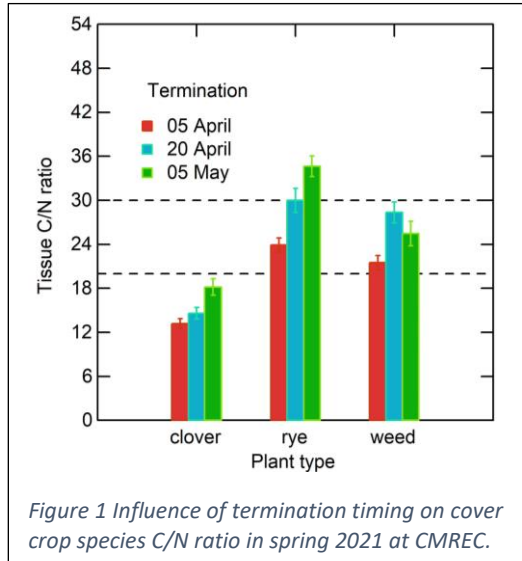


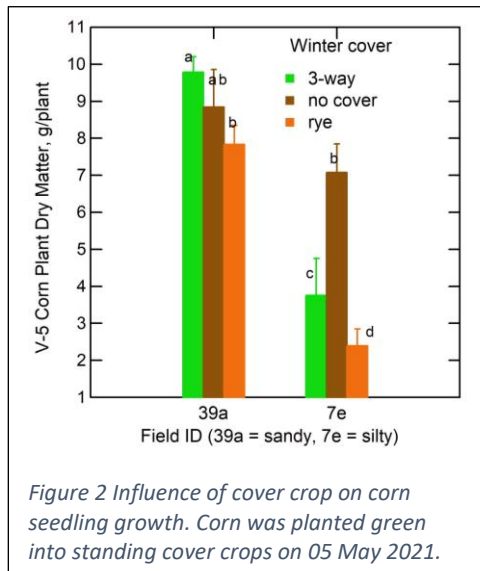
## Extending the Cover Crop Growing Season by Planting Green

August 2021 Progress Report to the Maryland Soybean Board



In the spring of 2021, we began evaluating the impacts of the cover crops planted in the fall of 2020 on both corn and soybean. The biomass of the cover crops allowed to grow until soybean and corn seeds were planted in early May was far greater than for the covers terminated in early or mid-April, with about 100 kg/ha of dry matter (about 40 kg of carbon/ha) added for each extra day of growth. For the rye, crimson clover, and winter weeds present on the spring 2021 cover crops, the time of termination influenced the N content and C/N ratio of their tissues (Figure 1). The more mature plants having higher C/N ratios. However, only the rye (and weeds) reached C/N ratios > 20 which would be expected to immobilize nitrogen as they decompose. For corn planted green into cover crops in early May, we evaluated the effect on early corn growth at

the V5 stage. There was a large difference between corn growth on the slowly drained silty soil compared to the well-drained sandy soil. Conditions were cold and wet just after planting for several weeks and the much wetter conditions on the silty field were probably responsible for the reduced corn growth. These conditions were aggravated by the presence of cover crop residue, especially the rye residue. The effect was much less for the three-way mixture. The no-cover V5 corn was significantly



larger than the corn growing in the rye residue in both fields, but the three-way mix had the largest corn in the Sandy field and was only slightly smaller than the no-cover corn in the wet silty field. We also evaluated nitrogen uptake by the early corn growth. There was little difference in the nitrogen concentration of the corn tissue except for a small decrease due to the rye cover crop in the wet field. Multiplying these two parameters to give nitrogen uptake showed that the rye cover crop reduced nitrogen uptake as well as growth in the corn seedlings especially on the wet field. The data suggest that the growth inhibition was due to both weather conditions under the rye mulch as well as lower nitrogen availability. Stands we're not affected by the cover crop except in the silty field which had a large slug infestation that caused considerable damage to both the corn and soybean crops.

In fact, the presence of slugs in the silty soil field (7e) gave us an opportunity to study the impact of cover crop type and termination date on slug damage. We took advantage of this and conducted a study on both the corn and soybean residue plots, the results of which are in the attached PDF. The main conclusions were that the slug infestation was significantly worse in corn residue than in soybean

residue, even before the crops were planted in spring. In the corn residue, where soybeans were planted, cover crops initially had little effect on the number of slugs counted. However, once the soybeans were planted, cover crops did appear to affect the damage to the seedlings. Planting green by killing the cover crop after soybean planting actually improved the survival and growth of the soybean plants slightly as compared to plots where the cover crop was killed in early-April and mid-April, weeks before soybean planting. All the plots were planted at the same time on May 6th. While all the soybean stands were considerably reduced, stand counts taken on June 3rd show a significantly higher number of plants surviving in the late-killed (planted green) plots. While this is just one site-year, the data do lend some support to the idea that having a living cover crop for some time after soybean planting may divert slugs and dilute their damage to the soybean crop. Clearly, this needs to be studied further.

In April 2021 the National Soybean Board published a research highlights story based on an interview with Dr. Weil: Temple, L. (2021). Get more from cover crops: Plant green. Interview with Ray Weil Part 2 of 2 United Soybean Board <https://soybeanresearchinfo.com/research-highlight/get-more-from-cover-crops-plant-green/>