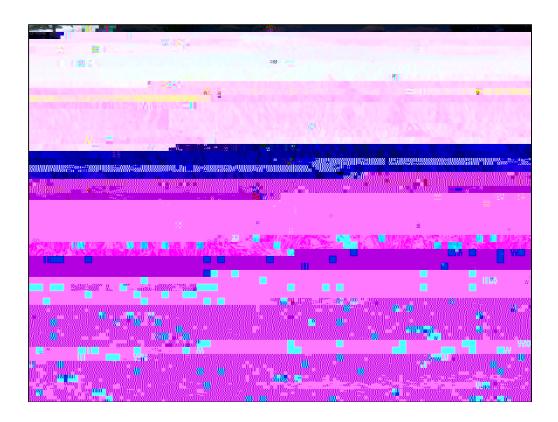


2021 Rye Harvest Date



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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 endusers are requesting yield and quality information on cereal rye varieties. In 2021, University of Vermont Extension Northwest Crops and Soils (NWCS) Program conducted a harvest date trial to evaluate the effects of harvest date on yield and quality of cereal rye. Falling number is a laboratory test that measures the viscosity of flour. There are well established ranges for falling number as an indicator of baking and malting quality in wheat and barley. There is less information on the ideal range for falling number in cereal rye. The goal of this project was to evaluate the impact of harvest date on yields and quality parameters, specifically falling number, on two common varieties of cereal rye.

MATERIALS AND METHODS

The field was plowed, disked, and prepared with a spike tooth harrow to prepare the seedbed for planting. The experimental design was a randomized complete block with split plots and 4 replicates. The main plots were harvest date and the split plots variety (Danko and Hazlet). The plots were planted with a Great Plains cone seeder on 25-Sep 2020 and (Table 1).

Table 1. Agronomic and trial information for the rye cov

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.					

Impact of Harvest Date

Yield, harvest moisture, and test weight were measured at the time of

Harvest date x variety interactions

There were no statistically significant harvest date x variety interactions; in other words, both varieties performed similarly at each harvest date.

Falling number

Falling number measures viscosity by recording the time in seconds it takes for a plunger to fall through a slurry to the bottom of a test tube. The viscosity is an indicator of enzymatic (alpha-amylase) activity in the kernel, which most often results from pre-harvest sprouting in the grain. Low falling number means high enzymatic activity, or more pre-harvest sprouting damage. This is most common if there are rain events as the grain is ripening prior to harvest. Falling number is a widely understood indicator of wheat flour quality, though its use as an indicator of rye flour quality is less understood. Low falling number in wheat, below 250, has a negative impact on bread quality and can lead to lower prices paid for the wheat or possible rejection at the mill. The ideal range for wheat is 250-350. High falling numbers, over 400 seconds, can potentially lead to slower fermentation, poorer loaf volume and drier bread texture, depending on the end product. Because rye bread relies on different grain components to create high-quality bread, and ferments more quickly than wheat, it is expected that lower falling numbers are preferred for rye than for wheat, likely lower than 200 seconds and potentially as low as 100 seconds. For rye in particular, waiting longer to harvest may result in grains that are more suited for baking as currently, bakers seem to desire lower falling numbers than are needed for wheat.

DISCUSSION

During a harvest period with greater amounts of rainfall from week to week, there is greater potential for harvest timing to affect grain quality. This can be an important consideration when attempting to determine ideal harvest windows as farmers may be forced to harvest at an earlier or later date to salvage a crop and maintain grain quality. Both varieties trialed in 2021 showed a decrease in falling number as harvest was delayed through the growing season (Figure 1).



Figure 1. Interaction between harvest date and variety for falling number, 2021.

The trend of falling number decreasing from the first harvest date until the last harvest date has been consistent over the four years of the harvest date study (Figure 2). However, this decrease has not been universally beneficial. In the first three years of the study, the rye falling number started out higher than optimum and standing in the field for some weeks lowered falling number, increasing baking quality. However, in 2021, the falling number at the first date was acceptable and the subsequent drop in falling number may have lowered falling number too far for good rye baking quality (particularly for the third harvest date).

Figure 2. Falling number by harvest date for 4 years of study in Alburgh, VT.