

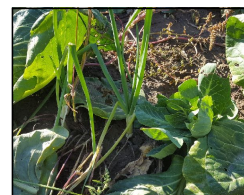
Research Report: HORTICULTURE 2017

Interplanting Onions and Brassicas



FARMER-RESEARCHER

Ryan Thiessen, Creek Shore Farm - West Region



WHY IT MATTERS

Interplanting is an agroecological approach that optimizes space, light capture, and water and nutrient use. Effective combinations vary by region and system, and Ryan wanted to test different intercropping distances using a paper pot transplanter. **Ryan's goals for interplanting were to optimize growing space and minimize pest pressure without impacting growth of onions or brassicas.**

RESEARCH QUESTIONS

Is onion growth affected by intercropped brassicas?

METHODS

Ryan wanted to experiment with interplanting using his paper plot transplanter. In a paper pot transplanted system, the maximum spacing is 6" between plants. Brassicas, therefore, have to be every other "pot" in the chain, and onions seemed like a good intercrop: they won't compete with the brassicas and may deter movement of cabbage loopers within row.

Semi-randomized complete block design with 4 blocks/replicates:

Broccoli with onion
Cabbage with onion
Onion alone
Broccoli alone
Cabbage alone

| | | | | | | | | | | | | | | | |
|--------------------------------------|---------------------------------------|---------------------------------------|--------------------------------------|--------------------------------------|---------------------------------------|--------------------------------------|---------------------------------------|--------------------------------------|--------------------------------------|---------------------------------------|--------------------------------------|--------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 8. Cabb age w/ 6" Onio n | 5. Broc coli w/ 6" Onio n | 2. Broc coli w/ 6" Onio n | 3. Cabb age w/ 6" Onio n | 4. Cabb age w/ 6" Onio n | 1. Broc coli w/ 6" Onio n | 7. Cabb age w/ 6" Onio n | 6. Broc coli w/ 6" Onio n | 7. Cabb age w/ 6" Onio n | 8. Cabb age w/ 6" Onio n | 2. Broc coli w/ 6" Onio n | 4. Cabb age w/ 6" Onio n | 3. Cabb age w/ 6" Onio n | 1. Broc coli w/ 6" Onio n | 5. Broc coli w/ 6" Onio n | 6. Broc coli w/ 6" Onio n |
| | | | | | | | | | | | | | | | |
| BLOCK 3 | | | | | | | | BLOCK 4 | | | | | | | |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 |
| 8. Cabb age w/ 6" Onio n | 5. Broc coli w/ 6" Onio n | 2. Broc coli w/ 6" Onio n | 3. Cabb age w/ 6" Onio n | 4. Cabb age w/ 6" Onio n | 1. Broc coli w/ 6" Onio n | 7. Cabb age w/ 6" Onio n | 6. Broc coli w/ 6" Onio n | 7. Cabb age w/ 6" Onio n | 8. Cabb age w/ 6" Onio n | 2. Broc coli w/ 6" Onio n | 4. Cabb age w/ 6" Onio n | 3. Cabb age w/ 6" Onio n | 1. Broc coli w/ 6" Onio n | 5. Broc coli w/ 6" Onio n | 6. Broc coli w/ 6" Onio n |

Figure 1. Ryan's semi-random to try to limit Diamondback Moth movement.



Paper Pot Transplanter transplanting onions.



There was so much rain at some points Ryan could float a canoe behind the house.

RESULTS

Ryan is still collecting results, but here are some of his notes from the year:

- Constant rains kept Ryan out of the field and delayed planting 3-4 weeks (July).
- When he finally did plant, the ground was still too wet for the paper pot transplanter to perform well.
- The transplants were in the trays for too long because of the wet conditions and the learning curve for how to grow 2 crops in the pot chains.
- Weed pressure was huge: the weeds loved the wet weather and it was often too wet to get into the fields to weed.
- As the brassicas grew bigger, Ryan was unable to weed close enough to onions in mixed rows (*column 3; last photo*).
- Onion-only rows generally performed many fold better than the onions in mixed rows.



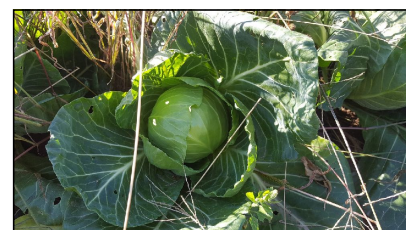
Onion and cabbage interplanted in trays.



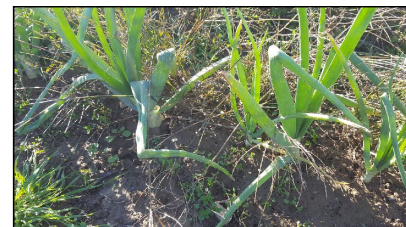
Cabbage after finger weeding.

TAKE HOME MESSAGE

- Intercropping is a valuable tool, but matching timing of two crops can be difficult.
- For intercropping, it's a good idea to first optimize planting time for the 2 crops especially when using paper pot chains.



Cabbage and broccoli performed very well despite pressure from weeds and being intercropped with onions.



Onion-only rows performed the best. A lot of interplanted onions were only ever pencil size.



Weed pressure was much higher this year than in past. Ryan managed to keep the weeds at about canopy height of the brassicas. But weed pressure was too much for the slower growing onions that had to compete with weeds and brassicas.

See update
on page 2



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UPDATE

At harvest, Ryan counted the number of onions, broccoli and cabbage from each plot and weighed each crop per section for an average weight per section.

In onion only sections, he grew significantly more onions ($P < 0.00001$) and these onions were larger than onions planted with brassicas ($P = 0.004$). There was no detectable difference in yield ($P = 0.9$) or size ($P = 0.07$) between onions grown with broccoli or cabbage. There was no detectable difference in broccoli yield or size between interplanted and control sections. We were unable to analyze cabbage data because of missing data due to low yield.

While Ryan detected a yield deficient for the interplanted onions, he wonders what would happen in a year that wasn't so wet and perfect for weed growth.

Creek Shore Farm Weather Data:

