Northern NY Agricultural Development Program
2004 Project Report

Corn Grain Hybrid Testing Program for Northern New York

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Background:
Corn is the primary row crop grown in northern New York (NNY), planted on about 120,000 acres and providing essential feed for the dairy industry. Roughly 18,700 acres are harvested as grain. When the ethanol production facility currently being constructed in New York comes on line, the increased demand for corn grain as feedstock for that facility will provide new grain marketing opportunities for NNY farmers and increase interest in corn production for grain in this region. Furthermore, grain yield is an important contributor to silage yield, so grain yield evaluation provides an indication of which hybrids would be good candidates for silage use. It is important to evaluate silage quality on these hybrids as well, but seed companies will often enter their hybrids into grain evaluation trials as a first step in determining what is worth marketing in a region for either grain or silage. Thus grain yield evaluations of commercial hybrids provide essential comparative information to farmers interested in grain production in NNY and to seed companies who make marketing decisions based initially on performance in grain yield trials and subsequently on silage evaluations.

Methods:

During 2004, we summarized the results of early season corn grain testing done in 2003 and tested a new set of early maturing hybrids in NNY. Seed companies marketing corn in New York were contacted to request entry of their early maturing commercial hybrids into these evaluation tests. We evaluated 23 early maturing hybrids (1400-1900 growing degree days, 70-90 days relative maturity) at two locations in NNY: one at the Miner Institute's research farm in Chazy, Clinton County, and one at Jon Greenwood's farm in Madrid, Jefferson County. In addition, we evaluated 30 medium-early maturing hybrids (1900-2400 growing degree days, 85-100 days relative maturity) at Ron Robbins's farm in Sackets Harbor, St. Lawrence County. These evaluations were designed to identify hybrids that can meet the grain and silage needs of farmers in the region.

Each hybrid was planted in three replications per location, with each replication consisting of a two-row plot, 17.5' long and thinned to a density of 28,000 to 30,000 plants/acre. Data was collected at thinning time (late June to early July) on plant counts and unusually high or low vigor. In September, plots were evaluated for reaction to any disease or insect pests that occur at each site, for unusually tall or short plants (indicative of potential value as a silage hybrid), and for early-season stalk lodging, root lodging, and animal damage. At harvest time (November), data was collected on final stalk and root lodging, animal damage, grain weight, grain moisture, and test weight. These data were used to calculate grain yield per acre and yield: moisture ratio (a measure of hybrid efficiency in producing high yield under short-season conditions). Results of 2003 testing were published in the 2003 Hybrid Corn Grain Performance Trials Report (Plant Breeding Mimeo 2004-1) and were incorporated into the tables of recommended hybrids in the 2005 Cornell Guide for Integrated Field Crop Management (Cornell University, 2004). These results are available for farmer and seed company use in selecting hybrids best adapted to the challenging soils and climates of NNY. Results from 2004 trials, which were harvested during October and November, are currently available in the 2004 Hybrid Corn Grain Performance Trials Report (Plant Breeding Mimeo 2005-1) and will be incorporated into the tables of recommended hybrids in the 2006 Cornell Guide for Integrated Field Crop Management (to be published by Cornell University in fall, 2005).

Results:

The 2004 growing season tended to be cool and wet during the height of the corn growing period (July and August). Chazy had excess rain only in August and fairly normal temperatures, but Madrid and Sackets Harbor were both a bit cool and quite wet during the summer growing period. Fortunately, a warm fall saved the corn crop in many parts of the state, including parts of NNY. The lack of drought stress during flowering

combined with warmer than average temperatures during grain filling made for some excellent corn yields in the region. Results from our hybrid evaluations are shown in Tables 1 through 3 that follow on page 4-6.

The quality of our testing data this year was excellent, as reflected in the low coefficients of variation (CVs) for yield in the trials (12% at both Madrid and Sackets Harbor and 6% at Chazy). These low CVs indicate that the values in these tables are quite reliable and not overly influenced by random variation in the testing fields. Results present information on a broad array of commercially available hybrids, allowing farmers and seed companies to compare productivity and adaptation of hybrids from various seed companies. In addition, this year one seed company entered into our medium-early test a pair of hybrids that are identical except for the presence of the Bt gene for European corn borer resistance (Dekalb DKC46-28RR2 vs. Dekalb DKC47-10RR2YGCB). This will provide farmers with a direct comparison of the yield and standability benefits that come from the Bt gene for European corn borer resistance in NNY, and help determine whether the extra cost of a Bt hybrid is worth it. This is the type of information that helps both seed companies and farmers make decisions about hybrids for NNY.

Conclusions/Impacts:

Data in the hybrid production tables in this report shows a number of hybrids that had excellent performance in NNY in 2004. However, hybrid choices should always be made based on the most comprehensive data available, usually multi-year and/or multi-location data. Multi-year data is available in the Cornell Guide for Integrated Field Crop Management and this publication should be consulted, in combination with the individual test data presented above, when making hybrid choices. From the single comparison presented above, it appears that the Bt gene for European corn borer resistance did not provide a benefit to the yield of Dekalb DKC46-28RR2 in NNY in 2004, but may have slightly improved its standability.

Table 1. 2004 Early Maturity Hybrids, Chazy, Clinton County.

Brand	Hybrid	Yield bu/A	% Mois-ture	Yield: Moisture Ratio	% Stalk Lodging
Hyland	HL2222	171	28.2	6.1	1
Hyland	HLB264	176	28.4	6.2	0
Dekalb	DKC37-14RR2	199	30.8	6.5	2
Doebler's	241XRR	178	31.3	5.7	0
Hyland	HL2288	170	31.4	5.4	1
Chemgro	4240	158	31.4	5.0	1
TA Seeds	TA2210	163	31.5	5.2	0
Hyland	HLR228	147	32.0	4.6	0
Hyland	HLB258	196	32.6	6.0	0
TA Seeds	TA2650	195	33.2	5.9	0
Hytest	HT7213BTRR2	185	33.8	5.5	1
Doebler's	236X	198	34.0	5.8	0
NK	N22-T8	199	34.2	5.8	0
Golden Harvest	H6565RR	205	34.7	5.9	0
FS Seeds	3840	209	35.0	6.0	0
Hytest	HT7215BTRR2	202	35.6	5.7	0
FS Seeds	4145	199	35.8	5.6	0
Doebler's	296XP	215	36.4	5.9	1
Doebler's	353XYG	195	36.7	5.3	0
Golden Harvest	H6621Bt	199	36.8	5.4	0
Doebler's	318XRR	198	37.2	5.3	0
Hytest	HT7220BTRR2	230	38.2	6.0	0
Golden Harvest	H46905RR	193	39.5	4.9	1
	Mean	190	33.9	5.6	0.3
	CV	6	4.8		
	LSD	19	2.7		
	SD	12	1.6		

Table 2. 2004 Early Maturity Hybrids, Madrid, St. Lawrence County

Brand	Hybrid	Yield bu/A	% Moisture	Yield: Moisture Ratio	Stand-ability	% Stalk Lodging	Test Weight
Hyland	HL2222	135	21.0	6.4	7.3	11	60
TA Seeds	TA2210	168	21.3	7.9	7.7	4	59
Hyland	HLR228	155	21.9	7.1	7.7	7	58
Dekalb	DKC37-14RR2	181	22.5	8.0	8.3	2	58
Doebler's	236X	178	22.5	7.9	8.0	3	59
Hyland	HL2288	165	22.8	7.2	7.7	6	57
TA Seeds	TA2650	176	23.4	7.5	8.0	3	59
Doebler's	241XRR	161	23.6	6.8	7.7	6	59
Hyland	HLB264	182	23.7	7.7	9.0	0	60
FS Seeds	3840	191	23.8	8.0	8.3	1	60
Hytest	HT7213BTRR2	176	24.2	7.3	8.0	5	58
Hyland	HLB258	204	24.4	8.4	8.3	1	62
Chemgro	4240	154	24.5	6.3	8.3	4	57
NK	N22-T8	218	24.8	8.8	9.0	0	59
FS Seeds	4145	220	25.0	8.8	9.0	0	59
Golden Harvest	H6565RR	197	25.1	7.8	8.7	0	57
Doebler's	296XP	213	25.1	8.5	8.0	3	59
Hytest	HT7215BTRR2	193	25.2	7.7	8.7	1	56
Golden Harvest	H46905RR	193	25.6	7.5	7.7	9	57
Golden Harvest	H6621Bt	206	26.3	7.8	8.7	1	56
Doebler's	353XYG	239	26.4	9.1	9.0	0	57
Doebler's	318XRR	159	26.9	5.9	8.7	3	57
Hytest	HT7220BTRR2	226	27.3	8.3	9.0	0	57
	Mean	187	24.2	7.7	8.3	3	58
	CV	12	3.6		5.9		3
	LSD	36	1.4		0.8		3
	SD	22	0.9		0.5		2

Table 3. 2004 Medium-early Maturity Hybrids, Sackets Harbor, Jefferson County.

Brand	Hybrid	Yield bu/A	% Mois-ture	Yield: Moisture Ratio	Stand-ability	% Stalk Lodging	Test Weight	Rust
Dekalb	DKC40-05	155	22.1	7.0	8.3	2	56	3.7
Garst	8959YG1	116	22.1	5.2	7.7	7	55	4.5
NK	N29-A2	185	22.8	8.1	8.0	2	54	3.2
Dekalb	DKC42-95RR2YGCB	159	23.4	6.8	8.7	1	55	2.3
TA Seeds	TA3021	165	23.8	6.9	8.3	1	55	2.5
Hyland	HL2368	173	23.9	7.2	8.3	2	54	3.2
Hyland	HLR234	159	24.0	6.6	8.7	1	56	3.2
Hyland	HLB282	157	24.3	6.5	8.3	2	54	3.0
Doebler's	318XRR	129	24.4	5.3	8.3	1	53	3.7
Doebler's	353XYG	143	24.5	5.8	8.0	1	53	3.7
Dekalb	DKC46-28RR2	156	24.6	6.3	8.3	2	55	3.5
Dekalb	DKC47-10RR2YGCB	147	24.6	6.0	8.0	1	56	3.7
Golden Harvest	H7007Bt	166	24.7	6.7	8.0	2	54	3.5
Hytest	HT7385BT	165	24.8	6.7	8.7	1	55	2.8
Golden Harvest	H6907RR	136	24.9	5.5	8.3	2	53	3.3
Golden Harvest	EX46908RW	156	24.9	6.3	8.3	0	53	3.3
TA Seeds	TA4963	163	25.2	6.5	8.0	1	54	2.8
Hyland	HLB292	203	25.4	8.0	9.0	1	55	3.2
Garst	8880YG1	174	25.4	6.9	8.0	0	53	3.2
Doebler's	469RYG2	182	25.4	7.2	8.7	0	54	2.3
Hyland	HL2507	190	25.6	7.4	8.0	2	53	3.2
NK	N3030BT	141	26.0	5.4	7.0	2	53	3.8
FS Seeds	4312	166	26.2	6.3	8.3	1	53	1.5
Garst	8922YG1	132	26.3	5.0	8.0	3	51	2.7
Golden Harvest	H7298RR	175	26.4	6.6	8.7	1	52	2.0
NK	N45-A6	201	26.9	7.5	8.3	1	50	3.2
FS Seeds	4717	177	27.1	6.5	8.7	0	53	2.3
Garst	8787YG1	158	27.4	5.8	8.3	0	53	3.3
Chemgro	5760BT	172	27.8	6.2	8.3	0	52	1.3
NK	N45-T5	157	28.4	5.5	8.0	1	50	2.5
	Mean	162	25.1	6.5	8.3	1	54	3.0
	CV	12	4.7		5.6		3	
	LSD	31	1.9		0.8		3	
	SD	19	1.2		0.5		2	

Next steps if results suggest continued work is needed:
In future years, we will plan to continue testing hybrids in the NNY region to ensure that farmers and seed companies have a solid basis for their choices of corn grain hybrids for this important region of the state.

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Northern New York Agricultural Development Program:
The Northern New York Agricultural Development Program provided funding for this corn grain hybrid variety evaluation research project. The Northern New York Agricultural Development Program is a farmer-driven research and education program specific to New York state's six northernmost counties: Jefferson, Lewis, St. Lawrence, Franklin, Clinton and Essex.

Thirty-three farmers serve on the Program board led by Co-Chairs Jon Greenwood of Canton (315-386-3231) and Joe Giroux of Plattsburgh (518) 563-7523. For more information, contact Jon, Joe or R. David Smith at 607-255-7286 or visit www.nnyagdev.org
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