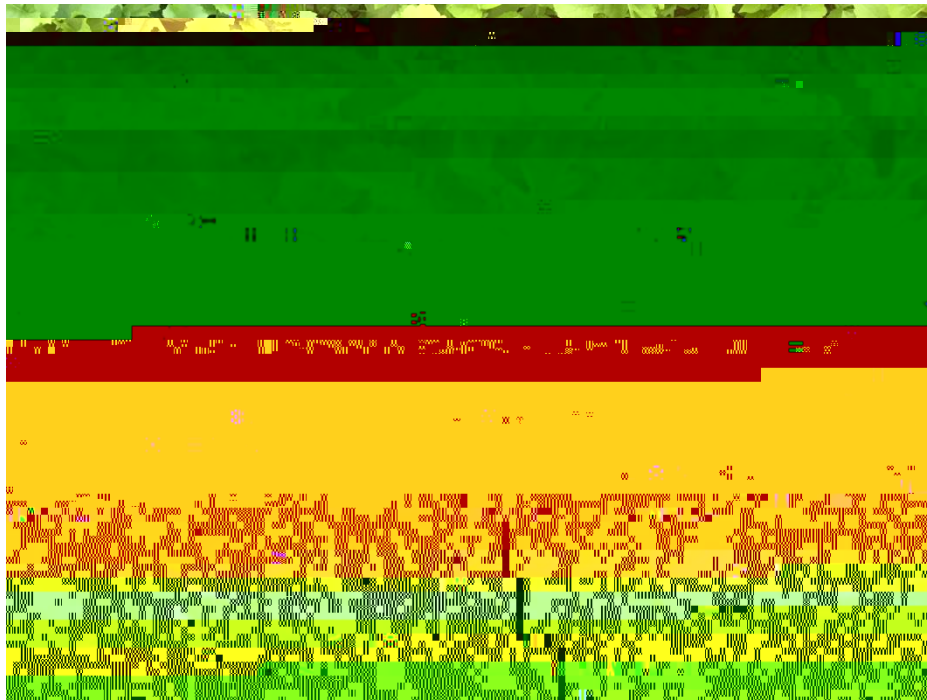




2016 Tillage Radish Planting Date x Seeding Rate Trial



Dr. Heather Darby, UVM Extension Agronomist
Nate Brigham, Erica Cummings Hillary Emick, Abha Gupta, and Sara Ziegler
University of Vermont Crops and Soils Technicians
(802) 524-6501

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Tillage radish biomass was measured on 8-Nov. All plants in a 0.5 m² quadrat from each plot were collected, and counted. Weights for the harvested material (root and vegetation) were recorded. Five plants were selected at random from each plot sample to record root diameter and length. Subsamples of vegetation and roots were weighed before and after drying to determine dry matter for each plot. After drying, roots and tops were combined and ground with a Wiley laboratory mill. The coarsely-ground plot samples were brought to the lab where they were reground using a cyclone sample mill (1mm screen) from the UDY Corporation. A subsample of each was retained for nitrogen analysis. The subsamples were analyzed for nitrogen content at the University of Vermont's Testing Laboratory in Burlington, VT.

All data was analyzed using a mixed model analysis where replicates were considered random effects. The LSD procedure was used to separate means when the F-test was 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 treatments is real or whether it might have occurred due to other variations in the field. All data was analyzed using a mixed model analysis where replicates were considered random effects. At the bottom of each table a Least Significant Difference (LSD) value is presented for each variable (e.g. yield). LSDs at the 10% level (0.10) of probability 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 in 9 out of 10 chances that there is a real difference between the two values. In the example below, treatment A is significantly different from treatment C but not from treatment B. The difference between A and B is equal to 200, which is less than the LSD value of 300. This means that these treatments did not differ in yield. The difference between A and C is equal to 400, which is greater than the LSD value of 300. This means that the yields of these two treatments were significantly different from one another. The treatment in bold had the top observed performance, while treatments with an asterisk did not differ significantly from the top performer.

Planting date	Yield
A	2100*
B	1900*
C	1700
LSD (0.10)	300

RESULTS

Weather data collected with an onsite Davis Instruments Vantage Pro2 Weather Station at Borderview Research Farm in Alburgh, VT, are summarized for the 2016 tillage radish growing season (Table 2). August, September, and October were all warmer than the historical average (1981-2010). The warm fall overall resulted in 239 more growing degree days than the 30-year average, as calculated with a base temperature of 41 F. The 2016 fall growing season was slightly more dry than average, with 0.71 fewer inches of rain than normal between August and October.

Table 2. Summarized weather data for fall 2016, Alburgh, VT.

Alburgh, VT	August	September	October
Average temperature (°F)	71.6	63.4	50.0
Departure from normal	2.9	2.9	1.9
Precipitation (inches)	3.00	2.50	5.00
Departure from normal	-0.93	-1.17	1.39
Growing Degree Days (base 41°F)	942	681	320
Departure from normal	82	95	62

Based on weather data from a Davis Instruments Vantage Pro2 with WeatherLink data logger.
 Historical averages are for 30 years of NOAA data (1981-2010) from Burlington, VT.

Impact of Planting Date

Table 3. Tillage radish dry matter yields by planting date, Alburgh, VT, 2016.

Planting Date	Whole plant nitrogen yield lbs ac ⁻¹	Vegetation dry matter yield lbs ac ⁻¹	Root dry matter yield lbs ac ⁻¹	Total dry matter yield lbs ac ⁻¹
19-Aug	161	3446	1928	5382
29-Aug	133	2964*	1239	4174
6-Sep	86	1978	423	2393
13-Sep	51	1197	114	1279
LSD (0.10)	21			

Table 4.

Table 6. Root length and root diameter by seeding rate, Alburgh, VT, 2016.

Seeding rate	Root length	Root diameter
lbs/ac ⁻¹	cm	In
3	21.7*	1.70*

Figure 2. Root diameter (in) by planting date for four seeding rates.

DISCUSSION

On average, tillage radishes produced 3307 lbs of dry matter per acre and were able to scavenge 108 lbs of nitrogen per acre from the soil. These results were greater than the trial averages from the 2015 trials (1575 lbs of dry matter per acre and 36.3 lbs of nitrogen per acre) and 2014 trials (1573 lbs of dry matter and 40.4 lbs of nitrogen per acre).

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