Organic No-till Cabbage in Hairy Vetch: Yield, Head Size, and Labor Time.



Mowed vetch before planting.



Green cabbage damaged by deer



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We wanted to test how no-till organic cabbage would compare to the tilled cabbage that we usually grow in terms of yield and labor. We planted three varieties of cabbage (green, red, and Chinese) in two locations this spring. Each location was planted with hairy vetch cover crop the previous fall and had three replications with two tillage treatments (no-till and full tillage) for each variety arranged in a randomized complete block. Unfortunately, we entirely lost one location to deer damage in the summer and ended up with only one viable location as a result. We recorded the time it took to weed all plots and the final harvest weight for each cabbage variety and treatment as well as the number of harvestable heads. We had originally wanted to do a more complicated experiment than we ended up doing in several ways. We wanted to have an additional tillage treatment (strip tillage), but the tiller we had planned to use for strip tillage pulled all of the cover crop off the plots so we decided to only do two tillage treatments. We had also originally proposed to measure weed density and soil nitrogen but found the logistics too difficult to do during the season.

We transplanted red, green, and Chinese cabbage in June, two rows, 18 inches apart in row. In the no-till plots, we used a trowel to dig a small hole for the transplants. Each plot was weeded as necessary throughout the season with blocks fully weeded on the same or consecutive days. We harvested the cabbage in September and October as the heads were ready. At harvest, we measured the number of heads and their weight.

During the growing season, our general impression of the experiment was that the tilled plots looked better than the untilled. Our yield data supports this observation but the statistical results show very few significant differences between treatments (see figures to right).

Overall weight and head counts were not significantly different between any treatments. Head counts were very similar for all treatments. Overall yield was higher in tilled plots for Chinese and red cabbage but higher for green cabbage in the no-till plots. While yield differences were not significant they do fit with our in season impression that the tilled plots looked better overall.

Although tilled red cabbage had heavier heads than no-till, the opposite was true in green cabbage. We also found that the tilled plots took longer to weed but the difference was only somewhat significant (p < 0.1). We weeded only using hand tools (hoes and hands) and, with tractor cultivation (unfeasible in no-till plantings), it is possible that this difference would disappear or invert.

One of the difficulties of doing research on a small farm is that, despite cabbage being an important crop for us (we make sauerkraut and sell fresh cabbage), it does not take up enough of our land to have each of eighteen plots as a full bed. In designing a similar experiment in the future, we would likely reduce the number of treatments (one or two cabbage varieties instead of three) and locate it in a field with the shorter beds (and better protection from deer). This would allow us both to treat each tilled bed exactly as we would regularly (possibly including a small amount of tractor cultivation) and increase the size of each plot to accentuate treatment differences.



Average yield (heads) in per 100 square feet.



Average head size (kg); treatment differences significant at p<0.05.

Head



Average labor (min.) in per 100 square feet, p<0.1.









