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Wireworm insecticide evaluation

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Abstract
Wireworms are a sporadic problem for farmers planting corn in Iowa, but the problem does appear to be on the increase. Stand loss occurs in a very small percentage of Iowa fields, but where the problem does exist, it may persist for several years. The exact cause of this increase in wireworm problems is not known, but the relatively mild winters of 1997-2000 may be partly responsible for higher than normal survival.

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Wireworms cannot be controlled with crop rotation. Most species have life cycles ranging from 3 to 5 years (although some species have a 1-year cycle), and although they seem to prefer corn roots, apparently they can persist in soybean fields by feeding on organic matter from the previous crop. Prevention of stand loss from wireworms can only be accomplished with the use of an insecticide.

Wireworm and damage to a corn seed.

Enlarge [1]

Selecting the best wireworm insecticide based on performance has not been easy, primarily because less information is available compared with a pest such as corn rootworm. Insecticide data from multiyear evaluations in Iowa and Missouri were presented in the March 20, 2000, ICM newsletter (pages 19 and 28). Since that time, new products have been labeled for wireworm control and their performance was evaluated in Iowa during 2000 (Table 1).

No statistical differences were found for the percentage of damaged plants. Although there is a broad range in the percentage of damaged plants from a low of 9 percent (Counter 20CR, 1.2 ounces in-furrow) to a high of 43 percent (Regent 4SC, 0.09 ounces), we were not able to detect any real treatment differences. Likewise, there was no statistical difference in plant stand per acre even though the numbers ranged from a low of 24,000 (Kernel Guard Supreme) to a high of 30,800 (Force 3G, T-band). Variation from plot to plot within the experiment made detecting real treatment differences (from a statistical standpoint) impossible for both the damage ratings and plant stand counts. Based on this single-year experiment, all the products performed the same, although others may interpret these data differently.

It is important to remember that seed treatments are usually less effective for control of high populations of wireworms than granular and liquid insecticides and they provide very little

root protection against corn rootworms or cutworms. Affordable protection of seed and seedlings is a foundation for maximum yields and profit.

Table 1. Average percentage of wireworm damaged seeds/seedlings for planting-time insecticide treatments (Numa, IA, 2000).

Insecticide	Formulation	Rate[a]	Placement[b]	% Damage[c,d]		Stand Count[e,f]
Counter	20CR	1.2	Furrow	9	a	29.3
Counter	20CR	1.2	T-band	12	a	29.8
Counter	20CR	0.6	Furrow	13	a	27.3
Fortress	5G	0.15	Furrow SB	14	a	29.8
Agrox Premiere	ST	3.6 oz mat/cwt	ST	16	a	26.8
Lorsban	15G	1.2	Furrow	16	a	26.5
Lindane	ST	40 a.i./100 kg	ST	16	a	27.8
Force	3G	0.15	Furrow	17	a	29.3
Capture	2EC	0.037	Furrow	18	a	27.5
Capture	2EC	0.074	Furrow	23	ab	28.5
Aztec	2.1G	0.07	Furrow	25	ab	28.5
Kernel Guard Supreme	ST	54.8 g a.i./100 kg	ST	26	ab	24.0
ProShield	ST	0.075	ST	27	ab	27.3
Force	3G	0.15	T-band	27	ab	30.8
Aztec	2.1G	0.14	Furrow	28	ab	26.3
Gaucho	ST	0.16 mg	ST	29	ab	29.3
Isotox	ST	4.0 oz mat/cwt	ST	30	ab	27.0
Adage	ST	50 g a.i./100 kg	ST	31	ab	29.0
H101:14-1	ST	--	ST	33	ab	28.0
Raze	ST	3.0 fl oz mat/cwt	ST	38	ab	25.3
Regent (4 GPA)[g]	4SC	0.12	Furrow-M	39	ab	27.0

Pounce	1.5G	0.18	Furrow	43	ab	27.8
Regent (4 GPA)[g]	4SC	0.09	Furrow-M	44	ab	26.5
Check	--	--	--	72	b	27.6

Planted May 22, 2000; evaluated June 19, 2000.

[a]Granular and liquid formulations plus ProShield ST expressed as ounces a.i. per 1,000 row-ft; Gaucho ST listed as a.i. per seed. mat/cwt, material/hundredweight.

[b]ST, seed treatment; M, microtube; SB, SmartBox.

[c]Insecticide means based on four observations (seeds/seedlings damaged in 1-m sample/treatment with four replications); check means based on eight observations (1-m sample/treatment ¥ two random checks ¥ four replications).

[d]Means sharing a common letter do not differ significantly according to Ryan's Q test ($P < 0.05$).

[e]Insecticide means based on four observations (1/1000-acre sample/treatment ¥ four replications); check means based on eight observations (1/1000-acre sample/treatment ¥ two random check rows ¥ four replications).

[f]No significant differences between means (ANOVA, $P < 0.05$).

[g]Four gallons of water carrier per 17,424 row-ft.

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