

‘Vernia’ Rootstock Trial, Basinger

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CREC/USDA Citrus Plant Improvement*

‘Vernia’ Rootstock Trial, Basinger - Description

This trial with ‘Vernia’ scion was planted in a grove near Basinger, Highlands County. Planting commenced in 2006 and was completed in 2007. Because the block had different soils at each end, it was decided to plant two sub-trials, one at the east end [NE] and the other at the west end [SW] of the block. There were 14 rows [7 double-row beds] each at the NE and SW locations with 6 replicates of 8-tree linear plots with a break [no tree] at the end of each plot at NE and SW sites; thus, 48 trees on each rootstock at each location, NE and SW, or 96 trees total was the planting goal. The number of trees on each rootstock was not consistent, thus, the trees available on each rootstock were assigned to reps such that Replication 1 had the highest priority [most rootstocks of those available] and Rep 6 had the fewest rootstocks. There were 68 rootstocks, mostly citranges from the UF program, the C-series from California and various USDA hybrids. Data collection continued until 2017 at which time a final report was prepared.

'Vernia' Rootstock Trial, Basinger - Summary

- Location: Basinger, Highlands County, FL.
- Scion – Rootstocks:
 - 'Vernia'
 - 68 rootstocks consisting of CREC new hybrids both conventional and somatic, C-series from California and a number of USDA hybrids.
- Date planted: mostly in 2006; completed in 2007.
- Design: Randomized complete-block with 6 replicates. Because of unequal tree numbers, rootstock distribution is not the same among replicates.
 - Plot size: Trees were arranged in linear [in-row] plots of 8 trees with an unplanted space at each end of the plot for ease of data collection and harvesting.
 - Spacing: 12 x 25 ft. = 145 trees/acre
- Data: *(Beginning of data collection was delayed 3 years by a severe canker infestation)*
 - Yield and juice quality including PS/acre: 2013-14, 2014-15 and 2015-16 seasons.
 - HLB status was rated several times. In January 2014 and 2015, all trees were rated simultaneously by a Principal Investigator and a grower.
 - 2017-18: Hurricane Irma tree survival and tree height.
- Trial Status: **INACTIVE**

'Vernia' Rootstock Trial, Basinger – Interpretive Summary as of June 2020:

With consideration of all measured, rated and calculated variables and the presence of canker and HLB, the consistently top performing rootstocks were C-54, US 812, PxM 1584, AP 6556 and Cleo. Cleopatra mandarin was the only commercial rootstock [Cleo, Swingle and Kuharske] that ranked well among all rootstocks. The statistical analyses did not support significant effects because of location: NE versus SW.

One objective of the trial was to find rootstocks that produced high-yielding, HLB-tolerant and smallish trees [8 ft. in height at maturity]. No such rootstocks were apparent among those adequately replicated.

Table 1. 'Vernia' rootstock trial, Basinger - List of rootstocks, parentage and number of trees.

Rootstock	Parentage	Number of Trees Planted	Number of Trees affeted by Hurricane Irma
12-19	sour orange + Carrizo 12-19	8	1
16R1T19	<i>Citrus ichangensis</i> OP	25	13
16R1T31	Sanford Swt x FDT	18	3
16R1T59	Sanford Swt x Argentine	8	2
16R2T40	Sanford Swt x FDT	8	0
16R2T54	Sanford Swt x Argentine	31	31
16R2T60	Sanford Swt x Argentine	8	0
17R1T58	Ruby orange x Argentine trifoliate orange	45	39
17R2T40	Ruby orange x FDT	32	24
17R2T52	Ruby orange x Argentine	25	17
4R1T37	Tahiti x Argentine	8	1
4R2T42	Tahiti x Argentine	24	24
4R2T51	Tahiti x Argentine	8	3
4R2T53	Tahiti x Argentine	8	1
4R2T75	Kona x Swingle TF	8	8
5R2T88	Fiwicke x Swingle TF	24	12
6R2T32	Fiwicke x Argentine	8	0
6R2T34	Fiwicke x Argentine	8	1
6R2T40	Fiwicke x Argentine	64	51
6R2T45	Fiwicke x Argentine	8	2
6R2T63	Fiwicke x FDT	24	16
7R1T72	Tahiti x FDT	16	2
7R1T89	Fiwicke x Flying Dragon	8	1

Table 1. (cont'd). 'Vernia' rootstock trial, Basinger - List of rootstocks, parentage and number of trees.

Rootstock	Parentage	Number of Trees Planted	Number of Trees affeted by Hurricane Irma
Amb+5	Amblycarpa + 5-1-99-1B	16	16
Amb+50-7	Amblycarpa + 50-7	23	23
Amb+7	Amblycarpa + 7-2-99-5	20	20
Amb+8	Amblycarpa + 8-1-99-4A	27	27
Amb+Ben	Amblycarpa + Benton	33	33
Amb+C-35	Amblycarpa + C-35	16	16
Amb+Car	Amblycarpa + Carrizo	43	43
Amb+Ch	Amblycarpa + Chandler	26	26
Amb+HBJ	Ambly+HBJL2B Pummelo	32	28
AMB+HBP	Amblycarpa + HBP	10	10
AP-6556	(Pummelo x sour orange) x Orlando	37	12
AP-66-68	(Pummelo x sour orange) x Orlando	14	3
AP-6741x	(Pummelo x sour orange) x Orlando	5	3
C-32	C-32 Citrange	46	31
Cleo	Cleopatra mandarin	99	12
ClxSwC	Cleopatra x Swingle citrumelo	78	61
CS-22	Sunki x Swingle TF	80	51
CS-54	Sunki x Swingle TF	96	17
CS-57	Sunki x Swingle TF	96	7
D.RxP.t	Selec. Del Riachuelo x TF [Argentina]	104	38
Kuharske	Kuharske citrange, Carrizo open-pollinated zygotic	40	32
Morton	Morton citrange	90	20
Mur+Chdlr	Murcott + Chandler A1-11	30	30

Table 1. (cont'd). 'Vernia' rootstock trial, Basinger - List of rootstocks, parentage and number of trees.

Rootstock	Parentage	Number of Trees Planted	Number of Trees affeted by Hurricane Irma
Mur+Rub	Murcott + Rubidoux	8	2
Mur+SN3	Murcott + SN3	10	10
Orange 21	[Nova + HBPummelo] x [Cleopatra + Argentine trifoliate orange]	8	8
Purple 3	[Nova + HBPummelo] x [Cleopatra + sour orange]	8	2
PxM 1584	<i>Poncirus trifoliata</i> x Milam	99	7
PxM 1586	<i>Poncirus trifoliata</i> x Milam	37	15
SO+CAR	sour orange + Carrizo citrange	59	52
SO+50-7	sour orange + trifoliate orange 50-7	5	5
SOxCar	sour orange x Carrizo	32	18
Swingle	Swingle citrumelo	56	8
UFR 10: 7R1T68	Tahiti swt org x FDT	24	10
UFR 11: 7R1T58	Sanford swt org x Argentine	9	9
UFR 4: Orange 19	[Nova + HBPummelo] x [Cleopatra + Argentine trifoliate orange]	16	6
UFR 7: 6R2T19	Fiwicke swt org x Argentine TO	8	2
UFR 8: 16R1T3	Ruby x Argentine	8	8
UFR 9: 16R1T21	Kona x Argentine	31	9
US-802	Pummelo x TF	80	22
US-812	Sunki x Benecke TF	96	2
US-852	Changsha x Eng. Lg. TF	79	75
US-874	Swingle citrumelo	96	16
US-896	Cleo x Rubidoux TF	96	39
US-897	Cleo x TF	97	40
x 639	Cleo x Rubidoux TF	15	3

Fig. 1. ‘Vernia’ rootstock trial, Basinger - % tree survival* for NE block: mean + std. dev. [February 2018].

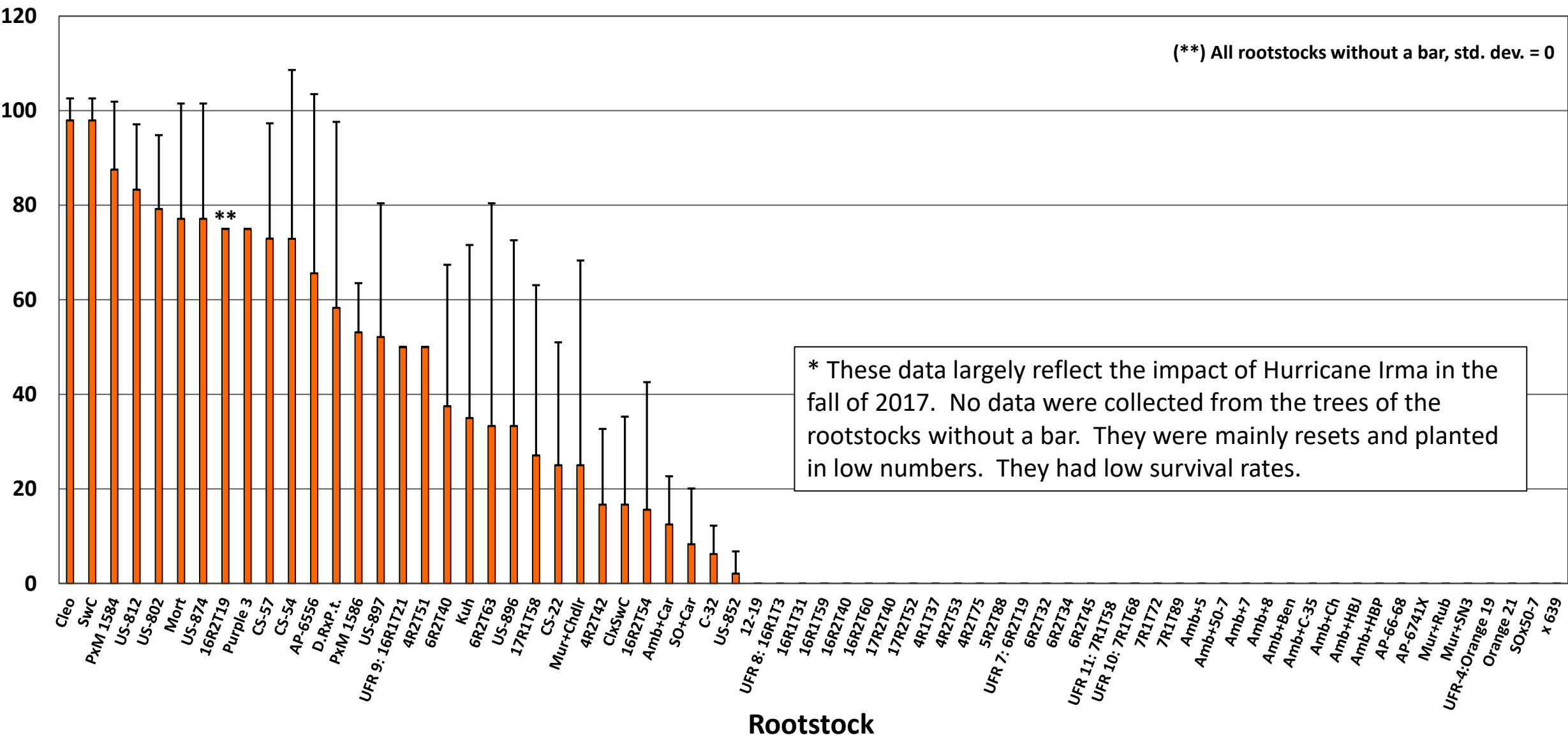


Fig. 2. ‘Vernia’ rootstock trial, Basinger - % tree survival* for SW block: mean + std. dev. [February 2018].

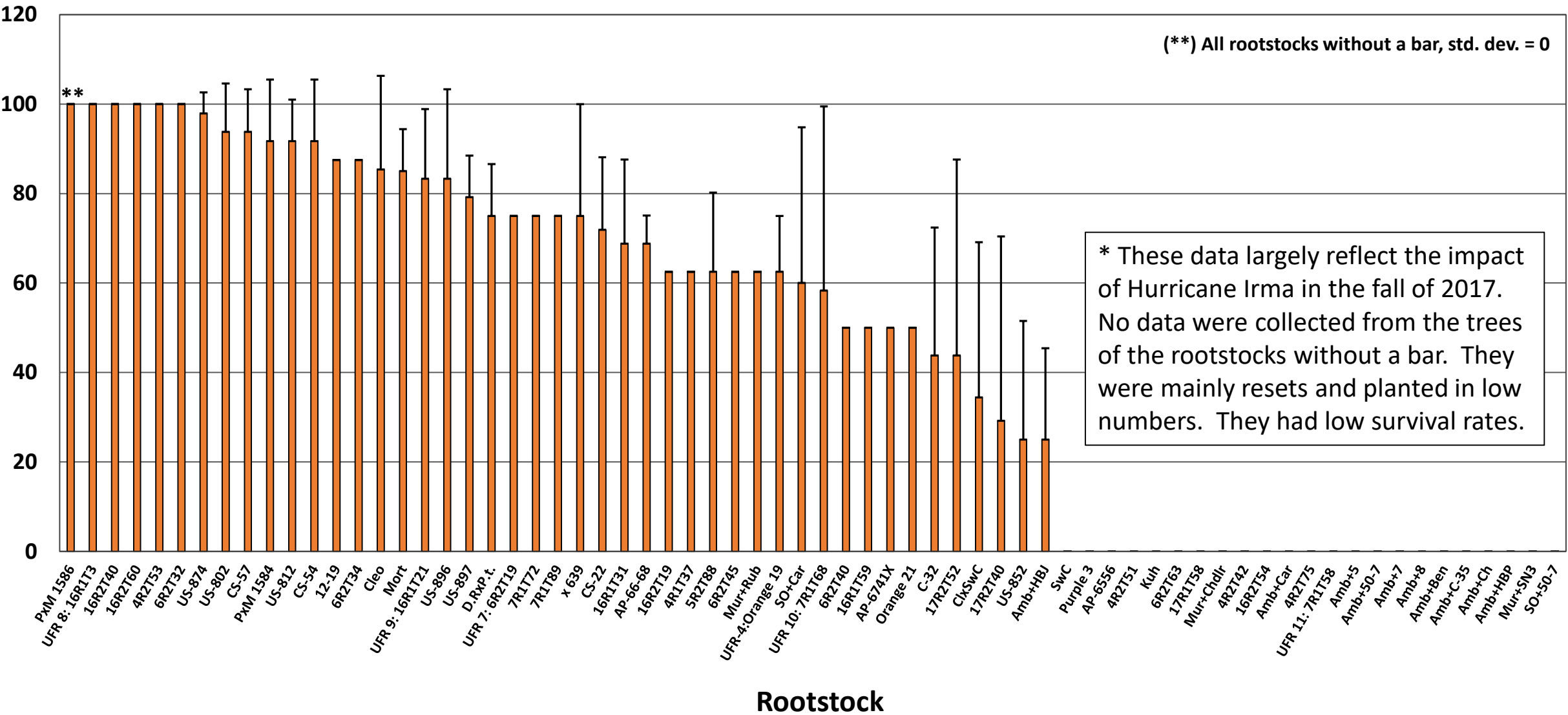


Fig. 3. ‘Vernia’ rootstock trial, Basinger - Tree height [ft.] for SW block [February 2018].

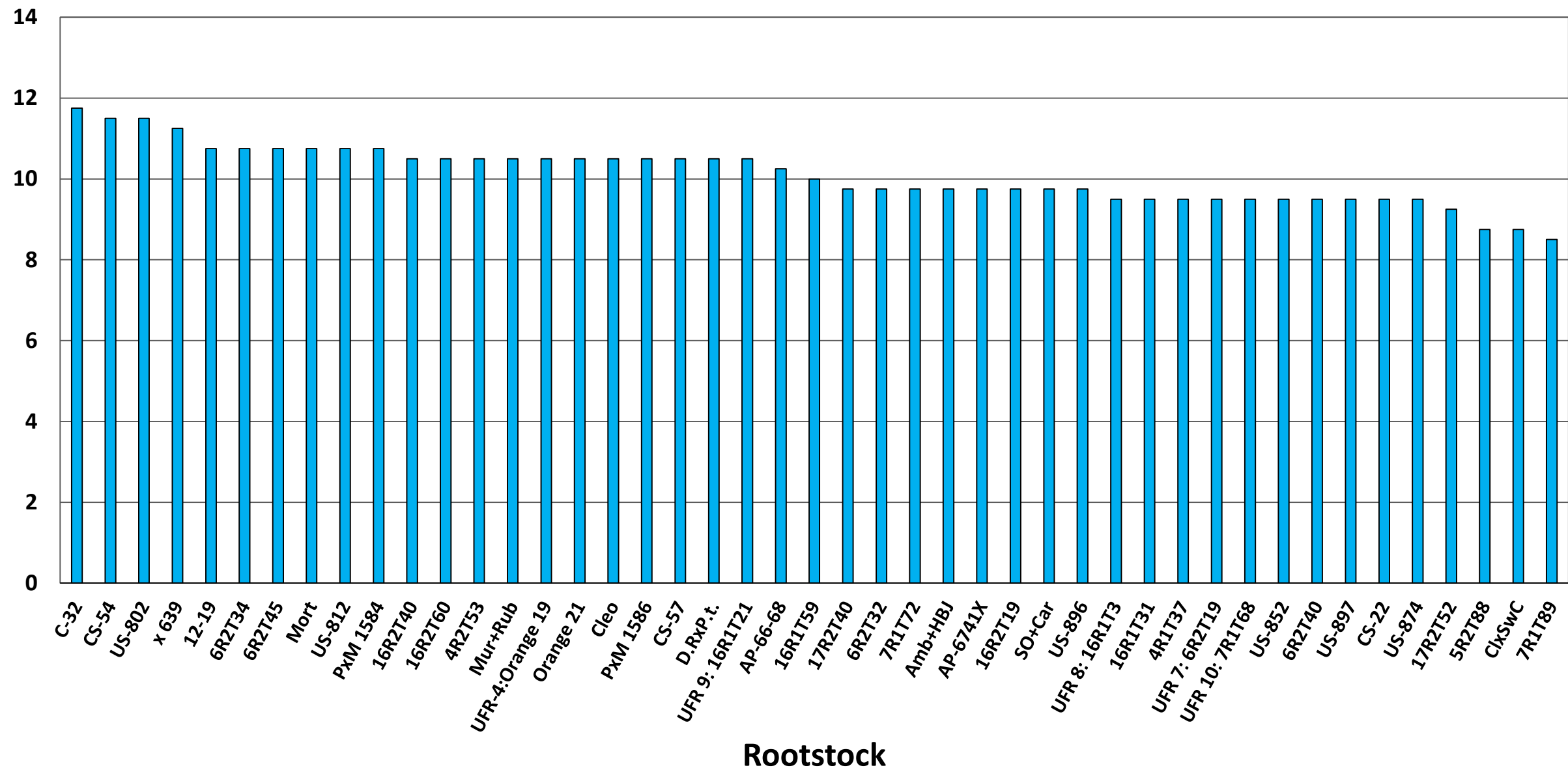


Fig. 4. 'Vernia' rootstock trial, Basinger - Tree height [ft.] for NE block [February 2018].

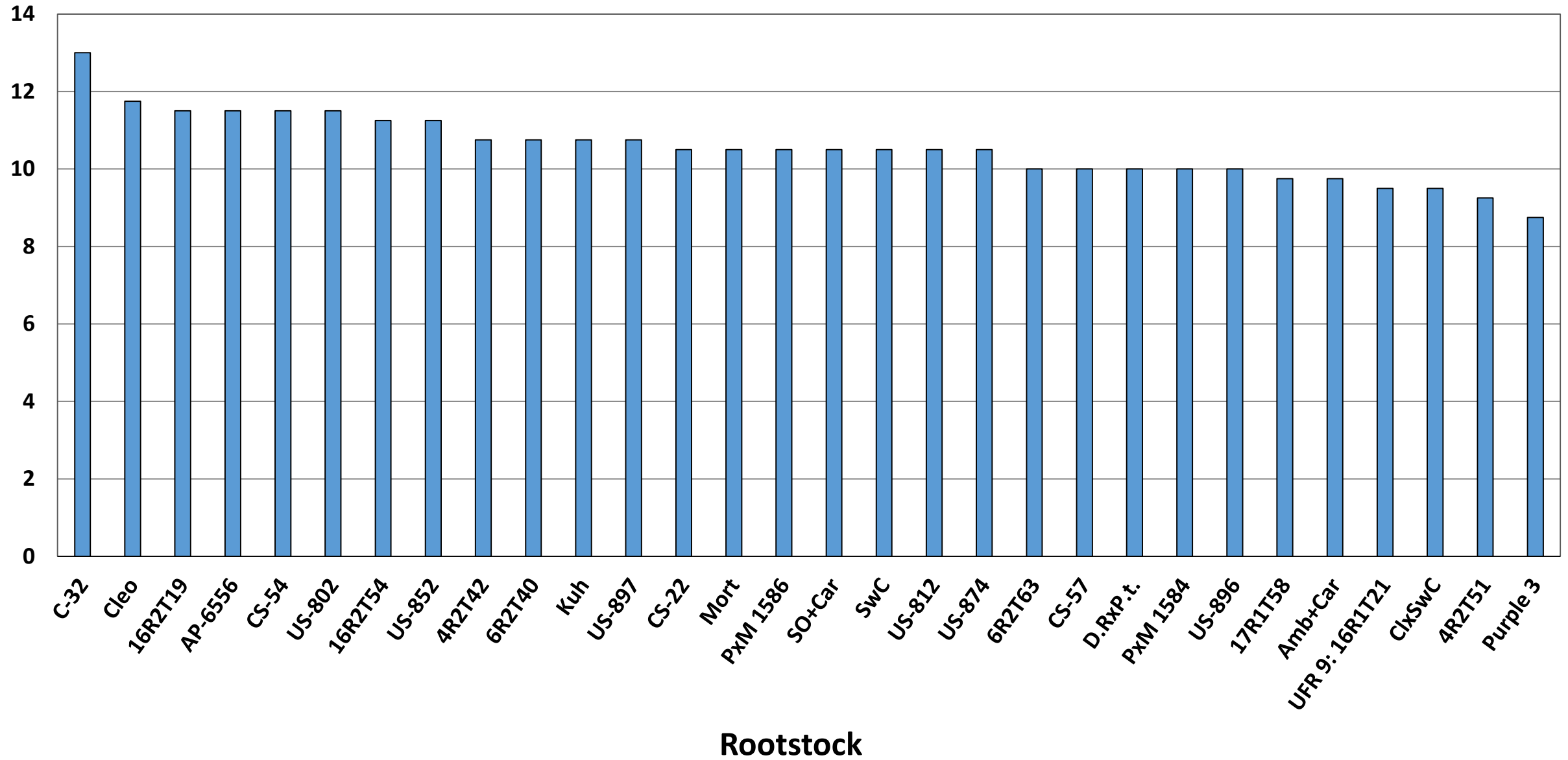


Fig. 5. 'Vernia' rootstock trial, Basinger – SW block annual yield [boxes/acre, seasons 2013/14; 2014/15; 2015/16], sorted by 2015/16 yield.

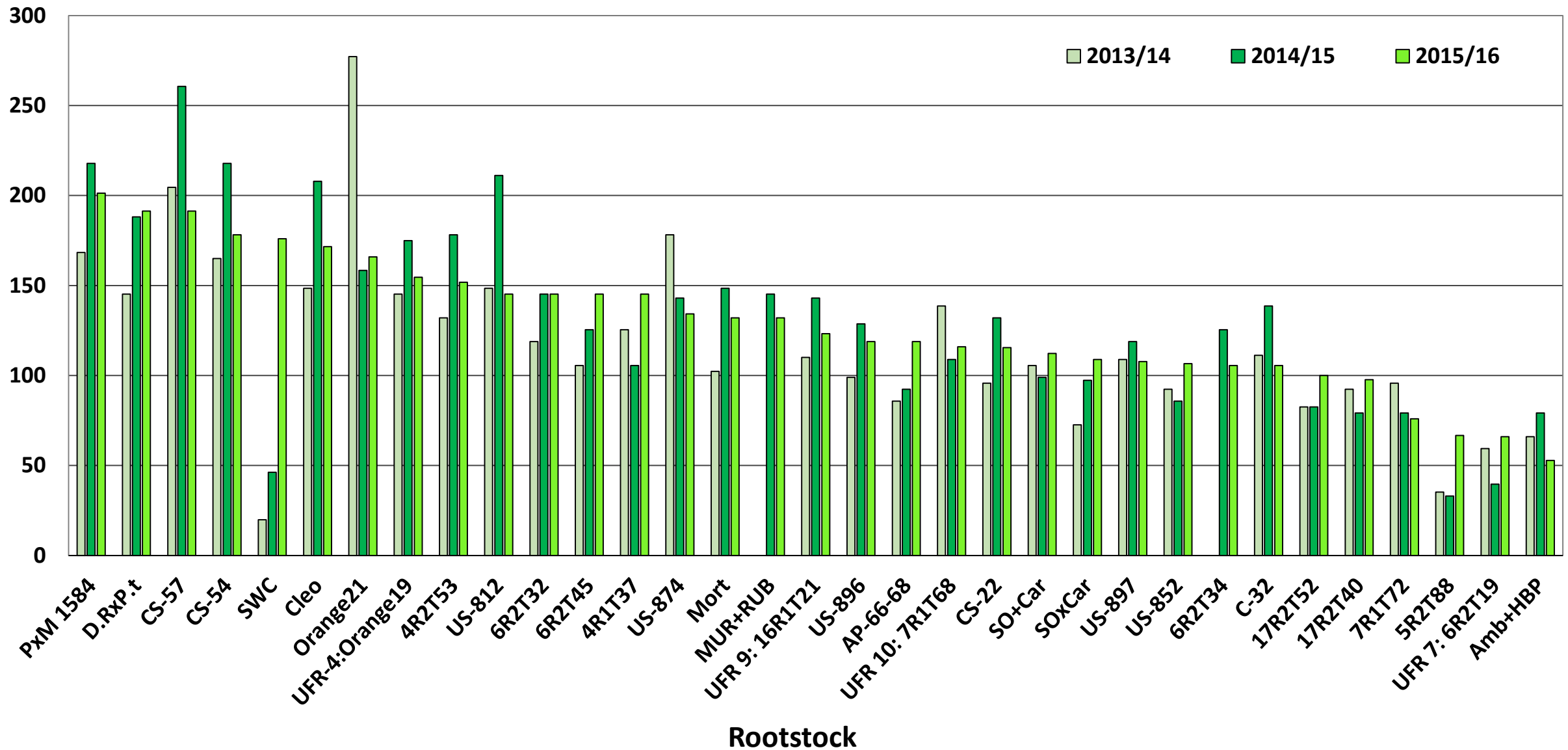


Fig. 6. ‘Vernia’ rootstock trial, Basinger – NE block annual yield [boxes/acre, seasons 2013/14; 2014/15; 2015/16], sorted by 2015/16 yield.

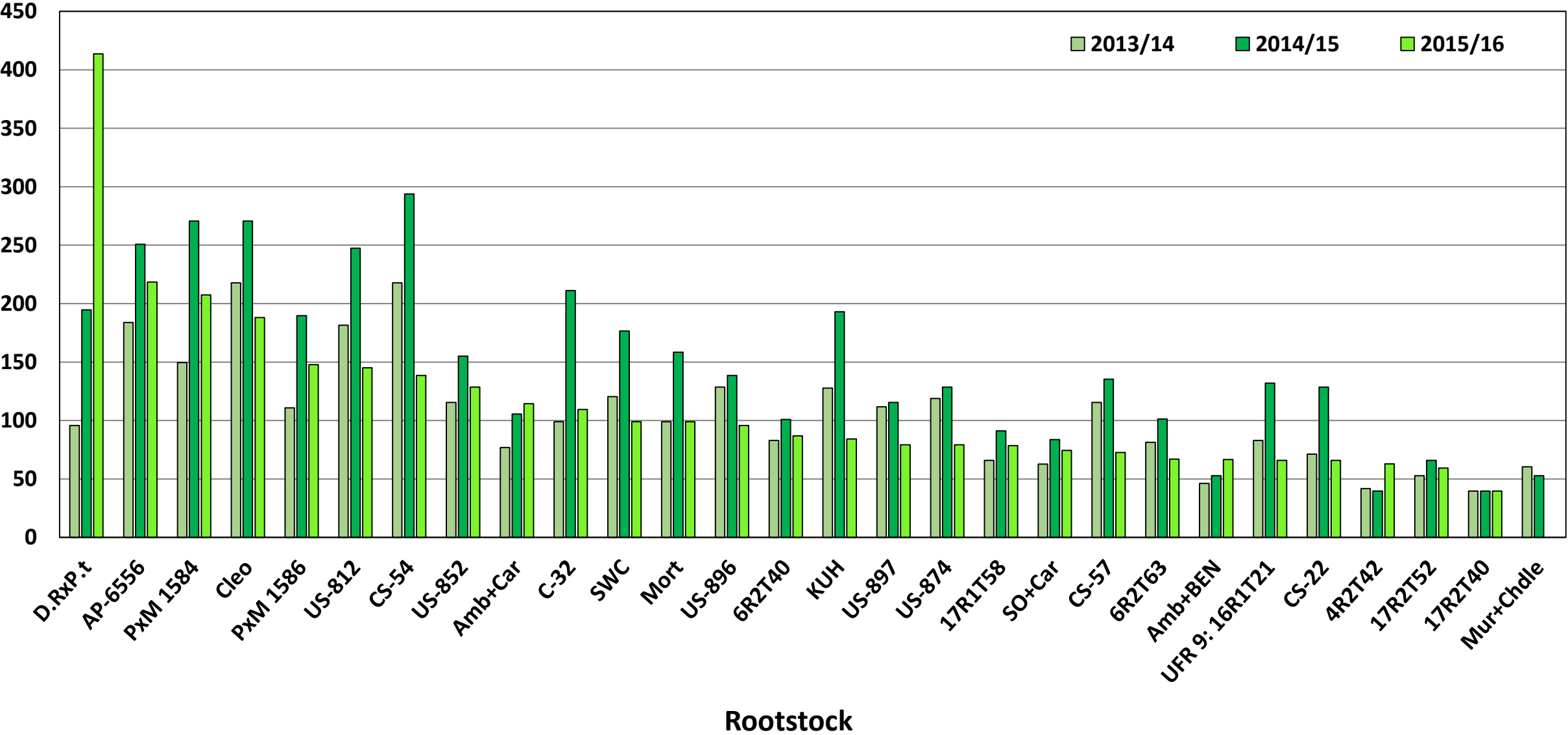


Fig. 7. 'Vernia' rootstock trial, Basinger – Cum. 3-year yield [boxes/acre] and cum. 3-year PS/acre: 2013/14; 2014/15; 2015/16 for NE block.

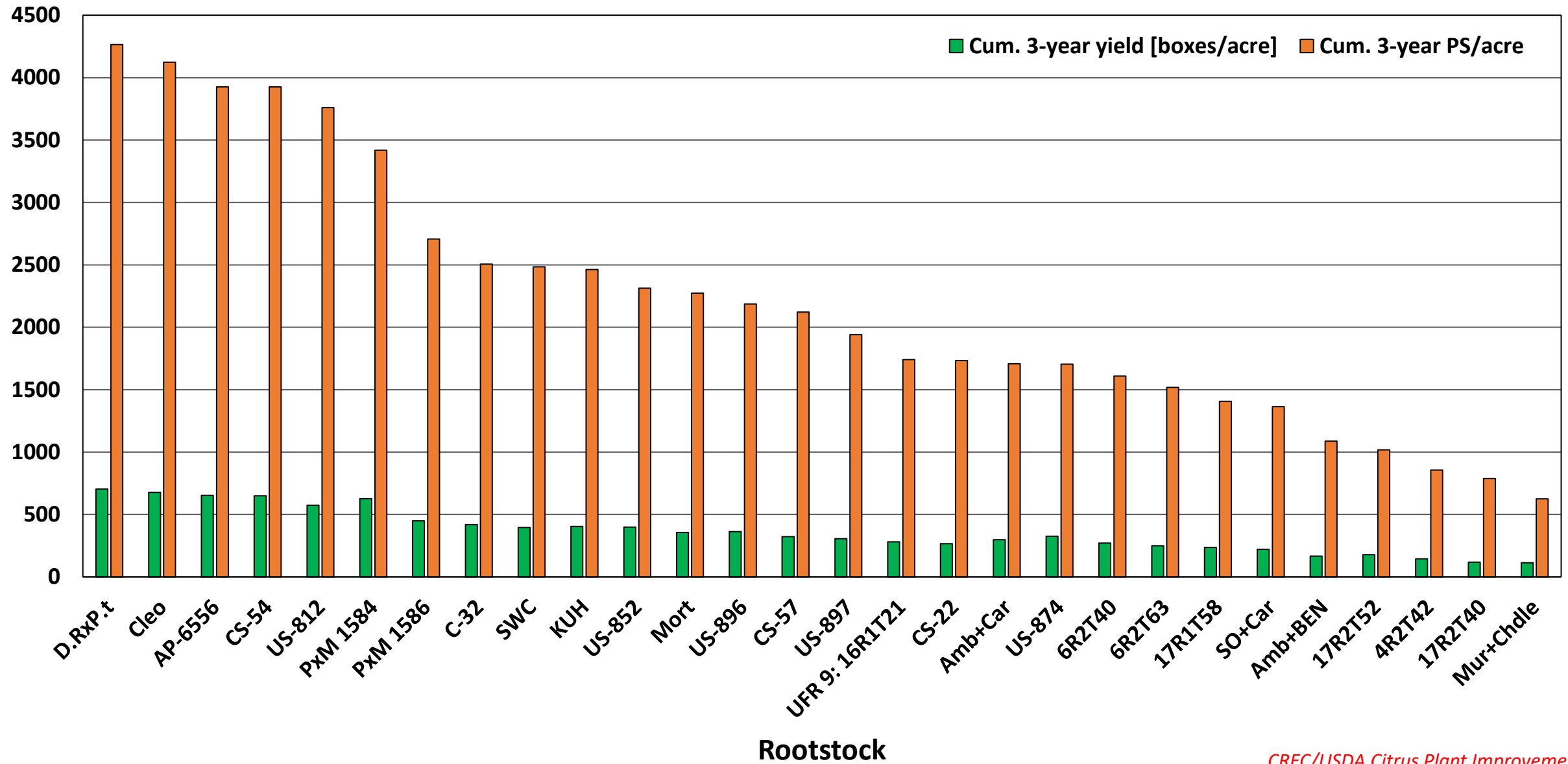


Fig. 8. ‘Vernia’ rootstock trial, Basinger – Cum. 3-year yield [boxes/acre] and cum. 3-year PS/acre: 2013/14; 2014/15; 2015/16 for SW block.

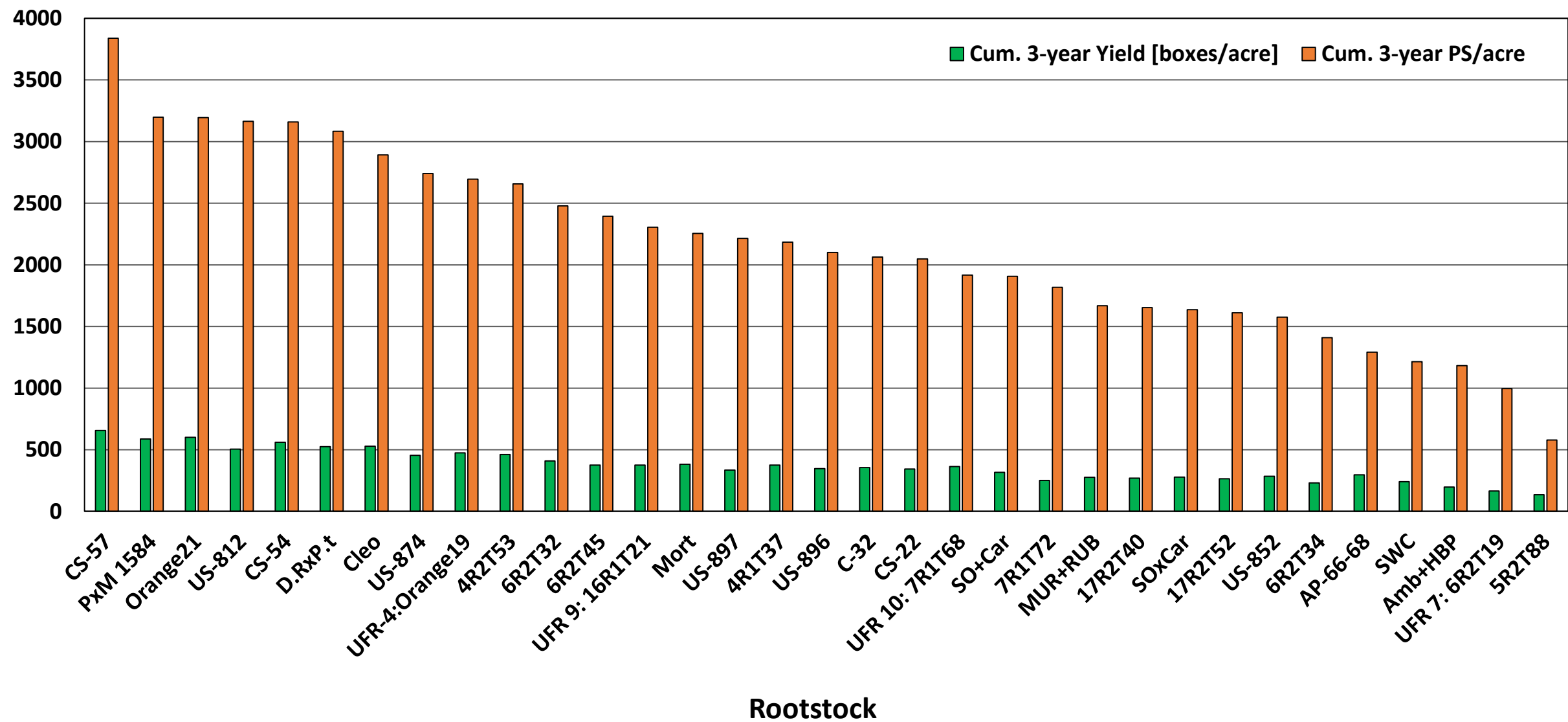
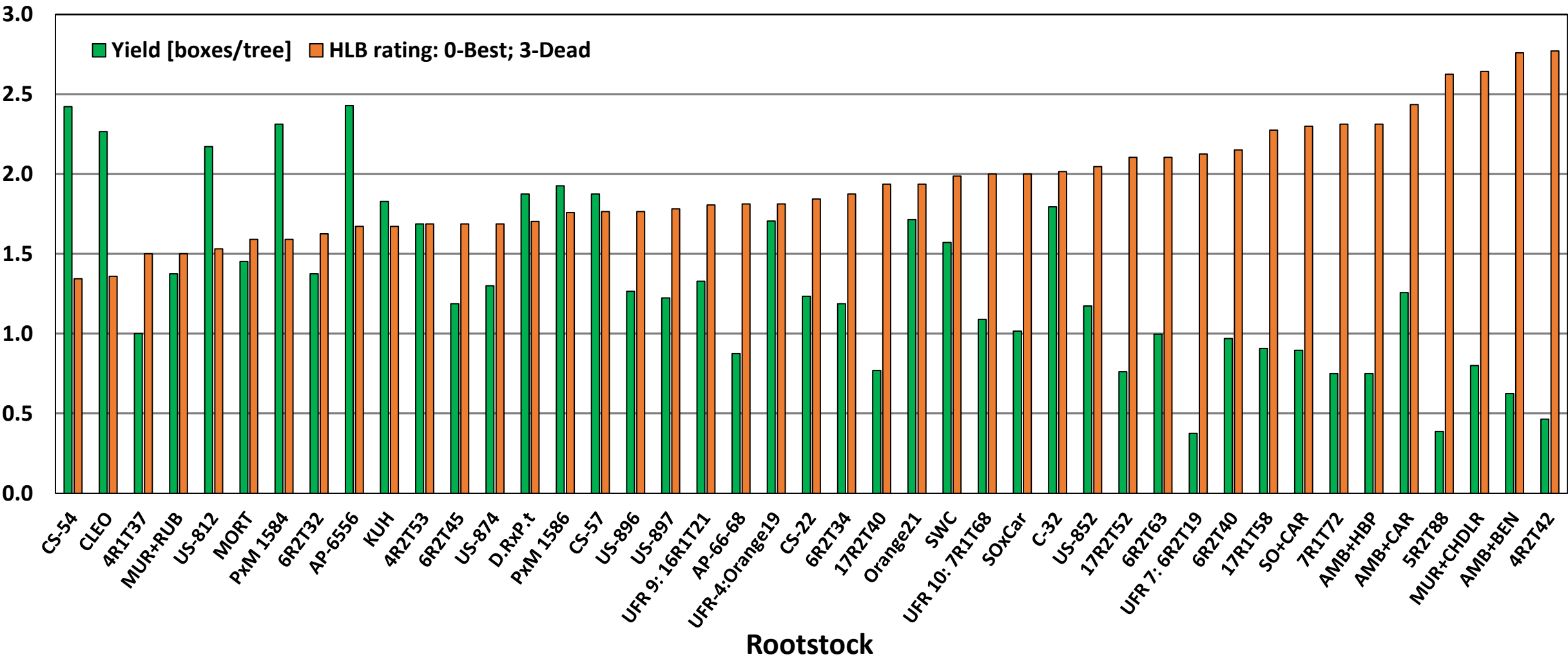


Fig. 9. ‘Vernia’ rootstock trial, Basinger – HLB rating and yield, 2014/15, sorted by HLB rating for NE and SW blocks combined.



HLB ratings: 0= The best trees, i.e., HLB symptoms present, but not strikingly so with consistently good yield on all trees in a plot; 1= Some HLB symptoms, but trees with consistent appearance and crop within the whole plot; 2= Tree HLB condition fair with low to modest yield. Trees more variable than those rated 2; 3= Poor condition or dead. NOTE: The ratings are for whole plots, not individual trees and only for those rootstocks for which yield data were available.

Fig. 10. ‘Vernia’ rootstock trial, Basinger – SW & NE blocks juice Brix: 3-year mean + std. dev. for seasons: 2013/14 [March/14]; 2014/15 [Feb./15] and 2015/16 [Feb./16].

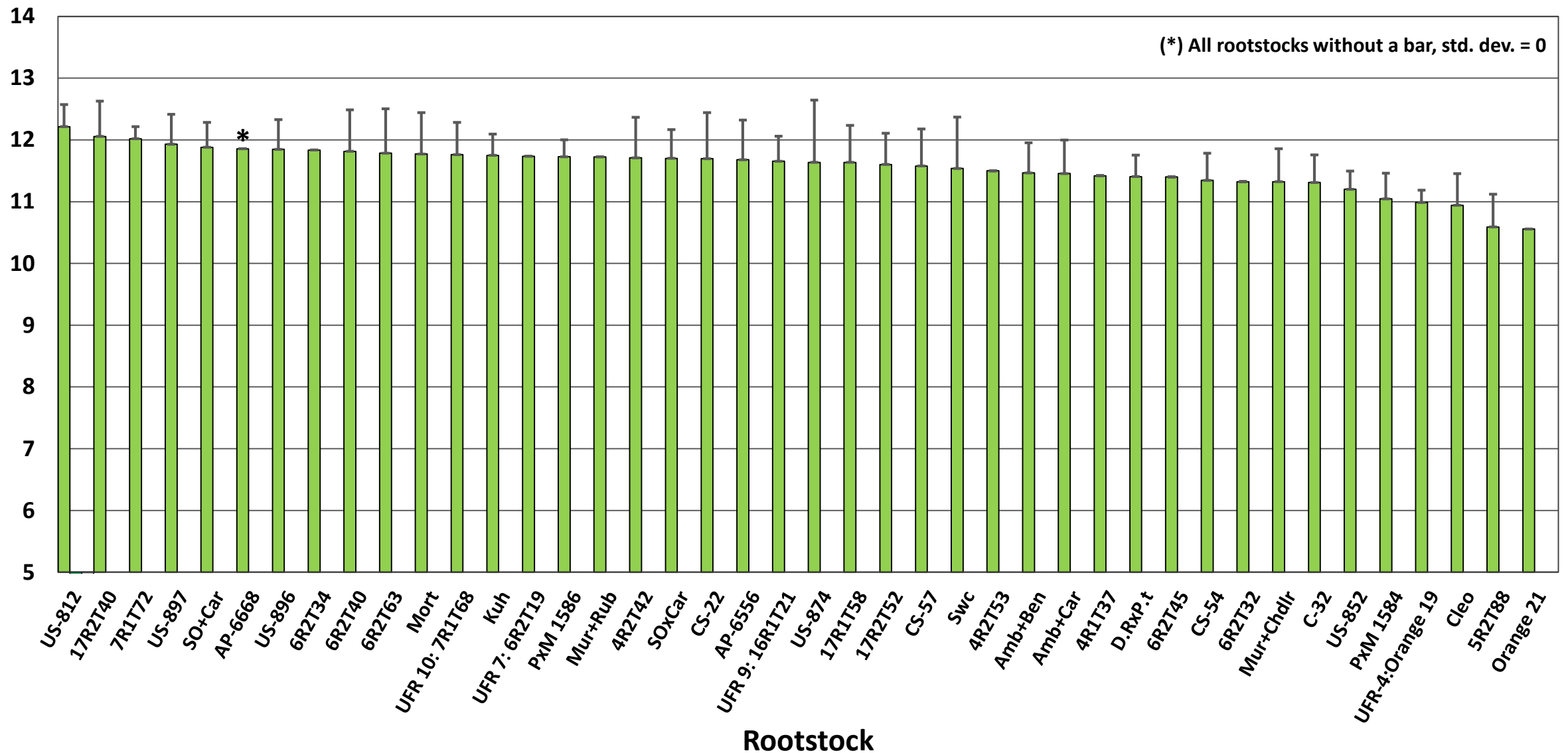


Fig. 11. 'Vernia' rootstock trial, Basinger – SW & NE blocks juice acid: 3-year mean + std. dev. for seasons: 2013/14 [March/14]; 2014/15 [Feb./15] and 2015/16 [Feb./16].

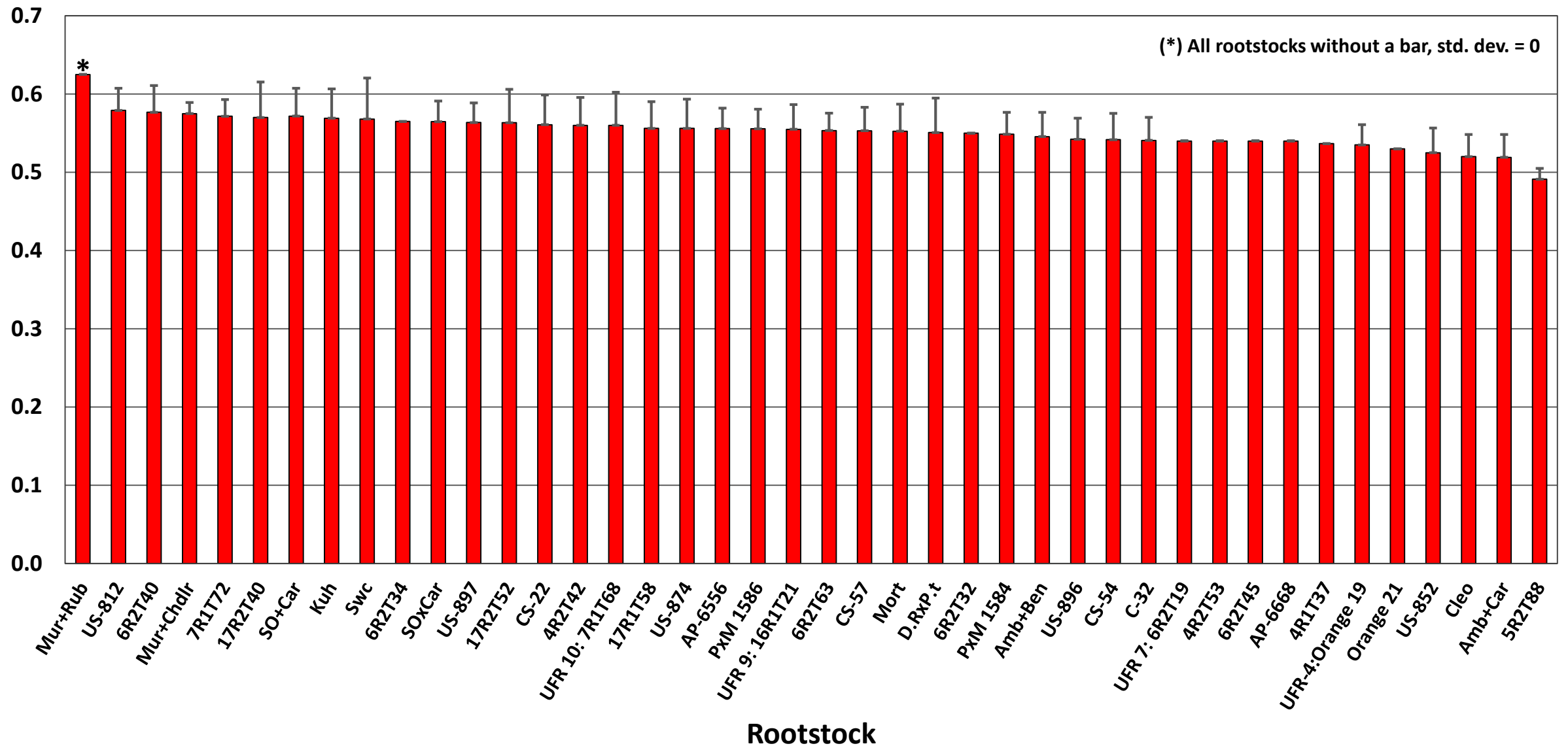


Fig. 12. ‘Vernia’ rootstock trial, Basinger – SW & NE blocks juice Ratio: 3-year mean + std. dev. for seasons: 2013/14 [March/14]; 2014/15 [Feb./15] and 2015/16 [Feb./16].

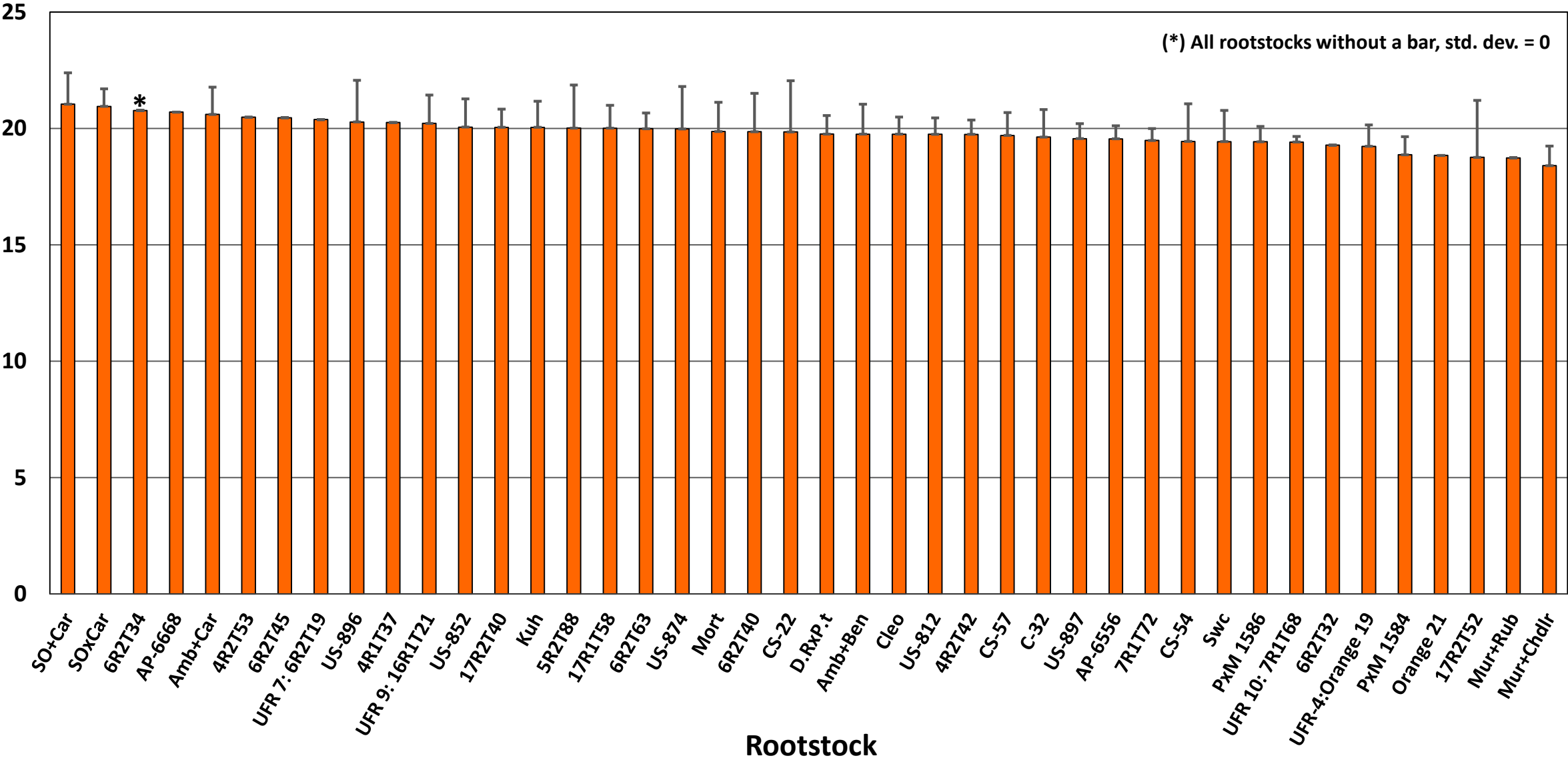


Fig. 13. 'Vernia' rootstock trial, Basinger – SW & NE blocks PS/box: 3-year mean + std. dev. for seasons: 2013/14 [March/14]; 2014/15 [Feb./15] and 2015/16 [Feb./16].

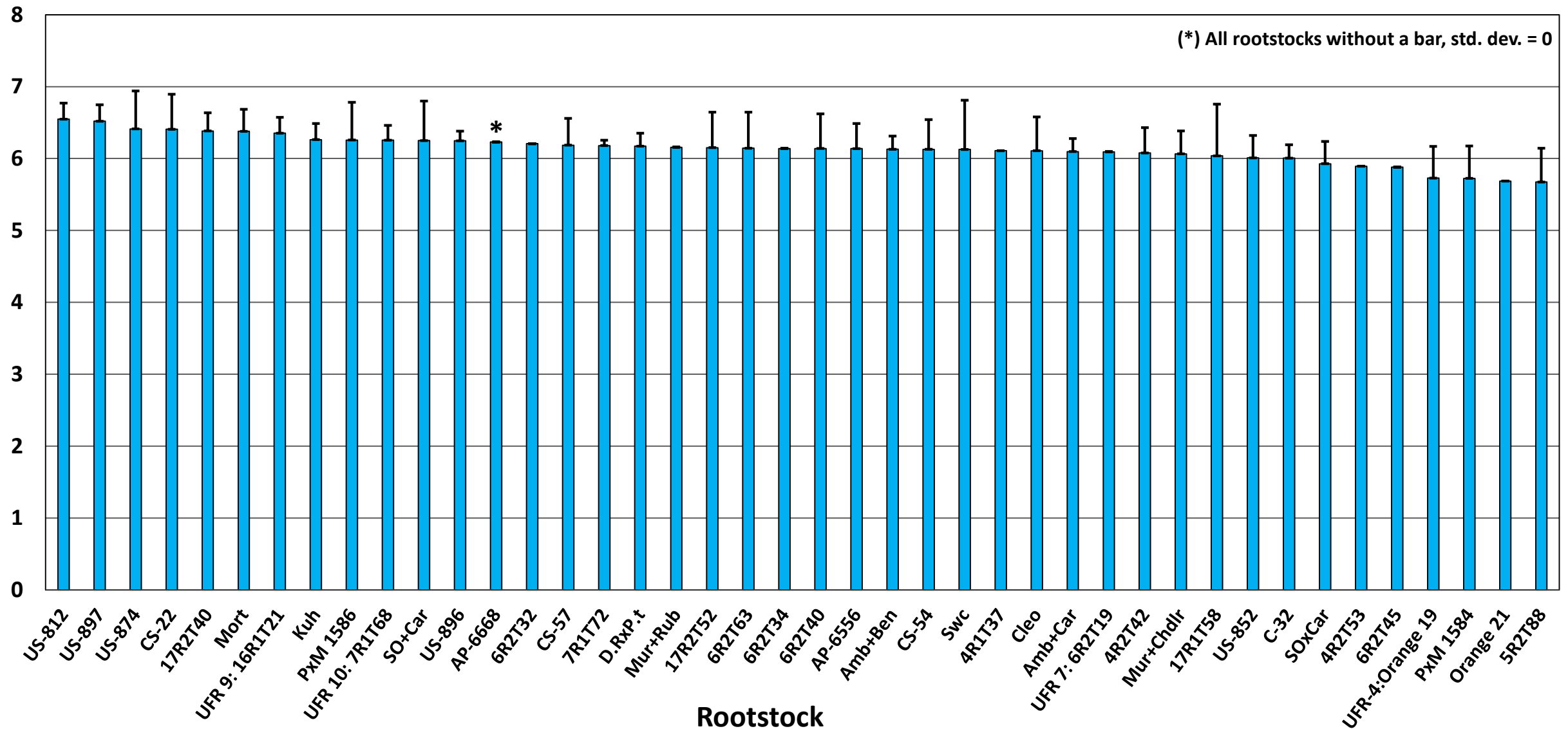


Fig. 14. 'Vernia' rootstock trial, Basinger – SW & NE blocks juice color: 3-year mean + std. dev. for seasons: 2013/14 [March/14]; 2014/15 [Feb./15] and 2015/16 [Feb./16].

