

Water Conserv II Valencia & Midsweet Scion Trial

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May 12, 2020 - Posted
CREC Citrus Plant Improvement

Water Conserv II Scion Trial - Description

The primary purpose of this trial was to conduct a semi-commercial scale evaluation of Valencia and Midsweet scion selections [Table 1] in order to discover ones that could complement the existing scion cultivar range and provide a broader harvesting season. The scions consisted of advanced somaclonal Valencia selections along with irradiated budlines [seedless] of Midsweet from the CREC plant improvement group and an assortment of other selections including ones from Australia. Of special interest were young line [juvenile] sources.

A secondary objective was to assess the response of the selections to HLB.

Water Conserv II Scion Trial - Summary

- Location: Lake County
- Scions: Valencia & Midsweet [see Table 1]
- Rootstock: Carrizo citrange
- Date planted: March 2000
- Design: Randomized complete-block, 4 replications
 - Plot size: 14 trees
 - Spacing: 15 x 25 ft. @ 116 trees/acre
- Data: [see Table 2]
- HLB: In the 2010-11 season, when the last data were collected, HLB had a minor visible impact on the project. Some leaf symptoms were present, but no serious effects on tree or fruit condition or fruit drop. The trees were rated in the 2017-18 season with little change from the 2010-11 season. The ratings are included in the 2017-18 annual data file available upon request.
- TRIAL STATUS: **TERMINATED**

Table 1. Scion selections.

No.	Selection*	Source	Description/Remarks
1	Valencia 10-12-7	S 441-54-3	Juvenile bud source for comparison.
2	Valencia 10-12-7	S 822-111-5	Mature line for comparison.
3	Rohde Red Val.	DPI 472-11-43; SH 8-3	Mature line for juice color comparison.
4	Appleby Valencia	S 441-35-33 (St. Cloud)	Australian selection; juvenile line.
5	Frost Valencia	S 441-36-22 (buds from Ward's)	California selection; juvenile line.
6	Jenner Valencia	S 441-35-27 (St. Cloud)	Australian selection; juvenile line.
7	Natal	S 441-44-9 (St. Cloud)	Brazilian late orange; juvenile line.
8	Smith Valencia	S 441-36-3 (St. Cloud)	Australian selection; juvenile line.
9	Vernia	S-DPI 441-35-15; WH 2-18-7 (St. Cloud)	Early maturing valencia-type; juvenile line.
10	Midsweet	SF 11-1-24	Irradiated budline, seedless.
11	Midsweet	SF 11-1-25	Irradiated budline, seedless.
12	Midsweet	SF 11-2-31	Irradiated budline, seedless.
13	Midsweet	SF 12-1-32	Irradiated budline, seedless.
14	Midsweet	SF 12-1-66	Irradiated budline, seedless.
15	Midsweet	SF 12-1-67	Irradiated budline, seedless.
16	Midsweet	SF 12-2-23	Irradiated budline, seedless.
17	Midsweet	SF 12-2-33	Irradiated budline, seedless.
18	Midsweet	SF 12-2-43	Irradiated budline, seedless.
19	Midsweet	SF 12-2-49	Irradiated budline, seedless.
20	Midsweet	SF 12-2-50	Irradiated budline, seedless.
21	Midsweet	SF 12-2-51	Irradiated budline, seedless.

* Selections were provided by Castle, Gmitter, and Grosser from among introductions, somaclones, induced mutations, and others.

Table 1 [cont'd]. Scion selections.

No.	Selection*	Source	Description/Remarks
22	Valencia	V-SF 8-2-35	Irradiated budline, seedless.
23	Valencia	V-SF 9-1-86	Irradiated budline, seedless.
24	Valencia	V-SF 11-1-69	Irradiated budline, seedless.
25	Valencia	B-6-66	Early-maturing Valencia somaclone, seedless.
26	Valencia	B-6-68	Early-maturing Valencia somaclone
27	Valencia	B-8-66	Early-maturing Valencia somaclone, high PS.
28	Valencia	B-8-76	Valencia somaclone, high PS.
29	Valencia	B-9-65	Valencia somaclone, high PS.
30	Valencia	B-10-62	Early-maturing Valencia somaclone.
31	Valencia	B-10-68	Early-maturing Valencia somaclone, exceptional color.
32	Valencia	B-10-81	Early-maturing Valencia somaclone, good color
33	Valencia	B-12-71	Early-maturing Valencia somaclone.
34	Valencia	T-1-13	Very early maturing Valencia somaclone.
35	Valencia	T-1-23	Very early maturing Valencia somaclone, good color
36	Valencia	T-1-25	Early-maturing Valencia somaclone.
37	Valencia	T-1-26	Early-maturing Valencia somaclone.
38	Valencia	T-1-33	Early-maturing Valencia somaclone, high PS.
39	Valencia	T-2-25	Very early maturing Valencia somaclone, high PS.
40	Valencia	T-2-62	Early-maturing Valencia somaclone, high PS.
41	Valencia	T-3-62	Early-maturing Valencia somaclone.
42	Valencia	T-4-43	Early-maturing Valencia somaclone.

* Selections were provided by Castle, Gmitter, and Grosser from among introductions, somaclones, induced mutations, and others.

Table 2. Data collected.

Data	Valencia	Midsweet
6-year mean Yield [boxes/tree] & PS/acre	x	
6-year cumulative Yield [boxes/tree] & PS/acre	x	
8-year mean Juice: Brix, acid, ratio, color.	x	x
5-year mean Yield [boxes/tree] & PS/acre		x
Annual juice Brix, acid, ratio, PS/box, color		
2003-04	x	x
2004-05	x	x
2005-06 [<i>data for 20 out of 30 scions</i>]	x	x
2006-07	x	x
2007-08	x	x
2008-09	x	x
2009-10	x	x
2010-11	x	x
Annual Yield [boxes /tree] & PS/acre		
2003-04	NA	NA
2004-05	NA	NA
2005-06 [<i>data for 20 out of 30 scions</i>]	x	x
2006-07	x	x
2007-08	x	x
2008-09	x	x
2009-10	x	NA
2010-11	x	x
Yield rating 2003-04	x	x
HLB rating 2017-18	x	x

Considerations regarding the data:

- Due to the large volume of data and, thus, ease of viewing, only mean data are presented.
- Individual season's data are available upon request for seasons: 2003-04 to 2010-11.
- In order to better visualize the overall trial results, a summary table [Table 3 for Valencia and Table 4 for Midsweet] was created presenting mean juice Brix, acid, ratio, yield [box/tree; PS/acre] for all seasons and cumulative PS/acre. The data were color coded into statistically relevant groups as follows: green [best results]; yellow [intermediate] and red [worst results] based on statistical experience from this and other similar field trials. Data are sorted by cumulative PS/acre.

Valencia

Overall Results

	Mean						Cumulative
Selection	Brix*	Acid*	Ratio*	PS/box*	Boxes/tree**	PS/acre***	PS/acre ***
V-B-9-65	12.4	0.82	15.8	6.3	2.9	2,117	11,420
Appleby Val/J	12.2	0.84	15.2	6.2	2.9	2,113	11,038
V-10-12-7/M	12.5	0.79	16.5	6.2	2.7	1,935	10,194
V-T-4-43	12.2	0.82	15.6	6.1	2.6	1,809	10,047
V-10-12-7/J	12.4	0.81	15.9	6.3	2.6	1,871	9,852
V-T-2-25	12.3	0.81	15.8	6.3	2.6	1,869	9,836
Jenner Val/J	12.3	0.80	16.1	6.2	2.6	1,860	9,775
Natal S/J	12.8	0.85	15.6	6.4	2.4	1,803	9,686
V-B-8-66	12.7	0.85	15.4	6.4	2.4	1,797	9,662
V-B-10-81	12.4	0.75	17.1	6.2	2.6	1,842	9,503
V-B-6-68	12.3	0.82	15.7	6.1	2.5	1,774	9,217
V-T-3-62	12.4	0.81	15.8	6.1	2.5	1,766	9,163
RRV/M	12.4	0.80	16.0	6.2	2.4	1,711	9,115
V-T-1-33	12.2	0.80	15.9	6.0	2.4	1,664	9,077
V-B-12-71	12.3	0.81	15.8	6.2	2.4	1,766	9,028
V-B-8-76	12.4	0.78	16.5	6.1	2.3	1,658	9,024
V-T-1-23	12.2	0.77	16.8	5.8	2.4	1,651	8,991
Smith Val/J	12.6	0.83	15.6	6.2	2.4	1,771	8,988
V-T-2-62	12.3	0.79	16.2	6.1	2.3	1,664	8,715
V-T-1-26	12.3	0.83	15.4	6.1	2.4	1,678	8,610
V-T-1-25	12.1	0.81	15.6	6.0	2.3	1,620	8,606
V-T-1-13	12.4	0.82	15.5	6.0	2.4	1,681	8,592
Frost Val/J	12.2	0.71	18.1	5.6	2.4	1,587	8,530
V-SF-8-2-35	12.2	0.79	16.4	6.0	2.3	1,604	8,474
Vernia/J	12.6	0.68	19.1	6.1	2.4	1,674	8,387
V-B-10-68	12.3	0.86	14.8	6.1	2.2	1,532	8,032
V-SF-11-1-69	12.3	0.82	16.0	6.2	2.0	1,444	7,536
V-B-10-62	13.0	0.85	15.8	6.0	1.9	1,284	7,134
V-SF-9-1-86	12.0	0.76	16.3	6.0	1.6	1,138	6,177
V-B-6-66	13.0	0.82	16.4	6.0	1.5	1,043	5,650

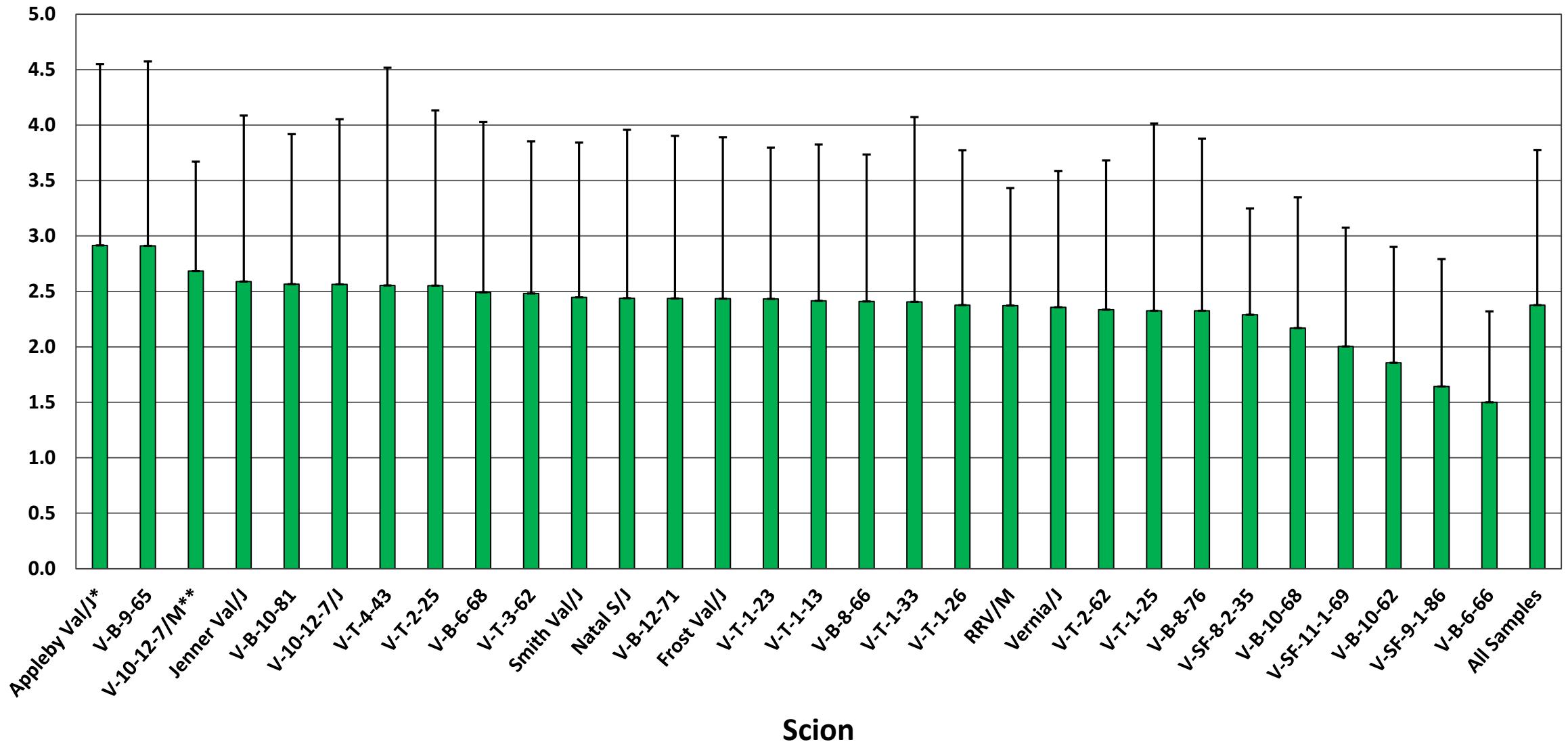
Table 3. Overall mean juice Brix, acid, ratio, yield [box/tree; PS/acre] and cumulative PS/acre.

Color Legend

Green	Best result
Yellow	Intermediate result
Red	Worst result

(*) 8-years of data: 2003-04 to 2010-11; (**) 6-years of data: 2005-06 to 2010-11; (***) 5-years of data: 2006-07 to 2010-11.

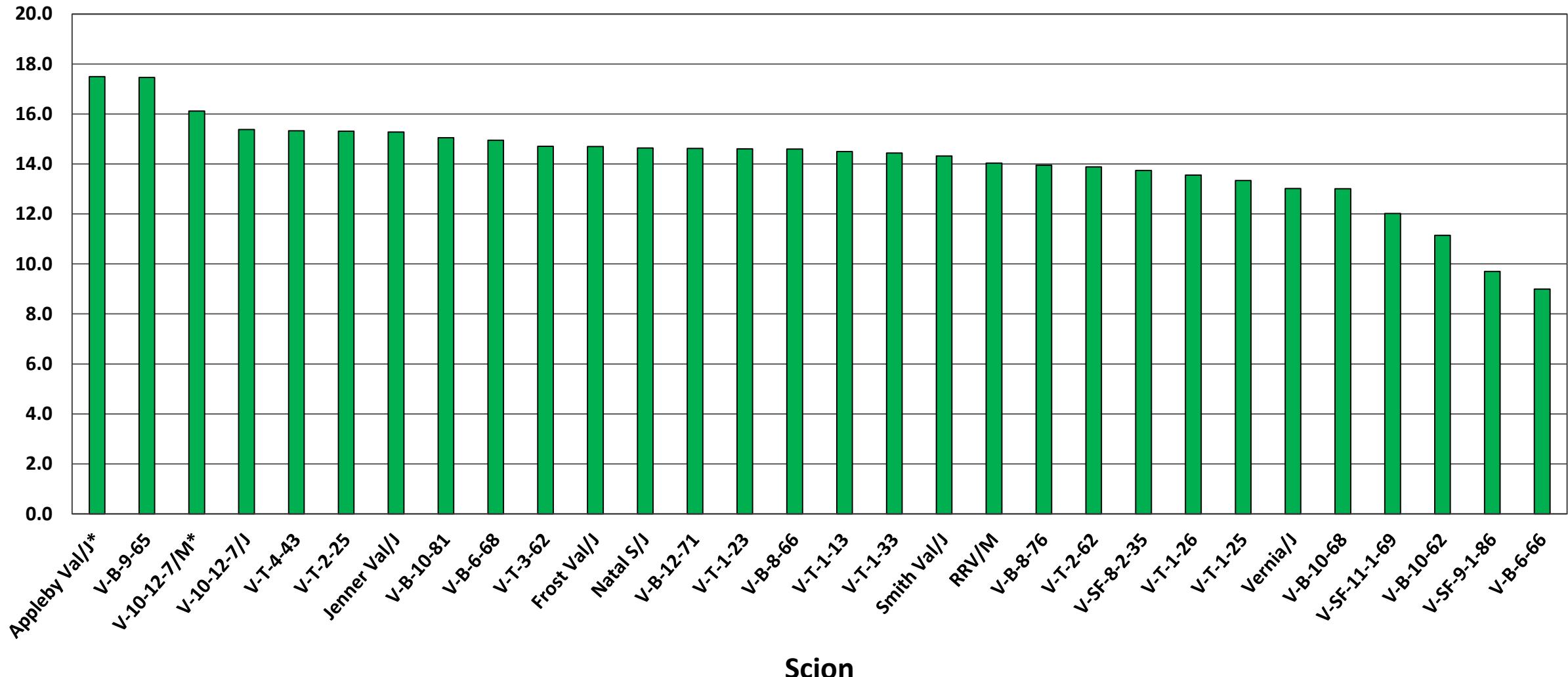
Fig. 1. Water Conserv II scion trial – Valencia [V; Val] 6-year Yield [boxes/tree]: mean + std. dev., seasons: 2005-06 to 2010-11.



(*) Juvenile line; (**) Mature line

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Fig. 2. Water Conserv II scion trial – Valencia [V; Val] 6-year cumulative Yield [boxes/tree], seasons: 2005-06 to 2010-11.



(*) Juvenile line; (**) Mature line

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Fig. 3. Water Conserv II scion trial – Valencia [V; Val] 6-year PS/acre: mean + std. dev., seasons: 2005-06 to 2010-11 [darker blue bars: 5-year PS/acre mean - no data 2005-06].

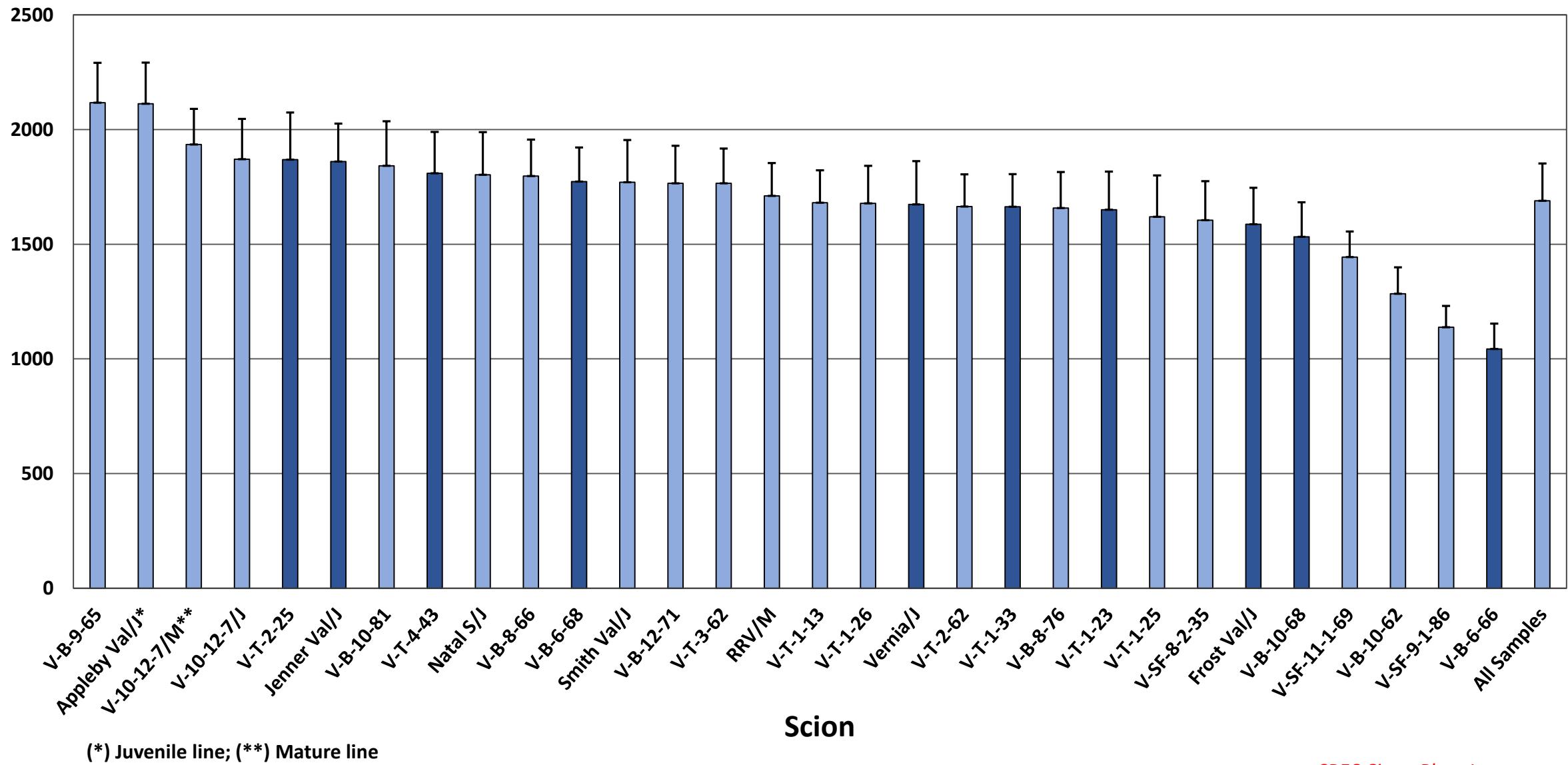
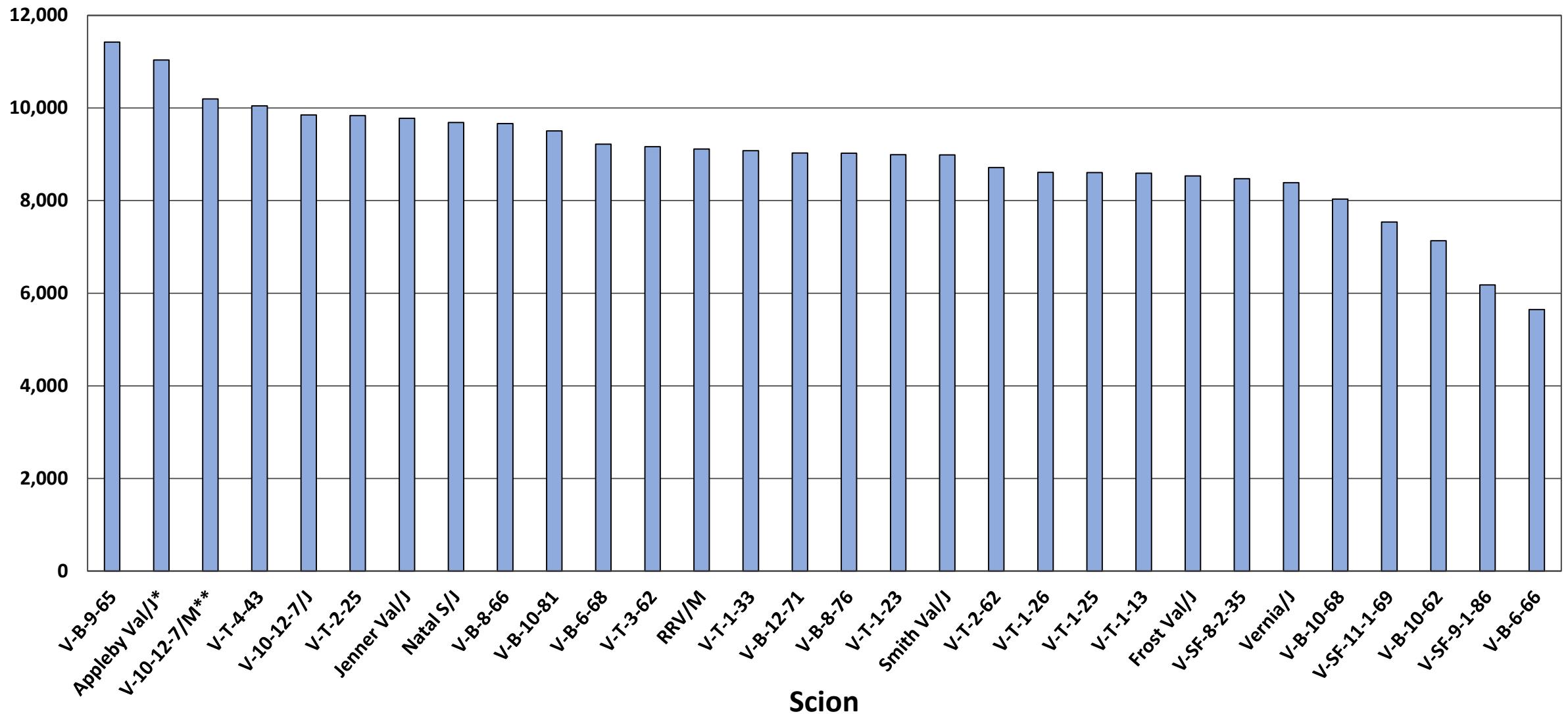
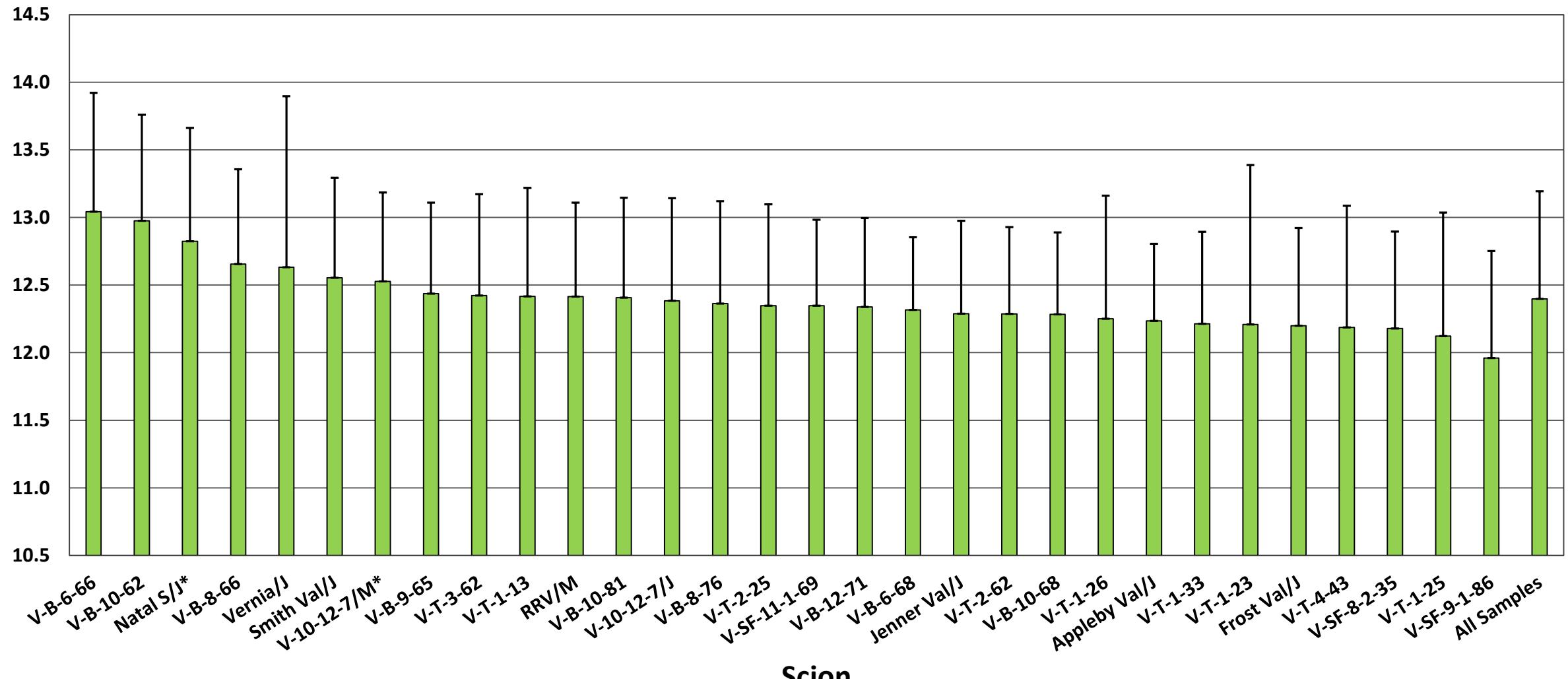


Fig. 4. Water Conserv II scion trial – Valencia [V; Val] 5-year cumulative PS/acre, seasons: 2006-07 to 2010-11.



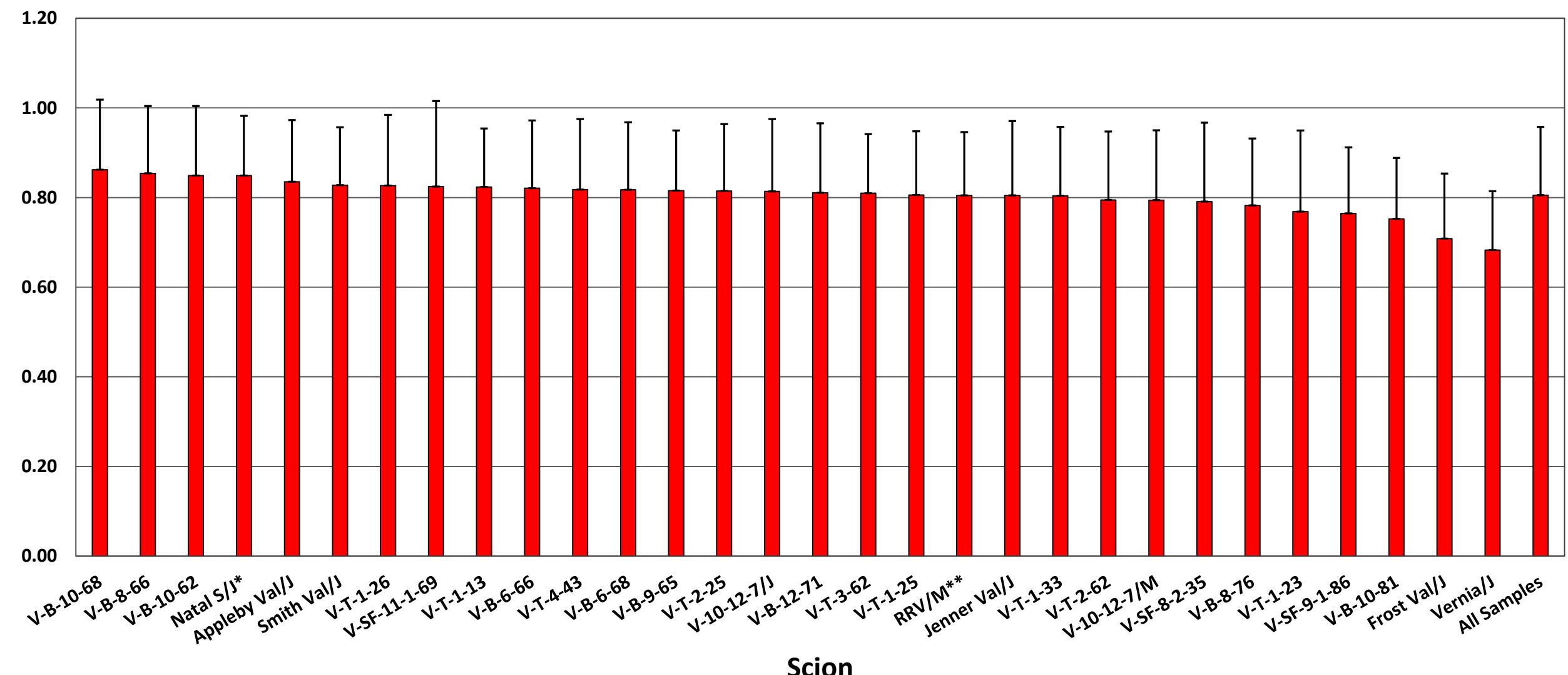
(*) Juvenile line; (**) Mature line

Fig. 5. Water Conserv II scion trial – Valencia [V; Val] 8-year Juice Brix: mean + std. dev., seasons: 2003-04 to 2010-11.



(*) Juvenile line; (**) Mature line

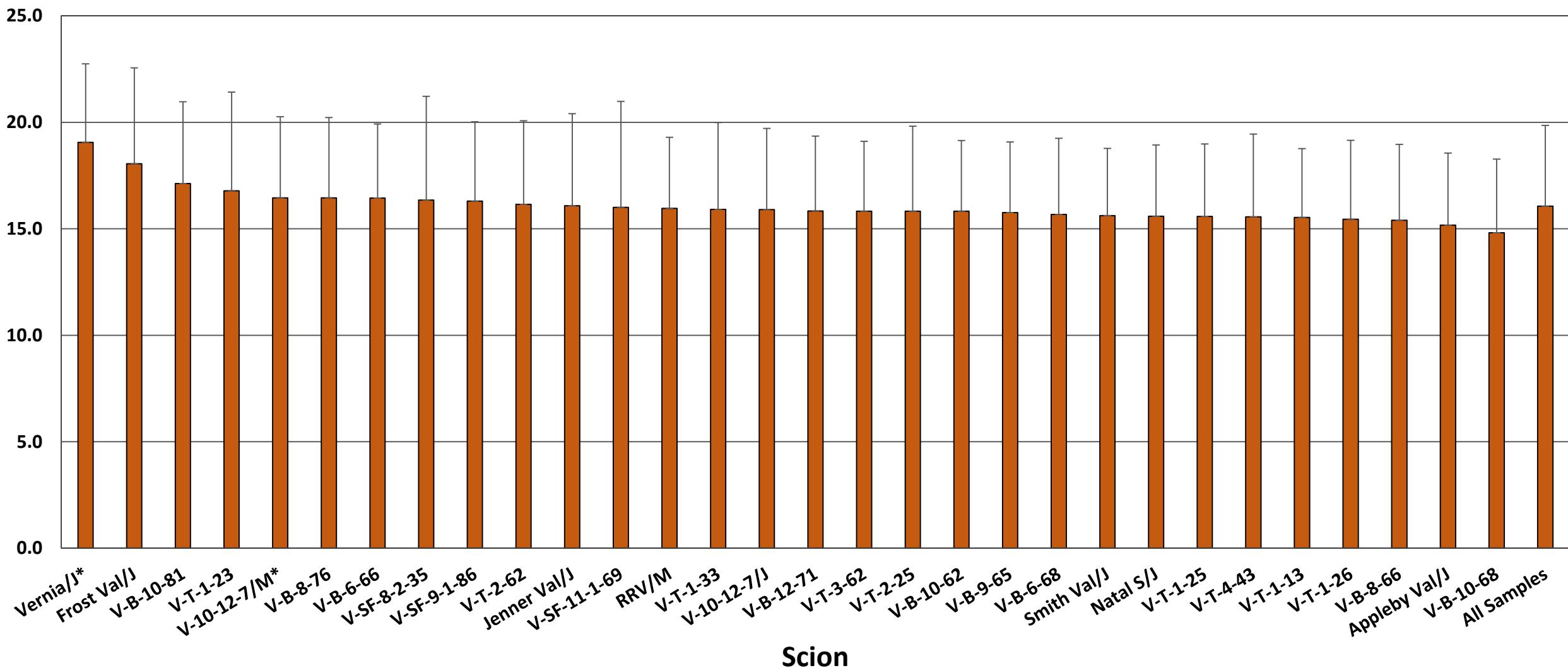
Fig. 6. Water Conserv II scion trial – Valencia [V; Val] 8-year Juice Acid: mean + std. dev., seasons: 2003-04 to 2010-11.



(*) Juvenile line; (**) Mature line

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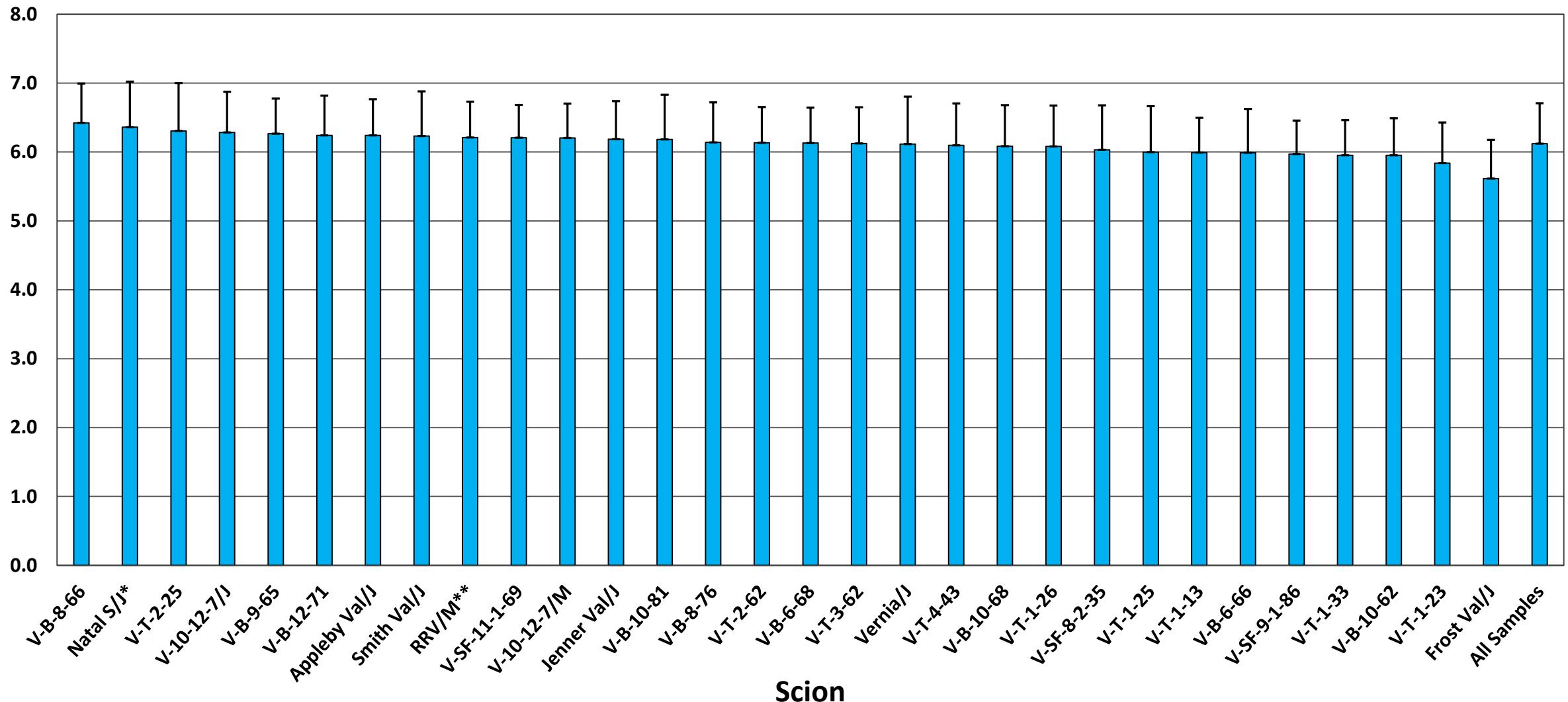
Fig. 7. Water Conserv II scion trial – Valencia [V; Val] 8-year Juice Ratio: mean + std. dev., seasons: 2003-04 to 2010-11.



(*) Juvenile line; (**) Mature line

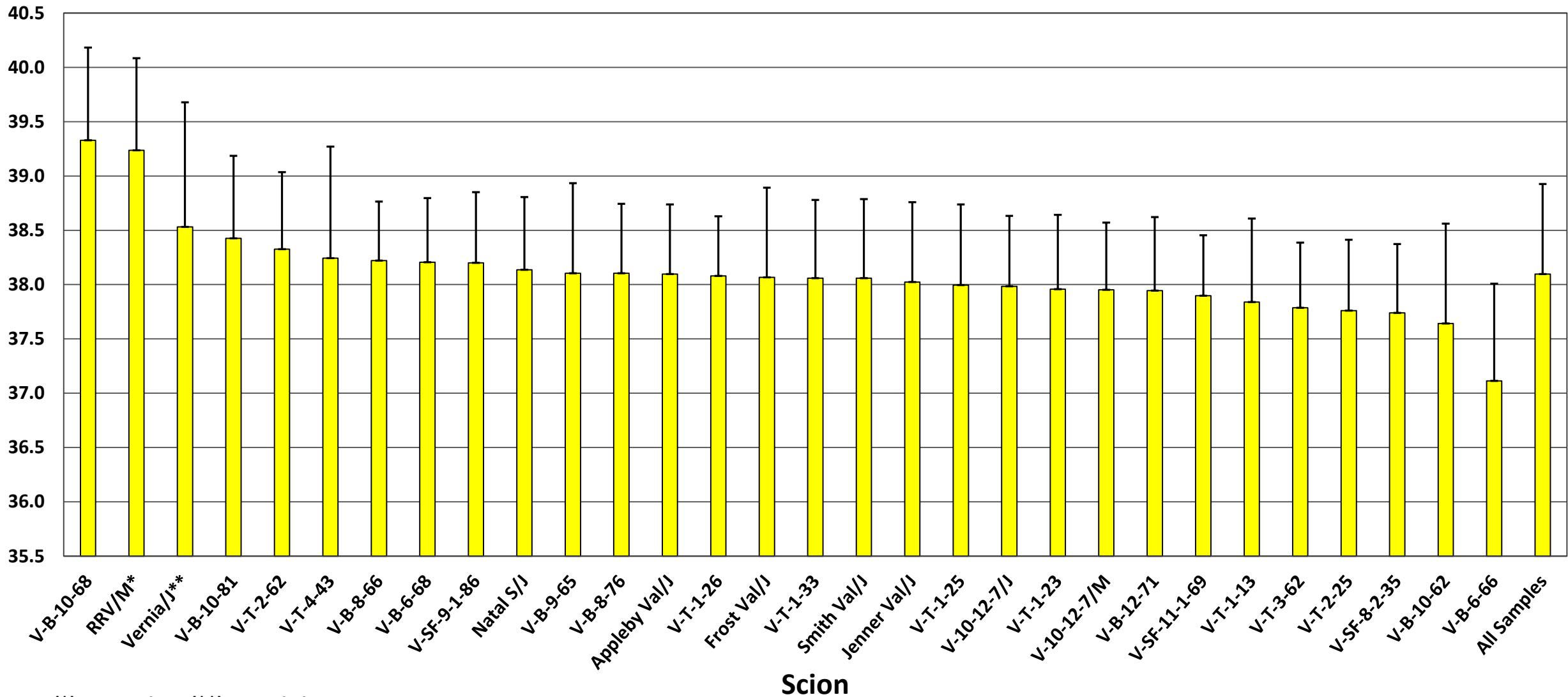
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Fig. 8. Water Conserv II scion trial – Valencia [V; Val] 8-year PS/box: mean + std. dev., seasons: 2003-04 to 2010-11.



(*) Juvenile line; (**) Mature line

Fig. 9. Water Conserv II scion trial – Valencia [V; Val] 8-year Color: mean + std. dev., seasons: 2003-04 to 2010-11.



(*) Mature line; (**) Juvenile line

Midsweet

Overall Results

Table 4. Overall mean juice Brix, acid, ratio, yield [box/tree; PS/acre] and cumulative PS/acre.

Selections	Mean							Cumulative PS/acre**
	Brix*	Acid*	Ratio*	Color*	PS/box*	Boxes/tree**	PS/Acre**	
MS-SF12-2-51	11.7	0.80	14.9	34.1	5.6	3.6	2,390	11,753
MS-SF12-2-49	11.9	0.75	16.1	34.2	5.6	3.5	2,366	11,596
MS-SF12-2-43	11.4	0.73	16.0	33.9	5.3	3.6	2,293	11,331
MS-SF12-2-33	11.6	0.77	15.5	34.2	5.5	3.4	2,212	10,846
MS-SF12-1-32	11.7	0.94	12.6	33.5	5.5	3.3	2,256	10,802
MS-SF11-2-31	11.9	0.76	15.8	34.0	5.6	3.3	2,152	10,761
MS-SF12-2-23	11.6	0.76	15.6	33.8	5.4	3.4	2,217	10,724
MS-SF12-2-50	11.7	0.73	16.2	34.0	5.3	3.1	1,990	9,736
MS-SF11-1-25	11.5	0.70	16.6	34.3	5.2	3.1	1,932	9,445
MS-SF12-1-66	11.6	0.78	14.9	34.1	5.4	2.9	1,912	9,349
MS-SF12-1-67	11.5	0.77	15.1	34.2	5.5	2.6	1,728	8,461
MS-SF11-1-24	12.3	0.65	19.2	35.5	5.6	2.5	1,688	8,210

Color Legend

Best result
Intermediate result
Worst result

(*) 8-years of data: 2003-04 to 2010-11; (**) 5-years of data: 2005-06 to 2010-11 less 2009-10.

Fig. 10. Water Conserv II scion trial – Midsweet [MS] 5-year Yield [boxes/tree]: mean + std. dev., seasons: 2005-06 to 2008-09 & 2010-11.

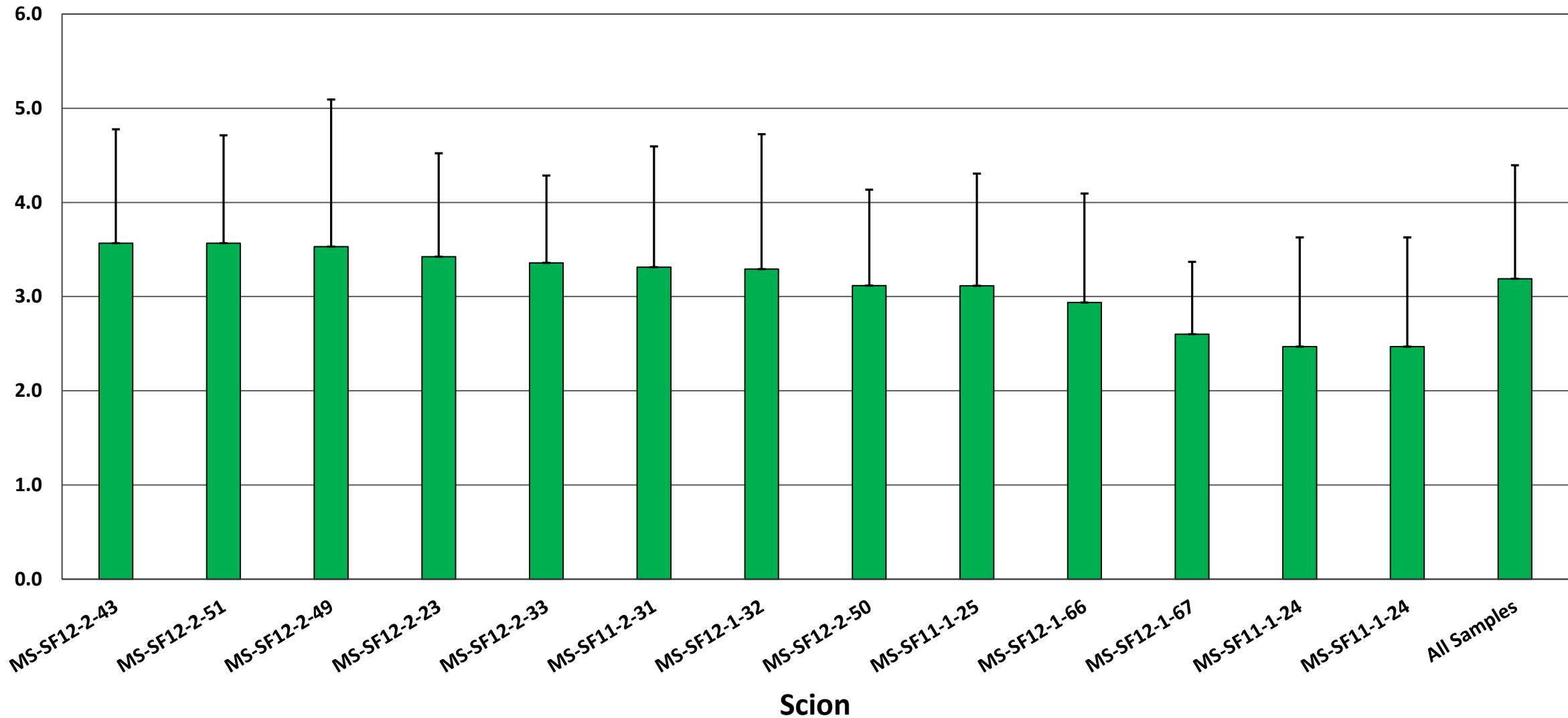


Fig. 11. Water Conserv II scion trial – Midsweet [MS] 5-year cumulative Yield [boxes/tree], seasons: 2005-06 to 2008-09 & 2010-11.

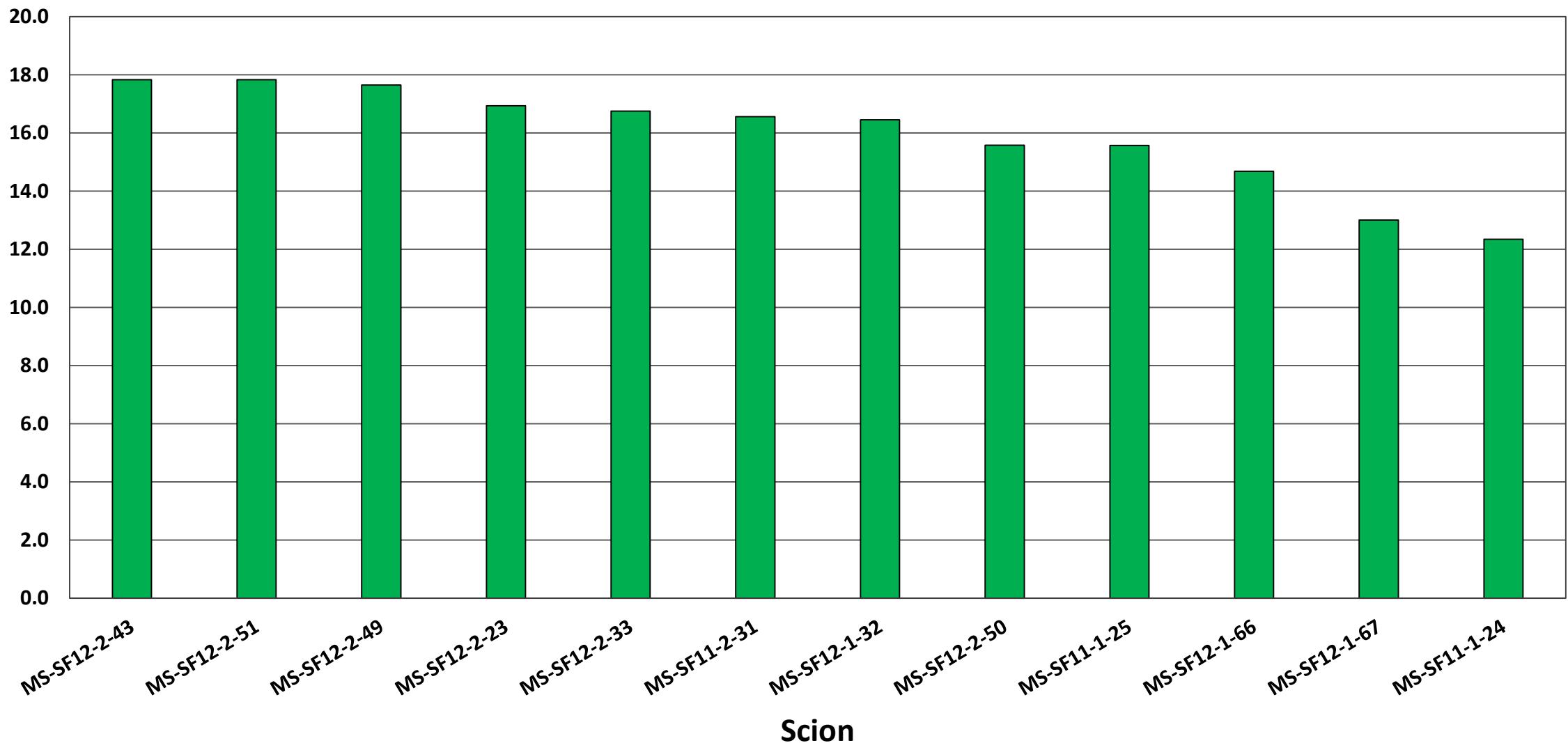


Fig. 12. Water Conserv II scion trial – Midsweet [MS] 5-year PS/acre: mean + std. dev., seasons: 2005-06 to 2008-09 & 2010-11.

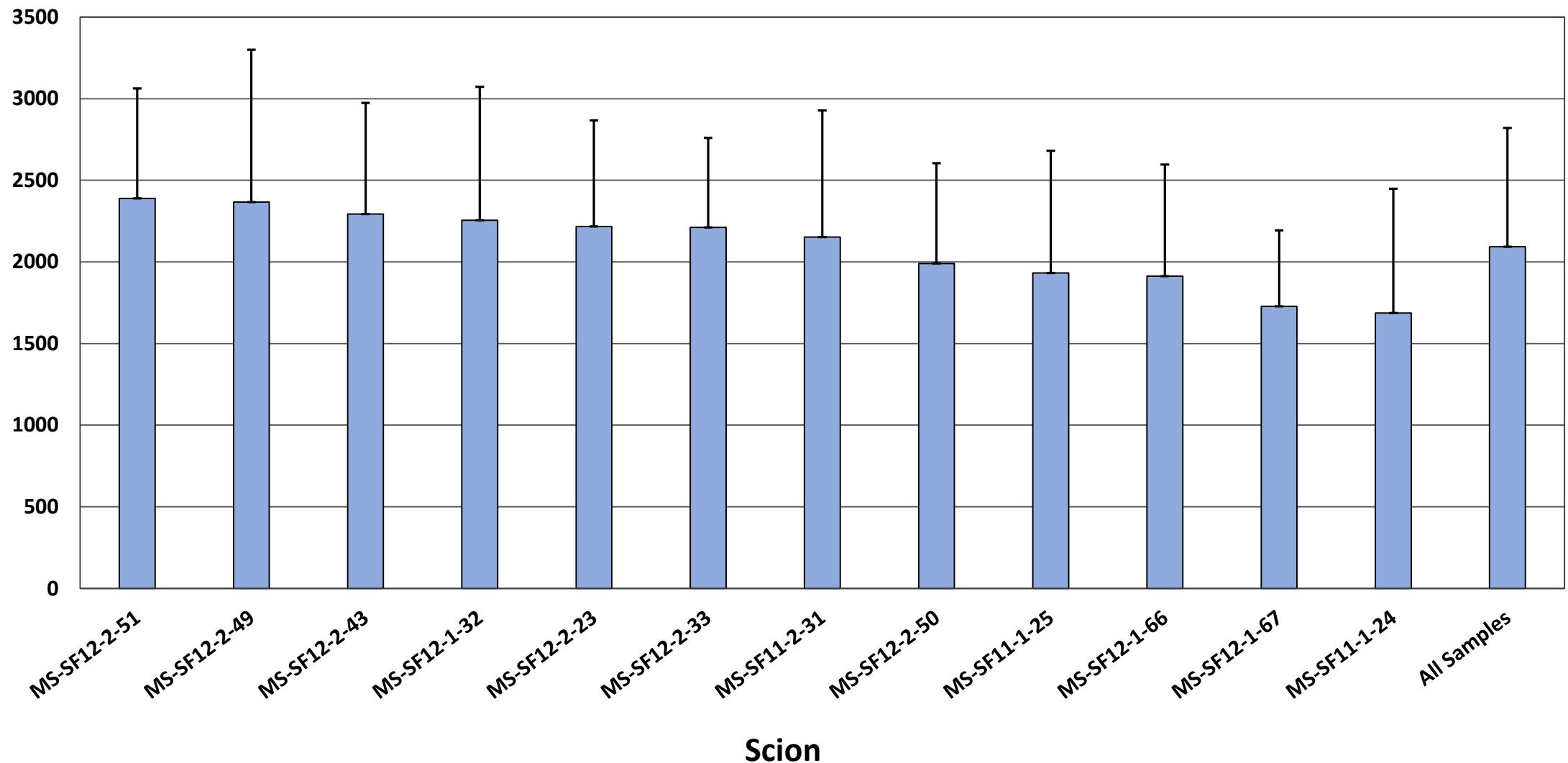


Fig. 13. Water Conserv II scion trial – Midsweet [MS] 5-year cumulative PS/acre, seasons: 2005-06 to 2008-09 & 2010-11.

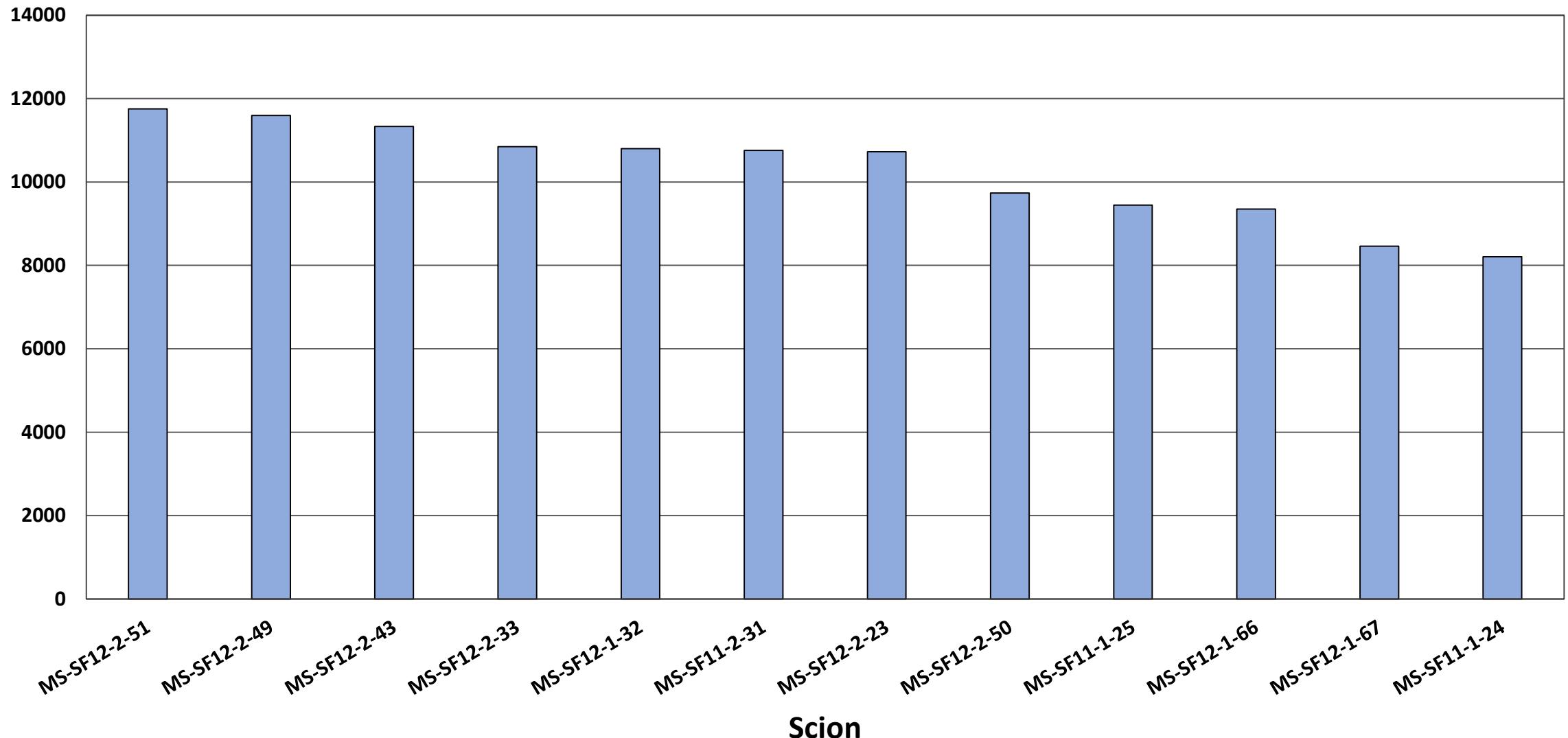


Fig. 14. Water Conserv II scion trial – Midsweet [MS] 8-year Juice Brix: mean + std. dev., seasons: 2003-04 to 2010-11.

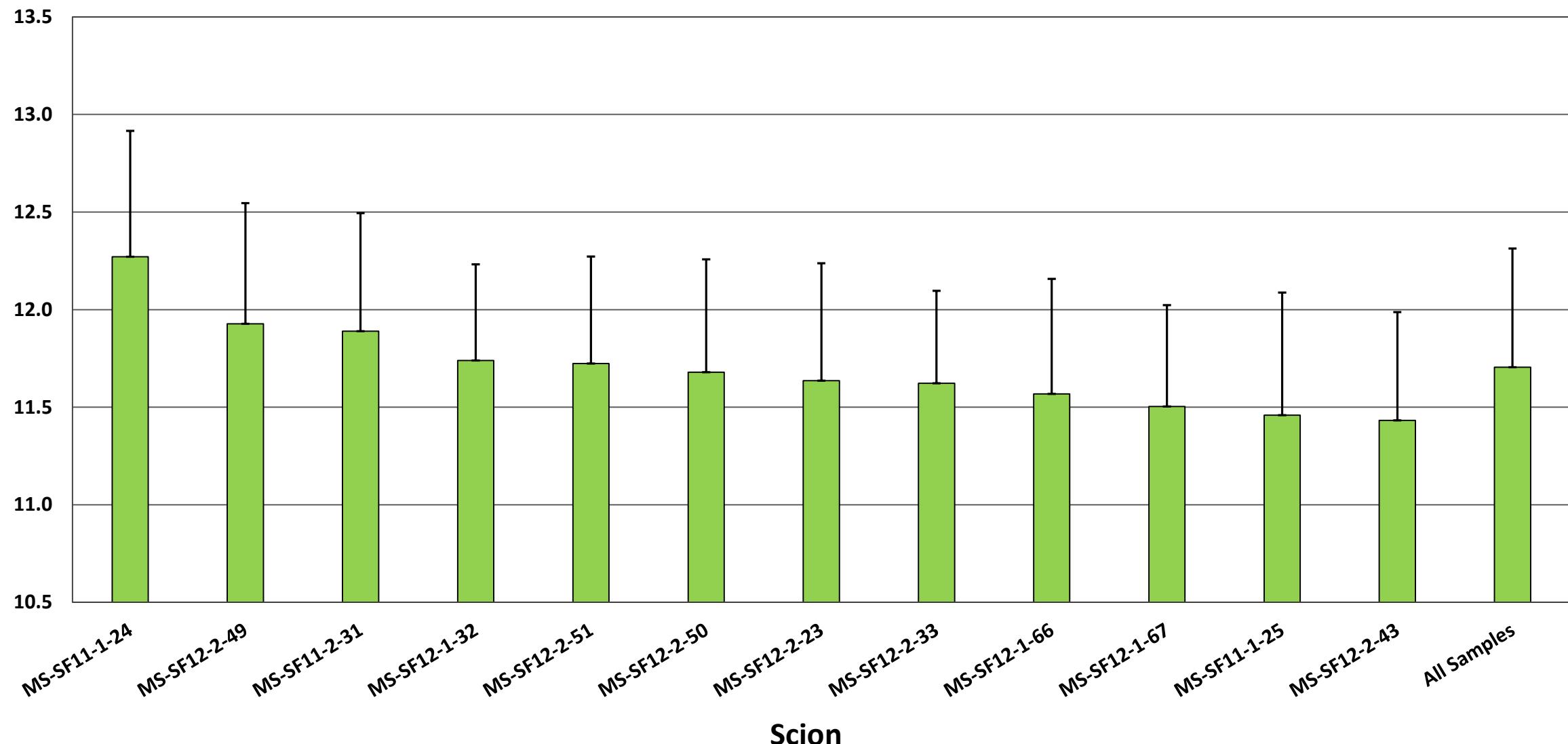


Fig. 15. Water Conserv II scion trial – Midsweet [MS] 8-year Juice Acid: mean + std. dev., seasons: 2003-04 to 2010-11.

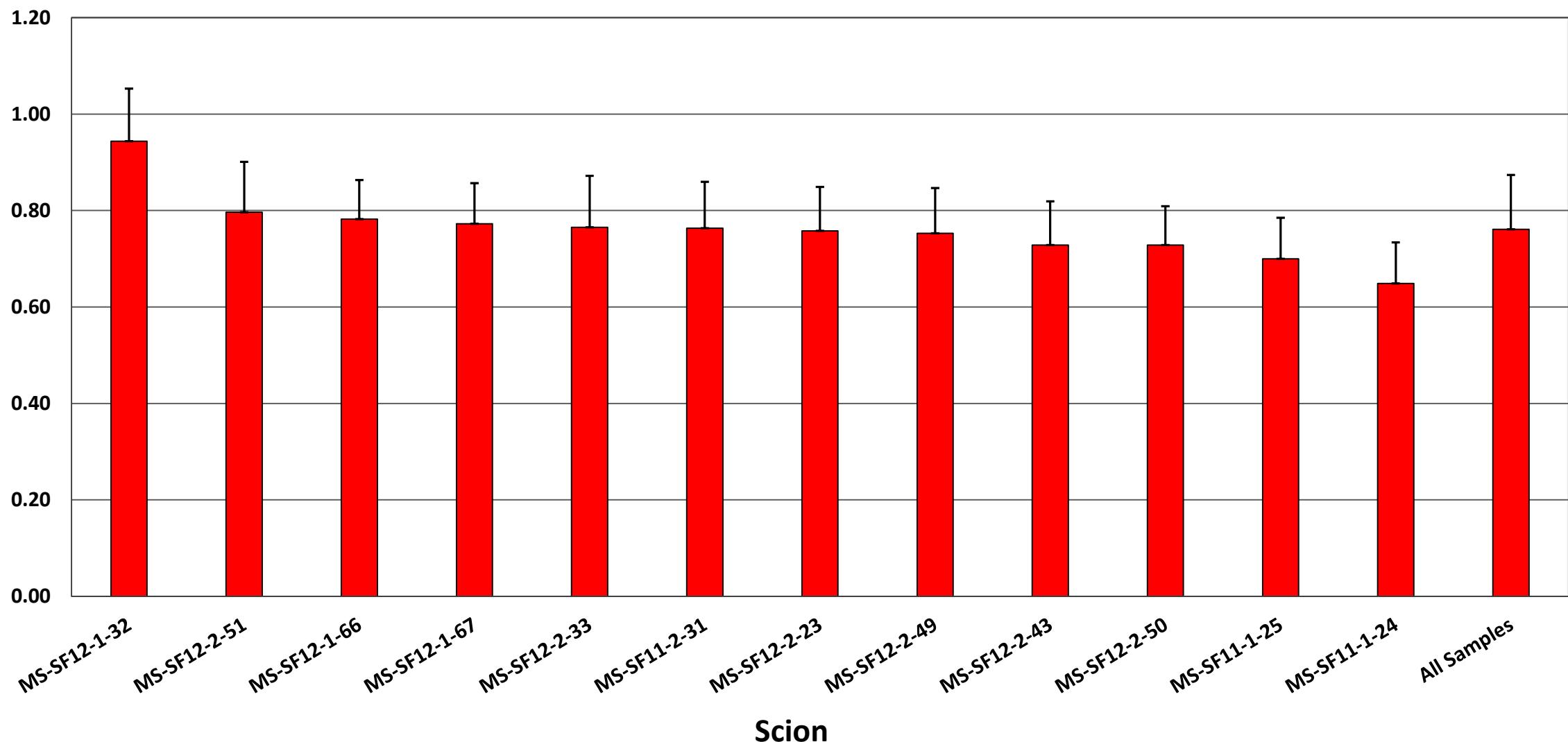


Fig. 16. Water Conserv II scion trial – Midsweet [MS] 8-year Juice Ratio: mean + std. dev., seasons: 2003-04 to 2010-11.

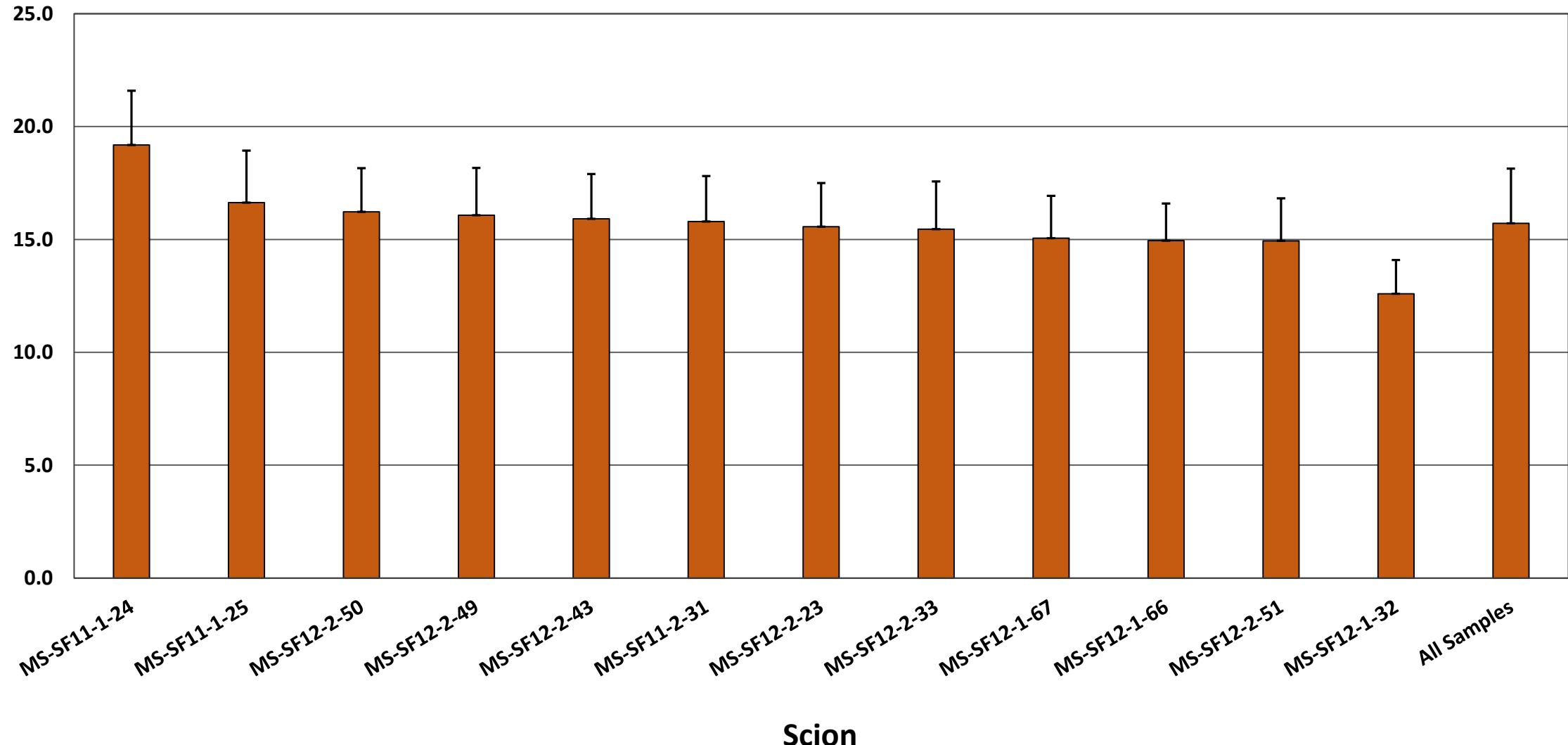


Fig. 17. Water Conserv II scion trial – Midsweet [MS] 8-year PS/box: mean + std. dev., seasons: 2003-04 to 2010-11.

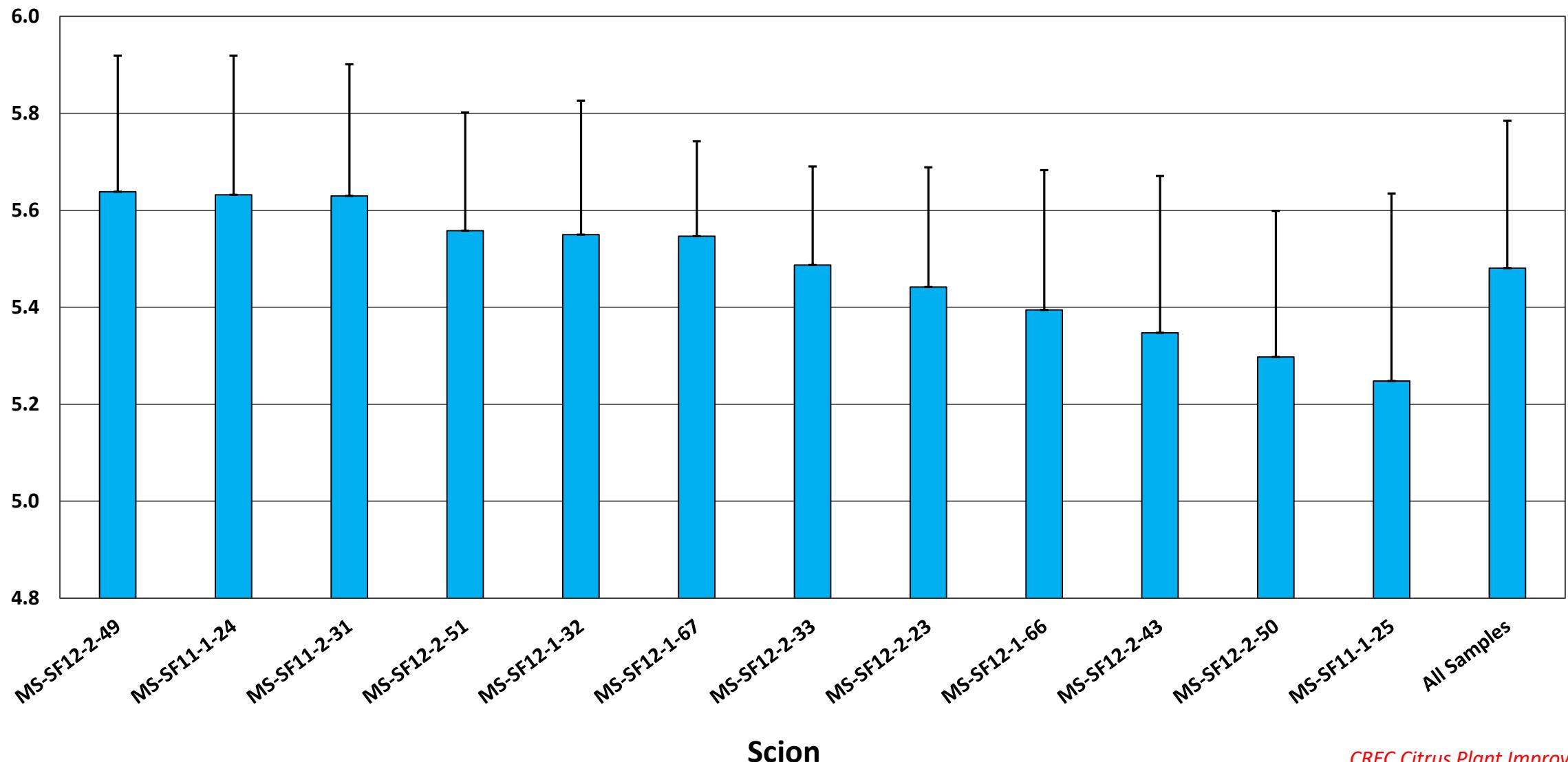


Fig. 18. Water Conserv II scion trial – Midsweet [MS] 8-year Juice color: mean + std. dev., seasons: 2003-04 to 2010-11.

