2011 SPRING WHEAT PLANTING DATE REPORT

The localvore movement has revived otherwise historical crops in Vermont, including small-scale grain production. As the demand for local organic wheat has risen over the last few years, University of Vermont Extension has developing best agronomic practices for wheat production in a Northeastern climate. In an organic system, weed management can be one of the biggest challenges. One strategy to manage weeds is to modify planting dates. Early planting dates can establish a crop prior to weed flushes while a late planted crop can help avoid some weed species. Planting date can also have an overall impact on both grain yield and quality. Certain crop varieties may also have characteristics (i.e. height) that can help to compete against weed populations. However, some varieties may respond better to earlier or later planting dates. Another struggle that Northeastern wheat farmers face is disease, most notably, Fusarium Head Blight (FHB), caused predominantly by Fusariumgraminearum. This disease can cause yield loss, low test weight, low seed germination, and will produce mycotoxins. The primary mycotoxin produced by FHB is a vomitoxin called deoxynivalenol (DON). Spores are usually transmitted by air currents and can infect plants at flowering through grain fill. One of the goals of this project was to evaluate if planting date will have an effect on the susceptible time period of flowering through grain fill, and in turn if it will influence mycotoxin presence and other quality factors in the harvested grain.

At this time there is no data to document optimum spring wheat planting dates for New England. The objective of this project was to determine the effect of planting date and variety on weed biomass, FHB, and spring wheat yield and quality.

MATERIALS AND METHODS

The trial was conducted in 2011at Borderview Farm in Alburgh, VT. The experimental design was a randomized complete block split design with four replications. Main plots were planting date and subplots were varieties. Planting dates started on 19-April and continued approximately every week for 5 weeks (Table 2). Four hard red spring wheat varieties were selected to represent varieties of varying heights. Ladoga, an heirloom variety was selected because of its known tall height (Table 1).

Table 1. Seed varieties and seed sources for planting date trial at Borderview Farm in Alburgh, VT.

RESULTS

Table 7. The effect of planting date on weed cover in hard red spring wheat in Alburgh, VT.

Planting Date	Weed cover
	%
19-Apr-11	7.00*
25-Apr-11	9.80
2-May-11	7.30*
10-May-11	**3.80***
19-May-11	13.5
LSD (0.10)	3.50
Means	8.30

Table 8. The effect of hard red spring wheat Variety on weed cover in Alburgh, VT.

*Treatments that did not perform significantly lower than the top performing treatment in a particular column is indicated with an asterisk.
NS - None of the varieties were significantly different from one another.

April planting dates resulted in the highest spring wheat yields (Table 9; Figure 1). The wheat yields and test weight declined as planting date was delayed into late May. Protein levels were highest in the late May planting date. This may be a reflection of the really low yields. Falling number at all planting dates met the milling standard. There was a decline as planting dates were delayed. DON levels were below the FDA 1ppm threshold at all dates.

Table 9. Yield and quality characteristics by planting date across all hard red spring wheat varieties in Alburgh, VT.

Planting date	Harvest date	Harvest moisture	Yield at 13.5% moisture	Test weight	Crude protein at 12% moisture	Falling number at 14% moisture	DON
		%	lbs/ac	lbs/bu	%	seconds	ppm
19-Apr-11	5-Aug-11	14.5	**1170***	**57.6***	13.8	410*	1.01

Figure 1. Yield comparison between planting dates in 2011 across hard red spring wheat varieties in Alburgh, VT.

AC Superb was the highest yielding variety (Table 10, Figure 2). AC McKenzie and RB07 had the highest test weight. Ladoga had significantly lower crude protein levels compared to the other three varieties, and the lowest level of DON, although all four varieties tested below the FDA limit. AC Superb and AC McKenzie had the highest falling numbers.

Table 10. Yield and quality characteristics by hard red spring wheat variety across all planting dates in Alburgh, VT.

Variety	Harvest moisture	Yield at 13.5% moisture	Test weight	Crude protein at 12% moisture	Falling number at 14% moisture	DON
	%	lbs/ac	lbs/bu	%	seconds	ppm
AC Superb	**15.7***	**1110***	55.8	**14.0***	**420***	0.93
AC McKenzie	14.3	882	**56.5***	13.8*	416*	0.46
RB07	14.6	873	56.3*	13.8*	377	0.51
Ladoga	15.1	849				

Figure 2. Yield comparison between hard red spring wheat varieties across all planting dates in Alburgh, VT.