



Northern New York Agricultural Development Program FACT SHEET

Small Grains Variety Trials 2004: Spring & Winter Wheat

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Why Small Grains?

Small grain variety trials have been conducted at the Cornell Baker Research Farm at Willsboro for more than 20 years...

A local specialty organic flour mill provides Northern New York farmers with a premium local market for organically-grown wheat.

**See also
Organic Field Crop
Rotation for NNY:
Spring & Winter
Wheat Fact Sheet
online at
www.nnyagdev.org**

Introduction:

Why Small Grains Variety Trials?

Small grain variety trials have been conducted at the Cornell Baker Research Farm at Willsboro, NY, for more than 20 years. Trials of spring and winter wheat, spring and winter triticale, winter rye, spring barley, and oat varieties have provided Northern NY farmers with evaluations of the performance of available varieties grown under local conditions.

Champlain Valley Milling, a specialty organic flour mill located in Westport, NY, currently provides Northern New York farmers with a premium local market for organically-grown wheat, and regional acreage devoted to organic spring and winter wheat production has increased significantly in recent years. Specialty, niche markets have specific quality standards and it is essential that varieties selected for production under local conditions have the potential to meet the requisite standards.

The objectives of the study are:

- (1) To acquire promising spring and winter wheat varieties and advanced lines from regional seed companies, and public and private breeding programs in the Northeast, Midwest, and Canada, and
- (2) To evaluate the performance, yield, and quality of spring and winter wheat varieties grown in replicated trials on a Northern NY research farm.

Twenty-nine winter wheat entries and 16 spring wheat were grown...

No herbicides were used.

Methods:

45 Entries in Replicated Trials

Varieties and promising advanced breeding lines of spring and winter wheat were acquired from C&M Seeds, Agriculver Seeds, Champlain Valley Milling, Dr. Sorrells' breeding program at Cornell, and Dr. Mergoum's breeding program at North Dakota State University.

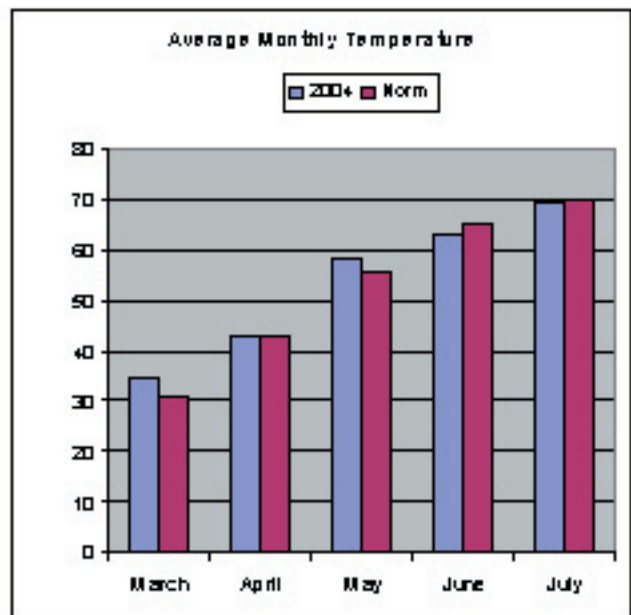
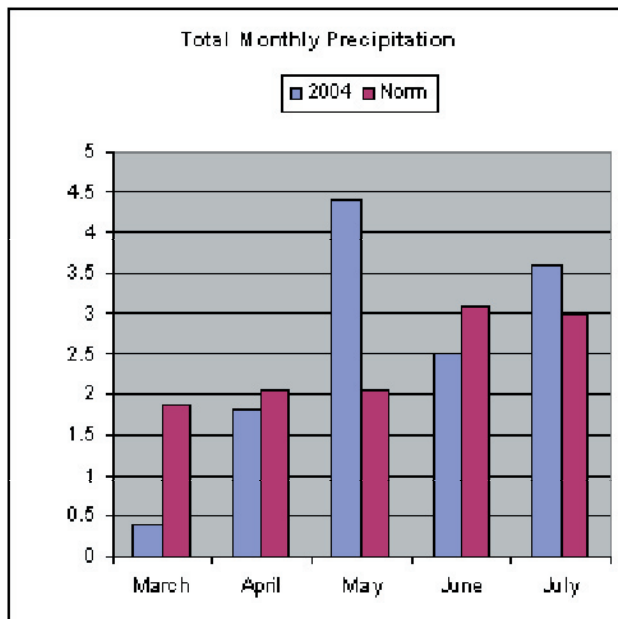
Twenty-nine winter wheat entries and sixteen spring wheat entries were grown in replicated trials at the Cornell Baker Research Farm. A randomized complete block design was employed with three replications for each trial.

Plots were located on a Rhinebeck sandy clay loam soil with tile drainage. 200 lb/acre 6-24-24 was broadcast applied and incorporated with a spring-tooth harrow prior to planting each trial. No herbicides were used. Winter wheat was seeded at a rate of 2bu/acre on October 3, 2003 and harvested on August 9, 2004. Spring wheat was planted April 18, 2004 at a 2.5bu/acre seeding rate and harvested August 9, 2004.

Results

Average monthly temperatures for March through July were near long term averages (Figure 1). Rainfall was well above average in May, slightly below average in June, and above average in July (Figure 1).

Figure 1. March-July monthly precipitation totals and average monthly temperatures for 2004 and 13-year average (norm) at Cornell Baker Research Farm, Willsboro.



Winter wheat trial

2003-2004 winter weather conditions were unfavorable for wheat and significant stand losses occurred in the plots. The mean percent survival rate for the overall trial was 72 percent, and survival rates differed significantly between varieties (Table 1).

Mean yield for the trial was 90 bu/acre. The influence of winterkill on yield was highlighted by the varieties at the top and bottom of the yield ranking. The top four varieties in the ranking had survival rates of 87 or 88 percent, while the three lowest yielding varieties had mean winter survival rates of 42 percent or lower. The relationship between winter survival and yield was less apparent, however, with the varieties in the middle of the rankings (Table 1).

Significant differences in plant height, test weight, and percent moisture at harvest were also observed (Table 1). There were no lodging problems in the plots.

Spring wheat trial

Hard red spring wheat varieties yielded between 63 and 85 bu/acre with an overall trial mean of 77 bu/acre (Table 2). The top nine varieties in the ranking were not statistically different with respect to yield. While several of the varieties in the 2004 trial were new entries and we only have one year of data on their performance, it is interesting to note that some of the Midwestern lines performed well in Northern New York. It may also be noted that Dapps, a hard red spring wheat from North Dakota State University that was selected for high protein level, had below average yield, suggesting that trade-off may exist between yield and protein content.

In addition to yield, spring wheat varieties differed significantly in plant height and test weight, but not in percent moisture at harvest (Table 2). No lodging was observed in the plots.

Tabulated trial results have been posted on the Northern New York Agricultural Development Program website at www.nnyagdev.org and in the variety trial section of the online journal, Plant Management Network, at www.plantmanagementnetwork.org.

Significant differences in plant height, test weight, and percent moisture at harvest were also observed (Table 1).

Some of the Midwestern lines performed well in Northern New York.

Table 1. Northern New York 2004 Winter Wheat Variety Trial Results

Brand/Company Name	Hybrid/Variety Name	Market Class	Yield bu/a	Test weight lb/bu	Moisture %	Plant height inches	Winter survival %
		Trial Mean	89.8	58.4	13.2	33	72
		LSD	10.607	2.2	0.6	2.4	15.8
		LSD P >	0.05	0.05	0.05	0.05	
		CV	7.2	2.3	3	4.4	13.5
		F Test	0.0001	0.0001	0.0079	0.0001	0.0001
Ohio	Freedom	SRW	106	58.3	13.1	31	87
Pioneer	Pioneer 25R57	SRW	100	58.7	13.4	33	87
Ottawa, Canada	AC Ron	SW	100	57.0	12.7	36	87
Agriculver	AC Morley	HRW	99	62.3	13.1	36	88
Agriculver	Mendon	SRW	98	58.7	13.5	31	82
Pioneer	Pioneer 2737W	SW	97	57.0	13.0	38	68
C&M Seeds	Kristy	SRW	97	57.7	13.6	29	78
Agriculver	99-53	SRW	96	57.7	12.9	32	85
Agriculver	Harus	SW	94	58.7	12.9	36	63
C&M Seeds	Harvard	HRW	94	60.0	13.4	32	88
Ontario, Canada	Marilee	SW	93	56.0	13.0	36	67
Ontario, Canada	Superior	SW	93	55.3	12.4	33	55
Cornell	Cayuga	SW	91	60.3	13.5	40	80
Cornell	Houser	SW	91	56.0	12.9	34	48
Agriculver	Genesis 9953	SRW	90	57.0	13.1	31	92
Agriculver	Ashlund	SRW	90	57.7	13.1	31	85
Cornell	Geneva	SW	90	58.3	13.5	36	70
Romania	Fundulea	SRW	89	61.3	13.5	36	83
C&M Seeds	Maxine	HRW	88	61.0	13.2	31	82
Nebraska	Century	HRW	87	60.0	13.8	30	67
Pioneer	Pioneer 25W60	SW	86	58.7	13.2	29	62
C&M Seeds	Gryphon	HRW	85	59.3	13.6	34	85
C&M Seeds	CM 98091	HRW	85	60.3	13.5	29	68
Colorado State	Lindon	HRW	83	61.0	13.5	32	73
Cornell	Richland	SW	83	56.7	13.0	34	60
Cornell	NY Batavia	SW	78	57.7	12.8	36	73
Pioneer	Pioneer 25W33	SW	78	56.0	12.8	28	42
Agriculver	NY 88024-117	SW	75	58.0	13.0	34	40
Agriculver	Caledonia	SW	69	58.3	13.2	30	30

Table 2. Northern New York 2004 Spring Wheat Variety Trial Results

Brand/Company Name	Hybrid/Variety Name	Market Class	Yield bu/a	Test weight lb/bu	Moisture %	Plant height inches
		Trial Mean	76.9	61.6	14.2	34
		LSD	7.6	1.5	NS	1.6
		LSD P >	0.05	0.05	0.05	0.05
		CV	5.9	1.5	2.7	2.8
		F Test	0.0001	0.0001	0.1394	0.0001
Champlain Valley Milling	Russ	HRS	85	61.0	13.8	36
C&M Seeds	CM1248	HRS	84	62.0	14.5	36
Champlain Valley Milling	Knudson	HRS	84	60.7	13.9	27
C&M Seeds	CM2032	HRS	82	61.7	14.8	33
C&M Seeds	CM206	HRS	81	64.7	14.3	32
Champlain Valley Milling	Freyr	HRS	80	63.0	14.3	32
C&M Seeds	CM207	HRS	80	60.0	14.2	29
NDSU	Butte 86	HRS	79	60.7	14.0	37
NDSU	2375	HRS	79	62.3	13.9	31
Champlain Valley Milling	Gunner	HRS	78	62.3	14.0	38
NDSU	Grandin	HRS	75	61.3	14.0	33
NDSU	Parshall	HRS	73	63.0	14.5	37
Champlain Valley Milling	Hannah	HRS	72	61.0	14.2	38
NDSU	Dapps	HRS	68	59.7	14.2	36
NDSU	Alsen	HRS	67	62.7	14.3	32
Champlain Valley Milling	Coteau	HRS	63	60.0	14.1	41

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The small grains variety trials were funded by the Northern New York Agricultural Development Program Program.

Principal Investigators

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Northern New York
Agricultural Development Program

The Northern New York Agricultural Development Program selects and prioritizes research the results of which can be practically applied to farms in the six-county region of northern NY: Jefferson, Lewis, St. Lawrence, Franklin, Clinton and Essex Counties.

To learn more about the Northern New York Agricultural Development Program, contact Co-Chairs Jon Greenwood, 315-386-3231, or Joe Giroux, 518-563-7523; or R. David Smith, Cornell University, 607-255-7286; or visit www.nnyagdev.org on the web. ♦

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