Corn Talk News

RESEARCH UPDATE

CORN TALK NEWS
PENNSYLVANIA MASTER CORN GROWERS ASSOC., INC.

ROOTWORMS

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Many producers found the presence of white worms which invaded corn fields and destroyed roots to the point that the corn goosenecked or was easily blown over with wind.

This little worm, which becomes a small beetle, infests corn fields almost exclusively where corn was grown the following year.

The adult beetle lays eggs around the corn base in midsummer. These eggs hatch in the spring around the time fire flies are noticeable and begin feeding on the roots of corn.

For this reason, an insecticide is recommended in a corn-on-corn situation. For a complete explanation of rootworms and their identification, call the extension office and ask for Extension Circular 333.

The following information is from Steve Spangler and Dennis Calvin's research summary. They tested 13 insecticide treatments for control of corn rootworm at the Rockspring farm in 1995. The results are shown in Table 1.

For your review, they use the common "Iowa" root rating system to determine damage to roots: a rating of 1 is an undamaged root system, a rating of 6 is the most severely damaged (all three nodes are chewed completely back), and ratings of 2 to 5 are intermediate. Entomologists generally believe that economic damage begins to occur when the root rating exceeds 3 to 3.5.

From the root ratings shown in Table 1, three general groupings appeared to occur. The best treatments (lowest root ratings: 2.6 to 3.2) occurred with Counter 15G™ T-band, Fortress 2.5G™ T-band and in-furrow, all Force™ treatments, Furadan 4F™ broadcast + cultivation, and Lorsban 15G™ T-band. Less effective were the Dyfonate II™ T-band and Furadan 4F™ broadcast treatments (root ratings of 3.9 to 4.4). All these treatments were significantly better than the untreated plots (root rating of 5.4). This was our first side-by-side comparison of Furadan 4F™ with the granular materials.

Despite the drought in July and August, there was ample moisture during May and June, which would favor effectiveness of Furadan 4F™. It also appears that it is important to cultivate after application of Furadan 4F™, because the root rating with cultivation (2.6) was significantly lower than without cultivation (3.7). Steve and Dennis also collected yield date, but because of the extreme drought and heavy corn rootworm pressure during July and August, they were so low (11 to 40 bushels/acre) and had little correlation to insecticide treatment.

There will be two new rootworm insecticides registered for the 1996 growing season: Aztec and Fortress. Axtec is from Bayer, and is a combination of an organophosphate (2.0% tebuprimiphos) and a pyrethroid (0.1 percent cyfluthrin). Fortress, from DuPont, is an organophosphate (chlorethoxyfos), and will be available in either a 2.5G or 5G formulation. Both these compounds will be applied at much lower rates (2.5 oz active ingredient/acre for Aztec and 2.6 for Fortress), compared to other granulars (typically 21 oz. active ingredient/acre). Trials in Pennsylvania and Iowa indicate that these new compounds compare favorably with others presently registered.

When selecting an insecticide, refer to your Agronomy Guide to be sure you control other pests such as seed corn maggot and garden symphalan. If you are unsure of what product to use, please do not hesitate to call me. If I am out of the office, simply leave a message and I will be in touch with you.

Table 1. Assessment of 13 insecticide formulations for rootworm control in Centre Co., PA, during 1995.

Treatment	Formulation	Rate[1]	Application method[2]	Root Rating[3,4]	Yield (Bu/A)[4]
Force	3G	0.12	T-Band	3.2cde	13.4a
Force	3G	0.12	In-furrow	2.8de	14.7a
Force	1.5G	0.12	T-Band	2.8de	19.2a
Force	1.5G	0.12	In-furrow	3.0cde	31.9a
Dyfonate II	15G	1.20	T-Band	4.4b	14.6a
Lorsban	15G	1.20	T-Band	3.0cde	18.7a
Counter	15G	1.20	T-Band	2.7e	23.9a
Regent	1.5G	0.12	T-Band	3.2cde	16.0a
Regent	1.5G	0.12	In-furrow	3.9bc	23.1a
Fortress	2.5G	0.15	T-Band	2.6e	18.3a
Fortress	2.5G	0.15	In-furrow	3.1cde	13.0a
Furadan	4F	1.20	BRD/CLT	2.6e	36.2a
Furadan	4F	1.20	BRD	3.7bcd	14.1a
Untreated	-	-	-	5.4a	10.7a

1 Rates are expressed as oz./1000 ft of row .

2 T-band and In-furrow granular applications were made at planting (May 16). BRD/CLT = Furadan broadcast on Jun 16, followed immediately with cultivation; BRD = broadcast with Furadan 4F only.

3 Ratings done with the Iowa method (1=no damage, to 6=three nodes or more missing).

4 Means followed by the same letter in the same column are not statistically different