Tillage Radish to Control Weeds in Horticulture Crops

Abstract

Scattergood Farm near West Branch tested tillage radish for weed control in one of their vegetable fields. They also collected data on seed germination for the cash crop after tillage radishes to observe if the tillage radish had an adverse effect on seed germination. Mean weed counts (34.25 in control and 31.75 in tillage radish plots) combined with statistical analysis indicated no difference in weed control between the tillage radish and control.

Statistical analyses of cash crop germination also illustrated no difference in cash crop seed germination between tillage radish and control plots. Mark Quee, farm manager at Scattergood, said that observations were in line with the data. He thinks tillage radish may have potential to contribute to soil tilth and organic matter, and plans to find out with further research.

Cooperator
Mark Quee, West Branch

Project Timeline
August 2009–May 2010

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www.practicalfarmers.org

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SARE, Walton Family Foundation, Green Lands Blue Waters

Background

Controlling weeds without the use of synthetic chemicals is a priority of Practical Farmers of Iowa's fruit and vegetable members.

Tillage radishes are a quick growing brassica cover crop that winter kills. Steve Groff, Pennsylvania farmer, praises tillage radish for its ability to: alleviate compaction, suppress winter annual weeds, scavenge nitrogen, and leave the soil mellow or soft and loamy.[1]

Mark Quee, manager of Scattergood Friends Farm, trialed tillage radishes for weed control in the farm's vegetable rotation. He also wanted to see if the tillage radishes had an adverse effect on germination of vegetable seeds.

Scattergood students count weeds in quadrats to determine if tillage radish planted the previous fall impacted spring weed germination.

Method

Mark planted two plots of tillage radish into a tilled field on August 25, 2009, with a no-till drill at a rate of 10 pounds/acre. He planted into a field that contained beets the prior season. Mark tilled and left two plots bare for control. Each plot was approximately 10 by 50 feet in size.

Mark tilled up the ground in spring 2010 and planted peas and spinach May 5. Weed and seed germination counts were recorded May 17, 2010.

Statistical analysis of the data was computed as variance of analysis using JMP software.

Farm Cooperators

Scattergood Friends School is a small Quaker boarding school about 15 miles east of Iowa City, with approximately 10 acres of IDALS-certified organic

gardens and orchards and about 30 acres of pastures, upon which they grass-finish beef and lamb. Scattergood also raises a few heritage breed Guinea hogs and has a couple Berkshire sows, a small flocks of guinea fowl and turkeys, occasional broiler flocks, and a laying flock of about 100 chickens. Scattergood Farm primarily grows food for its school, but also market through New Pioneer Coop in Iowa City and Coralville, and is trying to support the nascent West Branch farmer's market.

Results

The project hypothesis was that there was no difference between tillage radish and control (no cover) weed counts or cash crop seed germination.

Four samples of weeds were counted per four replications in both control and cover crop plots. Mean weed count where cover had been planted was 31.75 per sample (approximately one square foot) and 34.25 per control sample.

Using an analysis of variance, there was no significant difference in occurrence of weeds between cover and no cover treatments (P=0.8766).

Germination counts were taken for the cash crop that was planted after the tillage radish to determine if tillage radish had an adverse effect on cash crop germination. Using analysis of variance, results show that there is no difference in pea germination between cover and no cover treatments (P=0.9479). Using analysis of variance, results show that there is no difference in spinach germination between cover and no cover treatments (P=0.8968).

Conclusions

Mark's observations were in line with the data; he did not see a noticeable difference in weeds between the control and the tillage radish plot.

He had issues with black rot in his brassicas this year, and is going to be disciplined with crop rotation (he has been using turnips as cover crop as well as for his sheep). Scattergood Farm's sheep readily grazed an oats/tillage radish mix, so they fit well in the farm system for that.

Mark Quee said, "I loved the porosity of the soil after the radishes rotted. The soil has been productive this season. I tilled in the experimental crops and planted two rows of raspberries with mangels. The mangels are really sizing up nicely, indicating good fertility."

While Mark did not notice a reduction of weed pressure due to planting tillage radish, he is curious about their ability to increase organic matter and improve soil tilth on his farm. He is participating in a follow up trial measuring soil compaction that incorporates tillage radish.

References

1. Tillage Radishes, blog by Dan Davidson: http://www.dtnprogressivefarmer.com/dtnag/common/link.do?symbolicName=/free/news/template2&forceNavUpdate=false&topic=DTN/Ag&vendorReference=becab9aa-9415-49dc-a37e-341d21cba9e1__1251378735587