



UNIVERSITY OF
FLORIDA

EVALUATION OF TYLCV AND FUSARIUM CROWN ROT TOMATO VARIETY IN SOUTHWEST FLORIDA

Monica Ozores-Hampton, Eugene McAvoy, Steve Sargent and Pamela Roberts

Objectives

- To evaluate the horticultural performance of the TYLCV and FCR varieties under South Florida conditions:
- Yield and fruit qualities, disease incidence and post-harvest characteristics
- Under high or low virus pressure



Facts: Tomato Yellow Leaf Curl Virus (TYLCV)

- Is the worst tomato disease, because can have tremendous impact in yields.
- The disease is induced by a number of begomoviruses, transmitted by the whitefly *Bemisia tabaci*.
- Leaf symptoms include chlorotic margins, small leaves which are cupped, thick and rubbery. The majority (up to 90%) of flowers abscise after infection.





In order to lessen the incidence of the TYLCV
(There are no wild species as reservoir for
TYLCV during the summer):

1. Tomato Free Periods
2. Eradication of volunteer
3. Peppers whitefly control

Now, if the virus become more strong another tool is "resistant varieties".

Three Harvest

Extra-large (5/6), Large (6/6), Medium (6/7) and un-marketable



Spring 2009
2 trials Conventional and
Organics
12 varieties
Immokalee Farm

Variety	Source
BHN 765	BHN Seed
UF 8577	UF
UF 8578	UF
HA 3075 (Ofri)	Hazera
HA 3095	Hazera
HA 3096	Hazera
HM 8845	Harris Moran
Sak 5230	Sakata
Sak 5443	Sakata
SVR 200	Seminis
Tycoon	Hazera
Tygress	Seminis
FL 47 (Control)	Seminis
Sebring (Control)	Syngenta

Total Marketable Harvest

TYLCV 2009

No TYLCV

January 8

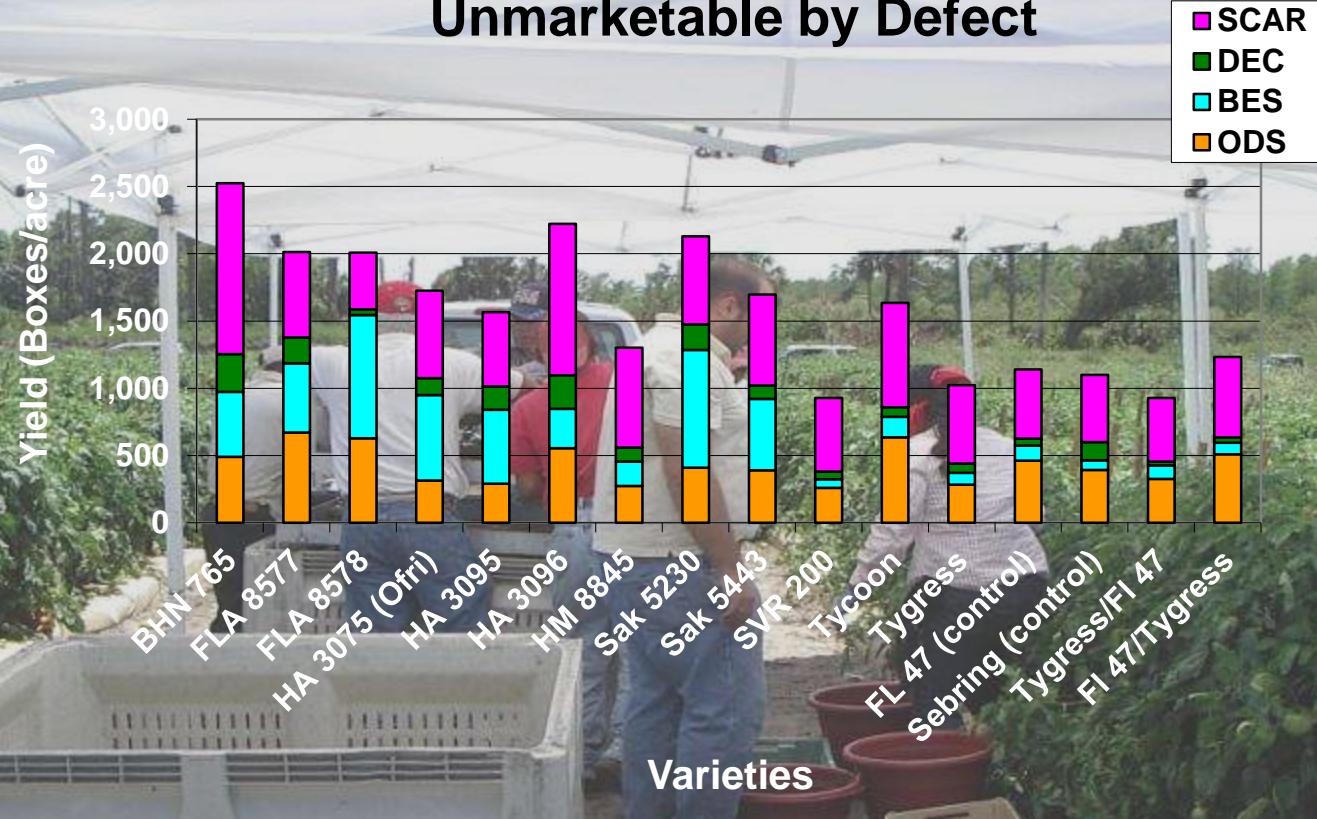
Cool and dry

Five freeze
events

Rainfall 3"

	Varieties	Marketable Yield (Boxes/acre)				Unmarketable
		5/6	6/6	6/7	Total	
	BHN 765	1,457bcd	747bcde	464cdef	2,675abc	2,524a
	UF 8577	863efg	727bcdef	558cde	2,148cde	2,012abc
	UF 8578	462g	543defg	543cdef	1,549e	2,007abc
	HA 3075 (Ofri)	757efg	791b	792ab	2,339bcd	1,725abcd
	HA 3095	801efg	530defg	614bcd	1,945de	1,578bcd
	HA 3096	1,070def	523efg	429cdef	2,022de	2,222ab
	HM 8845	1,417bcd	764bc	629bcd	2,810ab	1,301cd
	Sak 5230	663fg	563cdefg	413def	1,639e	2,130ab
	Sak 5443	1,106def	748bcd	655bc	2,509bcd	1,695bcd
	SVR 200	1,876ab	515fg	372ef	2,763abc	928d
	Tycoon	1,233cde	543defg	368ef	2,144cde	1,634bcd
	Tygress	2,165a	429g	309f	2,903ab	1,023d
	FL 47 (control)	1,568bcd	781b	598bcde	2,947ab	1,140d
	Sebring (control)	1,247cde	1,057a	906a	3,210a	1,098d
	P value	0.0001	0.0001	0.0001	0.0001	0.0004
	Sig.	**	**	**	**	**

Unmarketable by Defect



Post-Harvest Evaluation TYLCV 2009

Fruit Firmness and Color

First harvest

7 days of ethylene ripening treatment

Full color

Varieties	Post-harvest	
	Deformation (mm)	Color (1-10)
BHN 765	3.56	6.0
UF 8577	4.15	6.0
UF 8578	3.13	7.0
HA 3075 (Ofri)	2.79	6.0
HA 3095	3.39	7.0
HA 3096	3.56	7.0
HM 8845	3.73	7.0
Sak 5230	3.05	6.0
Sak 5443	3.47	6.5
SVR 200	2.88	6.0
Tycoon	3.30	7.0
Tygress	2.71	6.5
FL 47 (control)	2.46	6.0
Sebring (control)	2.96	5.0
P value	0.09	0.08
Sig.	Ns	Ns



Bacterial Disease Assessment

TYLCV 2009



Variety	Bacterial Spot Rating (%)	Fusarium crown rot (%)
BHN 765	31.7	0.0
UF 8577	25.0	0.0
UF 8578	30.0	10.0
HA 3075 (Ofri)	33.3	0.0
HA 3095	30.0	10.0
HA 3096	31.7	20.0
HM 8845	31.7	0.0
Sak 5230	33.3	13.3
Sak 5443	36.7	10.0
SUR 200	30.0	6.7
Tycoon	35.0	46.7
Tygress	28.3	0.0
FL 47 (control)	28.3	6.7
Sebring (control)	25.0	0.0
P value	0.81	0.10
Sig.	ns	ns

Variety Blind Evaluation

Spring 2009

23 participants

(scale 1-5; 1 = very poor and 5 = very good)



Participant perception under a blind test rated best overall 'Tygress', 'SVR 200', 'HM 8845' and BHN

Variety	Overall Rating
BHN 765	3.6b
UF 8577	2.8cd
UF 8578	2.3ef
HA 3075 (Ofri)	2.3ef
HA 3095	2.5def
HA 3096	2.2f
HM 8845	3.7ab
Sak 5230	3.0c
Sak 5443	3.1c
SVR 200	3.7ab
Tycoon	2.6de
Tygress	4.0a
FL 47 (control)	3.1c
Sebring (control)	2.9cd
Sig	**

Variety	Source
Charger	Sakata
Katana	Takii
Security 28	Harris Moran
SVR 200	Seminis
Tygress	Seminis
Tycoon	Hazera
XTM 5467	Sakata
UF 8784	UFL
UF 8785	UFL
FL 47 (Control)	Seminis
Sebring (Control)	Syngenta

Spring 2010
9 varieties
Immokalee Farm

Total Marketable Harvest

TYLCV 2010

No TYLCV

January 7

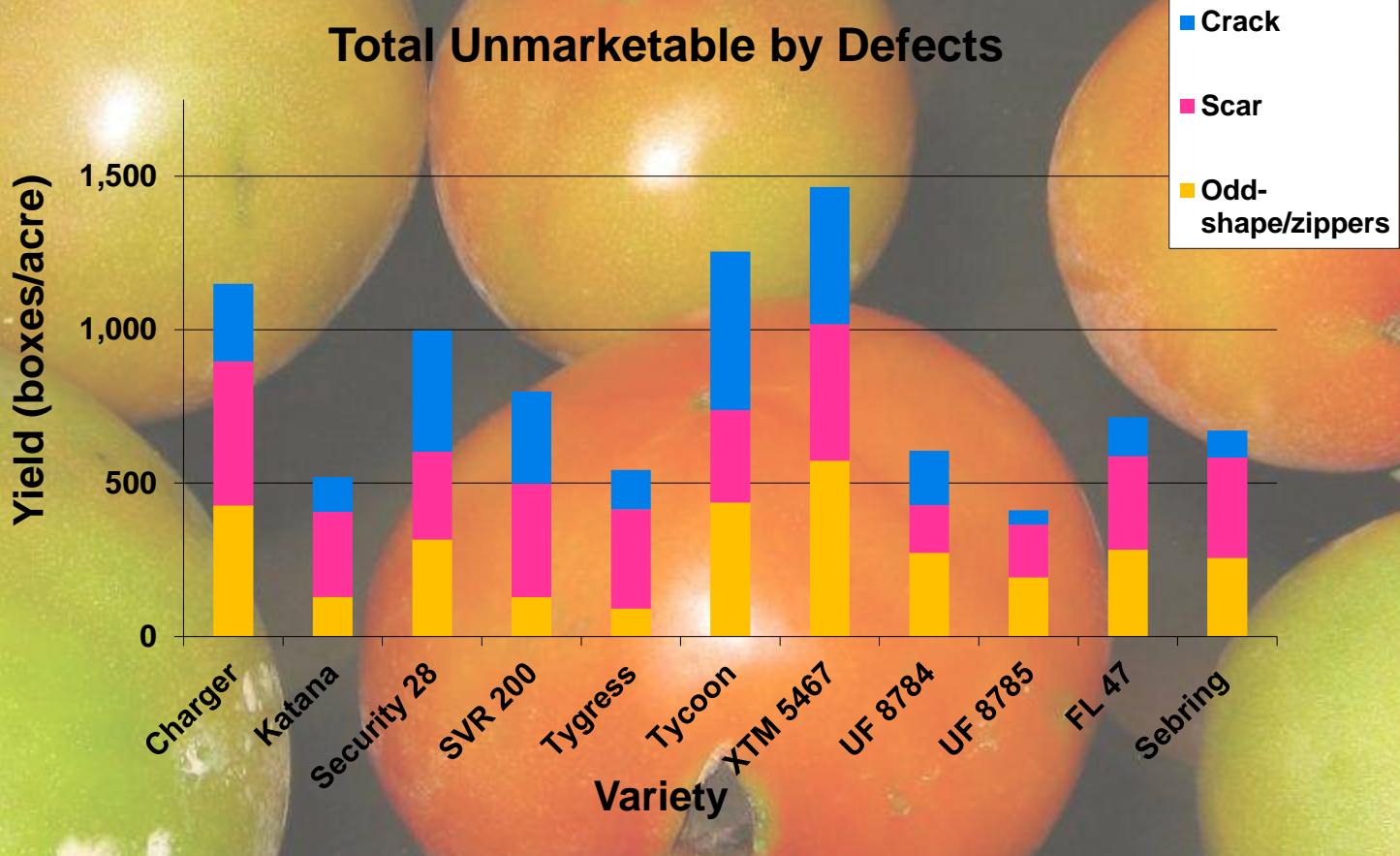
Wet and lower
than usual
temperatures

Five freeze
events

Rainfall 23"

Variety	Marketable Yield				Unmarketable
	5/6	6/6	6/7	Total	
(boxes/acre)					
Charger	310bc	215a	236a	762ab	1,150bc
Katana	261cd	187ab	182abc	631bc	520ef
Security 28	642a	116cd	141bcd	899a	998c
SVR 200	412b	145bcd	98d	655bc	799d
Tygress	291bcd	104d	142bcd	537cd	543ef
Tycoon	241cd	139cd	91d	471cd	1,255b
XTM 5467	353bc	122cd	109cd	584bcd	1,465a
UF 8784	164d	114d	153bcd	431d	606def
UF 8785	214cd	97d	206ab	517cd	411f
FL 47	327bc	164bc	139bcd	630bc	714de
Sebring	542a	143bcd	168abcd	852a	671de
P value	0.0001	0.0001	0.003	0.0001	0.0001
Sign.	**	**	**	**	**

Total Unmarketable by Defects



Post-Harvest Evaluation TYLCV 2010

Fruit Firmness and Color

First
Harvest

No ethylene
ripening
treatment

Table-ripe
or full color

Variety	Deformation (mm)	Color
Charger	2.23e	6.0b
Katana	2.41de	5.0c
Security 28	2.59cde	5.0c
SVR 200	2.63cde	6.0b
Tygress	3.09bcd	7.0a
Tycoon	4.91a	6.0b
XTM 5467	3.36bc	5.0c
UF 8784	3.81b	5.0c
UF 8785	2.89cde	6.0b
FL 47	2.71cde	5.0c
Sebring	2.42de	5.0c
P value	0.0001	0.01
Sign.	**	**



Variety Blind Evaluation

Spring 2010

14 participants

(scale 1-5; 1 = very poor and 5 = very good)



Variety	Overall Rating
Charger	2.6cde
Katana	2.5de
Security 28	4.1a
SVR 200	3.5b
Tygress	2.7cde
Tycoon	2.5de
XTM 5467	3.1bcd
UF 8784	2.5de
UF 8785	2.3e
FL 47 (Control)	2.8cde
Sebring (Control)	3.1bc
Sig	**

Participant perception under a blind test rated best overall 'Security 28'

Bacterial Disease Assessment

TYLCV 2010

First Harvest

The rating did not distinguish between the bacterial spot caused by *Xanthomonas perforans* and bacterial speck caused by *Pseudomonas syringae* pv. *tomato*.

Variety	Disease Severity Rating (%)
Charger	36.3bcde
Katana	45.0bc
Security 28	31.3cde
SVR 200	41.3bcd
Tygress	26.3de
Tycoon	70.0a
XTM 5467	50.0b
UF 8784	23.3e
UF 8785	26.7de
FL 47	35.0bcde
Sebring	52.5ab
P value	0.0002
Sig.	**

2006 Low Virus Pressure	2007 High Virus Pressure	2008 Low Virus Pressure	2009 Low Virus Pressure	2010 Low Virus Pressure
<u>http://swfrec.ifas.ufl.edu/veghort/trials/tylcv/</u>				
Best : HA 3075 (Hazera), S- 50257, VT- 60774, and VT-60780 (Zeraim Gedera).	Best: Hazera 3078, 3074 or Inbar and 3075 or Ofri. Roma: Shanty	Best: Tygress (Seminis) & 3074 or Inbar (Hazera). Roma: Sakata 5808	Best: 'Tygress' & SVR 200' (Seminis).	Best: 'Security 28' (Harris Moran) & 'Charger' (Sakata).
Good: BHN 745 (BHN Seed) and Tygress (Seminis) .	Good: Tygress (Seminis)	Good: Security 28 (Harris Moran), BHN 745 and 765, Hazera 3091 and 3075 (Ofri), and Sakata 5443.	Good: BHN 765, Harris Moran 8845.	Good: Katana (Takii) Tygress and SVR 200 (Seminis).



Evaluation of FCR-resistant Tomato Varieties

Facts: Fusarium Crown Rot (FCR)

FCR has been a serious disease of tomatoes on fumigated soils for the last 20 years.

Chemical control, such as methyl bromide and others, has limited efficacy and in some instances is not highly effective.

Fusarium Crown Rot
Spring 2010
5 varieties
Immokalee Farm

Variety	Source
BHN 585	BHN
Crown Jewel	Seminis
HMX 8849	Harris Moran
Sebring	Syngenta
Soraya	Syngenta
FL 47 (Control)	Seminis



Total Marketable Harvest FCR 2010

No FCR

Dec. 29

Wet and lower
than usual
temperatures

Seven freeze
events

Rainfall 21"

	Variety	Marketable Yield			Unmarketable
		5/6	6/6	6/7	
----- (boxes/acre) -----					
	BHN 585	836b	362	280ab	1,479b
	Crown Jewel	860b	440	290ab	1,591b
	HMX 8849	1,463a	322	169c	1,954a
	Sebring	900b	381	332a	1,613b
	Soraya	1,025b	370	228bc	1,623b
	FL 47	883b	319	202c	1,403b
	P value	0.002	0.27	0.002	0.04
	Sig.	**	Ns	**	*
					*

Post-Harvest Evaluation FCR 2010

Fruit Firmness and Color

Fist harvest

7 days of ethylene ripening treatment

Full color

	Variety	Deformation (mm)	Color
	BHN 585	1.99ab	6.0b
	Crown Jewel	2.05a	6.0b
	HMX 8849	1.75ab	6.0b
	Sebring	1.63b	5.0c
	Soraya	1.20c	4.0d
	FL 47	1.82ab	7.0a
	P value	0.0006	0.01
	Sig.	**	**



Variety Blind Evaluation

Spring 2010

16 participants

(scale 1-5; 1 = very poor and 5 = very good)

Variety	Overall Rating
BHN 585	2.6d
Crown Jewel	3.0cd
HMX 8849	4.0a
Sebring	3.3bc
Soraya	3.7ab
FL 47	3.8a
Sig	**

Participant perception under a blind test rated best overall 'HMX 8849' and 'Soraya',

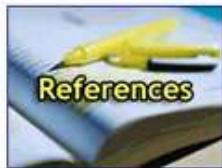
Bacterial Disease Assessment

FCR 2010

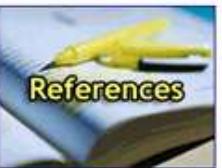
Second Harvest

The rating did not distinguish between the bacterial spot caused by *Xanthomonas perforans* and bacterial speck caused by *Pseudomonas syringae* pv. *tomato*.

Variety	Disease Severity Rating (%)
BHN 585	47.5b
Crown Jewel	50.0b
HMX 8849	47.5b
Sebring	50.0b
Soraya	67.5a
FL 47 (control)	37.5b
P value	0.006
Sig.	**

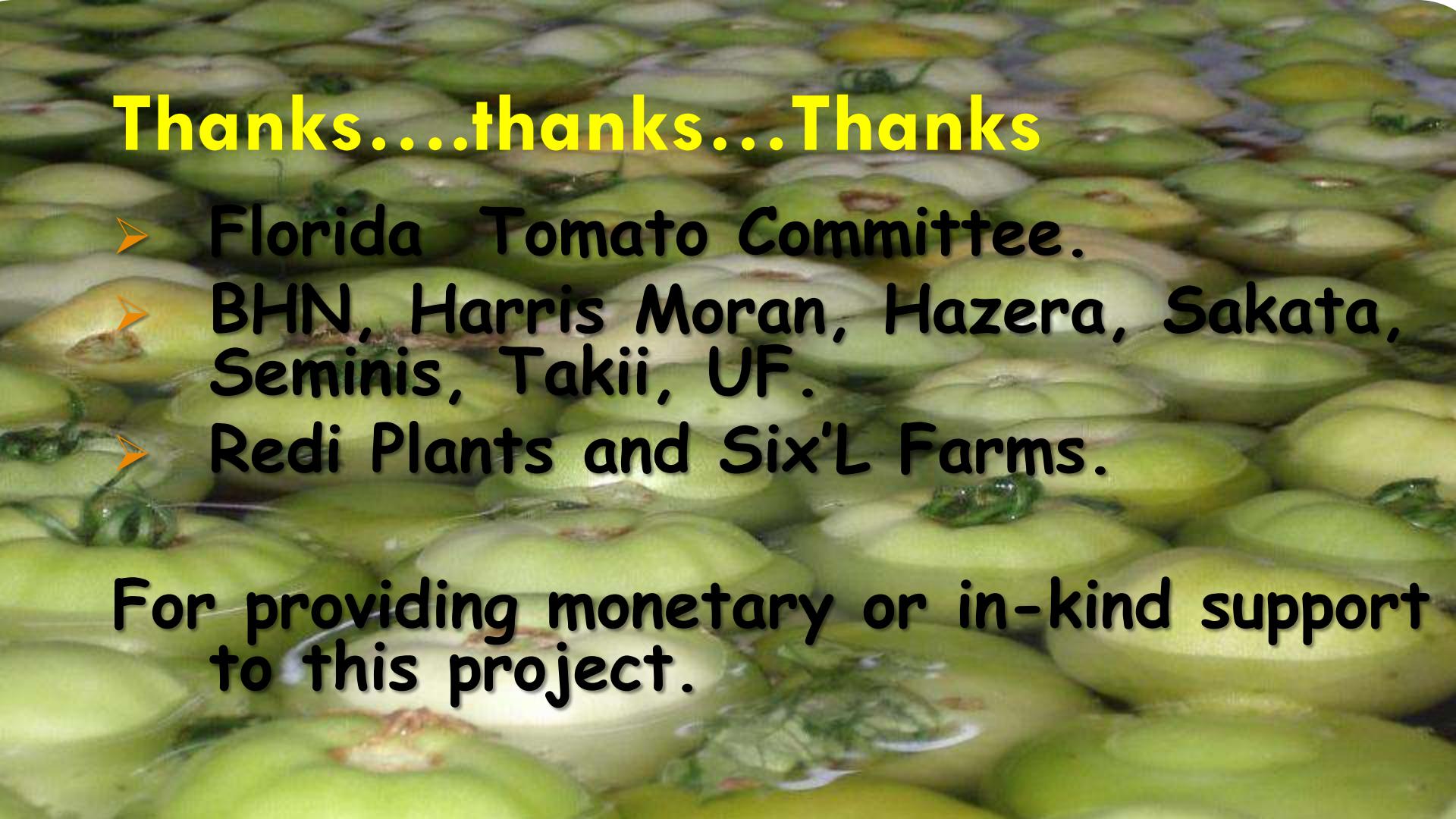
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<http://swfrec.ifas.ufl.edu/veghort/trials/tylcv/>



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