

AGRONOMY UPDATE

Agronomy Update No. 112
Revised December 2000

2000 Maryland Bt Corn Hybrid Performance Tests

Corn hybrid performance tests are conducted annually by the Maryland Agricultural Experiment Station and the Department of Natural Resource Sciences and Landscape Architecture. Recently, biotechnology has led to the development of insect resistant corn hybrids with genes from *Bacillus thuringiensis* (*Bt*). Some of these hybrids are now available for commercial production by farmers. Fourteen Bt corn hybrids were tested at two locations during 2000: (1) Wye Research and Education Center (REC) in Queen Anne's County; and (2) Central Maryland REC's Beltsville Facility in Prince George's County.

Entries were solicited from the companies (Table 6) that sell hybrid corn seed in Maryland. Basic production information can be found in Table 4. The entries were planted at a rate of 26,500 seeds/acre with a Wintersteiger Plotking 2600 Precision Air Planter. They were randomized within a complete block experimental design and replicated three times per location. Each planted plot was approximately 31 feet long and consisted of four rows that were spaced 30 inches apart. Each plot was trimmed to 25 feet (harvest length) prior to the onset of the reproductive stage. Harvest plant population counts and lodging scores were collected just prior to harvest. The center two rows of each plot were harvested to obtain a yield measurement using a Massey-Ferguson 8-XP plot combine equipped with a HarvestMaster weighing system that measured and recorded grain weight and grain moisture content for each plot.

The agronomic characteristics measured and reported in this update are yield in bushels/acre at 15.5% moisture content, harvest moisture content, lodging score (percentage of plants either broken below the ear or leaning more than 45°) and harvest population in plants/acre. These data can be found in Tables 1 and 2. A least significant difference (LSD) value is reported for yield in every test where statistically significant differences were observed. This number is a statistical test calculated at the 20% probability level. Readers of this report can use the LSD value to compare two hybrids within the same test. If the yield difference between two hybrids is greater than or equal to the LSD value, the reader can be 80% sure that the difference is real. The coefficient of variation

(CV) that is reported is a relative measure of the amount of variation at a test site and is an indicator of the degree of precision for that particular test. In these tests, CV values below 15% are an indication that the precision of the test was good in distinguishing differences for yield among hybrids.

The selection of a hybrid based solely upon its performance at one location for one year is not recommended. Instead, it is better to select a hybrid based upon its performance over a number of locations and/or years. In order to compare the performance of the Bt hybrids at the two locations for 2000, a relative yield table (Table 3) is included. Relative yield is the ratio of the yield performance of a hybrid at a location to the mean yield of all the hybrids at that location expressed in percentage. A hybrid with a relative yield consistently greater than 100 was a hybrid that consistently yielded better than the mean yield of all the hybrids in the test.

Index to Tables

	<u>Page</u>
Table 1. Bt corn hybrids at Wye R&E Center	3
Table 2. Bt corn hybrids at CMREC-Beltsville	4
Table 3. Relative yield for Bt corn hybrids	5
Table 4. Test plot information	6-7
Table 5. Growing season precipitation	8
Table 6. Suppliers of hybrids	9

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Additional Information

The inclusion of entries in the Maryland Bt Corn Hybrid Tests does not constitute an endorsement or recommendation of a specific entry by the University of Maryland. Advertising statements by an individual company about the performance of its entries can be made as long as they are accurate statements about the data as published, with no reference to other companies' hybrids. Statements similar to "See the official Maryland Corn Bt Hybrid Tests Agronomy Update No. 112" or Endorsement or recommendation by the University of Maryland is not implied" must accompany any information that is reproduced. Agronomy Update No. 112 can be downloaded from the Maryland Cropping Systems webpage: <http://www.agnr.umd.edu/users/nrsl/crops>

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Table 1. Performance of Bt field corn hybrids grown at Wye Research and Education Center. (2000)

Brand	Hybrid	Yield ¹ Bu/Acre	Harvest Moisture	Lodging ² Score	Harvest Population (Plant/Acre)
Asgrow	RX508YG	198	14	0	24045
Chemgro	7525BT	200	17	0	23813
Clark Seeds	CL816Bt	204	23	0	24742
DeKalb	DK647BtY	237	17	0	26020
DeKalb	DKC58-52	201	15	0	23813
Doebler's	638XYG	209	18	0	23464
Doebler's	765XYG	208	17	0	24626
Doebler's	818XYG	231	18	0	23929
Mid-Atlantic	MA9093YG	217	16	0	24277
Mid-Atlantic	MA9111YG	218	17	1	24510
Mid-Atlantic	MA9121YG	224	17	1	25091
Mid-Atlantic	MA9184YG	210	19	1	23697
Southern States	670BT	231	16	4	25904
Southern States	769Bt	218	18	0	25207
	Mean	215	17	1	24510
	LSD (0.20)	14			
	CV (%)	5.8			

¹ All yields are reported at 15.5 % Moisture.

² % of plants with breakage below ear or > 45° lean.

Table 2. Performance of Bt field corn hybrids grown at Central Maryland Research and Education Center, Beltsville Facility. (2000)

Brand	Hybrid	Yield ¹ Bu/Acre	Harvest Moisture	Lodging ² Score	Harvest Population (Plants/Acre)
Asgrow	RX508YG	191	21	0	22651
Chemgro	7525BT	210	18	0	24742
Clark Seeds	CL816Bt	206	29	0	20909
DeKalb	DK647BtY	240	26	0	26484
DeKalb	DKC58-52	218	25	0	24974
Doebler's	638XYG	209	24	0	24161
Doebler's	765XYG	197	26	1	24974
Doebler's	818XYG	207	26	0	22303
Mid-Atlantic	MA9093YG	205	25	1	24277
Mid-Atlantic	MA9111YG	209	25	0	24858
Mid-Atlantic	MA9121YG	211	23	0	24742
Mid-Atlantic	MA9184YG	211	29	0	21606
Southern States	670BT	213	26	1	24916
Southern States	769Bt	209	26	0	25439
	Mean	210	25	0	24074
	LSD (0.20)	16			
	CV (%)	6.1			

¹ All yields are reported at 15.5 % Moisture.

² % of plants with breakage below ear or > 45° lean.

Table 3. Relative yield¹ of Bt field corn hybrids compared to the mean yield of all entries at each location in Maryland in 2000.

Brand	Hybrid	Wye	Beltsville
Asgrow	RX508YG	92	91
Chemgro	7525BT	93	100*
Clark Seeds	CL816Bt	95*	98*
DeKalb	DK647BtY	110*	114*
DeKalb	DKC58-52	93	104*
Doebler's	638XYG	97*	100*
Doebler's	765XYG	97*	94*
Doebler's	818XYG	108*	99*
Mid-Atlantic	MA9093YG	101*	98*
Mid-Atlantic	MA9111YG	102*	100*
Mid-Atlantic	MA9121YG	104*	101*
Mid-Atlantic	MA9184YG	98*	101*
Southern States	670BT	108*	102*
Southern States	769Bt	102*	100*
Grand Mean		215	210

¹ Relative yield (hybrid mean/grand mean) x 100.

*Indicates that the relative yield of an entry is not significantly different (LSD 0.20) from the highest yielding entry at that location.

Table 4. Bt corn hybrid plot information

Wye Research and Education Center, Queenstown, Maryland.

Soil type:	Mattapeake silt loam
Previous crop:	Soybeans
Fertilizer:	Broadcast 200 lbs./acre 16-8-8 N-P ₂ O ₅ -K ₂ O on May 03, 2000 Sidedress with 133 lbs./acre N as 30% UAN on June 8, 2000
Herbicides:	Pre-emergent--2 qt./acre Harness Xtra; 0.8 lb./acre Aatrex 90
Insecticides:	None
Tillage:	Conventional
Planted:	May 03, 2000
Harvested:	October 5, 2000
Farm Crew:	Lew Smith Mark Sultenfuss Reese Stafford

Table 4, continued.

Central Maryland Research and Education Center, Beltsville Facility
Laurel, Maryland.

Soil type: Sassafras sandy loam

Previous crop: Soybeans

Fertilizer: 52 lb./acre N (UAN) sprayed with herbicides on
May 12, 2000.

 115 lb./acre N (UAN) dribbled on June 12, 2000

Herbicides: 2 qt. Harness Extra
 1.11 lb. Princep 90DF

Insecticides: None

Tillage: Conventional

Planted: May 9, 2000

Harvested: October 7, 2000

Farm Crew: Kevin Conover
 Russell Griffith
 Tracy Runner
 Mike Heyser

Table 5. Growing Season Rainfall (inches)

	Wye	Beltsville
April	3.79	4.17
May	3.99	3.20
June	3.82	5.11
July	6.81	6.07
August	2.85	4.63
September	4.72	4.49
Total	25.98	27.67

Table 6. Participating companies in the 2000 Maryland Bt field corn hybrid trials.

Brand	Address
Asgrow	Monsanto, 3100 Sycamore Rd., DeKalb, IL 60115
Chemgro	Chemgro Seeds, 1550 State Street, East Petersburg, PA 17520-0218
Clark's	Clark Seeds, Inc., PO Box 219, Kenton, DE 19955
DeKalb	Monsanto, 3100 Sycamore Rd., DeKalb, IL 60115
Doebler's	Doebler's Hybrids, Inc., RR1 Box 424, Jersey Shore, PA 17740
Mid-Atlantic	Mid-Atlantic Seed 2083 Springwood Rd., #163, York, PA 17403
Southern States	Southern States, PO Box 26234, Richmond, VA 23260