2021 Update Mtg: Plant Growth Regulators and Fruit Set

Plant growth regulators and fruit set

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UMass Cranberry Management Update, January 27, 2021

UMass Cranberry Station
Research & Extension

Fruit set and yield

- Fruit set is defined as the number of fruit that are produced from a given number of flowers
- % fruit set varies among cranberry varieties, typically falls in the range of 25- 50%
- Marketable fruit size
- Fruit set is an important yield component

Limitations to fruit set

1. Relatively low percentage of fruit set in cranberry is primarily due to limited pollination (**Devlin and Demoranville, 1967**)

- ✓ Length of flowering period in cranberry
- ✓ Orientation of the cranberry

2. Carbohydrate resources (**Birrenkott and Stang 1990; Hagidimitriou and Roper 1994**)

Carbohydrate resources

Table 1. The effect of position on the upright on fruit set, seed number and size of Ben Lear, Bergman and McFarlin cranberries in British Columbia. N=100

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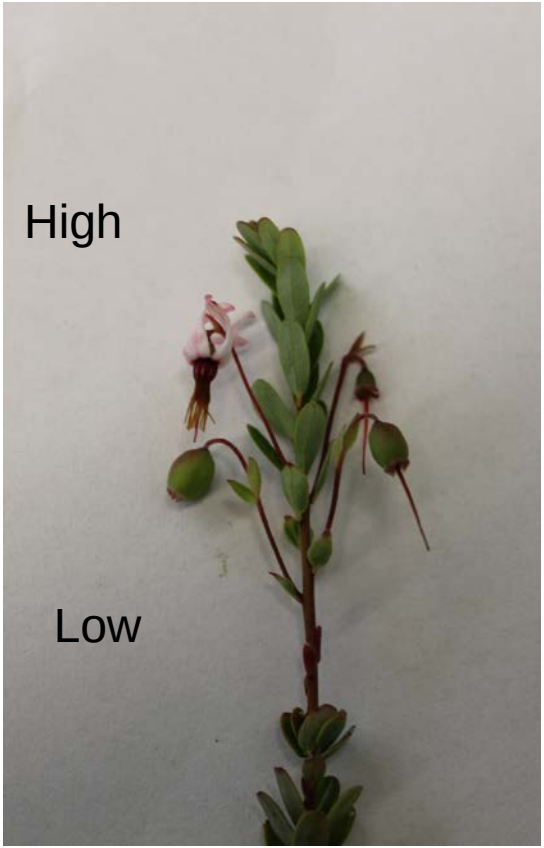
Position	Fruit set	Seed Number	Berry wt. (g)
1 (low)	73	12.7	0.83
2	54	9.3	0.58
3	28	4.6	0.28
4	15	2.6	0.15
5 (high)	12	2.1	0.13
LSD	0.07	1.46	0.07

(Data from Baumann and Eaton 1986)



Plant growth regulators and fruit set

- Plant growth regulators (PGR's) are used to improve fruit set in apples, grapes, blueberries, citrus etc.

- What about cranberry?

1. Devlin and DeMoranville on 'Early Black' (1967)
2. Stang and Birrenkott on 'Searles' (1989)

2020: Screen new PGR's on cultivar with high yield potential

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- Forchlorfenuron (FC) & Gibberellic acid (GA)
- LI 700 NIS
- 'Mullica Queen' & 'Stevens'

2020: Total fruit number

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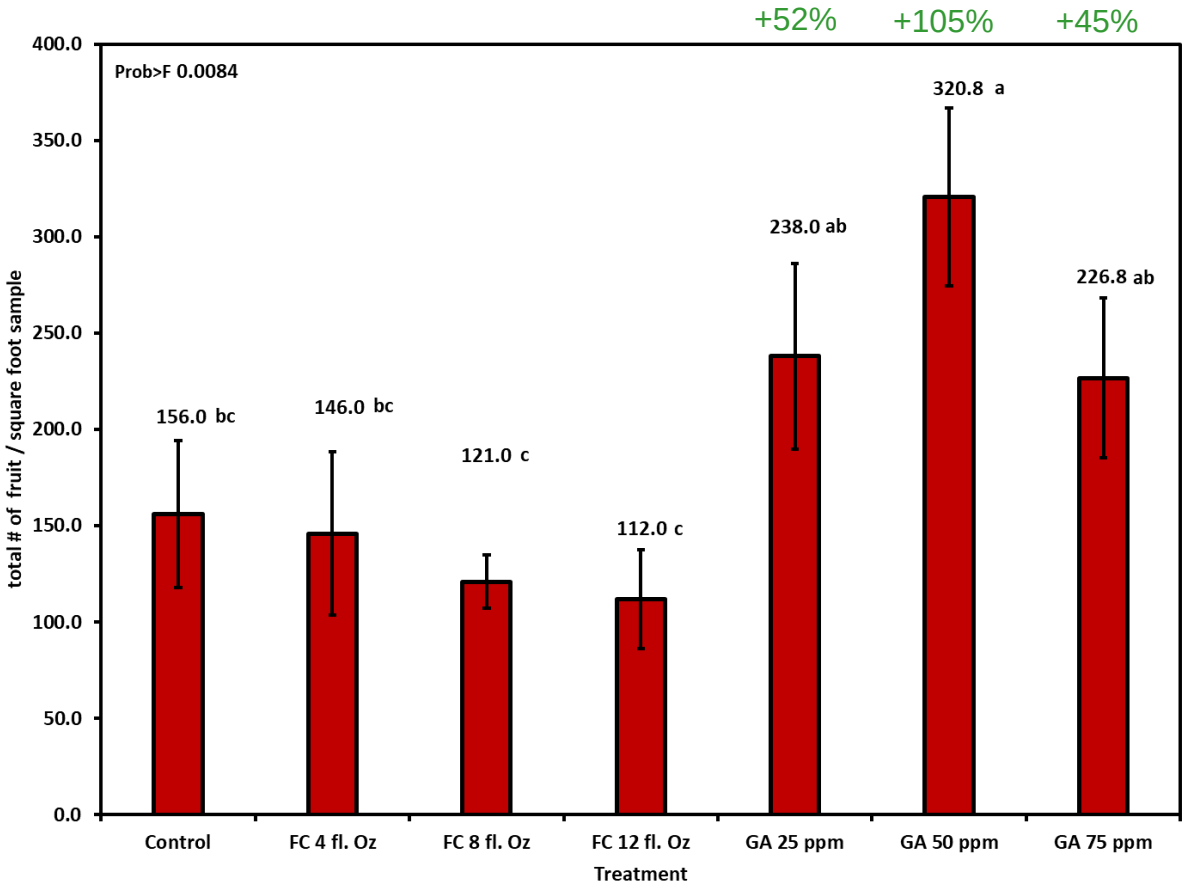
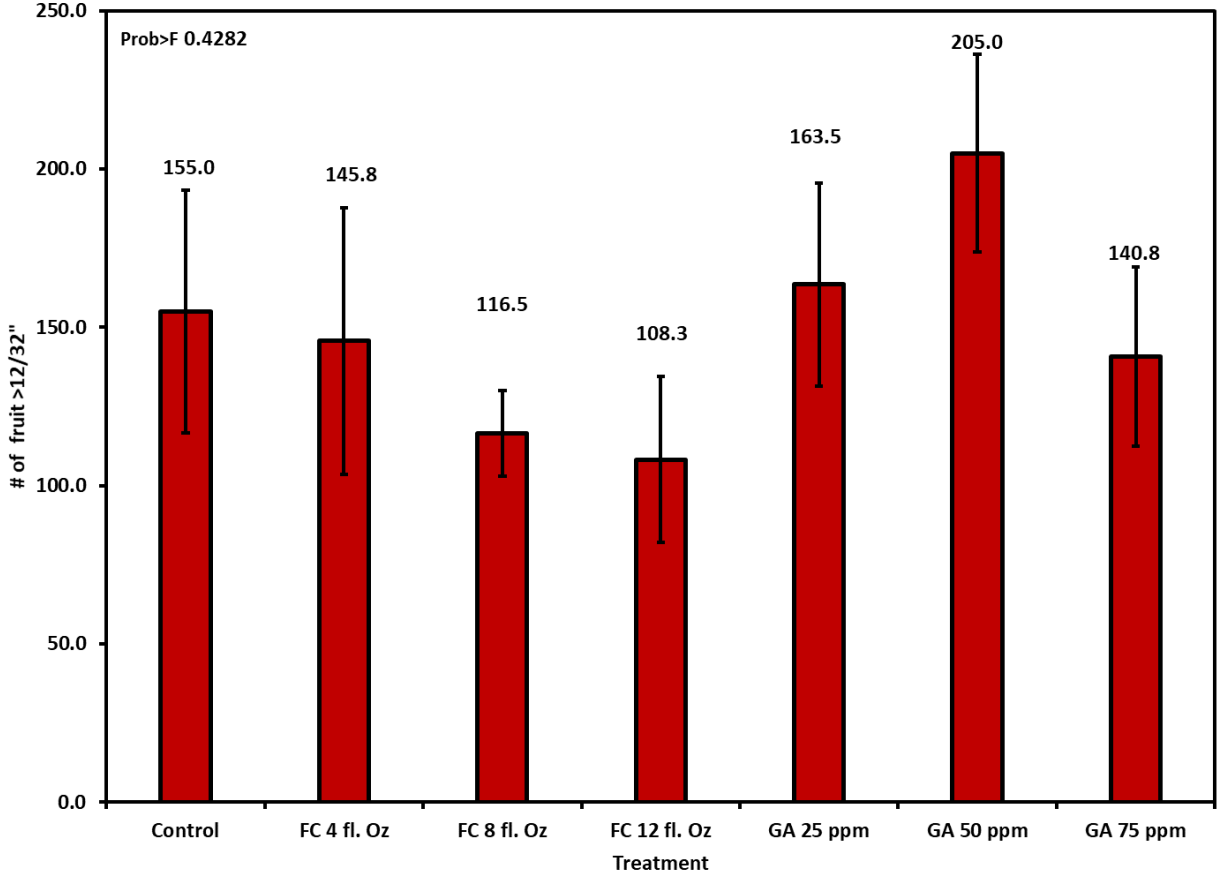


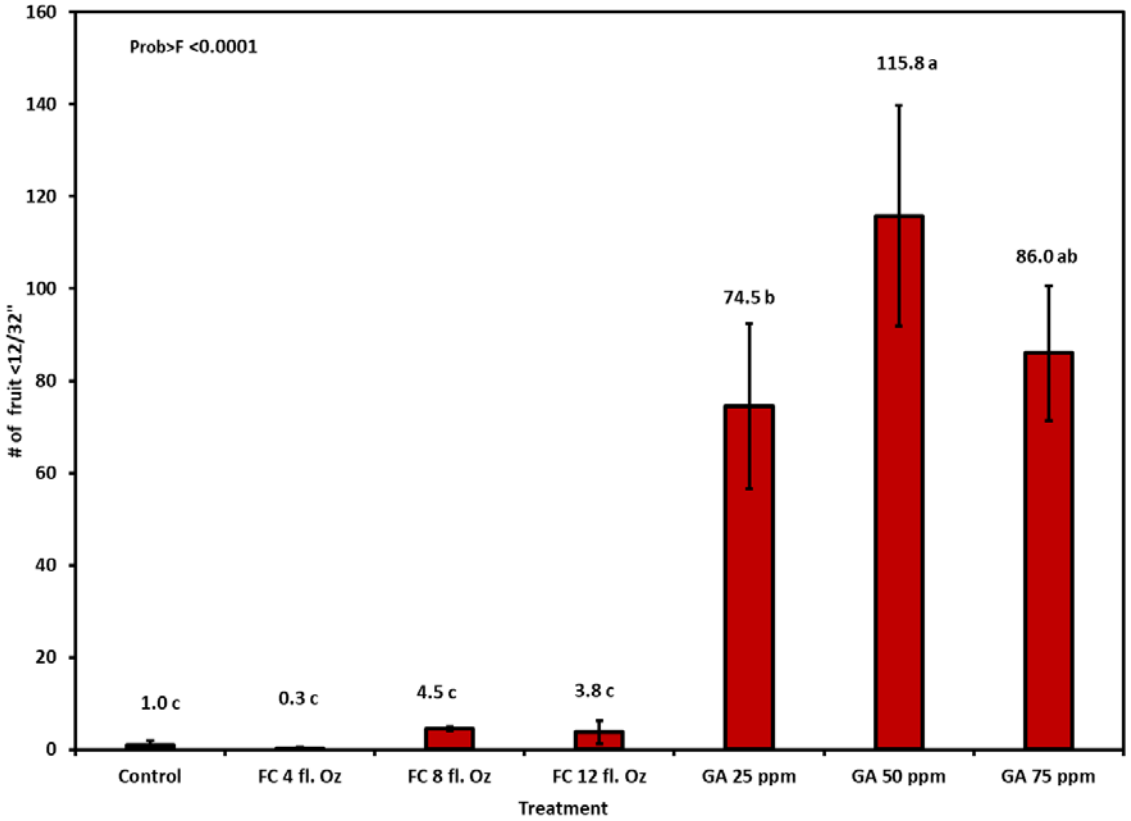
12/32” sieve

- Sample run through sieve to separate undersize fruit

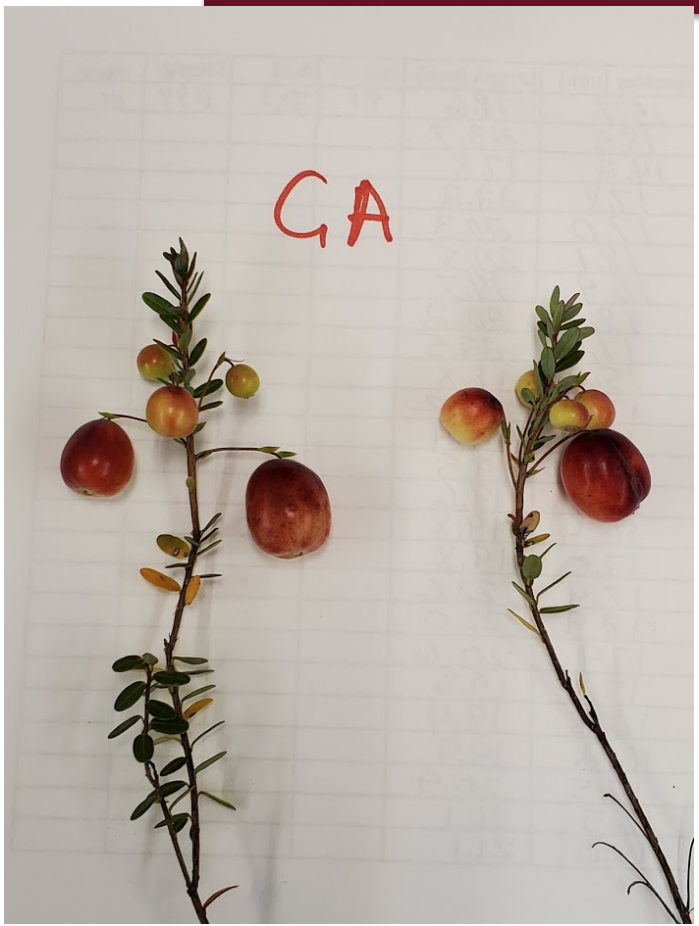
2020: # of marketable fruit >12/32”



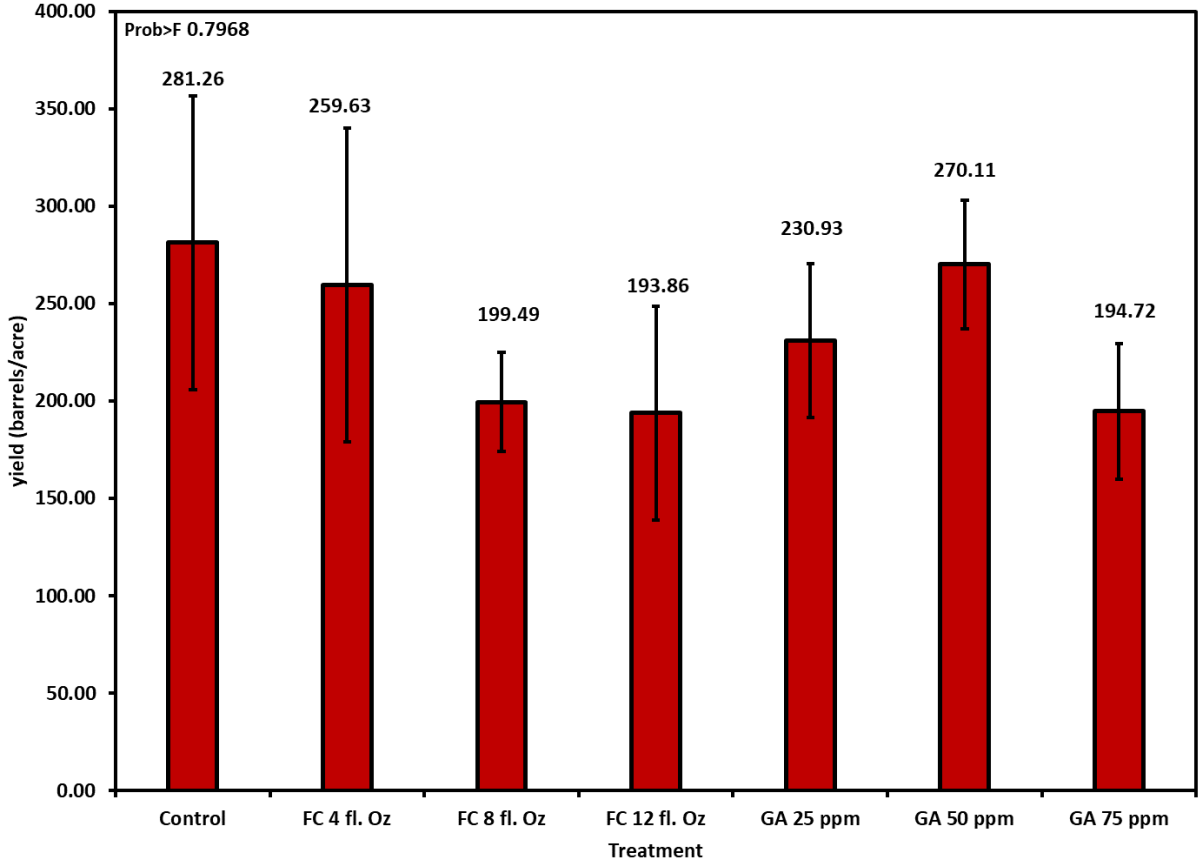
2020: # of undersize fruit <12/32”




Control


GA

2020: Yield marketable fruit >12/32”



2020: Conclusion

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- GA increased fruit set, FC had no effect on fruit set
- Increased fruit set with GA should be supported with increased carbohydrate resources so that all the fruit size up
- Need to find a way of increasing carbohydrate resources

Acknowledgements

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Massachusetts cranberries

- In kind

fine

VALENT BIOSCIENCES.