

# 2016 Soybean Cover Cropping Trial

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On 10-Oct, the soybeans were harvested using an Almaco SPC50 small plot combine. Seed was cleaned with a small Clipper M2B cleaner (A.T. Ferrell, Bluffton, IN). They were then weighed for plot yield, tested for harvest moisture using a DICKEY-John M20P moisture meter, and evaluated for test weight using a Berckes Test Weight Scale.

The cover crop plots were evaluated for establishment through percent ground cover on 10-Nov.

Soybean yields are presented at 13% moisture on a per acre basis. Yields were analyzed using the GLM procedure in SAS and brew values were analyzed using the PROC MIXED procedure in SAS with the Tukey-Kramer adjustment, which means that each cultivar was analyzed with a pairwise comparison. Relationships between variables were analyzed using the GLM procedure.

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 hybrids 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 hybrids. In this example, hybrid C is significantly different from hybrid A but not from hybrid B. The difference

Hybrid	Yield
A	6.0
B	7.5*
C	<b>9.0*</b>
LSD	2.0

between C and B is equal to 1.5, which is less than the LSD value of 2.0. This means that these hybrids did not differ in yield. The difference between C and A is equal to 3.0, which is greater than the LSD value of 2.0. This means that the yields of these hybrids were significantly different from one another.

## RESULTS

Weather data was recorded with a Davis Instrument Vantage Pro2 weather station, equipped with a WeatherLink data logger at Borderview Research Farm in Alburgh, VT. Missing precipitation data from 17-Aug through 31-Oct was supplemented using data provided by the NOAA from Highgate, VT. May through September was unusually dry, accumulating 7.27 inches less rain than in a usual year (Table 3). Despite the lack of rain, June and July were close to the average temperature. However, late summer and early fall were hotter than the average. Overall, there were an accumulated 2708 Growing Degree Days (GDDs) this season, approximately 302 more than the historical 30-year average.

**Table 3. 2016 weather data for Alburgh, VT.**

<b>Alburgh, VT</b>	May	June	July	August	September	October
Average temperature (°F)	58.1	65.8	70.7	71.6	63.4	50.0
Departure from normal	1.80	0.00	0.10	2.90	2.90	1.90
Precipitation (inches)	1.5	2.8	1.8	3.0	2.5	5.0

**Table 6. Cover crop establishment by seeding method, Alburgh, VT, 2016.**

<b>Seeding method</b>	<b>Ground cover %</b>
Interseeder	<b>72.8</b>
Broadcast seeding	23.2
Trial mean	41.8
p-value (0.1)	0.042

The top performing treatment is indicated in **bold**.

## **DISCUSSION**

It is important to remember that the results only represent one year of data. 2016 was a challenging growing season due to lack of rain. While the soybeans thrived this growing season, the cover crops had difficulty establishing. Populations were low in many plots, likely due to a lack of available water.

It is also interesting to note the difference in seeding methods. While there was a much higher ground cover percentage in plots that were seeded using the Penn State interseeder, some plots were damaged by the equipment and were not harvestable. The presence of cover crops appeared to be correlated to a higher soybean yield. To evaluate this further, another year of study will commence in 2017.

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