

Research Report: HORTICULTURE 2017

Spring Planted White Clover in Garlic



FARMER-RESEARCHER

Heather Coffey, Fiddlehead Farm - East Region



WHY IT MATTERS

Garlic on small organic farms is typically either dry mulched (e.g. straw) or grown in bare soil and cultivated for weed control. Farmers would like to see the soil covered to prevent erosion, increase water retention, and improve soil nutrition. However, water retention could increase nematode pressure and green mulches could compete with garlic. **Heather wanted to see if there was a difference in yields of garlic when white clover was seeded into the patch in spring, in hopes that nitrogen fixation might be more beneficial than the competition for nutrients.**

RESEARCH QUESTION

Does a white clover cover crop spring planted into our garlic beds lead to better garlic yields than our standard bare soil beds?

METHODS

The experimental area consisted of six 250 foot beds of two rows each, all planted with the Fish Lake garlic variety. Heather seeded white clover as a spring cover crop into half the garlic patch (approx. 200g/plot or 14kg/acre; **Fig. 1**), after two passes with hoes to limit weed seed bank pressure. Control beds had no clover seeded.

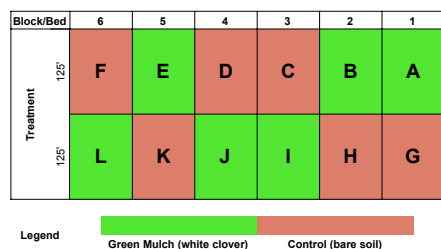


Figure 1. Field map of randomized complete block design with six replicates.



Set-up for the garlic trial.

Heather harvested and cured the garlic by plot. She recorded a count of garlic heads per plot along with the corresponding total yield (g) of cured, trimmed garlic.



Heather harvested and separated garlic by plot in order to record trial weights.

RESULTS

- Heather's garlic head weights varied between plots, but she didn't detect an effect of the cover crop ($P=0.58$).

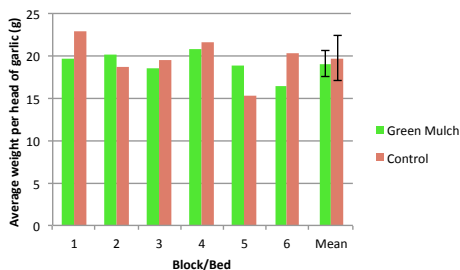


Figure 2. Garlic average head weights in each plot and average across treatments (mean) with standard error.

- Due to the wet spring, a second hoeing and planting of the clover was not possible until May 19 and there was still a good number of weeds that sprouted with the clover (photo right).
- Weed pressure in both clover and control was comparable so if there was shading issues it was across treatments.
- Harvest was delayed until August 8th which brought down our quality but we don't feel it affected our yields.



Garlic in the field, marked with stakes to denote treatment and control.



Heather seeding clover!

TAKE HOME MESSAGES

- There was no detectable difference between Heather's control and green mulch plots, suggesting that there may not be any effect of clover on garlic yield in a system like hers.
- It was a wet year, so the benefits of moisture retention in clover wouldn't have shown.
- Heather observed no differences in nematode damage between treatments.
- Clover stayed low enough so as to not compete with the garlic for light, and our results suggest there may not have been nutrient competition either.
- Spring planting a cover crop into garlic is weedy. Hand weeding would be ideal to tidy up clover plots.
- While we did get visible root nodule development over two months (photo right), we'd like to try getting clover in a good bit earlier (or in fall!) next time.



Participants at the field tour and Ontario Trillium Foundation recognition event, Fiddlehead Farm. MPP Todd Smith and OTF volunteer Nancy Parks attended as part of the recognition ceremony.

FUNDING

Ontario Trillium Foundation



Fondation Trillium de l'Ontario



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Fiddlehead Farm Weather Data:

Monthly temperatures and precipitation for 2017 and historical averages.

Mountainview was selected as the weather station for Fiddlehead Farm. It is located 12.3 km from the farm.

