



2012 Organic Spring Wheat Seeding Rate Trial Report



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Throughout Vermont and the Northeast, the demand for local organically grown wheat continues to rise. Due to this demand, there has been a renewed interest by producers to add wheat into their crop rotations. Several producers have asked questions about the best agronomic practices for cultivating organic spring wheat. As a result, University of Vermont Extension has been developing best agronomic practices for wheat production in the Northeast. Seeding rates can influence weed populations as well as overall yield and quality. The purpose of this trial was to determine optimum seeding rates for organic spring wheat in Vermont.

MATERIALS AND METHODS

In April of 2012, an organic spring wheat seeding rate trial was established at the Borderview Research Farm in Alburgh, Vermont. The experimental plot design was a randomized complete block with four replications. The seedbed at the Alburgh location was prepared by conventional tillage methods. All plots were managed with practices similar to those used by producers in the surrounding areas (Table 1). The previous crop planted in the site was sunflowers. In March 2012, the field was disked and spike-toothed harrowed to prepare for planting. The plots were seeded with a Kincaid Cone Seeder on 16-Apr at seeding rates of 50, 75, 100, 125, 150, 175 or 200 lbs ac⁻¹ with hard red spring wheat (var. 'Barlow'). Plot size was 6' x 20'.

Table 1. General plot management of the organic

RESULTS AND DISCUSSION

Seasonal precipitation and temperatures were recorded at a weather station in close proximity to the 2012 trial site (Table 2). The growing season this year was marked by higher than normal temperatures and less than average rainfall, especially in the months of June and July. From April to July there was an accumulation of 3547 Growing Degree Days (GDDs) in Alburgh which is 195 GDDs higher than the 30 year average.

Table 2. Temperature and precipitation summary for Alburgh, VT, 2012.

Alburgh, VT	April	May	June	July
Average Temperature (F)	44.9	60.5	67.0	71.4
Departure from Normal	0.10	4.10	1.20	0.80
Precipitation (inches) *	2.64	3.90	3.22	3.78
Departure from Normal	-0.18	0.45	-0.47	-0.37
Growing Degree Days (base 32)	396	884	1046	1221
Departure from Normal	12.0	128	32.0	23.0

Based on weather data from Davis Instruments Vantage pro2 with Weatherlink data logger.

Historical averages for 30 years of NOAA data (1981-2010).

* Precipitation data from June-September 2012 is based on Northeast Regional Climate Center data from an observation station in Burlington, VT.

Plant populations per acre were significantly different between seeding rates (Table 3). The highest plant population was at the seeding rate of 175 lbs ac⁻¹ with 2,075,907 plants to the acre. Not surprisingly, 50 lbs ac⁻¹ had the lowest plant population with 1,063,477 plants per acre. A low plant population in the 200 lbs ac⁻¹ treatment may be a result of high plant density causing smothering of plants. Plant heights and percent lodged were not significantly different among seeding rates.

Table 3. The impact of seeding rate on plant populations, plant height and lodging, Alburgh, VT.

Seeding Rate	Plant population	Plant height	Lodging	Severity
lbs ac ⁻¹	per acre	inches	%	1-5 scale
50	1063477	32.4	12.5	2.25
75	1157062	34.0	7.50	1.75*
100	1071985	33.0	2.50	1.50*
125	1080492	33.4	7.50	0.50*
150	1590961	34.0	2.50	0.50*
175	2075907*	35.2	17.5	3.00
200	1488867	34.3	16.3	1.25*
<i>LSD (0.1)</i>	323224	NS	NS	1.49
<i>Trial means</i>	1361250	34	9.5	1.5

Values shown in **bold** are of the highest value or top performing.

* Wheat varieties that are not significantly different than the top performing variety in a column are indicated with an asterisk.

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