2014 Tillage Radish Planting Date Trial



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Farmers are interested in growing tillage radishes as they may potentially offer many environmental and economic benefits. Tillage radishes are quick at scavenging excess nitrogen, provide good ground cover, and break down very quickly in the spring to make way for spring planting. The plants winter kill, but the dead frozen plant material can still supress the earliest spring weeds from establishing. The roots themselves are known to drill through compacted soil layers as they grow and the holes left by decomposed roots the next spring may also allow more water to infiltrate into the soil. Although tillage radish may have many benefits, it must be planted earlier than our other cereal grain cover crops commonly used following corn silage. The goal of this project was to identify optimum planting dates for tillage radish in Vermont.

MATERIALS AND METHODS

A trial was conducted at Borderview Research Farm in Alburgh, Vermont in 2014 to evaluate four tillage radish planting dates. The experimental desig 2 four replications (Table 1). The soil was a Benson rocky silt loam, and the area was previously planted with barley and oats. The seedbed was prepared with a fall chisel plow, disk, and spike tooth harrow.

Location	Borderview Research Farm Alburgh, VT
Soil type	Benson rocky silt loam
Previous crop	Barley/oats
Tillage operations	Fall chisel plow, disk, spike tooth harrow
Plot size (ft.)	5 x 20
Replicates	4
Seeding rates	6 lbs/ac^{-1}
Planting date	18-Aug, 25-Aug, 2-Sep, 10-Sep
Harvest date	29-Oct

 Table 1. Agronomic information for the 2014 tillage radish planting date trial at Borderview Research Farm.

The four planting dates were 18-Aug, 25-Aug, 2-Sep, and 10-Sep. The seeding rate was 6 lbs per acre. Radishes were harvested to determine biomass on 29-Oct. Just before harvest, percent cover was determined by analyzing pictures of a 0.5m² subsample of each plot. Percent cover analysis was

Yield data and stand characteristics were analyzed using mixed model analysis using the mixed procedure of SAS (SAS Institute, 1999). Replications within trials were treated as random effects, and hybrids were treated as fixed. Hybrid mean comparisons were made using the Least Significant Difference (LSD) procedure when the F-test was considered significant (p<0.10).

Variations in yield and quality can occur because of variations in genetics, soil, weather, and other growing conditions. Statistical analysis makes it possible to determine whether a difference among hybrids is real or whether it might have occurred due to other variations in the field. At the bottom of each table a LSD value is presented for each variable (i.e. yield). Least Significant Differences (LSDs) at the 0.10 level of significance are shown. Where the difference between two treatments within a column is equal to or greater than the LSD value at the bottom of the column, you can be sure that for 9 out of 10 times, there is a real difference between the two treatments. In the example below, treatment C is

RESULTS

Using data from a Davis Instruments Vantage Pro2 weather station at Borderview Research Farm in Alburgh, VT, weather data was summarized for fall 2014 (Table 2). The table shows weather information from the August (first planting date of tillage radish) through the October (time of harvest). August was slightly cooler than usual, with average weather in September and warmer than normal in October (based on 1981-2010 data). While August and October had average levels of precipitation, September was dry

The 18-Aug planting date resulted in the highest root dry matter and nitrogen yield per acre (Table 3). Although root biomass differed significantly by planting date,

DISCUSSION

These results indicate that tillage radishes will establish and produce adequate soil coverage to protect against erosion if planted between mid-August and mid-September. Nitrogen content of the whole plant biomass did not differ by planting date. The primary advantage to early planting (August) is larger roots that penetrate deeper into the ground, which should result in deeper breakup of hard soil. Warm weather conditions in October may have boosted radish growth beyond what might be observed in a more normal year. Hence, additional years of research should be conducted to confirm these results.

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