2017 Soybean Cover Crop Trial

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In 2017, the University of Vermont Extension Northwest Crops and Soils Program investigated the impact at Borderview Research Farm in Alburgh, VT. Soybeans are grown for human consumption, animal feed, and biodiesel and can be a useful rotational crop in corn silage and grass production systems. As cover cropping expands throughout

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 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 (Table 3). Overall, the season was cooler and wetter than normal. More than 1.5

produced the most biomass with 1494 lbs ac^{-1}. In reality only the triticale and clover survived the winter and produced that spring biomass. It is interesting that this treatment, despite having a lower seeding rate of triticale compared to treatment 2 (triticale/rape) produced significantly more biomass in the spring. Furthermore, winter rye is traditionally regarded as the species that produces the most biomass in this region, however, treatment 4, the only treatment containing winter rye, was one of the lowest producing treatments in the fall and produced half the biomass of treatment 9 in the spring.

Treatments did not differ in the percent ground cover that they provided. This suggests that, even cover crops that winterkill in our region can provide substantial ground cover in the spring to help protect the soil surface from the impacts of rainfall. Treatments also varied significantly in terms of soil aggregate stability. The highest aggregate stability was obtained by treatment 5 (annual ryegrass/tillage radish) with 33.4% aggregate stability. This was statistically higher than any other cover crop treatment. The next highest treatment was the oat/turnip/clover treatment with 26.5% aggregate stability.

Table 4. Cover crop and soil health characteristics, 2017.

Cover crop mixture	Fall biomass	Spring biomass	Ground cover	Aggregate stability
	-----DM lbs ac^{-1}---			

crops (Figure 1). However, to fully understand this interaction, more data needs to be collected, such as

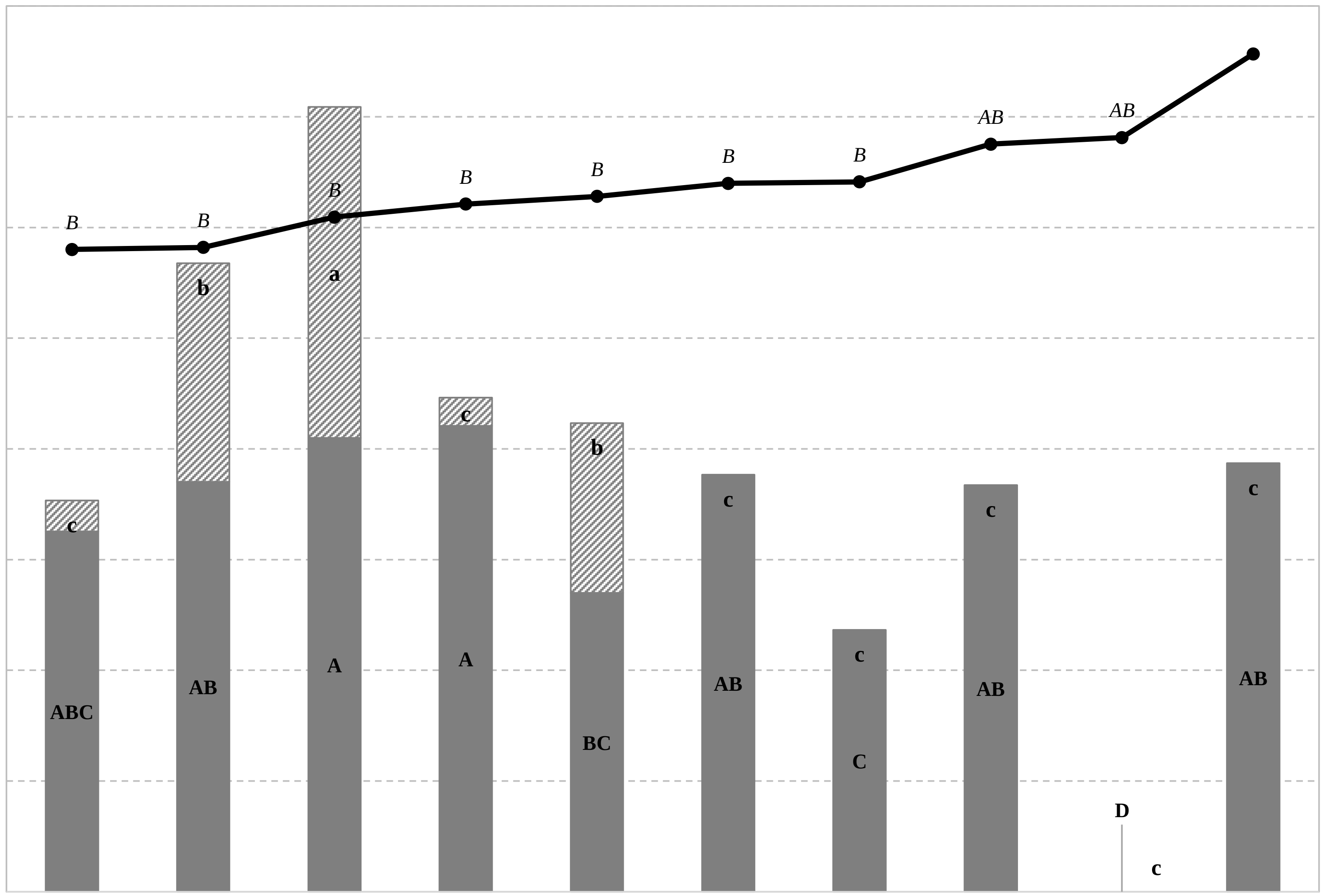

Figure 1. Soybean and cover crop yield by cover crop mixture treatment, 2017.
Treatments that share a letter performed statistically similarly to one another. Letters presented for cover crop yield indicated differences in total biomass.

REFERENCES

Sloneker, L. L. and W. C. Moldenhauer, 1977. Measuring the amounts of crop residue remaining after tillage. J. Soil Water Conserv. 32:23 l-236.

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