Insecticides and Resistant Varieties for Management of Whiteflies and TYLCV

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TYLCV Variety Trial:2007

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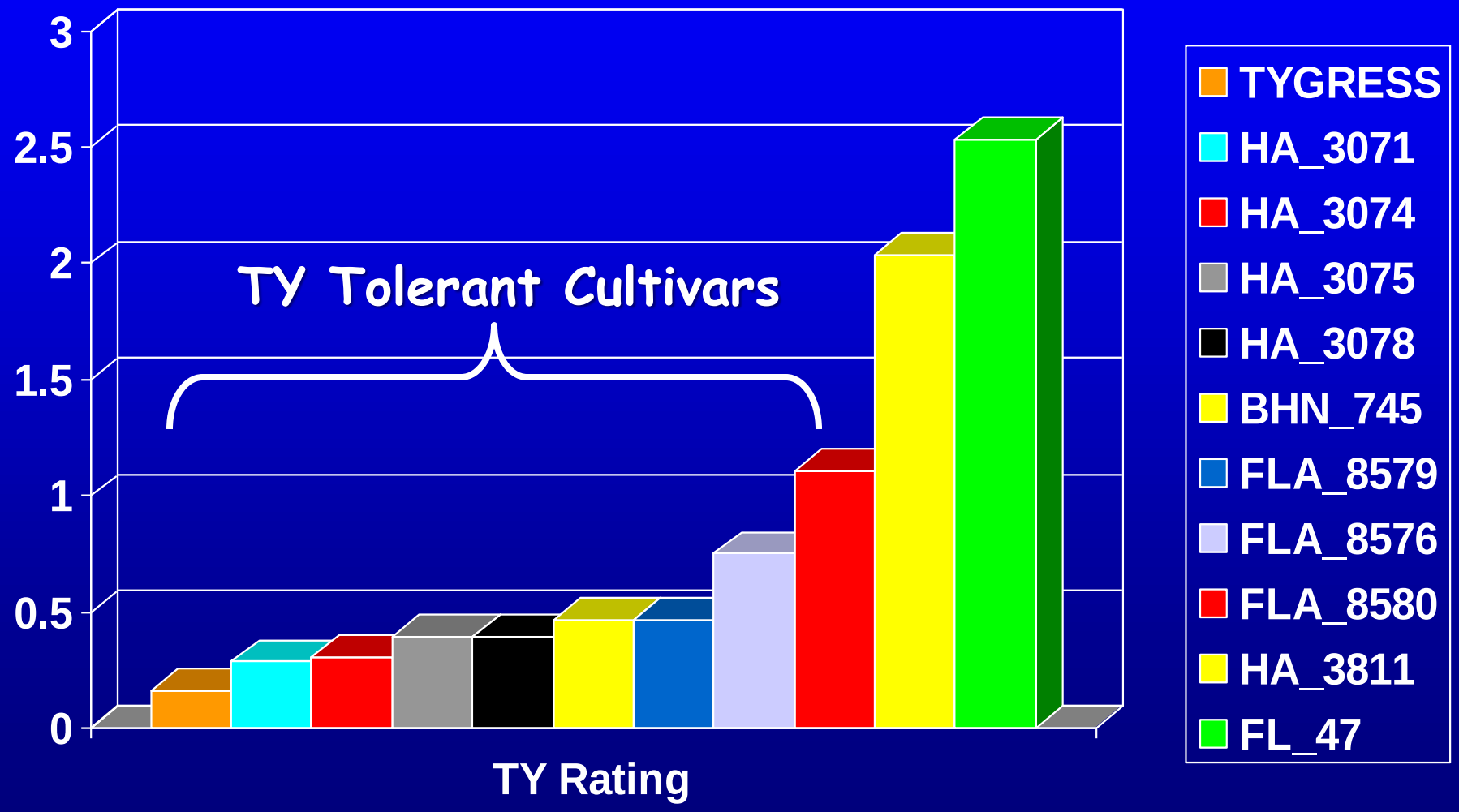
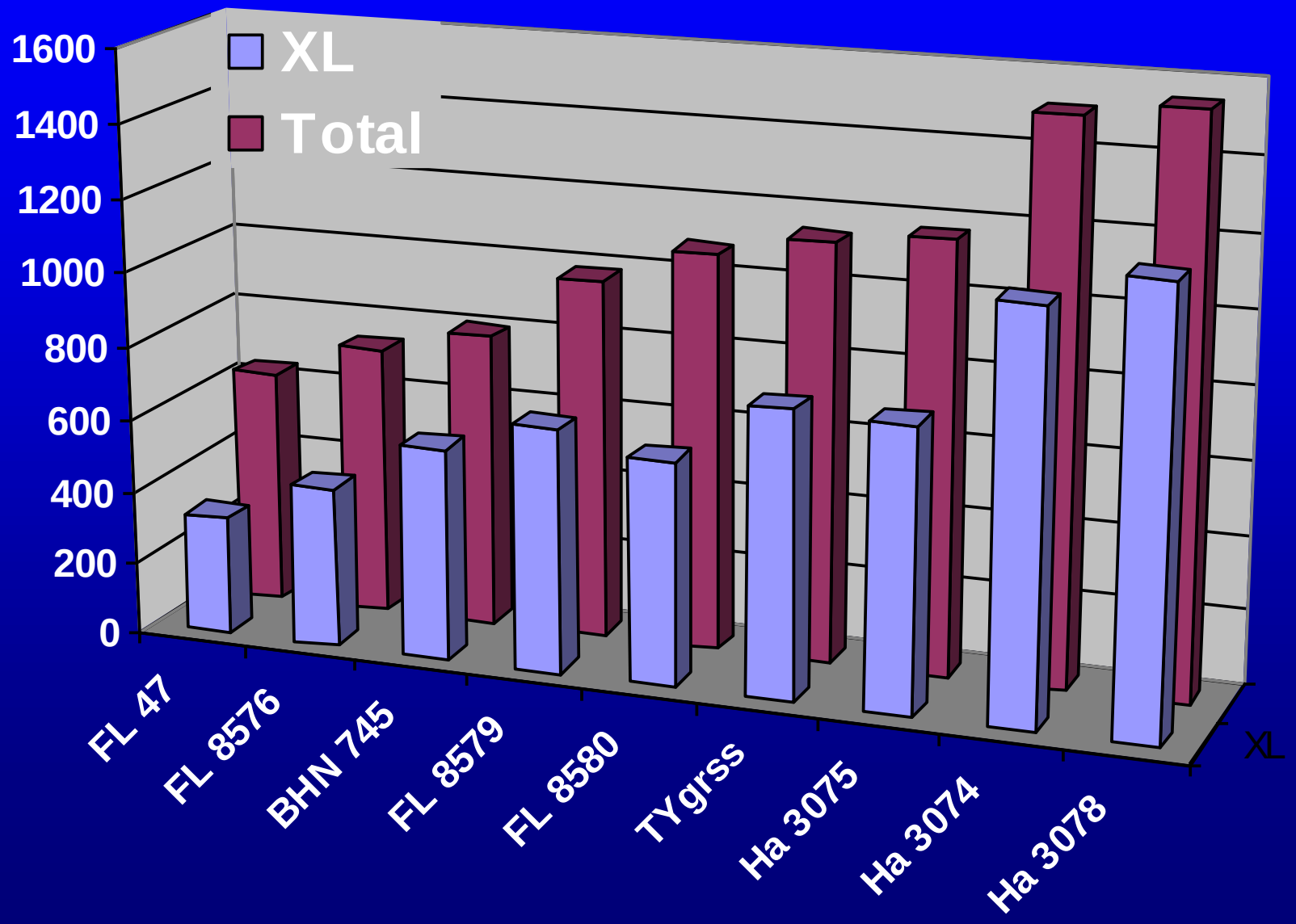
TYLCV Severity Prior to 1st Pick: Scale of 0 to 3



Adult whitefly count weeks 2 and 3 = 10 per leaf

Yield of Round Tomatoes, SWFREC Spring 2007



TYLCV Resistance Trial: Conclusions

- Whitefly pressure intense
- Resistant varieties showed little or no virus symptoms
- Yields of some cultivars comparible to SW Florida standards
- Resistant varieties viable option for spring crop

Variety Field Trials

Methods, TYLCV Variety Trials 2006-2011

Cultural practices	2006	2007	2008	2009	2010	----------2011----------	
Location	Immokalee	Immokalee	Immokalee	Immokalee	Estero	Estero	Homestead
Experimental Design	CRBD (4 reps)	CRBD (4 reps)	CRBD (3 reps)	CRBD (3 reps)	CRBD (4 reps)	CRBD (4 reps)	CRBD (3 reps)
Irrigation	Drip	Drip	Seepage	Seepage	Seepage	Seepage	Drip
Plot size (ft)	21	21	36	37	37	37	37
Harvest unit (ft)	15.0	15.0	18.3	18.3	18.3	18.3	18.3
Planting date	24Feb06	20Feb07	4Jan08	8Jan09	7Jan10	7Jan11	7Jan11
Fumigation	MeBr/CP	MeBr/CP	MeBr/CP	MeBr/CP	MeBr/CP	MeBr/CP	MIDAS
Mulch	Black	Black	Black	Metalized	Metalized	Black	Black
Linear ft per acre	7,260	7,260	7,260	7,260	7,260	7,260	7,260
Bed height (in)	8	8	9	8	8	8	6
Bed width	32	32	36	32	32	32	35
Bed spacing (ft)	6	6	6	6	6	6	6
Plant spacing (in)	18	18	22	22	22	22	22
Plant population	4,840	4,840	3,967	3,967	3,967	3,967	3,967
Harvest date							
1st	10May06	7May07	7Apr08	21Apr09	3May10	13Apr11	6Apr11
2nd	24May06	22May07	21Apr08	6May09	18May10	26Apr11	20Apr11
3rd	6June06	29May07	30Apr08	20May09		4May11	29Apr11
Planting to last harvest (weeks)	13	13	16	19	17	17	16

Summary: Best TY Tolerant Varieties, 2006-2011

2006 Low TYLCV Pressure	2007 High TYLCV Pressure	2008 Low TYLCV Pressure	2009 Low TYLCV Pressure	2010 Low TYLCV Pressure	2011 Low TYLCV Pressure
Best Varieties					
Immokalee: HA 3075 (Hazera), S50257, VT60774, VT60780 (Zeraim Gedera).	Immokalee: 3078, 3074 (Inbar) and 3075 (Ofri) (Hazera) Roma: Shanty (Hazera).	Immokalee: Tygress (Seminis) & 3074 (Inbar) (Hazera). Roma: 5808 (Sakata).	Immokalee: Tygress & SVR200 (Seminis).	Immokalee: Security 28 (Harris Moran) & Charger (Sakata).	Homestead: SVR 200 (Seminis) Estero: SVR (Seminis), Tygress (Seminis), Grafting BHN 833 /Tygress (BHN/Seminis)
Good Varieties					
Immokalee: BHN 745 &Tygress (Seminis).	Immokalee: Tygress (Seminis).	Immokalee: Security 28 (Harris Moran), BHN 745 and 765, 3091 & 3075 (Ofri) (Hazera), and 5443 (Sakata).	Immokalee: BHN 765, 8845 (Harris Moran).	Immokalee: Katana (Takii) Tygress and SVR 200 (Seminis).	Homestead: Tycoon (Hazera) Estero: RFT 9773 (Syngenta)

Insecticide/Variety Trials: Cultural Practices

All crops grown on raised beds covered with plastic mulch on 6-foot centers with plant spacing of 18 inches

Rates per acre based on 7,260 linear bed feet per acre

Split Plot Design: 2010

'BHN602' (Susceptible)
9 plants

x x x x x x x x x

TYLCV-Infected plant

'Tygress' (Resistant)
9 plants

x x x x x x x x x

Drench Applications

Suspension delivered by an EZ-Dose® sprayer operating at a pressure of 45 PSI and a flow rate of 3.7 gallons per minute.

Foliar Applications

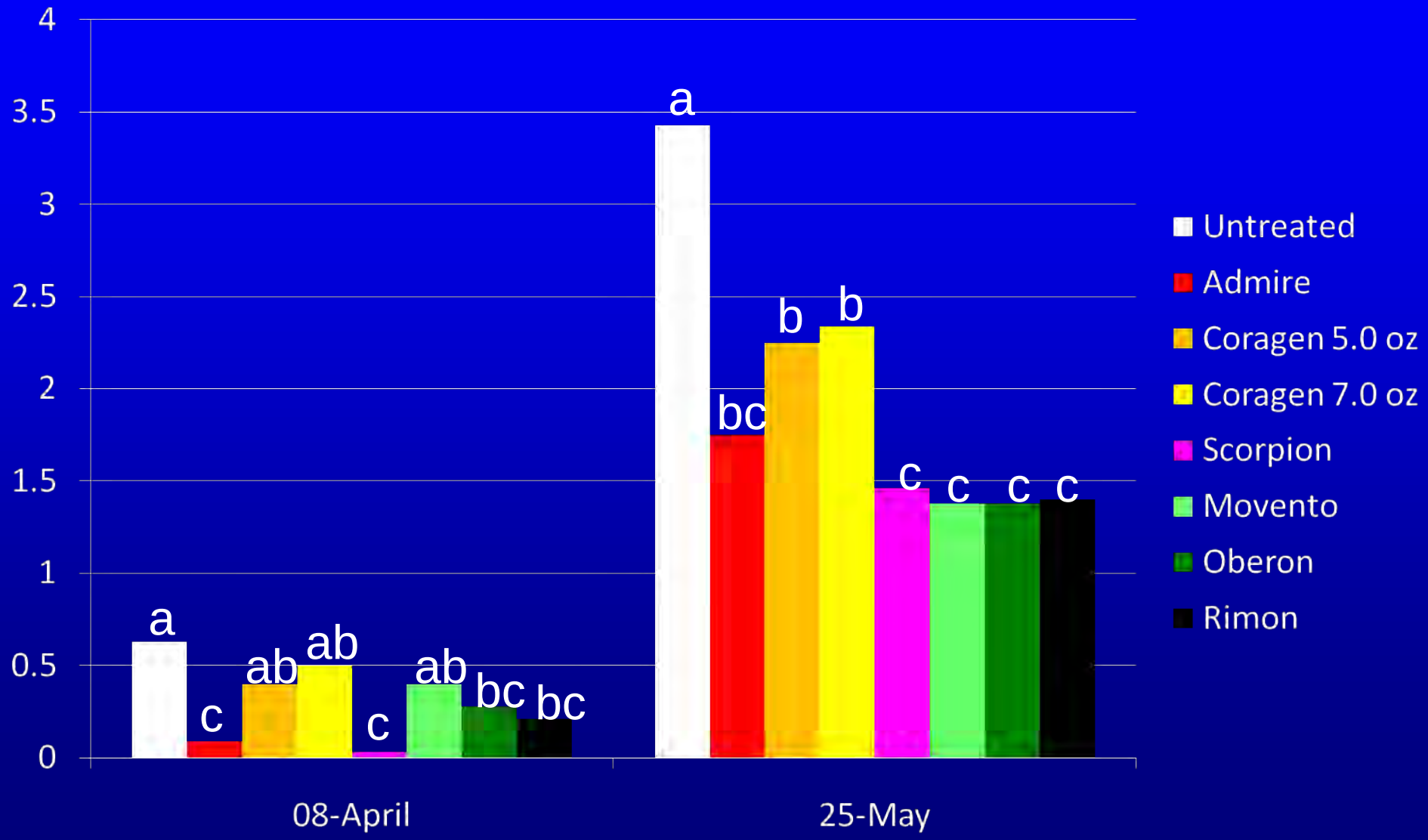
High clearance sprayer operating at 180 psi and 2.3 mph with the spray delivered through two vertical booms fitted with yellow Albuz® hollow cone nozzles, each delivering 10 gpa.

Spray Schedule 2010

			Application Dates			
			3/24/2010	5/4/2010	5/18/2010	6/3/2010
1	Untreatead					
2	Admire Pro	7.0 oz	drench			
	Fulfill	2.75 oz		foliar 60 GPA		
	Courier	9.0 oz			foliar 60 GPA	foliar 80 GPA
	Thionex	21.0 oz			foliar 60 GPA	
3	Coragen	5.0 oz	drench			
	Fulfill	2.75 oz		foliar 60 GPA		
	Courier	9.0 oz			foliar 60 GPA	foliar 80 GPA
	Thionex	21.0 oz			foliar 60 GPA	
4	Coragen	7.0 oz	drench			
	Fulfill	2.75 oz		foliar 60 GPA		
	Courier	9.0 oz			foliar 60 GPA	foliar 80 GPA
	Thionex	21.0 oz			foliar 60 GPA	
5	Scorpion	10.3 oz	drench			
	Fulfill	2.75 oz		foliar 60 GPA		
	Courier	9.0 oz			foliar 60 GPA	foliar 80 GPA
	Thionex	21.0 oz			foliar 60 GPA	
6	Admire Pro	7.0 oz	drench			
	Movento	5.0 oz		foliar 60 GPA	foliar 60 GPA	
7	Admire Pro	7.0 oz	drench			
	Oberon	8.5 oz		foliar 60 GPA	foliar 60 GPA	
	Admire Pro	7.0 oz	drench			
	Rimon	12.0 oz		foliar 60 GPA	foliar 60 GPA	foliar 80 GPA

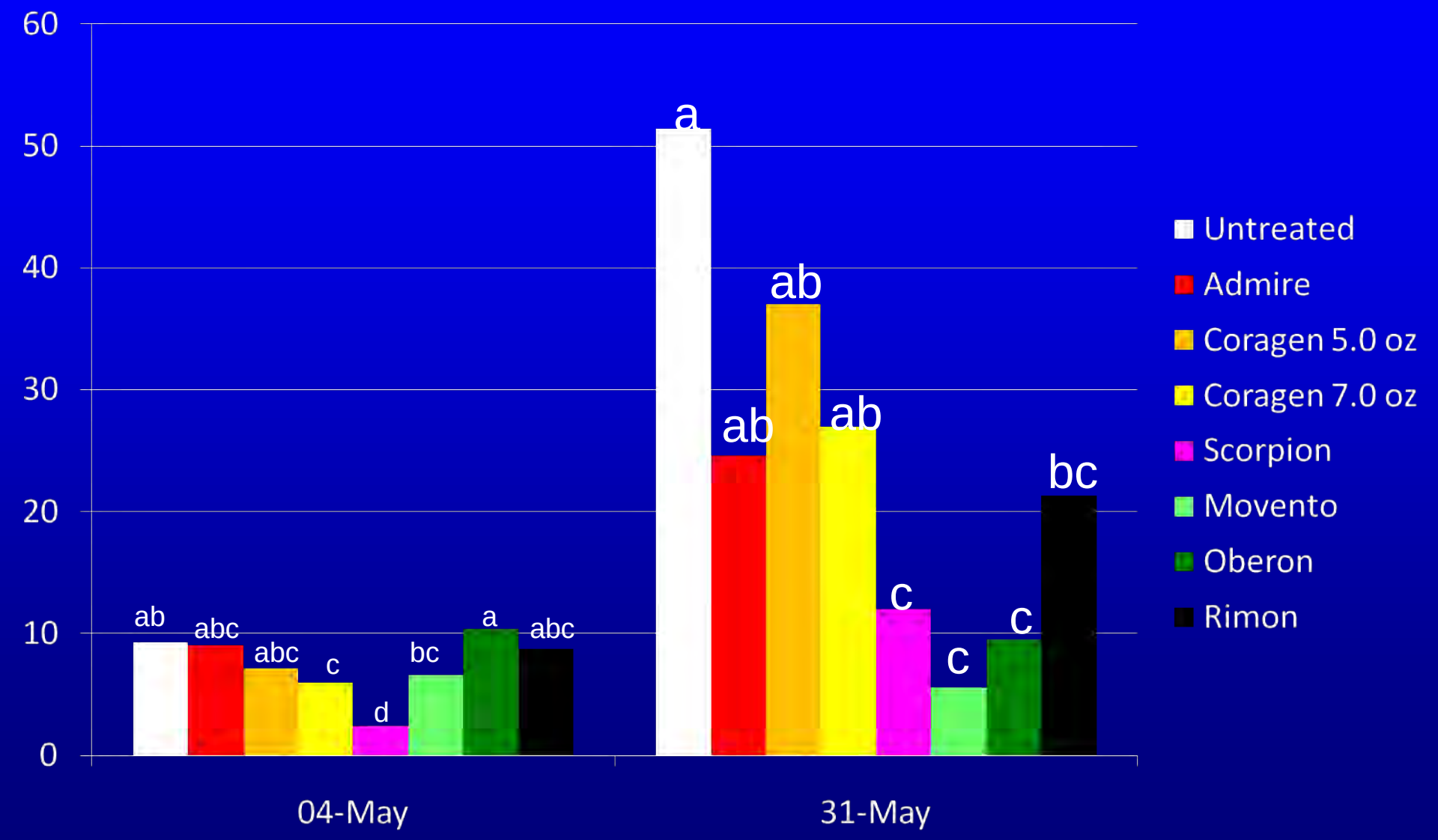
Adult Whitefly Counts

Total number per leaf (5 terminal leaflets)



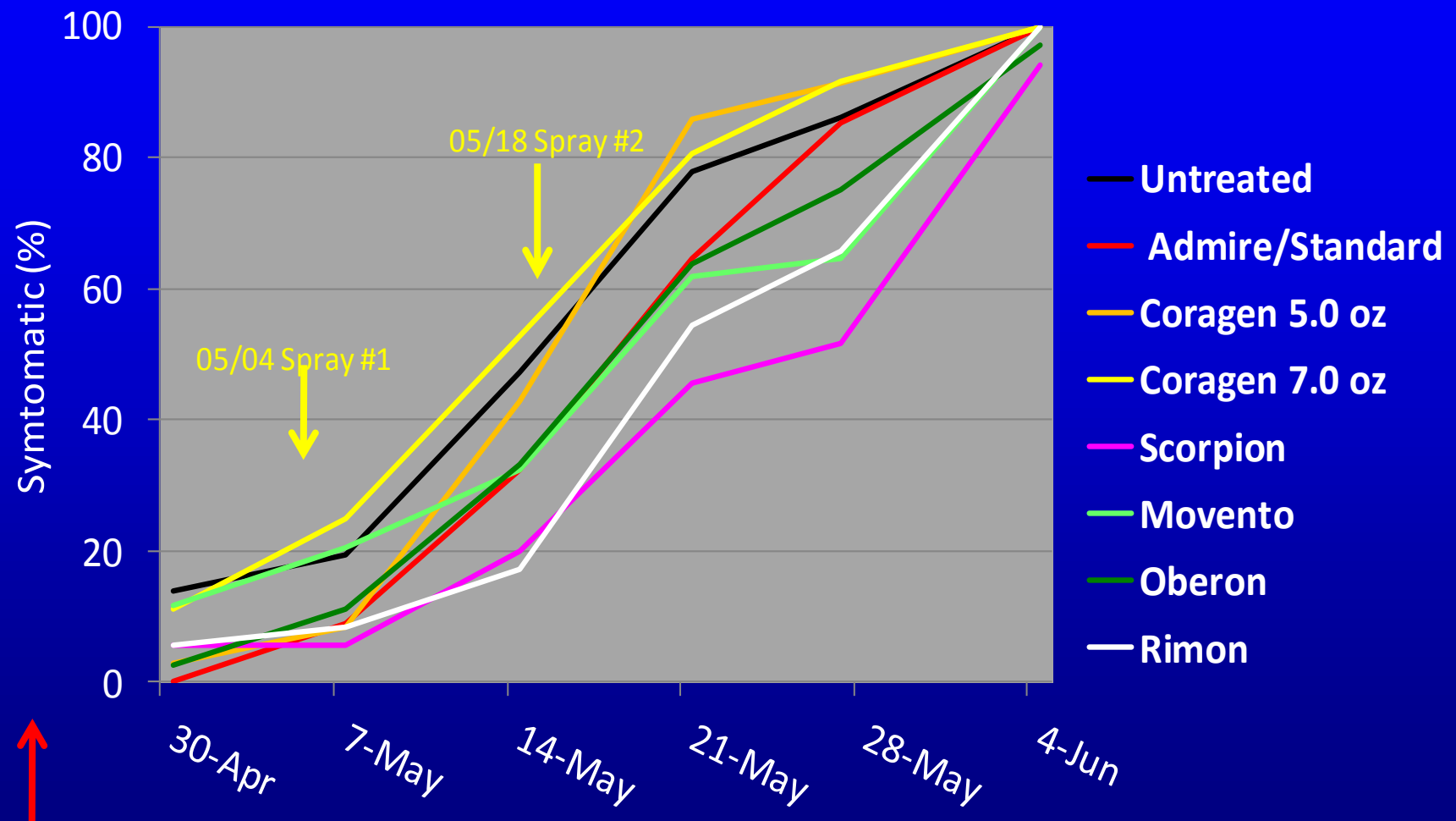
Nymph Counts

Total number of nymphs.4 sq. inches



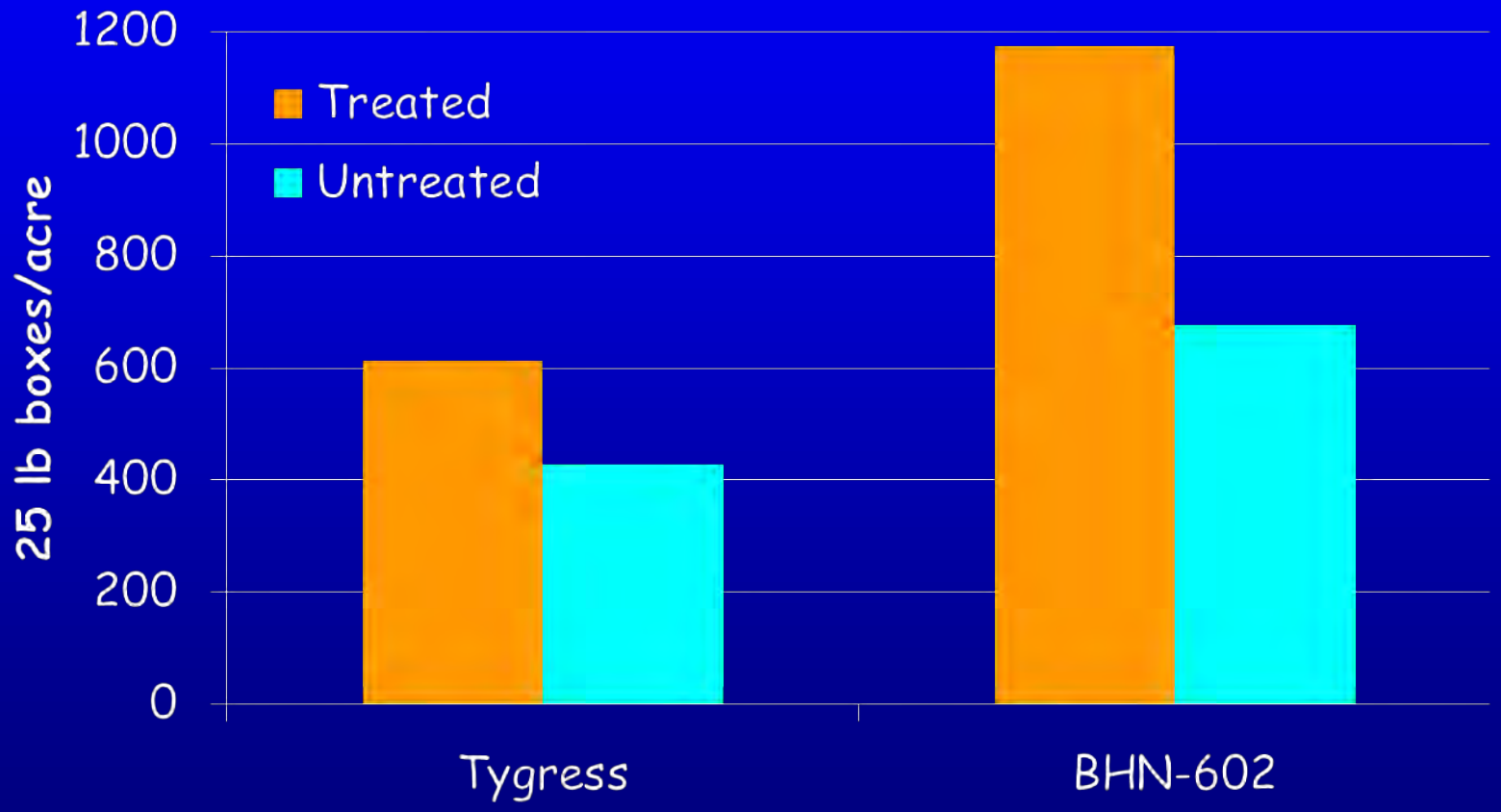
Original
TYLCV
Plant

TYLCV Incidence: 'BHN-602'



Drenches 03/24

Yield 2010


1200
1000
800
600
400
200
0
25 lb boxes/acre
Treated
Untreated
Tygress
BHN-602

Conclusions – 2010 Trial

- TYLCV came in Late. Heavy bacterial spot in Tygress
- The Scorpion Drench outperformed the Admire Pro and Coragen 5.0 and 7.0 oz drenches in both lower numbers of nymphs and slowing down the spread of virus
- Movento, Oberon and Rimon foliar applications reduced whitefly nymphs and decreased the rate of TYLCV transmission
- BHN-602 gave best yield. No treatment effects on yield among insecticides

Split Plot Design: 2011

'Florida 47' (Susceptible)
10 plants

x x x x x x x x x

TYLCV-Infected plant

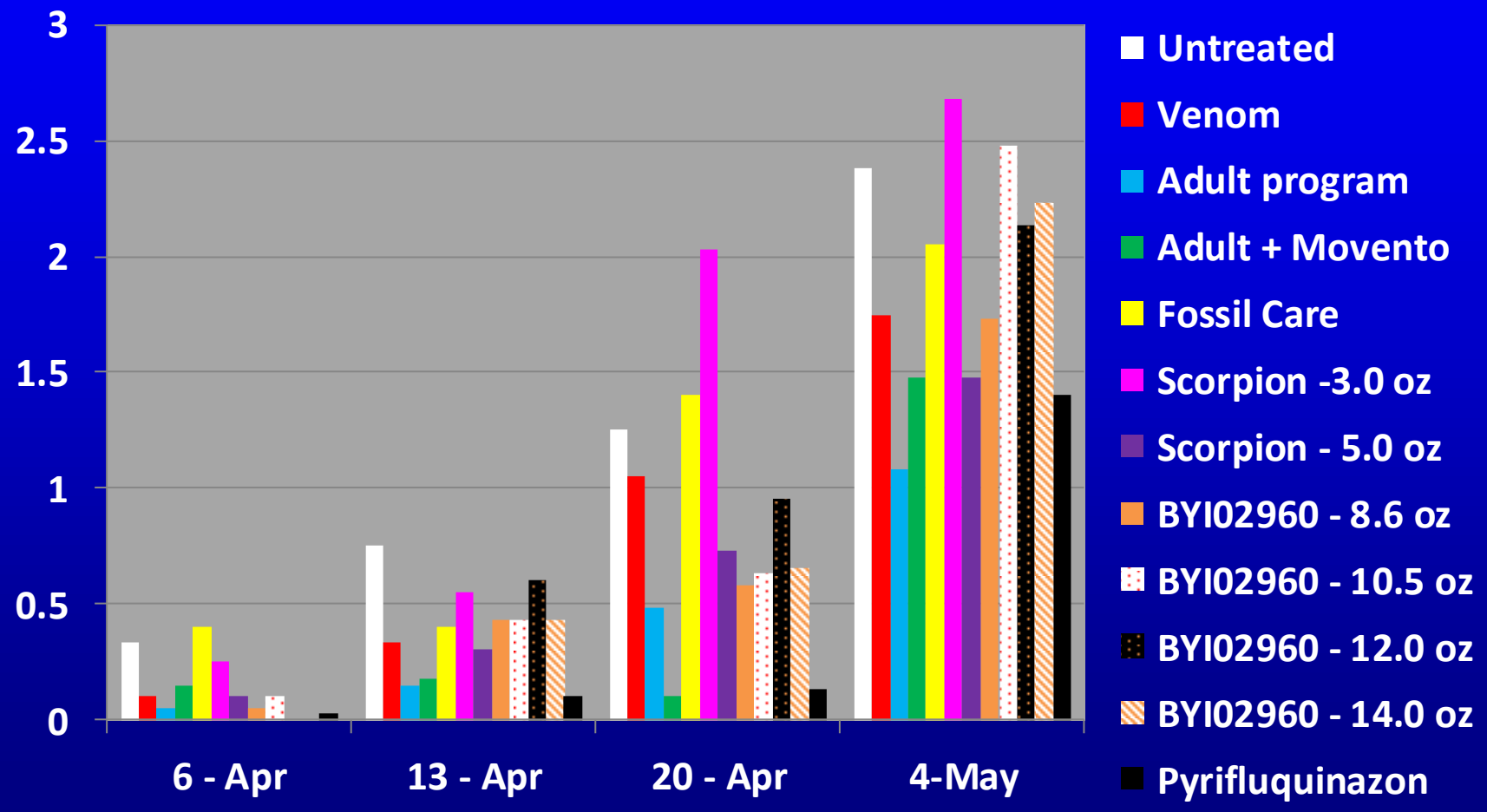
'Tygress' (Resistant)
10 plants

x x x x x x x x x

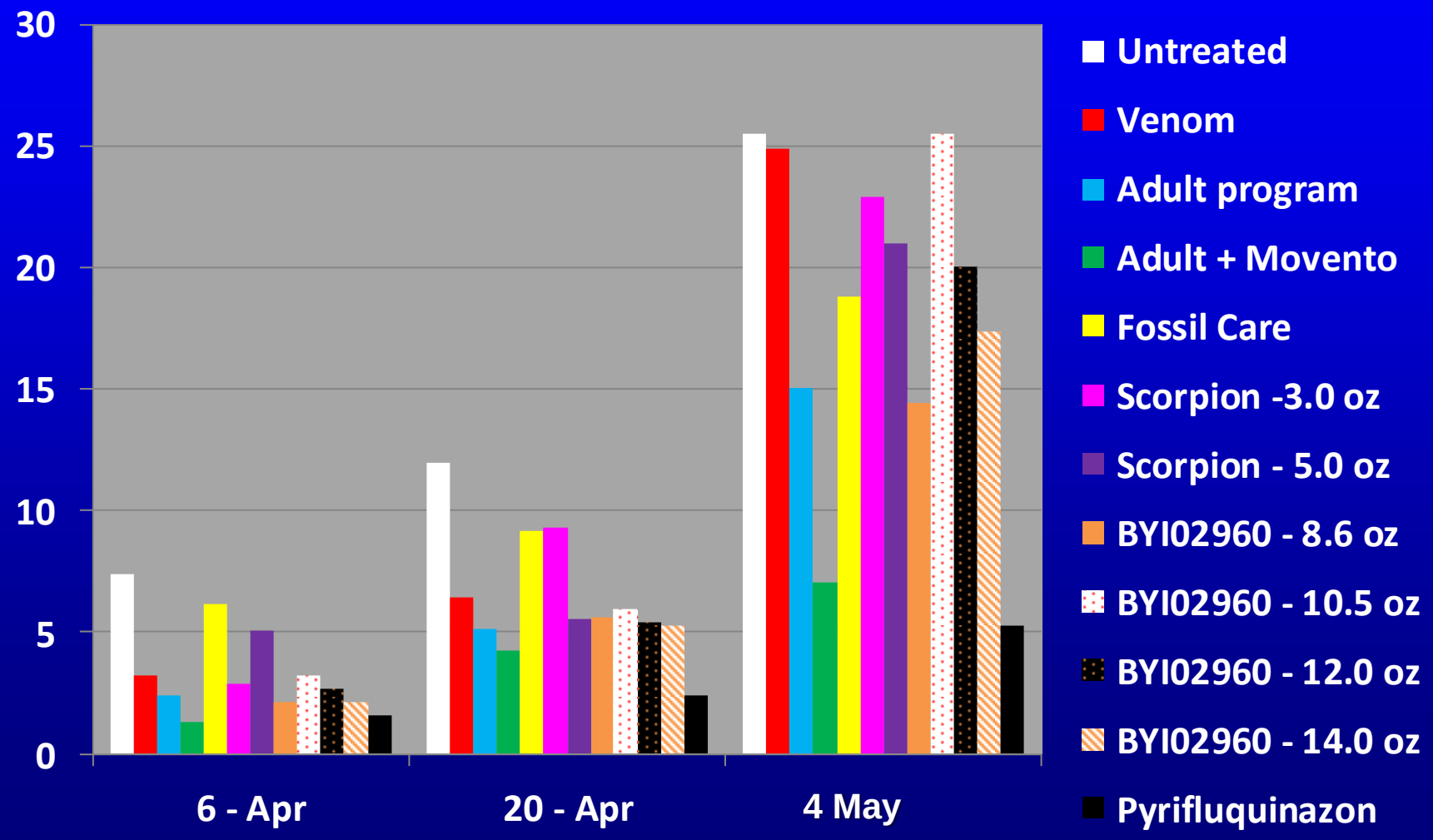
Spray Schedule 2011

TRT	Product	Rate/ac	7-Mar	21-Mar	22-Mar	28-Mar	29-Mar	4-Apr	5-Apr	11-Apr	18-Apr	25-Apr	4-May	9-May
1	Untreated													
2	Venom	4.0 oz			X		X		X					X
3 Adult Prg	Admire Pro	10.5 oz	X											
	Fulfill	2.75 oz		X										
	Baythroid	2.8 oz				X				X			X	
	Thionex 3ec	21 oz						X			X			
4 Adult Prg+ Movento	Admire Pro	10.5 oz	X											
	Fulfill	2.75 oz		X										
	Baythroid	2.8 oz				X				X			X	
	Thionex 3ec	21 oz						X			X			
	Movento	5.0 oz						X			X			
	Induce	0.25%						X			X			
5	Fossil Care	8.0 lbs			X		X		X	X	X	X	X	
6	Scorpion	3.0 oz		X			X		X			X		X
7	Scorpion	5.0 oz		X			X		X					X
8	BYI02960	8.6 oz		X			X	X						
	Induce	0.25%		X			X	X						
9	BYI02960	10.5 oz		X			X	X						
	Induce	0.25%		X			X	X						
10	BYI02960	12.0 oz		X			X	X						
	Induce	0.25%		X			X	X						
11	BYI02960	14.0 oz		X			X	X						
	Induce	0.25%		X			X	X						
12	Admire Pro	10.5 oz	X											
	Pyrifluquinazon	3.2 oz				X		X		X	X		X	
	Induce	0.25%				X		X		X	X		X	

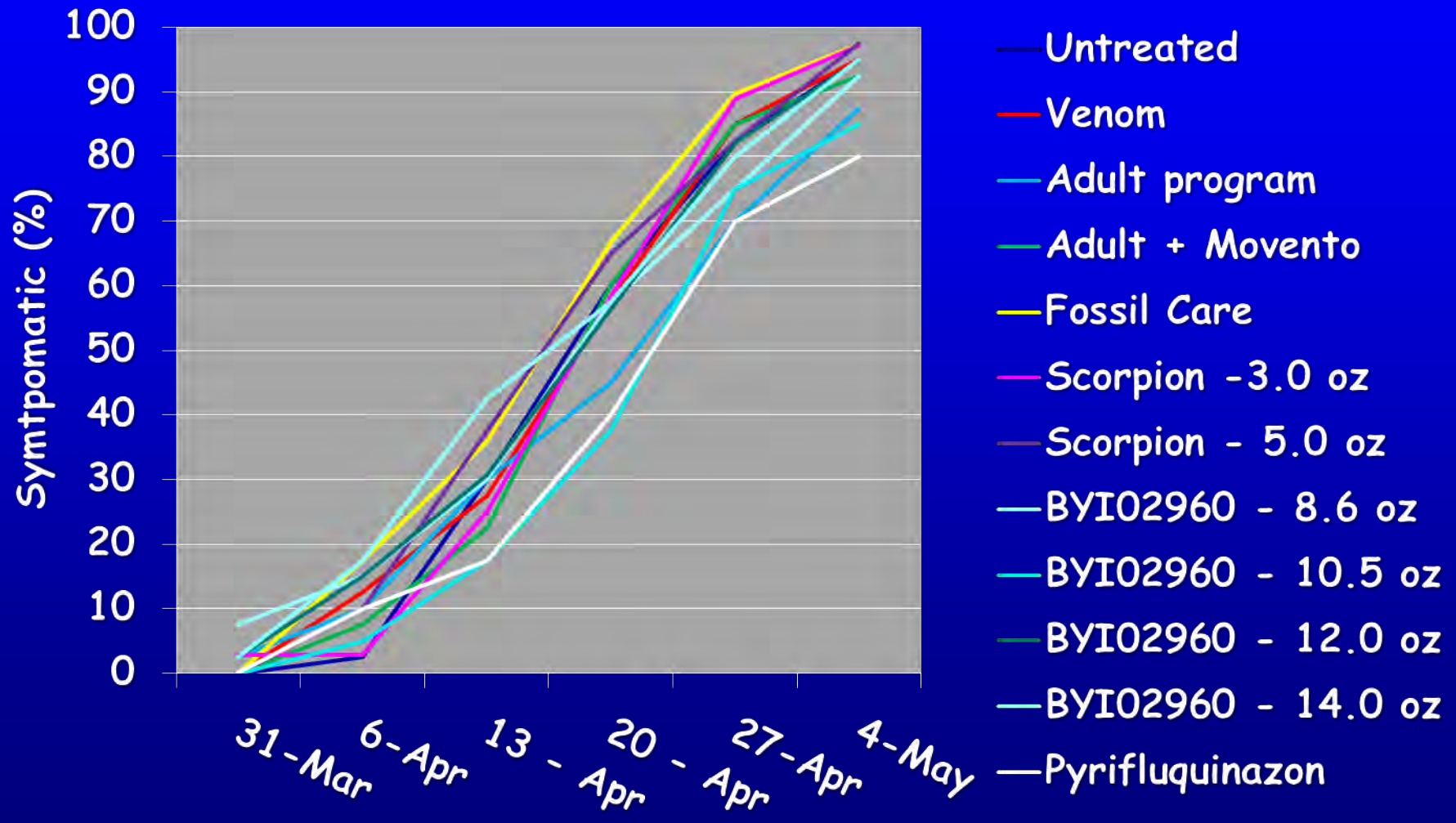
Adults per 5 leaflets



Nymphs per 4 sq. in.



FL-47 Plants with TYLCV symptoms



Drench-Drip Trial: 2011

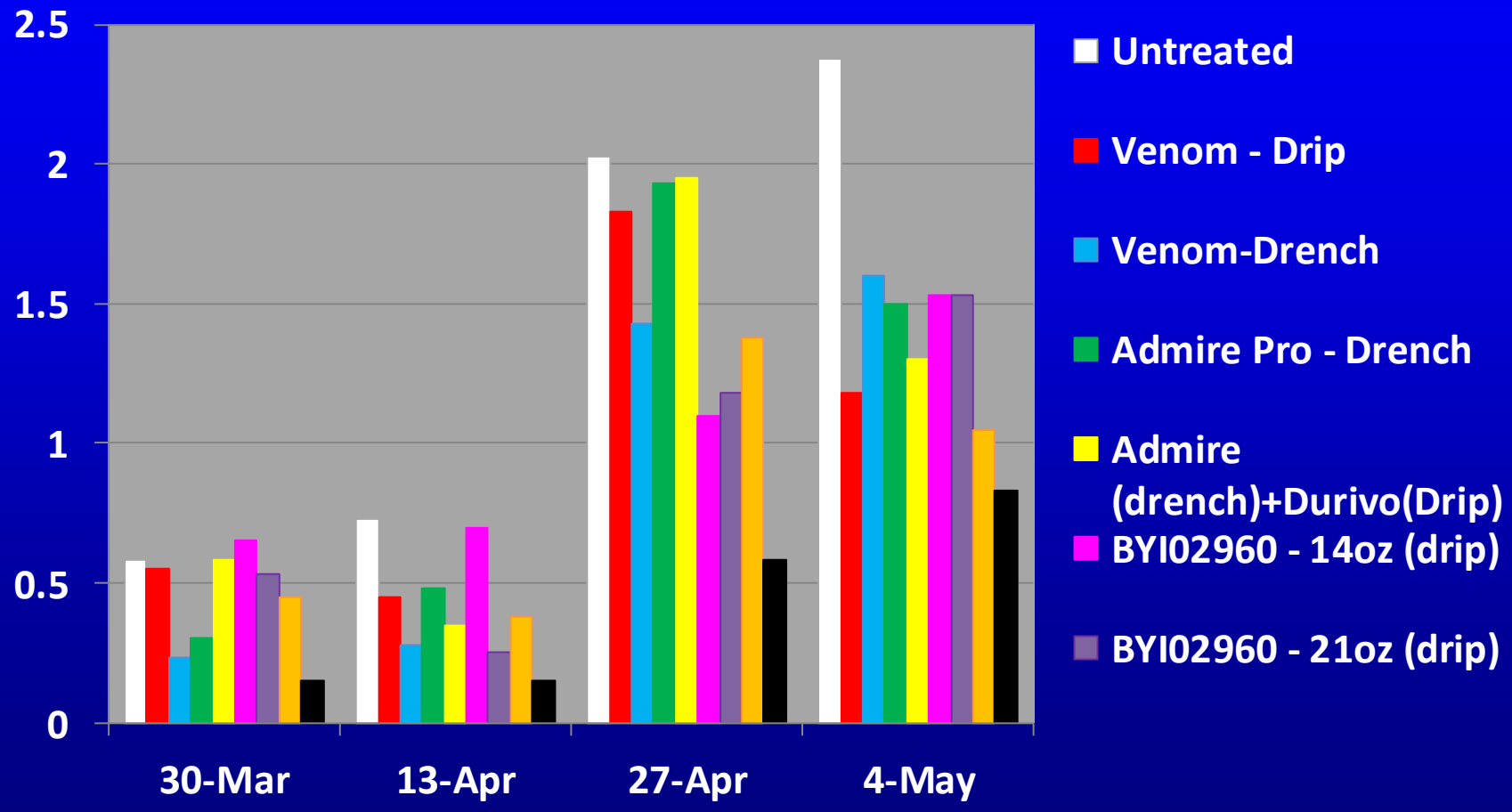
EZ-Dose ® sprayer 45 PSI delivering 3.7 gpm

Injection into drip using a 12 V pump and bladder tank

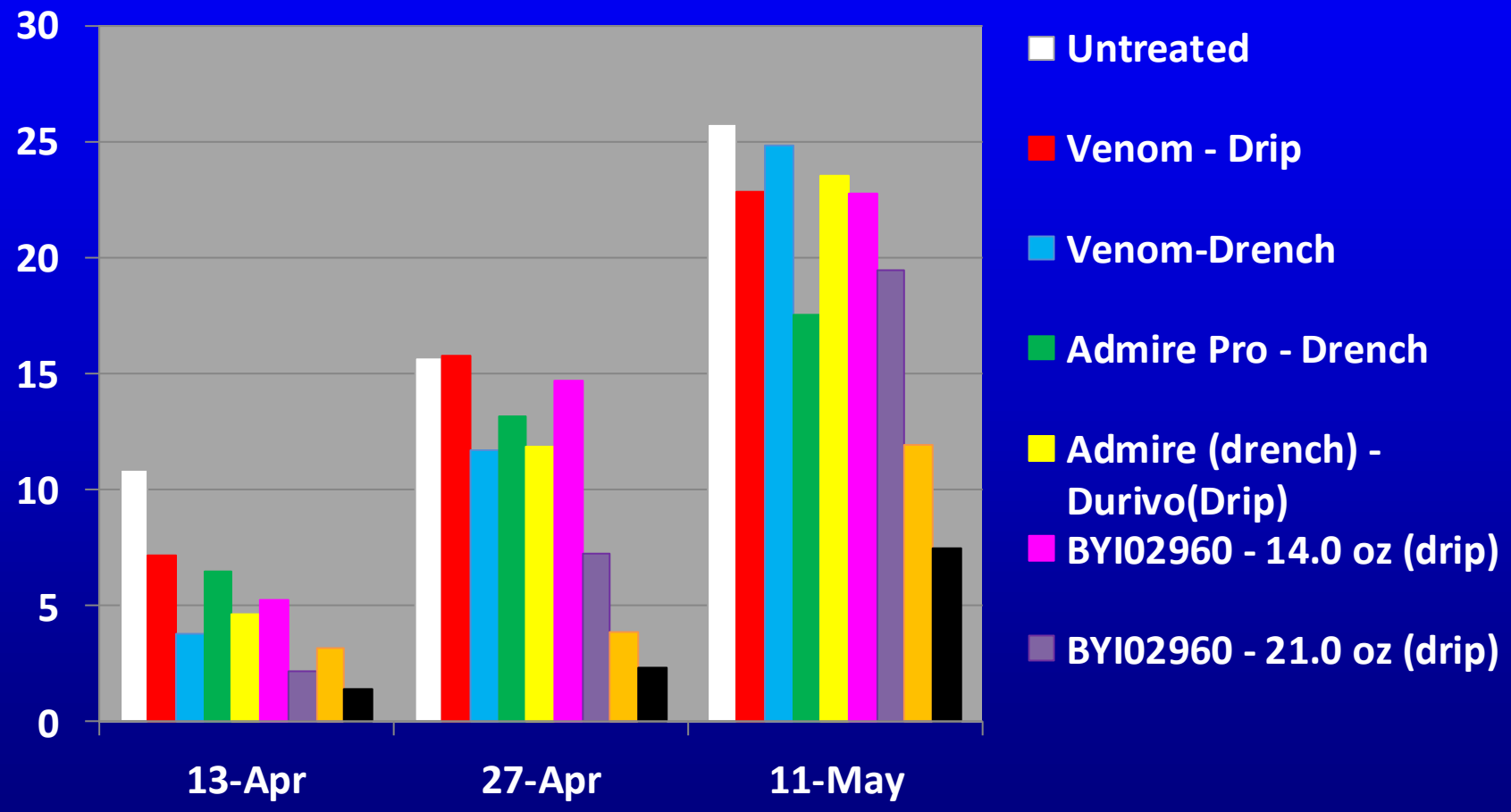
Drench-Drip Trial: 2011

Product	Rate oz/ac	Applied			
		Method	7-Mar	8-Mar	30-Mar
Untreated	None	-	-	-	-
Venom	6.0	Drip	x		
Venom	6.0	Drench	x		
Admire Pro	10.5	Drench	x		
Admire Pro	10.5	Drench	x		
Durivo	13.0	Drip			X
BYI02960	14.0	Drip		x	
BYI02960	21.0	Drip		x	
BYI02960	28.0	Drip		x	
BYI02960	21.0	Drench	x		

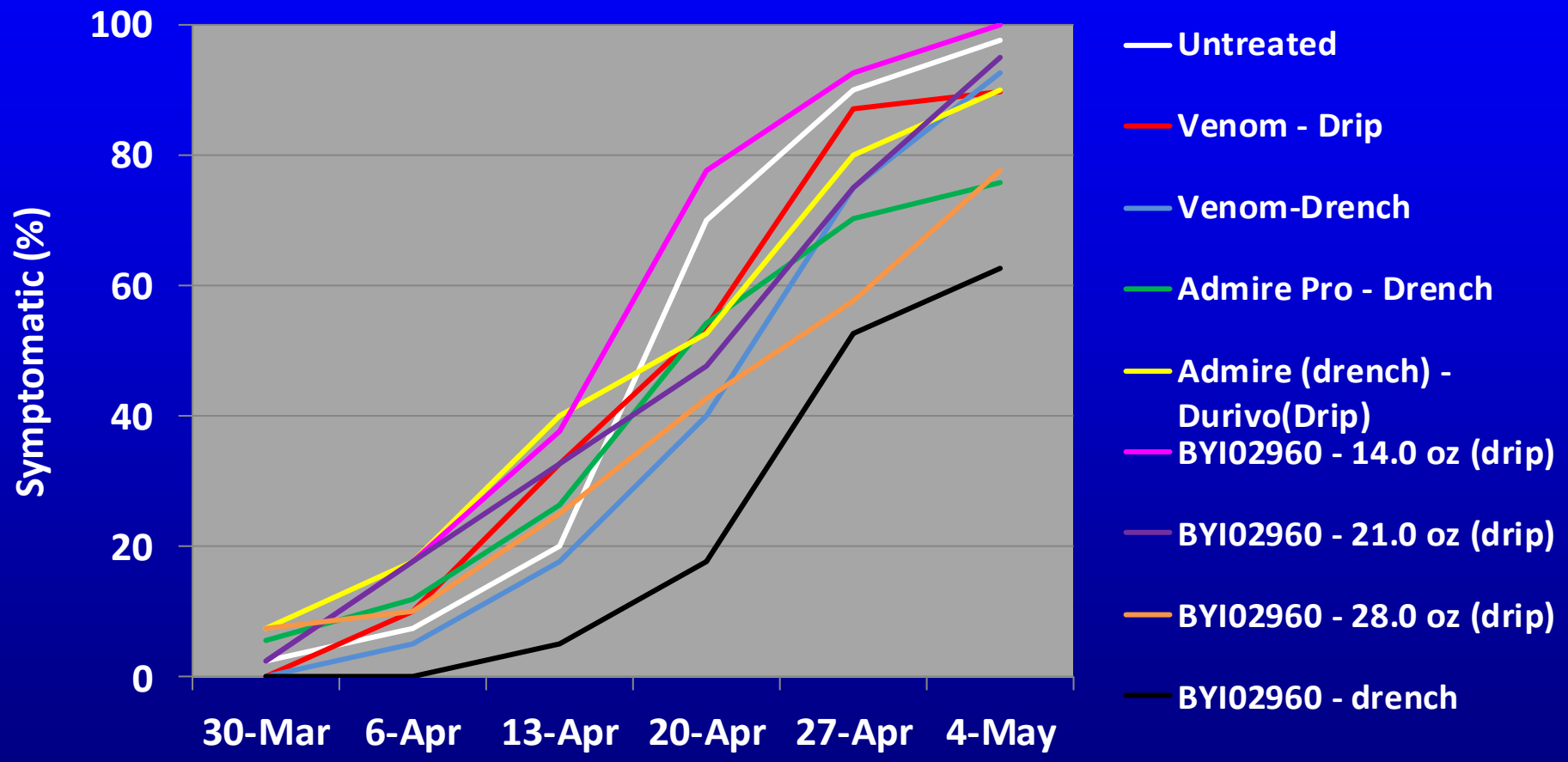
Adults / 5 leaflets



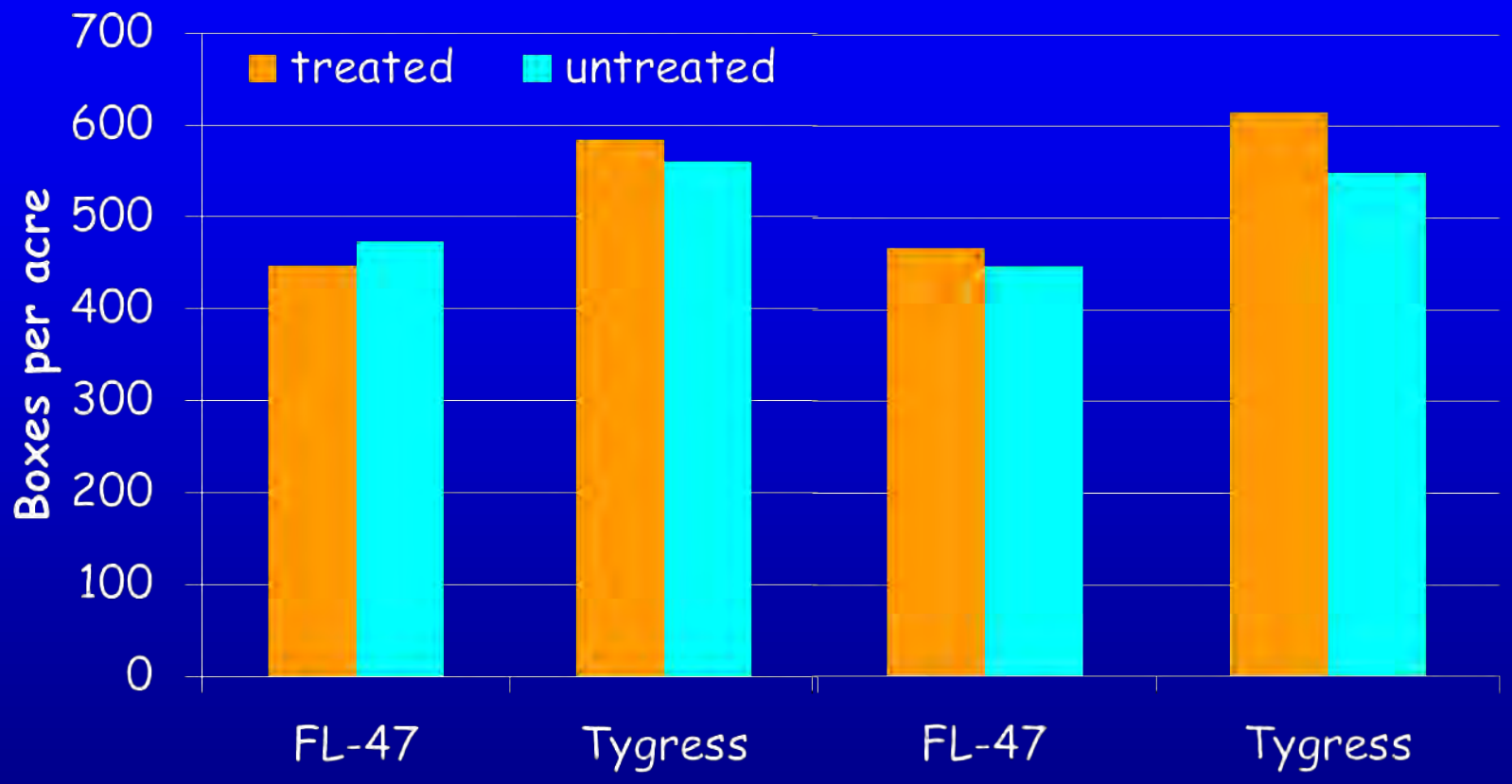
Nymphs per 4 sq. in.



Plants with symptoms of TYLCV



Harvest 2011



FOLIAR

DRENCH

Conclusions – 2011 Trials and General

- Virus pressure was higher in 2011 than 2010
- BYI-02960 and and to a lesser extent Venom drenches reduced rate of TYLCV spread
- Drenches work better than drip for all systemic products
- TYGRESS provided better yield than FL-47 in 2011 in contrast to 2010. No insecticide effects on yield.
- TY resistant varieties best choice when virus pressure high
- Still can't compete with TY-susceptible varieties when pressure is low.