Ontario

NCCC 212 Report
Ontario Berry Research Summary

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Strawberry:

Breeding day-neutral strawberry F1 Hybrids. A. Dale, M. Kalischuk, University of Guelph.

Objective 1

Seed-propagated strawberry breeding: F1 Hybrid 3rd generation inbred females crossed with 5th & 6th generation hermaphrodites planted in the fall of 2021 at grower sites for grower trial evaluation in 2022.

Management of emerging strawberry diseases in Ontario. K Schooley, Berry Growers of Ontario; E. Pate, K Goldenhar, OMAFRA.

Objective 2

Anthracnose fruit rot (*Collectotrichum nymphaeae*) has become a challenging disease for Ontario strawberry growers in recent years. In 2016 populations of *C. nymphaeae* on several Ontario strawberry farms were found to be resistant or showed decreased sensitivity to group 11 fungicides. Additionally, following recent re-evaluations of broad spectrum fungicides, beginning in 2021 growers can no longer use captan during harvest, leaving growers with limited options for anthracnose control.

This project screened multiple promising fungicides and biofungicides in 2021. Albion was planted in a randomized complete block design with 4 replications. Plants were inoculated with anthracnose spores on July 21 after the first 2 fungicide applications. The trial was harvested twice a week until September 7th.

Treatments included:

1. Control
2. Serifel (*Bacillus amyloliquefaciens* MBI 600)
3. Problad (BLAD polypeptide)
4. Diplomat (polyoxin D zinc salt)
5. Switch (fludioxonil + cyprodinil)
6. Cevya (mefentrifluconazole)
7. Mettle (tetraconazole)
8. Inspire (difenoconazole)
9. Fullback (flutriafol)

10. Sercadis (fluxapyroxad)

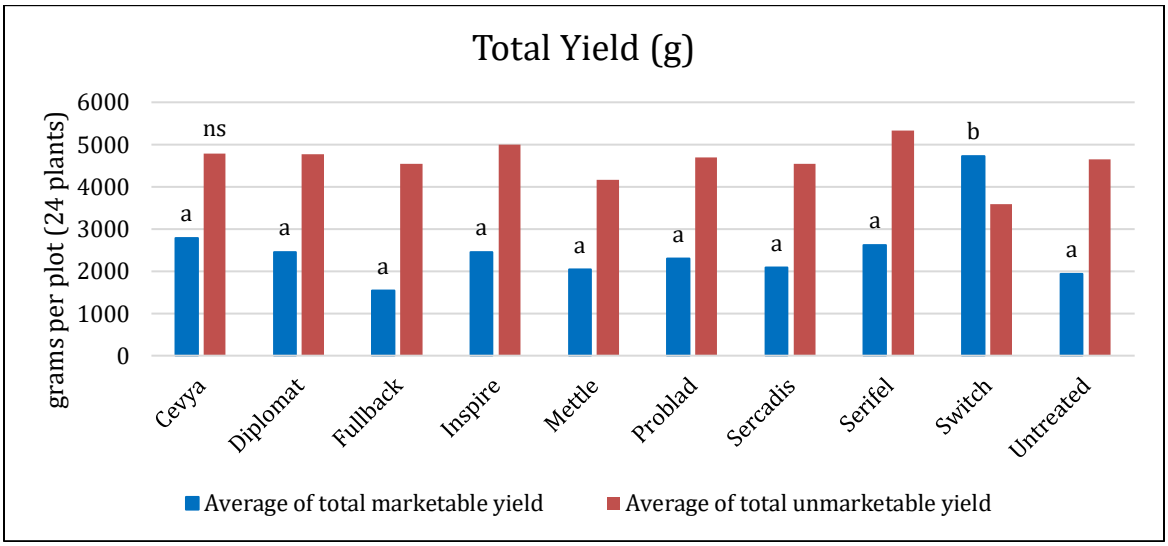

Figure 1. Yield of strawberries cv. Albion totaled from the 13 harvests. Marketability was determined based on the shape, size, and quality of the fruit. Diseased and misshapen fruit were separated, and all considered unmarketable. Numbers in a column followed by the same letter are not significantly different at P = 0.05, Tukey's HSD test. ns= no significant differences at a confidence level of 5%, Tukey's HSD.

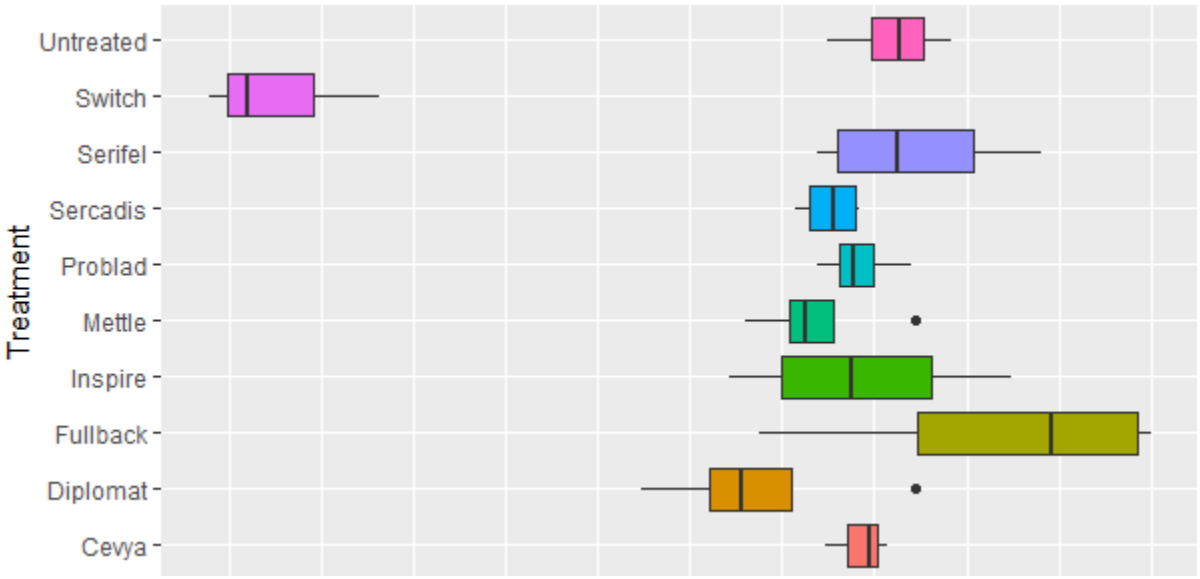

Figure 2. Area under the disease progress curve (AUDPC) for anthracnose incidence for each fungicide treatment applied. Area under the disease progress curve (AUDPC) was based on the anthracnose incidence harvest ratings on 27, 30 July, 3, 6, 10, 13, 17, 20, 24, 27, 31 August, 3 and 7 September and was determined using the following equation:

$$\text{AUDPC} = \sum_{j=1}^{N_{j-1}} (\frac{y_j + y_{j+1}}{2})(t_{j+1} - t_j)$$

We also conducted more resistance testing to understand the frequency of resistance to group 11 fungicides across Ontario, which will inform recommendations to reduce the use of group 11s, reducing unnecessary pesticide use.

Dissemination of results: A plot tour was help in September 2021 for growers and industry. Results will be shared at the Berry Growers of Ontario annual meeting, February, 2022.

Effect of crown size on strawberry performance. E. Pate, OMAFRA; K. Schooley, Berry Growers of Ontario.
Objective 2

This project will evaluate the effects of crown size on yield and harvest timing. Albion and San Andreas bare root plants were sorted into three crown sizes: small (<7mm diameter), medium (7-9 mm) and large (>10 mm). The trial planted on raised beds in a randomized complete block design with 5 replications. Treatments were harvested twice a week from July 27- October 8. Data currently being analyzed.
Dissemination of results: A plot tour was help in September 2021 for growers and industry.
Plans for next reporting period: repeat trial in 2022.

Early alert of airborne fungal disease and the determination of fungicide resistance in several Southern Ontario horticultural crops using air sampling monitoring. K. White, M. Saleh, Spornado Inc.; K. Grigg-McGuffin, W. McFadden-Smith, E. Pate, OMAFRA.
Objective 2

The purpose of this project is to develop molecular tests for the rapid detection of crop disease in the air, and the molecular identification of fungicide resistant alleles in pathogenic spores. These diagnostic tests will provide information to growers that will allow them to better choose and time their pesticide use, and thereby reduce it.
Plans for next reporting period: continue project in 2022.

Blueberry

Distribution of four major plant parasitic nematodes associated with highbush blueberry in Southern Ontario. T. Sultana, AAFC; E. Pate, OMAFRA
Objective 2

Building on the initial survey from 2019 this project will expand the number of sites included in the nematode survey. The objective of this project is to determine the occurrence and distribution of plant parasitic nematodes associated with blueberries in Ontario.
Plans for next reporting period: continue survey in 2022 & 2023.

Strawberry, Raspberry, Blueberry:

Canadian Berry Trial Network. B. Amyotte, AAFC; E. Gerbrandt, Sky Blue Horticulture; M. Dossett, B.C. Berry Cultivar Dev. Inc.; A. Dale, J. Zandstra, University of Guelph; P. Lafontaine, Carrefour Industriel et Expérimental de Lanaudière.
Objective 1
Day-neutral & June-bearing strawberry, raspberry, and blueberry variety trials in Simcoe and Cedar Springs, Ontario, as part of the Canadian Berry Trial Network. All trials planted outdoors and managed with standard production practices. Project is ongoing.