2018 RYE VARIETY TRIAL

Dr. Heather Darby, University of Vermont Extension
heather.darby[at]uvm.edu

The interest in growing cereal rye for grain to be sold as cover crop seed, or to other value-added markets (distillers and bakers), has increased considerably across the Northeast region. As a result, farmers and end-users are requesting yield and quality information on cereal rye varieties. In 2018, University of Vermont Extension Northwest Crops and Soils (NWCS) Program conducted a variety trial to evaluate yield and quality of cereal rye. The varieties were Aroostook, Brasetto, Danko, Guardian, Huron, Musketeer, ND Dylan, Spooner, Wheeler, and one unstated variety (VNS).

MATERIALS AND METHODS

The experimental design of the study was a randomized complete block with treatment plots replicated four times. Treatments were ten varieties of cereal rye: Aroostook, Brasetto, Danko, Guardian, Huron, Musketeer, ND Dylan, Spooner, Wheeler, and one unstated variety (VNS) (Table 2). The field was plowed, disked, and prepared with a spike tooth harrow to prepare the seedbed for planting. The plots were planted with a Great Plains cone seeder on 21-Sep 2017 (Table 1). Prior to harvest, on 20-Jul 2018, three plant heights per plot were measured.

Table 1: Agronomic and trial information for the rye cover crop variety trial, 2017-2018.

	Borderview Research Farm, Alburgh, VT
Soil Type	Benson rocky silt loam
Previous Crop	Winter Wheat
Tillage Operations	Fall plow, disc, and spike tooth harrow
Harvest Area (ft.)	5 x 20
Seeding Rate (live seeds m^{-2})	350
Replicates	4
Planting Date	21-Sep 2017
Harvest Date	20-Jul 2018

Grain plots were harvested at the Alburgh site with an Almaco SPC50 plot combine on 20-Jul. Following harvest, seed was cleaned with a small Clipper M2B cleaner (A.T. Ferrell, Bluffton, IN). Grain moisture, test weight, and yield were calculated. An approximate one pound subsample was collected to determine quality. Quality measurements included standard testing parameters used by commercial mills. Test weight was measured by the weighing of a known volume of grain. Once test weight was determined, the samples were then ground into flour using the Perten LM3100 Laboratory Mill. At this time, flour was evaluated for its protein content, falling number, and mycotoxin levels. Grains were analyzed for protein content using the Perten Inframatic 8600 Flour Analyzer. The determination of falling number (AACC Method 56-81B, AACC Intl., 2000) was measured on the Perten FN 1500 Falling Number Machine. The falling number is related to the level of sprout damage that has occurred in the grain. It is measured by the time it takes, in seconds, for a stirrer to fall through a slurry of flour and water to the bottom of the tube.

exception of April which saw above average precipitation. There were 5159 growing degree days (GDDs) accumulated over the course of the growing season, 447 more growing degree days than the historical average.

Table 3. Temperature and precipitation summary for Alburgh, VT, 2017 and 2018.

The ten cereal varieties were analyzed for crude protein concentration, falling number, and the vomitoxin DON (Table 5). Wheeler had the highest crude protein at 13.9%, and was significantly higher than the other varieties in the trial. Falling number ranged between 216 and 273; an ideal falling number falls around 260 seconds. The top performing variety was Brasetto at 272.25 seconds, but was not statistically significant from Danko, Guardian, ND Dylan, Spooner, Wheeler, and VNS, who were also top performers.

ACKNOWLEDGEMENTS

UVM Extension would like to thank Roger Rainville and his staff at the Borderview Research Farm in Alburgh, VT, for hosting this trial. This project was funded through a USDA SARE Partnership Grant. We would also like to thank Catherine Davidson, Abha Gupta, Haley Jean, Rory Malone, Freddy Morin, Lindsey Ruhl, and Sara Ziegler for their assistance with data collection and entry. The information is presented with the understanding that no product discrimination is intended and no endorsement of any product mentioned or criticism of unnamed products is implied.

UVM Extension helps individuals and communities put research-based knowledge to work.