EVALUATION OF INSECTICIDE OVERSPRAYS FOR CONTROL OF BOLLWORMS IN TRANSGENIC BT COTTON

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Abstract

A trial was conducted to determine if any benefit is gained by treating Bt cotton for caterpillars and if yield is enhanced by insecticide alone without pest present. Field trials were conducted at nine sites across Texas on Bollguard II or Widestrike cotton once during the first two weeks of bloom. Few bollworms and minimal feeding injury was detected in the trial areas. This project was not able to determine if any benefit was gained by treating Bt cotton for caterpillars because few caterpillars were found in the test areas. Combined data from nine locations did not show yield response to insecticide application. The results of this research project indicate yield was not enhanced by insecticide applications in the absence of caterpillar pests.

Objectives

1. Determine if any benefit is gained by treating Bt cotton for caterpillars.
2. Determine if yield is enhanced by insecticide alone without pest present.

Methods

Field trials were conducted at nine sites across Texas. These locations included College Station, Wharton, Port Lavaca, Corpus Christi, Ballenger, Levelland, and Muleshoe, Texas. Insecticides were applied for bollworm control on Bollguard II or Widestrike cotton once during the first two weeks of bloom. Treatments were as follows:

1. Untreated
2. Prevathon 14 or 20 oz/a
3. Belt + Mustang Max 2 + 3.6 oz/a
4. Besiege 8 or 6.5 oz/a
5. Mustang Max 3.6 oz/a

Surviving bollworms and feeding injury were counted at 3 and 7 days after treatment. Yield was measured at harvest time.

Few bollworms and minimal feeding injury was detected in the trial areas. The highest worm population in East Texas and Coastal Bend tests was 2.5 small worms per 100 plants. No worms found in the West Texas trials. One Coastal Bend location found Cotton square borers at population below 13 per 100 plants. None of these insect populations are thought to be economic, yield limiting populations on cotton.

Results

This project was not able to determine if any benefit was gained by treating Bt cotton for caterpillars because few caterpillars were found in the test areas.

Yield differences were found at the Wharton location with the Prevathon and Belt/Mustang Max treatments having more lint yield than the other treatments and untreated control (Table 1). Yield differences were not found at the other eight test sites.

Yield data from each trial location was normalized to the untreated control and the means were used as nine replications to compare the treatments across location (Table 2). Combined data from nine locations did not show yield response to insecticide application.

The results of this research project indicate yield was not enhanced by insecticide applications in the absence of caterpillar pests.

Table 1. Lint Yields for insecticide treatments applied to Bt cotton at nine locations in Texas.

		Ballinger	Wharton		College Station	Levelland	Corpus Christi
		FM 2484 GLB2	FM 1944 B2RF		Phy 499 WRF	Phy 367 WRF	Phy 367 WRF
1	Untreated Check	1186.8	1372.5	b	997.85	632	2065.631
2	Prevathon	1064.5	1651.8	a	1059.363	672.3	2215.276
3	Belt/Mustang Max	1019.3	1690.3	a	969.325	686	2201.288
4	Besiege	1011.3	1457	b	1007.213	616	2231.578
5	Mustang Max	1127.3	1412	b	1096.55	678.8	2202.922
LSD (P=.05)		176.1	148.48		129.8892	121.27	308.76358
Standard Deviation		116.86	98.54		86.1995	80.48	204.90738
CV		10.8	6.5		8.4	12.25	9.39
Treatment Prob(F)		0.2182	0.0008		0.2795	0.6718	0.7873

		Muleshoe	Port Lavaca1	Port Lavaca2	Port Lavaca3
		FM 9063 B2F	Phy 499 WRF	DP 1044 B2RF	DP 1044 B2RF
1	Untreated Check	582.3	1129.33	1396.28	1447.93
2	Prevathon	487.8	1211.73	1375.25	1499.23
3	Belt/Mustang Max	424.3	1219.75	1436.18	1478.93
4	Besiege	599.8	1159.83	1524.83	1455.28
5	Mustang Max	480	1053.35	1350.08	1369.13
LSD (P=.05)		218.1	214.814	237.593	96.99
Standard Deviation		144.74	142.559	157.676	64.367
CV		28.12	12.34	11.13	4.44
Treatment Prob(F)		0.4165	0.4849	0.5733	0.0987

Means followed by same letter do not significantly differ (P=.05, LSD)

Table 2. Lint yields normalized to the untreated control for insecticide treatments applied to Bt cotton across nine locations in Texas.

Treatment		Normalized Yield
1	Untreated Check	100.0
2	Prevathon	103.7
3	Belt/Mustang Max	101.9
4	Besiege	103.0
5	Mustang Max	100.4
LSD (P=.05)		10.049
Standard Deviation		6.669
CV		6.55
Treatment Prob(F)		0.9177

Means followed by same letter do not significantly differ (P=.05, LSD)