

SARE 2020 Producer Grant

Summer cover crops for roller-crimper no-till fall planted broccoli production

Wild Hope Farm

Why summer cover crops?

In agricultural systems, cover crops provide erosion protection, water conservation, and help increase fertility. Having a summer cover crop or mulch from a crimped cover crop in place provides added soil protection during extreme weather events like hurricanes and tornadoes.



The experiment:

We tested 5 summer cover crop mixes for a no-till crimped fall planted broccoli. The plot was cover cropped with winter rye and clover which was mowed and disked in early May. Treatments 1 and 2 were seeded on May 15th. Treatments 3, 4 and 5 were seeded a month later. Treatment 1 was tilled and all other treatments were terminated with a roller-crimper on July 29th. A week later broccoli was transplanted in all sections, spaced at 2 rows. Treatments were color coded in the field for harvesting purposes. We evaluated the treatments by measuring weed suppression on a bi-weekly basis. The treatments were also evaluated by tracking total yields.

Treatment 1: Tilled after Sunn Hemp (100 lbs/acre)

Treatment 2: Crimped Sunn Hemp (100lbs/acre)

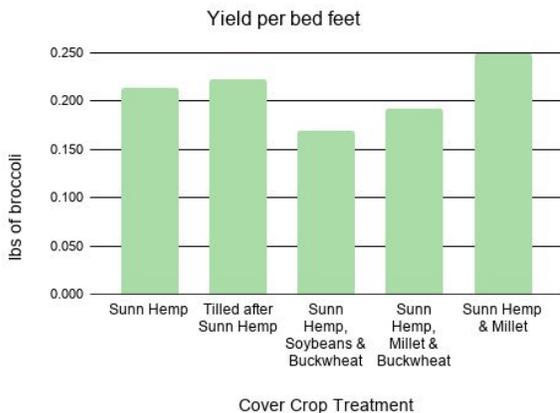
Treatment 3: Crimped Sunn Hemp (100lbs/acre) & Millet (50lbs/acre)

Treatment 4: Crimped Sunn Hemp (75lbs/acre), Millet (50lbs/acre) & Buckwheat (50lbs/acre)

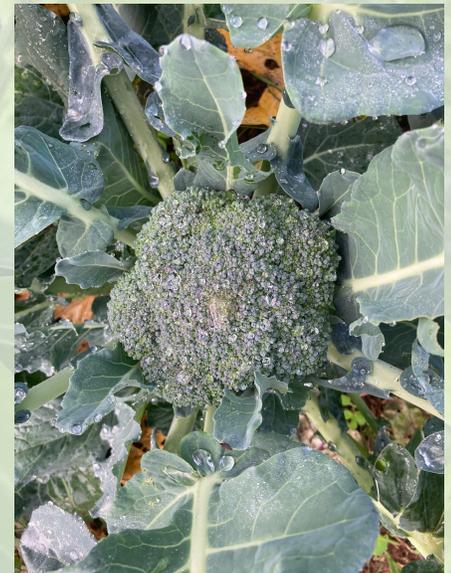
Treatment 5: Crimped Sunn Hemp (75lbs/acre), Soybeans (50lbs/acre) & Buckwheat (50lbs/acre)



Due to timing complications with the cover crop termination (too early/too late), we experienced regrowth of the Sunn Hemp and reseeded of Buckwheat and Japanese Millet. The regrowth/reseeding of cover crops caused competition with the broccoli plants, along with perennial weeds. These photos are from our weed suppression observations.



The Sunn Hemp & Millet plot had the highest yield per bed foot, followed by the Tilled plot, the straight Sunn Hemp treatment, and ending with the Buckwheat mixes. The following graphs depict our cover crop regrowth observations and show a high level of Buckwheat competition.



Weed Observations

A primary goal of a crimped cover cropping system is to suppress perennial weeds.

The following graphs show our findings from tracking perennial and annual weed coverage in randomized 5x5 sections of the treatment plots on a bi-weekly basis. The columns are clustered to show a weed observation made in each replication of the treatments. Cover crop regrowth was tracked as well.

We found that the beds with cover crop mixes (Treatments 3, 4 & 5) had fewer perennial weeds than the straight Sunn Hemp and Tilled treatments. Annual weeds were stronger in the Tilled treatment in comparison to the cover crop treatments. Mixes with Buckwheat experienced high percentages of regrowth.

Cover crop regrowth caused a number of issues in the health and maturity of our broccoli patch. Ultimately, cover crop regrowth was a bigger issue than perennial and annual weeds.

