2016 High Tunnel Tomato Variety Trials

Kansas State University
Horticulture Research and Extension Center
Olathe, Kansas

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www.hightunnels.org

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Materials & Methods

- **Planted** in tunnel: April 18th
- Five plants per plot
- 18" in-row spacing
- Pruned to first fruit hand
- Stake-and-weave
- **Fertilize:**
  - **Fertigate:** carried out at a rate of 10lbs nitrogen/acre per application on April 29, June 1, June 30 and August 1
- **Harvest** from June 28 to September 27
- **IPM:** BT for army and horn worms

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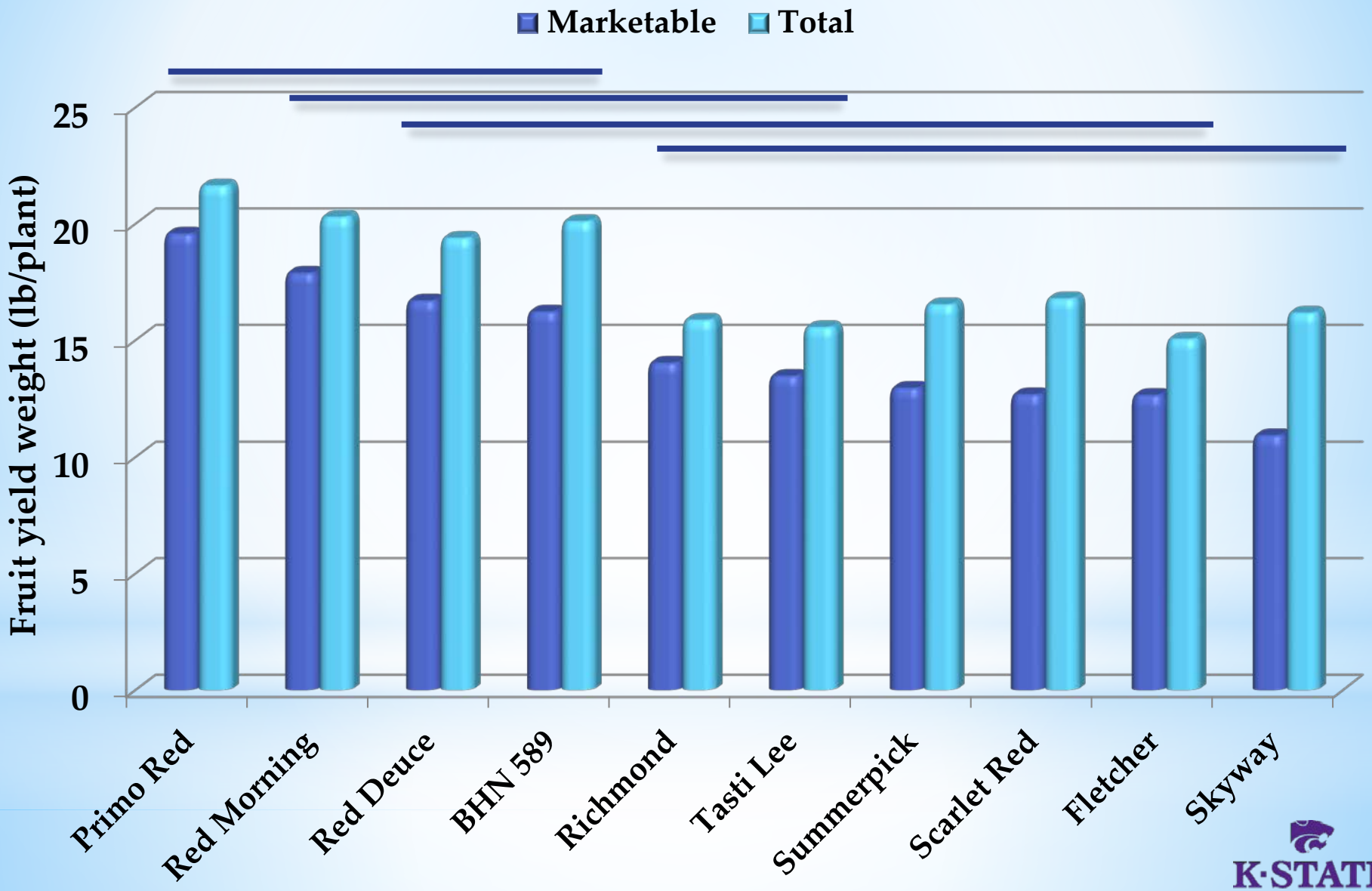
2016 KVGA High Tunnel Tomato Variety Trial



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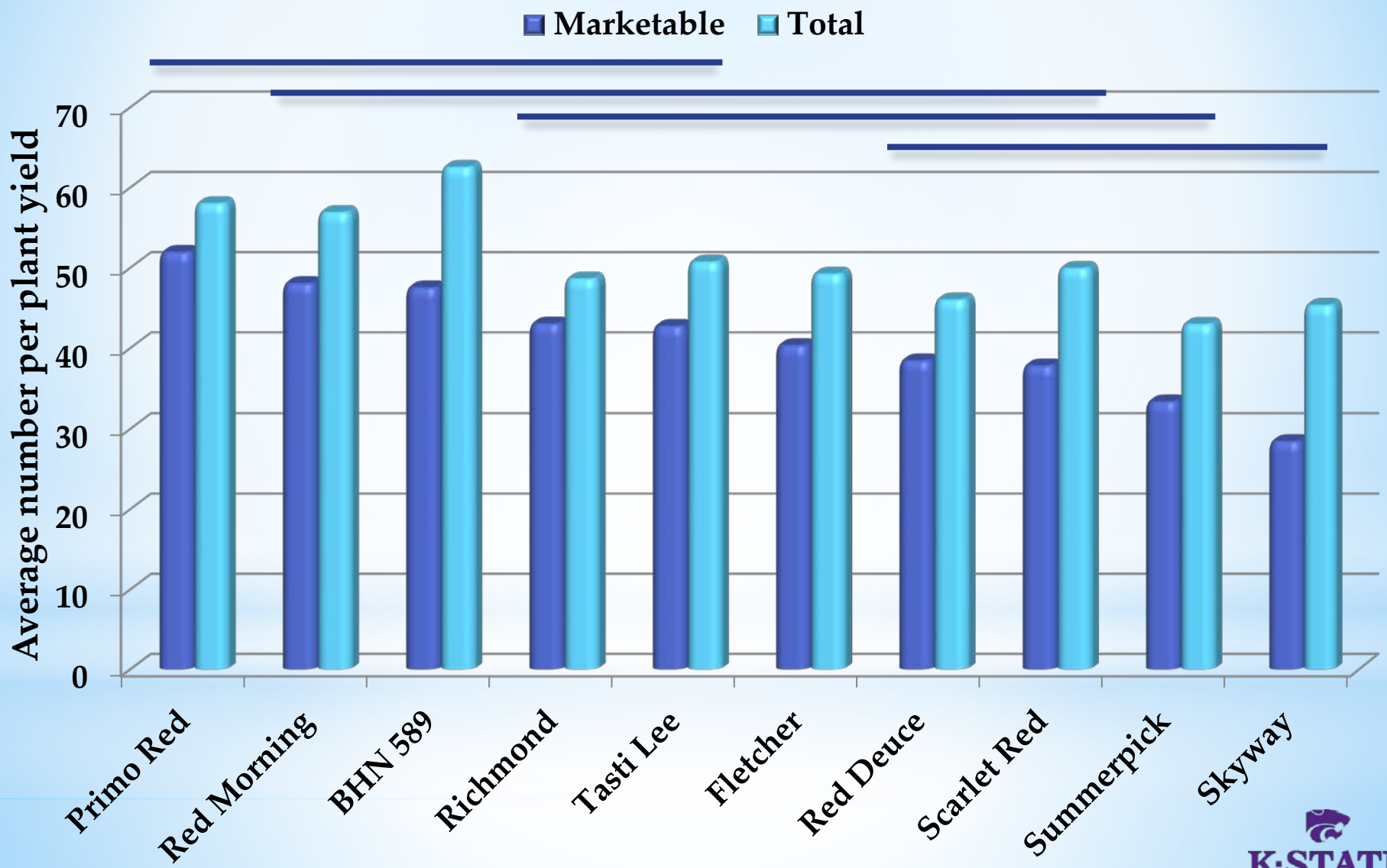
The status bars above show the marketable statistical similarities. For full details, see table on page 4

2016 KVGA High Tunnel Tomato Variety Trial



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2016 KVGA High Tunnel Tomato Variety Trial

Marketable and total per plant fruit yield of tomato varieties grown in a three season high tunnel in Olathe, Kansas.

Variety	Marketable				Total			
	Number		Wt (lbs)		Number		Wt (lbs)	
Primo Red	51.9	d	19.6	d	58.0	ab	21.6	
Red Morning	48.0	cd	17.9	cd	56.9	ab	20.3	
BHN 589	47.5	cd	16.2	bcd	62.5	b	20.1	
Richmond	43.0	bcd	14.0	abc	48.6	ab	15.9	
Tasti Lee	42.7	bcd	13.4	abc	50.7	ab	15.5	
Fletcher	40.3	bc	12.6	ab	49.2	ab	15.0	
Red Deuce	38.4	abc	16.7	bcd	46.0	a	19.4	
Scarlet Red	37.8	abc	12.7	ab	49.9	ab	16.8	
Summerpick	33.4	ab	12.9	ab	43.0	a	16.5	
Skyway	28.4	a	10.9	a	45.3	a	16.2	
$LSD_{(0.05)}$	10.30		4.83		15.21		6.58	

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The status bars above show the marketable statistical similarities. For full details, see table on page 8

2016 KVGA High Tunnel Tomato Variety Trial

Mean tomato fruit size (lbs) and marketability of tomato varieties grown in a three season high tunnel in Olathe, Kansas.

Variety	Average Fruit Size (lbs)				Percent Marketability			
	Marketable		Total		Number		Weight	
Red Deuce	0.43	e	0.42	e	83.6%	bc	86.2%	bc
Summerpick	0.39	de	0.38	de	80.3%	bc	81.2%	bc
Skyway	0.38	cde	0.35	bcd	64.0%	a	68.7%	a
Primo Red	0.38	cde	0.37	cde	89.7%	c	90.7%	c
Red Morning	0.37	bcde	0.36	bcd	84.7%	bc	88.1%	bc
BHN 589	0.34	abcd	0.32	ab	76.6%	b	81.0%	bc
Scarlet Red	0.33	abcd	0.33	abcd	78.2%	bc	78.6%	ab
Richmond	0.32	abc	0.32	abc	88.4%	c	88.2%	bc
Fletcher	0.32	ab	0.31	ab	82.5%	bc	84.5%	bc
Tasti Lee	0.31	a	0.30	a	83.4%	bc	85.4%	bc
$LSD_{(0.05)}$	0.0599		0.0512		0.1151		0.1055	

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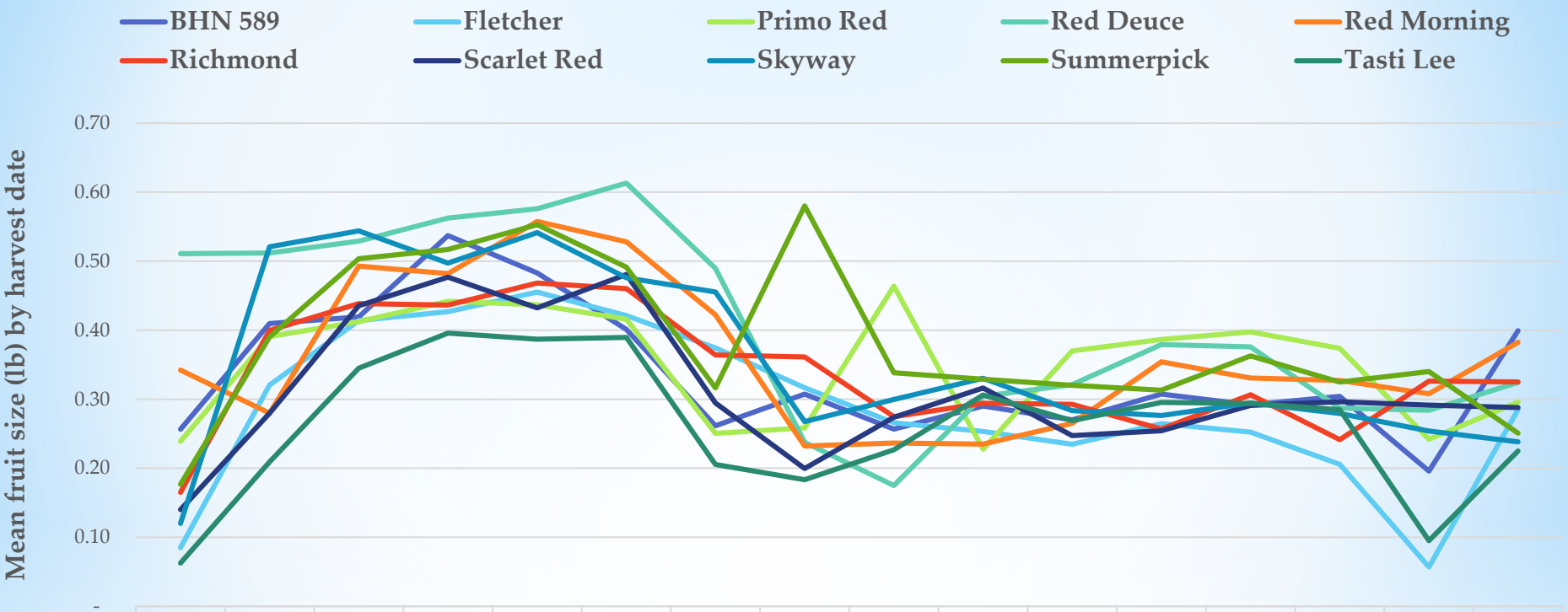
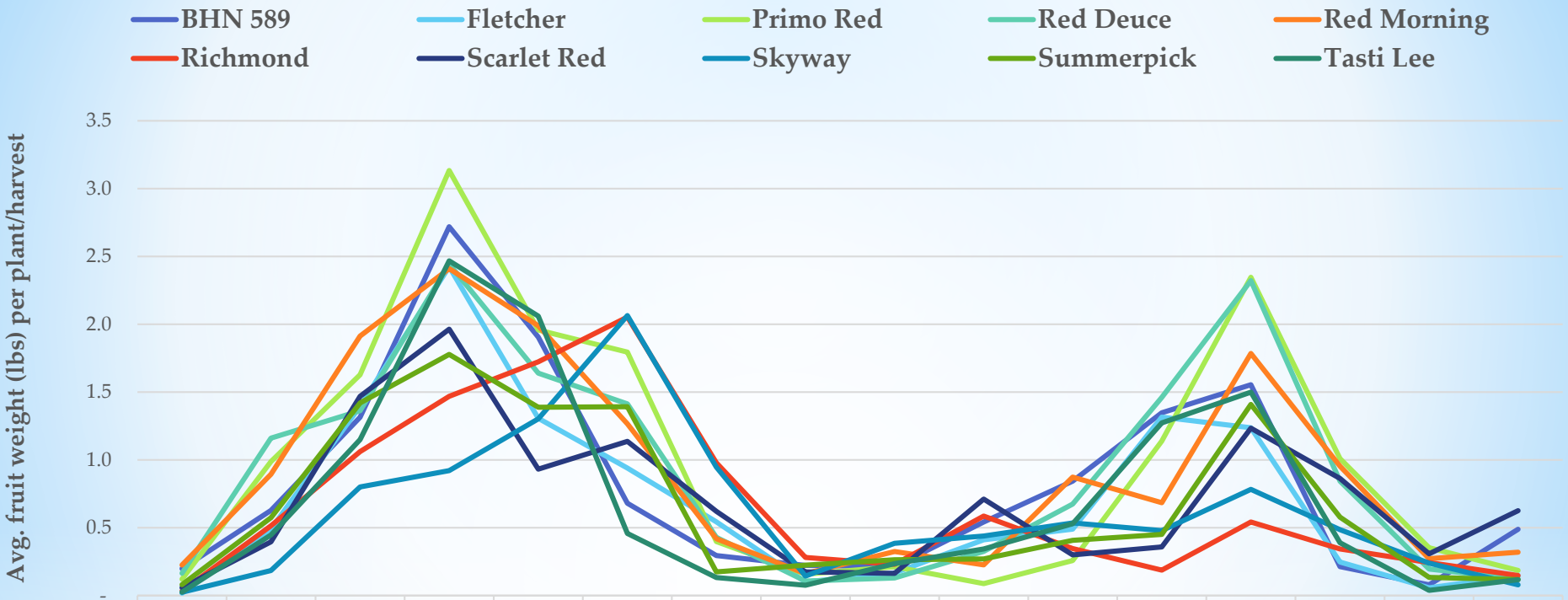


	Jun 28	Jul 5	Jul 11	Jul 14	Jul 19	Jul 25	Aug 1	Aug 5	Aug 9	Aug 12	Aug 22	Aug 29	Sep 6	Sep 13	Sep 19	Sep 27
BHN 589	0.26	0.41	0.42	0.54	0.48	0.40	0.26	0.31	0.26	0.29	0.27	0.31	0.29	0.30	0.20	0.40
Fletcher	0.09	0.32	0.41	0.43	0.46	0.42	0.37	0.32	0.27	0.25	0.23	0.26	0.25	0.21	0.06	0.29
Primo Red	0.24	0.39	0.41	0.44	0.44	0.42	0.25	0.26	0.46	0.23	0.37	0.39	0.40	0.37	0.24	0.30
Red Deuce	0.51	0.51	0.53	0.56	0.58	0.61	0.49	0.24	0.18	0.30	0.32	0.38	0.38	0.29	0.28	0.32
Red Morning	0.34	0.28	0.49	0.48	0.56	0.53	0.42	0.23	0.24	0.24	0.26	0.35	0.33	0.33	0.31	0.38
Richmond	0.17	0.40	0.44	0.44	0.47	0.46	0.36	0.36	0.27	0.29	0.29	0.26	0.31	0.24	0.33	0.33
Scarlet Red	0.14	0.28	0.44	0.48	0.43	0.48	0.29	0.20	0.27	0.32	0.25	0.25	0.29	0.30	0.29	0.29
Skyway	0.12	0.52	0.54	0.50	0.54	0.48	0.46	0.27	0.30	0.33	0.28	0.28	0.29	0.28	0.25	0.24
Summerpick	0.18	0.39	0.50	0.52	0.55	0.49	0.32	0.58	0.34	0.33	0.32	0.31	0.36	0.32	0.34	0.25
Tasti Lee	0.06	0.21	0.34	0.40	0.39	0.39	0.21	0.18	0.23	0.31	0.27	0.30	0.29	0.28	0.10	0.23

2016 KVGA High Tunnel Tomato Variety Trial



	Jun 28	Jul 5	Jul 11	Jul 14	Jul 19	Jul 25	Aug 1	Aug 5	Aug 9	Aug 12	Aug 22	Aug 29	Sep 6	Sep 13	Sep 19	Sep 27
BHN 589	0.20	0.63	1.31	2.72	1.91	0.68	0.30	0.22	0.21	0.54	0.84	1.35	1.55	0.21	0.08	0.49
Fletcher	0.02	0.49	1.40	2.42	1.31	0.94	0.54	0.10	0.17	0.41	0.49	1.32	1.24	0.25	0.06	0.15
Primo Red	0.12	0.99	1.63	3.13	1.96	1.79	0.40	0.16	0.21	0.09	0.26	1.14	2.35	1.01	0.35	0.19
Red Deuce	0.16	1.16	1.36	2.44	1.64	1.41	0.43	0.11	0.13	0.33	0.67	1.46	2.32	0.84	0.20	0.12
Red Morning	0.23	0.89	1.91	2.41	1.99	1.27	0.42	0.16	0.32	0.23	0.87	0.68	1.78	0.95	0.27	0.32
Richmond	0.03	0.51	1.06	1.47	1.72	2.05	0.98	0.28	0.23	0.59	0.35	0.19	0.54	0.34	0.24	0.15
Scarlet Red	0.06	0.40	1.47	1.96	0.93	1.14	0.62	0.17	0.16	0.71	0.30	0.36	1.23	0.86	0.31	0.63
Skyway	0.02	0.18	0.80	0.92	1.30	2.06	0.95	0.14	0.39	0.44	0.54	0.48	0.78	0.49	0.24	0.08
Summerpick	0.08	0.57	1.42	1.78	1.39	1.39	0.17	0.22	0.26	0.27	0.41	0.45	1.41	0.58	0.13	0.12
Tasti Lee	0.03	0.45	1.15	2.47	2.06	0.46	0.13	0.08	0.24	0.34	0.53	1.27	1.50	0.39	0.04	0.12

2016 KVGA High Tunnel Tomato Variety Trial

Variety	TSWV	Fusarium Wilt		Verticillium Wilt (r1)	Root-knot Nematode	TMV	Alternaria Stem Canker	Grey Leaf Spot
		Race 1	Race 2					
BHN589		R	R	R	R	R		
Fletcher	R	R	R	R	R	R		
Primo Red	IR	R	R	R		R		
Red Deuce		R	R	R		R		R
Red Morning		R	R			R		
Richmond								
Scarlet Red		R	R	R			R	R
Skyway	IR	R	R	R	IR			
Summerpick	IR	R	R	R				R
Tasti Lee		R	R	R				

R=Resistant , I=Intermediate Resistance

Resistance information gathered from seed companies

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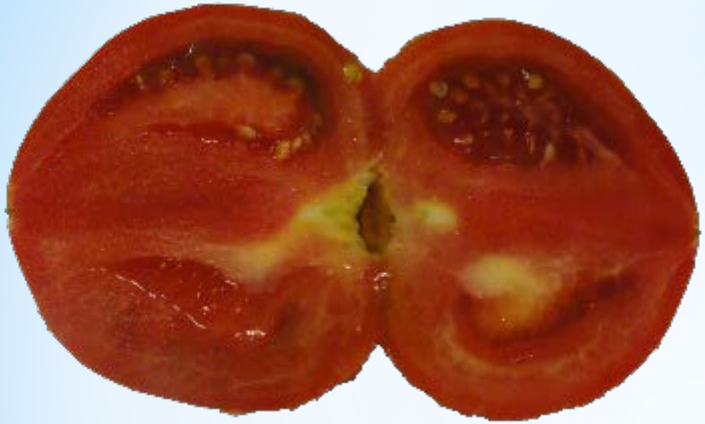
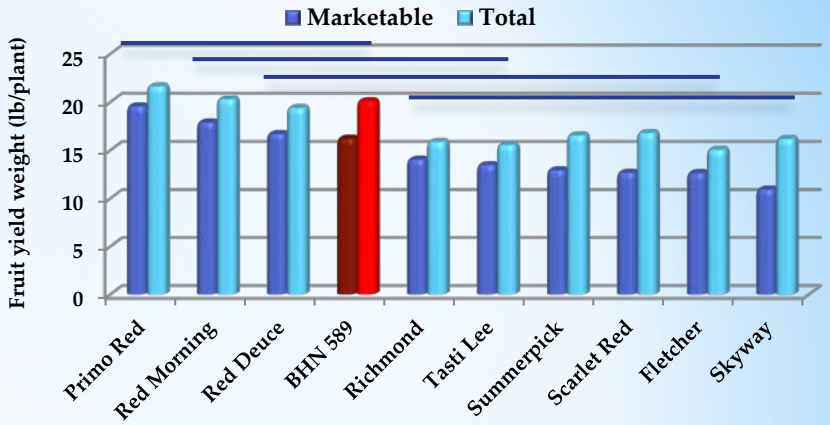
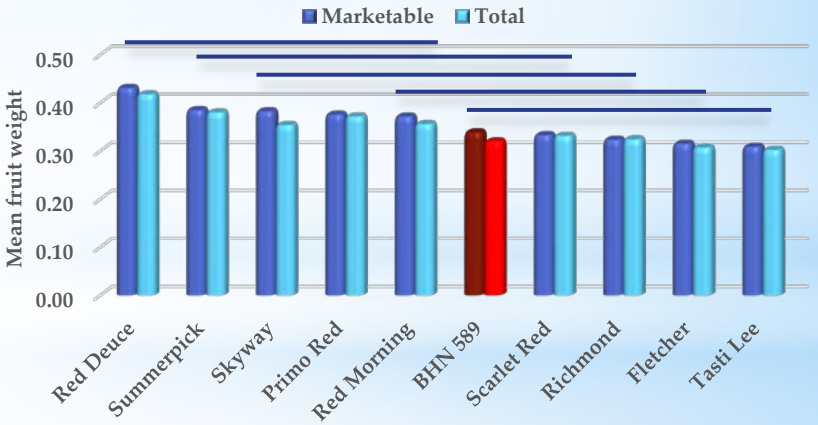
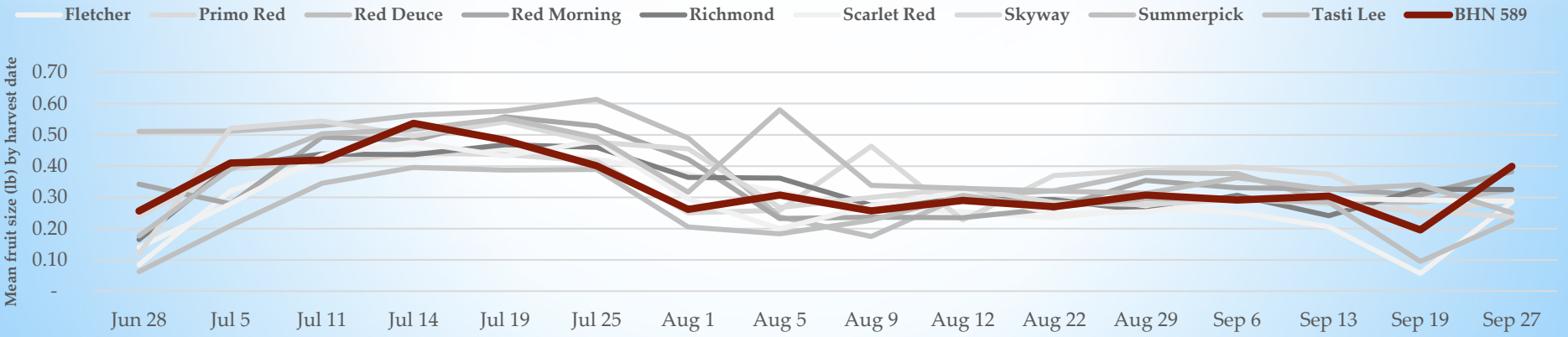
BHN 589



DAYS: 75
FRUIT SIZE: 7oz.
PLANT TYPE/HEIGHT: 3ft

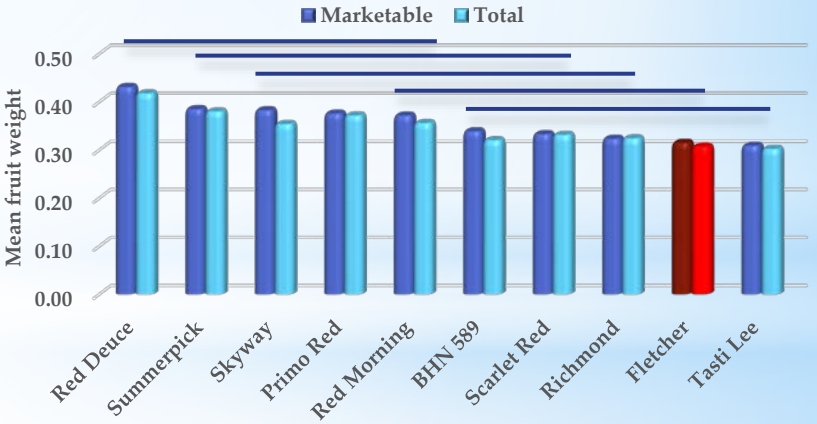


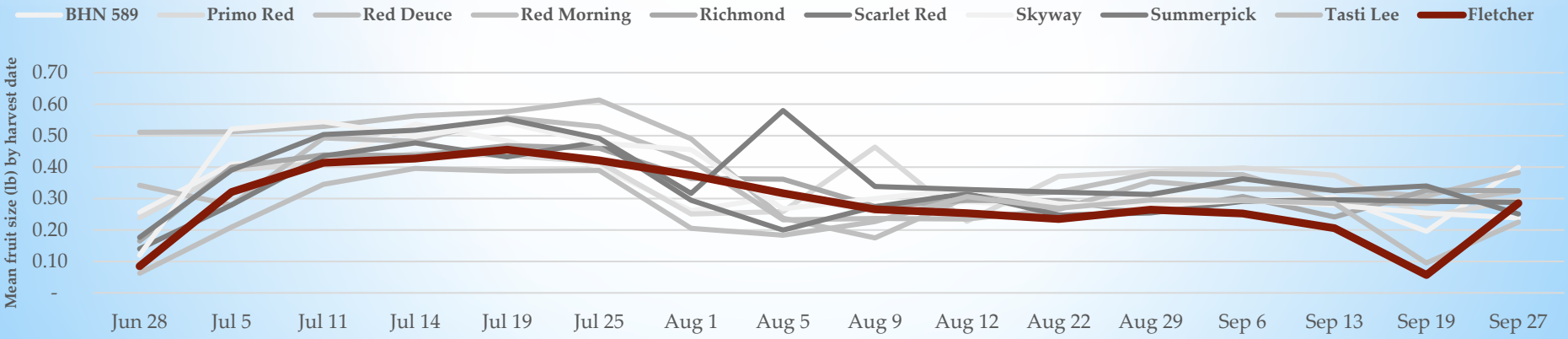




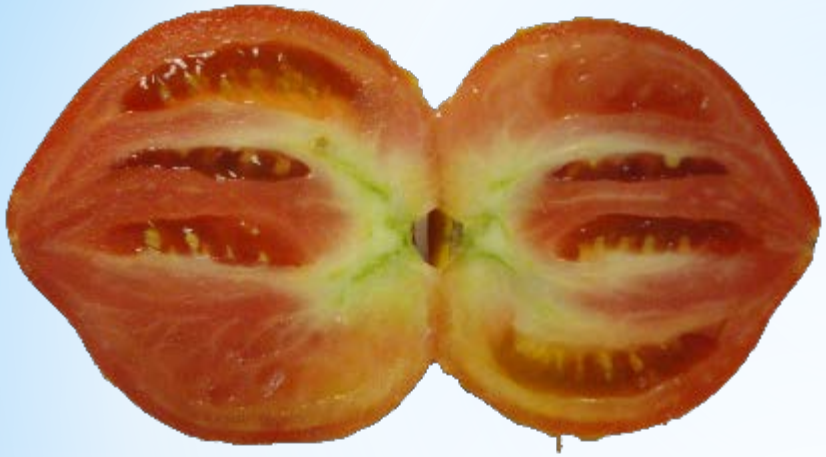
FLETCHER

DAYS: 74
FRUIT SIZE: 10-12 oz.
PLANT TYPE/HEIGHT: 36-48″

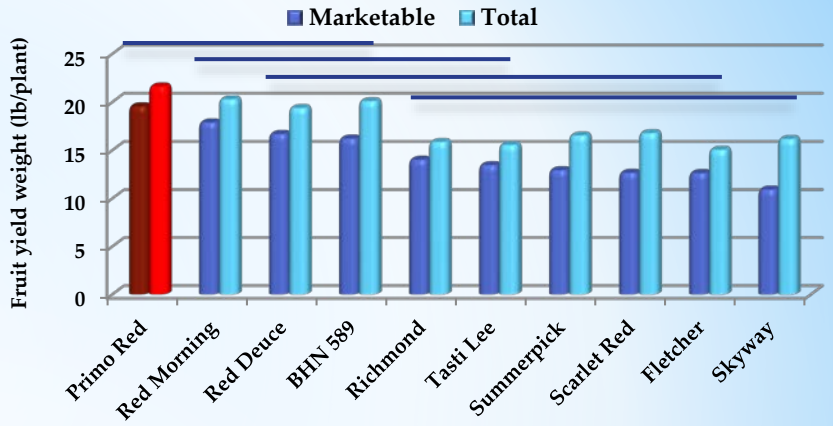


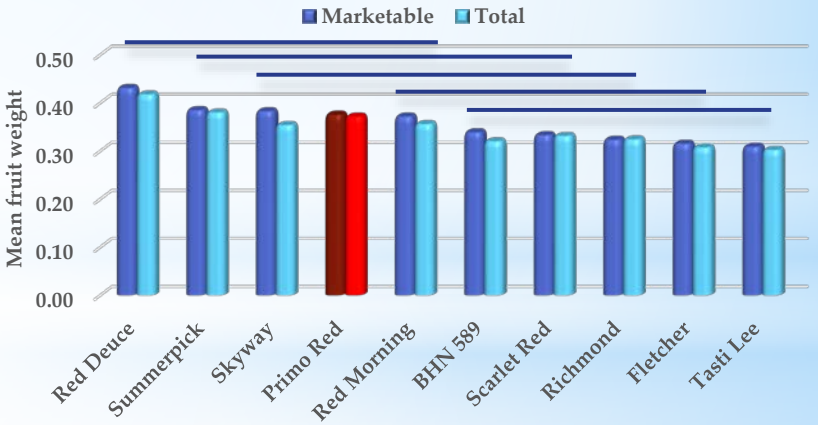


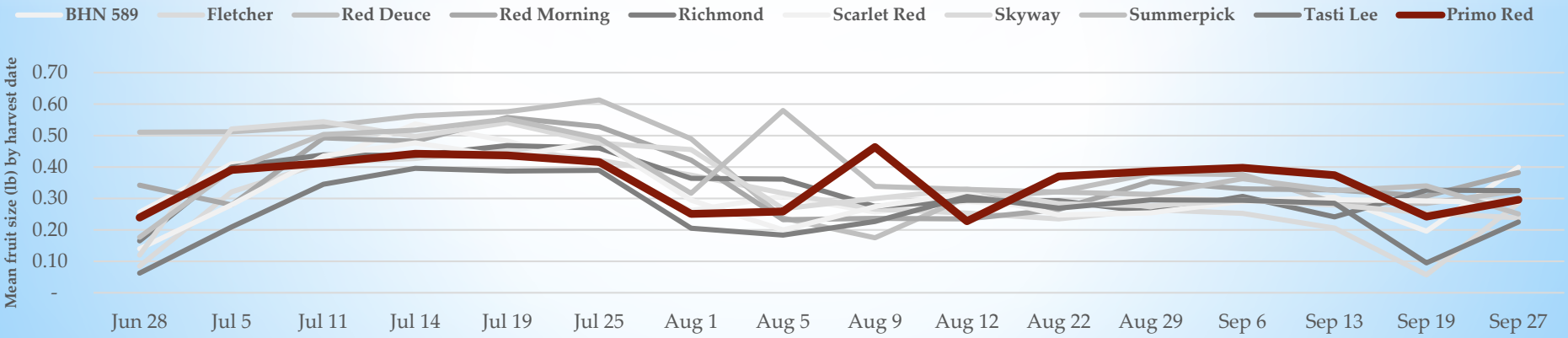
PRIMO RED



DAYS: 65
FRUIT SIZE: 8.5oz.
PLANT TYPE/HEIGHT: Compact

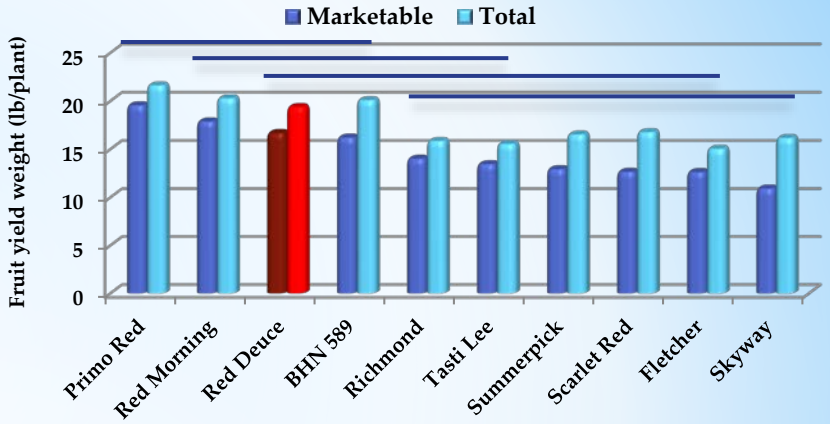


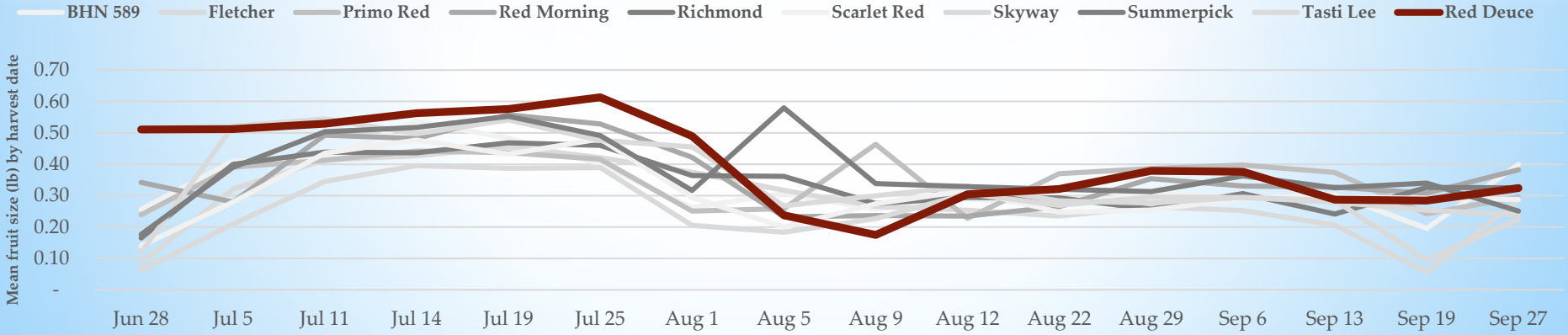




RED DEUCE

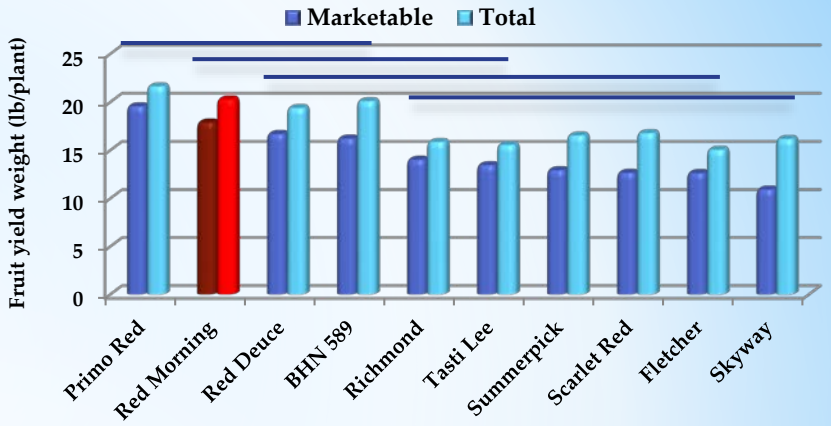
DAYS: 72
FRUIT SIZE: 10oz.
PLANT TYPE/HEIGHT: 2-3ft

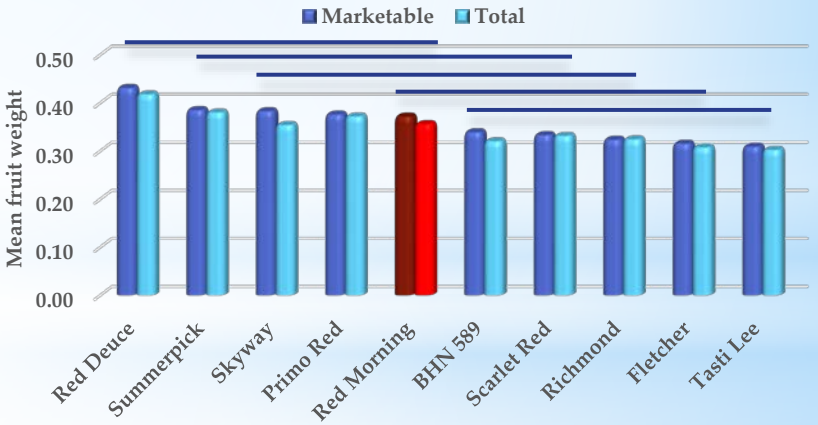


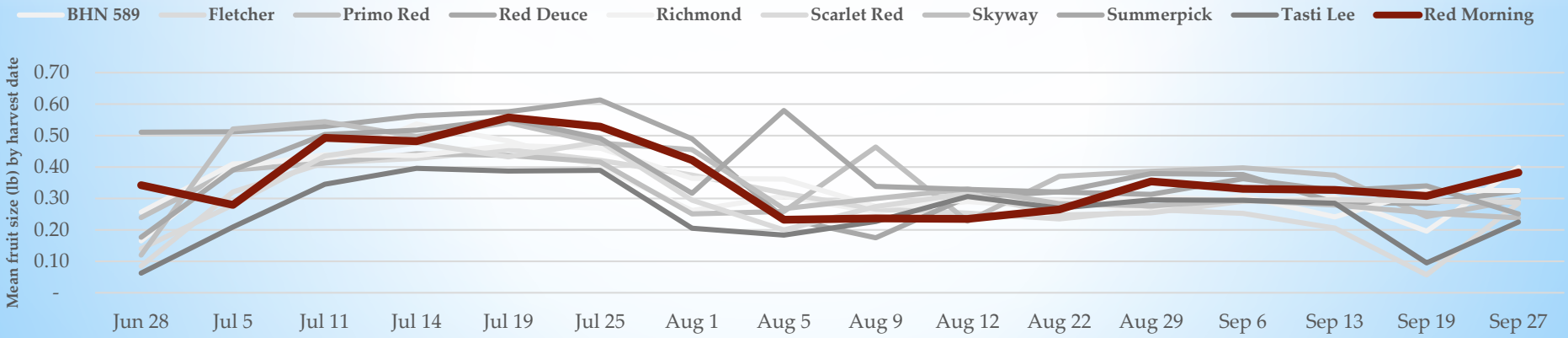


RED MORNING

DAYS: 73
FRUIT SIZE: 12 oz.
PLANT TYPE/HEIGHT: 36″

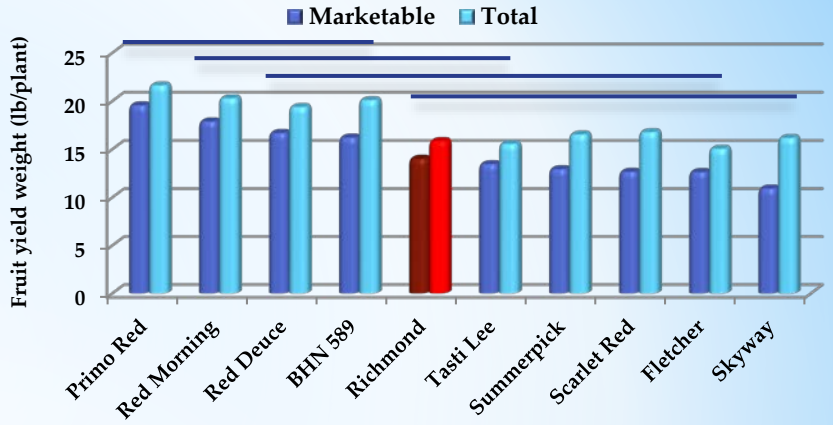


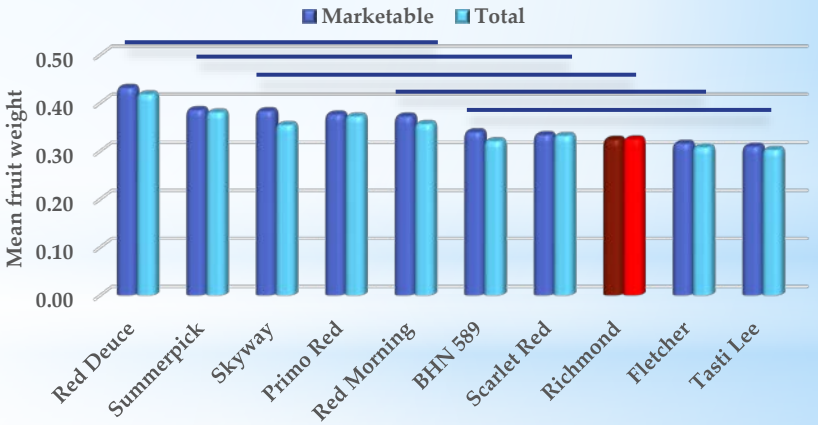


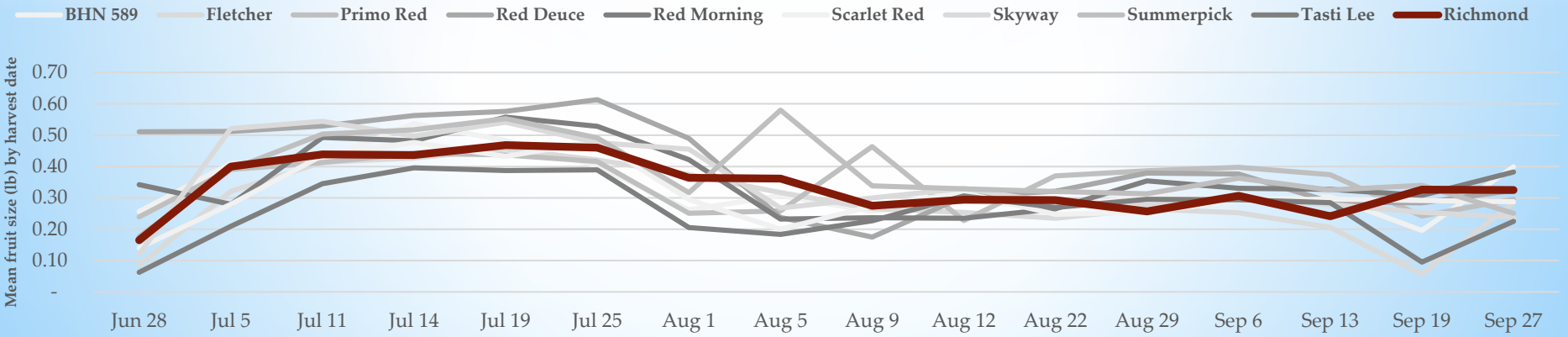


RICHMOND

DAYS:
FRUIT SIZE:
PLANT TYPE/HEIGHT:

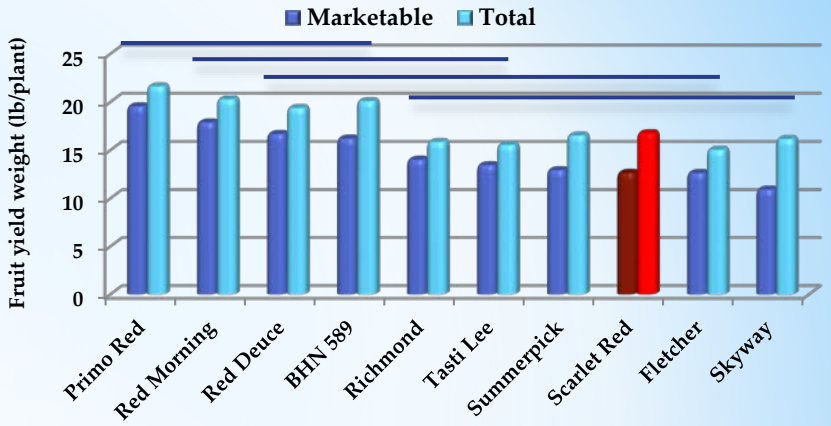


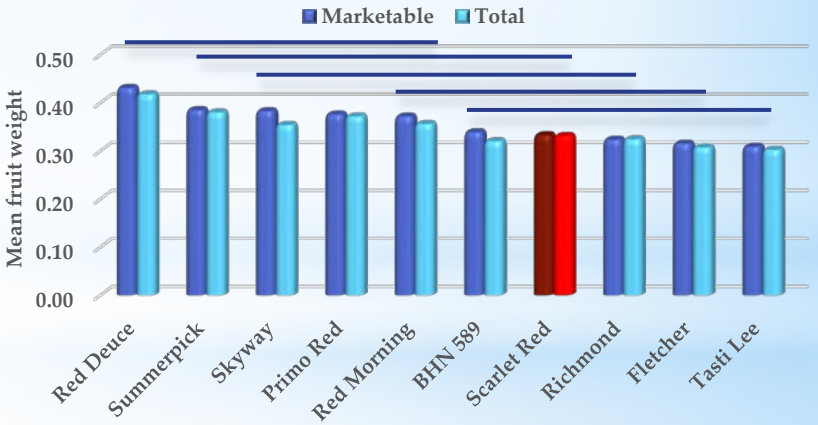


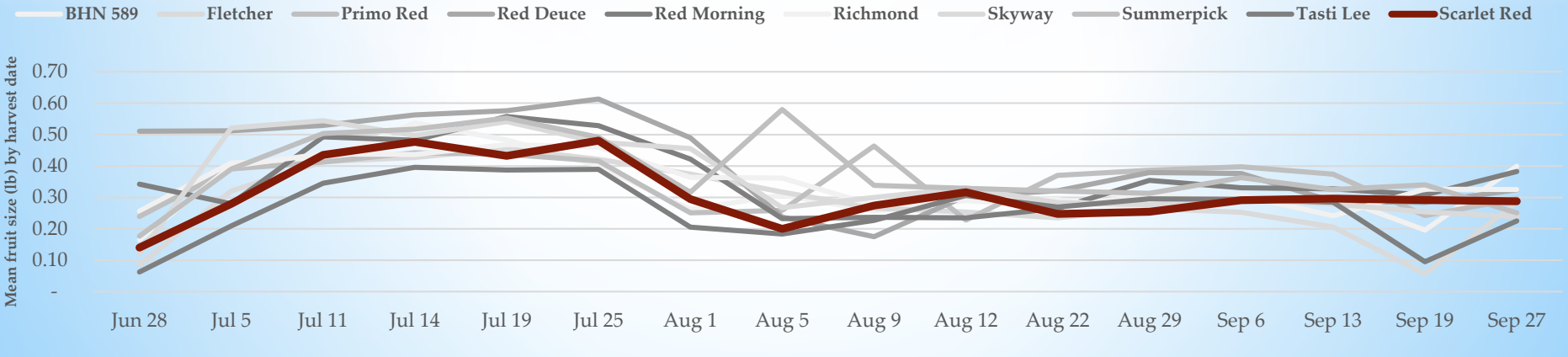


SCARLET RED

DAYS: 75
FRUIT SIZE: 12oz.
PLANT TYPE/HEIGHT: 4ft

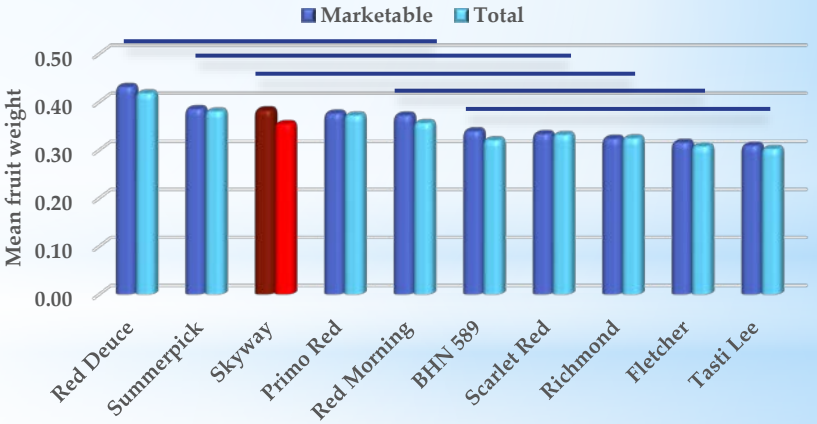


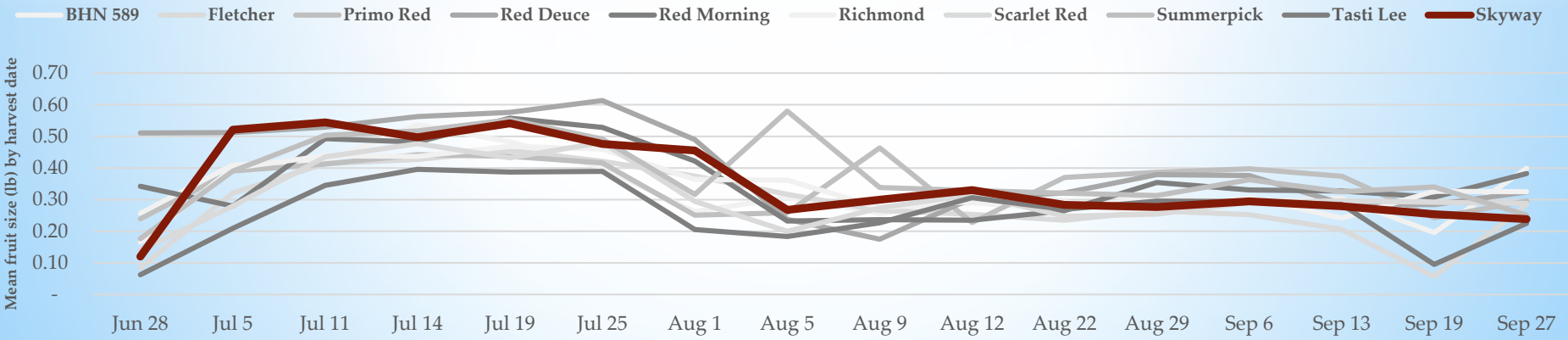




SKYWAY

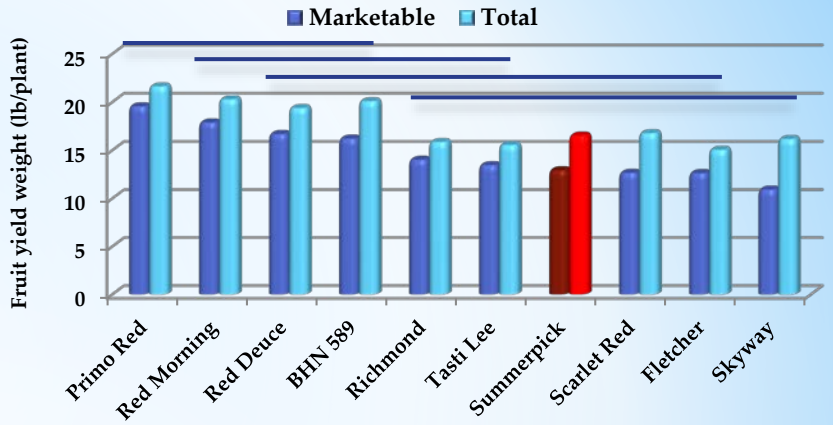
DAYS: 78
FRUIT SIZE: 10 oz.
PLANT TYPE/HEIGHT: 48″

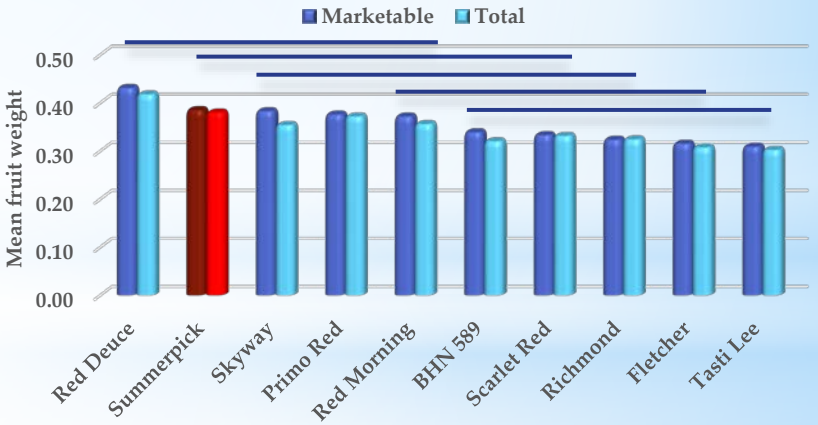


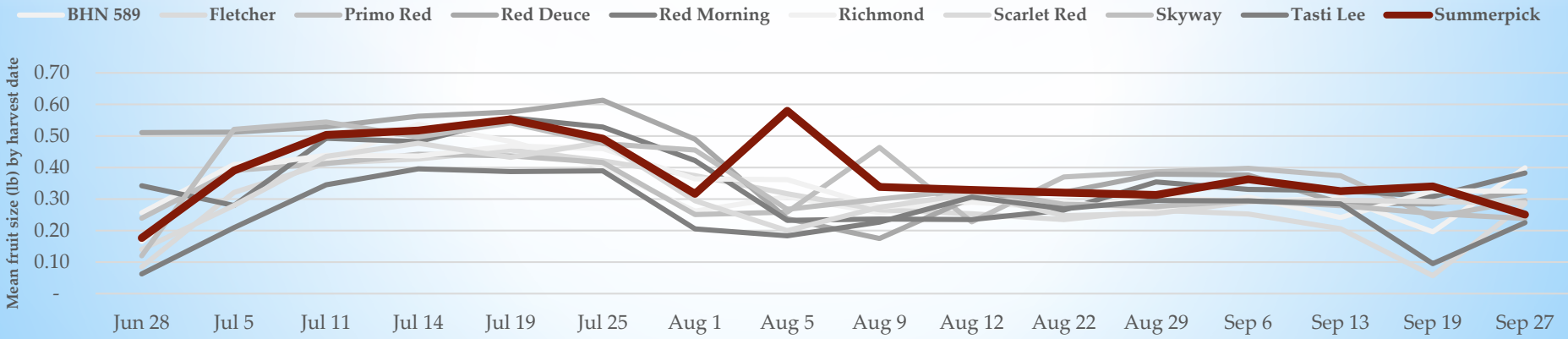


SUMMERPICK

DAYS: 70
FRUIT SIZE: 10 oz.
PLANT TYPE/HEIGHT: 48″

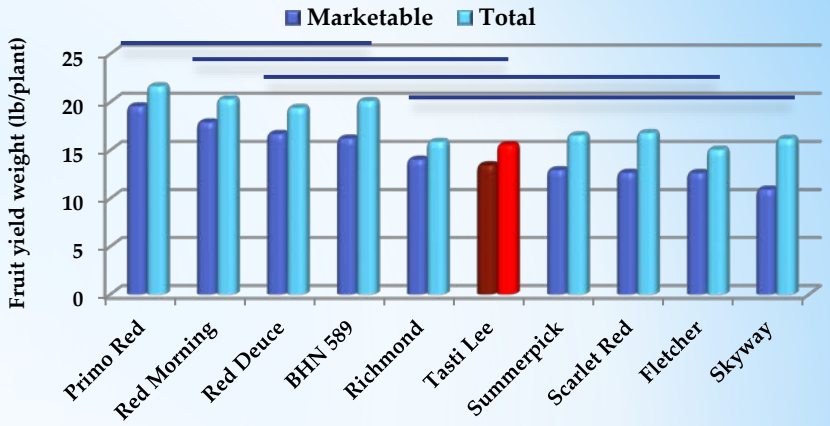


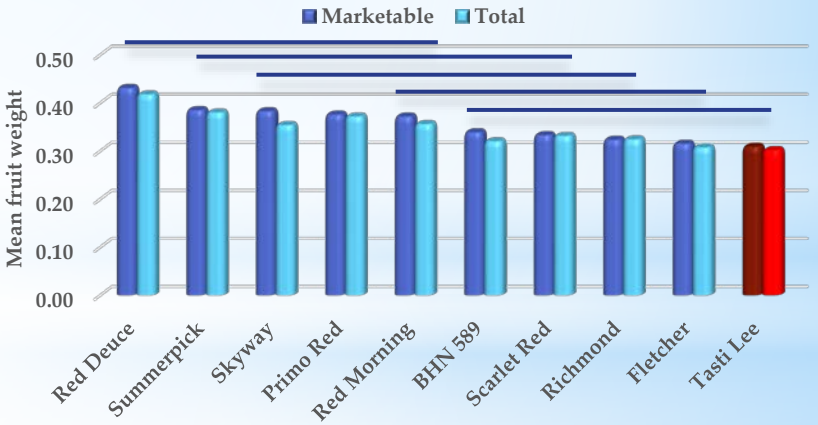


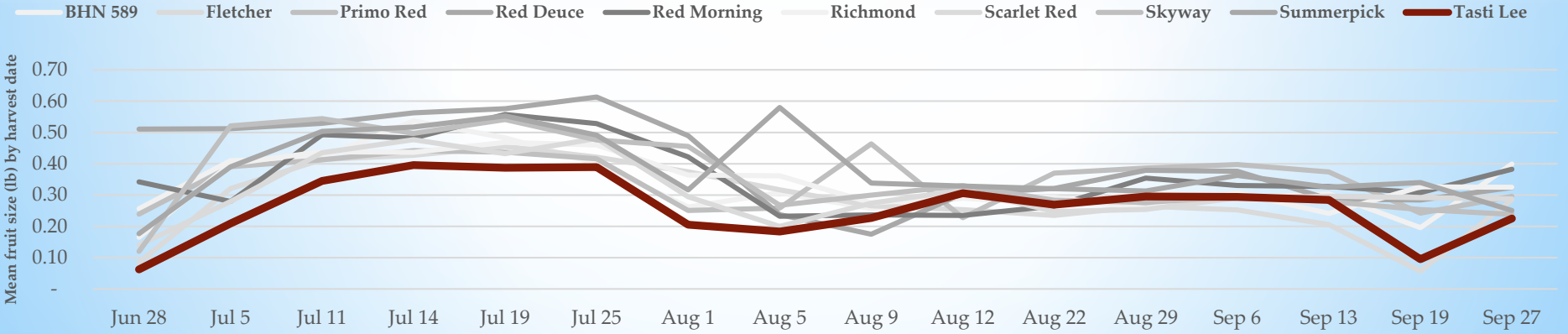


TASTI LEE

DAYS: 75
FRUIT SIZE: 6-9oz.
PLANT TYPE/HEIGHT: 36″







Summary

'Primo Red' had the highest per plant total and marketable yield at 19.6 and 21.6lb respectively. 'Primo Red' also resulted the highest per plant total and marketable yield in 2013, 2014 and 2015 variety trials. 'Richmond' was not statistically different than other varieties when it came to marketable yield. 'BHN 589' had statistically similar yield to 'Red Deuce', and 'Richmond' to 'Tasti Lee' when it came to yield. In regards to fruit size, 'Red Deuce' had the highest fruit size in marketability and total resulting in .43 and .42lb respectively. 'Red Deuce' was not statistically similar to other varieties in terms of fruit size. The results were similar in our 2013, 2014 and 2015 variety trials. For the third year in a row, 'Primo Red' resulted in the highest percent marketability by number at 89.7% and by total at 90.7%. 'Primo Red' was statistically similar to 'Richmond' in percent marketability by number.

The major portion (>80%) of the fruit quality problems seen in this trial were the result of blossom end rot (BER). Although the cull fruit were not graded specifically for this issue, the results seen in this study were most likely the result of a lower incidence of BER.

'Primo Red' was a consistent producer throughout the season with an average marketable fruit size of 0.38 lbs/fruit. When reviewing harvesting trends, particularly by marketable fruit weight per plant, three seasonal flushes were observed. There were two large flushes, 14 July and 6 September and one small flush on 25 July. 'Primo Red' had the largest fruit produced on 14 July and tied with 'Red Deuce' on 6 September. During the small flush, 'Primo Red' still produced well and came in the third highest mean fruit weight. 'Red Deuce' produced its largest mean fruit size at that time resulting in .61 lb/fruit.

Another variety that is known for its high Lycopene levels, 'Tasti Lee', was also a season consistent producer with smaller fruit between 0.21 and 0.40 lbs/fruit. and had a mid-season flush (from 14 to 25 July) with average fruit size at .40 lbs/fruit. Several varieties showed good potential for early-season production, which can be advantageous for marketing high-value fruit. In particular, 'Primo Red', 'Scarlet Red', and 'BHN 589' showed the highest yields during the mid weeks of July (data not shown). 'Primo Red', 'Red Deuce' and 'Red Morning' also showed very strong production in the early part of September, which may be useful for growers looking to cater to late markets.

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