



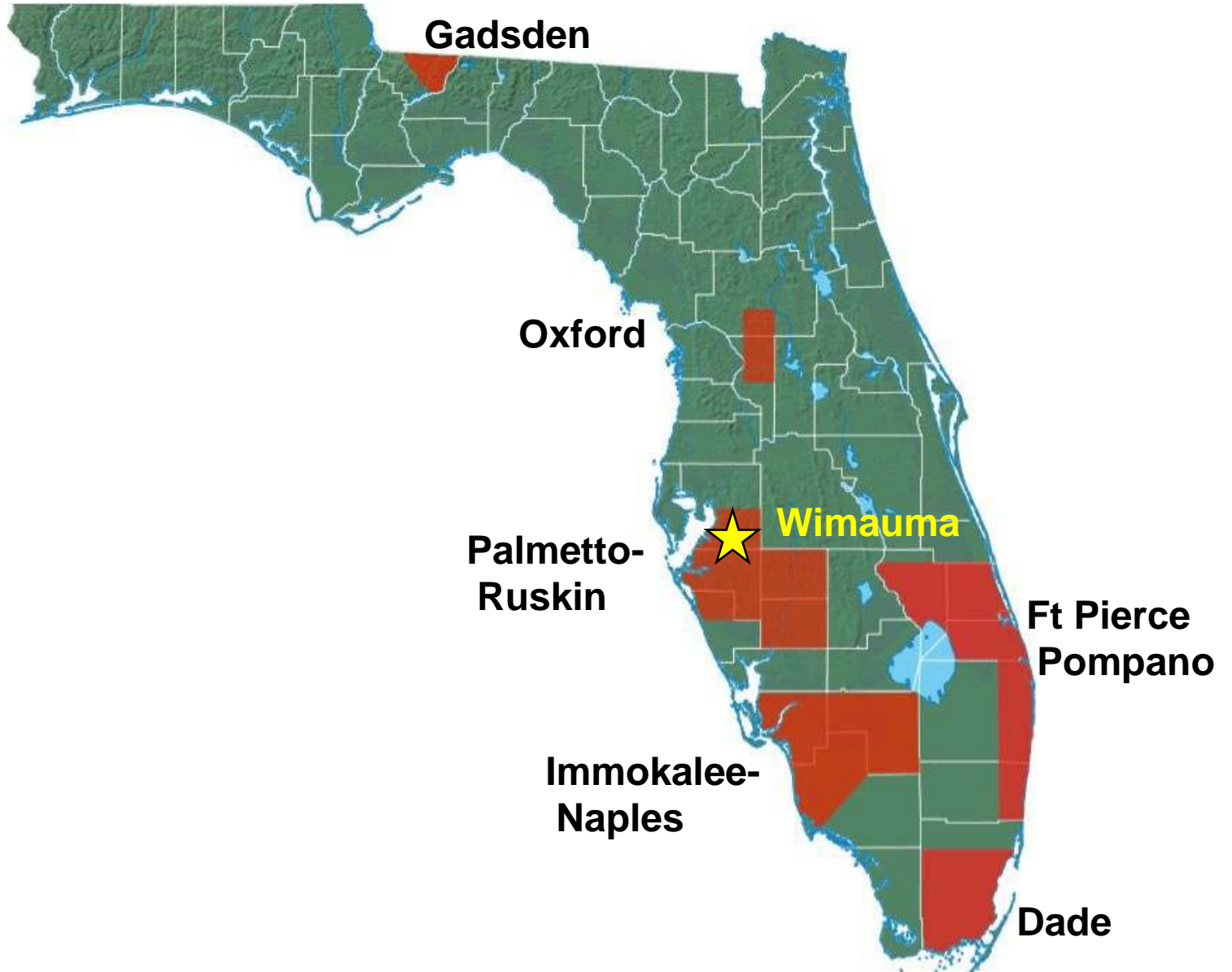
**Spotty results in our Sw-7 tomato  
spotted wilt virus research**

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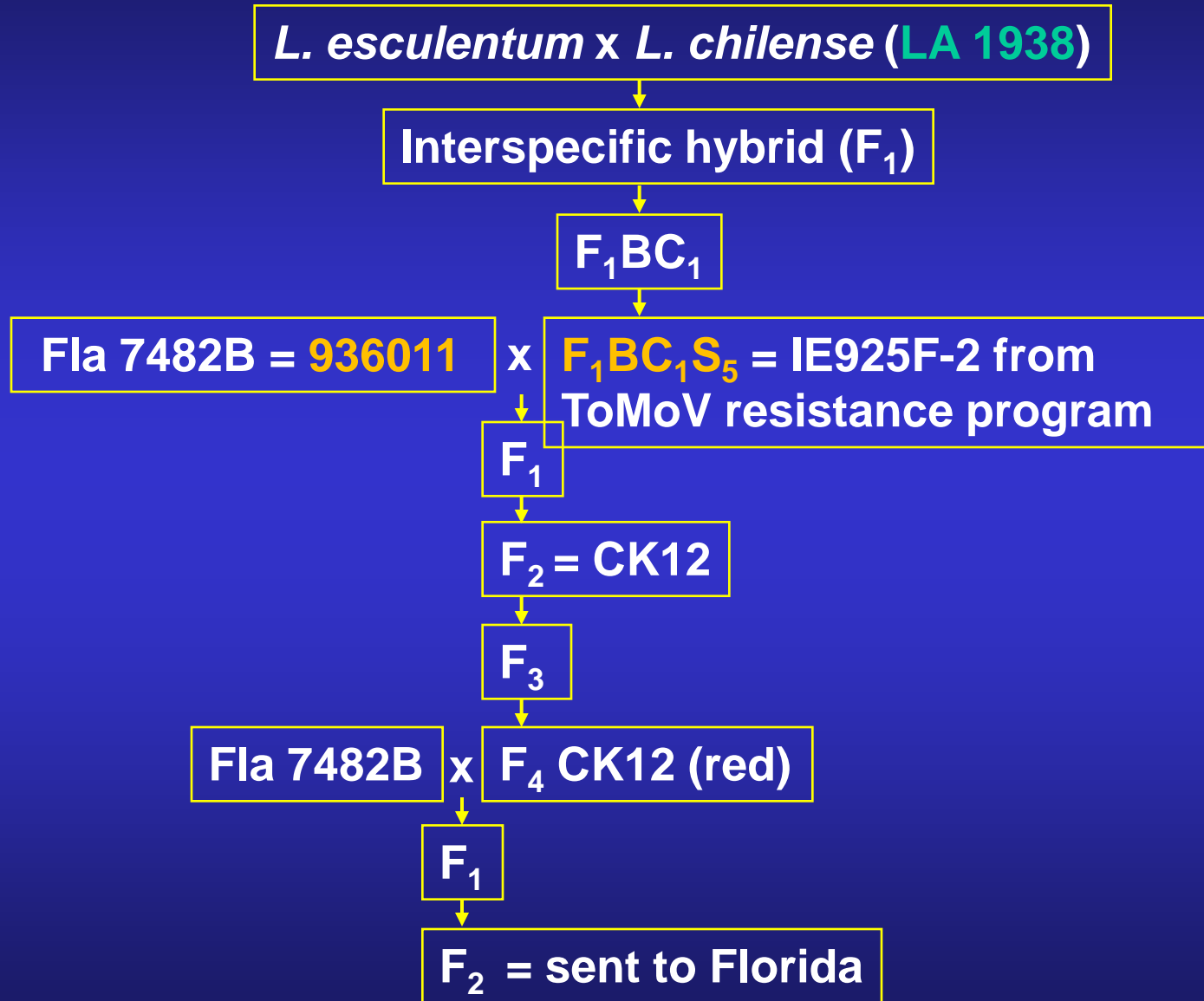


# Florida

## Principle Tomato Producing Areas



# Background Pedigree





God knows I love the South

## Fla. 8516, 8516B and 8516C

- Spring 2002: (Fla. 7482 x CK12)  $F_2$ 's selected (1 of 9 selections =  $F_3$  seed) [No TSWV].
- Spring 2004: Seven selections were made under 50% TSWV infection ( $F_4$  seed).
- Spring 2005: 3 of 7  $F_4$  selections were homozygous resistant = Fla. 8516, 8516B, and 8516C.
- Fall 2005: Fla. 8516 crossed to 21 parent lines.
- Spring 2006: 15  $F_1$ 's advanced to  $F_2$ .
- Fall 2006: 102  $F_2$  plants selected ( $F_3$  seed) [No TSWV infection].
- Spring 2007:  $F_3$ 's and controls field tested for TSWV incidence.



**Tomato spotted wilt disease incidence for seven lines derived from *L. chilense* LA1938 and control hybrids grown in South Georgia, Spring 2005 plus Chi-square test for goodness of fit to a single dominant gene model .**

Genotype	Plants			Conclusion <sup>y</sup>	Chi-square (3:1)	P
	Total No.	Healthy No.	Diseased No. (%)			
9-1	126	89	37 (29)	Seg	1.28	.5 - .1
9-2 (8516B)	127	126	1 (0.8)	R		
9-3 (8516)	126	125	1 (0.8)	R		
9-4	125	39	86 (69)	S		
9-5	128	92	36 (28)	Seg	0.66	.5 - .1
9-6 (8516C)	128	127	1 (0.8)	R		
9-7	93	61	32 (34)	Seg	4.39	.05 - .025
Crista ( <i>Sw-5</i> )	200	197	3 (1.5)	R - control		
Mt. Spring	49	21	28 (57)	S - control		

<sup>z</sup> There was an average of 63% infection for the 2 susceptible genotypes 9-4 and Mt. Spring.

<sup>y</sup> R = resistant, Seg = segregating, S = susceptible.

Pa 16



Segregation of F<sub>3</sub> tomato and control lines for incidence of tomato spotted wilt virus and chi-square tests for control by a single dominant gene at Quincy, Florida in spring 2007.

Line(s) <sup>z</sup>	Number of plants			$\chi^2_{3:1}$	$\rho$
	Total	Resistant	Susceptible		
<b>Fla. 8516</b>	<b>29</b>	<b>28</b>	<b>1</b>	--	
<b>Fla. 8153</b>	<b>30</b>	<b>7</b>	<b>23</b>	--	
<i>Homozygous resistant</i>					
<b>9 lines</b>	<b>30, 29</b>	<b>all</b>	<b>0</b>	--	
<b>12 lines</b>	<b>30</b>	<b>29</b>	<b>1</b>	<b>7.511</b>	<b>0.01 - 0.005</b>
<b>703</b>	<b>22</b>	<b>21</b>	<b>1</b>	<b>4.909</b>	<b>0.025 - 0.01</b>
<b>4 lines</b>	<b>30</b>	<b>28</b>	<b>2</b>	<b>5.114</b>	<b>0.025 - 0.01</b>
$\Sigma = 26$					

<sup>z</sup> Fla. 8516 is the resistant control, Fla. 8153 is the susceptible control. F<sub>3</sub> lines categorized as homozygous resistant, heterozygous resistant or homozygous susceptible based on chi-square tests for 3:1 ratios that were significant due to an excess of resistant plants, had acceptable fits, or were significant due to an excess of susceptible plants, respectively.



**Number of plants**

<b>Line(s)<sup>z</sup></b>	<b>Total</b>	<b>Resistant</b>	<b>Susceptible</b>	<b><math>\chi^2_{3:1}</math></b>	<b><math>\rho</math></b>
<b>5 lines</b>	<b>30</b>	<b>26</b>	<b>4</b>	<b>2.177</b>	<b>0.1 - 0.05</b>
<b>2 lines</b>	<b>30</b>	<b>25</b>	<b>5</b>	<b>1.111</b>	<b>0.5 - 0.1</b>
<b>783</b>	<b>29</b>	<b>24</b>	<b>5</b>	<b>0.931</b>	<b>0.5 - 0.1</b>
<b>761</b>	<b>18</b>	<b>13</b>	<b>5</b>	<b>0.074</b>	<b>0.9 - 0.5</b>
<b>796</b>	<b>30</b>	<b>24</b>	<b>6</b>	<b>0.400</b>	<b>0.9 - 0.5</b>
<b>770</b>	<b>28</b>	<b>22</b>	<b>6</b>	<b>0.190</b>	<b>0.9 - 0.5</b>
<b>5 lines</b>	<b>30</b>	<b>23</b>	<b>7</b>	<b>0.286</b>	<b>0.9 - 0.5</b>
<b>764</b>	<b>27</b>	<b>20</b>	<b>7</b>	<b>0.012</b>	<b>0.975 - 0.9</b>
<b>2 lines</b>	<b>29</b>	<b>22</b>	<b>7</b>	<b>0.011</b>	<b>0.975 - 0.9</b>
<b>801</b>	<b>30</b>	<b>22</b>	<b>8</b>	<b>0.044</b>	<b>0.9 - 0.5</b>
<b>716</b>	<b>30</b>	<b>21</b>	<b>9</b>	<b>0.400</b>	<b>0.9 - 0.5</b>
<b>731</b>	<b>29</b>	<b>20</b>	<b>9</b>	<b>0.563</b>	<b>0.5 - 0.1</b>
<b>766</b>	<b>28</b>	<b>19</b>	<b>9</b>	<b>0.762</b>	<b>0.5 - 0.1</b>
<b>4 lines</b>	<b>30</b>	<b>20</b>	<b>10</b>	<b>1.111</b>	<b>0.5 - 0.1</b>
<b>722</b>	<b>29</b>	<b>19</b>	<b>10</b>	<b>1.391</b>	<b>0.5 - 0.1</b>
<b>5 lines</b>	<b>30</b>	<b>19</b>	<b>11</b>	<b>2.178</b>	<b>0.5 - 0.1</b>
<b>771</b>	<b>26</b>	<b>16</b>	<b>10</b>	<b>2.513</b>	<b>0.5 - 0.1</b>
<b>752</b>	<b>30</b>	<b>18</b>	<b>12</b>	<b>3.600</b>	<b>0.1 - 0.05</b>

$\Sigma = 39$

Line(s) <sup>z</sup>	Number of plants			$\chi^2_{3:1}$	$\rho$
	Total	Resistant	Susceptible		
3 lines	30	17	13	5.378	0.025 - 0.01
2 lines	29	16	13	6.080	0.036 - 0.01
800	28	15	13	6.857	0.01 - 0.005
2 lines	30	16	14	7.511	0.01 - 0.005
707	29	15	14	8.379	< 0.005
719	30	15	15	10.000	< 0.005
802	28	12	16	15.429	< 0.005
3 lines	30	13	17	16.044	< 0.005
3 lines	30	12	18	19.600	< 0.005
775	30	11	19	--	--
3 lines	30	9	21	--	--
728	30	8	22	--	--
741	29	7	22	--	--
2 lines	30	7	23	--	--
2 lines	30	6	24	--	--
748	29	5	24	--	--
705	30	5	25	--	--
774	30	4	26	--	--
780	30	2	28	--	--
2 lines	30	1	29	--	--
3 lines	30	0	30	--	--
$\Sigma = 37 \chi^2$					

# Goodness of Fit Test

- $F_3$  line segregation- 26R:39Seg:37S
- $X^2_{1:2:1}=8.019, p=0.025-0.01$

## Tomato spotted wilt virus disease incidence for selected hybrids, 2009.

Hybrid	TSWV (%)	TSWV Gene(s)
Shanty	0.0 d <sup>z</sup>	<i>Sw-5</i>
Top Gun	5.2 d	<i>Sw-5</i>
Fla. 8688	0.0 d	<i>Sw-5</i> and <i>Sw-7</i>
Fla. 8687	13.6 c	<i>Sw-7</i>
Fla. 8686	13.8 c	<i>Sw-7</i>
Tygress	42.1 b	( <i>Susc</i> )
Florida 47	60.0 a	( <i>Susc</i> )

<sup>z</sup> Mean separation in columns by DMRT at  $P \leq 0.05$ .



## **'Save the whales' trip cut short after boat rams whale**

**SAN FRANCISCO (Reuters)**—A California activist who embarked on a trans-Pacific sailing adventure dedicated to saving the whales called off the attempt Friday after his boat ran into one of the large mammals.

# Sw-7 Recombinant Population

- Sw-7 introgression from *S. chilense* LA1938 identified on chr. 12 (Dockter, et al. 2009. HortScience 44:1123)

- Fall 2009 MAS

	<u>Recombinants</u>
[7777 x (7777 x 8516)] F <sub>2</sub>	(30)
[8111 x (8111 x 8516)] F <sub>2</sub>	(17)
[8249 x (8249 x 8516)] F <sub>2</sub>	(13)
[7776 x (7776 x 8516)] F <sub>2</sub>	(4)
[8021 x (8021 x 8516)] F <sub>2</sub>	(1)
[8022 x (8022 x 8516)] F <sub>2</sub>	(1)

- Each recombinant selfed and RILs selected
- RILs evaluated in Quincy in Spring 2011
  - RCBD with 3 reps and 10-plant plots

~45 cM

~58 cM

Chr 12

T1263

SL 10953i

CT100

TG360

CT99

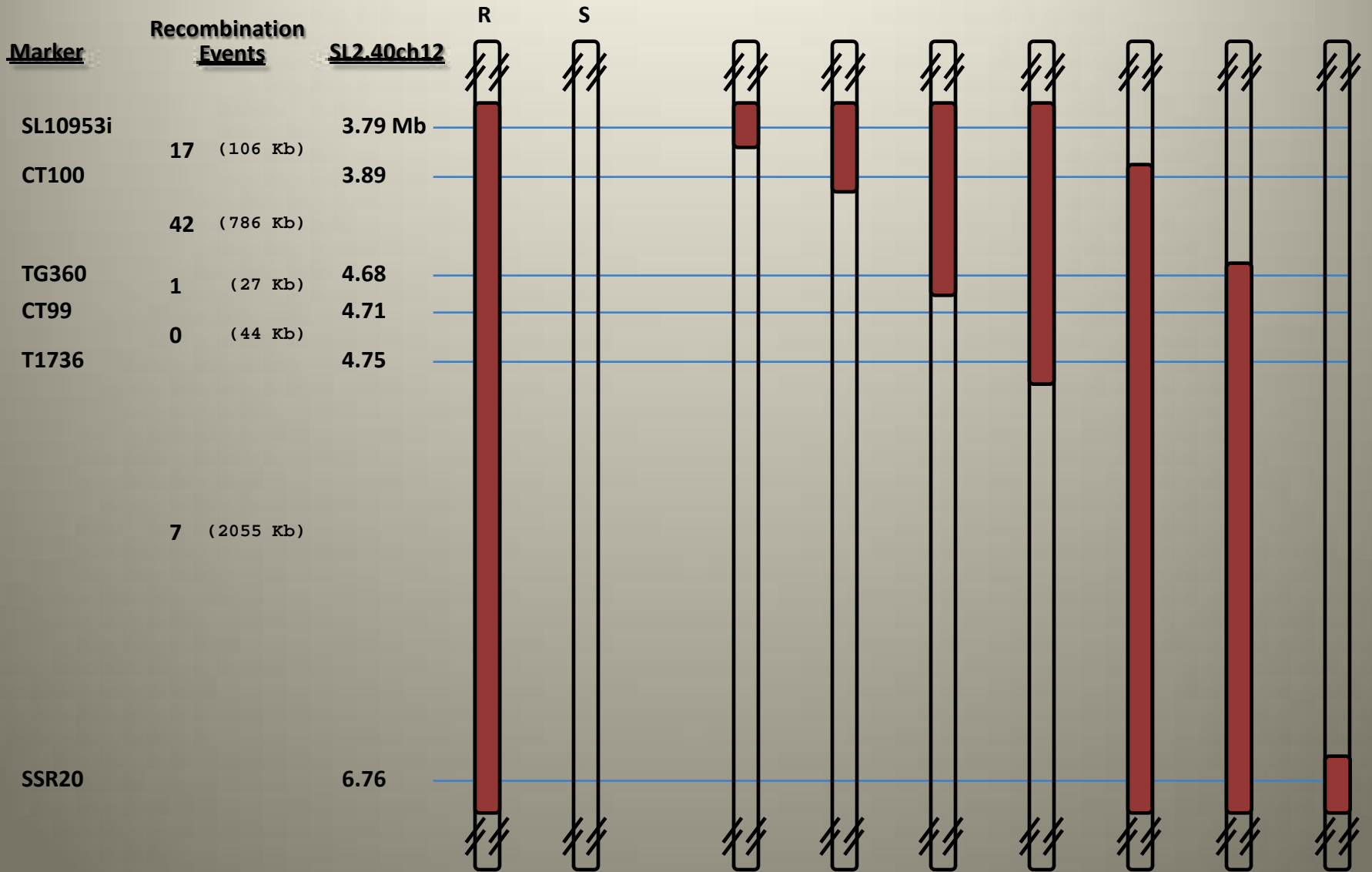
T1736

~2.97 Mb

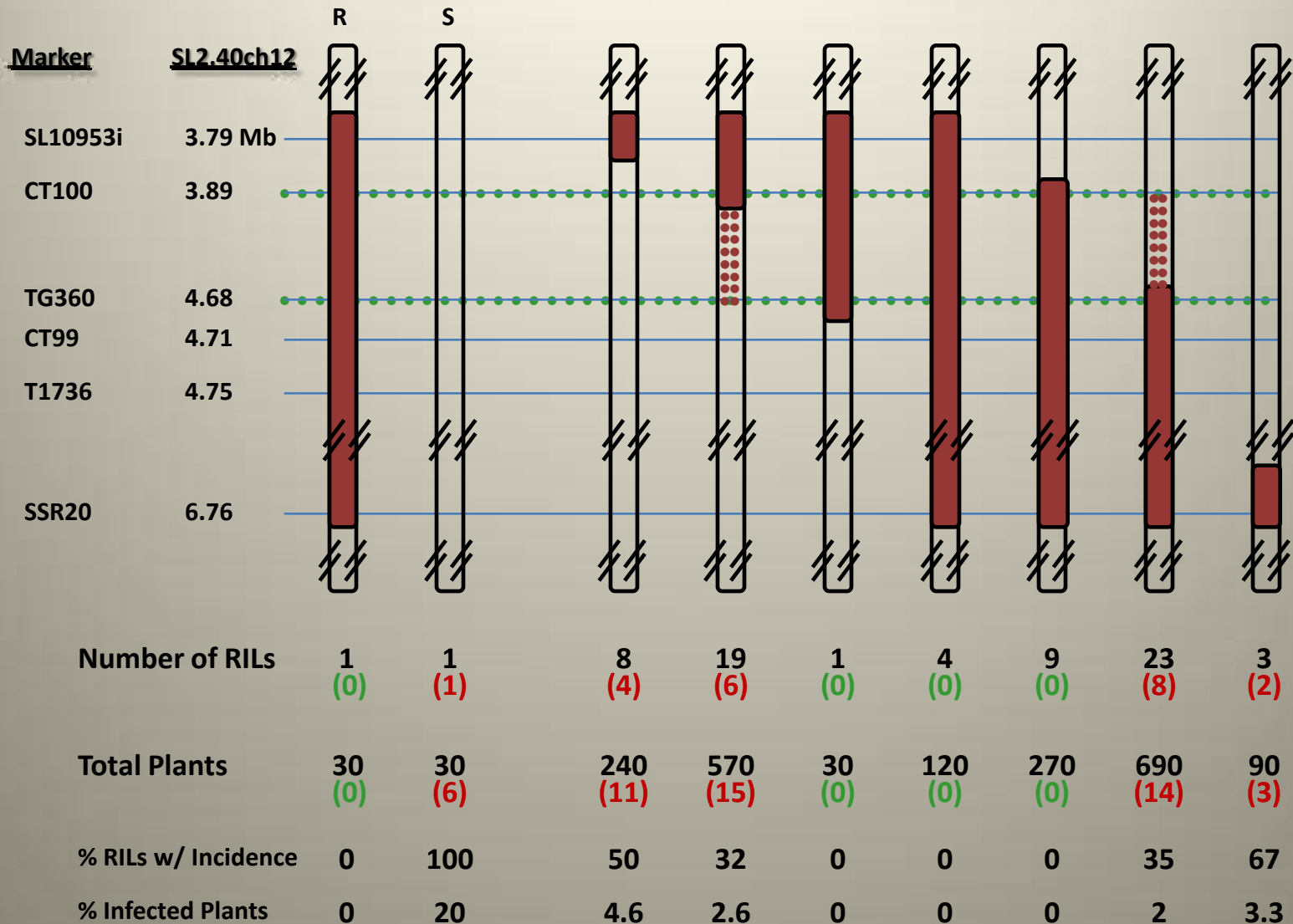
SSR20



# Spring 2011 Sw-7 RIL Population

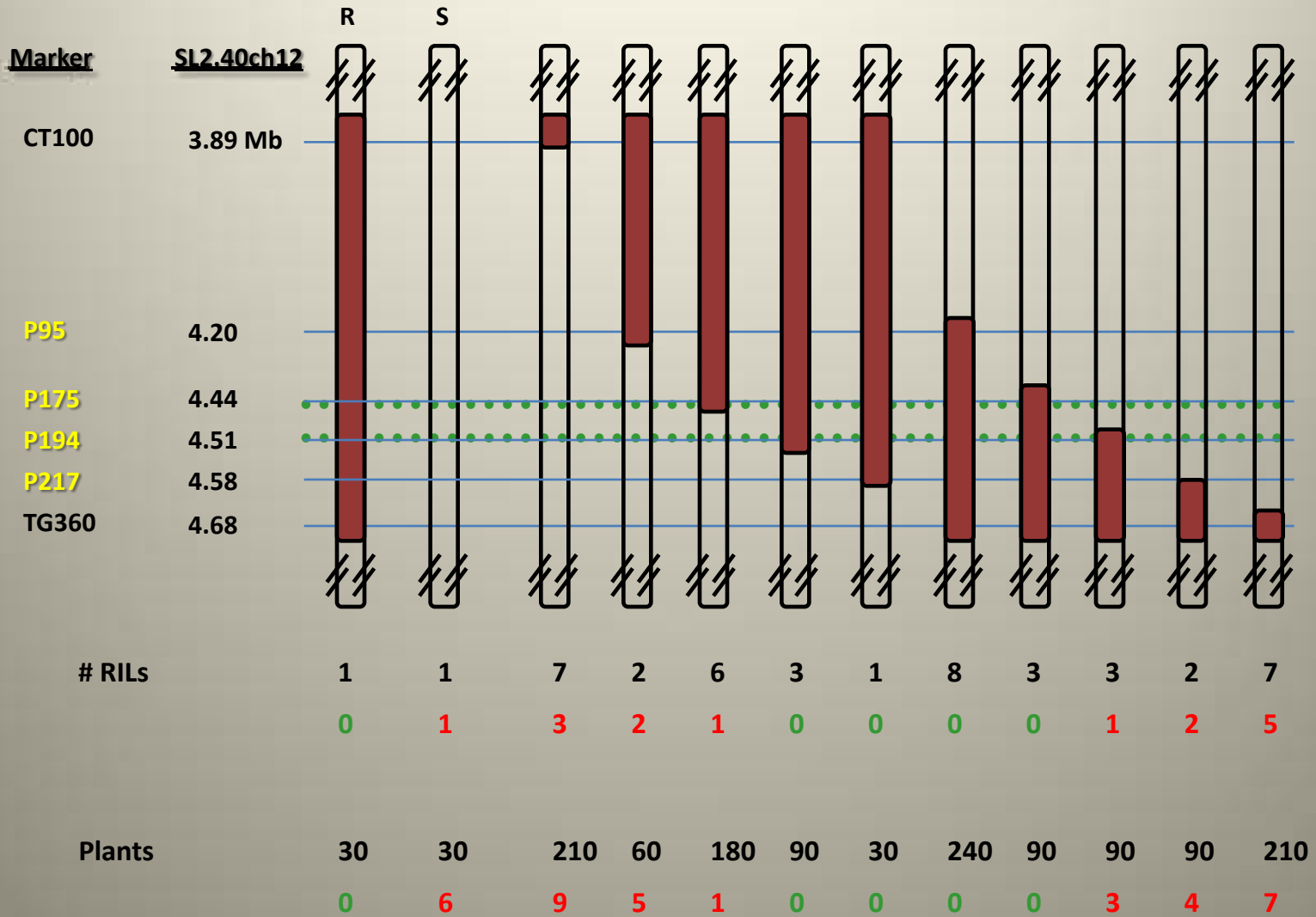


# Spring 2011 Sw-7 RIL Population





# Spring 2011 Sw-7 RIL Population



# Status of Sw-7 Research

- ❑ Clarify the gene action of Sw-7
- ❑ Determine if germplasm with Sw-7 gets fruit blotch
- ❑ Verify fine mapping results
- ❑ All the above require adequate disease pressure in the field
- ❑ Note: Sw-7 can not be screened by mechanical seedling inoculation



**Namaste**

## ∞. Zen Mindset II

To maintain a Zen Mindset it is best to have time to adjust to bad policies before they occur. When administrators get together and one of them comes up with a bad idea, others are quick to adopt it. An example is using Journal Impact Scores to evaluate refereed publications. So when you hear of something bad elsewhere begin to accept it because it is coming home soon.