



Testing new alternatives to Carbaryl

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In-Depth Fruit School – Syracuse, NY

Testing new alternatives to Carbaryl for NY1 and NY2 apple

Geneva

Target : NY1 – 60 fruit per tree

NY2 – 80 fruit per tree

TRV: 130 gallon

Tunnel sprayer @ 100 gal/acre

M.9T337

Per acre:

83 oz MaxCel

5.2 (Bloom) and 4 oz FruitoneL (later)

10.5 oz AmidThin

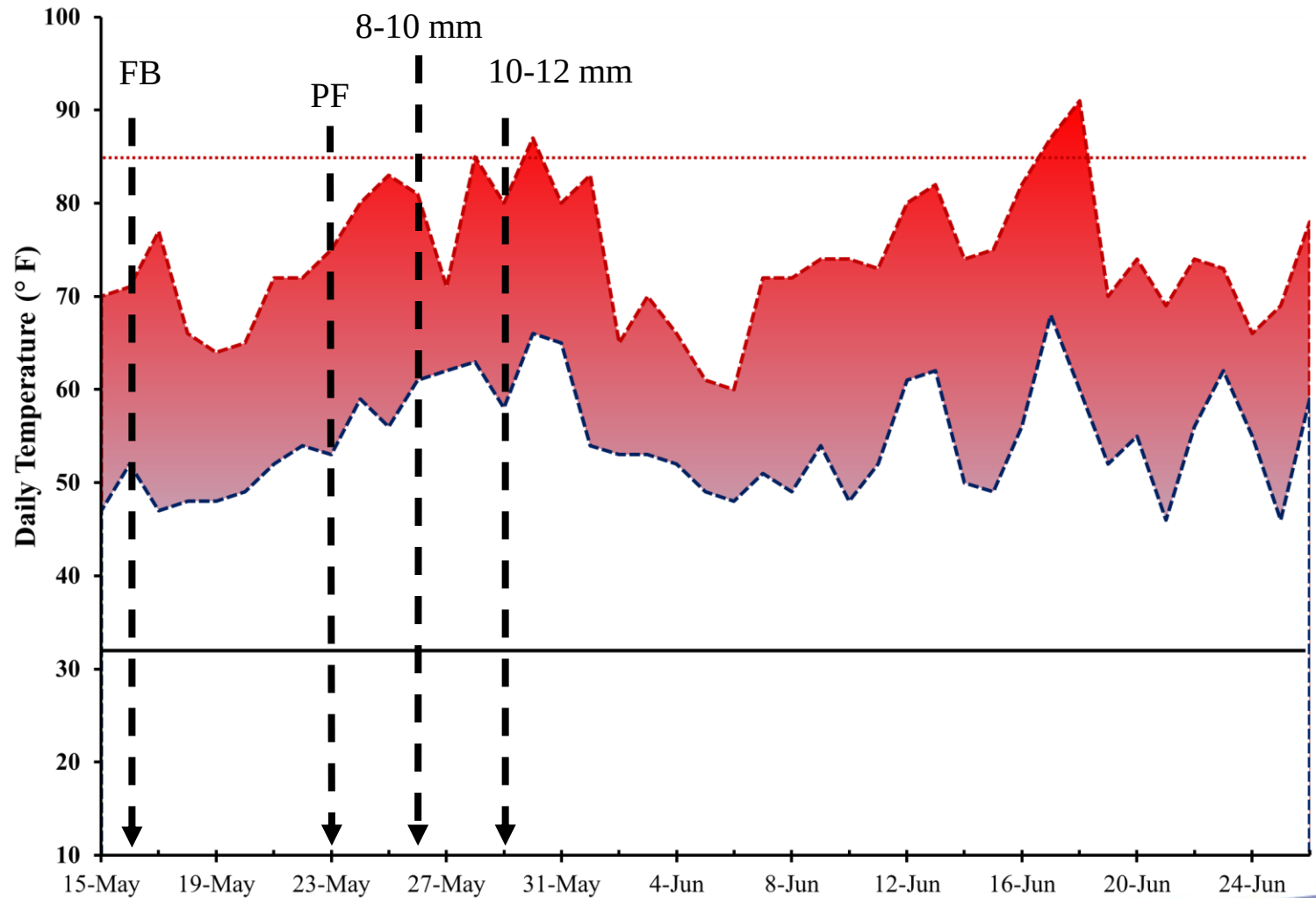
1.3 pt Carbaryl

Still delivering 100 gallons/acre

Trt No.	Bloom Whole tree NY1: 5/17 NY2: 5/16	Petal fall Whole tree NY1: 5/24 NY2: 5/23	8-10mm NY1: whole tree NY2: Top NY1: 5/26 NY2: 5/26	10-12mm NY1: whole tree NY2: Top NY1: 5/29 NY2: 5/29
1.	UTC	UTC	UTC	UTC
2.	10ppm NAA	7.5ppm NAA + 1pt Sevin	-	7.5ppm NAA + 1pt Carbaryl
3.	10ppm NAA	100 ppm 6BA + 1pt Sevin	-	100 ppm 6BA + 1pt Sevin
4.	10ppm NAA	100 ppm 6BA + 7.5ppm NAA	-	100 ppm 6BA + 7.5ppm NAA
5.	10ppm NAA	100 ppm 6BA + 50ppm NAD	-	100 ppm 6BA + 50ppm NAD
6.	10ppm NAA	50ppm NAD	-	100 ppm 6BA + 50ppm NAD
7.	PGTmodel using ATS	-	-	-
8.	PGTmodel using ATS	-	100 ppm 6BA + 1pt Sevin	-

Weather conditions during chemical thinning - 2018

Geneva, NY

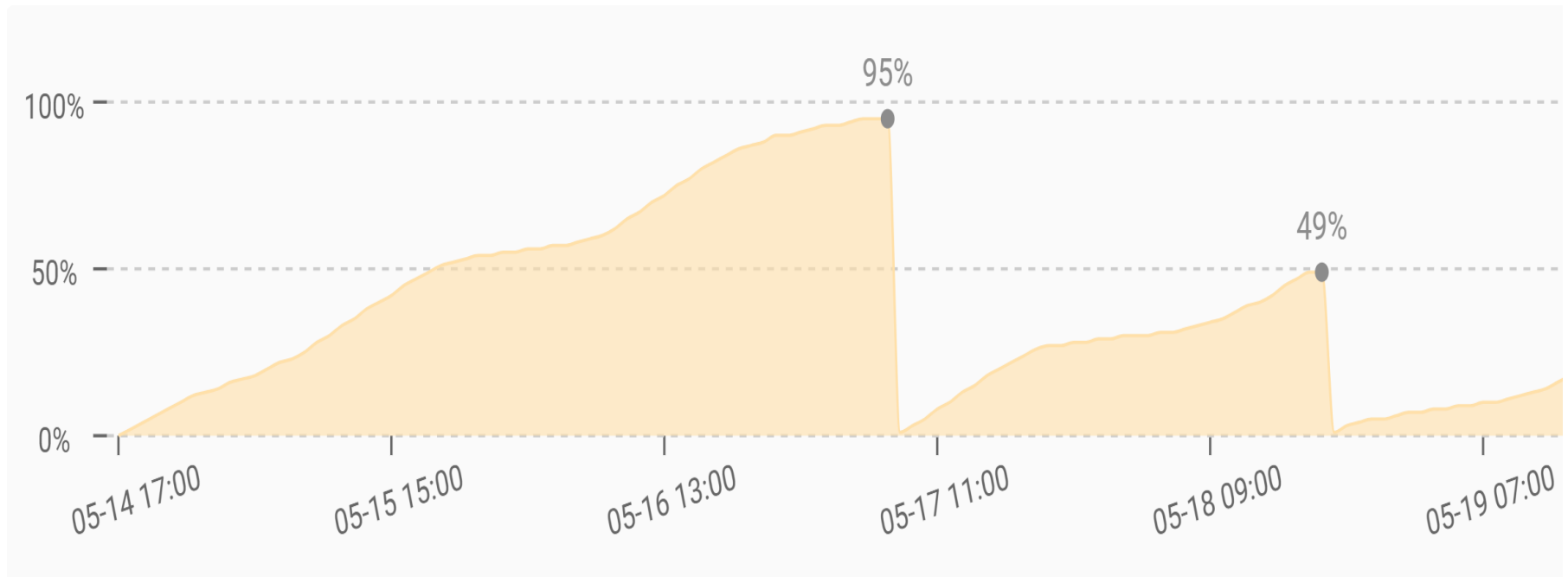


Variety: NY1 – Snapdragon

PTG used: Honeycrisp

City: Geneva, NY

Style Length: 10.85 mm



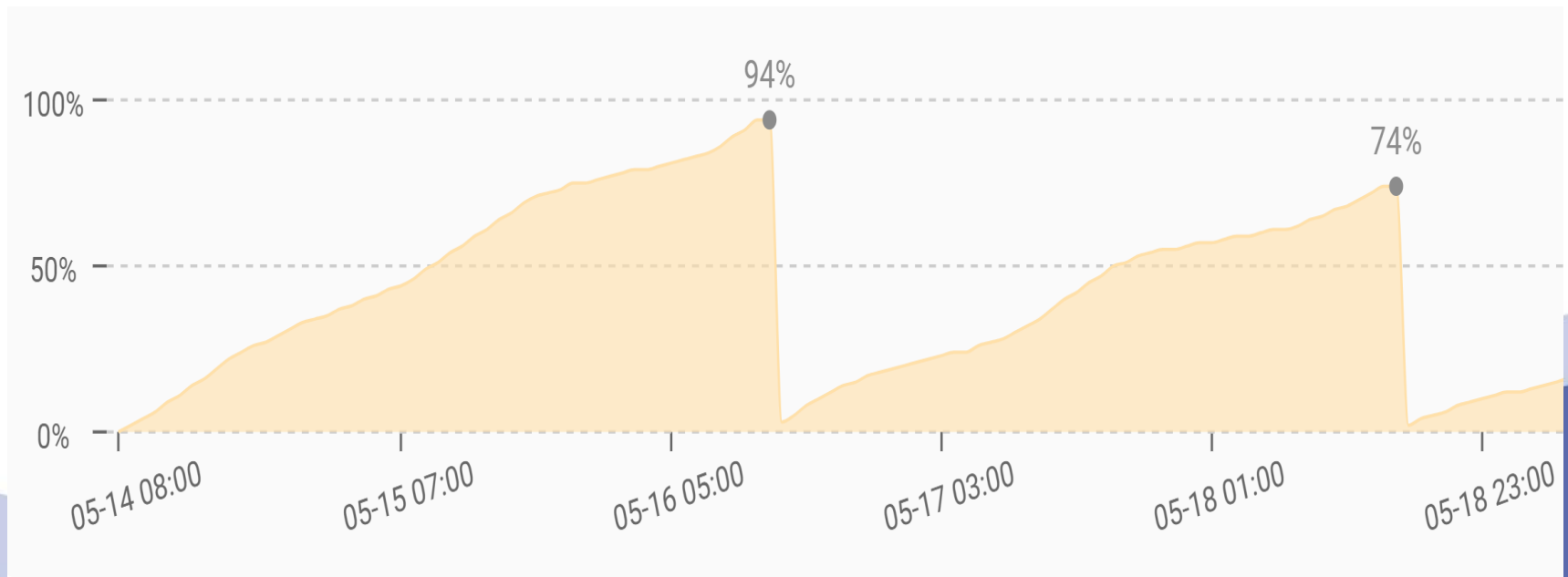
Target : NY1 – 60 fruit per tree

Variety: NY2 – RubyFrost (Braeburn x Autumn Crisp)

PTG used: Golden Delicious

City: Geneva, NY

Style Length: 9.5 mm



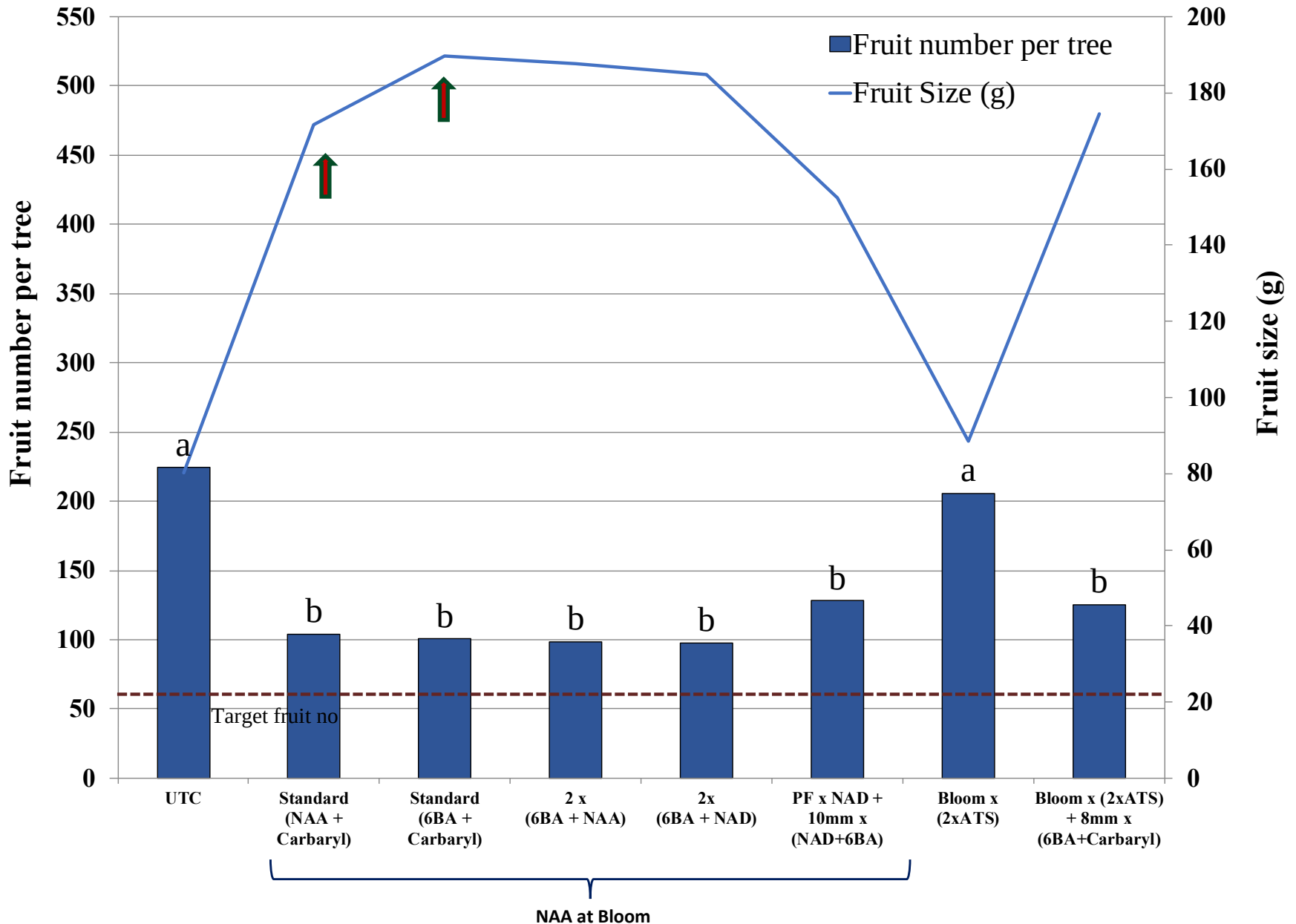
Target : NY2 – 80 fruit per
tree



NY1
ATS + Oil

Some Leaf phyto

Testing new alternatives to Carbaryl for NY1

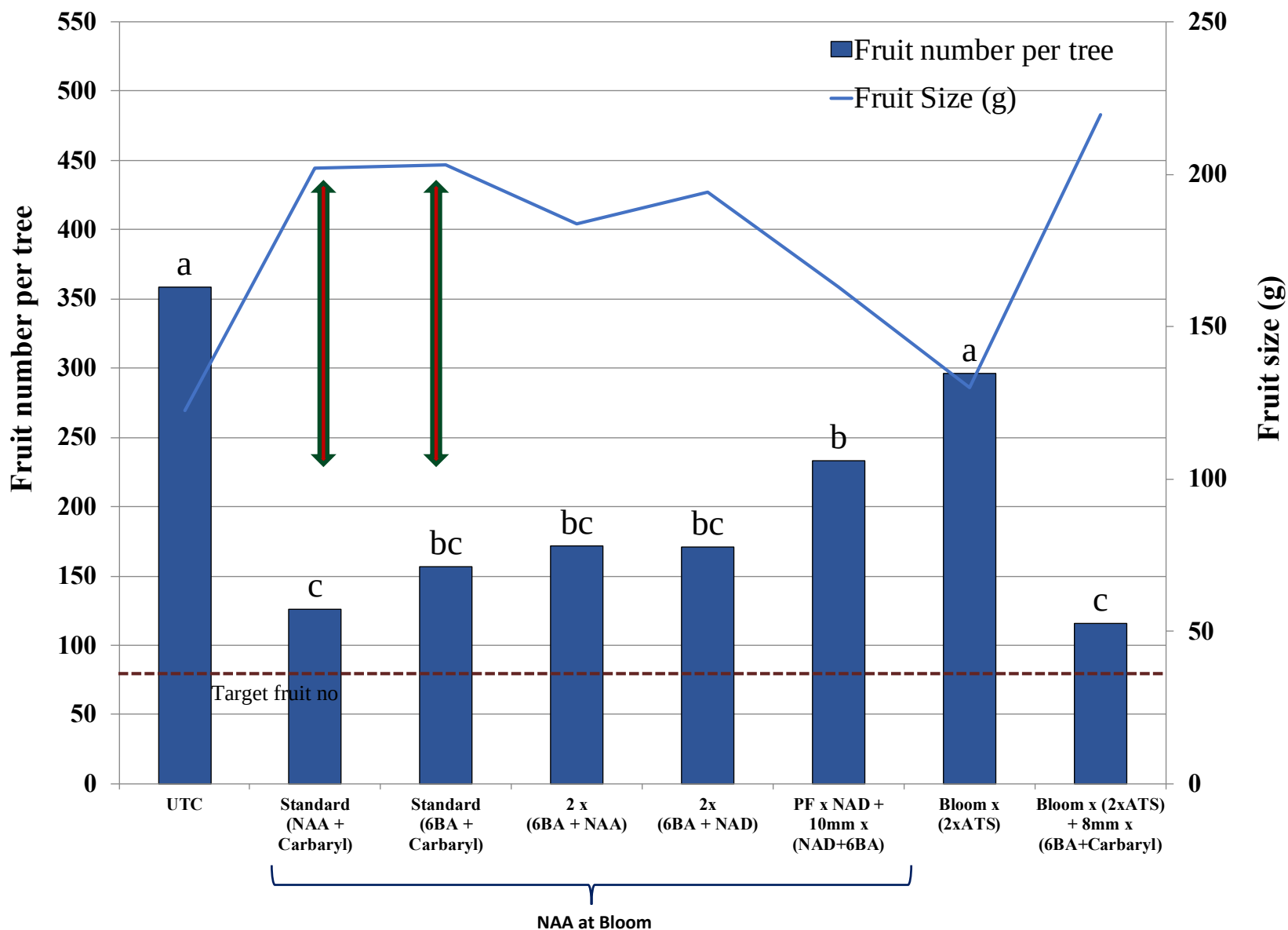


Testing new alternatives to Carbaryl for NY1

Effects on yield

<i>Bloom</i>	<i>PF</i>	<i>10-12mm</i>	<i>Fruit set (no.fruit/ cluster)</i>	<i>Crop load (no/cm2 TCA)</i>	<i>Fruit number per tree</i>	<i>Yield (kg/tree)</i>	<i>Yield (bu/acre)</i>	<i>Fruit Size (g)</i>	<i>Adj. Size (g)</i>	<i>Crop value (\$/acre)</i>
UTC	UTC	UTC	1.35 a	16.0 a	224 a	18	1226	80 c	140	\$ 620 c
10 ppm NAA	7.5 ppm NAA + 500 ppm Carbaryl	7.5 ppm NAA + 500 ppm Carbaryl	0.55 b	7.0 b	104 b	18	1234	172 ab	151	\$ 31,213 ab
10 ppm NAA	100 ppm 6-BA + 500 ppm Carbaryl	100 ppm 6-BA + 500 ppm Carbaryl	0.40 b	6.1 b	101 b	19	1328	190 a	161	\$ 41,673 a
10 ppm NAA	100 ppm 6-BA + 7.5 ppm NAA	100 ppm 6-BA + 7.5 ppm NAA	0.41 b	7.1 b	99 b	18	1275	188 a	168	\$ 37,312 ab
10 ppm NAA	100 ppm 6-BA + 50 ppm NAD	100 ppm 6-BA + 50 ppm NAD	0.41 b	6.2 b	98 b	18	1257	185 a	157	\$ 34,169 ab
10 ppm NAA	50 ppm NAD	100 ppm 6-BA + 50 ppm NAD	0.57 b	8.6 b	128 b	20	1352	152 b	146	\$ 27,822 b
2.5% ATS + 2% ATS	-	-	1.22 a	14.2 a	206 a	18	1254	89 c	133	\$ 2,339 c
2.5% ATS + 2% ATS	-	100 ppm 6BA + 1pt Sevin	0.56 b	7.9 b	125 b	22	1519	175 ab	162	\$ 40,914 ab
Significance			**	**	**	NS	NS	**	NS	**
Duncan P≤0.05										

Testing new alternatives to Carbaryl for NY2



Testing new alternatives to Carbaryl for NY2

Effects on yield

<i>Bloom</i>	<i>PF</i>	<i>10-12mm</i>	<i>Fruit set (no.fruit/ cluster)</i>	<i>Crop load (no/cm2 TCA)</i>	<i>Fruit number per tree</i>	<i>Yield (kg/tree)</i>	<i>Yield (bu/acre)</i>	<i>Fruit Size (g)</i>	<i>Adj. Size (g)</i>	<i>Crop value (\$/acre)</i>
UTC	UTC	UTC	0.80 a	17.5 a	359 a	44 a	3039 a	123 d	178 abc	\$ 28,661 c
10 ppm NAA	7.5 ppm NAA + 500 ppm Carbaryl	7.5 ppm NAA + 500 ppm Carbaryl	0.36 b	6.9 c	126 d	25 c	1701 c	202 ab	174 bc	\$ 53,219 abc
10 ppm NAA	100 ppm 6-BA + 500 ppm Carbaryl	100 ppm 6-BA + 500 ppm Carbaryl	0.35 b	9.0 bc	157 bc	31 bc	2161 bc	203 ab	192 a	\$ 68,618 a
10 ppm NAA	100 ppm 6-BA + 7.5 ppm NAA	100 ppm 6-BA + 7.5 ppm NAA	0.38 b	8.5 bc	172 d	31 bc	2156 bc	184 bc	168 c	\$ 63,414 a
10 ppm NAA	100 ppm 6-BA + 50 ppm NAD	100 ppm 6-BA + 50 ppm NAD	0.33 b	8.5 bc	171 cd	33 abc	2274 abc	194 abc	179 abc	\$ 69,338 a
10 ppm NAA	50 ppm NAD	100 ppm 6-BA + 50 ppm NAD	0.58 b	10.9 b	233 bc	37 ab	2581 ab	163 c	167 c	\$ 58,352 ab
2.5% ATS + 2% ATS	-	-	0.68 ab	16.8 a	296 ab	38 ab	2661 ab	130 d	180 abc	\$ 33,924 bc
2.5% ATS + 2% ATS	-	100 ppm 6BA + 1pt Sevin	0.39 b	6.0 c	116 d	25 c	1738 c	220 a	185 ab	\$ 56,739 ab
Significance			**	**	**	*	*	**	*	*
Duncan P≤0.05										



NY2
ATS + oil

Testing new alternatives to Carbaryl

Honeycrisp/M26 – Champlain Valley

Target : 75 fruit per tree

TRV: 120 gallon

Tower sprayer @ 65 gal/acre

519 trees/acre

Per acre:

4.7 oz Fruitone L (bloom)

3.5 oz FruitoneL (later)

1.2 pint Carbaryl

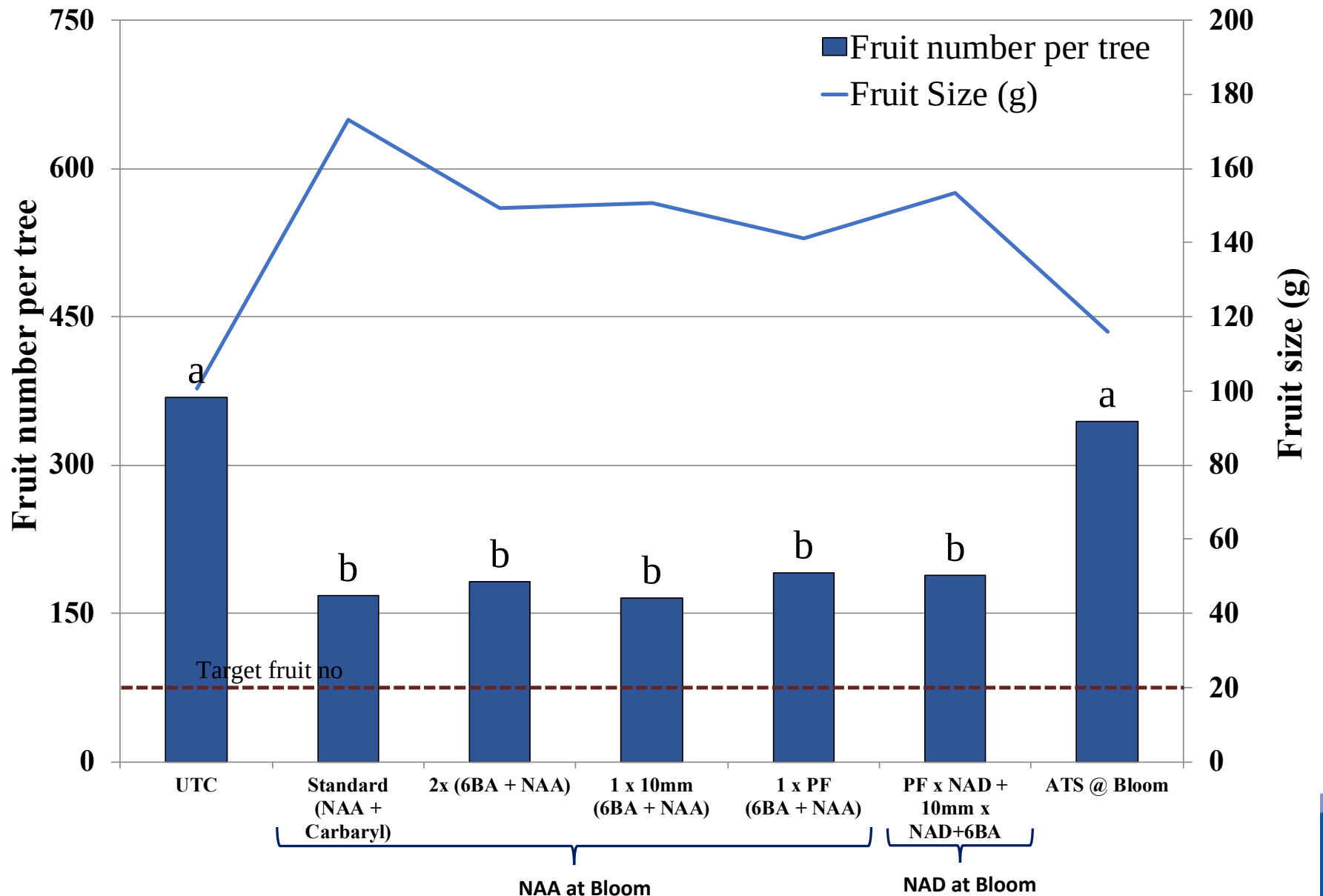
9.4 oz Amid Thin

38 oz Maxcel

Trt No.	Bloom Whole tree 5/21/18	Petal fall Whole tree 5/27/18	10-12mm Whole tree 6/3/18
1.	UTC	UTC	UTC
2.	10ppm NAA	7.5ppm NAA + 1pt Sevin	5 ppm NAA + 1pt Carbaryl
3.	10ppm NAA	50 ppm 6BA + 7.5ppm NAA	50 ppm 6BA + 7.5ppm NAA
4.	10ppm NAA	-	50 ppm 6BA + 7.5ppm NAA
5.	10ppm NAA	50 ppm 6BA + 7.5ppm NAA	-
6.	50 ppm NAD + 0.125% Regulaid	50ppm NAD + 0.125% Regulaid	50 ppm 6BA + 50ppm NAD
7.	PGTmodel using ATS	-	-

Testing new alternatives to Carbaryl

Honeycrisp – Champlain Valley



Testing new alternatives to Carbaryl

Honeycrisp – Champlain Valley

<i>Bloom</i>	<i>PF</i>	<i>10-12mm</i>	<i>Fruit set (no.fruit/ cluster)</i>	<i>Crop load (no/cm2 TCA)</i>	<i>Fruit number per tree</i>	<i>Yield (kg/tree)</i>	<i>Yield (bu/acre)</i>	<i>Fruit Size (g)</i>	<i>Crop value (\$/acre)</i>
UTC	UTC	UTC	0.77 a	11.6 a	369 a	37 a	1060 a	101 c	\$ 2,906 c
10 ppm NAA	7.5 ppm NAA + 500 ppm Carbaryl	5 ppm NAA + 500 ppm Carbaryl	0.28 c	4.8 c	169 b	29 b	826 b	173 a	\$ 11,124 a
10 ppm NAA	50 ppm 6-BA + 7.5 ppm NAA	50 ppm 6-BA + 7.5 ppm NAA	0.47 b	5.5 c	182 b	27 b	772 b	149 b	\$ 7,902 b
10 ppm NAA	-	50 ppm 6-BA + 7.5 ppm NAA	0.29 c	5.1 c	165 b	24 b	683 b	151 b	\$ 6,685 b
10 ppm NAA	50 ppm 6-BA + 7.5 ppm NAA	-	0.48 b	5.7 c	191 b	27 b	770 b	141 b	\$ 6,960 b
50 ppm NAD + 0.125% Regulaid	50 ppm NAD + 0.125% Regulaid	50 ppm 6-BA + 50 ppm NAD	0.44 b	5.5 c	189 b	28 b	807 b	153 ab	\$ 8,582 ab
2.5% ATS + 2% ATS	-	-	0.76 a	10.1 b	345 a	39 a	1129 a	116 c	\$ 5,954 b
Significance Duncan P≤0.05			**	**	**	**	**	**	**

Trees were picked a bit too early – color is not great

Conclusions

- In general, 6BA – better fruit size – great temps in 2018
- Either NAA (7.5ppm = Fruitone L 3oz/100 gal TRV dilute basis) or NAD (50 ppm = AmidThin 8oz/100 gal TRV dilute) can substitute Carbaryl
 - Good option for petal fall sprays when bees are still present.
- For NY1 and NY2 – 6BA+Carbaryl seems to be a better option than NAA+Carbaryl due to the size increase (3 years data).
- For Honeycrisp, the addition of 50ppm 6-BA to 7.5 ppm NAA worked as good as Carbaryl + NAA – no increase in size from 6-BA.