

2015

European Hybrid Corn Variety Trial

Heather Darby

University of Vermont, heather.darby@uvm.edu

Hillary Emick

University of Vermont

Lily Calderwood

University of Vermont

Erica Cummings

University of Vermont

Abha Gupta Gupta

University of Vermont

See next page for additional authors

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Recommended Citation

Darby, Heather; Emick, Hillary; Calderwood, Lily; Cummings, Erica; Gupta, Abha Gupta; Post, Julian; and Ziegler, Sara, "European Hybrid Corn Variety Trial" (2015). *Northwest Crops & Soils Program*. 125.

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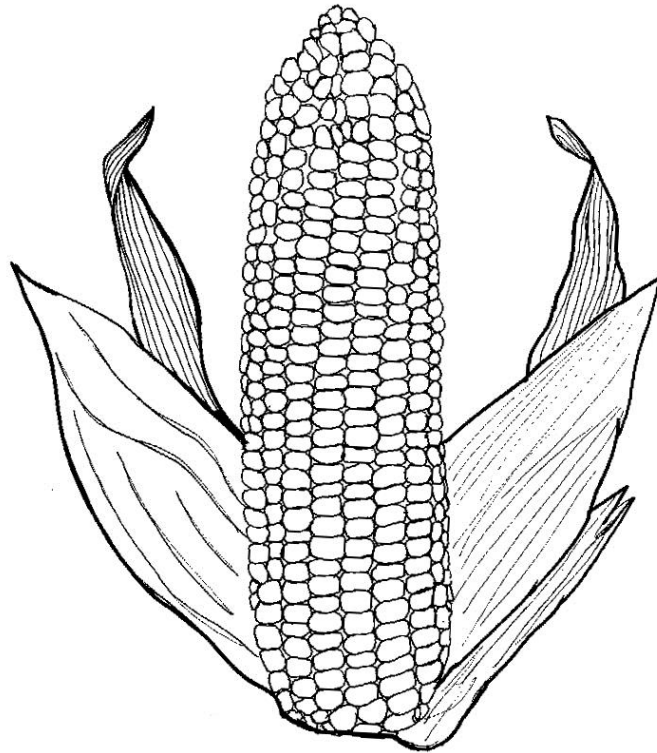
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Authors

Heather Darby, Hillary Emick, Lily Calderwood, Erica Cummings, Abha Gupta Gupta, Julian Post, and Sara Ziegler



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Dr. Heather Darby, UVM Extension Agronomist
Hillary Emick, Lily Calderwood, Erica Cummings, Abha Gupta, Julian Post and Sara Ziegler
UVM Extension Crop and Soil Technicians
802-524-6501

Visit us on the web at <http://www.uvm.edu/extension/cropsoil/>

2015 EUROPEAN HYBRID CORN VARIETY TRIAL
Dr. Heather Darby, University of Vermont Extension
heather.darby[at]uvm.edu

The University of Vermont Extension Northwest Crops and Soils Program conducted a grain corn variety trial in 2015 to provide unbiased performance comparisons of rapidly maturing European hybrid grain corn varieties developed in Eastern Europe for regions with short growing seasons similar to Vermont's climate. It is important to remember that the data presented are from a replicated research trial from only one location in Vermont and represent only one season. These varieties are being trialed to evaluate their suitability to the Vermont climate.

MATERIALS AND METHODS

The trial was conducted at Borderview Research Farm in Alburgh, VT (Table 1). The soil type at the Alburgh location is a Benson rocky silt loam. The seedbed was prepared with spring disking followed by a spike tooth harrow. The previous crop was corn with a rye cover crop. Treatments were 13 short season corn varieties from Eastern Europe (Table 2). Plots were 10' x 30' and consisted of four 30 inch rows. Plots were planted with a John Deere 1750 planter on 18-May at a seeding rate of 30,000 seeds per acre. The plot design was a randomized complete block with four replications.

Corn ears were harvested by hand on 29-Sep. The ears were fed through an Almaco SPC50 plot combine to strip the kernels. Percent moisture was obtained with a hand-held moisture meter. Test weight was determined with a grain test weight scale. Quality characteristics were not evaluated for this trial.

Table 1. European hybrid grain corn variety trial information, Alburgh, Vermont, 2015.

	Borderview Research Farm Alburgh, VT
Soil type	Benson rocky silt loam
Previous crop	Corn with rye cover crop
Row width (in)	30
Plot size (ft)	10 x 30
Seeding rate (seeds/acre)	30,000
Planting date	18-May
Tillage operations	Spring disk, spike tooth harrow
Harvest date	29-Sep

Table 2. European hybrid corn varieties evaluated in Alburgh, Vermont, 2015.

Variety	Country of origin	Developer
Bejon	Poland	Hodowla Roślin Smolice
Cebesto	Czech Republic	OSEVA
Cedrak	Czech Republic	OSEVA
Citrinia	Czech Republic	OSEVA
Jauor	Poland	Hodowla Roślin Smolice
Kosynier	Poland	Hodowla Roślin Smolice
NS1070	Serbia	Institute of Field &Vegetable Crops - Novi Sad
NS1090	Serbia	Institute of Field &Vegetable Crops - Novi Sad
Pyroxenia	Czech Republic	OSEVA
SMH34613	Poland	Hodowla Roślin Smolice
Smolik	Poland	Hodowla Roślin Smolice
Tyrkizia	Czech Republic	OSEVA
Zeta 200	Czech Republic	OSEVA

Yield data and stand characteristics were analyzed using mixed model analysis using the mixed procedure of SAS (SAS Institute, 1999). Replications within trials were treated as random effects, and varieties were treated as fixed. Variety mean comparisons were made using the Least Significant Difference (LSD) procedure when the F-test was considered significant ($p < 0.10$).

Variations in yield and quality can occur because of variations in genetics, soil, weather, and other growing conditions. Statistical analysis makes it possible to determine whether a difference among hybrids is real or whether it might have occurred due to other variations in the field. At the bottom of each table a LSD value is presented for each variable (i.e. yield). Least Significant Differences (LSDs) at the 0.10 level of significance are shown. Where the difference between two hybrids within a column is equal to or greater than the LSD value at the bottom of the column, you can be sure that for 9 out of 10 times, there is a real difference between the two hybrids. Hybrids that were not significantly lower in performance than the highest hybrid in a particular column are indicated with an asterisk. In the following example, hybrid C is significantly different from hybrid A but not from hybrid B. The difference between C and B is equal to 1.5, which is less than the LSD value of 2.0. This means that these hybrids did not differ in yield. The difference between C and A is equal to 3.0, which is greater than the LSD value of 2.0. This means that the yields of these hybrids were significantly different from one another.

Hybrid	Yield
A	6.0
B	7.5*
C	9.0*
LSD	2.0

RESULTS AND DISCUSSION

Seasonal temperature and precipitation recorded at Borderview Research Farm in Alburgh, VT are reported in Table 3. Temperatures through most of the growing season were near historical averages, with warmer than normal temperatures at the beginning and end of the growing season (May and September). Rainfall through the growing season was much less than normal – a total of 11.42 inches

below normal through the growing season. There was a total of 2522 Growing Degree Days (GDDs) for May through September—310 GDDs more than the historical average.

Table 3. Summarized weather data for 2015 – Alburgh, VT.

Alburgh, VT	April	May	June	July	August	September
Average temperature (°F)	43.4	61.9	63.1	70.0	69.7	65.2
Departure from normal	-1.4	5.5	-2.7	-0.6	0.9	4.6
Precipitation (inches)	0.09	1.94	6.42	1.45	0.00	0.34
Departure from normal	-2.73	-1.51	2.73	-2.70	-3.91	-3.30
Growing Degree Days (base 50°F)	22	376	399	630	626	470
Departure from normal	22	177	-75	-10	45	152

Based on weather data from a Davis Instruments Vantage Pro2 with WeatherLink data logger.

Historical averages are for 30 years of NOAA data (1981-2010) from Burlington, Vermont.

Yield results and harvest characteristics are listed in Table 4. There was little lodging and no significant difference among varieties for lodging. Several varieties (NS1090, Jauor, Kosynier, and Bejon) displayed no lodging on any plots. There was no significant difference in populations (plants per acre). The average moisture at the time of harvest was 18.9%. The varieties with low moistures may indicate that they will dry down better within a shorter grower season. The test weight for all varieties except Tyrkizia was above the industry standard of 56 lbs per bushel. The variety Pyroxenia had the highest yield of 107 bushels per acre at 15.5% moisture, statistically the same as the Bejon, Cebesto, SMH34613, Tyrkizia, Citrinia, NS1090, Jauor, Cedrak, and Smolik varieties. The average yield for the trial was 4.39 tons per acre or 90 bushels per acre (Figure 1). Interestingly, the plant populations did not correlate with yield. The variety with the highest yields had among the lowest populations. Overall, the trial had relatively low plant populations which may have been a result of heavy rainfall following planting.

Table 4. Harvest characteristics of 13 Polish grain corn varieties – Alburgh, VT, 2015.

Variety	Population plants/acre	Lodging	Moisture	Test weight	Yield at 15.5% moisture	Yield at 15.5% moisture
		%	%	lbs/bushel	tons/acre	bushels/acre
Bejon	27225	0.00	18.4*	62.5*	5.15*	105*
Cebesto	24394	1.25	18.8*	60.6*	4.96*	101*
Cedrak	27443	8.75	17.6	62.6	4.15*	84.7*
Citrinia	23305	3.75	18.6*	60.3*	4.77*	97.4*
Jauor	26572	0.00	22.3	58.4	4.45*	90.8*
Kosynier	27661	0.00	18.9*	59.7*	3.68	75.0
NS1070	27443	1.25	19.6*	61.3*	3.31	67.6
NS1090	28750	0.00	20.4*	59.7*	4.72*	96.3*
Pyroxenia	23305	3.75	22.9	58.3	5.25	107
SMH34613	27225	1.25	19.1*	60.2*	4.85*	98.9*
Smolik	27661	8.75	18.5*	59.7*	4.07*	83.1
Tyrkizia	25483	8.75	20.7	55.5	4.85*	98.9*
Zeta 200	26354	3.75	19.6*	58.3	2.87	58.7

Trial Mean	26371	3.17	18.9	59.7	4.39	89.6
LSD (p<0.10)	NS	NS	0.03	3.8	1.46	29.9

*Treatments indicated with an asterisk did not perform significantly lower than the top-performing treatment. Treatments shown in **bold** are of the highest value or top performing. NS – No significant difference was determined between treatments.

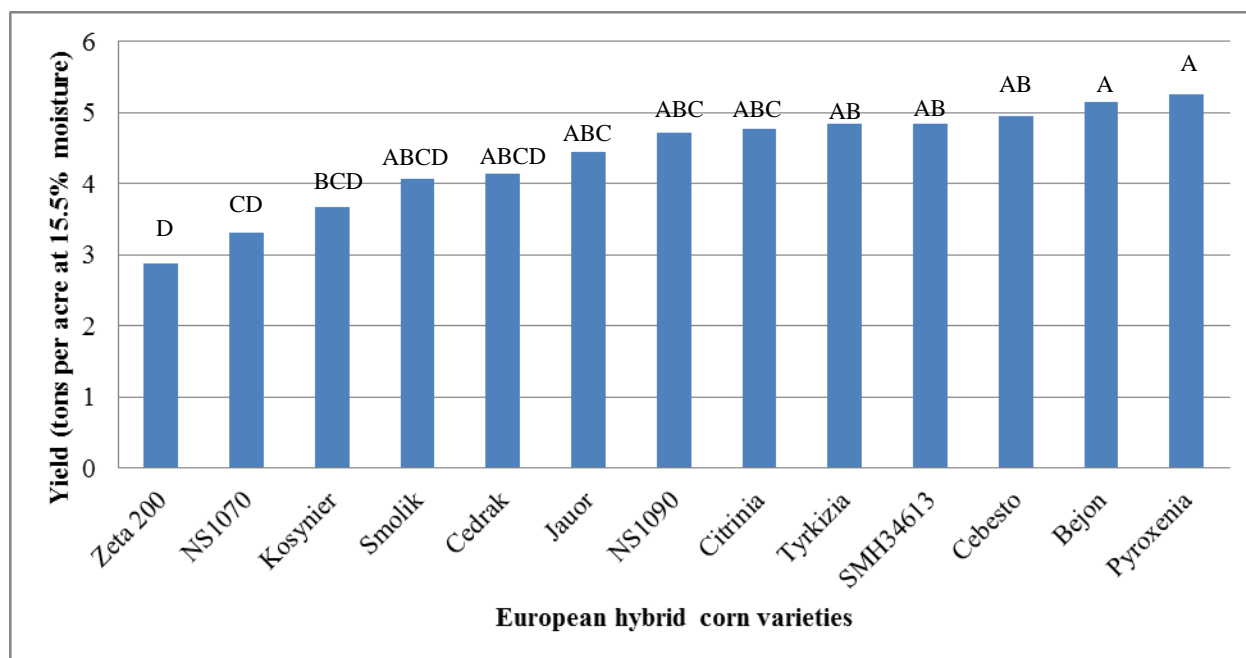


Figure 1. European hybrid grain corn yields, Alburgh, Vermont, 2015. Treatments with the same letter did not differ significantly from one another (p=0.10).

ACKNOWLEDGEMENTS

UVM Extension would like to thank Roger Rainville and staff at Borderview Research Farm in Alburgh for their generous help with the trials. We would like to acknowledge Julija Cubins, Lindsey Ruhl, and Dan Ushkow for their assistance with data collection and entry. We would also like to thank Dr. Frank Kutka of North Dakota State University for his seed donations. This information is presented with the understanding that no product discrimination is intended and no endorsement of any product mentioned, nor criticism of unnamed products, is implied.

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