

Progress report on project "Planting Green Extending the Growing Season to Get More Payback from Cover Crops" for August 2022

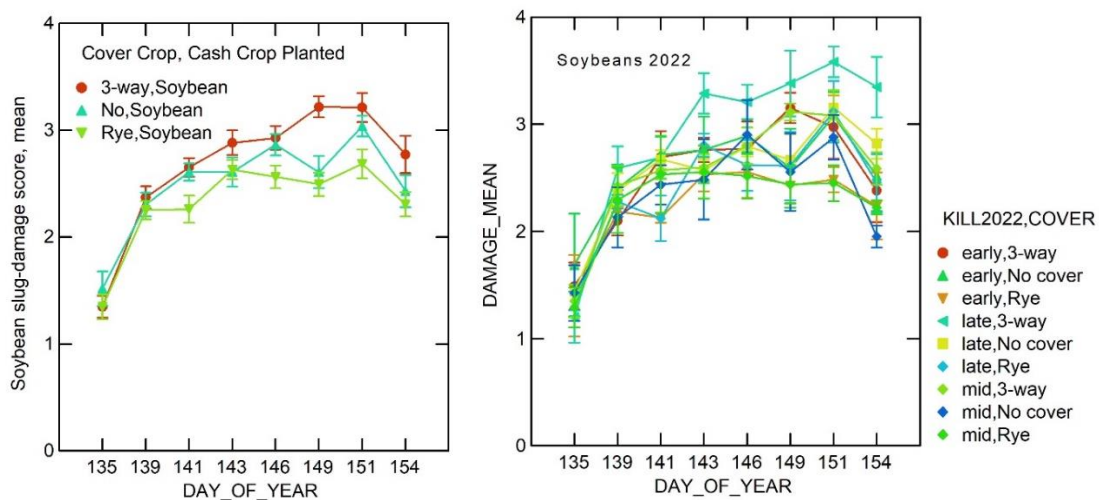
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Since this is a cover crop-focused project the main activity we have been doing since the initiation of this year's Grant in April has been collecting data on slugs and slug damage in April-June and analyzing that data. Our observations were made from April 10 through June 04, with soybeans planted on May 03.

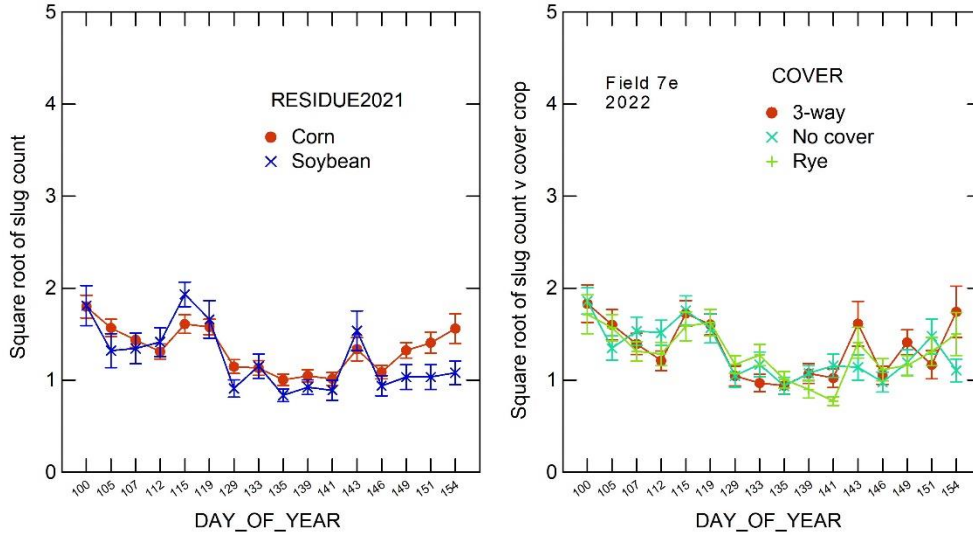
Weather and soil conditions this spring were better for corn and soybean grow than in 2021 and slug damage was considerably less. However, the slugs were present. We observed two species this year, the black-colored Meadow slugs which we also observed to 2021, as well as smaller numbers of the tan-colored Garden slug which we did not observe in 2021. About 20% of the slugs counted were the tan Garden slug.

The data indicate that cover crops had little effect on soil temperature or moisture this year. Nor did cover crop treatments appear to have much influence on the numbers of slugs or stand establishment of corn and soybeans. Slug damage was noticeable but not as severe as in 2021 and cover crops had little effect on the damage scores. The timing of cover crop termination also had little effect on slug damage or stand establishment. The only effect that may have been significant was a slightly higher level of damage and lower level of stand establishment in the late killed freeway cover crop for soybeans. The earliest killed three-way cover crop and all of the other cover crop treatments had no effects. We do not believe that the reduced stand establishment in the freeway cover crop with late germination as a result of slug activity because the same pattern was seen in a very Sandy field ahead and slugs on another part of the research station.

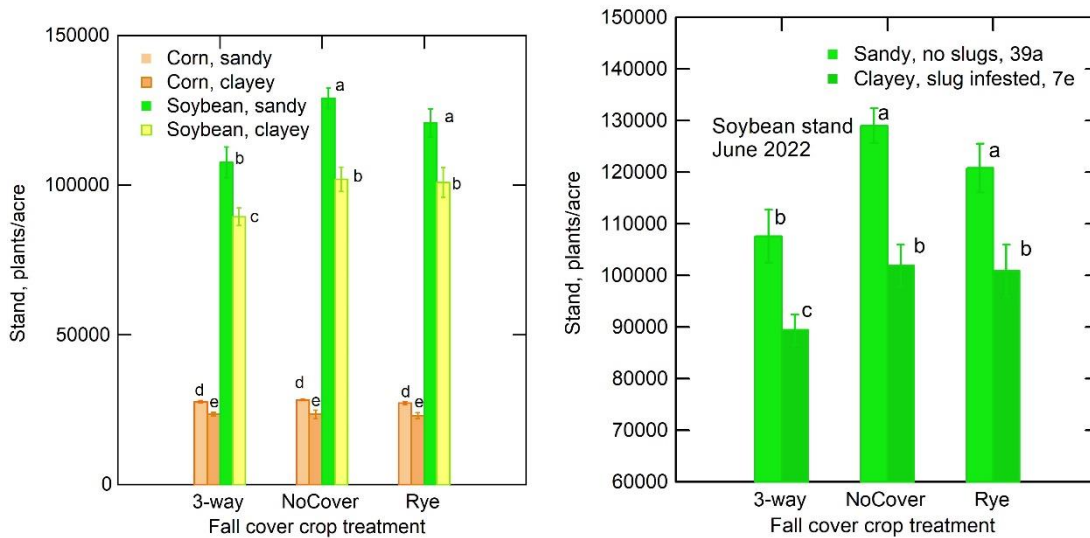
We did observe slugs feeding on both rye and clover in the three-way cover crop that was late terminated and was green at the same time that the soybeans were emerging. Very little effect was observed on the level of damage to the soybeans, however. Slug damage scores increased as expected with time were largely unaffected by the cover crop or termination dates, but there was an interaction that indicated slightly greater damage scores for the soybeans in the late kill three-way cover crop plots during the last week of observations in June (see graph below , right).



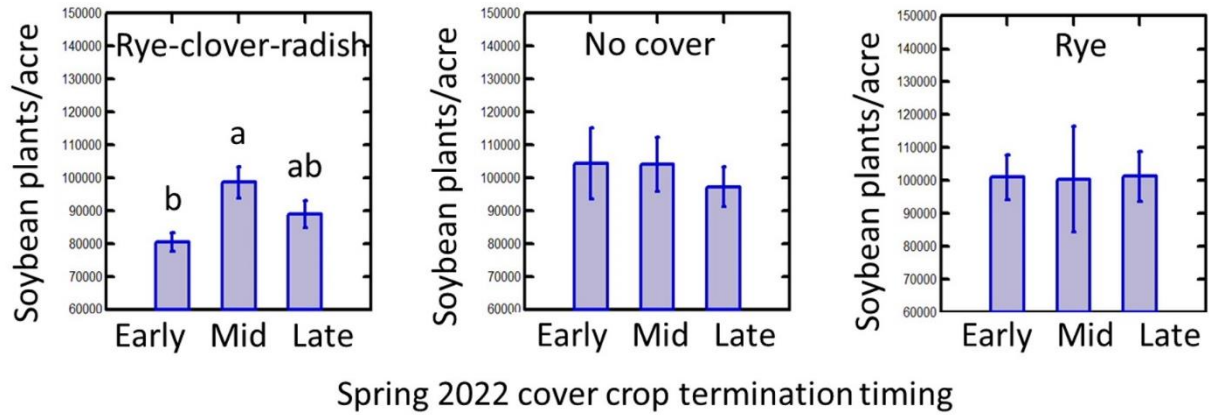
Raw slug counts ranged from 0 to 20 slugs per shingle. The non-normal data distribution was square-root transformed to satisfy ANOVA normality requirements. Toward the end of the study in early June, the appeared to be more slugs in the soybean crop emerging in the corn residue from 2021. The three cover crop treatments (including the no-cover control) appeared to have no effect on slug numbers.



The next graph shows that the cover crop treatments had no effect on corn stand established in either the sandy field (with no slugs observed) or the clayey field (which had a significant slug infestation). For soybeans, there was no difference in stand count between the no cover control plots and the rye cover crop plots, but the 3-way (radish/rye/clover) cover crop plots had significantly lower stand counts *in both fields*. Since the sandy field had no observable slugs or slug damage, the lower stand count in the 3-way cover crop plots must have been due to factors other than slugs.



In the final graph below, we can see that the reduced stand associated with the 3-way cover crop was actually due to a significantly reduced stand in the early (April 10) kill 3-way subplots which had vegetative-stage rye and clover plants at the time of termination. We are not sure why termination before soybean planting had this effect, but one possibility is that the young succulent plants may have released allelopathic compounds through decomposition by the time the soybeans were seeded two weeks after the cover crop was terminated.



Spring 2022 cover crop termination timing