



## **Northern NY Agricultural Development Program 2014 Project Report**

### **2014 Hybrid Corn Grain Performance Trials in NNY**

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**Background:**

Corn is the primary row crop grown in northern New York (NNY), harvested from about 156,221 acres. Five of the six NNY counties each grow more than 24,000 acres of corn. Corn provides essential feed for the dairy industry.

The grain produced by corn hybrids also is a major 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 the region.

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 may or may not do subsequent silage evaluations.

This project data also helps the development of the annual Cornell Guide for Integrated Field Crop Management.

Identifying appropriate hybrids for corn grain production in NNY is an annual priority for the NNYADP. As corn seed prices continue to climb, it becomes more and more important to provide growers with the information that allows them to choose hybrids that are well adapted and likely to be productive in the NNY region.

**Methods:**

Hybrids were compared for grain yield, maturity, stalk and root quality, and disease and insect resistance.

We evaluated early maturing hybrids: 1400-1900 growing degree days, 70-85 days relative maturity in NNY at Chazy in Clinton County, and both early maturing hybrids and early/medium hybrids: 1900-2300 growing degree days, 85-100 days relative maturity at Greenwood Dairy in Madrid in St. Lawrence County.

The data from these sites were entered into a comprehensive report that evaluated early, medium-early and medium corn grain hybrids at sites statewide.

Each hybrid was planted in three replications per location, with each replication consisting of a 1/500 acre plot (two rows, 17.5' long). All sites were machine planted and all except Chazy were combine harvested. Each plot's grain weight and grain moisture percentage were measured electronically on the combine. Grain yields were calculated in bushels per acre at 15.5 percent moisture.

**Yield Moisture Ratio**

Yield:moisture ratio (a measure of hybrid efficiency in producing high yield under short-season conditions) was calculated as grain yield in bu/acre divided by the percentage grain moisture at harvest. Some breeders use this number as an estimate of hybrid efficiency. Hybrids that show high yields and earlier maturity (lower grain moistures) have higher Y/M ratios.

**Stalk Lodging and Root Lodging**

At harvest time, we counted the number of stalks broken, or lodged, below the ear. This number was expressed as a portion of the total number of plants in the plot (% Stalk Ldg). We also counted plants leaning over from the base at more than a 45 degree angle as root lodged, and then express this number as a proportion of the total number of plants in the plot (% Root Ldg).

**Early Vigor, Staygreen, Leaf Disease Ratings**

Early Vigor was evaluated at knee-high stage or a bit earlier, with 5 = excellent vigor and 1 = very poor vigor.

**CV, LSD, SD**

We use three statistics to evaluate the quality of the data from these experiments. The coefficient of variation (CV) is a measure of the amount of uncontrolled variability due to differences in the soil, microclimate, fertility, etc. Grain yield CVs below 12 are excellent; those around 15 are acceptable. Grainmoisture CVs below 5 are excellent. The least significant difference (LSD) is computed at the 5% level of probability. If a difference between two hybrids is larger than the LSD listed for the trial, then the odds are at least 95 to 5 (or 19 to 1) that there is true varietal difference between the hybrids, or, as the statisticians say, the difference between the two hybrids is "significant."

Farmers who need businessmen's odds more than statistical precision may consider a 10 bu/acre grain yield difference sufficient to guide a decision in choice of hybrid. The

standard deviation (SD) is the measure used to determine whether the differences between two hybrids are large enough, given the precision of that experiment, to be significant and probably due to true differences between the hybrids.

As a cautionary note, growers should choose hybrids based on multi-year and multi-location data whenever possible, since any hybrid can have a “banner year” or “banner environment” but not necessarily hold up as strongly over a range of different locations and growing seasons.

**Results:**

**NOTE: Tables should not be reproduced if any portion is omitted or if order of data is changed.**

**Table 1. Early maturity hybrid corn grain trial results, Chazy and Madrid, NY.**

<b>ENTRY NAME</b>	<b>YIELD, bu/acre</b>	<b>% MOIST</b>	<b><u>YM</u> RATIO</b>	<b>% RL</b>	<b>% SL</b>	<b>PLANT COUNT</b>
2515GRQ	158.8	22.3	7.3	0	2	61
FS3989VT3	176.9	23.2	7.7	0	1	62
FS 40R27VT3P	158.6	23.4	7.2	0	3	62
FS 3647VT2P	166.6	24.1	7.0	0	1	62
FS 3848SS	145.6	26.9	6.3	0	2	61
DKC44-13RIB	168.1	27.2	6.2	0	1	62
FS 40R30SS	161.5	29.1	5.6	0	0	61
<b>MEAN</b>	162.3	25.2	6.8	0	2	62
<b>S.D.</b>	12.2	1.4	.7	0	3	1
<b>C.V.</b>	7.5	5.4				
<b>LSD(.05)</b>	14.1	1.6				

**Table 2. Medium-early maturity hybrid corn grain trial results, Madrid, NY.**

<b>ENTRY NAME</b>	<b>YIELD, bu/acre</b>	<b>% MOIST</b>	<b><u>YM</u> RATIO</b>	<b>% RL</b>	<b>% SL</b>	<b>PLANT COUNT</b>	<b>EARLY VIGOR</b>
2515GRQ	182	21.6	8.4	0	4	56	3.0
FS 3647VT2P	198	22.5	8.8	1	2	60	3.3
FS 40R27VT3P	183	22.8	8.0	0	7	60	4.0
TA 290-20	183	22.9	8.0	2	1	57	4.2
SI 3232-3110	212	22.9	9.3	0	1	60	3.0
FS 3848SS	175	23.1	7.6	2	4	58	3.3
448AMX	199	23.2	8.6	0	2	60	3.3
FS 4343VT3P	196	23.5	8.4	0	0	60	4.2
TA333-28RIB	206	23.7	8.7	0	0	60	3.9
FS 42R12VT3P	191	23.7	8.1	0	0	60	3.7
D39VP14	193	23.8	8.1	0	1	60	4.0
FS 4545SS	188	23.8	7.9	0	9	60	4.0
497AM	192	24.0	8.0	0	1	57	3.7
N 36A-3111	189	24.2	7.8	0	1	58	3.7
FS 40R30SS	198	24.3	8.2	1	1	60	3.3
FS 50R40SS	178	24.5	7.3	0	1	60	3.5
TA445-32EZ	184	24.5	7.5	0	2	59	3.0
428AMX	201	24.6	8.2	0	0	60	3.3
D34VC52	165	24.9	6.6	1	1	60	3.8
SG 3482-3111	211	25.2	8.4	0	0	60	4.5
CX13401/D40SS48 SS	206	25.7	8.0	1	1	60	3.7
<b>MEAN</b>	192	23.8	8.1	0	2	59	3.6
<b>S.D.</b>	15	0.6	1.0	1	3	2	0.4
<b>C.V.</b>	7.8	2.6					
<b>LSD(.05)</b>	25	1.0					

**Next steps:**

When funding is available, we will plan to continue testing hybrids in NNY 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. We may also incorporate a greater range of maturity into these tests, including the somewhat longer-season hybrids that many NNY growers

are finding they can use in light of warmer, longer growing seasons. This should also increase the number of hybrids evaluated, making the data more useful to growers.

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The complete 2014 New York Hybrid Corn Grain Performance Trials with results from NNY and other sites statewide is posted at <http://plbrgen.cals.cornell.edu/research-extension/crop-variety-trials/corn-variety-testing>.

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