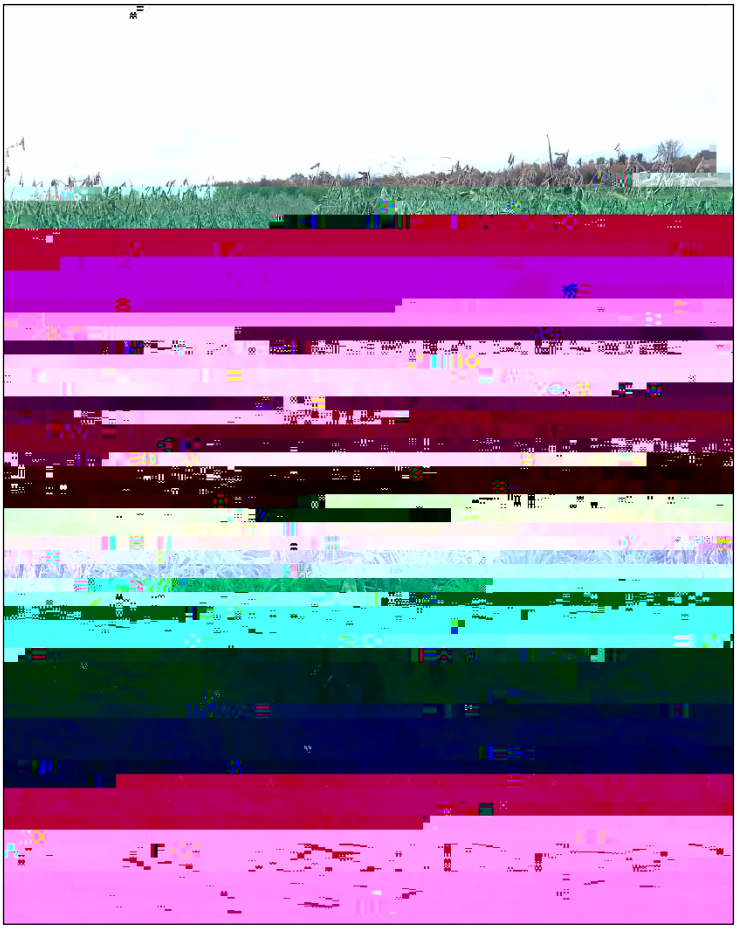
2021 Interseeding Winter Rye in Soybeans



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THE UNIVERSITY OF VERMONT EXTENSION

2021 INTERSEEDING WINTER RYE IN SOYBEANS

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Soybeans are grown for human consumption, animal feed, and biodiesel and can be a useful rotational crop

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 treatments were treated as fixed. Treatment 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 treatments is real or whether it might have occurred due to other variations in the field. At the bottom of each table an 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 this example, treatment C is significantly different from treatment A but not from treatment B. The difference between C and B is equal to 1.5, which is less than the LSD value of 2.0. This means that these treatments 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 treatments were significantly different from one another.

RESULTS

Weather data were recorded throughout the season with a Davis Instrument Vantage Pro2 weather station, equipped with a WeatherLink data logger at Borderview Research Farm in Alburgh, VT (Table 2). Precipitation was much lower this season than normal. From May-Oct, there was a total of 19.25 inches of rain, nearly 4 inches below the 30-year average for that same time frame. Precipitation did increase by the end of the season, but the increased rainfall in October posed a challenge to timely soybean harvest. Warm temperatures in June were followed by unseasonably cool temperatures in July. The warm temperature persisted through October, which was over 4 degrees warmer than normal. These temperatures contributed to a total of 2830 accumulated Growing Degree Days (GDDs), which is 143 above average the 30-year average.

Table 2. Weather data for Alburgh, VT, 2021.

Alburgh, VT	May	Jun	Jul	Aug	Sep	Oct
Average temperature (°F)	58.4	70.3	68.1	74	62.8	54.4
Departure from normal	-0.03	2.81	-4.31	3.25	0.14	4.07
Precipitation (inches)	0.66	3.06	2.92	2.29	4.09	6.23
Departure from normal	-3.10	-1.20				

The annual ryegrass planting date had no significant impact on soybean harvest (Table 3). The average harvest moisture for the trial was 24.7% and additional drying was required for safe storage. The trial yield average was 2560 lbs. or 42.7 bu. ac^{-1}. The average test weight was 51.7 lbs. bu^{-1} which is well below the industry standard of 60 lbs. bu^{-1}, but similar to the average test weight of this year's conventional soybean trial, 53.9 lbs. bu^{-1}. Ground cover and ryegrass yields were significantly impacted by planting date. The first planting date, 14-Sep, had statistically higher ground cover, 52.9%, and dry matter yield, 1426 lbs. or 0.71 tons ac^{-1}, compared to the other three planting dates. The latest planting date, 4-Oct, had the lowest ground cover, 13.6%, and dry matter yield, 235 lbs. or 0.12 tons ac^{-1}.

Table 3. Cover crop and soybean harvest characteristics, Alburgh, VT, 2021

	Soybean harvest	Cover crop harvest
Rye planting date		

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