



Update of 2017 NC-140 semi-dwarfing rootstock trial

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2017 Cresthaven Semi-dwarfing Peach Rootstock Trial

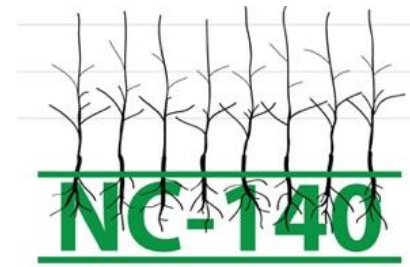
Objective:

Determine how **vigor** impacts **light availability**, **metabolite profiles**, and **fruit quality**, and if they are **truly different** when controlling for **equal maturity**.

Evaluate **rootstocks** and determine potential for use in CO.



2017 NC-140 Cresthaven Semi-Dwarf Peach Rootstock Trial



Sites: AL, CO, GA, MI, NC, NY, ONT, PA, SC, UT

Coordinator: Ioannis Minas (Colorado State University)

Cultivar: 'Cresthaven'

Training system: KAC-V

Spacing: 6 x 15 feet (1.8 x 4.5 m)

Trees/acre: 484



| Rootstock | Breeder, Country | Genetic origin |
|-------------------------|---------------------------|---|
| Controller™ 6 (HBOK 27) | UC Davis, USA | peach x peach hybrid (P. persica x P. persica) |
| Controller™ 7 (HBOK 32) | UC Davis, USA | peach x peach hybrid (P. persica x P. persica) |
| Controller™ 8 (HBOK 10) | UC Davis, USA | peach x peach hybrid (P. persica x P. persica) |
| MP-29 | USDA-Georgia, USA | plum x peach interspecific hyb. (Prunus umbellata x P. persica) |
| Rootpac® 40 (Nanopac) | Agromillora Iberia, Spain | almond x peach interspecific hyb. [(P. dulcis x P. persica) x (P. dulcis x P. persica)] |
| Rootpac® 20 (Densipac) | Agromillora Iberia, Spain | plum x peach interspecific hybrid (P. besseyi x P. persica) |
| Guardian® | Clemson/USDA, USA | peach seedling (P. persica) |
| Lovell | G.W. Thissell, USA | peach seedling (P. persica) |

The 2017 NC-140 'Cresthaven' Semi-Dwarf Peach Rootstock Trial

Controller™ 6

Controller™ 7

Controller™ 8

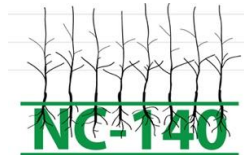
MP-29

Rootpac® 40

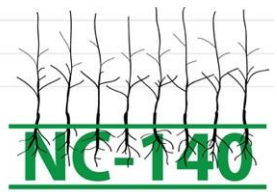
Rootpac® 20

Guardian®

Lovell



2017 NC-140 Semi-Dwarf Cresthaven Peach Rootstocks Performance

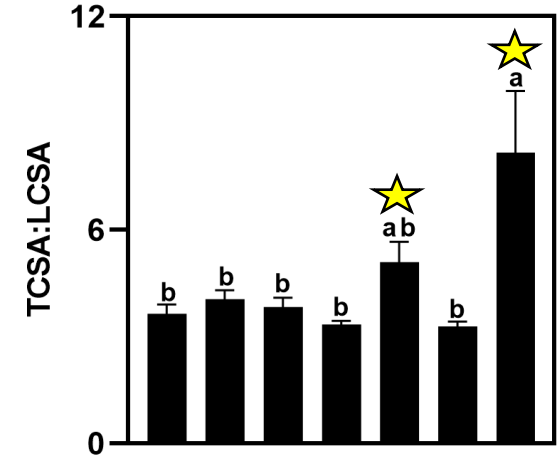
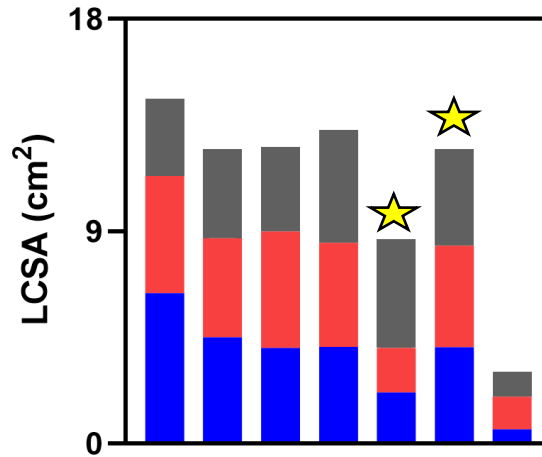
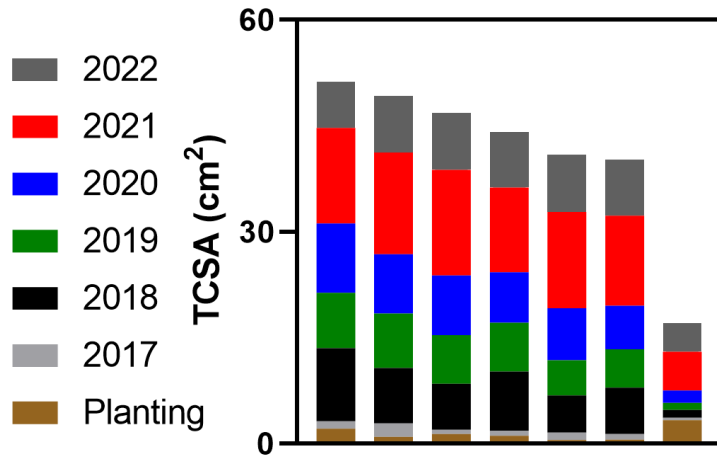


6th leaf -2022

| Rootstock | Survival (%) | TCSA (cm ²) fall 2022 | % of Lovell | % of Guardian | Sucker ct. |
|---------------------------|--------------|-----------------------------------|-------------|---------------|------------------|
| Guardian [®] | 100 | 51.3 ^a | 109 | 100 | 0.3 ^b |
| Rootpac [®] 20 | 100 | 49.3 ^{ab} | 105 | 96 | 4.5 ^a |
| Lovell | 100 | 46.9 ^{abc} | 100 | 91 | 0.6 ^b |
| Controller [™] 8 | 100 | 44.1 ^{abc} | 94 | 86 | 0.0 ^b |
| Rootpac [®] 40 | 100 | 40.9 ^{bc} | 87 | 80 | 0.4 ^b |
| Controller [™] 6 | 100 | 40.2 ^c | 86 | 78 | 0.0 ^b |
| MP-29 | 100 | 17.0 ^d | 36 | 33 | 0.0 ^b |
| Estimated LSD | | 8.33 | | | 0.60 |

***Mean separation in columns by Tukey's HSD (P=0.05). LSD was calculated based on the number of observations per mean.*

2017 NC-140 Cresthaven Semi-Dwarf Peach Rootstock Trial



Guardian
Rootpac 20
Lovell
Contoller 8
Rootpac 40
Controller 6
MP-29

Guardian
Rootpac 20
Lovell
Contoller 8
Rootpac 40
Controller 6
MP-29

Guardian
Rootpac 20
Lovell
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Rootpac 40
Controller 6
MP-29

Vigorous || Rootstock vigor → Dwarf

Iron chlorosis symptoms on the 2017 NC-140 Semi-Dwarf Cresthaven Peach Rootstocks



Controller™ 6



Controller™ 7



Controller™ 8



Lovell



MP-29



Rootpac® 20



Rootpac® 40



Guardian®

May, 30 2018



Controller 8



Controller 6

Controller 7

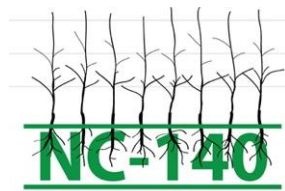




| Rootstock | Average Gummosis ct. / tree | Total Gummosis | Gummosis severity | | | Prune | No Prune | Above 1.5 m | Below 1.5 m |
|---------------|-----------------------------|----------------|-------------------|---|---|-------|----------|-------------|-------------|
| | | | 3 | 4 | 5 | | | | |
| Guardian® | 3.8 ^{ab} | 19 | 9 | 4 | 6 | 18 | 1 | 3 | 16 |
| Rootpac® 20 | 4.2 ^a | 21 | 13 | 4 | 4 | 20 | 1 | 3 | 18 |
| Lovell | 1.4 ^{bcd} | 10 | 3 | 2 | 5 | 7 | 0 | 1 | 6 |
| Controller™ 8 | 3.6 ^{abc} | 18 | 12 | 4 | 2 | 17 | 1 | 3 | 15 |
| Rootpac® 40 | 2.25 ^{abcd} | 9 | 5 | 1 | 3 | 9 | 0 | 2 | 7 |
| Controller™ 6 | 1.2 ^{cd} | 6 | 3 | 2 | 1 | 5 | 1 | 1 | 5 |
| MP-29 | 0.60 ^d | 4 | 2 | 1 | 1 | 4 | 0 | 0 | 3 |
| Estimated LSD | 2.4 | | | | | | | | |

**Mean separation in columns by Tukey's HSD (P=0.05). LSD was calculated based on the number of observations per mean.

2017 NC-140 Semi-Dwarf Cresthaven Peach Rootstocks Performance



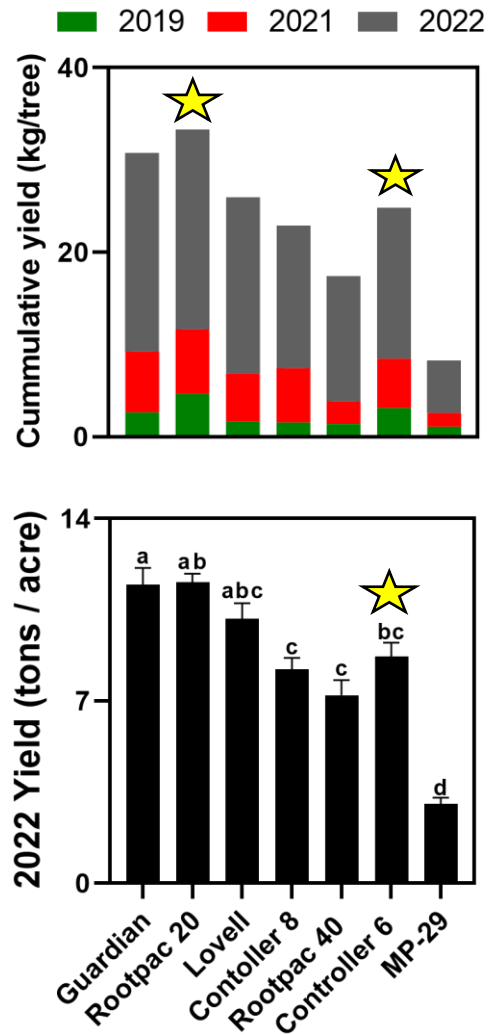
6th leaf -2022

| Rootstock | TCSA (cm ²) 2022 | Crop load (fruit/TCSA) | Yield (kg/tree) | Avg. fruit ct. | Avg. fruit wt. (g) | Yield eff. (yield/TCSA) |
|---------------------------|------------------------------|------------------------|---------------------|------------------|--------------------|-------------------------|
| Guardian [®] | 51.3 ^a | 1.81 | 21.53 ^a | 80 ^a | 270 ^a | 0.49 |
| Rootpac [®] 20 | 49.3 ^{ab} | 1.96 | 21.69 ^a | 80 ^a | 273 ^a | 0.53 |
| Lovell | 46.9 ^{abc} | 1.87 | 19.09 ^{ab} | 72 ^{ab} | 269 ^a | 0.50 |
| Controller [™] 8 | 44.1 ^{abc} | 1.67 | 15.43 ^{bc} | 60 ^{bc} | 258 ^{ab} | 0.43 |
| Rootpac [®] 40 | 40.9 ^{bc} | 1.63 | 13.56 ^c | 52 ^c | 264 ^{ab} | 0.42 |
| Controller [™] 6 | 40.2 ^c | 2.07 | 16.36 ^{bc} | 63 ^{bc} | 260 ^{ab} | 0.53 |
| MP-29 | 17.0 ^d | 1.96 | 5.70 ^d | 25 ^d | 228 ^b | 0.45 |
| Estimated LSD | 8.33 | ns | 3.66 | 11.90 | 35.71 | ns |

**Mean separation in columns by Tukey's HSD (P=0.05). LSD was calculated based on the number of observations per mean.



2017 NC-140 Cresthaven Semi-Dwarf Peach Rootstock Trial



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2022 take aways

Lovell

- Performs well as a standard

Controller 8

- Similar to Lovell
- Lower yields

Controller 6

- Good fruit size
- Good proleptic shoot formation
- Increased shade lowers over color development
- Size may allow for increased planting density

MP-29

- Enhanced fruit quality profile
- Low gumosis
- May perform well trained as a single leader
- Poor quality at planting makes evaluation difficult

Guardian

- Vigorous, upright, top heavy
- Excessive water sprouts that compete for light – needs summer pruning
- Poor proleptic shoot formation

Rootpac 20

- Good precocity, high early yields
- Corrected small fruit size (2021)
- Excessive suckering
- Poor proleptic shoot formation
- High gummosis
- Dwarfing characteristics?

Rootpac 40

- Short and squat
- Small scaffolds, may be better suited as a single leader



Questions?

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Acknowledgements

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CSU_Pomology Team



Dr. Ioannis Minas



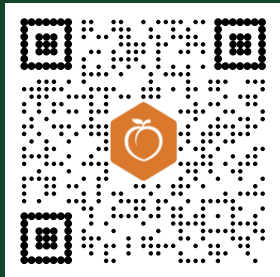
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