7"B	3.12 a
Broot 15GX	1.00	Cult	3.12 a
PP993 1.5G	0.075	Cult	3.18 ab
67825 20G	1.00	Cult	3.25 ab
Furadan 15G	1.00	7"B	3.31 ab
PP993 1.5G	0.125	Cult	3.56 abc
UC27BF24 50W	1.00	Cult	3.56 abc
Broot 15GX	1.00	7"B	3.87 bcd
Control	-	-	4.12 cd
Dyfonate 4.6MS	1.00	Cult	4.31 de
Dyfonate 4EC	1.00	Cult	4.37 de
UC27BF24 50W	1.00	7"B	4.81 e
Control	-	-	4.93 e

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

TABLE 8. Comparison of Soil Insecticide Efficacy for Control of Western and Northern Corn Rootworm Larvae (Test 2), Novelty, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	Combined Analysis Rating Means <sup>1</sup>
Counter 15G	1.00	IF	2.93 a
67825 20G	0.75	7"B	2.93 a
PP993 1.5G	0.125	IF	2.93 a
67825 20G	1.00	7"B	3.04 ab
PP993 1.5G	0.100	IF	3.04 ab
PP993 1.5G	0.075	IF	3.10 ab
PP993 1.5G	0.125	7"B	3.14 ab
PP993 1.5G	0.100	7"B	3.22 abc
Dyfonate 20G	1.00	7"B	3.22 abc
PP993 1.5G	0.075	7"B	3.33 abc
Dyfonate 20G(NF)	1.00	7"B	3.35 abc
67825 20G	0.75	Cult	3.37 abc
PP993 1.5G	0.100	Cult	3.41 abc
Broot 15GX	1.00	Cult	3.50 abc
67825 20G	1.00	Cult	3.50 abc
Furadan 15G	1.00	7"B	3.60 bcd
PP993 1.5G	0.075	Cult	3.62 bcd
PP993 1.5G	0.125	Cult	3.79 cde
UC27BF24 50W	1.00	Cult	3.81 cde
Broot 15GX	1.00	7"B	4.16 def
Control	-	-	4.31 efg
Dyfonate 4.6MS	1.00	Cult	4.45 fg
Dyfonate 4EC	1.00	Cult	4.62 fg
UC27BF24 50W	1.00	7"B	4.79 g
Control	-	-	4.85 g

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

TABLE 9. Comparison of Soil Insecticide Efficacy for Control of Western and Northern Corn Rootworm Larvae (Test 3), Fairfax, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	General Root Rating Means <sup>1</sup>
UBI-B8451 15G	1.00	7" B	2.68 a
CGA-12223 20G	0.50	IF	2.93 ab
CGA-12223 10G	0.50	Cult	3.06 abc
CME-16003 5G	1.00	7" B	3.06 abc
CGA-12223 10G	0.50	IF	3.06 abc
CGA-12223 10G	0.50	7" B	3.12 abc
Counter 15G	1.00	IF	3.12 abc
Lorsban 15G	1.00	7" B	3.12 abc
CGA-12223 20G	0.50	7" B	3.37 abc
EL-499 10G	0.25	BPW	3.43 abc
EL-499 10G	0.50	BPW	3.50 abcd
Furadan 15G	1.00	7" B	3.75 bcde
EL-499 10G	0.38	BPW	3.81 bcde
Lorsban 50W	1.00	PPI	3.87 bcde
Lorsban 4E	1.00	PPI	3.87 bcde
CME-16003 5G	0.50	7" B	4.00 cdef
UBI-A920 15G	1.00	7" B	4.06 cdef
Lorsban 50W	2.00	PPI	4.43 def
Lorsban 4E	2.00	PPI	4.50 ef
Control	-	-	4.87 f

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

TABLE 10. Comparison of Soil Insecticide Efficacy for Control of Western and Northern Corn Rootworm Larvae (Test 3), Fairfax, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	Combined Analysis Rating Means <sup>1</sup>
UBI-B8451 15G	1.00	7" B	2.87 a
CGA-12223 20G	0.50	IF	3.06 ab
CBA-12223 10G	0.50	Cult	3.20 abc
Lorsban 15G	1.00	7" B	3.29 abcd
CGA-12223 10G	0.50	7" B	3.35 abcd
CME-16003 5G	1.00	7" B	3.35 abcd
Counter 15G	1.00	IF	3.37 abcd
CGA-12223 10G	0.50	IF	3.47 abcde
CGA-12223 20G	0.50	7" B	3.70 abcdef
EL-499 10G	0.25	BPW	3.83 bcdefg
EL-499 10G	0.50	BPW	3.87 bcdefg
EL-499 10G	0.38	BPW	4.06 cdefgh
Furadan 15G	1.00	7" B	4.12 defghi
Lorsban 50W	1.00	PPI	4.29 efghi
Lorsban 15G	1.00	PPI	4.29 efghi
UBI-A920 15G	1.00	7" B	4.35 fghi
CME-16003 5G	0.50	7" B	4.37 fghi
Lorsban 4E	2.00	PPI	4.58 ghi
Lorsban 50W	2.00	PPI	4.72 hi
Control	-	-	4.91 i

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

TABLE 11. Comparison of Soil Insecticide Efficacy for Control of Western and Northern Corn Rootworm Larvae (Test 3), Novelty, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	General Root Rating Means <sup>1</sup>
UBI-B8451 15G	1.00	7" B	2.43 a
Counter 15G	1.00	IF	2.68 ab
CGA-12223 10G	0.50	IF	2.87 abc
Lorsban 15G	1.00	7" B	2.87 abc
Furadan 15G	1.00	7" B	2.93 abc
CGA-12223 10G	0.50	7" B	3.00 abc
CGA-12223 20G	0.50	IF	3.00 abc
CME-16003 5G	1.00	7" B	3.06 abc
CGA-12223 20G	0.50	7" B	3.18 abc
UBI-A920 15G	1.00	7" B	3.31 bc
CME-16003 5G	0.50	7" B	3.56 cd
EL-499 10G	0.38	BPW	3.62 cd
EL-499 10G	0.50	BPW	3.68 cd
EL-499 10G	0.25	BPW	4.12 d
Lorsban 4E	1.00	PPI	4.18 d
Lorsban 50W	2.00	PPI	4.25 d
Lorsban 50W	1.00	PPI	4.31 d
Control	-	-	4.37 d
CGA-12223 10G	0.50	Cult	4.37 d
Lorsban 4E	2.00	PPI	5.25 e

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

TABLE 12. Comparison of Soil Insecticide Efficacy for Control of Western and Northern Corn Rootworm Larvae (Test 3), Novelty, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	Combined Analysis Rating Means <sup>1</sup>
UBI-B8451 15G	1.00	7" B	2.70 a
Counter 15G	1.00	IF	2.89 ab
Lorsban 15G	1.00	7" B	3.14 abc
CGA-12223 10G	0.50	7" B	3.18 abcd
CGA-12223 20G	0.50	IF	3.20 abcde
CGA-12223 10G	0.50	IF	3.22 abcde
Furadan 15G	1.00	7" B	3.22 abcde
CGA-12223 20G	0.50	7" B	3.43 bcdef
CME-16003 5G	1.00	7" B	3.50 bcdef
UBI-A920 15G	1.00	7" B	3.58 cdef
EL-499 10G	0.38	BPW	3.83 defg
CME-16003 5G	0.50	7" B	3.85 efg
EL-499 10G	0.50	BPW	3.91 fgh
Lorsban 4E	1.00	PPI	4.35 ghi
EL-499 10G	0.25	BPW	4.37 ghi
Lorsban 50W	2.00	PPI	4.45 ghij
Control	-	-	4.54 hij
Lorsban 50W	1.00	PPI	4.56 ij
CGA-12223 20G	0.50	Cult	4.58 ij
Lorsban 4E	2.00	PPI	5.04 j

<sup>1</sup> Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

TABLE 13. Comparison of Soil Insecticide Efficacy for Control of Western and Northern Corn Rootworm Larvae (Test 4), Fairfax, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	General Root Rating Means <sup>1</sup>
SC-0567 10G	1.00	IF	2.68 a
SD 208304 15G	0.50	IF	2.68 a
Counter 15G	1.00	7" B	2.75 ab
Counter 15G	1.00	IF	2.75 ab
SD 208304 15G	0.80	7" B	2.81 abc
SD 208304 15G	0.35	IF	2.87 abc
SC-0567 10G	1.00	7" B	2.93 abc
Lorsban 15G	1.00	7" B	3.00 abc
SD 208304 15G	0.50	7" B	3.00 abc
SC-0567 10G	0.50	IF	3.00 abc
SD 208304 15G	0.35	7" B	3.06 abc
SC-0567 10G	0.25	7" B	3.12 abcd
Dyfonate 20G	1.00	7" B	3.18 bcd
SC-0567 10G	0.25	IF	3.25 cd
SC-0567 10G	0.50	7" B	3.56 d
Control	-	-	5.75 e

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.



TABLE 14. Comparison of Soil Insecticide Efficacy for Control of Western and Northern Corn Rootworm Larvae (Test 4), Fairfax, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	Combined Analysis Rating Means <sup>1</sup>
Counter 15G	1.00	7" B	2.89 a
SC-0567 10G	1.00	IF	2.91 a
SD 208304 15G	0.50	IF	2.97 a
SD 208304 15G	0.80	7" B	3.02 a
Counter 15G	1.00	IF	3.04 a
SC-0567 10G	1.00	7" B	3.04 a
SD 208304 15G	0.50	7" B	3.08 ab
SD 208304 15G	0.35	IF	3.14 abc
SD 208304 15G	0.35	7" B	3.27 abcd
Lorsban 15G	1.00	7" B	3.31 abcd
SC-0567 10G	0.50	IF	3.31 abcd
SC-0567 10G	0.25	7" B	3.50 bcd
SC-0567 10G	0.25	IF	3.56 cde
Dyfonate 20G	1.00	7" B	3.60 de
SC-0567 10G	0.50	7" B	3.95 e
Control	-	-	5.25 f

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

TABLE 15. Comparison of Soil Insecticide Efficacy for Control of Western and Northern Corn Rootworm Larvae (Test 4), Novelty, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	General Root Rating Means <sup>1</sup>
SD 208304 15G	0.50	IF	2.43 a
SD 208304 15G	0.50	7" B	2.62 ab
SD 208304 15G	0.38	IF	2.68 ab
Counter 15G	1.00	7" B	2.75 abc
SC-0567 10G	1.00	7" B	2.75 abc
Dyfonate 20G	1.00	7" B	2.75 abc
SC-0567 10G	0.50	IF	2.81 abc
Counter 15G	1.00	IF	2.81 abc
SC-0567 10G	0.25	IF	2.87 abc
SC-0567 10G	0.50	7" B	2.87 abc
TD-2208 15G	1.00	IF	2.87 abc
Lorsban 15G	1.00	7" B	2.87 abc
TD-2209 15G	1.00	7" B	2.93 bc
SC-0567 10G	1.00	IF	2.93 bc
SD 208304 15G	0.80	7" B	2.93 bc
TD-2209 15G	0.75	7" B	3.00 bc
TD-2208 15G	1.00	7" B	3.00 bc
TD-2209 15G	1.00	IF	3.00 bc
SD 208304 15G	0.35	7" B	3.00 bc
TD-2208 15G	0.75	7" B	3.06 bc
SC-0567 10G	0.25	7" B	3.18 c
Control	-	-	4.56 d

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

TABLE 16. Comparison of Soil Insecticide Efficacy for Control of Western and Northern Corn Rootworm Larvae (Test 4), Novelty, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	Combined Analysis Rating Means <sup>1</sup>
SD 208304 15G	0.50	7" B	2.75 a
SD 208304 15G	0.50	IF	2.79 ab
SD 208304 15G	0.35	IF	2.85 abc
SC-0567 10G	0.50	IF	2.89 abcd
Counter 15G	1.00	IF	2.93 abcd
Counter 15G	1.00	7" B	2.93 abcd
SC-0567 10G	1.00	7" B	2.95 abcde
TD-2208 15G	1.00	IF	2.97 abcde
SC-0567 10G	0.50	7" B	3.00 abcde
SC-0567 10G	1.00	IF	3.02 abcde
Dyfonate 20G	1.00	7" B	3.08 abcde
SC-0567 10G	0.25	IF	3.08 abcde
TD-2208 15G	1.00	7" B	3.08 abcde
SD 208304 15G	0.80	7" B	3.08 abcde
Lorsban 15G	1.00	7" B	3.10 abcde
TD-2208 15G	0.75	7" B	3.18 bcdef
TD-2209 15G	1.00	7" B	3.20 bcdef
SD 208304 15G	0.35	7" B	3.25 cdef
TD-2209 15G	1.00	IF	3.31 def
TD-2209 15G	0.75	7" B	3.37 ef
SC-0567 10G	0.25	7" B	3.56 f
Control	-	-	4.75 g

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

TABLE 17. Ten Year Comparison of Performance<sup>1</sup> for Recommended Insecticides Applied at 1 lb ai/A in a Seven-Inch Band at Planting

Insecticide	A 1977	A 1978	A 1979	A 1980	B 1980	A 1981	A 1982	A 1983	B 1983	A 1984	B 1984	A 1985	C 1985	A 1986	C 1986
carbofuran 10G (Furadan) 15G	3.94	3.56	2.75	3.19	2.13	3.56									
				3.75	1.88	3.75	3.44	4.00	2.06	3.25	2.19	3.19	2.31	3.06	3.93
chlorpyrifos (Lorsban) 15G		2.88	2.75	3.50	3.06	3.00	2.44	3.13	3.06	3.13	2.52	3.13	2.94	3.00	3.00
ethoprop 10G (Mocap) 15G		2.94	2.69	2.89	2.75	3.56	3.00								
				2.67	2.44			3.88	2.81	3.63	2.18	3.50	3.13	3.68	3.75
fonofos 10G (Dyfon-15G ate) 20G		2.63		3.13	2.38										
	3.25 <sup>2</sup>	2.50	2.56	3.25	2.69		2.44	2.94	2.56	2.75	2.42	2.56	2.94	3.25	2.87
phorate 15G (Thimet) 20G	3.19		2.44		2.31	2.53									
		2.38					3.50	3.00	2.94	4.50		3.13	4.25	3.12	2.87
phorate + flucythrinate Aastar 15G												3.00	3.44	2.75	2.93
terbufos 15G (Counter)	3.19	2.44	2.03	2.13	2.56	2.10	2.56	2.19	3.19	4.00	2.28	2.63	3.00	2.93	2.93
trimethacarb 15G (Broot)							3.06	3.50	2.88	3.19		3.31	2.88	3.62	3.00
CONTROL	5.50	5.06	5.06	3.97	4.03	5.55	4.00	4.63	3.06	4.56	3.75	4.00	5.13	4.50	4.75

<sup>1</sup>Based on general root rating (Iowa method 1-6)

<sup>2</sup>Mean 3 plots

A Data from field with carbamate history

B Data from field with no carbamate history

C Data from field with organophosphate history

## CUTWORM INSECTICIDE EVALUATIONS

Planting time evaluations were conducted in barrier plots on the University of Missouri-Columbia South Farms near Columbia, Boone County. Row-band treatments were applied with a V-belt seeder mounted on a two-row John Deere model 7100 max-emerge planter. Pre-weighed insecticide granules were placed uniformly along the V-belt seeder and directed through 7-inch banders to obtain the desired placement. Corn was planted in a conventional manner at the same time. Band and broadcast sprays were applied at the rate of 11 gallons of finished spray per acre at 30 psi through a tractor-mounted compressed-air sprayer. Pre-plant incorporated treatments were applied as a broadcast and incorporated with a motorized garden tiller prior to planting.

Individual plots were two 35-foot rows. Treatments were replicated three times according to a randomized complete block design. Following planting, metal barriers (8 inches in height) were driven approximately 3 inches into the soil to enclose portions of the 35-foot plots (15 feet x 2 rows). Twenty 3rd- to 5th-instar laboratory-reared black cutworm larvae were released in the barriers at seedling emergence. Efficacy of the treatments was evaluated by counting the number of plants cut on three different dates throughout the test period.

Rescue evaluations were also conducted on the South Farms. Rescue treatments were evaluated using metal barriers 8 inches in height and 6 feet in diameter placed over two rows of seedling corn. When the corn reached the two-leaf stage, each barrier was infested with 10 4th- to 5th-instar laboratory-reared black cutworms. Treatments were applied within two hours following infestation. Bait and granular treatments were hand broadcast in each individual barrier. Spray treatments were applied with a tractor-mounted compressed-air sprayer at 30 psi and 40 gallons per acre. All treatments were replicated three times in a randomized complete block design. Efficacy of treatments was measured by cut plant counts on three dates following treatments.

TABLE 18. Comparison of Registered and Experimental Insecticide Efficacy for Black Cutworm Planting Time Treatments (Test 1) in Corn, Columbia, Missouri, 1986

Insecticide	Rate (lb ai/A)	Placement	Mean % Cut Plants			
			Days Post-Infestation			Total <sup>1</sup>
			1	3	7	
F-3859 3G	0.10	7" B	1.67	14.03	2.57	18.28 a
F-6033 1.5G	0.10	7" B	2.75	7.30	9.03	19.09 a
Pounce 1.5G	0.10	7" B	0.00	16.24	4.92	21.17 ab
F-3859 3G	0.10	7" B w/c <sup>2</sup>	1.66	21.91	3.27	26.86 abc
Pounce 1.5G	0.10	7" B w/c	5.19	13.67	8.23	27.10 abc
F-6033 1.5G	0.15	7" B	1.68	18.65	9.10	29.44 abc
F-6063 1.5G	0.10	7" B	2.67	15.75	12.19	30.63 abc
F-6033 1.5G	0.30	7" B w/c	4.14	13.27	13.23	30.65 abc
F-6063 1.5G	0.10	7" B w/c	7.28	14.56	9.30	31.15 abc
F-6063 1.5G	0.15	7" B w/c	3.51	22.70	6.74	32.95 abc
F-6063 1.5G	0.15	7" B	6.43	18.98	11.29	36.71 abc
F-6033 1.5G	0.15	7" B w/c	0.95	19.89	16.05	36.90 abc
F-6063 1.5G	0.05	7" B	3.30	25.62	8.65	37.58 abc
F-6033 1.5G	0.10	7" B w/c	7.58	14.66	15.75	38.00 abc
F-6033 1.5G	0.30	7" B	11.16	19.76	7.18	38.11 abc
F-6063 1.5G	0.05	7" B w/c	6.29	25.46	9.84	41.60 bc
Control	-	-	10.01	20.22	17.47	47.71 c

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

<sup>2</sup>Applications were made with chain placed behind press wheel.

TABLE 19. Comparison of Registered and Experimental Insecticide Efficacy for Black Cutworm Planting Time Treatments (Test 2) in Corn, Columbia, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	Mean % Cut Plants			
			Days Post-Infestation			Total <sup>1</sup>
			1	3	10	
Lorsban 15G	1.0	7"B	0.79	0.87	0.00	1.67 a
AA2 10:1	1.0	7"B	2.65	0.00	0.00	2.65 a
AA2 30:1	1.0	7"B	5.05	0.00	0.83	5.89 a
Aastar 15G	1.0	7"B	2.22	5.89	1.11	9.23 a
AA2 40:1	1.0	7"B	5.14	4.10	0.00	9.24 a
AA2 20:1	1.0	7"B	2.92	5.60	1.90	10.43 a
Control	-	-	6.43	4.09	0.75	11.28 a

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.



TABLE 20. Comparison of Registered and Experimental Insecticide Efficacy for Black Cutworm Planting Time Treatments (Test 3) in Corn, Columbia, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	Mean % Cut Plants			
			Days Post-Infestation			Total <sup>1</sup>
			1	3	10	
Pounce 1.5G	0.10	7" B	0.77	0.00	0.00	0.77 a
Lorsban 15G	1.00	7" B	3.92	0.00	0.00	3.92 ab
Mocap 15G	1.00	BPW	2.37	1.70	0.00	4.07 ab
SD-208304 15G	1.00	7" B	1.80	3.65	0.00	5.45 abc
SD-208304 15G	0.80	1F	3.98	2.33	0.00	6.32 abc
CGA-12223 4E	0.50	Bd	5.63	0.79	1.58	8.02 abcd
CGA-12223 10G	0.75	7" B	6.93	0.83	0.90	8.67 abcde
SD-208304 15G	0.80	7" B	4.95	3.02	1.53	9.52 abcde
CME-16003 5G	1.00	7" B	4.91	4.76	0.00	9.67 bcde
CGA-12223 10G	0.50	7" B	5.91	3.39	0.85	10.17 bcde
SD-208304 15G	1.00	1F	6.60	5.01	0.00	11.61 bcdef
Aastar 15G	1.00	7" B	2.53	7.51	1.75	11.79 bcdef
Dyfonate 20G	1.00	7" B	5.56	6.44	0.00	12.01 bcdef
Control	-	-	4.91	6.54	1.62	13.08 cdef
UBI-A920 15G	1.00	7" B	9.10	5.60	0.75	15.46 defg
SC-0567 10G	0.50	7" B	4.12	12.33	0.00	16.46 defg
CME-16003 5G	0.50	7" B	7.58	8.93	0.00	16.51 defg
Dyfonate 20G(NF)	1.00	7" B	5.97	9.31	1.82	17.11 efg
UBI-B8451 15G	1.00	7" B	6.58	6.71	3.88	17.18 efg
CGA-12223 4E	0.75	Bd	7.14	10.98	1.61	19.74 fg
SC-0567 10G	1.00	7" B	8.18	12.67	0.00	20.85 g

<sup>1</sup> Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

TABLE 21. Comparison of Registered and Experimental Insecticide Efficacy for Black Cutworm Planting Time Treatments (Test 4) in Corn, Columbia, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	Mean % Cut Plants			
			Days Post-Infestation			Total <sup>1</sup>
			1	3	9	
PP993 1.5G	0.125	7" B	2.56	2.56	0.00	5.12 a
PP993 1.5G	0.100	7" B	4.49	2.38	0.00	6.87 ab
Pounce 1.5G	0.100	7" B	4.19	4.27	0.00	8.46 ab
PP993 1.5G	0.050	7" B	5.83	3.33	0.00	9.16 ab
Lorsban 15G	1.00	7" B	8.49	0.87	0.00	9.36 ab
PP993 1.5G	0.075	7" B	7.72	2.56	0.00	10.28 abc
Aastar 15G	1.00	7" B	5.21	5.44	0.00	10.66 abc
Baythroid 0.375G	0.0034g/m	7" B	5.92	5.92	0.00	11.85 abcd
Pounce 1.5G	0.075	7" B	9.49	3.15	1.44	14.10 abcde
Baythroid 0.375G	0.0023 g/m	7" B	9.52	4.84	0.00	14.36 abcde
Control	-	-	8.03	6.05	2.45	16.54 abcdef
Baythroid 2E	0.022	Bd	12.47	4.73	0.00	17.21 abcdef
Scout 0.3EC	0.019	7" B	11.26	6.39	0.00	17.65 abcdef
Pydrin 2.4EC	0.150	7" B	13.71	4.62	0.00	18.34 abcdef
Ambush 2E	0.150	PP1	7.97	9.76	0.83	18.57 bcdef
Pounce 3.2EC	0.100	Bd	15.62	3.07	0.75	19.45 bcdefg
Pounce 3.2EC	0.100	PP1 <sup>2</sup>	9.25	6.73	3.99	19.98 bcdefg
Lorsban 4E	1.50	PP1 <sup>2</sup>	17.69	4.58	0.79	23.07 cdefgh
Lorsban 4E	1.00	PP1 <sup>2</sup>	15.65	6.27	2.38	24.31 defgh
Pounce 3.2EC	0.200	PP1 <sup>2</sup>	23.36	1.70	1.61	26.69 efgh
Baythroid 2EC	0.033	Bd	12.09	14.11	2.24	28.44 fgh
Pounce 3.2EC	0.100	PP1	21.90	7.20	0.00	29.11 fgh
Pounce 3.2EC	0.200	PP1	17.37	13.60	0.85	31.83 gh
Scout 0.3EC	0.015	7" B	19.51	13.12	1.55	34.19 h

<sup>1</sup> Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

<sup>2</sup> Treatment applied 5 days prior to planting.

TABLE 22. Comparison of Registered and Experimental Insecticide Efficacy for Black Cutworm Rescue Treatments in Corn, Columbia, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Mean % Cut Plants			
		Days Post-Treatment			Total <sup>1</sup>
		1	3	9	
Pounce 3.2EC	0.100	0.00	0.00	0.00	0.00 a
Karate 1E	0.010	0.00	0.00	0.00	0.00 a
Ambush 2E	0.150	0.00	0.00	0.00	0.00 a
Baythroid 2E	0.012	1.66	0.00	0.00	1.66 a
CME-16002 4E	0.500	0.00	1.75	0.00	1.75 ab
Karate 1E	0.020	1.75	1.75	0.00	3.50 ab
CME-16002 4E	1.00	3.71	0.00	0.00	3.71 ab
CME-16002 4E	2.00	3.70	1.85	0.00	5.55 ab
Lorsban 4E	1.00	7.03	0.00	0.00	7.03 ab
Karate 1E	0.015	7.40	0.00	0.00	7.40 ab
CGA-12223 4E	0.750	8.96	0.00	0.00	8.96 ab
CGA-12223 4E	0.500	6.93	5.17	0.00	12.10 b
Control	-	21.62	18.39	1.85	41.87 c

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

## WIREWORM INSECTICIDE EVALUATIONS

Wireworm insecticide evaluations were conducted at two locations in 1986. The first location, near Schell City, Vernon County, was planted to sorghum in 1985 and a severe reduction in stand was observed by the farmer. The stand reduction was attributed to wireworm Melanotus species. The second location was near Shelbyville, Shelby County. According to the land owner, the field was noted to have a history of chronic wireworm problems. Severe damage to corn in 1983 occurred in an area approximately 20 acres in size with more than 50 percent stand loss. The remainder of the 90 acres suffered a loss of 5-10 percent. In 1984, evaluation plots were located in a portion of this field, with the remainder planted to soybeans. The same location was used for plots in 1985. The remainder of the field was planted to corn.

In 1986, a 5-acre area in each field was baited in early April to assess the potential for wireworm injury. An average of 4.0 and 6.34 wireworms per bait was found at Schell City and Shelbyville, respectively. Plots were placed in areas of heaviest wireworm concentration. Individual plots were two 35-foot rows and replicated four times according to a randomized complete block design. Performance of treatments was evaluated by counting the number of live and dead or injured plants in each row four weeks following planting.

The 7-inch band (7"B), in-furrow (IF) and behind the press wheel treatments (BPW) were made with a V-belt seeder mounted on a two-row John Deere model 7100 max-emerge planter. Pre-weighed insecticide granules were placed uniformly along the V-belt seeder and directed through banders or tubes to obtain the desired placement. Corn was planted in a conventional manner at the same time.

TABLE 23. Comparison of Registered and Experimental Insecticide Efficacy for Control of Wireworms in Corn, Shelbyville, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	Plant Emergence (Standcount) Mean No. Emerged Plants/35 row ft.
SD 208304 15G	1.00	7" B	62.50 a
Counter 15G	1.00	7" B	62.12 ab
PP993 1.5G	0.100	7" B	62.00 ab
F-3859 3G	0.100	IF	61.87 ab
SD 208304 15G	0.750	IF	61.62 ab
Mocap 15G	1.00	BPW	61.50 ab
F-6033 1.5G	0.300	IF	61.25 ab
67825 20G	1.00	7" B	60.87 ab
PP993 1.5G	0.125	7" B	60.75 ab
SD 208304 15G	0.750	7" B	60.75 ab
Counter 15G	1.00	IF	60.50 ab
PP993 1.5G	0.100	IF	60.00 ab
PP993 1.5G	0.125	IF	60.00 ab
SD 208304 15G	0.500	IF	59.50 ab
Aastar 15G	1.00	7" B	59.25 ab
67825 20G	0.750	7" B	58.50 ab
Furadan 15G	1.00	IF	58.12 ab
Thimet 20G	1.00	7" B	57.75 ab
F-6033 1.5G	0.150	IF	57.37 b
Control	-	-	57.37 b

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

Table 24. Comparison of Registered and Experimental Insecticide Efficacy for Control of Wireworms In Corn, Shelbyville, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	% Damaged Plants	
			Mean % <sup>1</sup> Damaged Plants (Arcsin Transformation)	% Damaged Plants
F-3859 3G	0.100	IF	0.045 a	0.40
PP993 1.5G	0.125	IF	0.046 a	0.42
Counter 15G	1.00	IF	0.055 ab	0.62
PP993 1.5G	0.100	7" B	0.063 abc	0.80
PP993 1.5G	0.125	7" B	0.068 abc	0.61
Aastar 15G	1.00	7" B	0.069 abc	0.63
Counter 15G	1.00	7" B	0.076 abc	0.80
SD 208304 15G	0.750	IF	0.095 abc	1.20
SD 208304 15G	1.00	7" B	0.098 abc	1.00
F-6063 1.5G	0.150	IF	0.113 abc	1.30
SD 208304 15G	0.500	IF	0.113 abc	1.96
PP993 1.5G	0.100	IF	0.120 abcd	1.46
Furadan 15G	1.00	IF	0.122 abcd	1.51
67825 20G	1.00	7" B	0.123 abcd	2.08
SD 208304 15G	0.750	7" B	0.126 abcd	1.64
Thimet 20G	1.00	7" B	0.129 abcd	1.73
67825 20G	0.750	7" B	0.146 bcd	2.14
Mocap 15G	1.00	BPW	0.151 cd	2.49
F-6033 1.5G	0.300	IF	0.153 cd	2.48
Control	-	-	0.208 d	4.70

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

TABLE 25. Comparison of Registered and Experimental Insecticide Efficacy for Control of Wireworms in Corn, Shelbyville, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	Live Plant Count Mean No. <sup>1</sup> Live Plants/35 row ft.
SD 208304 15G	1.00	7"B	61.87 a
F-3859 3G	0.100	IF	61.62 ab
Counter 15G	1.00	7"B	61.62 ab
PP993 1.5G	0.100	7"B	61.50 ab
SD 208304 15G	0.750	IF	60.87 ab
PP993 1.5G	0.125	7"B	60.37 ab
Counter 15G	1.00	IF	60.12 ab
Mocap 15G	1.00	BPW	60.00 ab
F-6033 1.5G	0.300	IF	59.75 ab
SD 208304 15G	0.750	7"B	59.75 ab
PP993 1.5G	0.125	IF	59.75 ab
67825 20G	1.00	7"B	59.62 ab
PP993 1.5G	0.100	IF	59.12 abc
Aastar 15G	1.00	7"B	58.87 abc
SD 208304 15G	0.500	IF	58.37 abc
67825 20G	0.750	7"B	57.25 abc
Furadan 15G	1.00	IF	57.25 bc
Thimet 20G	1.00	7"B	56.75 bc
F-6063 1.5G	0.150	IF	56.62 bc
Control	-	-	54.62 c

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

TABLE 26. Comparison of Registered and Experimental Insecticide Efficacy for Control of Wireworms in Corn, Schell City, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	Plant Emergence (Standcount) Mean No. <sup>1</sup> Emerged Plants/35 row ft.
PP993 1.5G	0.125	IF	63.50 a
SD 208304 15G	0.750	IF	62.12 ab
Control	-	-	61.50 ab
Counter 15G	1.00	7"B	61.37 ab
PP993 1.5G	0.100	IF	61.37 ab
Thimet 20G	1.00	7"B	61.12 ab
SD 208304 15G	0.750	7"B	61.12 ab
PP993 1.5G	0.125	7"B	60.75 ab
67825 20G	1.00	7"B	60.50 ab
PP993 1.5G	0.100	7"B	60.37 ab
SD 208304 15G	0.500	IF	60.00 ab
67825 20G	0.750	7"B	59.62 ab
Counter 15G	1.00	IF	59.50 ab
Furadan 15G	1.00	IF	59.37 ab
Mocap 15G	1.00	BPW	58.87 ab
SD 208304 15G	1.00	7"B	58.00 b
Aastar 15G	1.00	7"B	57.87 b

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.



Table 27. Comparison of Registered and Experimental Insecticide Efficacy for Control of Wireworms in Corn, Schell City, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	% Damaged Plants	
			Mean % <sup>1</sup> Damaged Plants (Arcsin Transformation)	% Damaged Plants
PP993 1.5G	0.125	IF	0.098 a	0.99
Counter 15G	1.00	7" B	0.101 ab	1.42
PP993 1.5G	0.125	7" B	0.110 abc	1.63
Furadan 15G	1.00	IF	0.133 abcd	1.97
PP993 1.5G	0.100	IF	0.161 abcde	2.65
SD 208304 15G	0.750	7" B	0.168 abcde	3.03
Mocap 15G	1.00	BPW	0.170 abcde	3.00
67825 20G	0.750	7" B	0.186 abcde	3.55
PP993 1.5G	0.100	7" B	0.186 abcde	3.53
Counter 15G	1.00	IF	0.189 bcde	3.78
Aastar 15G	1.00	7" B	0.192 cde	4.02
67825 20G	1.00	7" B	0.196 cde	3.91
Control	-	-	0.204 de	4.95
SD 208304 15G	1.00	7" B	0.217 de	4.78
Thimet 20G	1.00	7" B	0.224 e	5.09
SD 208304 15G	0.500	IF	0.229 e	5.20
SD 208304 15G	0.750	IF	0.414 f	16.28

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

TABLE 28. Comparison of Registered and Experimental Insecticide Efficacy for Control of Wireworms in Corn, Schell City, Missouri, 1986.

Insecticide	Rate (lb ai/A)	Placement	Live Plant Count Mean No. <sup>1</sup> Live Plants/35 row ft.
PP993 1.5G	0.125	IF	62.87 a
Counter 15G	1.00	7"B	60.50 ab
PP993 1.5G	0.125	7"B	59.75 ab
PP993 1.5G	0.100	IF	59.75 ab
SD 208304 15G	0.750	7"B	59.25 ab
Control	-	-	58.50 ab
PP993 1.5G	0.100	7"B	58.25 ab
Furadan 15G	1.00	IF	58.25 ab
67825 20G	1.00	7"B	58.12 ab
Thimet 20G	1.00	7"B	58.00 ab
67825 20G	0.750	7"B	57.50 b
Counter 15G	1.00	IF	57.25 b
Mocap 15G	1.00	BPW	57.12 b
SD 208304 15G	0.500	IF	56.87 b
Aastar 15G	1.00	7"B	55.62 bc
SD 208304 15G	1.00	7"B	55.25 bc
SD 208304 15G	0.750	IF	52.00 c

<sup>1</sup>Mean separation by DMRT; means followed by the same letter are not significantly different at P=0.05.

APPENDIX

Agronomic and Entomological Information for Insecticide Efficacy Plots, Missouri, 1986.

	ROOTWORM		CUTWORM					WIREWORM	
Location	Fairfax Atchison County	Novelty Knox County	Test 1	Test 2	Columbia Boone County Planting Time Test 3	Test 4	Rescue Test 5	Schell City Vernon County	Shelbyville Shelby County
Planting Date	May 2	May 31	May 12	May 29	May 29	June 3	May 9	April 30	April 25
Corn Hybrid	Pioneer 3377	Pioneer 3377	Garst 8344	Pioneer 3377	Pioneer 3377	Pioneer 3377	Pioneer 3377	Garst 8344	Garst 8344
Evaluation Date	July 15 16 17	July 21 22	May 21 23 27	June 6 9 16	June 6 9 16	June 10 13 18	June 10 13 18	June 2	May 22
Insect Population	3.5/pint of soil Adult Population 94% western 6% northern	Eggs 2/pint of soil Adult Population 98% western 2% northern	All cutworm tests were infested with laboratory-reared black cutworms.					Average wireworms/bait 4.00 6.34	

1986 Soil Test Results for Insecticide Evaluation Sites

Location	pHs	% OM	NA me 100g	P-I <sup>1</sup>	P-II <sup>2</sup>	CA lbs/A	Mg lbs/A	K lbs/A	% Sand	% Silt	% Clay	Soil Type
Fairfax	6.8	1.8	0.5	46	341	5250	747	284	20.0	45.4	34.6	Silty Clay Loam
Novelty	7.2	2.2	0.0	66	302	3880	260	366	18.0	52.4	29.6	Silty Clay Loam
South Farms	4.7	2.3	5.5	76	272	2700	464	375	21.6	50.8	27.6	Silt Loam
Schell City	5.7	2.2	1.5	111	401	2940	189	397	33.0	46.8	20.2	Loam
Shelbyville	6.6	2.7	0.0	88	305	4760	395	393	23.6	45.0	31.4	Clay Loam

<sup>1</sup>P-I, lbs P<sub>2</sub>O<sub>5</sub>/A extracted with 0.025 normal HCL

<sup>2</sup>P-II, lbs P<sub>2</sub>O<sub>5</sub>/A extracted with 0.100 normal HCL

Daily Rainfall and Temperature Data for Fairfax, Missouri, 1986<sup>1</sup>.

Day	May 1986			June 1986			July 1986		
	Temp (°F)		Rainfall (Inches)	Temp (°F)		Rainfall (Inches)	Temp (°F)		Rainfall (Inches)
	Max	Min		Max	Min		Max	Min	
1	76	42		89	57		87	68	
2	68	37		92	59		83	62	0.20
3	71	51		79	56		87	62	
4	69	52		87	60		92	68	
5	79	62		88	64	0.85	93	76	
6	85	44		82	66		95	68	2.20
7	80	52	0.23	86	63		79	69	0.78
8	85	59		85	55		86	70	0.02
9	81	60	0.67	84	61		93	69	0.22
10	83	61	0.16	81	68	0.33	88	67	1.42
11	68	49	0.17	88	62	0.45	87	66	0.01
12	82	52		75	51	0.02	89	63	1.65
13	84	57	0.51	88	57		88	60	0.02
14				88	62	0.06	90	72	0.02
15				89	56		93	72	
16				90	68		95	73	
17			1.19	90	64		94	74	
18				93	66		93	74	
19	63	37		94	69	0.65	95	74	
20	70	42					90	60	
21	78	44					85	54	
22	79	50					88	56	
23	75	55					88	64	
24	70	50					94	70	0.17
25	84	55	0.03		56		95	66	
26	74	46		93	60				
27	76	52		95	72				
28	71	51	0.27	93	68				
29	74	55	0.60	99	72				
30	81	55	0.02	92	67	1.45			
31	86	56							0.20

<sup>1</sup>Weather data was recorded at the Rockport weather station, approximately 15 miles northwest of plots.

Daily Rainfall and Temperature Data for Novelty, Missouri, 1986.

Day	May 1986			June 1986			July 1986		
	Temp (°F)		Rainfall (Inches)	Temp (°F)		Rainfall (Inches)	Temp (°F)		Rainfall (Inches)
	Max	Min		Max	Min		Max	Min	
1	72	46	0.10	84	64	86	70		
2	67	41		86	56	73	60	0.22	
3	61	41		72	52	80	59		
4	68	52		79	68	81	69		
5	77	57		85	58	91	72		
6	77	67	Trace	86	64	92	73		
7	75	62	1.26			84	68		
8	86	66				82	71		
9	81	62	0.35	85	65	91	69	0.07	
10	80	62	0.15	79	64	86	64	1.55	
11	71	61	0.20	89	67	89	68	0.45	
12	77	57		77	60	82	66		
13	80	61	0.63	77	60	81	67		
14	71	49	0.20	87	66	86	67	1.60	
15	76	61	1.10	82	63	81	70	0.07	
16	70	54	0.10	84	73	89	72		
17	71	58	3.20	88	62	89	71		
18	60	54	0.45	82	64	89	70		
19	63	52		86	68	90	71		
20	66	50		90	67	89	66		
21	66	48		88	68	80	60		
22	72	48		89	68	82	60		
23	70	51		82	62	83	63		
24	71	54		78	60	88	70		
25	75	57		79	56	85	70	0.62	
26	73	57	0.39	83	65	83	64		
27	72	58		89	76	80	66		
28	77	58		88	67	84	66	0.14	
29	73	58		86	67	92	64	0.03	
30	78	56		86	68	87	70		
31						84	72		

Daily Rainfall and Temperature Data for University of Missouri South Farms, Columbia, Missouri, 1986.

Day	May 1986			June 1986		
	Temp (°F)		Rainfall (inches)	Temp (°F)		Rainfall (inches)
	Max	Min		Max	Min	
1	80	53	0.80	85	64	
2	70	43		87	56	
3	66	48	0.02	72	57	
4	66	52		81	57	
5	77	60		83	68	0.54
6	80	61		85	69	0.05
7	80	64		83	68	1.15
8	87	64		85	68	
9	82	64	0.40	84	69	
10	84	62	0.07	81	70	0.07
11	73	62	0.35	89	64	0.21
12	75	56	T	77	59	
13	82	60	0.12	79	58	
14	74	48	0.18	86	64	
15	77	54	0.83	86	65	0.30
16	75	58	0.32	87	68	
17	83	59	2.45	91	65	
18	72	50	0.31	84	61	
19	67	46		86	65	
20	67	48		89	65	
21	69	49		91	68	
22	93	53		91	72	
23	77	57		88	68	
24	68	60		83	65	
25	75	60		84	60	
26	73	56	0.69	88	68	
27	74	55		91	72	1.47
28	77	59	0.06	92	67	
29	78	59	0.05	89	71	
30	81	60		94	75	
31	85	62				



Daily Rainfall and Temperature Data for Schell City, Missouri, 1986<sup>1</sup>.

Day	April 1986			May 1986			June 1986		
	Temp (°F)		Rainfall (Inches)	Temp (°F)		Rainfall (Inches)	Temp (°F)		Rainfall (Inches)
	Max	Min		Max	Min		Max	Min	
1	78	53	0.17	72	51		86	63	
2	64	57	T	73	42		81	63	
3	75	58	1.28	69	50	0.03	84	64	
4	73	53	1.47	78	53		83	66	0.04
5	76	47	0.10	80	62		87	67	
6	79	57		80	68	0.05	78	67	1.20
7	80	61		86	65		88	66	0.06
8	75	54	1.26	86	68		86	68	
9	63	37		88	62	0.04	85	68	
10	69	37		85	65	0.03	88	69	
11	73	45		86	60		84	63	0.19
12	76	50		89	53		85	55	
13	81	45		85	60	0.08	90	56	
14	76	41	0.25	82	56	T	88	70	
15	53	32		79	60	1.08	89	64	0.20
16	65	37		82	65		94	68	
17	65	42		76	53	1.98	92	68	
18	70	52	0.03	68	52		94	65	
19	67	39		69	44		91	62	
20	71	49	0.02	75	45		93	61	
21	68	38	T	75	48		93	65	
22	62	28		79	61		93	69	
23	75	42		74	62	0.24	90	68	0.09
24	83	54		80	60		90	63	
25	87	62		78	63		94	64	
26	85	59		77	48		94	69	
27	80	66		76	55		95	71	
28	75	44	0.46	78	51	0.62	92	66	0.44
29	82	50		84	55		96	73	
30	78	69	T	81	61		92	76	
31				87	59				

<sup>1</sup>Weather data was recorded at the Nevada weather station, approximately 14 miles southwest of the wireworm plots.

Daily Rainfall and Temperature Data for Shelbyville, Missouri 1986<sup>1</sup>.

Day	April 1986			May 1986		
	Temp (°F)		Rainfall (Inches)	Temp (°F)		Rainfall (Inches)
	Max	Min		Max	Min	
1	79	46		78	61	0.35
2	66	45		76	42	
3	70	46	0.60	68	45	
4	68	47	T		50	
5	72	49	0.20		68	
6	71	46		84	66	T
7	80	42		82	62	T
8	76	46		86	74	
9	60	33		82	61	0.15
10	66	27		88	64	T
11	67	31		85	60	0.20
12	72	40		79	62	
13	74	35		78	58	0.35
14	71	34	0.18	74	49	0.10
15	40	30	T	73	57	0.80
16	62	38	T	79	49	0.30
17	71	42		78	57	1.90
18	67	44		67	46	1.00
19	74	45	0.25	64	45	
20	72	41		71	48	
21	69	38	0.20	73	52	
22	56	29		72	42	
23	69	44		74	49	
24		46		77	51	
25	87	58		72	60	
26	89	62		71	55	0.40
27	86	64		76	50	
28	84	40	0.20	75	53	0.35
29	83	43		74	60	
30	83	62		75	60	
31				87	67	

<sup>1</sup>Weather data was recorded at the Shelbina weather station, approximately 11 miles south of wireworm plots.

COOPERATING COMPANIES

<u>Company</u>	<u>Insecticide</u>
American Cyanamid Company	AA2 Aastar Counter Thimet
BASF-Wyandotte Corporation	Lance
Ciba-Geigy Corporation	CGA 12223
Dow Chemical U.S.A.	Lorsban
Elanco Products Company	EL-499
EM Industries Inc.	CME-16002 CME-16003
FMC Corporation	Furadan Pounce 67825 F-6033 F-6063 F-3859
Hoechst-Roussel Agri-Vet Company	Scout
ICI Americas Inc.	Ambush Karate PP993
Mobay Chemical Corporation	Baythroid
Penwalt Corporation	TD-2208 TD-2209
Rhone-Poulenc Chemical Company	Mocap
Shell Development Company	Pydrin SD 208304
Stauffer Chemical Company	Dyfonate SC-0567
Union Carbide Agricultural Products Co., Inc.	Broot UC27BF24
Uniroyal Chemical Company	UBI-A920 UBI-8451