# Northern NY Agricultural Development Program
## 2010 Project Report

# Variety Trials for Small Grains and Food-Grade Soybeans


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## Wheat Variety Trials

### Background

Finding varieties with solid agronomic characteristics (yield potential, maturity, disease resistance, stand-ability, quality) that are well adapted to regional growing conditions is an essential first step toward a profitable cropping season. Trials at the Cornell E.V. Baker Research Farm have provided NNY farmers with variety performance evaluations since the 1980's. These trials test established varieties from regional seed companies such as W.G. Thompson, JGL Inc., and Seedway, in addition to advanced lines and recently released varieties from Dr. Mark Sorrells' breeding program at Cornell.

### Methods

2009-2010 trials included 21 spring wheat varieties and 15 winter wheat varieties. Trials were conducted at the E.V. Baker Research Farm in Willsboro, NY. A randomized complete block design was employed with three replications for each trial. Plots were located on a Rhinebeck clay loam soil with subsurface tile drainage. 200 lb/acre 6-24-24 was broadcast applied and incorporated with a spring-tooth harrow prior to planting each trial. Additionally, the winter wheat plots received a spring topdress application of ammonium nitrate (33-0-0) at a rate of 75 lbs nitrogen per acre. Plant heights, lodging scores, disease incidence, and bird damage data were collected prior to grain harvests. Grain samples from each plot were cleaned, and then tested for moisture content and bushel weight.

### Results: Winter Wheat Trial

The 2010 winter wheat trial consisted of eleven soft white winter (SW), two soft red winter (SRW), and two hard red winter (HRW) varieties (Table 1). Plots were planted at a 2 bu/acre seeding rate on September 26, 2009, and harvested July 26, 2010. Grain

yields ranged from 56.0 bu/acre to 84.7 bu/acre with a trial mean of 70.0 bu/acre. Overall 2010 trial yields were lower, and plant heights were shorter than in 2009 (Table 2).

*Zorro*, a hard red winter wheat variety, had the highest mean yield, while another hard red winter variety, *Harvard*, also yielded near the top of the rankings. Additionally, two experimental lines from Dr. Mark Sorrells' breeding program yielded particularly well for the second year in a row (Table 1). No major lodging problems were observed in any of the plots. Winter grain test weights averaged 56.8 lb/bu, and moisture levels at harvest averaged 13.2%.

**Table 1. 2010 Winter Wheat Variety Trial Results**

| Variety | Market Class | % H2O | Yields (bu/acre) | Test Weight. (lb/bu) | Plant Height (inches) | Lodging Scale 0-10 |
|---|---|---|---|---|---|---|
| Zorro | HRW | 13.2 | 84.7 | 59.3 | 39.0 | 0 |
| NY03180FHB10 | SW | 13.2 | 82.0 | 55.8 | 27.0 | 0 |
| NY03179FHB10 | SW | 12.9 | 77.5 | 57.3 | 30.8 | 0 |
| Harvard | HRW | 13.4 | 77.4 | 59.5 | 31.1 | 0 |
| E0028 | SW | 12.7 | 77.3 | 56.0 | 26.4 | 0 |
| NY88046-7088 | SW | 12.8 | 73.9 | 56.5 | 32.2 | 0 |
| Caledonia Resel. | SW | 13.3 | 70.4 | 56.7 | 28.7 | 0 |
| Bess | SRW | 13.7 | 67.8 | 56.5 | 27.4 | 0 |
| Caledonia | SW | 13.1 | 66.5 | 56.0 | 31.1 | 2 |
| Cal 4PHS-10 | SW | 13.2 | 66.5 | 56.0 | 27.6 | 0 |
| Jensen | SW | 12.8 | 65.9 | 56.8 | 29.1 | 0 |
| Truman | SRW | 13.5 | 64.3 | 57.0 | 30.6 | 1.7 |
| NY03179FHB12 | SW | 12.9 | 62.9 | 55.7 | 28.5 | 1 |
| Cayuga | SW | 13.6 | 57.5 | 56.3 | 27.8 | 1 |
| Richland | SW | 13.2 | 56.0 | 56.7 | 32.7 | 0.3 |
| **Trial Mean:** | | **13.2** | **70.0** | **56.8** | **30.0** | **0.4** |

| Table 2. Comparison of 2009 and 2010 Winter Wheat Trial Results | | | | | |
|---|---|---|---|---|---|
| **Variety** | **Market Class** | **2009 Yields (bu/acre)** | **2010 Yields (bu/acre)** | **2009 Plant Ht. (inches)** | **2010 Plant Ht. (inches)** |
| NY03180FHB10 | SW | 103.4 | 82.0 | 39.2 | 27.0 |
| CaledoniaRes-l | SW | 102.7 | 70.4 | 37.8 | 28.7 |
| NY03179FHB12 | SW | 100.9 | 62.9 | 37.1 | 28.5 |
| E0028 | SW | 99.1 | 77.3 | 37.5 | 26.4 |
| NY88046-7088 | SW | 97.9 | 73.9 | 41.6 | 32.2 |
| NY03179FHB10 | SW | 97.6 | 77.5 | 38.6 | 30.8 |
| Truman | SRW | 96.7 | 64.3 | 36.9 | 30.6 |
| Bess | SRW | 94.9 | 67.8 | 35.3 | 27.4 |
| Caledonia | SW | 92.1 | 66.5 | 37.1 | 31.1 |
| Cal 4PHS-10 | SW | 90.5 | 66.5 | 36.3 | 27.6 |
| Richland | SW | 90.1 | 56.0 | 41.2 | 32.7 |
| Zorro | HRW | 89.1 | 84.7 | 47.2 | 39.0 |
| Jensen | SW | 88.8 | 65.9 | 38.1 | 29.1 |
| Harvard | HRW | 87.1 | 77.4 | 39.6 | 31.1 |
| Cayuga | SW | 85.9 | 57.5 | 46.9 | 27.8 |
| **Trial Mean:** | | **94.6** | **70.0** | **39.4** | **30.0** |

**Results: Spring Wheat Trial**

Twenty-one hard red spring wheat varieties were included in the 2010 trial (Table 4). Nineteen entries were repeats from the 2009 trial, while *Glenn* and *Red Fife* (a Canadian land race) were new to the test. Spring wheat plots were planted April 15, 2010 and harvested July 27, 2010. The seeding rate was 2.5 bu/acre.

2010 trial results were very similar to the 2009 test with respect to variety yields and plant heights (Tables 3 & 4). No lodging was observed in either year. Test weights were notably higher in 2010 compared to 2009, and the grain moisture level at harvest was lower in 2010 relative to 2009.

Star performers from past hard red spring wheat variety trials, including *HRS6002*, *HRS45-025J*, *Russ*, and *Hannah*, once again produced the highest yields. These four entries have consistently topped the yield rankings over multiple years (2006-2010) and appear to be particularly well suited to northern New York growing conditions. As in several past trials, *Dapps* and *Coteau* produced the lowest mean yields in 2010 and should probably be dropped from the test. The two new entries, *Red Fife* and *Glenn*, did not yield particularly well relative to the other varieties in the trial, but they are reported to have very high bread baking quality characteristics, and as a result command a premium price in the marketplace. In many circumstances the increased value of these varieties will more than offset somewhat lower yields.

| Table 3. 2009 Spring Wheat Variety Trial Results | | | | | | |
|---|---|---|---|---|---|---|
| **Variety** | **Market Class** | **% H2O** | **Yields (bu/acre)** | **Test Weight. (lb/bu)** | **Plant Height (inches)** | **Lodging Scale 0-10** |
| HRS6002J | HRS | 15.5 | 83.0 | 57 | 45.4 | 0 |
| HRS45-025 | HRS | 15.5 | 78.6 | 57 | 39.1 | 0 |
| Russ | HRS | 14.8 | 71.8 | 55 | 39.9 | 0 |
| Hannah | HRS | 16.0 | 71.4 | 56 | 42.0 | 0 |
| 2375 | HRS | 15.2 | 67.0 | 55 | 35.2 | 0 |
| Alsen | HRS | 16.1 | 66.8 | 56 | 34.5 | 0 |
| SD45-015J | HRS | 15.9 | 64.4 | 55 | 30.1 | 0 |
| Parshall | HRS | 15.7 | 63.9 | 57 | 41.2 | 0 |
| Stoa | HRS | 14.3 | 62.0 | 53 | 33.5 | 0 |
| Freyr | HRS | 15.6 | 61.2 | 55 | 36.2 | 0 |
| HRS45-035 | HRS | 14.9 | 60.9 | 56 | 36.0 | 0 |
| CM606 | HRS | 15.2 | 60.6 | 58 | 35.2 | 0 |
| Butte 86 | HRS | 15.1 | 60.4 | 54 | 39.9 | 0 |
| Profit | HRS | 14.7 | 60.4 | 54 | 33.3 | 0 |
| Knudson | HRS | 15.7 | 58.2 | 54 | 30.4 | 0 |
| Gunner | HRS | 14.7 | 58.0 | 57 | 40.0 | 0 |
| HRS6001J | HRS | 16.0 | 53.6 | 55 | 39.1 | 0 |
| Dapps | HRS | 15.3 | 51.8 | 53 | 46.2 | 0 |
| Coteau | HRS | 14.9 | 50.2 | 53 | 45.7 | 0 |
| **Trial Mean:** | | **15.4** | **64.1** | **55** | **38.4** | **0** |

| Table 4. 2010 Spring Wheat Variety Trial Results | | | | | | |
|---|---|---|---|---|---|---|
| **Variety** | **Market Class** | **% H2O** | **Yields (bu/acre)** | **Test Weight. (lb/bu)** | **Plant Height (inches)** | **Lodging Scale 0-10** |
| HRS6002J | HRS | 13.6 | 79.9 | 60 | 44.2 | 0 |
| HRS45-025 | HRS | 13.7 | 70.8 | 61 | 38.1 | 0 |
| Hannah | HRS | 13.7 | 69.4 | 61 | 42.3 | 0 |
| Freyr | HRS | 14.3 | 67.7 | 59 | 38.1 | 0 |
| Russ | HRS | 13.5 | 67.6 | 61 | 39.0 | 0 |
| Butte 86 | HRS | 13.1 | 64.7 | 60 | 39.1 | 0 |
| Stoa | HRS | 13.1 | 64.5 | 57 | 33.9 | 0 |
| Alsen | HRS | 14.3 | 63.5 | 60 | 33.3 | 0 |
| 2375 | HRS | 13.3 | 62.9 | 60 | 34.0 | 0 |
| Knudson | HRS | 13.9 | 62.7 | 59 | 31.6 | 0 |
| Parshall | HRS | 13.4 | 62.6 | 61 | 40.0 | 0 |
| Gunner | HRS | 13.5 | 62.6 | 61 | 38.6 | 0 |
| SD45-015J | HRS | 13.5 | 61.6 | 59 | 32.0 | 0 |
| HRS6001J | HRS | 13.4 | 61.5 | 61 | 35.8 | 0 |
| Profit | HRS | 13.2 | 60.3 | 59 | 29.0 | 0 |
| HRS45035J | HRS | 14.2 | 60.0 | 59 | 32.4 | 0 |
| Glenn | HRS | 14.1 | 58.1 | 61 | 36.0 | 0 |
| CM606 | HRS | 13.6 | 57.7 | 61 | 35.0 | 0 |
| Red Fife | HRS | 13.7 | 56.2 | 57 | 51.4 | 0 |
| Coteau | HRS | 13.0 | 54.3 | 56 | 43.6 | 0 |
| Dapps | HRS | 12.8 | 53.4 | 56 | 42.4 | 0 |
| **Trial Mean:** | | **13.6** | **63.9** | **60** | **37.9** | **0** |

# Organic Food-Grade Soybean Variety Trial

## Background

Northern New York is well suited for growing soybeans, and the total number of north-country acres devoted to soybean production continues to increase. Growing certified organic food-grade soybeans can significantly increase the value and profit potential of the soybean crop. Demand for high quality food-grade soybeans continues to grow, and the establishment of a regionally located soybean food processing business (Vermont Soy) could serve as a solid market for organic growers in the area. If farmers are going to be successful with food-grade soybean production, it is essential that we identify food-grade varieties that are well adapted to northern New York growing conditions and meet the quality specifications of processors.

## Methods

Twenty-two commercially available food grade soybean varieties were included in the 2010 trial. Thirteen of the entries were repeats from the 2009 trial, and nine entries were new. A randomized complete block experimental design with five replications was employed. Food grade soybeans were grown on tile drained, certified organic fields with a Rhinebeck clay loam soil at the Cornell University E.V. Baker Research Farm. Plots were 10' wide and 20' long, and consisted of four rows with a 30" spacing between the rows. Target planting depth was 1" and all seed was inoculated with the appropriate OMRI approved *Rhizobium* sp. prior to planting. Plots were seeded May 27, 2010 and harvested October 20, 2010. Weed control measures included cultivation with a rotary hoe (two passes in opposite directions) when the plants were approximately 4" tall and had their first set of true leaves, and an additional between row cultivation with sweeps in mid summer (sweeps were mounted on an Allis Chalmers G tractor). Prior to harvest plant heights were measured and the plots were scored for lodging (Photo 1).

## Results

Overall food-grade soybean yields in the 2010 trial were exceptional (Table 5). The trial mean of 54.8 bu/acre was higher than the 2009 (52.4 bu/acre), 2008 (48.0 bu/acre), and 2007 (41.5 bu/acre) trials. High yields in the 2010 trial were supported by a timely May planting date and excellent growing conditions during the season. Soybean plants were taller on average in the 2010 trial than in 2009 (Table 6), and there was a trend toward increased yields with taller, later maturing varieties. No lodging was observed in any of the plots, and the mean moisture level at harvest was 11.4%.

The 2010 trial provided a second year of data for thirteen of the entries in the test. A comparison of yields between 2009 and 2010 (Table 6) shows that while the 2010 yields for most varieties were either similar or higher than in 2009, *Nova* and *Acora* produced markedly lower yields in 2010. Plant heights were much higher in 2010 than in 2009 for all thirteen entries, so the reduced yields with *Nova* and *Acora* are difficult to explain.

Considering varieties with two years of results, *PR807228* and *Vinton 81* consistently ranked at or near the top of the test for yield. While *Acora*, the highest yielding entry in 2009, also ranked near the top of the list when yields were averaged over two year

(Table 7), its performance in the 2010 trial was not that impressive. A first year entry, *15K9*, yielded very well in 2010; an additional year or two of testing is needed to fully assess its relative performance. *Korus*, *Nova*, *Venus*, and *1F44* yielded toward the bottom of the trials in both years.

**Table 5. 2009 Organic Food-Grade Soybean Variety Trial Results**

| Variety | R8 Stage Date | % H2O | Yields (bu/acre) | Plant Height (cm) | Lodging Scale 0-10 |
|---|---|---|---|---|---|
| PR807228 | Oct. 4 | 11.8 | 61.9 | 84.4 | 0 |
| 15K9 | Sept. 27 | 11.3 | 59.5 | 76.8 | 0 |
| Vinton 81 | Oct. 4 | 12.2 | 58.7 | 100.6 | 0 |
| Oria | Sept. 27 | 11.4 | 58.4 | 70 | 0 |
| 10F8 | Sept. 27 | 11.6 | 57.7 | 88 | 0 |
| 1A24 | Oct. 4 | 11.6 | 56.9 | 76 | 0 |
| Dares | Sept. 27 | 11.5 | 56.8 | 78.4 | 0 |
| CFS08.5.0 | Sept. 21 | 11.1 | 55.7 | 70 | 0 |
| Auriga | Sept. 21 | 11.3 | 55.6 | 69.2 | 0 |
| 15F8 | Oct. 4 | 11.9 | 55.6 | 68.2 | 0 |
| Naya | Sept. 21 | 11.4 | 55.2 | 67.4 | 0 |
| Krios | Sept. 27 | 10.8 | 55.2 | 78.2 | 0 |
| Destiny | Sept. 21 | 11.6 | 55.1 | 78.2 | 0 |
| Acora | Sept. 27 | 11.3 | 55.0 | 91.6 | 0 |
| PR8072A3 | Sept. 21 | 11.0 | 54.4 | 68.6 | 0 |
| Etna | Sept. 21 | 11.2 | 54.3 | 66.6 | 0 |
| Venus | Sept. 21 | 11.3 | 54.2 | 84 | 0 |
| 1F44 | Sept. 27 | 11.8 | 53.1 | 85.8 | 0 |
| PR717917 | Sept. 27 | 11.1 | 51.9 | 71 | 0 |
| CFS08.3.0 | Sept. 10 | 11.5 | 48.1 | 65.6 | 0 |
| Nova | Sept. 21 | 10.9 | 46.5 | 68.6 | 0 |
| Korus | Sept. 21 | 11.3 | 44.6 | 64.2 | 0 |
| **Trial Mean:** | | **11.4** | **54.8** | **76.0** | **0** |

| Table 6. Comparison of Yields and Heights for Entries included in both 2009 and 2010 Trials | | | | |
|---|---|---|---|---|
| **Variety** | **2009 Yields (bu/acre)** | **2010 Yields (bu/acre)** | **2009 Plant Heights (cm)** | **2010 Plant Heights (cm)** |
| 10F8 | 57.3 | 57.7 | 53.5 | 88.0 |
| Korus | 37.0 | 44.6 | 39.5 | 64.2 |
| Nova | 49.4 | 46.5 | 46.3 | 68.6 |
| Acora | 66.0 | 55.0 | 60.8 | 91.6 |
| 1F44 | 39.0 | 53.1 | 45.9 | 85.8 |
| Naya | 56.7 | 55.2 | 42.8 | 67.4 |
| Venus | 47.6 | 54.2 | 51.0 | 84.0 |
| Oria | 47.6 | 58.4 | 49.0 | 70.0 |
| Vinton 81 | 56.7 | 58.7 | 62.3 | 100.6 |
| Destiny | 54.9 | 55.1 | 52.3 | 78.2 |
| PR717917 | 52.4 | 51.9 | 48.3 | 71.0 |
| PR8072A3 | 52.8 | 54.4 | 50.0 | 68.6 |
| PR807228 | 63.8 | 61.9 | 55.5 | 84.4 |
| **Trial Mean:** | **52.4** | **54.4** | **50.5** | **78.6** |

| Table 7. Mean Yields and Heights Averaged Over Two Years (2009 and 2010) | | |
|---|---|---|
| **Variety** | **Yields (bu/acre)** | **Plant Height (cm)** |
| PR807228 | 62.8 | **71.6** |
| Acora | 59.9 | 77.9 |
| Vinton 81 | 57.8 | 83.6 |
| 10F8 | 57.6 | 72.7 |
| Naya | 55.9 | 56.4 |
| Destiny | 55.0 | 66.7 |
| PR8072A3 | 53.7 | 60.3 |
| Oria | 53.6 | 60.7 |
| PR717917 | 52.1 | 60.9 |
| Venus | 51.2 | 69.3 |
| **Nova** | 47.8 | 58.7 |
| 1F44 | 46.8 | 68.1 |
| Korus | 41.2 | 53.2 |
| **Trial Mean:** | **53.5** | **66.1** |

# Heritage Wheat Variety Trials

**Background**

As an outgrowth of the local foods movement, there is increased interest on the part of millers, bakers, and consumers in regionally grown and processed "heritage" wheat varieties that may have unique flavors or other desirable quality characteristics. In an effort to explore the potential for heritage wheat production in New York, Elizabeth Dyck at NOFA-NY obtained several heritage varieties of winter wheat from Mark Sorrells' breeding program at Cornell University, and spring Emmer wheat from North Dakota State University. In collaboration with Elizabeth Dyck, heritage winter and spring Emmer wheat trials were conducted on the Cornell E.V. Baker Research Farm. 2010 was the second year of this study.

## *Heritage Winter Wheat*

**Methods**

Eleven heritage varieties and nine modern varieties were included in the 2010 heritage winter wheat trial. The trial was conducted on a Rhinebeck clay loam soil with subsurface tile drainage. Organic production practices were followed, but the field was not certified organic. The test followed three years of alfalfa/timothy sod and one year of spring grains in the rotation. A randomized complete block design with three replications was employed. All plots were 6' x 16.5'. Modern varieties were planted at a 2 bu/acre (120 lbs/acre) seeding rate. *Clarks Cream* was an exception as it was planted at 75 lbs/acre. The seeding rate for the heritage varieties was 60 lbs/acre. Plant heights, lodging scores, disease incidence, and bird damage data were collected prior to grain harvest. Plots were planted on September 26, 2009, and harvested on July 26, 2010.

**Results**

Overall the moisture levels at harvest, yields, and bushel weights were very similar for modern and heritage entries (Table 8) As a group the heritage varieties were taller than the modern varieties in the 2010 trial (Table 8), but no significant lodging problems were noted in any of the 2010 entries. It was surprising that four heritage varieties, *Genesee*, *Yorkwin*, *Yorkstar*, and *Honor*, and two modern varieties, *Geneva* and *Caledonia-Reselect*, topped the yield ranking (Table 9). The 2010 trial was managed organically, and the comparable yields for modern and heritage lines suggests that the tall, competitive growth habits of the heritage lines may have helped them to perform well in an organically managed system.

| Table 8. 2010 Overall Comparison of Modern and Heritage Variety Performance. | | |
|---|---|---|
| **Means averaged over all entries in each group** | **Modern Varieties (means for 9 entries)** | **Heritage Varieties (means for 11 entries)** |
| % H2O @ Harvest | 13.0 | 12.9 |
| | | |
| Yield (bu/acre) | 58.1 | 57.0 |
| | | |
| Test Weight (lb/bu) | 57 | 58 |
| | | |
| Height (inches) | 36.5 | 47.0 |
| | | |
| Lodging (0-10 scale) | 0.04 | 0.39 |

| Table 9. 2010 Heritage Winter Wheat Variety Trial Results | | | | | | |
|---|---|---|---|---|---|---|
| **Variety** | **Class** | **% H2O** | **Yields (bu/acre)** | **Test Weight. (lb/bu)** | **Plant Height (inches)** | **Lodging Scale 0-10** |
| Geneva | Modern | 12.8 | 68.4 | 58 | 37.4 | 0 |
| Caledonia Resel. | Modern | 13.0 | 65.5 | 57 | 32.0 | 0 |
| Genesee | Heritage | 12.6 | 65.4 | 57 | 46.6 | 0.7 |
| Yorkwin | Heritage | 12.9 | 64.6 | 58 | 49.1 | 0.7 |
| Yorkstar | Heritage | 12.8 | 63.8 | 57 | 41.2 | 0 |
| Honor | Heritage | 12.8 | 62.5 | 58 | 47.5 | 1 |
| Cayuga | Modern | 13.4 | 62.4 | 60 | 40.4 | 0.3 |
| NY Batavia | Modern | 13.0 | 62.3 | 56 | 36.1 | 0 |
| Jensen | Modern | 12.9 | 59.7 | 57 | 31.0 | 0 |
| Avon | Heritage | 12.6 | 58.8 | 58 | 46.3 | 0 |
| Houser | Modern | 12.4 | 57.9 | 55 | 36.9 | 0 |
| Valprize | Heritage | 12.6 | 57.2 | 58 | 47.1 | 0 |
| Purcell | Modern | 12.8 | 56.4 | 57 | 40.2 | 0 |
| Forward | Heritage | 12.9 | 55.7 | 58 | 45.1 | 0 |
| Grandprize | Heritage | 12.8 | 53.3 | 58 | 47.8 | 0 |
| Pride of Genesee | Heritage | 12.9 | 49.3 | 60 | 53.3 | 0.7 |
| Richland | Modern | 13.1 | 49.3 | 57 | 34.4 | 0 |
| Goldcoin | Heritage | 13.2 | 48.6 | 59 | 45.8 | 1.3 |
| Genesee Giant | Heritage | 13.7 | 48.4 | 58 | 46.9 | 0 |
| Clark's Cream | Modern | 13.9 | 40.8 | 59 | 40.0 | 0 |
| **Trial Mean:** | | **13.0** | **57.5** | **58** | **42.3** | **0.2** |

## *Heritage Winter Wheat Seeding Rate Experiment*

**Background**

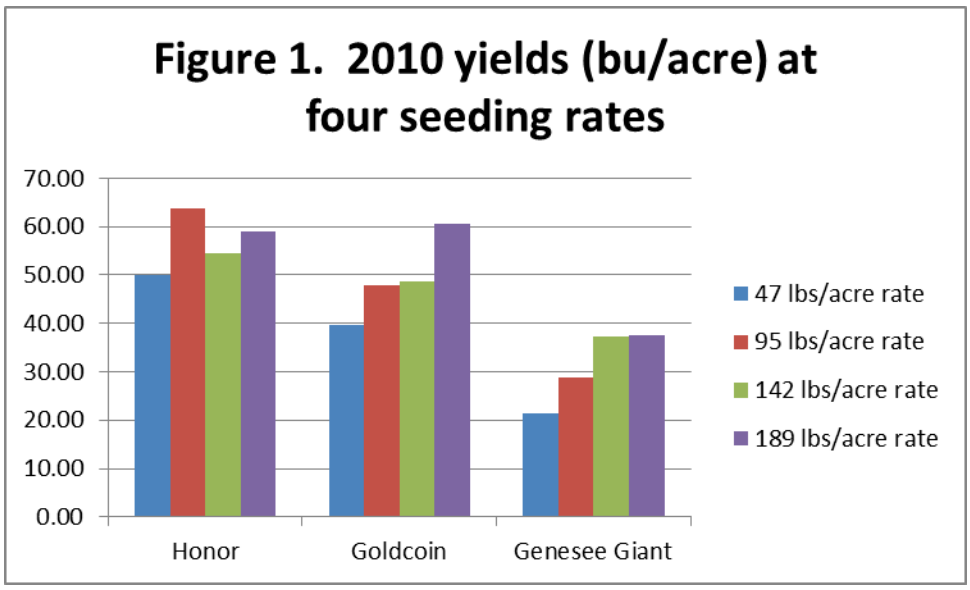
Recommended seeding rates for the heritage varieties are much lower those for modern varieties. A seeding rate study was designed to examine the relationship between seeding rate and plant growth habit, yield, and standability with heritage winter wheat lines.

**Methods**

Three heritage winter wheat varieties *(Honor, Goldcoin*, and *Genesee Giant*) were planted at four seeding rates (47, 95, 142, 189 lbs/acre) on the Cornell University E.V. Baker Research Farm in Willsboro. The trial was conducted on a Rhinebeck clay loam soil with subsurface tile drainage. Organic production practices were followed, but the field was not certified organic. The test followed three years of alfalfa/timothy sod and one year of spring grains in the rotation. A randomized complete block design with three replications for each variety-seeding rate treatment was employed. All plots were 6' x 16.5'. Plant heights, lodging scores, disease incidence, and bird damage data were collected prior to grain harvest. Plots were planted on September 26, 2009, and harvested on July 26, 2010.

**Results**

The three heritage varieties differed in their response to seeding rate. *Honor* was the only entry that had the highest yield at the recommended seeding rate of 95 lbs/acre (Figure 1), while *Goldcoin* and *Genesee Giant* trended toward higher yields at the higher seeding rates. Very little lodging was exhibited by *Goldcoin* or *Genesee Giant* at any of the seeding rates (Table 10). More lodging problems occurred with Honor, but the problem was consistent across all four seeding rate treatments. 2010 results indicate that more research is needed to establish the optimal seeding rates for heritage winter wheat varieties, and that each variety will need to be evaluated separately.



| Table 10. 2010 Heritage Winter Wheat Seeding Rate Trial Results | | | | | | |
|---|---|---|---|---|---|---|
| **Variety** | **Seeding Rate (lb/ac)** | **% H2O** | **Yields (bu/acre)** | **Test Weight. (lb/bu)** | **Plant Height (inches)** | **Lodging Scale 0-10** |
| Honor | 47 | 13.2 | 49.9 | 57 | 48.2 | 3.0 |
| Honor | 95 | 13.6 | 63.9 | 58 | 48.0 | 2.7 |
| Honor | 142 | 13.3 | 54.4 | 57 | 47.6 | 3.0 |
| Honor | 189 | 13.2 | 59.0 | 57 | 45.4 | 3.0 |
| Goldcoin | 47 | 13.9 | 39.8 | 58 | 44.8 | 0.7 |
| Goldcoin | 95 | 13.5 | 47.9 | 58 | 48.6 | 0.7 |
| Goldcoin | 142 | 13.4 | 48.8 | 57 | 45.4 | 2.7 |
| Goldcoin | 189 | 13.4 | 60.6 | 57 | 45.7 | 0 |
| Genesee Giant | 47 | 14.1 | 21.3 | 55 | 45.4 | 1.3 |
| Genesee Giant | 95 | 14 | 28.8 | 57 | 46.9 | 0 |
| Genesee Giant | 142 | 13.8 | 37.2 | 57 | 43.2 | 0 |
| Genesee Giant | 189 | 13.8 | 37.5 | 57 | 44.2 | 0.7 |

## *Spring Emmer Wheat*

**Methods**

Seven emmer wheat varieties were included in the 2010 trial for a second year of testing on the Cornell E.V. Baker Research Farm. The trial was conducted on certified organic fields with a Rhinebeck clay loam soil and subsurface tile drainage. A randomized complete block design was employed with three replications for each entry. The seeding rate for all the Emmer varieties was 100 lbs/acre. Plots were planted on April 26, 2010 and harvested on July 27, 2010. The trial was scored for lodging, bird damage, disease incidence and plant height prior to harvest.

**Results**

All seven emmer wheat varieties were much shorter and lower yielding in 2010 than in 2009 (Table 11). The 2009 trial followed a plowed down alfalfa/grass sod, and the high fertility levels resulted in very tall, high yielding plants that had significant lodging problems. In contrast, the 2010 trial followed three years of annual grain crops in the rotation, so fertility levels were lower and the soils structural health was constrained. Lower fertility and poorer soil health likely account for the shorter, lower yielding plants in 2010. On the plus side, no lodging problems were observed in the 2010 trial. During our two years of testing we've overshot and undershot the ideal soil fertility and plant populations for the emmer wheat varieties in our test. More research is needed to nail down the preferred rotational and agronomic practices for this small grain crop.

| Table 11. 2009 and 2010 Emmer Wheat Trial Results | | | | |
|---|---|---|---|---|
| **Emmer Variety** | **2009 Yields lb/acre (w/hulls)** | **2010 Yields lb/acre (w/hulls)** | **2009 Plant Height (inches)** | **2010 Plant Height (inches)** |
| Bowman | 2147 | 1531 | 44.2 | 36.7 |
| Red Vernal | 2435 | 1423 | 45.8 | 36.1 |
| Common H | 2187 | 1490 | 45.7 | 38.3 |
| Common R | 2304 | 1501 | 43.0 | 38.3 |
| Lucille | 2590 | 1501 | 50.5 | 36.7 |
| Common M | 2120 | 1837 | 46.5 | 39.0 |
| ND Common | 2174 | 1786 | 45.8 | 37.9 |
| **Trial Mean:** | **2280** | **1581** | **45.9** | **37.6** |

## Outreach

Tabulated trial results are posted on the Northern New York Agricultural Development Program website www.nnyagdev.org. Results were also presented during research farm field days, regional extension meetings and workshops.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## For more information


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