

INDEX TO VIRGINIA CORN HYBRID AND MANAGEMENT TRIALS 1999

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SECTION I. VIRGINIA CORN HYBRID TRIALS IN 1999.

Companies Participating in the 1999 Corn Hybrid Trials

Company	Brand	Address
AGRIBIOTECH, INC.	HYTEST	120 CORPORATE PARK DR HENDERSON NV 89014
AGRIPRO SEEDS, INC.	AGRIPRO, HYPERFORMER 38119	761 WALNUT KNOLL LN SUITE 200 MEMPHIS TN
AUGUSTA SEED CORPORATION	AUGUSTA	106 FAIRBURN RD MT SOLON VA 22843
BIO GENE	BIO GENE	5491 TRI COUNTY HWY SARDINIA OH 45171
DOEBLER'S PA. HYBRIDS INC.	DOEBLER'S	RR 1 BOX 424 JERSEY SHORE PA 17740
GARST SEED CO.	GARST	PO BOX 500 SLATER IA 50244
HOFFMAN SEEDS, INC.	NK BRAND	144 MAIN ST LANDISVILLE PA 17538
MID-ATLANTIC SEEDS	MID-ATLANTIC	2083 SPRINGWOOD ROAD #163 YORK PA 17403
MONSANTO	DEKALB	3100 SYCAMORE RD DEKALB IL 60115
MYCOGEN SEEDS	MYCOGEN 55121-1233	1340 CORPORATE CENTER CURVE EAGAN MN
NOVARTIS SEEDS, INC.	NK BRAND	PO BOX 959 MINNEAPOLIS MN 55440
PIONEER HI-BRED INT., INC.	PIONEER BRAND 27804	800 TIFFANY BLVD SUITE 200 ROCKY MOUNT NC
SOUTHERN STATES COOP., INC.	SS	PO BOX 26234 RICHMOND VA 23260
WILSON SEEDS, INC.	WILSON	PO BOX 391 HARLAN IA 51537

VIRGINIA CORN HYBRID TRIALS IN 1999

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Performance trials of commercial corn hybrids were conducted at seven locations in Virginia in 1999. Test weights were taken with a GrainGauge manufactured by HarvestMaster and calibrated over three years of testing. A list of the companies participating in the trials is shown in the above table. All hybrids entered in the Virginia trials were those submitted by commercial companies. The locations at which particular hybrids were entered were specified by the company. Companies entering hybrids were charged a fee for each hybrid per location to support the Corn Performance Trials.

All locations except Orange were planted with a Wintersteiger PlotKing 2600. Populations were determined by counting plants in a number of plots at each testing site and averaging them. Orange was planted by hand and thinned to the desired population. All locations except Orange were harvested with a Massey-Ferguson 8XP plot combine. Orange was hand harvested and shelled to obtain grain weights. Yields have been adjusted to 15% moisture.

Yield Differences

Experimental plots vary in yield and other measurements due to location in the field and other factors which cannot be controlled. Statistics given in the tables are intended to help the reader make valid comparisons between hybrids. The magnitude of differences which may have been due to uncontrollable variation has been computed for the data and listed at the bottom of columns as the LSD (.05) (least significant difference with 95% confidence). Differences less than the LSD are assumed not to be real differences with 95% confidence.

Choice of Hybrids

When making hybrid selections it is important to realize that hybrids differ in their performance under different environments. Some hybrids are more adapted to a wide range of environments. Hybrid performance may vary with year and location variations in rainfall, temperature, pests and other environmental variables. In these experiments, many hybrids have essentially the same yield, and great care should be taken in interpreting the results of a single year's tests, especially at only one location. For these reasons it is important, whenever possible, to also look at a hybrid's average across locations when making hybrid selections. Multi-year averages give even greater confidence to hybrid performance decisions. The relative yield tables compare the yield of a hybrid to the average yield of all hybrids in the test. These tables are an excellent summary of yield potential compared to other hybrids.

*Appreciation is expressed to the Virginia Corn Check-
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the Virginia Extension corn program.*

1999 VIRGINIA CORN HYBRID PLOT INFORMATION
(Rates are on a per acre basis.)

Blacksburg	Whitethorne Farm	Planted:	April 19, 1999
Land Prep:	plowed, deep-disked twice, finished/smoothed	Harvested:	September 20, 1999
Planted:	May 4, 1999	Pesticide:	4.4 lb Force 3G® + 1.6 qt Bicep II Magnum® + 1 pt atrazine at planting
Harvested:	October 28, 1999	Fertilizer:	50 lb N preplant incorporated + 22 gal 10-34-0 at planting; 25-0-0-3 applied through irrigation:
Pesticide:	4.4 lb Force 3G® at planting + 2.4 qt Bicep® preplant incorporated May 3, 1999		May 27 - 48 lb N + 6 lb S
Fertilizer:	30-60-60 preplant incorporated April 23, 1999		June 3 - 25 lb N + 3 lb S
	18 gal 10-34-0 at planting + 150 lb N using UAN sidedressed	Irrigation:	June 12 - 70 lb N + 9 lb S
Plot Size:	2 rows 25' x 30" 4 replications		0.5" May 21 0.3" May 27 to apply N
Soil Type:	Hayter		0.3" June 3 to apply N 0.5" June 9
Cooperator:	J. Wooge		0.4" June 12 to apply N 1.2" June 24
			0.9" July 3 0.9" July 8
			1.0" July 19
			1.0" July 26
			1.0" July 31 - Irrigation stopped due to concern over limited supply for beans. If water was unlimited, more would have been applied, especially late in season.
Blackstone	Southern Piedmont Agricultural Research & Extension Center	Plot Size:	2 rows 25' x 30" 4 replications
Planted:	April 26, 1999	Soil Type:	State fine sandy loam
Harvested:	October 5, 1999	Cooperator:	Bruce Beahm
Pesticide:	4.4 lb Force 3G® at planting + 2 qt Bladex 4L + 1 qt Dual II April 26, 1999		
Fertilizer:	1 ton lime plowed under April 8, 1999		
	1000 lb 10-10-10 preplant incorporated April 8, 1999		
	18 gal 10-34-0 at planting + 235 lb ammonium nitrate broadcasted June 2, 1999		
Irrigation:	1.5" July 2, 8, and 15; 1" July 24		
Plot Size:	2 rows 25' x 30" 4 replications		
Soil Type:	Wedowee		
Cooperators:	W. B. Wilkinson and R. R. Wilmouth		
Holland	Tidewater Agricultural Research & Extension Center	Orange	Northern Piedmont Agricultural Research & Extension Center
Land Prep:	disked, chisel-plowed Mar 11; field conditioned Apr 20	Planted:	May 7, 1999
Planted:	April 21, 1999	Harvested:	October 1, 1999
Harvested:	September 27, 1999	Pesticide:	1 qt Dual® + 2 qt Aatrex® 4L preplant incorporated
Pesticide:	3 qt Lariat® preplant incorporated April 20, 1999 + 4.4 lb Force 3G® at planting	Fertilizer:	1000 lb 10-10-10 May 5, 1999 + 100 lb N sidedressed
Fertilizer:	500 lb 5-10-30 March 8, 1999 + 30 units N April 20, 1999 + 22 gal 10-34-0 at planting + 100 units N using UAN sidedressed May 18, 1999		June 11, 1999
Plot Size:	2 rows 35' x 30" 4 replications	Plot Size:	1 row 30' x 30" 4 replications
Soil Type:	Dragston	Soil Type:	Dyke silty clay
Cooperators:	Bobby Ashburn and Gene Whitley	Cooperators:	D. E. Starner and D. Dixon
Mt Holly (dry)	Virginia Crop Improvement Association Farm	Wythe County	
Land Prep:	ripped, worked and planted conventionally	Land Prep:	minimum tillage (chiseled and disked)
Planted:	April 19, 1999	Planted:	May 5, 1999
Harvested:	September 8, 1999	Harvested:	November 5, 1999
Pesticide:	4.4 lb Force 3G® + 1.6 qt Bicep II Magnum® + 1 pt atrazine at planting	Pesticide:	2.5 qt Bicep II Magnum®
Fertilizer:	50 lb N preplant incorporated + 22 gal 10-34-0 at planting + 34 lb N May 19 + 80 lb N sidedressed June 2, 1999	Fertilizer:	125-40-125-13S preplant incorporated according to soil test + 18 gal 10-34-0 at planting
Plot Size:	2 rows 25' x 30" 4 replications	Plot Size:	2 rows 25' x 30" 4 replications
Soil Type:	State fine sandy loam	Cooperators:	David Danner, Scott Jessee, and Bobby Williams
Cooperator:	Bruce Beahm	Augusta County	
Mt Holly (irr)	Virginia Crop Improvement Association Farm	Land Prep:	conventional tillage
Land Prep:	ripped, worked and planted conventionally	Planted:	April 27, 1999
		Harvested:	October 8, 1999
		Pesticide:	2.1 qt Bicep® preplant incorporated + 4.4 lb Force 3G® at planting
		Fertilizer:	80 lb N preplant incorporated + 18 gal 10-34-0 at planting + 50 lb N sidedressed
		Plot Size:	2 rows 25' x 30" 4 replications
		Cooperators:	Tom Stanley and Roy D. Martin

Table 1. 1999 RELATIVE YIELD* of hybrids entered in three or more locations.

Very Early Maturity Brand	Hybrid	Mt Holly			Blackstone	Orange	Augusta	Blacksburg		Wythe	Mean
		Holland	Dry	Irr				burg	Wythe		
AUGUSTA	A9884	106	112	99	-	134	-	-	-	113	
AUGUSTA	A9873	-	115	98	-	126	-	-	-	113	
DEKALB	DK585	-	104	100	-	125	-	-	-	111	
SOUTHERN STATES	EXP77095	103	114	94	-	130	110	113	97	109	
PIONEER BRAND	34K78(Bt)	96	112	112	108	115	110	99	109	108	

DOEBLERS	636XY	-	95	102	-	-	-	102	-	99
AUGUSTA	A885	-	90	93	-	105	-	-	-	97
DEKALB	DK525	-	89	92	-	101	-	-	-	95
PIONEER BRAND	34K77	84	106	96	94	105	94	76	76	91

Early Maturity Brand										
	Hybrid	Holland	Mt Holly		Black-stone	Orange	Augusta	Blacks-burg	Wythe	Mean
			Dry	Irr						
PIONEER BRAND	3223	111	122	112	116	116	-	-	-	115
PIONEER BRAND	3394	98	109	112	106	122	-	-	-	113
AUGUSTA	A285	-	108	108	-	70	140	112	-	108
PIONEER BRAND	33A14(Bt)	97	106	105	100	128	-	-	-	107
MYCOGEN	2799	-	113	107	100	-	-	-	-	107
DEKALB	DK621	-	116	100	-	101	111	-	-	107
PIONEER BRAND	33V08(Bt)	104	109	108	107	101	-	-	-	106
PIONEER BRAND	34T14(Bt/LL)88		116	112	95	113	-	-	-	106
DEKALB	DK611	100	107	108	-	100	115	99	-	105
HYTEST	HT7712	93	110	117	-	-	103	100	-	104
SOUTHERN STATES	EXP77457	100	100	114	-	102	97	-	-	103
DOEBLERS	639XYG	102	106	114	-	78	123	89	-	102
NK BRAND	N7639Bt	-	97	104	-	-	108	97	104	102
MYCOGEN	2725	-	105	108	86	-	-	-	-	100
SOUTHERN STATES	729CL	94	106	99	-	100	94	106	-	100
AUGUSTA	A9864	-	100	108	-	90	-	-	-	100
PIONEER BRAND	32K62(Bt)	97	98	118	97	66	104	121	102	100
PIONEER BRAND	33Y09(Bt)	99	104	98	103	111	93	96	94	100
PIONEER BRAND	33K81	86	111	103	94	95	115	100	95	100
NK BRAND	N79-L3	110	102	109	-	-	91	89	96	100
PIONEER BRAND	33G26	96	106	105	102	89	96	101	98	99
PIONEER BRAND	33J56	-	-	-	-	96	96	97	106	99
PIONEER BRAND	32K61	96	108	109	98	60	99	111	108	98
WILSON	E4015Bt	99	90	102	-	-	-	93	-	96
PIONEER BRAND	3310	-	-	-	104	87	99	92	100	96
GARST	8464	84	105	94	-	-	102	92	-	96
WILSON	E4012	91	101	93	-	-	-	100	-	96
HYTEST	HTX7730	95	101	93	-	-	-	-	-	96
MID-ATLANTIC	MA9111YG	-	-	-	-	80	91	110	100	95
AUGUSTA	A385	-	90	106	-	41	144	-	-	95
WILSON	1792	84	102	98	-	-	-	92	-	94
AUGUSTA	A3313	-	97	108	-	82	-	92	-	94
DOEBLERS	642XP	93	-	-	-	107	82	-	94	94
MID-ATLANTIC	MA9121YG	-	-	-	-	46	125	111	91	93
SOUTHERN STATES	726	-	107	105	-	62	96	84	100	92
DEKALB	DK647	83	105	107	-	68	96	-	-	92
AUGUSTA	A6485	-	105	104	-	51	-	-	-	87

Medium Maturity Brand	Mt Holly				Black-stone	Orange	Blacks-burg			Mean
	Hybrid	Holland	Dry	Irr			Augusta	Wythe		
PIONEER BRAND	31B13(Bt)	118	121	106	102	142	-	-	-	118
NK BRAND	N75-T2	-	99	103	-	116	110	-	-	107
PIONEER BRAND	31G20	110	95	104	111	115	120	95	106	105
AUGUSTA	A2513	-	95	92	-	106	-	123	-	104
PIONEER BRAND	3163	120	102	98	102	115	80	105	106	104
AUGUSTA	A2062	-	92	86	-	124	114	105	-	104
DEKALB	DK658	-	-	-	96	112	-	100	-	103
SOUTHERN STATES	849CL	-	-	-	-	104	93	102	106	101
AUGUSTA	A9561	-	87	101	-	116	-	-	-	101
SOUTHERN STATES	859CL	111	90	95	-	108	94	104	96	100
NK BRAND	NX8318	113	89	71	-	-	100	121	104	100
HYTEST	HT7820	106	73	98	-	-	109	108	-	99
AUGUSTA	A6462	-	102	90	-	104	-	-	-	99
AUGUSTA	A552	-	87	98	96	102	-	107	-	99
SOUTHERN STATES	769Bt	94	100	98	-	94	111	87	103	98
AUGUSTA	A3383	96	106	92	-	107	-	87	-	98
NK BRAND	N83-N5	112	-	-	-	-	77	100	103	98
GARST	8366Bt/LL	94	90	105	-	-	99	101	-	98
DEKALB	DK679	104	96	72	101	121	93	99	-	98
SOUTHERN STATES	EXP78469	106	93	92	-	95	86	114	87	96
DOEBLERS	851XY	-	98	81	-	110	75	103	107	96
DEKALB	DK650	99	82	91	90	108	97	90	-	94
AUGUSTA	A2062aa	-	77	87	-	112	-	100	-	94
DOEBLERS	765XYG	-	94	88	-	98	91	-	-	93
AUGUSTA	A3556	-	75	86	99	93	84	101	99	91
MYCOGEN	2888IMI	-	88	80	96	-	-	-	-	89
AUGUSTA	A5650	-	66	87	-	77	-	-	-	78

Mid-Full Maturity Brand	Mt Holly				Black-stone	Orange	Blacks-burg			Mean
	Hybrid	Holland	Dry	Irr			Augusta	Wythe		
DOEBLERS	859XY*	113	87	92	-	105	102	94	106	100
SOUTHERN STATES	EXP79027	108	102	108	-	90	78	100	98	98
DEKALB	DK697	97	84	101	96	-	108	98	-	97
MID-ATLANTIC	MA9200	-	-	-	-	93	90	100	106	97
GARST	8285	104	97	98	-	-	86	-	-	96
PIONEER BRAND	3156	-	-	-	-	104	89	94	98	96
DOEBLERS	851XY*	-	-	-	-	95	78	102	-	92
GARST	8220	95	89	102	-	-	77	92	-	90
NK BRAND	NX8308	-	97	109	-	76	81	-	-	90

*Relative yield is calculated by dividing the yield of a hybrid by the average yield of all hybrids of all maturities at that location. A hybrid with a relative yield of 105 was 5% above the average of all hybrids at that location. The value of 105 is **not** a yield but a value relative to all other yield values at that location. Relative yields are listed in order of descending mean values.

Table 2. Two Year Average RELATIVE YIELD* (1998-1999) of hybrids entered in three or more locations each year.

Very Early Maturity Brand\Company	Hybrid	# Observations	Relative Yield
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AUGUSTA	A9873	22	110
DOEBLERS	636XY	25	105
PIONEER BRAND	34K77	60	96
AUGUSTA	A885	25	92

Early Maturity Brand\Company	Hybrid	# Observations	Relative Yield
PIONEER BRAND	3223	37	113
PIONEER BRAND	33V08(Bt)	37	108
AUGUSTA	A285	37	105
NK BRAND	N7639Bt	38	104
PIONEER BRAND	33Y09(Bt)	60	104
NK BRAND	N79-L3	37	103
AUGUSTA	A9864	22	102
DOEBLERS	642XP	27	102
PIONEER BRAND	3394	37	102
PIONEER BRAND	33G26	60	102
PIONEER BRAND	3310	38	102
PIONEER BRAND	32K61	60	99
AUGUSTA	A385	30	98
AUGUSTA	A6485	22	96
WILSON	1792	26	93
SOUTHERN STATES	726	34	92
GARST	8464	37	91

Medium Maturity Brand\Company	Hybrid	# Observations	Relative Yield
PIONEER BRAND	31B13(Bt)	37	111
PIONEER BRAND	3163	60	103
PIONEER BRAND	31G20	60	103
NK BRAND	N83-N5	30	102
SOUTHERN STATES	849CL	30	98
AUGUSTA	A2062	41	96
DEKALB	DK679	49	96
AUGUSTA	A552	41	94
AUGUSTA	A2062aa	26	93

Mid-Full Maturity Brand\Company	Hybrid	# Observations	Relative Yield
MID-ATLANTIC	MA9200	30	100
PIONEER BRAND	3156	34	100
DOEBLERS	859XY	44	97
GARST	8220	34	96

*Relative yield is calculated by dividing the yield of a hybrid by the average yield of all hybrids of all maturities at that location. A hybrid with a relative yield of 105 was 5% above the average of all hybrids at that location. The value of 105 is **not** a yield but a value relative to all other yield values at that location. Relative yields are listed in order of descending mean values.

Table 3. Three Year Average RELATIVE YIELD* (1997-1999) of hybrids entered in three or more locations each year.

Very Early Maturity Brand\Company	Hybrid	# Observations	Relative Yield
DOEBLERS	636XY	37	102
AUGUSTA	A885	41	95

Early Maturity **Relative**

Brand\Company	Hybrid	# Observations	Yield
PIONEER	3223	57	113
PIONEER BRAND	33V08-Bt	49	108
AUGUSTA	A285	53	105
PIONEER	3394	57	104
PIONEER BRAND	33Y09-Bt	87	104
PIONEER	3310	65	102
AUGUSTA	A385	46	101
AUGUSTA	A552	52	101
PIONEER BRAND	32K61	87	101
SOUTHERN STATES	SS726	46	97

Medium Maturity Brand\Company	Hybrid	# Observations	Relative Yield
PIONEER BRAND	31B13-Bt	49	113
PIONEER	3163	95	105
DEKALB	DK679	68	102
AUGUSTA	A2062	68	101

Mid-Full Maturity Brand\Company	Hybrid	# Observations	Relative Yield
PIONEER BRAND	3156	57	99
MID-ATLANTIC	MA9200	49	98

*Relative yield is calculated by dividing the yield of a hybrid by the average yield of all hybrids of all maturities at that location. A hybrid with a relative yield of 105 was 5% above the average of all hybrids at that location. The value of 105 is **not** a yield but a value relative to all other yield values at that location. Relative yields are listed in order of descending mean values.

Table 4. Yields at HOLLAND, VA in 1999. Population averaged 25,325 plants/acre.

Very Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu	Lodging %
AUGUSTA	A9884	184	19.5	56.1	6
SOUTHERN STATES	EXP77095	179	17.1	54.4	10
PIONEER BRAND	34K78(Bt)	167	20.6	56.5	3
DOEBLERS	585XPT	156	18.3	60.0	4
PIONEER BRAND	34K77	146	19.8	56.0	2
Maturity Average		167	19.0	56.7	5
LSD		18	0.7	1.5	4
Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu	Lodging %
PIONEER BRAND	3223	192	20.2	56.0	9
NK BRAND	N79-L3	190	21.6	59.8	3
HYPERFORMER	HY9646	187	18.6	54.7	7
PIONEER BRAND	33V08(Bt)	179	19.5	57.5	4
DOEBLERS	639XYG	177	19.1	53.4	3
DEKALB	DK611	173	19.2	57.4	10
SOUTHERN STATES	EXP77457	173	18.9	54.7	6
PIONEER BRAND	33Y09(Bt)	172	20.4	58.1	13
WILSON	E1046	171	20.0	54.1	16
WILSON	E4015Bt	171	21.4	58.0	9
WILSON	E4017	170	22.3	57.1	12
PIONEER BRAND	3394	170	19.3	56.9	9
PIONEER BRAND	33A14(Bt)	168	20.8	56.2	3
PIONEER BRAND	32K62(Bt)	168	19.7	58.1	4
PIONEER BRAND	32K61	167	20.0	58.0	6
PIONEER BRAND	33G26	166	20.1	54.7	6
AGRIPRO	AP9689Bt	166	19.7	57.4	2
HYTEST	HTX7730	165	19.6	58.2	12
SOUTHERN STATES	729CL	163	18.4	55.3	5
DOEBLERS	642XP	161	19.3	58.1	11
HYTEST	HT7712	161	20.0	56.8	10
WILSON	E4012	157	22.8	56.6	19
PIONEER BRAND	34T14(Bt/LL)	152	20.2	58.1	3
WILSON	E4025	152	22.7	54.0	24
PIONEER BRAND	33K81	149	20.9	58.2	7
WILSON	1792	146	21.4	56.6	13
GARST	8464	146	20.4	54.7	4
DEKALB	DK647	143	19.5	52.6	6
Maturity Average		166	20.2	56.5	8
LSD		25	1.4	1.2	9
Medium Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu	Lodging %
PIONEER BRAND	3163	208	20.3	56.2	6
PIONEER BRAND	31B13(Bt)	205	21.0	57.2	7
NK BRAND	NX8318	196	20.0	57.7	9
NK BRAND	N83-N5	195	21.1	57.5	10
SOUTHERN STATES	859CL	192	21.2	53.3	12
PIONEER BRAND	31G20	190	21.2	56.9	8

SOUTHERN STATES	EXP78469	184	20.8	54.2	5
AGRIPRO	AP9909	184	20.1	57.3	10
HYTEST	HT7820	183	21.5	53.8	7
DEKALB	DK679	181	20.5	57.3	11
AGRIPRO	AP9829IMI	180	20.0	57.2	17
DOEBLERS	859XY	179	20.5	58.0	11
DOEBLERS	75X2PT	174	19.3	56.8	14
DEKALB	DK650	171	22.6	55.3	12
HYPERFORMER	HS9843	168	19.3	56.9	4
AUGUSTA	A3383	166	21.1	57.5	4
SOUTHERN STATES	769Bt	162	19.9	58.3	3
GARST	8366Bt/LL	162	18.3	51.3	6
Maturity Average		182	20.5	56.3	9
LSD		25	1.2	1.1	8
Mid-Full Maturity		Yield	Moist	Test Wt	Lodging
Brand/Company	Hybrid	bu/A	%	lb/bu	%
DOEBLERS	859XY	195	19.9	57.9	10
SOUTHERN STATES	EXP79027	188	21.1	55.0	8
PIONEER BRAND	3167	181	21.9	52.1	11
GARST	8285	180	19.3	56.9	8
DEKALB	DK697	167	22.4	57.3	15
GARST	8220	164	24.4	49.0	11
Maturity Average		179	21.5	54.7	10
LSD		33	1.2	1.3	8
Location Average		173	20.3	56.2	8

Table 5. Two year average yields at HOLLAND, VA in 1998 and 1999.

Very Early Maturity		Yield	Moist	Test Wt
Brand/Company	Hybrid	bu/A	%	lb/bu
PIONEER BRAND	34K77	110	18.2	53.8
Early Maturity		Yield	Moist	Test Wt
Brand/Company	Hybrid	bu/A	%	lb/bu
PIONEER BRAND	3223	179	19.3	55.7
NK BRAND	N79-L3	173	20.8	59.1
PIONEER BRAND	33V08(Bt)	157	18.6	56.9
PIONEER BRAND	33G26	154	18.6	54.5
PIONEER BRAND	33Y09(Bt)	148	19.2	56.6
PIONEER BRAND	3394	144	18.3	56.7
WILSON	1792	140	19.5	56.1
GARST	8464	129	19.1	53.7
PIONEER BRAND	32K61	126	18.9	55.1
Maturity Average		150	19.1	56.1
LSD		28	0.7	1.5
Medium Maturity		Yield	Moist	Test Wt
Brand/Company	Hybrid	bu/A	%	lb/bu
PIONEER BRAND	31B13(Bt)	181	20.1	55.8
PIONEER BRAND	3163	177	19.5	54.7
NK BRAND	N83-N5	165	19.9	56.7
PIONEER BRAND	31G20	154	20.1	55.9

DEKALB	DK679	153	18.9	56.7
Maturity Average		167	19.7	55.9
LSD		28	0.9	1.6
Mid-Full Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
DOEBLERS	859XY	166	19.0	57.6
Location Average		154	19.3	56.0

3 YEAR RESULTS AT HOLLAND ARE UNAVAILABLE DUE TO CROP LOSS IN 1997.

Table 6. Yields at MT HOLLY, VA in 1999. Population averaged 24,742 plants/acre.

Very Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu	Lodging %
AUGUSTA	A9873	114	18.2	58.6	0
SOUTHERN STATES	EXP77095	113	18.0	56.6	10
AUGUSTA	A9884	111	20.5	60.9	0
PIONEER BRAND	34K78(Bt)	110	21.4	60.4	0
PIONEER BRAND	34K77	105	19.5	59.7	0
DEKALB	DK585	103	17.8	58.0	0
DOEBLERS	636XY	94	19.4	58.9	4
AUGUSTA	A885	89	20.4	58.7	0
DEKALB	DK525	89	18.9	61.3	0
Maturity Average		104	19.4	59.3	1
LSD		14	1.2	1.4	10
Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu	Lodging %
PIONEER BRAND	3223	121	21.7	58.7	2
DEKALB	DK621	115	20.6	59.1	0
PIONEER BRAND	34T14(Bt/LL)	114	21.4	60.7	0
MYCOGEN	2799	112	20.1	58.0	0
PIONEER BRAND	33K81	110	21.3	60.0	0
HYTEST	HT7712	109	22.3	59.3	3
PIONEER BRAND	3394	108	21.2	59.5	0
PIONEER BRAND	33V08(Bt)	108	21.3	59.2	0
PIONEER BRAND	32K61	107	21.3	61.6	0
AUGUSTA	A285	107	19.5	57.1	0
SOUTHERN STATES	726	106	20.4	57.3	0
DEKALB	DK611	106	20.2	60.5	5
SOUTHERN STATES	729CL	105	19.3	58.7	0
DOEBLERS	639XYG	105	19.9	58.7	0
PIONEER BRAND	33G26	105	21.8	59.8	0
MYCOGEN	2725	104	21.5	58.0	0
PIONEER BRAND	33A14(Bt)	104	21.4	58.5	0
GARST	8464	104	21.7	58.0	0
AUGUSTA	A6485	104	20.4	58.2	0
DEKALB	DK647	104	20.4	57.5	1
PIONEER BRAND	33Y09(Bt)	103	20.8	60.4	0
NK BRAND	N79-L3	101	22.0	61.1	0
WILSON	1792	101	22.2	56.6	0
HYTEST	HTX7730	100	18.6	60.0	0
WILSON	E4012	100	23.0	57.1	1
SOUTHERN STATES	EXP77457	99	19.0	59.0	0
AUGUSTA	A9864	99	19.3	60.0	4
PIONEER BRAND	32K62(Bt)	97	22.7	60.7	0
NK BRAND	N7639Bt	96	21.0	59.9	0
AUGUSTA	A3313	96	22.3	54.6	0
WILSON	E4015Bt	89	23.3	58.6	16
AUGUSTA	A385	89	19.9	56.3	0
Maturity Average		104	21.0	58.8	1
LSD		14	1.7	1.8	5
Medium Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu	Lodging %
PIONEER BRAND	31B13(Bt)	120	22.3	58.9	0

AUGUSTA	A3383	105	19.8	59.5	0
PIONEER BRAND	3163	101	21.1	59.8	1
AUGUSTA	A6462	101	22.4	59.8	0
SOUTHERN STATES	769Bt	99	21.8	60.4	0
NK BRAND	N75-T2	98	21.1	61.5	4
DOEBLERS	851XY	97	21.3	56.3	0
DEKALB	DK679	95	21.6	59.1	1
PIONEER BRAND	31G20	94	21.9	60.7	0
AUGUSTA	A2513	94	22.0	54.2	0
DOEBLERS	765XYG	93	22.0	59.5	6
SOUTHERN STATES	EXP78469	92	21.1	54.1	0
AUGUSTA	A2062	91	22.1	59.5	0
SOUTHERN STATES	859CL	90	20.9	55.1	0
GARST	8366Bt/LL	89	20.0	58.2	0
NK BRAND	NX8318	88	21.0	59.1	5
MYCOGEN	2888IMI	87	20.6	59.0	2
AUGUSTA	A9561	86	21.1	56.9	0
AUGUSTA	A552	86	20.1	56.6	1
DEKALB	DK650	81	19.6	60.0	0
AUGUSTA	A2062aa	76	23.1	56.8	0
AUGUSTA	A3556	74	20.2	58.1	3
HYTEST	HT7820	73	19.6	56.5	0
AUGUSTA	A5650	66	20.7	55.5	3
Maturity Average		91	21.2	58.3	1
LSD		17	1.7	1.8	5

Mid-Full Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu	Lodging %
SOUTHERN STATES	EXP79027	101	20.1	55.7	0
GARST	8285	96	23.2	57.4	0
NK BRAND	NX8308	96	23.0	59.5	4
GARST	8220	88	21.3	54.4	0
DOEBLERS	859XY	86	22.5	57.9	1
DEKALB	DK697	83	22.5	58.6	0
Maturity Average		92	22.1	57.3	1
LSD		15	3.5	1.6	5
Location Average		99	21.0	58.5	1

Table 7. Two year average yields at MT HOLLY, VA in 1998 and 1999.

Very Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	34K77	137	16.1	60.1
AUGUSTA	A9873	125	15.0	58.1
DOEBLERS	636XY	114	17.4	58.8
AUGUSTA	A885	103	16.5	58.6
Maturity Average		119	16.3	58.8
LSD		31	1.1	1.6
Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	3223	139	18.6	58.5
GARST	8464	129	17.9	57.3
PIONEER BRAND	33V08(Bt)	128	17.7	58.9
PIONEER BRAND	33Y09(Bt)	126	17.9	60.2
AUGUSTA	A285	125	16.4	57.3
SOUTHERN STATES	726	123	17.1	57.6
PIONEER BRAND	32K61	122	18.0	61.2
AUGUSTA	A6485	122	17.3	58.1
PIONEER BRAND	3394	119	17.9	59.4
AUGUSTA	A9864	119	16.9	59.8
AUGUSTA	A385	119	17.0	56.1
NK BRAND	N79-L3	118	18.7	61.7
PIONEER BRAND	33G26	117	18.1	59.3
NK BRAND	N7639Bt	115	18.2	60.0
WILSON	1792	110	18.2	57.1
Maturity Average		122	17.7	58.8
LSD		17	1.0	1.3
Medium Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
DEKALB	DK679	116	17.3	59.7
AUGUSTA	A552	113	17.0	57.4
PIONEER BRAND	31B13(Bt)	113	18.2	59.0
PIONEER BRAND	31G20	110	19.0	60.5
AUGUSTA	A2062	104	18.6	58.8
PIONEER BRAND	3163	102	17.2	58.9
AUGUSTA	A2062aa	101	18.8	57.3
Maturity Average		108	18.1	58.8
LSD		25	1.6	1.6

Mid-Full Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
GARST	8220	107	18.4	54.9
DOEBLERS	859XY	102	19.6	58.6
Maturity Average		105	19.0	56.8
LSD		18	2.0	1.1
Location Average		117	17.7	58.7

3 YEAR RESULTS AT MT HOLLY ARE UNAVAILABLE DUE TO CROP LOSS IN 1997.

Table 8. Yields at MT HOLLY, VA under irrigation in 1999. Population averaged 27,372 plants/acre.

Very Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	34K78(Bt)	225	23.6	59.4
DOEBLERS	636XY	204	21.7	56.4
DEKALB	DK585	200	20.5	56.5
AUGUSTA	A9884	199	22.0	58.6
AUGUSTA	A9873	197	21.3	56.1
PIONEER BRAND	34K77	194	23.8	57.0
SOUTHERN STATES	EXP77095	189	21.7	56.6
AUGUSTA	A885	188	21.0	57.2
DEKALB	DK525	184	20.6	59.9
Maturity Average		197	21.9	57.5
LSD		16	2.0	1.3
Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	32K62(Bt)	237	23.3	59.1
HYTEST	HT7712	236	22.7	58.0
SOUTHERN STATES	EXP77457	230	21.1	57.9
DOEBLERS	639XYG	229	21.7	56.3
PIONEER BRAND	34T14(Bt/LL)	226	22.2	58.3
PIONEER BRAND	3223	225	23.0	57.7
PIONEER BRAND	3394	225	21.4	58.9
PIONEER BRAND	32K61	220	23.0	58.7
NK BRAND	N79-L3	219	25.3	60.1
AUGUSTA	A3313	218	23.2	55.0
AUGUSTA	A9864	218	23.3	59.2
AUGUSTA	A285	217	22.6	55.4
PIONEER BRAND	33V08(Bt)	217	22.9	58.3
MYCOGEN	2725	217	22.4	55.7
MYCOGEN	2799	216	24.2	54.4
DEKALB	DK647	216	22.6	56.7
DEKALB	DK611	216	20.7	59.4
AUGUSTA	A385	212	22.7	55.3
PIONEER BRAND	33G26	212	23.4	58.4
PIONEER BRAND	33A14(Bt)	211	22.6	57.3
SOUTHERN STATES	726	211	22.6	57.5
NK BRAND	N7639Bt	209	22.9	57.8
AUGUSTA	A6485	209	24.3	54.9
PIONEER BRAND	33K81	208	21.7	59.6
WILSON	E4015Bt	206	25.0	57.2
DEKALB	DK621	201	21.5	58.3
SOUTHERN STATES	729CL	199	23.4	57.8
PIONEER BRAND	33Y09(Bt)	197	22.5	58.9
WILSON	1792	196	23.5	57.0
GARST	8464	189	23.3	54.8
WILSON	E4012	188	25.2	57.3
HYTEST	HTX7730	187	22.8	59.6
Maturity Average		214	22.9	57.6
LSD		20	2.0	1.3

Medium Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	31B13(Bt)	214	24.0	58.3
GARST	8366Bt/LL	211	22.8	55.8
PIONEER BRAND	31G20	209	25.0	59.4
NK BRAND	N75-T2	208	22.8	58.1
AUGUSTA	A9561	203	23.2	56.3
HYTEST	HT7820	198	23.5	55.6
PIONEER BRAND	3163	197	23.1	56.8
SOUTHERN STATES	769Bt	196	23.8	58.0
AUGUSTA	A552	196	22.3	58.5
SOUTHERN STATES	859CL	191	24.3	54.1
AUGUSTA	A3383	185	22.6	59.0
AUGUSTA	A2513	185	25.2	55.0
DEKALB	DK650	184	24.9	56.8
SOUTHERN STATES	EXP78469	184	23.6	54.5
AUGUSTA	A6462	181	22.6	57.8
DOEBLERS	765XYG	177	23.1	60.4
AUGUSTA	A5650	175	25.0	53.5
AUGUSTA	A3556	174	24.3	56.3
AUGUSTA	A2062aa	174	24.8	56.1
AUGUSTA	A2062	172	25.4	57.8
DOEBLERS	851XY	164	23.6	55.6
MYCOGEN	2888IMI	161	23.9	58.9
DEKALB	DK679	145	26.1	59.0
NK BRAND	NX8318	142	26.8	59.7

Maturity Average		185	24.1	57.2
LSD		21	2.7	1.9

Mid-Full Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
NK BRAND	NX8308	220	23.5	57.7
SOUTHERN STATES	EXP79027	217	24.0	54.9
GARST	8220	204	24.7	54.6
DEKALB	DK697	203	25.4	57.2
GARST	8285	198	23.2	57.5
DOEBLERS	859XY	185	24.6	55.9

Maturity Average		204	24.2	56.3
LSD		21	1.6	4.0

Location Average		201	23.3	57.3
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Table 9. Two year average yields at MT HOLLY, VA under irrigation in 1998 and 1999.

Very Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	34K77	225	21.1	57.5
AUGUSTA	A9873	215	18.8	57.3
DOEBLERS	636XY	213	20.2	57.3
AUGUSTA	A885	201	19.5	55.2
Maturity Average		214	19.8	56.8
LSD		12	1.7	3.3
Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	3223	241	21.5	55.6
PIONEER BRAND	3394	232	20.4	56.5
PIONEER BRAND	33V08(Bt)	231	20.9	56.5
NK BRAND	N79-L3	228	23.4	58.8
PIONEER BRAND	33G26	225	21.9	57.6
PIONEER BRAND	32K61	222	20.8	58.7
AUGUSTA	A385	221	21.2	54.5
NK BRAND	N7639Bt	220	20.1	56.9
PIONEER BRAND	33Y09(Bt)	219	19.8	56.6
SOUTHERN STATES	726	218	20.9	55.8
AUGUSTA	A9864	218	21.0	57.0
AUGUSTA	A285	217	20.9	54.2
AUGUSTA	A6485	214	22.4	53.8
WILSON	1792	214	22.1	55.6
GARST	8464	195	21.8	53.7
Maturity Average		221	21.3	56.1
LSD		15	2.1	1.3
Medium Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	31B13(Bt)	238	23.1	55.7
PIONEER BRAND	3163	230	22.2	54.6
PIONEER BRAND	31G20	225	24.5	57.2
AUGUSTA	A552	215	20.8	55.7
AUGUSTA	A2062	201	23.6	56.3
AUGUSTA	A2062aa	200	23.4	54.2
DEKALB	DK679	180	24.1	57.1
Maturity Average		213	23.1	55.8
LSD		18	1.7	1.0
Mid-Full Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
GARST	8220	213	24.1	52.4
DOEBLERS	859XY	205	23.4	55.9
Maturity Average		209	23.7	54.3
LSD		29	1.7	4.5
Location Average		217	21.7	56.0

Table 10. Three year average yields at MT HOLLY, VA under irrigation in 1997, 1998 and 1999.

Very Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
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DOEBLERS	636XY	220	20.3	55.8
AUGUSTA	A885	212	19.6	54.7
Maturity Average		216	19.9	55.2
LSD		10	0.5	3.2
Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	3223	237	22.1	54.5
PIONEER BRAND	3394	232	20.4	55.9
PIONEER BRAND	32K61	231	21.2	57.4
PIONEER BRAND	33V08(Bt)	227	20.9	55.8
AUGUSTA	A385	225	21.6	53.3
AUGUSTA	A285	221	21.1	53.6
PIONEER BRAND	33Y09(Bt)	219	20.2	56.0
SOUTHERN STATES	726	216	21.7	54.5
Maturity Average		226	21.2	55.1
LSD		13	1.5	1.1
Medium Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	31B13(Bt)	239	23.4	54.7
PIONEER BRAND	3163	230	22.8	54.0
AUGUSTA	A552	224	22.3	54.4
AUGUSTA	A2062	213	24.3	55.0
DEKALB	DK679	199	24.1	55.8
Maturity Average		221	23.4	54.8
LSD		13	1.2	0.7
Location Average		223	21.7	55.0

Table 11. Yields at BLACKSTONE, VA in 1999. Population averaged 24,752 plants/acre.

Very Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu	Lodging %	Days To Silk
PIONEER BRAND	34K78(Bt)	144	20.9	60.1	6	74
PIONEER BRAND	34K77	124	18.9	61.1	12	73
Maturity Average		136	19.8	60.8	11	74
LSD		19	0.9	1.1	17	1
Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu	Lodging %	Days To Silk
PIONEER BRAND	3223	154	21.3	59.0	9	74
PIONEER BRAND	33V08(Bt)	143	20.6	60.2	1	72
PIONEER BRAND	3394	141	20.3	60.5	2	72
PIONEER BRAND	3310	138	22.2	58.9	3	74
PIONEER BRAND	33Y09(Bt)	137	20.6	60.1	1	73
PIONEER BRAND	33G26	135	20.6	59.8	4	74
MYCOGEN	2799	134	20.1	58.1	3	72
PIONEER BRAND	33A14(Bt)	133	20.8	59.0	5	73
PIONEER BRAND	32K61	130	21.4	59.7	1	75
PIONEER BRAND	32K62(Bt)	129	22.3	60.5	2	75
PIONEER BRAND	34T14(Bt/LL)	127	20.4	61.3	3	73
PIONEER BRAND	33K81	124	20.9	59.5	7	73
MYCOGEN	2725	114	19.9	56.4	0	73
Maturity Average		134	20.9	59.5	3	73
LSD		14	1.0	1.7	6	1
Medium Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu	Lodging %	Days To Silk
PIONEER BRAND	31G20	147	23.0	59.3	19	75
PIONEER BRAND	31B13(Bt)	136	22.6	58.1	11	75
PIONEER BRAND	3163	136	21.1	58.3	15	75
MID-ATLANTIC	MA9170	134	20.3	57.6	11	75
DEKALB	DK679	134	21.0	59.2	20	75
AUGUSTA	A3556	132	22.3	57.1	14	76
MYCOGEN	2888IMI	128	20.9	58.7	24	75
DEKALB	DK658	128	20.0	59.2	5	75
AUGUSTA	A552	128	21.5	57.8	16	76
DEKALB	DK650	120	20.1	59.0	11	75
Maturity Average		132	21.3	58.4	15	75
LSD		16	1.0	1.3	15	1
Mid-Full Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu	Lodging %	Days To Silk
DEKALB	DK697	128	22.8	59.8	5	75
PIONEER BRAND	3167	128	26.0	57.5	29	77
Maturity Average		128	24.4	58.7	17	76
LSD		25	3.5	2.4	29	3
Location Average		133	21.2	59.1	9	74

Table 12. Two year average yields at BLACKSTONE, VA in 1998 and 1999.

Very Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
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PIONEER BRAND	34K77	127	17.9	60.8
Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	3223	160	19.7	58.9
PIONEER BRAND	33V08(Bt)	149	18.9	60.6
PIONEER BRAND	33Y09(Bt)	147	18.9	60.1
PIONEER BRAND	33G26	139	19.0	60.1
PIONEER BRAND	3310	139	20.2	59.2
PIONEER BRAND	3394	137	18.8	60.2
PIONEER BRAND	32K61	132	19.8	60.4
Maturity Average		144	19.3	59.9
LSD		12	0.6	1.1
Medium Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	31B13(Bt)	154	20.9	58.4
PIONEER BRAND	31G20	150	21.2	59.3
PIONEER BRAND	3163	140	19.8	58.4
DEKALB	DK679	139	19.3	59.2
AUGUSTA	A552	136	19.6	57.4
Maturity Average		144	20.2	58.6
LSD		12	0.6	0.7
Location Average		142	19.5	59.5

Table 13. Three year average yields at BLACKSTONE, VA in 1997, 1998 and 1999.

Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	3310	129	21.6	56.5
PIONEER BRAND	3394	127	19.3	56.8
PIONEER BRAND	33V08(Bt)	140	19.6	57.6
PIONEER BRAND	32K61	131	21.0	58.1
PIONEER BRAND	33Y09(Bt)	132	22.8	56.5
PIONEER BRAND	3223	149	21.0	56.5
Maturity Average		135	20.9	57.0
LSD		10	1.3	1.1
Medium Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	31B13(Bt)	144	23.4	56.3
PIONEER BRAND	3163	131	21.7	55.3
AUGUSTA	A552	133	21.0	54.7
Maturity Average		136	22.0	55.5
LSD		9	2.1	1.4
Location Average		135	21.3	56.4

Table 14. Yields at ORANGE, VA in 1999. Population averaged 23,232 plants/acre.

Very Early Maturity Brand/Company	Hybrid	Yield %	Moist lb/bu	Lodging %	Days To Silk	Ear Ht inches
AUGUSTA	A9884	93	19.9	19	68	35
SOUTHERN STATES	EXP77095	90	18.8	45	68	41
DEKALB	DK585	87	18.5	14	64	35
AUGUSTA	A9873	87	18.6	8	67	37
PIONEER BRAND	34K78(Bt)	79	20.7	1	69	35
PIONEER BRAND	34K77	72	18.0	18	66	34
AUGUSTA	A885	72	19.3	16	66	36
DEKALB	DK525	70	16.9	36	65	35
DOEBLERS	585XPT	68	17.2	5	65	35
Maturity Average		82	18.7	18	66	36
LSD		12	0.9	12	1	2
Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Lodging %	Days To Silk	Ear Ht inches
PIONEER BRAND	33A14(Bt)	88	21.1	6	67	34
PIONEER BRAND	3394	84	20.1	3	67	36
PIONEER BRAND	3223	80	22.6	4	73	39
PIONEER BRAND	34T14(Bt/LL)	78	20.7	3	68	35
PIONEER BRAND	33Y09(Bt)	77	20.0	1	69	35
DOEBLERS	642XP	74	18.5	11	69	32
DEKALB	DK621	70	19.2	24	67	33
PIONEER BRAND	33V08(Bt)	70	21.6	1	68	33
SOUTHERN STATES	EXP77457	70	19.4	4	69	34
DEKALB	DK611	69	18.9	45	69	34
SOUTHERN STATES	729CL	69	21.4	14	72	34
PIONEER BRAND	33J56	66	21.7	6	68	34
PIONEER BRAND	33K81	65	19.5	14	70	32
AUGUSTA	A9864	62	20.9	4	73	35
PIONEER BRAND	33G26	61	20.4	4	70	34
PIONEER BRAND	3310	60	22.1	13	70	35
AUGUSTA	A3313	56	22.8	31	72	30
MID-ATLANTIC	MA9111YG	55	20.7	9	69	33
DOEBLERS	639XYG	54	20.9	10	71	32
SOUTHERN STATES	EXP78228	49	18.6	54	68	32
AUGUSTA	A285	49	21.7	3	70	33
DEKALB	DK647	47	20.0	10	70	34
PIONEER BRAND	32K62(Bt)	45	21.4	0	74	32
SOUTHERN STATES	726	43	19.8	4	72	34
PIONEER BRAND	32K61	41	20.9	4	73	32
AUGUSTA	A6485	35	19.5	3	69	31
MID-ATLANTIC	MA9121YG	31	20.6	3	73	33
BIO GENE	BG316	29	22.8	6	70	31
AUGUSTA	A385	28	21.3	4	73	34
Maturity Average		59	20.6	10	70	33
LSD		11	1.2	9	2	3
Medium Maturity Brand/Company	Hybrid	Yield %	Moist lb/bu	Lodging %	Days To Silk	Ear Ht inches
PIONEER BRAND	31B13(Bt)	98	23.5	8	72	41

BIO GENE	BG408	88	22.0	3	71	41
BIO GENE	BG422	86	21.9	20	71	37
AUGUSTA	A2062	85	23.1	21	72	38
NK BRAND	N70-D5	84	19.1	6	68	34
DEKALB	DK679	83	21.8	28	72	40
AUGUSTA	A9561	80	22.6	4	72	34
NK BRAND	N75-T2	80	21.0	5	69	34
PIONEER BRAND	31G20	80	22.3	6	71	35
PIONEER BRAND	3163	79	22.2	13	72	38
BIO GENE	BG407	78	20.2	29	71	38
DEKALB	DK658	77	20.8	2	71	35
AUGUSTA	A2062aa	77	22.5	25	73	38
DOEBLERS	851XY	76	21.1	29	72	36
DEKALB	DK650	75	18.5	4	71	35
SOUTHERN STATES	859CL	74	23.0	21	72	35
AUGUSTA	A3383	74	19.2	8	68	33
AUGUSTA	A2513	73	25.1	20	70	33
SOUTHERN STATES	849CL	72	23.7	24	71	31
AUGUSTA	A6462	72	20.9	10	68	35
AUGUSTA	A552	70	23.6	3	76	38
DOEBLERS	765XYG	68	19.6	13	70	36
SOUTHERN STATES	EXP78469	65	22.9	7	70	33
SOUTHERN STATES	769Bt	65	22.6	5	69	32
AUGUSTA	A3556	64	22.5	24	74	37
BIO GENE	BG430Bt	62	22.6	4	71	33
AUGUSTA	A5650	53	25.7	1	76	36

Maturity Average		76	22.0	13	71	36
LSD		10	1.2	12	1	3

Mid-Full Maturity Brand/Company	Hybrid	Yield %	Moist lb/bu	Lodging %	Days To Silk	Ear Ht inches
PIONEER BRAND	3156	72	24.7	22	72	38
DOEBLERS	859XY	72	23.6	11	74	38
DOEBLERS	851XY	66	21.8	23	73	36
MID-ATLANTIC	MA9200	64	25.6	10	72	33
SOUTHERN STATES	EXP79027	62	22.8	8	73	34
NK BRAND	NX8308	53	21.9	6	72	35
Maturity Average		65	23.4	13	73	36
LSD		10	1.2	11	2	3
Location Average		69	21.1	12	70	35

Table 15. Two year average yields at ORANGE, VA in 1998 and 1999.

Very Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Lodging %	Days To Silk	Ear Ht inches
AUGUSTA	A9873	107	19.6	12	65	43
AUGUSTA	A885	99	20.2	10	64	39
PIONEER BRAND	34K77	97	19.8	12	64	39
Maturity Average		101	19.9	11	64	41
LSD		12	0.8	7	1	2
Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Lodging %	Days To Silk	Ear Ht inches
PIONEER BRAND	33V08(Bt)	99	24.2	7	66	41
PIONEER BRAND	33Y09(Bt)	97	23.0	11	67	44
PIONEER BRAND	3394	96	20.8	11	66	42
AUGUSTA	A9864	91	22.2	12	69	42
PIONEER BRAND	3223	90	26.9	25	71	47
PIONEER BRAND	33G26	86	21.1	11	67	41
PIONEER BRAND	3310	79	23.4	17	68	41
AUGUSTA	A285	72	23.2	12	68	40
AUGUSTA	A6485	71	20.7	8	67	37
PIONEER BRAND	32K61	69	23.1	12	70	41
SOUTHERN STATES	726	69	21.6	13	68	42
AUGUSTA	A385	55	26.2	10	71	42
Maturity Average		81	23.0	12	68	42
LSD		10	1.9	7	2	2
Medium Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Lodging %	Days To Silk	Ear Ht inches
PIONEER BRAND	31B13(Bt)	105	29.3	16	70	49
PIONEER BRAND	31G20	98	26.0	15	68	43
PIONEER BRAND	3163	92	26.4	16	69	44
DEKALB	DK679	91	25.6	29	69	46
AUGUSTA	A2062	88	27.3	24	69	45
AUGUSTA	A552	77	29.5	15	73	47
SOUTHERN STATES	849CL	72	27.1	18	69	39
Maturity Average		89	27.3	19	70	45
LSD		10	1.8	11	1	3
Mid-Full Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Lodging %	Days To Silk	Ear Ht inches
PIONEER BRAND	3156	86	27.0	28	70	46
DOEBLERS	859XY	80	28.7	16	71	45
MID-ATLANTIC	MA9200	73	28.3	9	69	38
Maturity Average		80	28.0	18	70	43
LSD		8	1.5	12	2	2
Location Average		86	24.4	15	68	43

Table 16. Three year average yields at ORANGE, VA in 1997, 1998 and 1999.

Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Days To Silk	Ear Ht inches
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PIONEER BRAND	33V08(Bt)	149	22.1	70	46
PIONEER BRAND	3394	147	20.0	70	47
PIONEER BRAND	3223	146	24.9	75	50
PIONEER BRAND	33Y09(Bt)	145	21.5	72	49
PIONEER BRAND	3310	138	22.5	72	46
PIONEER BRAND	32K61	131	21.6	74	46
SOUTHERN STATES	726	131	21.0	72	46
AUGUSTA	A285	131	22.0	72	44
AUGUSTA	A385	127	24.3	74	46

Maturity Average		138	22.2	72	47
LSD		8	1.4	1	2

Medium Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Days To Silk	Ear Ht inches
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PIONEER BRAND	31B13(Bt)	158	26.1	74	55
PIONEER BRAND	3163	148	24.6	74	49
AUGUSTA	A552	148	27.0	77	53
AUGUSTA	A2062	147	24.9	73	51

Maturity Average		150	25.6	74	52
LSD		8	1.5	1	2

Mid-Full Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Days To Silk	Ear Ht inches
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PIONEER BRAND	3156	141	25.7	74	50
MID-ATLANTIC	MA9200	139	27.2	73	44

Maturity Average		140	26.5	74	47
LSD		8	1.1	1	2

Location Average		142	23.7	73	48
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Table 17. Yields at AUGUSTA, VA in 1999.

Very Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
SOUTHERN STATES	EXP77095	81	21.8	53.4
PIONEER BRAND	34K78(Bt)	81	25.4	53.3
PIONEER BRAND	34K77	70	20.6	54.6
Maturity Average		78	22.1	53.8
LSD		24	6.4	3.9
Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
AUGUSTA	A385	107	23.6	51.0
AUGUSTA	A285	104	23.2	51.8
MID-ATLANTIC	MA9121YG	93	23.7	53.0
DOEBLERS	639XYG	91	21.3	53.9
SOUTHERN STATES	EXP78228	85	21.7	53.7
PIONEER BRAND	33K81	85	24.1	54.1
DEKALB	DK611	85	20.9	54.2
DEKALB	DK621	82	21.1	53.9
NK BRAND	N7639Bt	80	28.3	50.5
PIONEER BRAND	32K61	78	25.6	53.8
DOEBLERS	636XY	78	22.9	52.0
PIONEER BRAND	32K62(Bt)	77	26.0	54.5
GARST	8464	76	22.3	52.2
HYTEST	HT7712	76	26.0	53.1
PIONEER BRAND	3310	73	27.7	52.4
SOUTHERN STATES	EXP77457	72	21.8	52.9
DEKALB	DK647	71	22.6	53.9
PIONEER BRAND	33J56	71	25.3	53.3
PIONEER BRAND	33G26	71	22.9	54.3
SOUTHERN STATES	726	71	22.2	52.2
PIONEER BRAND	33Y09(Bt)	69	24.2	54.2
SOUTHERN STATES	729CL	69	26.7	51.3
NK BRAND	N79-L3	68	28.1	53.5
MID-ATLANTIC	MA9111YG	68	21.8	54.2
DOEBLERS	642XP	60	25.6	52.1
Maturity Average		79	24.1	53.0
LSD		26	3.2	2.2
Medium Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	31G20	89	27.5	54.1
AUGUSTA	A2062	85	31.6	48.7
SOUTHERN STATES	769Bt	82	26.0	51.9
NK BRAND	N75-T2	82	25.7	51.8
HYTEST	HT7820	81	28.3	49.9
NK BRAND	NX8318	74	30.8	50.7
GARST	8366Bt/LL	73	23.4	51.9
DEKALB	DK650	71	23.3	51.9
SOUTHERN STATES	859CL	69	30.3	47.7
SOUTHERN STATES	849CL	69	28.3	49.3
DEKALB	DK679	69	30.9	49.4
DOEBLERS	765XYG	68	26.1	52.5
DOEBLERS	747XY	67	24.6	50.6
SOUTHERN STATES	EXP78469	64	25.7	50.8
AUGUSTA	A3556	62	27.4	50.7
NK BRAND	N70-D5	61	23.8	52.2
PIONEER BRAND	3163	59	27.1	50.9
NK BRAND	N83-N5	57	30.6	51.3

DOEBLERS	851XY	55	29.3	50.2
Maturity Average		70	27.4	50.9
LSD		29	4.3	2.9
Mid-Full Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
DEKALB	DK697	80	28.0	50.0
DOEBLERS	859XY	76	29.3	50.6
DOEBLERS	887V2	69	28.5	50.0
MID-ATLANTIC	MA9200	67	28.5	49.4
PIONEER BRAND	3156	66	32.0	50.1
GARST	8285	63	28.8	50.7
NK BRAND	NX8308	60	28.2	52.2
SOUTHERN STATES	EXP79027	58	31.7	49.0
DOEBLERS	851XY	57	28.7	50.6
GARST	8220	57	27.7	49.8
Maturity Average		65	29.1	50.2
LSD		30	4.6	2.3
Location Average		74	25.9	52.0

Table 18. Two year average yields at AUGUSTA, VA in 1998 and 1999.

Very Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	34K77	128	19.2	56.2
Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
AUGUSTA	A285	147	21.8	52.7
PIONEER BRAND	32K61	143	22.5	56.9
AUGUSTA	A385	142	21.9	51.9
PIONEER BRAND	3310	129	24.2	55.3
NK BRAND	N7639Bt	127	24.7	53.0
PIONEER BRAND	33G26	124	21.8	56.1
PIONEER BRAND	33Y09(Bt)	124	22.9	55.4
DOEBLERS	642XP	114	22.9	54.8
Maturity Average		131	22.9	54.5
LSD		17	2.1	1.2
Medium Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	31G20	141	25.8	55.1
AUGUSTA	A2062	140	26.5	51.8
PIONEER BRAND	3163	124	23.9	53.4
SOUTHERN STATES	849CL	122	25.4	49.8
NK BRAND	N83-N5	118	26.4	53.3
DEKALB	DK679	117	26.8	52.2
Maturity Average		127	25.8	52.6
LSD		21	2.8	1.9
Mid-Full Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
MID-ATLANTIC	MA9200	141	26.1	51.6
PIONEER BRAND	3156	125	27.6	52.3
GARST	8220	121	25.8	50.3

Maturity Average	129	26.5	51.4
LSD	27	2.9	3.0
Location Average	129	24.3	53.4

Table 19. Three year average yields at AUGUSTA, VA in 1997, 1998 and 1999.

Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
AUGUSTA	A385	144	21.8	51.9
PIONEER BRAND	32K61	143	23.3	55.8
AUGUSTA	A285	142	21.5	52.7
PIONEER BRAND	3310	134	23.7	55.3
PIONEER BRAND	33Y09(Bt)	133	23.1	55.2
Maturity Average		139	22.7	54.2
LSD		14	1.2	0.6
Medium Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
AUGUSTA	A2062	142	26.1	51.9
DEKALB	DK679	129	26.4	52.2
PIONEER BRAND	3163	125	23.9	53.3
Maturity Average		132	25.4	52.5
LSD		16	2.0	1.3
Mid-Full Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
MID-ATLANTIC	MA9200	137	26.0	50.9
PIONEER BRAND	3156	130	27.4	51.9
Maturity Average		134	26.7	51.4
LSD		28	2.4	2.3
Location Average		136	24.3	53.1

Table 20. Yields at BLACKSBURG, VA in 1999.

Very Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
SOUTHERN STATES	EXP77095	136	16.7	54.6
DOEBLERS	636XY	122	17.9	55.1
PIONEER BRAND	34K78(Bt)	119	20.3	56.9
PIONEER BRAND	34K77	91	19.8	57.0
DOEBLERS	516XY	88	15.4	54.4
Maturity Average		114	18.1	55.8
LSD		21	1.1	1.2
Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	32K62(Bt)	145	21.4	58.6
AUGUSTA	A285	135	17.7	53.2
MID-ATLANTIC	MA9121YG	133	17.4	54.1
MID-ATLANTIC	MA9111YG	132	17.2	54.0
BIO GENE	BG316	128	19.7	54.5
SOUTHERN STATES	729CL	128	19.2	54.3
PIONEER BRAND	33G26	121	19.6	55.9
PIONEER BRAND	33K81	120	19.8	56.4
HYTEST	HT7712	120	19.2	55.2
WILSON	E4012	120	24.7	53.3
DEKALB	DK611	119	18.2	55.5
DEKALB	DK635	119	17.5	53.5
PIONEER BRAND	32K61	117	19.8	57.0
PIONEER BRAND	33J56	117	19.7	54.9
NK BRAND	N7639Bt	116	19.6	55.6
PIONEER BRAND	33Y09(Bt)	115	18.9	55.4
DOEBLERS	636XY	114	16.7	53.4
WILSON	E4015Bt	112	22.7	53.8
WILSON	1792	111	21.9	51.4
AUGUSTA	A3313	111	21.2	51.0
PIONEER BRAND	3310	110	20.8	53.9
GARST	8464	110	18.5	54.3
NK BRAND	N79-L3	107	20.3	57.9
DOEBLERS	639XYG	107	16.4	53.5
SOUTHERN STATES	726	100	17.9	51.8
Maturity Average		118	19.5	54.7
LSD		25	1.5	2.5
Medium Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
AUGUSTA	A2513	148	23.3	51.9
NK BRAND	NX8318	145	23.6	54.7
SOUTHERN STATES	EXP78469	137	22.1	53.6
MID-ATLANTIC	MAX9184YG	134	22.4	55.6
BIO GENE	BG422	133	22.4	53.4
DOEBLERS	859XY	131	22.7	55.3
HYTEST	HT7820	130	20.7	54.2
AUGUSTA	A552	129	21.7	53.5

BIO GENE	BG430Bt	128	21.1	53.9
PIONEER BRAND	3163	126	20.3	54.3
AUGUSTA	A2062	126	22.9	54.9
BIO GENE	BG408	125	19.5	52.6
SOUTHERN STATES	859CL	125	21.2	52.2
DOEBLERS	851XY	124	20.3	54.4
SOUTHERN STATES	849CL	123	21.4	51.4
GARST	8366Bt/LL	122	17.8	54.5
AUGUSTA	A3556	122	21.6	54.3
AUGUSTA	A2062aa	121	21.8	54.0
NK BRAND	N83-N5	120	22.3	53.3
DEKALB	DK658	120	19.4	54.7
BIO GENE	BG407	118	20.6	54.4
DEKALB	DK679	118	22.3	55.7
PIONEER BRAND	31G20	114	23.3	55.1
DEKALB	DK650	108	17.8	55.2
DOEBLERS	747XY	107	18.4	52.8
SOUTHERN STATES	769Bt	105	20.7	55.3
AUGUSTA	A3383	104	17.9	55.1

Maturity Average		124	21.1	54.1
LSD		28	1.4	2.6

Mid-Full Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
DOEBLERS	851XY	122	19.5	53.1
SOUTHERN STATES	EXP79027	119	19.8	50.4
MID-ATLANTIC	MA9200	119	21.7	50.5
DEKALB	DK697	118	19.3	52.5
DOEBLERS	887V2	115	21.8	51.3
DOEBLERS	859XY	113	21.5	53.0
PIONEER BRAND	3156	113	22.0	53.0
GARST	8220	110	22.0	51.1
Maturity Average		116	20.9	51.9
LSD		14	1.6	2.5
Location Average		120	20.2	54.2

Table 21. Two year average yields at BLACKSBURG, VA in 1998 and 1999.

Very Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
DOEBLERS	636XY	144	18.8	54.1
PIONEER BRAND	34K77	122	19.5	56.1
Maturity Average		133	19.1	55.1
LSD		11	0.5	0.6
Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	33G26	153	20.9	55.6
NK BRAND	N79-L3	150	22.2	56.7
AUGUSTA	A285	149	19.0	52.6
NK BRAND	N7639Bt	149	21.5	54.4
PIONEER BRAND	33Y09(Bt)	148	19.4	55.7
PIONEER BRAND	3310	146	21.2	54.1
PIONEER BRAND	32K61	143	20.1	56.4
Maturity Average		148	20.6	55.1
LSD		17	1.3	1.5
Medium Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
AUGUSTA	A552	146	23.1	52.7
SOUTHERN STATES	849CL	145	24.2	50.7
AUGUSTA	A2062aa	141	21.9	53.2
NK BRAND	N83-N5	140	22.5	53.3
PIONEER BRAND	3163	140	21.9	53.7
AUGUSTA	A2062	135	22.8	54.4
PIONEER BRAND	31G20	123	24.3	54.9
Maturity Average		139	22.9	53.3
LSD		21	1.2	1.6
Mid-Full Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	3156	142	22.8	53.2
DOEBLERS	859XY	142	22.5	53.0
MID-ATLANTIC	MA9200	136	24.6	50.2
Maturity Average		140	23.3	52.1
LSD		18	1.5	1.4
Location Average		142	21.7	54.0

Table 22. Three year average yields at BLACKSBURG, VA in 1997, 1998 and 1999.

Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	3310	147	21.3	55.0
AUGUSTA	A285	147	19.0	52.4
PIONEER BRAND	33Y09(Bt)	147	20.0	55.7
PIONEER BRAND	32K61	143	20.7	56.5
Maturity Average		146	20.2	54.9
LSD		17	1.0	1.2
Medium Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
AUGUSTA	A552	143	23.3	51.7
PIONEER BRAND	3163	141	21.7	53.6
AUGUSTA	A2062	136	23.3	53.2
Maturity Average		140	22.8	52.8
LSD		26	1.4	1.1
Mid-Full Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
MID-ATLANTIC	MA9200	132	24.9	49.2
PIONEER BRAND	3156	130	23.3	52.6
Maturity Average		131	24.1	50.9
LSD		13	1.1	1.8
Location Average		141	21.9	53.3

Table 23. Yields at WYTHE, VA in 1999. Population averaged 23,697 plants/acre.

Very Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu	Lodging %
PIONEER BRAND	34K78(Bt)	159	22.6	59.0	0
SOUTHERN STATES	EXP77095	141	18.6	56.1	9
PIONEER BRAND	34K77	111	21.3	58.5	3
Maturity Average		137	20.9	58.0	4
LSD		23	1.9	1.4	11
Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu	Lodging %
PIONEER BRAND	32K61	157	22.4	59.5	0
PIONEER BRAND	33J56	154	22.2	58.1	3
NK BRAND	N7639Bt	152	22.6	56.2	1
PIONEER BRAND	32K62(Bt)	148	23.2	58.3	0
PIONEER BRAND	3310	147	22.5	58.2	0
MID-ATLANTIC	MA9111YG	147	20.6	56.4	0
SOUTHERN STATES	726	146	23.1	55.7	6
PIONEER BRAND	33G26	143	22.3	59.2	1
NK BRAND	N79-L3	140	23.7	57.0	0
PIONEER BRAND	33K81	139	22.4	58.0	4
DOEBLERS	642XP	138	20.8	58.0	0
PIONEER BRAND	33Y09(Bt)	137	21.6	59.3	2
MID-ATLANTIC	MA9121YG	133	21.1	55.9	0
Maturity Average		146	22.2	57.7	1
LSD		20	0.9	1.4	5
Medium Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu	Lodging %
DOEBLERS	851XY	156	22.9	56.6	3
SOUTHERN STATES	849CL	155	23.5	53.3	5
PIONEER BRAND	3163	154	22.4	56.4	5
PIONEER BRAND	31G20	154	25.9	58.0	2
NK BRAND	NX8318	152	24.5	56.5	4
SOUTHERN STATES	769Bt	151	22.9	57.8	1
NK BRAND	N83-N5	150	24.0	57.0	7
MID-ATLANTIC	MAX9184YG	144	23.2	57.3	7
AUGUSTA	A3556	144	23.4	55.5	4
SOUTHERN STATES	859CL	141	24.9	52.6	5
SOUTHERN STATES	EXP78469	127	25.3	52.7	3
Maturity Average		148	23.9	55.8	4
LSD		25	1.2	1.1	7
Mid-Full Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu	Lodging %
MID-ATLANTIC	MA9200	154	24.5	53.5	5
DOEBLERS	859XY	154	23.8	57.2	4
PIONEER BRAND	3156	143	24.5	54.9	2
SOUTHERN STATES	EXP79027	143	24.2	52.8	3
Maturity Average		149	24.2	54.6	3
LSD		28	1.4	1.4	9
Location Average		146	22.9	56.7	3

Table 24. Two year average yields at WYTHE, VA in 1998 and 1999.

Very Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
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PIONEER BRAND	34K77	97	22.6	55.3
Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	3310	124	22.5	57.3
NK BRAND	N7639Bt	123	22.8	54.1
PIONEER BRAND	33Y09(Bt)	120	21.9	57.2
PIONEER BRAND	32K61	119	23.3	57.2
PIONEER BRAND	33G26	112	23.1	57.6
Maturity Average		119	22.7	56.7
LSD		13	0.6	0.7
Medium Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	3163	121	22.4	54.4
SOUTHERN STATES	849CL	119	23.8	51.5
NK BRAND	N83-N5	116	23.7	55.7
PIONEER BRAND	31G20	114	25.7	56.0
Maturity Average		118	23.9	54.4
LSD		19	1.2	1.1
Mid-Full Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
MID-ATLANTIC	MA9200	115	24.5	51.7
PIONEER BRAND	3156	109	23.8	54.3
Maturity Average		112	24.1	53.0
LSD		21	0.9	1.1
Location Average		116	23.4	55.2

Table 25. Three year average yields at WYTHE, VA in 1997, 1998 and 1999.

Early Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	32K61	143	24.4	57.2
PIONEER BRAND	3310	132	24.1	57.3
PIONEER BRAND	33Y09(Bt)	128	23.1	57.2
Maturity Average		134	23.9	57.2
LSD		13	0.6	0.9
Medium Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	3163	133	24.4	54.4
AUGUSTA	A552	111	26.4	50.3
Maturity Average		124	25.2	53.0
LSD		26	1.4	2.9
Mid-Full Maturity Brand/Company	Hybrid	Yield bu/A	Moist %	Test Wt lb/bu
MID-ATLANTIC	MA9200	127	26.9	51.7
PIONEER BRAND	3156	121	25.6	54.3
Maturity Average		124	26.3	53.0
LSD		19	0.7	1.1
Location Average		129	24.9	54.9

SECTION II. EVALUATION OF DOUBLECROP CORN IN EASTERN VIRGINIA.

We have been evaluating planting of corn for grain after harvest of barley or wheat for grain in eastern Virginia for the past three years. This year the study was located on the Gregory Farm in New Kent County southeast of Richmond.

The corn was planted no-till into small grain residue on June 14, 1999. Fertilization and herbicide at planting was 135 lb N + 2 qt Bicep II® + 1 qt Roundup® per acre. An excellent stand was obtained within seven days in all plots due to excellent moisture at planting. In fact, about an inch of rainfall was obtained the night after planting. Rainfall was adequate for early growth but there was significant moisture stress during the period when the corn hybrids were in the late vegetative stage. Hurricane Floyd produced over 10 inches of rainfall at this site but it was too late to help the corn. In fact, rainfall from Floyd dramatically reduced grain quality of many of the hybrids due to molding, rotting, and sprouting of the grain. Harvest occurred October 14, 1999.

The data below shows a wide range in yield from a low of 14 bu/acre to a high of 65 bu/acre. Note that the lowest yields generally come from the "short season" hybrids. Most of the top-yielding hybrids have the Bt gene for insect resistance. The yield data do not tell the whole story. The degree of bird damage was generally much greater on hybrids without insect resistance than in hybrids with Bt expressed in the grain. The theory is that birds started feeding on the worms in the ends of the ears. After the birds exposed the end of the ear any rainfall that occurred saturated the entire ear. There was sufficient rainfall from Floyd and other showers that the corn literally rotted in the husk and began sprouting with most of the non-Bt hybrids. Test weights of less than 40 lb/bu is indicative of poor grain quality in this test. In fact, the quality of grain was so bad that it would not have been marketable when the test weight was less than 35 lb/bu. The generally low test weight is likely related to the high moisture at which the determination was made on some of the hybrids.

The degree of insect damage to doublecrop corn will vary over years and locations. However, after three years it is evident that if corn is planted in mid- to late-June in eastern Virginia it is nearly always beneficial to plant a hybrid with insect resistance. In this test for example, Pioneer Brand 32K61 yielded 20 bushels compared to 34 bu/acre for Pioneer Brand 32K62Bt. Other comparisons, Novartis NK 4640 yielded 17 bushels compared to 34 bu/acre for NK 4640Bt, Pioneer Brand 3394 yielded 32 bushels compared to 59 bu/acre for Pioneer Brand 33V08. As mentioned earlier, yield is only part of the story. Grain quality is also often better with the Bt hybrid. This was especially true in 1999.

Table 26. Doublecrop Corn Hybrid Study at New Kent County, VA in 1999.

Brand/Company	Hybrid	Relative Maturity	Yield bu/A	Moist %	Test Wt lb/bu
SOUTHERN STATES	EXP79001	115	65	37.9	43.6
PIONEER BRAND	33Y09	113	60	38.0	44.2
PIONEER BRAND	33V08	110	59	40.8	44.2
PIONEER BRAND	34K78Bt	108	59	30.7	42.9
NOVARTIS	NX7617	114	56	36.2	42.4
AUGUSTA	A3383	112	51	28.1	40.5
PIONEER BRAND	34T14BtLL	110	47	35.0	43.3
NOVARTIS	NX5867	106	44	32.7	37.3
DEKALB	621BtY	112	43	24.6	35.5
PIONEER BRAND	35N05	105	41	29.8	43.2
NOVARTIS	N79-L3	116	40	38.7	39.5
PIONEER BRAND	33G27Bt	113	39	31.6	40.3
NOVARTIS	N6800Bt	110	38	35.8	37.1
NOVARTIS	N7639Bt	113	35	39.9	41.1
NOVARTIS	N4640Bt	102	34	23.1	33.3
PIONEER BRAND	32K62Bt	116	34	36.2	37.9
PIONEER BRAND	3394	110	32	26.7	41.7
NOVARTIS	N6800	110	32	31.0	38.8
MYCOGEN	2799	114	32	34.3	39.6
DEKALB	595BtY	109	29	28.3	39.2
PIONEER BRAND	34K77	107	28	23.1	42.9
SOUTHERN STATES	SS576	105	27	24.8	41.0
AUGUSTA	A9884	110	25	26.4	35.7
AUGUSTA	A9873	104	21	20.4	32.1
PIONEER BRAND	3905	87	20	19.0	32.2
PIONEER BRAND	32K61	114	20	36.3	37.7
PIONEER BRAND	31G20	119	19	29.4	37.7

PIONEER BRAND	33G26	112	18	26.9	41.0
NOVARTIS	N4640	101	17	18.8	29.1
PIONEER BRAND	3984	75	15	19.0	-----
MYCOGEN	2424	95	14	19.5	32.5
Location Average			36	29.9	39.5
LSD (0.05)			13	4.4	3.4

Table 27. European Corn Borer ratings on Doublecrop Corn Hybrids at New Kent, Virginia in 1999.

Two of the four blocks were sampled on 8 September. Five stalks per plot for a total of 10 stalks per variety were sampled for European corn borer (ECB) and ECB feeding damage. ANOVA indicated significant differences among varieties in number of stalk tunnels ($P < 0.0001$), ECB damaged leaves ($P = 0.02$), broken tassels ($P = 0.003$), ECB egg masses ($P = 0.008$), and ECB larvae ($P < 0.0001$). An important indicator of ECB damage is the number of stalk tunnels per stalk. One corn borer tunnel per stalk causes about a 5% yield loss per acre.

Brand	Variety	Items per Stalk					
		Stalk Tunnels	ECB Damaged Leaves	Broken Tassels	ECB Egg Masses	ECB Larvae	ECB Pupae
Pioneer	3984	5.0	1.4	0.7	0.1	4.8	0.1
Pioneer	31G20	4.1	1.0	0.6	0.2	4.6	0.0
Pioneer	3905	3.9	0.7	0.5	0.2	2.4	0.0
Augusta	A9884	3.7	0.6	0.5	0.2	3.2	0.0
Pioneer	33G26	3.6	0.8	0.4	0.2	3.1	0.0
Augusta	A9873	3.0	0.4	0.7	0.5	2.4	0.1
Augusta	A3383	2.8	0.5	0.4	0.0	1.9	0.0
SS	SS576	2.4	0.7	0.6	0.0	2.1	0.1
Novartis	N4640	2.2	0.4	0.3	0.1	1.2	0.0
Pioneer	3394	2.1	0.4	0.3	0.1	1.5	0.0
Pioneer	34K77	2.0	1.2	0.3	0.3	1.5	0.0
Pioneer	32K61	1.7	1.6	0.4	0.3	1.4	0.0
Novartis	N4640-Bt	1.1	0.5	0.2	0.0	0.9	0.0
Novartis	N6800	0.8	0.2	0.5	0.2	0.6	0.0
Mycogen	2424	0.2	0.2	0.0	0.1	0.0	0.0
Mycogen	2799	0.2	0.4	0.0	0.1	0.0	0.0
Pioneer	33G27Bt	0.2	0.2	0.0	0.1	0.2	0.0
Pioneer	34T14BtLL	0.2	0.6	0.0	0.1	0.1	0.0
Novartis	NX5867	0.1	0.3	0.1	0.2	0.1	0.0
Pioneer	34K78Bt	0.1	0.4	0.0	0.1	0.0	0.0
Dekalb	621BtY	0.0	0.0	0.0	0.2	0.0	0.0
Dekalb	DK595BtY	0.0	0.2	0.0	0.5	0.0	0.0
Novartis	N79-L3	0.0	0.2	0.0	0.1	0.0	0.0
Novartis	N6800-Bt	0.0	0.1	0.0	0.0	0.0	0.0
Novartis	N7639-Bt	0.0	0.3	0.0	0.0	0.0	0.0
Novartis	NX7617	0.0	0.2	0.0	0.2	0.0	0.0
Pioneer	32K62Bt	0.0	0.2	0.0	0.5	0.0	0.0
Pioneer	33V08	0.0	0.3	0.0	0.2	0.0	0.0
Pioneer	33Y09	0.0	0.4	0.0	0.2	0.0	0.0
Pioneer	35N05	0.0	0.3	0.0	0.2	0.0	0.0
SS	Exp79001	0.0	0.1	0.0	0.1	0.0	0.0
SS	Exp79007	0.0	0.3	0.0	0.3	0.0	0.0
LSD:		1.86	0.86	0.48	0.34	1.23	NS

Table 28. Two-year doublecrop corn hybrid studies at Middlesex County in 1998 and New Kent County in 1999.

Brand/Company	Hybrid	Relative Maturity	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	33V08Bt	110	78	26.5	50.5
PIONEER BRAND	33Y09Bt	113	75	25.2	50.5

NOVARTIS	N4640Bt	102	71	19.1	45.7
NOVARTIS	N7639Bt	113	70	26.5	49.5
NOVARTIS	N79-L3	116	67	26.0	49.1
NOVARTIS	N6800Bt	110	59	23.4	46.4
NOVARTIS	N6800	110	52	21.2	47.9
NOVARTIS	N4640	101	51	15.2	47.0
PIONEER BRAND	3905	87	29	15.3	48.7
PIONEER BRAND	3984	75	25	14.9	53.8
Average			58	21.4	48.7
LSD (0.05)			15	2.1	1.7

Table 29. Three year doublecrop corn hybrid studies at Middlesex County in 1997 and 1998 and at New Kent County in 1999. Also included is irrigated corn in Middlesex County in 1997.

Brand/Company	Hybrid	Relative Maturity	Yield bu/A	Moist %	Test Wt lb/bu
PIONEER BRAND	33V08Bt	110	98	24.1	52.7
PIONEER BRAND	33Y09Bt	113	96	23.4	52.1
NOVARTIS	N4640Bt	102	91	18.5	49.8
NOVARTIS	N7639Bt	113	86	25.0	51.4
NOVARTIS	N6800Bt	110	90	22.3	50.4
NOVARTIS	N6800	110	79	21.2	51.2
NOVARTIS	N4640	101	74	16.3	50.8
PIONEER BRAND	3905	87	57	16.4	52.6
PIONEER BRAND	3984	75	44	16.8	56.7
Average			80	20.5	51.9
LSD (0.05)			11	1.0	1.0

SECTION III. ROW WIDTH/POPULATION STUDIES IN EASTERN VIRGINIA.

Table 30. Doublecrop Row Width/Population Study at the Gregory Farm in NEW KENT COUNTY, VA in 1999.

Pioneer Brand 35N05						
Treatment						
	Row width inches	Seeded Pop'n 1000s	Yield bu/acre	Moist %	Test Wt lb/bu	Population
	15	19	52	33.4	43.1	18876
	30	19	61	35.7	43.8	18876
	15	22	50	33.2	44.3	22216
	30	22	53	31.7	44.6	19602
	15	25	39	27.5	43.2	23813
	30	25	58	31.1	43.4	25700
	15	28	36	36.8	42.2	26862
	30	28	53	30.6	42.8	28604
Average	15		44	32.7	43.3	22942
	30		56	32.3	43.6	23196
Hybrid Average			50	32.5	43.5	23069
LSD (0.05)			21	5.3	1.7	2112

Pioneer Brand 33V08						
Treatment						
	Row width inches	Seeded Pop'n 1000s	Yield bu/acre	Moist %	Test Wt lb/bu	Population
	15	19	64	41.7	44.5	19457
	30	19	64	41.4	43.7	18150
	15	22	54	39.4	42.2	24684
	30	22	45	42.0	43.6	22070
	15	25	42	38.3	43.0	23958
	30	25	57	41.8	42.6	24394
	15	28	43	45.1	42.6	28459
	30	28	60	39.9	43.9	28895
Average	15		51	41.1	43.1	24139
	30		56	41.3	43.4	23377
Hybrid Average			53	41.2	43.2	23758
LSD (0.05)			22	6.2	2.6	2210

Study was planted June 14, 1999. Fertilization and herbicide at planting was 135 lb N = 2 qt Bicep II® + 1 qt Roundup®. Study was harvested October 14, 1999.

Table 31. Corn Row Width/Population Study at Ray Ellis' farm in ESSEX COUNTY, VA in 1999.

Pioneer Brand 3394						
Treatment						
#	Row width	Seeded	Yield	Moist	Test Wt	Population
Rows	inches	Pop'n	bu/acre	%	lb/bu	
		1000s				
8	15	19	47	22.1	56.2	21929
4	30	19	52	19.6	57.8	18046
8	15	22	54	20.7	57.9	22007
4	30	22	52	21.0	56.2	22263
8	15	25	49	21.8	56.7	21984
4	30	25	46	23.9	55.8	23640
8	15	28	40	23.0	55.5	24580
4	30	28	38	25.1	54.2	26979
8	15	31	45	----	----	27000
4	30	31	48	----	----	30000
Average	15		47	21.8	56.7	23500
Average	30		48	21.6	56.5	24185
Average			48	21.7	56.6	23843
LSD (0.05)			13	5.4	2.9	630

Preplant fertilizer and herbicide was 600 lb 10-10-10 and 1.5 pt Roundup® + 1.8 qt Bicep II® + 1 p atrazine + 2 oz Warrior T®. Study was planted April 20, 1999. Force 3G® at 4.4 lb was applied at planting. Study was sidedressed May 17 with 120 lb N using 30% UAN. Plots were harvested September 8, 1999.

SECTION IV. EVALUATION OF BT HYBRIDS IN EASTERN VIRGINIA.

R. Youngman, C. Laub, T. Kuhar, T. Dellinger, H. Behl, E. Rucker, and D. Brann

Seven Bt corn hybrids and a non-Bt corn standard were planted April 1999 at the Virginia Crop Improvement Farm in Mt. Holly and the Eastern Virginia Agricultural Research and Extension Center in Holland. The Bt hybrids evaluated at both locations included: Dekalb DK595Bt, Mycogen 2717, Mycogen 2779, NK N6800-Bt, NK N7639-Bt, Pioneer 33V08, and Pioneer 35N05. Pioneer 3394, which consistently ranks in the top group for its maturity, was used as the non-Bt standard in our study. Corn was planted at both locations in four-row by 37-ft plots on 30-inch centers. All plots were trimmed to 25-ft lengths following emergence. The Mt. Holly and Holland plant populations were 27,372 and 25,325 plants per acre, respectively. All corn hybrids were replicated four times in a randomized complete block design.

Evaluating European Corn Borer Damage

Second generation damage was determined in all plots in late-August at Holland and early September at Mt. Holly. The sampling procedure we used to evaluate corn borer feeding and tunneling activity consisted of thoroughly inspecting 20 cornstalks per plot. A plant was destructively sampled only when evidence of feeding or tunneling activity was detected. Detailed records were made on the location and extent of the damage.

European Corn Borer Pest Pressure

Second generation pest pressure from European corn borer was somewhat higher than the previous two years; however, the number of stalk tunnels experiment-wide did not exceed the threshold of 1 or more tunnels per stalk considered to result in economic damage. At both the Mt. Holly (**Table 32**) and Holland (**Table 33**) locations, all of the Bt hybrids had significantly fewer stalk tunnels than the non-Bt standard, Pioneer 3394. Nevertheless, Pioneer 3394 averaged only one tunnel per four stalks at Mt. Holly, and one tunnel per three stalks at Holland.

Table 32. 1999 European corn borer damage in Bt corn hybrid trial; Mt. Holly, Va.

Hybrid	Tunnels per stalk	Damaged leaves per stalk	Broken tassels per stalk	Egg masses per stalk	Larvae per stalk	Pupae per stalk
Pioneer 3394	0.25 a	0.75 a	0.01	0.00	0.03	0.01
Mycogen 2717	0.09 b	0.29 b	0.03	0.00	0.04	0.00
Pioneer 35N05	0.09 b	0.21 b	0.00	0.00	0.00	0.00
Mycogen 2799	0.05 b	0.23 b	0.00	0.00	0.03	0.00
Pioneer 33V08	0.05 b	0.10 b	0.00	0.00	0.00	0.00
Dekalb DK595Bt	0.01 b	0.19 b	0.00	0.00	0.00	0.00
NK N6800-Bt	0.01 b	0.10 b	0.00	0.00	0.00	0.00
NK N7639-Bt	0.01 b	0.19 b	0.00	0.00	0.00	0.00

Means within a column followed by different letters are significantly different according to ANOVA and LSD (P 0.05). Statistical analyses were performed on $(x + 0.5)^{1/2}$ transformed data, but actual means are shown.

Table 33. 1999 European corn borer damage in Bt corn hybrid trial; Holland, Va.

Hybrid	Tunnels per stalk	Damaged leaves per stalk	Broken tassels per stalk	Egg masses per stalk	Larvae per stalk	Pupae per stalk
Pioneer 3394	0.33 a	0.34 a	0.01 ab	0.00	0.01 ab	0.04
Mycogen 2717	0.13 b	0.23 ab	0.00 b	0.00	0.04 a	0.03
Mycogen 2799	0.05 bc	0.09 bc	0.00 b	0.00	0.01 ab	0.00
Pioneer 35N05	0.04 c	0.11 bc	0.01 ab	0.00	0.01 ab	0.00
Dekalb DK595Bt	0.01 c	0.18 ab	0.00 b	0.00	0.00 b	0.00
NK N7639-Bt	0.01 c	0.16 ab	0.03 a	0.00	0.00 b	0.00
Pioneer 33V08	0.01 c	0.13 ab	0.00 b	0.00	0.00 b	0.01
NK N6800-Bt	0.00 c	0.14 ab	0.00 b	0.01	0.00 b	0.00

Means within a column followed by different letters are significantly different according to ANOVA and LSD (P 0.05). Statistical analyses were performed on $(x + 0.5)^{1/2}$ transformed data, but actual means are shown.

Although no significant yield differences were detected among hybrids at Mt. Holly, significant differences were detected in percent moisture, and test weights (**Table 34**). At Mt. Holly, corn yields under irrigation averaged 194.8 bu/acre. NK N6800-Bt had the highest percent moisture of 23.7 compared to Pioneer 35N05, which had the lowest percent moisture of 20.9. Test weights ranged from 53.4 lb/bu for Mycogen 2799 to 57.6 lb/bu for NK N7639-Bt.

Significant differences in yields, percent moisture, and test weights were detected among corn hybrids grown under dryland conditions at Holland (**Table 35**). Corn yields at Holland averaged 179.5 bu/acre with top yielding hybrids including Pioneer 35N05 (191.9 bu/acre), Pioneer 33V08 (190.8 bu/acre), Mycogen 2799 (190.6 bu/acre), and Pioneer 3394 (189.0 bu/acre). Mid-range yielding hybrids included NK N6800-Bt (179.4 bu/acre) and Dekalb DK595Bt (173.4 bu/acre). NK N6800-Bt had the highest percent moisture of 20.4 compared to Dekalb DK595Bt, which had the lowest percent moisture of 18.2. Test weights ranged from 54.2 lb/bu for Mycogen 2799 to 57.8 lb/bu for NK N6800-Bt and Pioneer 35N05. Under the conditions of these experiments, our 1999 results indicate that several Bt corn hybrids are competitive with the non-Bt hybrid, Pioneer 3394, for eastern Virginia.

Table 34. 1999 performance of Bt corn hybrids under irrigation; Mt. Holly, Va.

Hybrid	Yield (bu/acre)		Test Wt (lb/bu)
	@ 15% moisture	Percent moisture	
Pioneer 33V08	204.3	22.3 abc	57.5 a
Pioneer 3394	203.6	22.7 ab	57.3 a
Mycogen 2799	199.8	22.3 abc	53.4 c
Dekalb DK595Bt	197.3	21.6 bc	55.6 b
NK N6800-Bt	194.5	23.7 a	55.7 b
Pioneer 35N05	187.4	20.9 c	56.8 a
Mycogen 2717	186.5	21.0 c	55.6 b
NK N7639-Bt	185.2	22.1 bc	57.6 a
Location average	194.8	22.0	56.2
LSD	NS	1.45	1.03

Table 35. 1999 performance of Bt corn hybrids under dryland conditions; Holland, Va.

Hybrid	Yield (bu/acre) @ 15% moisture	Percent moisture	Test Wt (lb/bu)
Pioneer 35N05	191.9 a	18.9 cd	57.8 a
Pioneer 33V08	190.8 a	19.8 ab	57.1 ab
Mycogen 2799	190.6 a	19.6 b	54.2 d
Pioneer 3394	189.0 ab	19.8 ab	56.3 bc
NK N6800-Bt	179.4 abc	20.4 a	57.8 a
Dekalb DK595Bt	173.4 abc	18.2 e	57.1 ab
NK N7639-Bt	160.6 bc	19.6 b	57.7 a
Mycogen 2717	160.2 c	18.3 de	55.3 c
Location average	179.5	19.3	56.7
LSD	28.6	0.64	0.97

SECTION V. 1999 EUROPEAN CORN BORER SURVEY IN EASTERN VIRGINIA.

R. Youngman, C. Laub, T. Kuhar, and T. Dellinger

We surveyed second generation European corn borer damage in 60 non-Bt cornfields across 15 eastern Virginia counties in August, 1999 (**Fig. 1**). The counties included four in the northern neck: Lancaster, Northumberland, Richmond, and Westmoreland; three in the middle peninsula: Essex, King and Queen, and Middlesex; three in the lower peninsula: Charles City, James City, and New Kent; and five south of the James River: Isle of Wight, Southampton, Suffolk, Surry, and Sussex. In each field, 100 stalks were sampled for corn borer damage making up a total sample size of 6,000 plants.



Figure 1. 1999 survey of European corn borer damage in 60 non-Bt cornfields in eastern Virginia. Numbers in counties represent average ECB tunnels per stalk.

The results of our 1999 survey indicated very low levels of European corn borer pressure across all 15 counties in eastern Virginia. European corn borer damage ranged from a low of 0.04 tunnels per stalk in Northumberland Co. to a high of 0.84 tunnels per stalk in Suffolk. Despite this relatively large difference in numbers of stalk tunnels, a threshold of 1 or more corn borer tunnels per stalk is considered to be the level at which economic damage occurs.

SECTION VI. CORN SILAGE STUDIES

Table 36. Corn hybrids grown for silage in 1999 in Wythe County, Virginia.

Brand	Hybrid	Yield, tons/acre			Dry basis								
		Actual	Adj. to 35%	DM %	CP	DP	% ADF	TDN	NE, mcal/lb			Protein Index	Energy Index
									Lact.	Maint.	Gain		
Hyttest	HTX6221	19.1	18.4	33.70	6.26	2.30	24.19	68.77	0.69	0.72	0.45	83	101
Southern States	EXP79579	18.4	19.1	36.21	6.17	2.21	26.28	67.76	0.67	0.71	0.44	81	99
Mid-Atlantic	MA9174	18.3	16.5	35.92	6.51	2.52	21.16	69.25	0.69	0.73	0.46	86	101
Southern States	EXP79027	18.2	20.5	39.52	6.71	2.71	16.09	70.00	0.70	0.74	0.47	88	102
Pioneer	3172	18.2	17.3	33.34	5.83	1.90	23.84	68.93	0.69	0.72	0.46	77	101
Pioneer	3130	18.0	18.3	35.41	5.96	2.02	23.59	69.06	0.69	0.73	0.46	79	101
Wilson	E4012	17.9	18.9	36.98	6.29	2.32	20.79	68.95	0.69	0.72	0.45	83	101
Novartis	N83-N5	17.7	18.6	36.78	6.35	2.37	22.05	69.80	0.69	0.74	0.46	84	102
Southern States	849IT	17.6	16.6	33.06	6.80	2.79	22.36	69.34	0.69	0.73	0.46	90	101
Southern States	859IT	17.4	18.8	37.64	5.77	1.83	21.48	69.87	0.69	0.74	0.46	76	102
Southern States	943	17.4	16.3	32.71	6.21	2.25	22.87	69.38	0.69	0.73	0.46	82	101

Doebblers	859XY	17.3	16.8	34.06	6.07	2.12	25.19	68.28	0.68	0.72	0.45	80	100
Dekalb	DK697	17.1	18.0	36.80	6.20	2.24	22.47	69.47	0.69	0.73	0.46	82	101
Hyttest	HT7820	17.1	18.1	36.87	5.26	1.36	25.07	68.34	0.68	0.71	0.45	70	100
Southern States	897	17.0	16.6	34.20	6.17	2.21	23.13	69.27	0.69	0.73	0.46	81	101
Augusta	A2062	16.8	16.4	34.08	6.29	2.33	23.01	69.33	0.69	0.73	0.46	83	101
Pioneer	31G20	16.8	16.9	35.19	5.66	1.73	25.18	68.29	0.68	0.71	0.45	74	100
Wilson	E7004	16.6	16.9	35.52	6.31	2.35	24.20	68.77	0.69	0.72	0.45	83	101
Dekalb	DK720S	16.6	16.1	33.94	6.19	2.23	22.50	69.04	0.69	0.72	0.45	82	101
Pioneer	32G94	16.6	17.7	37.16	6.70	2.70	20.27	69.92	0.69	0.74	0.46	88	102
Wilson	D-118	16.5	14.3	30.30	6.51	2.53	25.30	68.23	0.68	0.72	0.45	86	99
Mid-Atlantic	MA9184YG	16.5	18.0	38.00	5.83	1.90	24.06	68.82	0.69	0.72	0.45	77	101
Mid-Atlantic	MA9140YG	16.5	17.4	36.98	6.63	2.63	22.68	69.24	0.69	0.73	0.46	87	101
Augusta	A2062aa	16.5	16.0	34.10	6.11	2.15	25.57	68.11	0.68	0.71	0.44	81	100
Pioneer	32K61	16.3	18.3	39.22	5.79	1.86	23.01	69.09	0.69	0.73	0.45	77	101
Mycogen	TMF114	16.3	17.2	36.80	6.03	2.08	21.57	69.72	0.69	0.73	0.46	80	102
Novartis	N79-L3	16.3	18.4	39.48	6.25	2.29	20.07	70.00	0.70	0.74	0.47	83	102
Mid-Atlantic	MA9200	16.3	16.0	34.27	6.56	2.58	23.48	69.09	0.69	0.73	0.45	87	101
Augusta	A3556	16.3	16.4	35.17	6.15	2.19	23.66	68.76	0.69	0.72	0.45	81	100
Pioneer	33J56	16.2	15.9	34.36	6.46	2.48	22.57	69.38	0.69	0.73	0.46	85	101
Doebblers	75XMD2	16.2	16.4	35.35	5.75	1.82	24.16	68.78	0.68	0.72	0.45	76	100
Pioneer	33K81	16.2	17.2	37.25	6.10	2.15	24.29	68.72	0.69	0.72	0.45	80	100
Pioneer	3310	16.2	17.0	36.77	6.09	2.13	23.59	69.05	0.69	0.73	0.45	80	101
Mid-Atlantic	MA9153	15.7	14.2	31.30	6.61	2.62	24.09	68.81	0.69	0.72	0.46	87	101
Augusta	A2513	15.6	16.9	37.97	7.22	3.19	18.75	70.00	0.70	0.74	0.47	96	102
Wilson	E4025	15.6	16.6	37.27	6.38	2.41	21.29	70.00	0.70	0.74	0.47	84	102
Mid-Atlantic	MA9201	15.6	16.9	37.97	5.56	1.65	21.68	69.77	0.69	0.74	0.46	74	102
Novartis	N7639Bt	15.4	16.4	37.27	6.29	2.32	23.57	68.81	0.69	0.72	0.45	83	100
Hyttest	BH4924	15.2	15.8	36.40	6.27	2.31	20.98	69.58	0.69	0.73	0.46	83	102
Doebblers	639XYG	14.6	16.1	38.55	6.30	2.33	19.28	69.87	0.69	0.74	0.46	83	102
Mid-Atlantic	MA9111YG	14.3	14.4	35.49	6.66	2.66	22.18	69.44	0.69	0.73	0.46	88	101
Augusta	A6462	14.0	14.6	36.45	5.34	1.55	24.29	68.72	0.68	0.72	0.45	71	100
Average		16.6	17.0	35.85	6.20	2.25	22.76	69.14	0.69	0.73	0.46	82	101

LSD (0.05)

2.3

2.5

2.21

1.13

1.04

5.51

1.85

0.02

0.03

0.03

15

3

Table 37. Two-year averages for corn hybrids grown for silage in 1998 and 1999 in Wythe County, VA.

Brand	Hybrid	Yield, tons/acre			Dry basis								
		Actual	Adj. to 35%	DM %	CP	DP	% ADF	TDN	NE, mcal/lb			Protein Index	Energy Index
									Lact.	Maint.	Gain		
Pioneer Brand	3172	18.7	17.5	32.83	6.63	2.63	27.30	67.26	0.66	0.70	0.43	87	98
Mid-Atlantic	MA9174	16.8	17.3	36.24	7.20	3.17	23.27	68.81	0.68	0.72	0.45	95	100
Augusta	A2062	16.8	16.4	34.45	6.67	2.67	25.54	68.11	0.67	0.71	0.44	88	99
Southern States	943	16.7	16.2	34.02	7.20	3.16	25.36	68.19	0.67	0.71	0.44	94	99
Pioneer Brand	3310	16.6	17.6	37.07	6.81	2.80	27.52	67.16	0.66	0.69	0.42	89	97
Mycogen	TMF114	16.5	16.6	35.26	6.13	2.17	25.81	67.87	0.67	0.71	0.44	80	99
Mid-Atlantic	MA9201	15.8	16.4	36.21	6.24	2.27	26.51	67.57	0.67	0.70	0.43	82	98
Novartis	N83-N5	15.8	16.8	37.13	6.44	2.46	27.65	67.09	0.66	0.69	0.43	84	97
Pioneer Brand	3130	15.7	16.0	35.73	6.95	2.94	27.27	67.28	0.66	0.70	0.43	91	97
Dekalb	DK720S	15.7	14.9	33.34	6.90	2.89	25.25	68.06	0.67	0.71	0.44	91	99
Pioneer Brand	31G20	15.6	16.2	36.67	6.18	2.65	27.13	67.35	0.67	0.70	0.43	87	98
Novartis	N7639Bt	15.5	17.0	38.31	6.32	2.34	26.09	67.76	0.67	0.70	0.44	83	98
Mid-Atlantic	MA9200	15.4	15.5	35.58	6.65	2.66	25.07	68.33	0.68	0.71	0.44	87	99
Pioneer Brand	32K61	15.4	16.4	37.12	6.55	2.56	28.37	66.67	0.66	0.69	0.42	86	97
Novartis	N79-L3	15.2	17.6	40.39	6.26	2.30	25.20	68.03	0.67	0.71	0.44	82	99
Southern States	897	15.2	14.6	33.69	6.64	2.65	26.26	67.77	0.67	0.71	0.43	87	98
Augusta	A2062aa	14.8	14.9	35.39	6.04	2.09	29.97	65.98	0.65	0.68	0.41	79	96
Average		16.0	16.3	35.87	6.58	2.61	26.50	67.58	0.67	0.70	0.43	87	98
LSD (0.05)		2.0	2.1	1.95	0.96	0.77	3.24	1.47	0.02	0.02	0.02	11	2

SECTION VII.

E. L. Stromberg and L. E. Flinchum

RESISTANCE AND AGRONOMIC CHARACTERISTICS OF CORN HYBRIDS UNDER NATURAL GRAY LEAF SPOT DISEASE PRESSURE, MONTGOMERY CO., VA, 1999: Gray leaf spot disease ratings, grain harvest moisture, bushel weights, and grain yields were obtained for 19 corn hybrids and a known high yielding susceptible check hybrid, Pioneer Brand 3394 (highlighted in gray in the table below), grown under heavy gray leaf spot disease pressure on VPI&SU's Whitethorne-Kentland Experimental Farm, Montgomery Co., VA. Prior to planting on a Hayter silt loam, pH 6.7, a fertilizer containing 200 lb N, 45 lb P and 25 lb K per acre was broadcast. The experimental design was a randomized complete block replicated four times with plots consisting of four 25-ft rows spaced 30 in. apart and seeded at a rate of 25,000 seeds/A. The plots were no-tillage planted on 13 May into a field continuously cropped to corn since 1986 and abundantly covered with corn debris naturally infested with *Cercospora zea-maydis*, the causal agent of gray leaf spot. Leaf blighting or gray leaf spot (GLS) reaction was assessed four times and is reported as a GLS Severity Index (0-5) read in 0.1 units. Hybrids were also rated for percentage stalks lodged just prior to harvest, grain moisture at harvest, bushel weight, and grain yield adjusted to 15.5% moisture. Grain was mechanically harvested on 27 Oct with a Massey Ferguson 8XP plot combine.

Moisture in the soil profile at planting and weather for thirty days after planting provided conditions favorable for vigorous stand establishment. GLS lesions were first observed on the lower leaves of susceptible hybrids by mid-June. In July, weather conditions turned extremely dry and warm and remained so until September. These conditions were not favorable for severe disease development. Despite this, GLS lesions had moved to the ear leaf and above on the more susceptible hybrids by 3 Aug and to the top of these hybrids by 20 Aug. Significant differences in GLS ratings among hybrids were apparent at all rating periods. At harvest, statistically significant differences among hybrids occurred in grain yield, grain moisture at harvest, and bushel weights. Generally those hybrids that blighted least had the higher yields. The susceptible check hybrid, Pioneer Brand 3394, the most heavily blighted, ranked 20th for grain yield of the 20 hybrids evaluated.

Hybrid ¹	<u>GLS Severity Index (0-5)²</u>				Grain ³ H ₂ O 27 Oct	Bu wt ⁴ in lbs 27 Oct	Yield ⁵ Bu/A 27 Oct
	21 Jul	3 Aug	20 Aug	14 Sep			
DEKALB DK679	1.15 fg ⁶	1.75 fg	2.28 de	3.42 hi	19.8 bc	56.4 bc	166.2 a
PIONEER BRAND 33Y18	1.25 ef	2.03 cd	2.53 c	3.83 e-g	17.8 e	58.3 a	162.2 a
DEKALB DK683	1.00 g	1.75 fg	2.17 e	2.82 jk	21.0 ab	54.6 f	161.9 a
FFR COOPERATIVE SS943	0.48 h	1.60 h	2.10 e	2.50 l	21.6 a	51.5 h	158.8 ab
DEKALB DK687	1.13 fg	1.78 fg	2.25 de	2.72 kl	20.8 a-c	55.4 d-f	158.5 ab
FFR COOPERATIVE SS729IT	1.00 g	1.65 gh	2.22 de	3.33 i	18.3 de	55.5 c-f	158.2 ab
FFR COOPERATIVE SS897	1.00 g	1.73 f-h	2.13 e	3.00 j	20.1 bc	53.3 g	157.6 a-c
FFR COOPERATIVE SS859IT	1.13 fg	1.83 ef	2.40 cd	3.78 fg	19.9 bc	57.2 g	152.1 a-d
PIONEER BRAND 32K61	1.40 e	2.00 d	2.80 b	4.05 c-f	18.2 de	58.3 a	151.8 a-d
FFR COOPERATIVE SS849IT	1.10 fg	1.92 de	2.25 de	3.35 i	20.3 bc	51.6 h	147.4 b-e
PIONEER BRAND 3172	1.15 fg	1.95 de	2.38 cd	3.65 gh	19.8 bc	53.3 g	144.9 b-e
PIONEER BRAND 33J56	1.85 ab	2.33 b	2.83 b	4.48 b	15.4 g	55.8 c-e	143.9 c-e
PIONEER BRAND 33Y09	1.47 c-e	2.35 b	2.72 b	4.05 c-f	17.6 e	57.2 b	143.2 de
PIONEER BRAND 3156	1.78 b	2.28 b	2.75 b	3.83 e-g	19.4 cd	55.1 ef	142.1 de
PIONEER BRAND 31G20	1.65 b-d	2.15 c	2.75 b	3.93 d-g	20.6 a-c	57.0 b	141.5 de

DEKALB DK697	1.42 de	2.05 cd	2.53 c	4.10 c-e	17.7 e	55.1 ef	137.3 e
PIONEER BRAND 33K81	1.65 b-d	2.30 b	2.83 b	4.25 bc	17.1 ef	56.2 b-d	137.3 e
PIONEER BRAND 33G26	1.83 ab	2.30 b	2.90 b	4.15 cd	15.9 fg	57.0 b	137.0 e
PIONEER BRAND 3310	1.70 bc	2.40 b	2.85 b	4.48 b	17.3 e	56.9 b	135.9 e
PIONEER BRAND 3394	2.03 a	2.75 a	3.47 a	4.95 a	13.0 h	55.0 ef	119.6 f
<hr/>							
Least Significant Diff. ($P \leq 0.05$) =	0.21	0.12	0.17	0.26	1.2	0.9	12.3
Standard Deviation	=0.15	0.09	0.12	0.18	0.84	0.64	8.73
Coefficient of Variation	=10.90	4.16	4.60	4.85	4.52	5.91	1.17

¹Hybrid entry planted in four 25-foot rows spaced 2.5 feet apart and replicated four times.

²GLS Disease Severity Index: 0 = no gray leaf spot lesions; 1 = trace of lesions below ear, none above; 2 = many lesions below ear, trace above; 3 = severe lesion development below ear, all leaves above with lesions; 4 = all leaves with severe lesion development, but green tissue still visible; 5 = all leaves dry and dead.

³Grain moisture at harvest expressed in percent.

⁴Bushel weight expressed in pounds at a standard 15.5% grain moisture.

⁵Yield expressed in bushels per acre at a standard 15.5% grain moisture.

⁶Means with letters in common do not differ statistically ($P \leq 0.05$) by Duncan's Multiple Range Test.

RESISTANCE AND AGRONOMIC CHARACTERS OF CORN HYBRIDS UNDER NATURAL GRAY LEAF SPOT DISEASE PRESSURE, WYTHE CO., VA, 1999: Gray leaf spot (GLS) ratings, yield, harvest grain moisture, and bushel weights were obtained for 19 corn hybrids and one known high yielding, susceptible check hybrid, Pioneer Brand 3394 (highlighted in gray in the table below), grown under moderately heavy gray leaf spot disease pressure on a farmer cooperators field in Wythe Co., VA. Prior to planting on a clay silt loam, pH 6.8, a fertilizer containing 170 lb N, 40 lb P, and 25 lb K per acre was broadcast. The experimental design was a randomized complete block replicated four times with plots consisting of four 25-ft rows spaced 30 in. apart and seeded at a rate of 25,000 seeds/A. The plots were no-tillage planted with an Almaco two-row cone planter on 5 May into a field that has been no-tillage planted every year to corn since 1965 and abundantly covered with corn debris naturally infested with *C. zea-maydis*. Leaf blighting was assessed one time and is reported as a disease severity index (0-5). Hybrids were also rated for percentage stalks lodged just prior to harvest, grain moisture at harvest, bushel weight, and grain yield in bu/A adjusted to 15.5% moisture. Grain was harvested on 4 Nov with a Massey-Ferguson 8XP plot combine.

Growing conditions early in the season were generally fair with moderate temperatures and moisture. From June through early-September the weather was extremely dry and the hybrids were drought-stressed through much of this period. These conditions seriously delayed the development of the GLS epidemic as compared to previous years at this location. Even the most susceptible hybrids had considerable green tissue remaining at the 14 Sep rating. Despite this reduced disease pressure, differences in blighting among hybrids were apparent. Significant differences among hybrids occurred for bushel weight, grain yield, and grain moisture. However, the unusually dry conditions, European corn borer injury, and variation in plant populations within individual plots had a greater influence on the grain yields attained by hybrids than gray leaf spot disease despite the statistical difference among hybrids for blighting. The susceptible check hybrid, Pioneer Brand 3394, the most heavily blighted, ranked 20th for grain yield out of the 20 hybrids evaluated despite the drought reduced disease pressure.

Hybrid ¹	GLS Severity Index (0-5) ²		Grain ³		Bu wt ⁴		Yield ⁵
	14 Sep	H ₂ O	4 Nov	in lbs	4 Nov	Bu/A	4 Nov
PIONEER BRAND 33J56	3.20 b ⁶		23.0 gh		57.3 bc		201.3 a
PIONEER BRAND 33Y18	2.58 ef		22.9 gh		58.2 ab		192.1 ab
DEKALB DK679	2.30 gh		25.1 c-e		55.2 ef		187.8 a-c
FFR COOPERATIVE SS859IT	2.47 fg		25.6 b-e		51.8 hi		187.3 a-c
FFR COOPERATIVE SS729IT	2.38 f-h		23.4 fg		54.8 ef		185.4 a-d
FFR COOPERATIVE SS943	1.88 i		26.9 ab		51.1 ij		178.4 a-e
FFR COOPERATIVE SS897	2.20 h		25.7 b-e		52.9 gh		177.8 a-e
DEKALB DK687	2.38 f-h		24.8 de		54.3 e-g		176.2 b-e
PIONEER BRAND 3156	2.63 ef		25.9 b-d		54.0 fg		174.4 b-f
PIONEER BRAND 3310	2.88 cd		24.7 de		57.7 a-c		171.8 b-f
PIONEER BRAND 3172	2.38 f-h		26.3 bc		53.0 gh		171.8 b-f
PIONEER BRAND 32K61	2.63 ef		23.4 fg		59.0 a		169.4 b-f
PIONEER BRAND 33Y09	3.05 bc		23.1 gh		57.4 bc		169.2 b-f
DEKALB DK697	2.38 f-h		25.4 c-e		54.6 ef		168.2 b-f
DEKALB DK683	2.20 h		24.4 ef		54.3 e-g		163.4 c-f
PIONEER BRAND 33K81	3.07 bc		22.9 gh		57.7 a-c		161.5 d-f
PIONEER BRAND 31G20	2.78 de		27.6 a		55.6 de		161.3 d-f
FFR COOPERATIVE SS849IT	2.23 gh		25.9 b-d		50.3 j		160.7 d-f
PIONEER BRAND 33G26	3.22 b		22.3 gh		58.2 ab		159.0 ef
PIONEER BRAND 3394	3.83 a		21.9 h		56.7 cd		150.1 f
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Least Significant Difference (P≤0.05) =	0.24		1.2		1.3		21.2
Standard Deviation =	0.17		0.83		0.91		14.99
Coefficient of Variation =	6.37		3.38		1.64		8.65

¹Hybrid entry planted in four 25-foot rows spaced 2.5 feet apart and replicated four times.

²GLS Disease Severity Index: 0 = no gray leaf spot lesions; 1 = trace of lesions below ear, none above; 2 = many lesions below ear, trace above; 3 = severe lesion development below ear, all leaves above with lesions; 4 = all leaves with severe lesion development, but green tissue still visible; 5 = all leaves dry and dead.

³Grain moisture at harvest expressed in percent.

⁴Bushel weight expressed in pounds at a standard 15.5% grain moisture.

⁵Yield expressed in bushels per acre at a standard 15.5% grain moisture.

⁶Means with letters in common do not differ statistically (P≤0.05) by Duncan's Multiple Range Test.