# Research Report: HORTICULTURE 2017
# Efficacy of foliar sprays for cucurbits

Ecological Farmers Association of Ontario


## FARMER-RESEARCHER
**Angie Koch**, Fertile Ground CSA - West Region


## WHY IT MATTERS

Ecological vegetable growers often struggle with pests and disease pressure. There is anecdotal and observational information around the use of organic foliar sprays, but quantitative data is lacking. While nutrient foliar sprays can be expensive, the cost could be less than time and space cost associated with succession planting needed to manage disease pressure. **With the goal of minimizing succession planting and field space while maximizing harvestable yield, Angie tested the efficacy of a nutrient foliar spray to maintain health of her cucurbits.**

## RESEARCH QUESTION

***How does a nutrient foliar spray compare to no spray with respect to plant health and production of summer squash and cucumbers?***

## METHODS

Angie sprayed nutrient foliar sprays weekly following a spray program from Advancing Eco Agriculture (AEA). The program included spray formulas for different developmental stages in crop development.

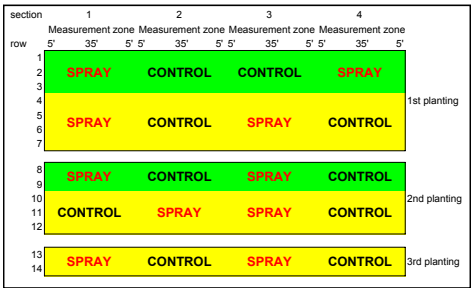


***Figure 1**. Layout of Angie's spray trial with 3 succession plantings and cucumber and summer squash. Angie took measurements within the middle 35' within each section in order to leave a 10' buffer for spray drift between sections. **Green** = cucumber; **Yellow** = summer squash.*

Angie was most interested in finding a way to keep plants healthy for longer, in order to reduce the number of succession plantings. She **predicted** nutrient foliar applications would result in healthier and more disease-resistant plants.

Throughout the season, Angie measured mosaic virus pressure by counting affected plants (i.e. susceptibility to disease) and number of healthy plants remaining (i.e. length of productive growing time).

She also measured Brix content of the fruit as a measure of plant health, with the idea that healthier plant will be more sugar- and nutrient-dense (*photo right*).

## RESULTS

### Brix

- For both cucumbers and summer squash, Angie was unable to detect a difference in Brix measurements from plants sprayed and those that received no spray.

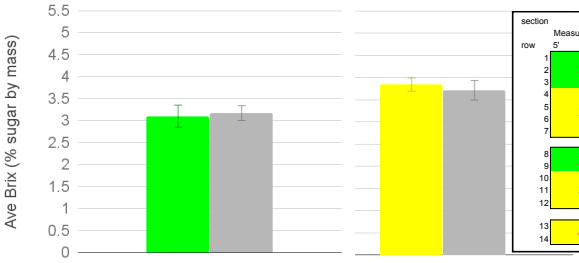


***Figure 2**. Brix values for sprayed and control cucumbers and sprayed and control summer squash averaged across all rows, sections and successions (cucumber, P=0.73; summer squash, P=0.39). **Green** = cucumber; **Yellow** = summer squash; **Grey** = control.*

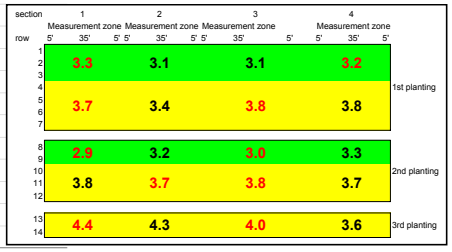


***Figure 3**. Brix values for sprayed (**red** numbers) and control (**black** numbers) cucumbers and summer squash, averaged across rows. **Green** = cucumber; **Yellow** = summer squash.*

### Mosaic virus and overall disease pressure

- For summer squash, unsprayed plants had less mosaic virus and overall disease pressure than sprayed plants in August but not in July and September. There was not enough data on cucumber to run a statistical analysis.
- When summer squash data were separated by variety, there was no detectable difference in mosaic virus or overall disease pressure between sprayed and unsprayed plants.

## TAKE HOME MESSAGE

- Despite Angie's predictions, nutrient foliar sprays did not noticeably impact Brix measurements, disease pressure or length of productive season for cucurbits.
- Assigning treatments to entire rows would make data collection more practical but would preclude Angie from organizing her patch by variety.
- Moving forward, Angie wonders: Does she need better soil fertility in order for foliars to make noticeable improvement? A Was focusing on a crop family susceptible to diseases carried by complex insects (i.e. cucumber beetle and squash bug) just too ambitious - especially in a wet year when diseases spread so easily?


FUNDING

Ontario Trillium Foundation

Fondation Trillium de l'Ontario

Weston Seeding Stronger Communities

# Research Report: HORTICULTURE 2017
# Efficacy of foliar sprays for cucurbits

Ecological Farmers Association of Ontario

**Fertile Ground Farm Weather Data:**

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

__Roseville was selected as the weather station for Fertile Ground Farm. It is located 17.28 km from the farm.