

**Evaluation of FCR-resistant Tomato Varieties under  
Commercial Conditions in Southwest Florida  
Spring 2011**



**Submitted by Monica Ozores-Hampton and Gene McAvoy  
University of Florida/SWFREC  
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**Table 1. Seed sources and pruning of Fusarium Crown Rot (FCR) resistant tomato varieties grown with seepage irrigation during spring 2011, Estero, FL.**

<b>Varieties</b>	<b>Company</b>	<b>Number of suckers pruned</b>
BHN 585	BHN	3
BHN 730	BHN	3
Crown Jewel	Seminis	3
HMX 8849	Harris Moran	3
Soraya	Syngenta	3
Sebring	Syngenta	3
FL 47	Seminis	3

**Table 2. Summary of cultural practices used in (FCR resistant tomato varieties grown with seepage irrigation during spring 2011, Estero, FL.**

<b>Field History</b>	
<b>Location</b>	Estero, FL.
<b>Experimental Design</b>	CRBD (4 reps)
<b>Irrigation</b>	Seepage
<b>Plot size</b>	37 ft
<b>Harvest unit</b>	18.3 ft
<b>Planting Date</b>	7-Jan-11
<b>Fumigation</b>	MeBr/Chloropicrin (100 lb/acre 50:50)
<b>Mulch</b>	Black
<b>Linear ft per acre</b>	7,260
<b>Bed Height</b>	8 in
<b>Bed Width</b>	32 in
<b>Bed Spacing</b>	6 ft
<b>Plant Spacing</b>	22 in
<b>Row run</b>	North – South
<b>Plant population</b>	3,967
<b>Harvest Date</b>	
1 <sup>st</sup>	13-Apr-11
2 <sup>nd</sup>	27-Apr-11
3 <sup>rd</sup>	4-May-11
<b>Planting to 3rd pick</b>	17 weeks

**Table 3. Summary of temperature and total rainfall during the spring 2011, Estero, FL.**

Period	Temperature (°F)			Total rainfall (inch)
	Average	Min	Max	
Jan 2011	59.4	46.0	74.2	1.4
Feb 2011	65.7	52.4	81.4	0.4
Mar 2011	67.8	53.7	84.2	2.4
Apr 2011	75.4	60.4	91.7	3.8
May 2011	78.9	65.8	92.9	0.0
Average/Total	69.4	55.7	84.9	7.9

\*There was freeze stress on 13 and 23 January, 2011.

**Table 4. Bacterial spot (BS), Tomato Yellow Leaf Curl virus (TYLCV) incidence, and FCR evaluation at third harvest (May 5, 2011) of FCR resistant tomato varieties grown during spring 2011, Estero, FL.**

Treatment	Disease Severity Rating (%)		
	BS <sup>z</sup>	TYLCV	FCR <sup>y</sup>
<b>BHN 585</b>	50.0ab <sup>z</sup>	0.0	0.0b
<b>BHN 730</b>	50.0ab	0.0	0.0b
<b>Crown Jewel</b>	50.0ab	0.0	0.0b
<b>HMX 8849</b>	50.0ab	0.0	0.0b
<b>Soraya</b>	57.5a	0.0	0.0b
<b>Sebring</b>	45.0b	0.0	0.0b
<b>FL 47</b>	41.0b	0.3	1.3a
<b>P value</b>	0.01	0.45	0.0001
<b>Sig.</b>	**	ns	**

<sup>z</sup> Bacterial spot disease assessment as disease severity (percentage symptomatic tissue) for BS. The rating did not distinguish between the bacterial spot caused by *Xanthomonas perforans* and bacterial speck caused by *Pseudomonas syringae* pv. *tomato*.

<sup>y</sup> Fusarium crown rot (*Fusarium oxysporum* f.sp.*radicis-lycopersici*).

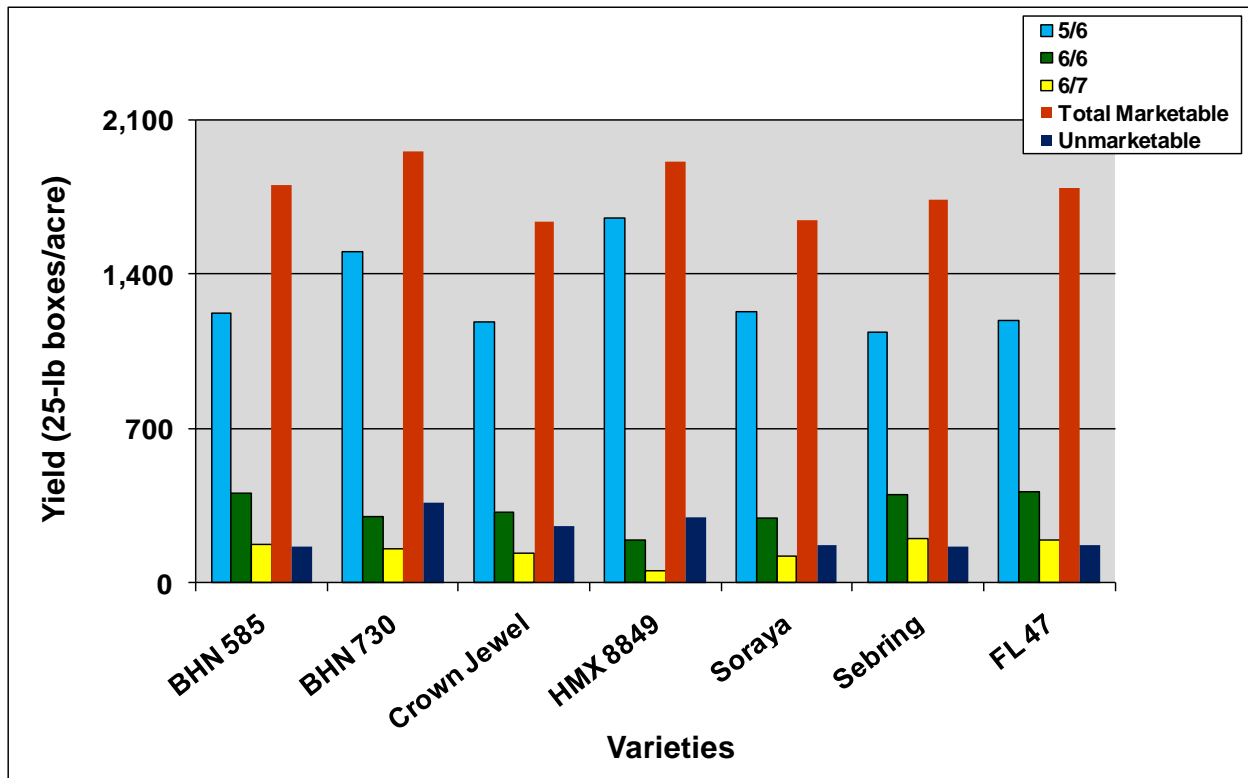
\*\*Significance at  $P \leq 0.01$ , \*Significance at  $P \leq 0.05$  and ns = Non-significance.

**Table 5. First harvest marketable fruit yield by size categories for FCR resistance tomato varieties grown in spring 2011, Estero, FL.**

Variety	Marketable Yield			Total	Unmarketable
	5/6	6/6	6/7		
	----- (25-lb boxes/acre) -----				
<b>BHN 585</b>	1,225b <sup>z</sup>	409a	172ab	1,805ab	164b
<b>BHN 730</b>	1,503a	300c	155ab	1,957a	362a
<b>Crown Jewel</b>	1,183b	319bc	137ab	1,639b	259ab
<b>HMX 8849</b>	1,653a	196d	58c	1,907a	297a
<b>Soraya</b>	1,231b	293c	124bc	1,647b	173b
<b>Sebring</b>	1,137b	403ab	200a	1,740ab	165b
<b>FL 47</b>	1,190b	411a	191ab	1,793ab	170b
<b>P value</b>	0.0001	0.0003	0.004	0.04	0.005
<b>Sig.</b>	**	**	**	*	**

<sup>z</sup> Within columns, means followed by different letters are significantly different according to Duncan's Multiple Range Test at 5%.

\*\*Significance at  $P \leq 0.01$ . \*Significance at  $P \leq 0.05$ . ns Non-significance.

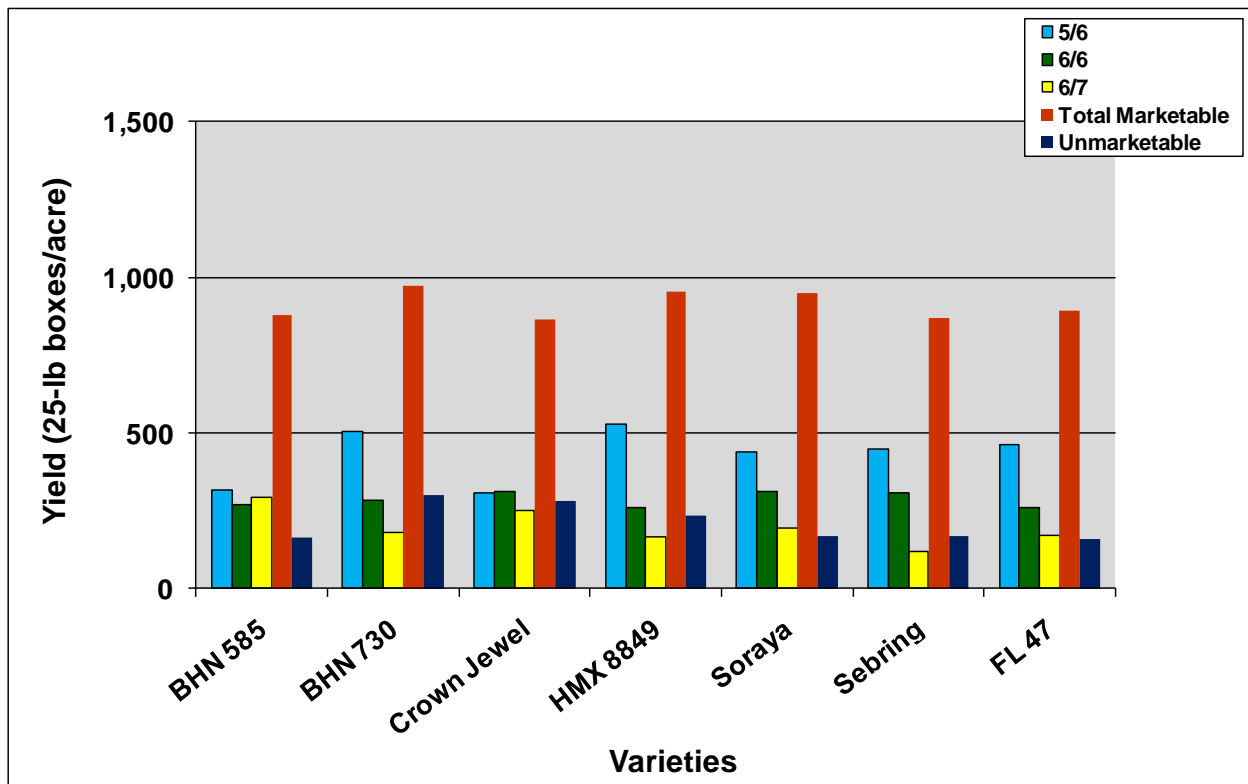


**Table 6. Second harvest marketable fruit yield by size categories for FCR resistance tomato varieties grown in spring 2011, Estero, FL.**

Variety	Marketable Yield			Total	Unmarketable
	5/6	6/6	6/7		
	----- (25-lb boxes/acre) -----				
<b>BHN 585</b>	315b <sup>z</sup>	269	295a	879	162b
<b>BHN 730</b>	505a	286	182bc	972	302a
<b>Crown Jewel</b>	305b	312	249ab	867	284ab
<b>HMX 8849</b>	531a	258	167bc	955	236ab
<b>Soraya</b>	438ab	313	195bc	947	168b
<b>Sebring</b>	446ab	305	119c	871	170b
<b>FL 47</b>	462ab	262	169bc	894	160b
<b>P value</b>	0.03	0.47	0.003	0.75	0.05
<b>Sig.</b>	*	ns	**	Ns	*

<sup>z</sup> Within columns, means followed by different letters are significantly different according to Duncan's Multiple Range Test at 5%.

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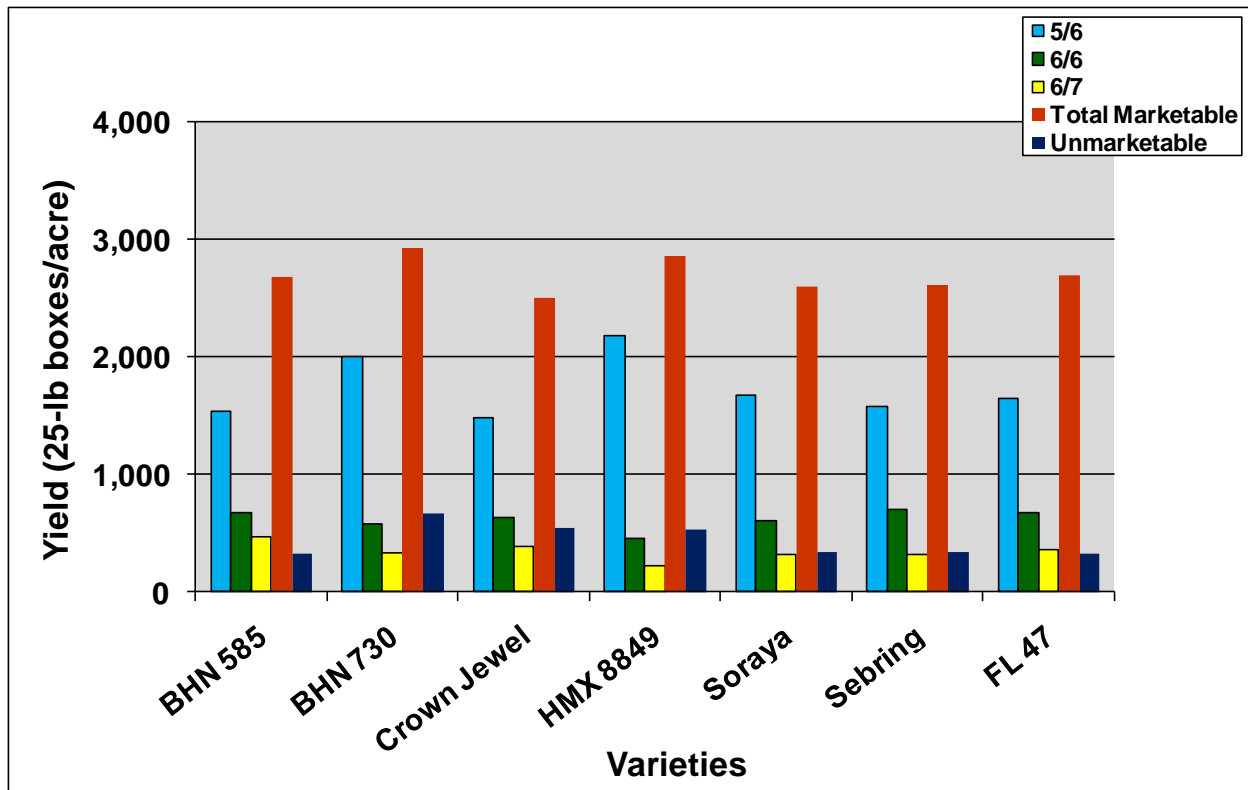


**Table 7. First and second harvest marketable fruit yield by size categories for FCR resistance tomato varieties grown in spring 2011, Estero, FL.**

Variety	Marketable Yield			Total	Unmarketable
	5/6	6/6	6/7		
	----- (25-lb boxes/acre) -----				
<b>BHN 585</b>	1,540b <sup>z</sup>	677a	466a	2,684abc	325b
<b>BHN 730</b>	2,007a	585a	336b	2,929a	664a
<b>Crown Jewel</b>	1,489b	632a	386ab	2,506b	543a
<b>HMX 8849</b>	2,184a	454b	224c	2,862ab	533a
<b>Soraya</b>	1,669b	606a	319bc	2,595b	340b
<b>Sebring</b>	1,583b	708a	319bc	2,610bc	334b
<b>FL 47</b>	1,653b	673a	361b	2,687abc	330b
<b>P value</b>	0.0001	0.005	0.002	0.03	0.0001
<b>Sig.</b>	**	**	**	*	**

<sup>z</sup> Within columns, means followed by different letters are significantly different according to Duncan's Multiple Range Test at 5%.

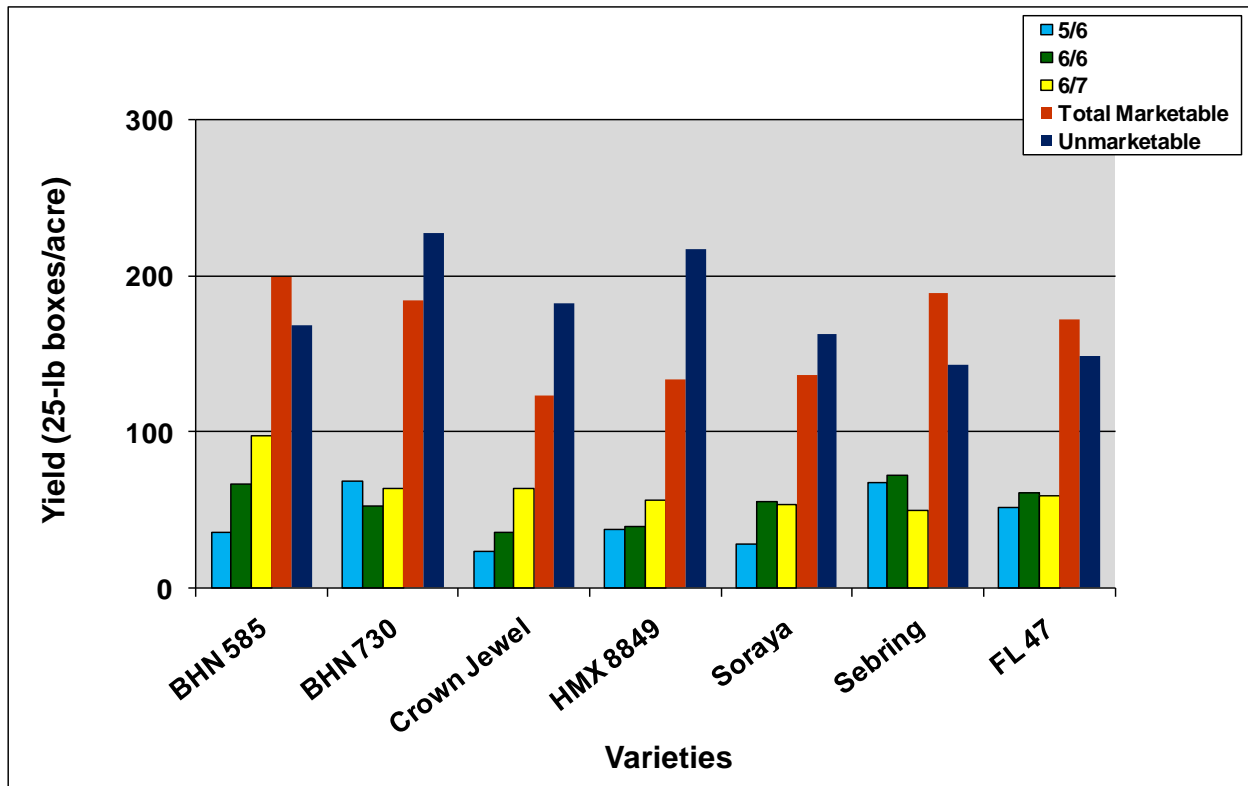
\*\*Significance at  $P \leq 0.01$ . \*Significance at  $P \leq 0.05$ . ns Non-significance.



**Table 8. Third harvest marketable fruit yield by size categories for FCR resistance tomato varieties grown in spring 2011, Estero, FL.**

Variety	Marketable Yield			Total	Unmarketable
	5/6	6/6	6/7		
	----- (25-lb boxes/acre) -----				
<b>BHN 585</b>	36	66	97	199	169
<b>BHN 730</b>	68	53	63	184	227
<b>Crown Jewel</b>	24	36	63	123	182
<b>HMX 8849</b>	38	40	57	134	217
<b>Soraya</b>	28	56	54	137	163
<b>Sebring</b>	67	72	50	189	143
<b>FL 47</b>	52	61	59	172	148
<b>P value</b>	0.16	0.34	0.22	0.46	0.27
<b>Sig.</b>	Ns	ns	ns	ns	ns

\*\*Significance at  $P \leq 0.01$ . \*Significance at  $P \leq 0.05$ . ns Non-significance.

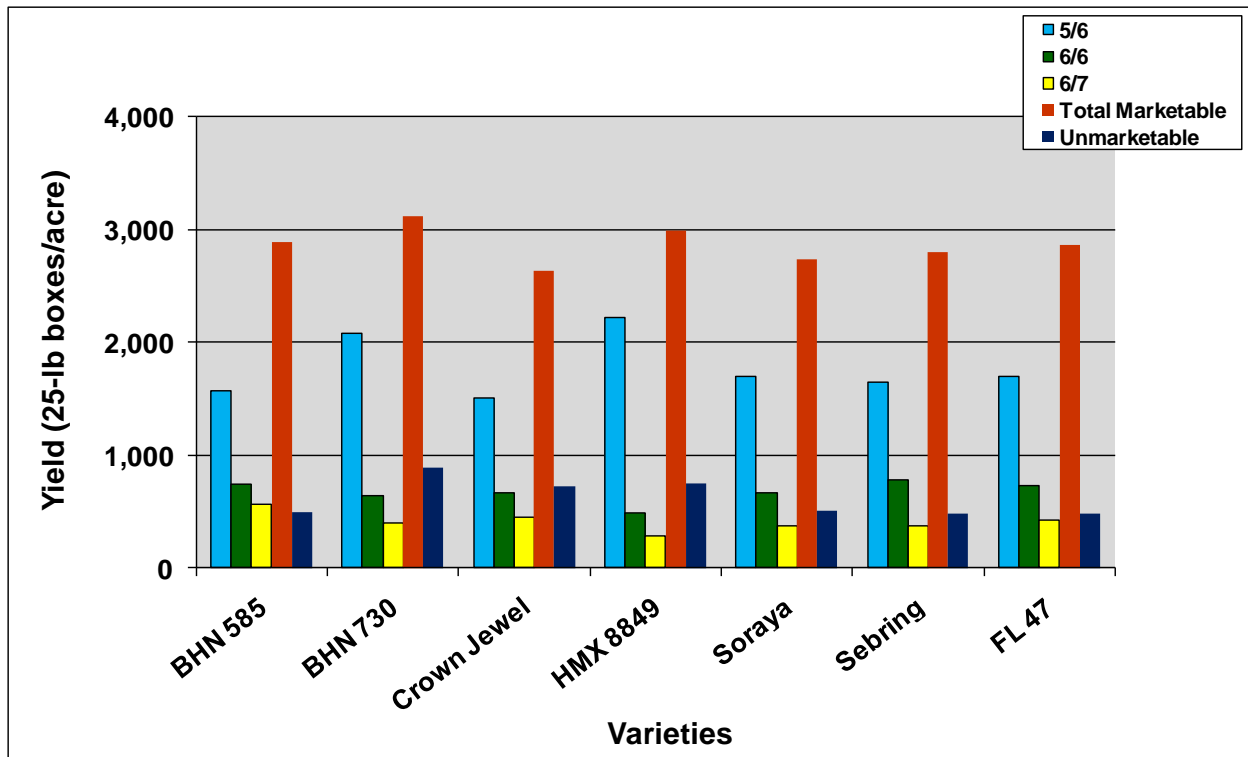


**Table 9. Total marketable harvest fruit yield by size categories for FCR resistance tomato varieties grown in spring 2011, Estero, FL.**

Variety	Marketable Yield			Total	Unmarketable
	5/6	6/6	6/7		
	----- (25-lb boxes/acre) -----				
<b>BHN 585</b>	1,576b <sup>z</sup>	744a	563a	2,883abc	494b
<b>BHN 730</b>	2,076a	638a	400b	3,113a	891a
<b>Crown Jewel</b>	1,513b	667a	449b	2,629c	725a
<b>HMX 8849</b>	2,222a	494b	281c	2,996ab	750a
<b>Soraya</b>	1,697b	662a	373bc	2,731bc	503b
<b>Sebring</b>	1,650b	781a	369bc	2,800bc	477b
<b>FL 47</b>	1,705b	734a	420b	2,859abc	478b
<b>P value</b>	0.0001	0.006	0.0007	0.02	0.0001
<b>Sig.</b>	**	**	**	*	**

<sup>z</sup> Within columns, means followed by different letters are significantly different according to Duncan's Multiple Range Test at 5%.

\*\*Significance at  $P \leq 0.01$ . \*Significance at  $P \leq 0.05$ . ns Non-significance.





**Table 10. Post-harvest evaluation of tomato fruit firmness (as fruit deformation) and color at table ripe stage at first harvest for FCR resistance tomato varieties grown in spring 2011, Estero, FL.**

Variety	Post-harvest Evaluation			
	First Test (12 DAFH)		Second test (16 DAFH)	
	Firmness Deformation (mm) <sup>z</sup>	Color (Rating 1-10) <sup>y</sup>	Firmness Deformation (mm)	Color (Rating 1-10)
<b>BHN 585</b>	3.26b <sup>x</sup>	6.0b	3.87abc	5.0b
<b>BHN 730</b>	3.62b	6.0b	4.51ab	5.0b
<b>Crown Jewel</b>	4.80a	6.0b	4.65a	6.0a
<b>HMX 8849</b>	3.19b	6.0b	3.14cd	6.0a
<b>Soraya</b>	2.20c	5.0c	2.16e	5.0b
<b>Sebring</b>	2.04c	6.0b	2.51de	5.0b
<b>FL 47</b>	3.29b	7.0a	3.79bc	6.0a
<b>P value</b>	0.0001	0.0001	0.0001	0.0001
<b>Sig.</b>	**	**	**	**

DAH = Days after first harvest

<sup>z</sup>Very firm ≤ 0.7 mm; firm ≤ 1.4mm; medium ≤ 2.1 mm; Soft ≤ 2.8 mm; very soft ≥ 3.9 mm.

<sup>y</sup> 1= green and 10 = purple.

<sup>x</sup> Within columns, means followed by different letters are significantly different according to Duncan's Multiple Range Test at 5%.

\*\*Significance at  $P \leq 0.01$  \*Significance at  $P \leq 0.05$  ns Non-significance.

**Table 11. Blind evaluation of plants and fruits at first harvest for FCR resistance tomato varieties grown in spring 2011, Estero, FL. (Blind evaluation was calculated from the contribution of 17 participants based in rating scale 1-5; 1= very poor and 5 = very good).**

Variety	Tomato Plants and Fruit Evaluation						
	Earliness type	Plant vigor	Fruit size	Firmness	Fruit quality	Yield potential	Overall rate
<b>BHN 585</b>	1.9cd <sup>z</sup>	3.0de	2.8cd	3.2	3.1ab	3.1c	2.9b
<b>BHN 730</b>	2.6b	3.9ab	3.4b	3.0	3.4a	3.7a	3.5a
<b>Crown Jewel</b>	2.6b	2.9e	2.8cd	3.0	2.8b	3.1c	2.8b
<b>HMX 8849</b>	3.0a	4.0a	4.1a	3.6	3.1ab	3.5ab	3.4a
<b>Soraya</b>	1.9cd	3.6abc	3.0bc	3.2	3.4a	3.2bc	3.1ab
<b>Sebring</b>	2.2c	3.4cd	3.1bc	3.3	3.4a	3.2bc	2.9b
<b>FL 47</b>	1.9cd	3.5bc	2.5d	3.2	3.5a	3.1c	2.9b
<b>P values</b>	0.0001	0.0001	0.0001	0.08	0.01	0.0002	0.001
<b>Sig.</b>	**	**	**	ns	**	**	**

<sup>z</sup> Within columns, means followed by different letters are significantly different according to Duncan's Multiple Range Test at 5%.

\*\*Significance at  $P \leq 0.01$  \*Significance at  $P \leq 0.05$  ns Non-significance.