

# Research Report: HORTICULTURE 2017

## Cabbage Seed Production



**FARMER-RESEARCHERS** (left to right)  
**Rebecca Ivanoff**, Whole Circle Farm - Central Region  
**Nicola Inglefield**, Whole Circle Farm - Central Region

### WHY IT MATTERS

Seed saving is important tool for ecological growers who want to produce locally adapted seed, develop new or maintain older varieties, and/or reduce seed costs. Biennial seed production has added challenges, as it occupies valuable storage space for overwintering that would otherwise be taken by marketable crops. **To optimize trade-offs between vegetable storage for seed saving and market, Nicola and Rebecca compared two methods of cabbage seed production.**

### RESEARCH QUESTIONS

*How do two methods of cabbage seed production compare with respect to seed quality, seed quantity and marketable cabbage?*

### METHODS

Nicola and Rebecca compared two methods of cabbage seed production:

1. The **Pyramid method**, learned from Petra and Matthew at Fruition Seeds, where the head is trimmed like a pyramid such that leaves are usable but not sellable (*control*), and
2. An **alternative Chop method**, learned from Beth and Nathan at Meadowlark Hearth Biodynamic Seeds, that removes the head in a way that it can be sold at winter and spring markets (*new method; treatment*).

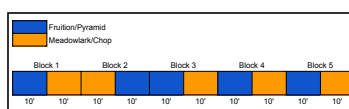
**Predictions:** Greater quality from the Pyramid method due to the main stem of the flower not being cut off, but greater value from Chop method, both in terms of seed quantity and saleable cabbage.

In autumn 2016, Nicola and Rebecca selected 110 ideal *April Green* cabbage heads and stored them with roots in plastic bags in the rafters of a cooler (photo right).



In spring 2017, they assigned the 99 plants that survived to one of the two methods by choosing plants at random from the cooler.

They planted cabbages on May 12 (**Fig 1**). They marked Pyramid plants with flagging tape tied around the stalk. They used the Florida weave to maintain plants as they grew, and they did not rogue in 2017, as it would have affected the experiment.



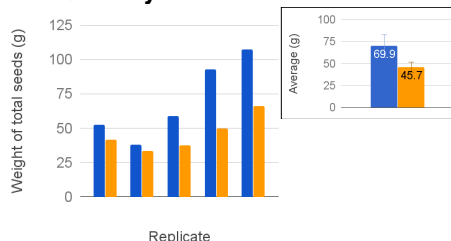
**Figure 1.** Layout and photo of the trial with 5 replicate pairs comparing two methods.

### RESULTS

#### Cabbage Sold

- Chop method resulted in 38 heads of cabbage (~ 3lb each) **sold for \$115 total**
- 12 were too small after peeling back the molded leaves or were too rotten

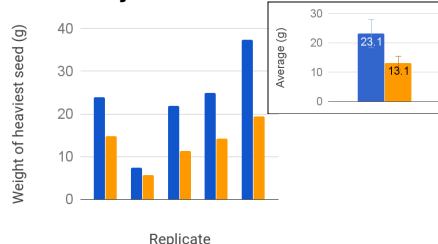
#### Seed Quantity



**Figure 2.** Total seed weight of cabbage seeds by replicate and average (inset;  $P=0.06$ ). **Blue** = Pyramid; **Orange** = Chop

- Total seed weight was 13-87% greater using the Pyramid method, and we are confident this was due to the different methods ( $P=0.06$ ).

#### Seed Quality

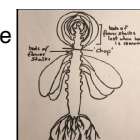


**Figure 3.** Weight of heaviest seeds by replicate and average (inset;  $P=0.05$ ). **Blue** = Pyramid; **Orange** = Chop

- The weight of the heaviest (good quality) seeds was 29-92% heavier from the Pyramid method, and we are confident this was due to the different methods ( $P=0.05$ ).
- At \$20/28g, this means seed from Pyramid method would have sold for **\$35.80 more**

### TAKE HOME MESSAGE

- The Pyramid method produced better seed quantity and seed quality.
- Nicola and Rebecca think the lower performance of the Chop method is because removes a large number of nodes (and thus potential seeds; see *diagram right*).
- This is consistent with the fact that the ratio of heavy seed between methods was the same (data not shown;  $P=0.21$ ), so the difference between methods is because the Pyramid method produces more seed.
- Rebecca thinks the “block effect” - increasing seed weight from replicates 1 to 5 - might be do to compaction near the road closer to replicate 1. It could also be because plants from the first replicates were winnowed a few weeks before the last blocks.
- These results emphasize the importance of randomizing and replicating! *Imagine the conclusions if they compared the methods side-by-side, with the Chop method farther from the road!?*
- The decision around what method to use in the future depends on growers’ goals: **If high quality seed is the goal, the Pyramid method appears to be better; if net revenue is the goal, then the Chop method wins.**



**Rebecca and Nicola harvested cabbage from the two methods using colour coded tarps.**



**Seed processing set-up**



**Cabbage seeds separated by plot**

**FUNDING**

Ontario Trillium Foundation

Fondation Trillium de l'Ontario

**WESTON SEEDING stronger communities**

# Research Report: HORTICULTURE 2017

## Cabbage Seed Production

### Whole Circle Farm Weather Data:

#### Monthly temperatures and precipitation for 2017 and historical averages.

\_\_Georgetown WWTP was selected as the weather station for Whole Circle Farm. It is located 17.43 km from the farm.

