Torac and Bexar Update

Ag Innovations Meeting 2013

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New products by Nichino

Product Composition

- **Active ingredient: Tolfenpyrad**
- **New Chemistry**
- **Label Brands**
  - Torac 15EC
    - **Use rates 14-21 fl oz**
  - Bexar 15SC.
    - **Use rates 21-27 fl oz**
- **EPA Registered**
- **California Registration Pending**
  - Expected September 2014

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Current Registered Crops

Bexar 15SC

Grape

Citrus

Tree Nuts

Stone Fruit

Persimmon

Pomegranates

Torac 15EC

Leafy Vegetables:

Lettuce, Celery, Spinach

Potatoes

Cotton

Second Tier Crops:

Fruiting Vegetables, Cucurbits, Brassicas, Strawberries, Blueberries
Onions

Chemistry: General Properties

- **Broad Spectrum Contact Insecticide**
  - Non systemic or translaminar
  - Adjuvant/spreader recommended
- **Residual efficacy: Varies by pest (5-7 days)**
- **Speed of activity: Fast acting**
  - **Faster when warmer**
- **Crop Safety**
  - No phytotoxicity on all labeled crops.
- **Non-selective Chemistry**
  - **Toxic to most beneficial insects 7-14 days**
  - **Toxic to Bees by direct contact.**
    - Follow Bee language on label

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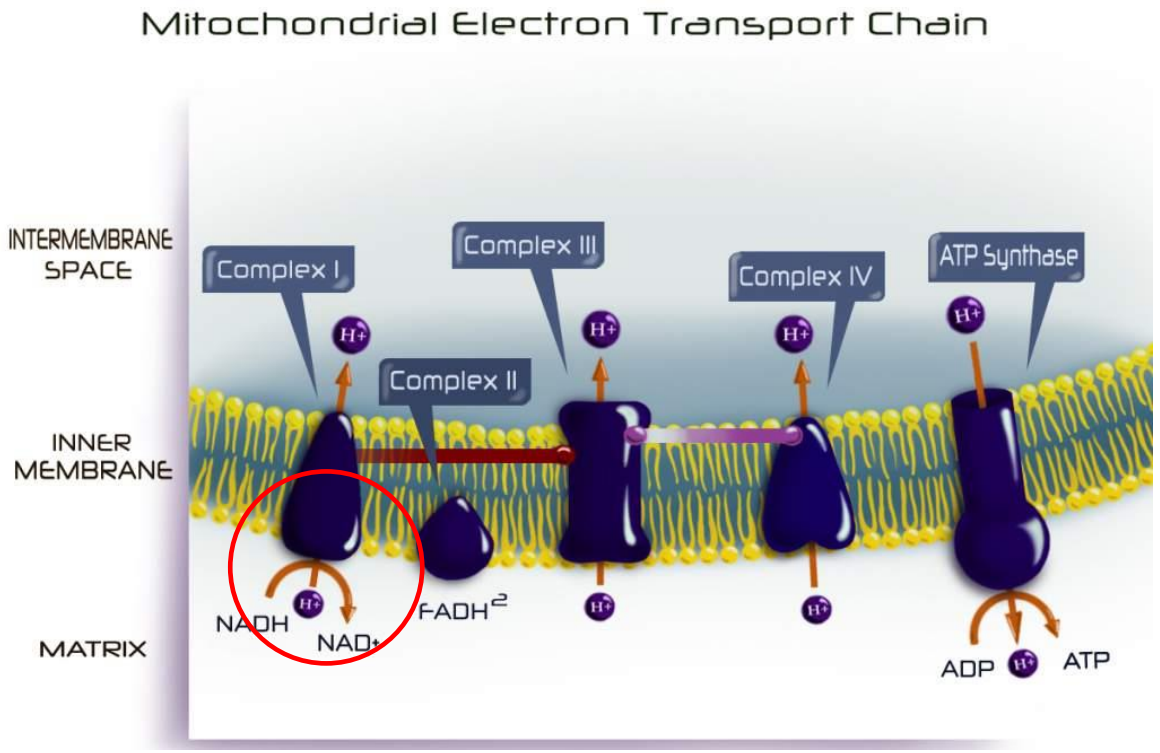
Mode of Action

- **Torac is an Insecticide and Fungicide**
- **IRAC Group 21A and FRAC Group 31**
- **Mitochondrial Electron Transport Inhibitor**
- **Disrupts Cell Respiration**
- **IRM**
  - New mode of action for target insect pests
  - No cross resistance outside Group 21 A.



Key Target Pests

Leafy Vegetables	Citrus	Tree Nuts	Potatoes	Grape
Thrips	Citrus thrips	Aphids	Colorado Potato beetle	Mealybug
Aphids	Citricola Scale	Leaf footed plant bug	Potato Psyllid	Leafhoppers
Flea beetles	ACP	Leaf rollers	Aphids	Leafrollers
Leps (Suppression)	Aphids	Lygus	Thrips	
Whitefly (Suppression)	Mites	Mealybug	Leafhoppers	
Powder Mildew	Katydids	Leaf hoppers		







Torac Efficacy Trials

- **Trial Locations**
  - Yuma, AZ
  - Holtville, CA
  - Lompoc, CA
  - Salinas, CA
- **Small Plot Replicated Trials**
  - 2-4 beds X 30-50 ft long
  - 4 Replicates
  - CO2 Backpack/Tractor Applied
  - Spray volume: 20-50 GPA
  - Spreader

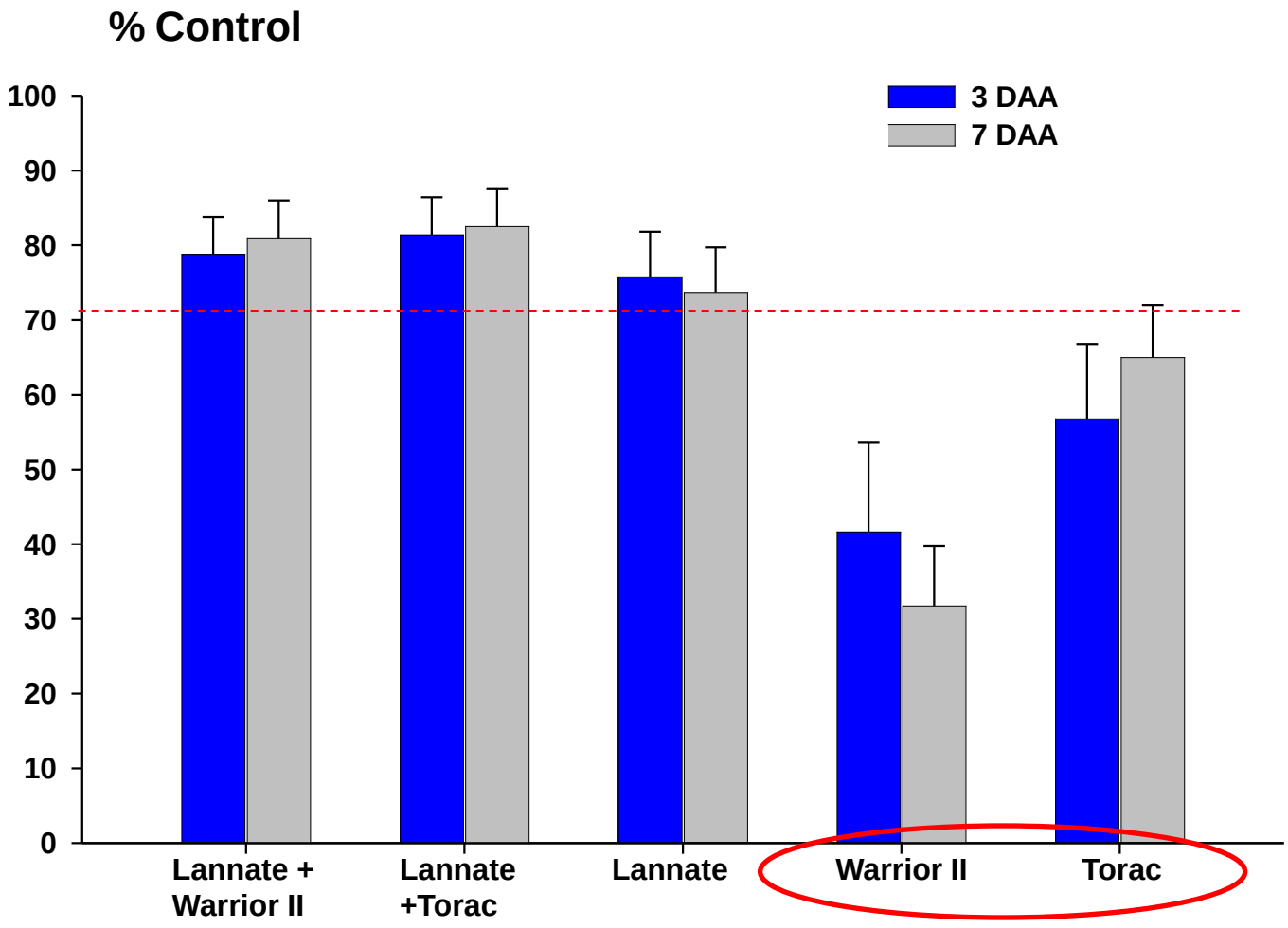
Comparative Efficacy – Lettuce

Western flower thrips

Yuma Ag Center, Spring 2010-2011

Adults

- **3 Trials**
- **8 applications**



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Comparative Efficacy – Lettuce

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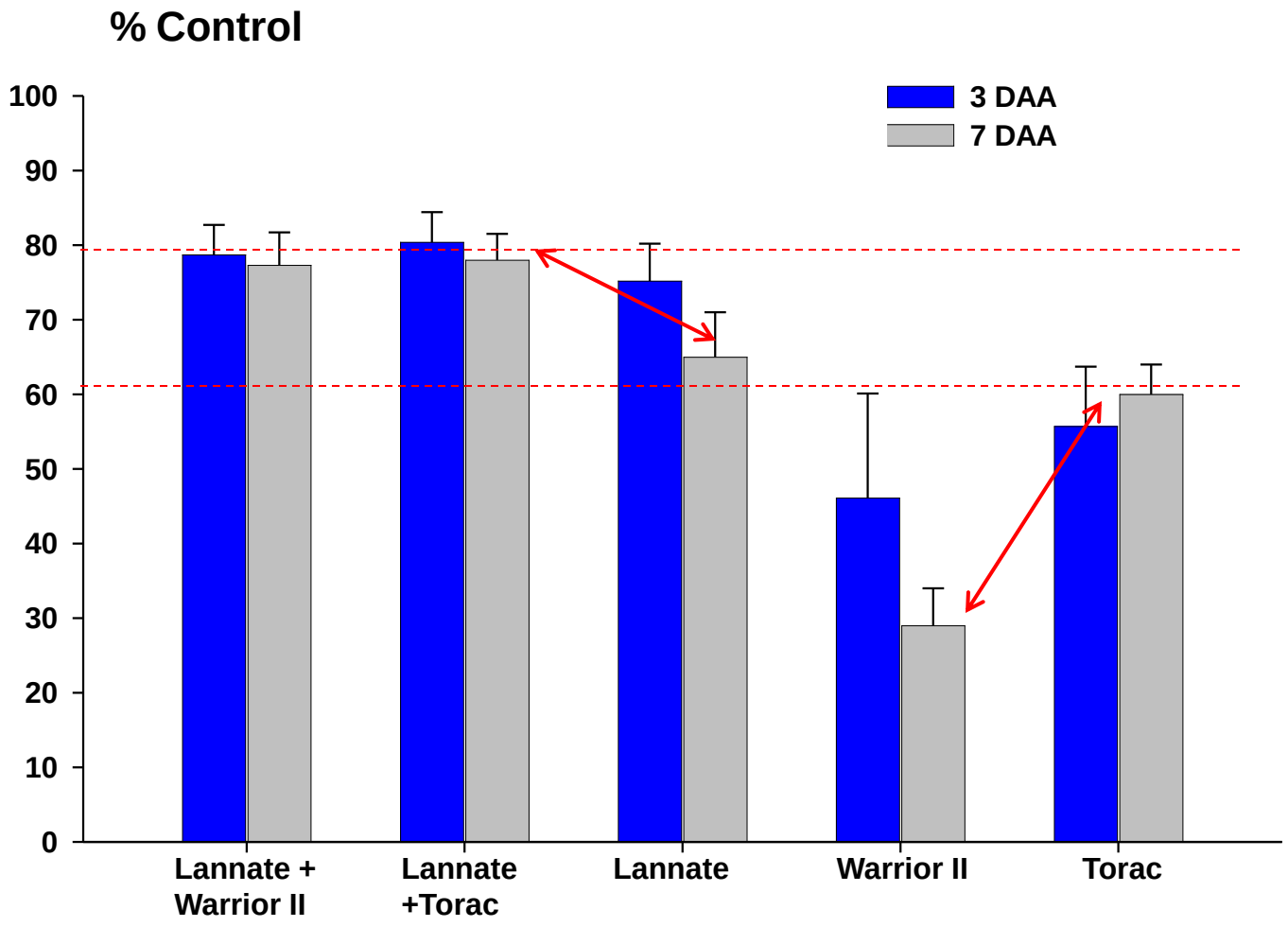
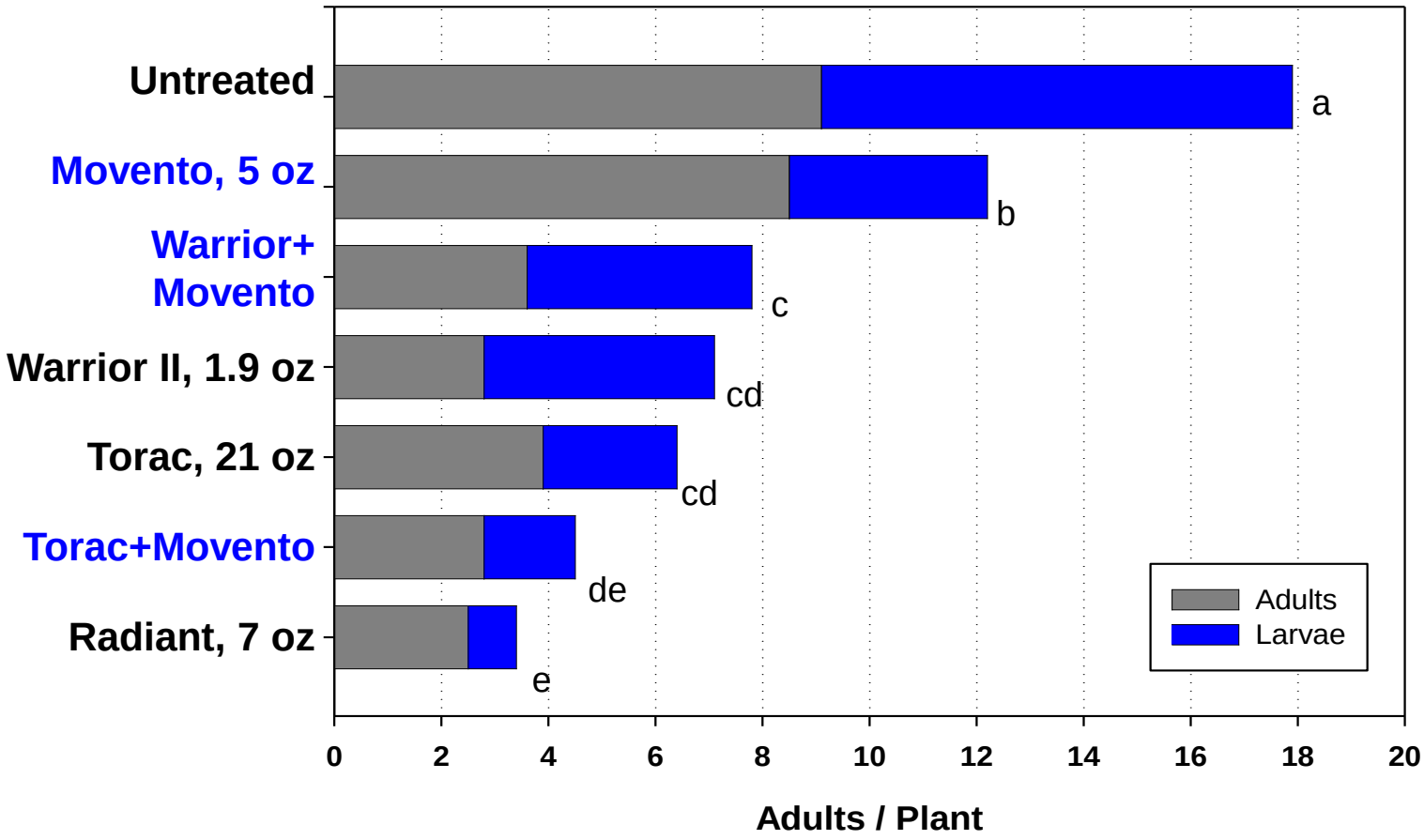


Comparative Efficacy – Tank Mixtures in Lettuce

Western flower thrips

Yuma Ag Center, Spring 2013



- **2 spray applications**
- **14 d spray interval**
- **3 , 7 & 11 & 14 DAA**

Efficacy Comparison Between Available Chemistry
John Palumbo, UA 20014

Thrips Management in Desert Leafy Vegetables - 2014

Product	IRAC MOA	Relative Efficacy Index For Western Flower Thrips: Adult	Relative Efficacy Index For Western Flower Thrips: Larvae	Comments*
Lannate	1A	•••	•••	Tank mix with pyrethroid for best thrips control; PHI: 10 d on lettuce; 7 d spinach
Acephate	1B	•••	•••	Tank mix with pyrethroid for best thrips control PHI: 14-21 d on head lettuce, has aphid activity
Dimethoate	1B	••	••	Tank mix with another product for enhanced thrips and aphid activity; PHI: 14 d on leaf lettuce
Pyrethroids	3	••	•	Tank mix with Lannate or Orthene for best performance; use high labeled rates; PHI: varies with products
Assail	4A	•	••	May provide thrips suppression when sprays are targeted for aphids. Use at high rates (4 oz for Assail 30SG); PHI: 7 d on leafy vegetables.
Radiant/Success	5	•••	•••	Stand alone worm, leafminer, and thrips control; Use of pyrethroid can improve adult thrips activity, PHI: 1 day on leafy vegetables
Agri-Mek	6	••	••	Use a penetrating adjuvant; use 12 oz or higher for thrips activity; perfroms better when tank-mixed with a pyrethroid; PHI: 7 days on leafy vegetables.
Beleaf	9	•	••	May provide thrips larvae suppression when sprays are targeted for aphids. Use at higher rates; PHI: 0 d on leafy vegetables
Torac	21A	•••	•••	Not as efficacious as Radiant or Lannate, but significantly better than other alterantives. For best results, tank mix with Lannate or Radiant; PHI: 3 d on lettuce
Movento	23	•	••	May provide thrips larvae suppression when sprays are targeted at aphids; use a penetrating adjuvant at 0.25%v/v or ; PHI: 3 d for leafy vegetables

•••	Good residual control
••	Marginal residual control
•	Poor control

* always consult the label before applying any of these products on leafy vegetables or cole crops

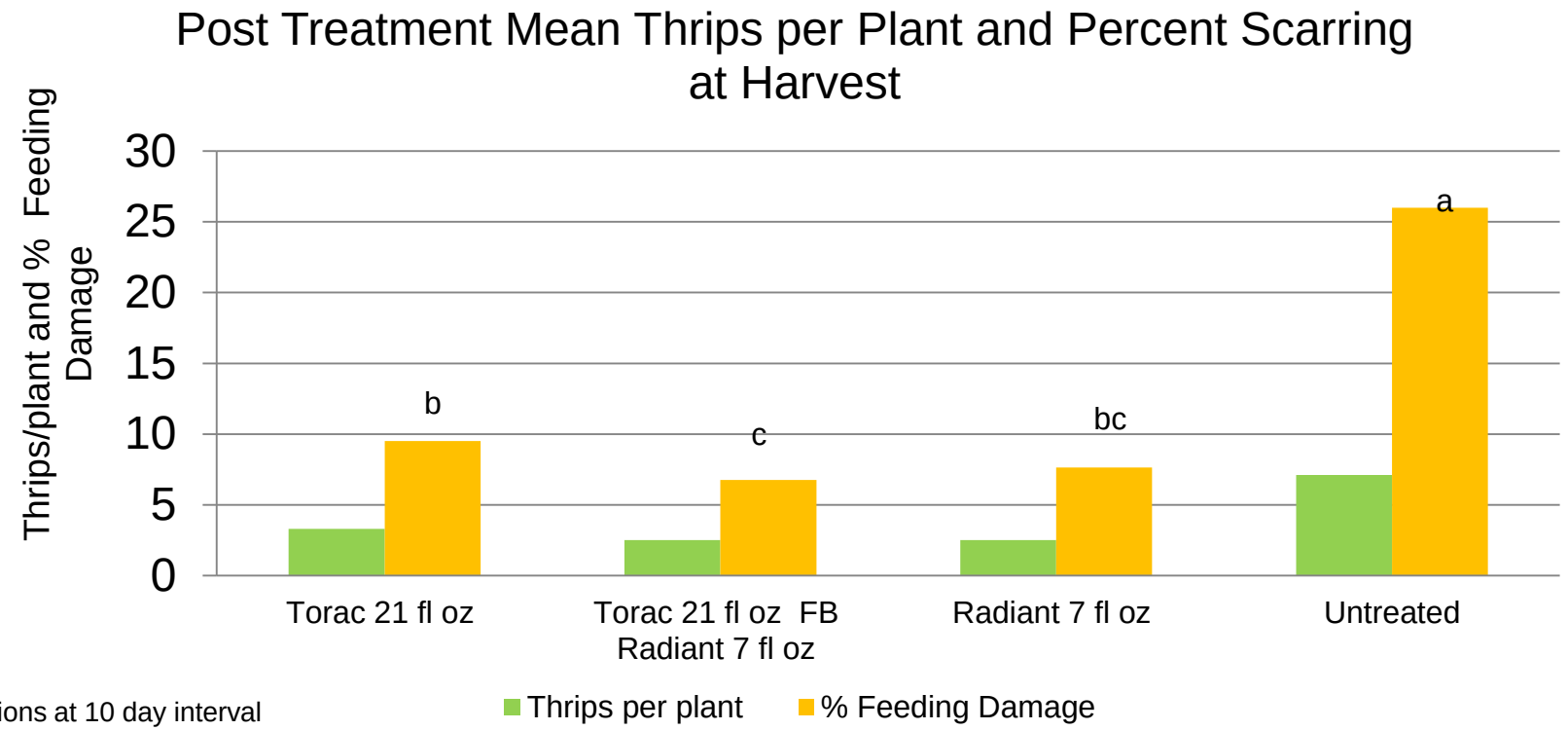
Torac 15EC Efficacy on Western Flower Thrips in Romaine Lettuce
Yuma, AZ
John Palumbo 2010

Post Treatment Average Trips per Plant

		Mean Thrips / Plant		
Treatment	**Rate**	**Adult**	**Larvae**	**Total**
Lannate	0.75 lb	50.2 a	67.3 c	117.5 cd
Warrior	1.9 oz	49.2 a	131.3 b	180.5 b
Lannate + Warrior	0.75 lb + 1.9	45.6 a	48.7 cd	94.3 de
Torac 15EC	21 oz	56.3 a	70.2 c	126.5 c
Lannate + Torac 15EC	0.75 lb + 21 oz	41.1 a	35.0 d	76.10 e
UTC		59.6 a	249.9 a	309.5 a
	F value	*2.21*	*63.2*	*66.8*
	Pr > F	*0.11*	*<.0001*	*<.0001*
	LSD	*13.8*	*30.5*	*31.6*

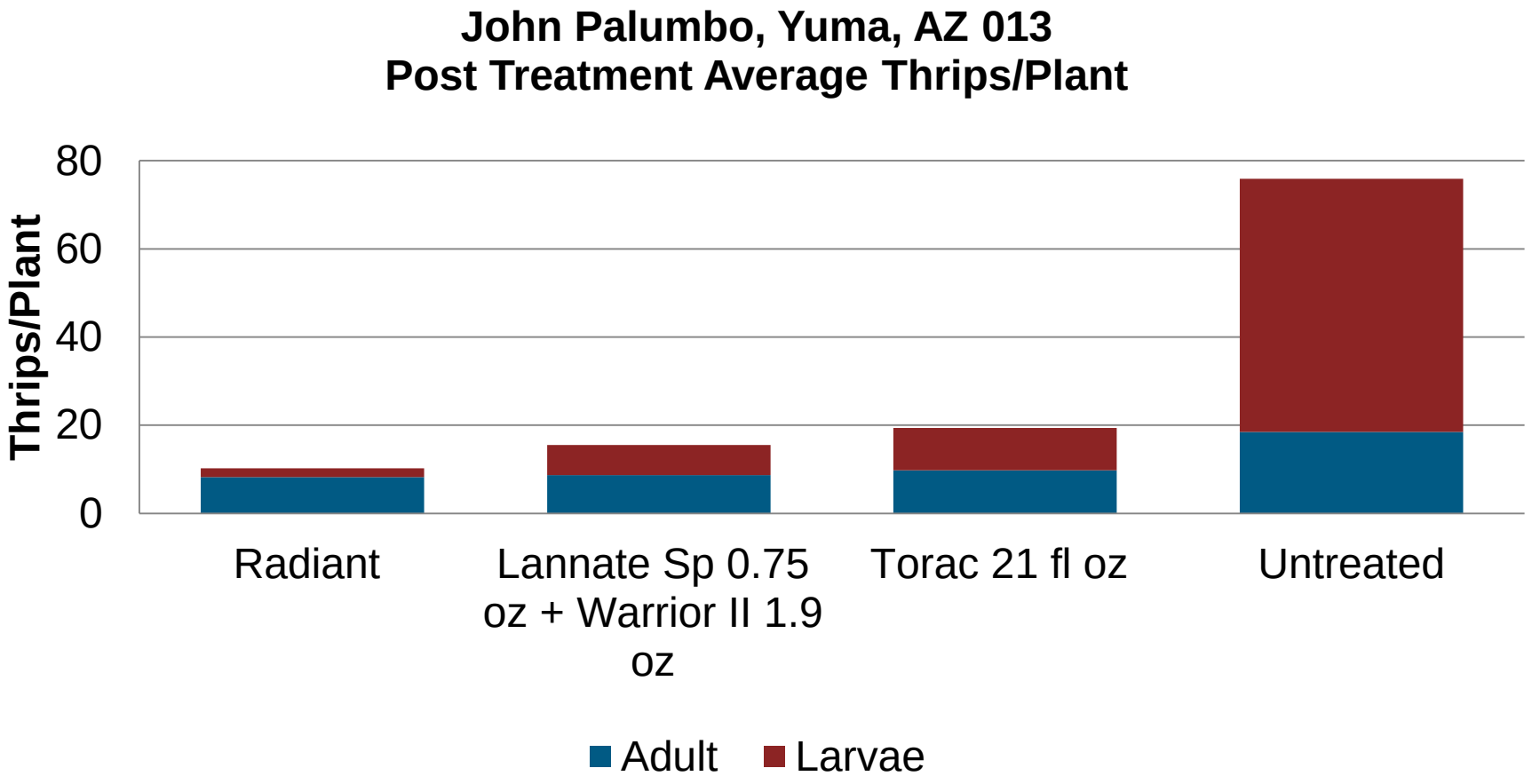
Two applications 8 days apart
Spray volume:21 GPA
NIS 0.25% v/v

Torac 15EC Efficacy on Western Flower Thrips in Romaine Lettuce Watsonville, CA 2011



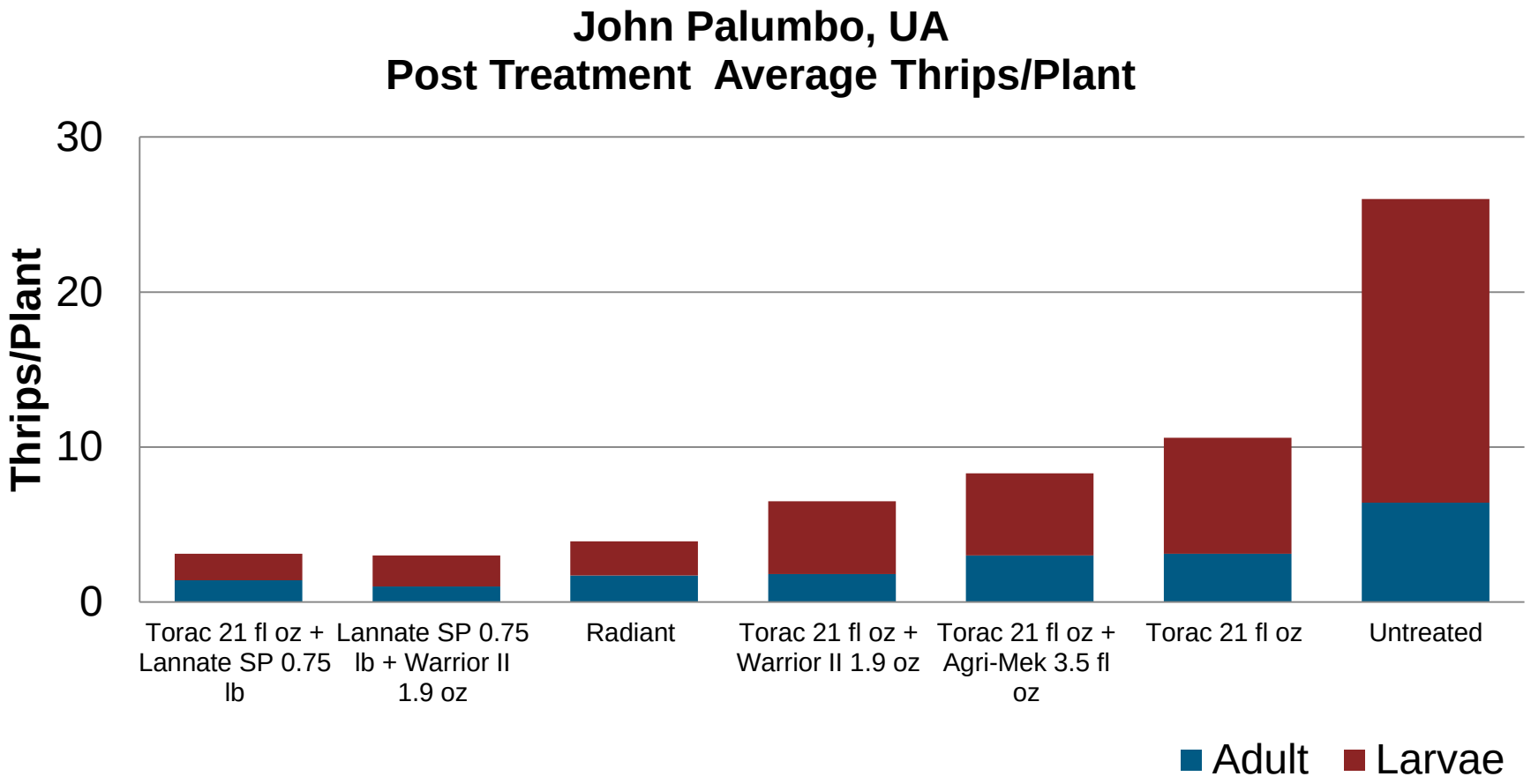
4 applications at 10 day interval
Plots 6X30 ft X 4 reps
Backpack sprayer
30 GPA
LSD P=0.05

Torac Efficacy on Western Flower Thrips In Lettuce



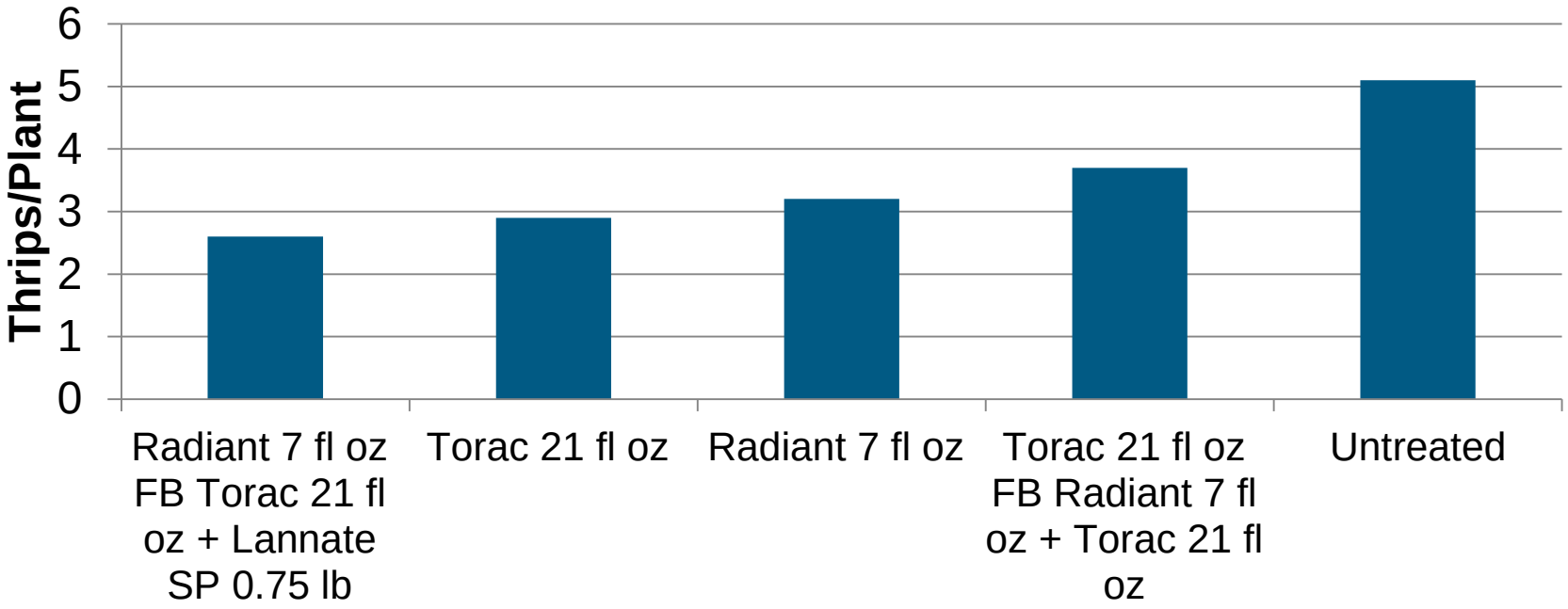
Two applications 10 day interval
Spray volume: 20 GPA
NIS 0.25% v/v
Pre-application Counts 7.3 thrips/plant

Torac Tank-Mix Efficacy on Western Flower Thrips In Lettuce Yuma, AZ 2013



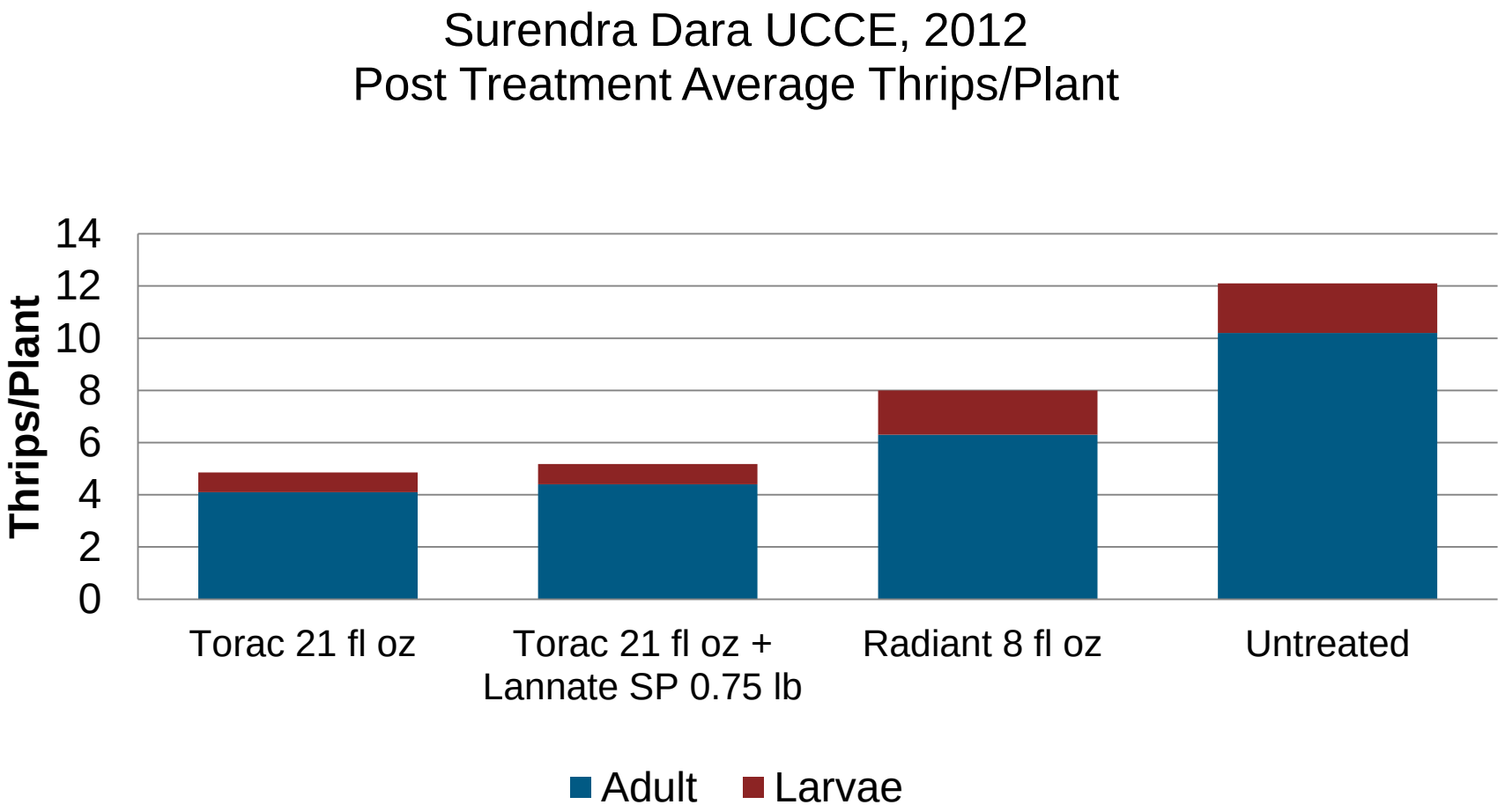
Three applications 13 day interval
Spray volume: 20 GPA
NIS 0.25% v/v
Pre-application Counts 6.5 thrips/plant

Torac Efficacy on Western Flower Thrips in Lettuce
Post Treatment Average Thrips/Plant
Salinas, CA 2012



Three applications at 7 day interval
Spray volume:45 GPA
NIS 0.25% v/v
Pre-application Counts: 1-1.5 thrips/plant

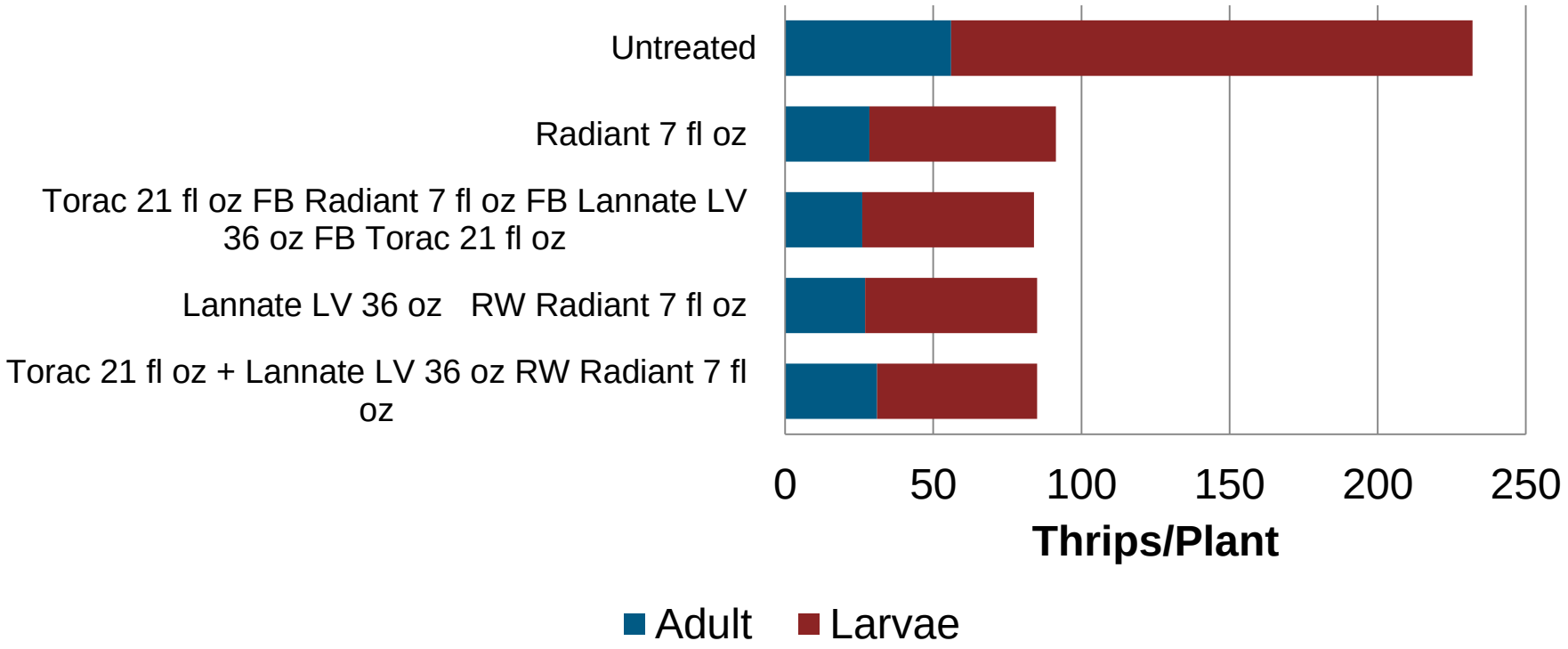
Torac Efficacy on Western Flower Thrips in Lettuce Lompoc ,CA



Three applications 8-12 day interval
Spray volume: 50 GPA
NIS 0.25% v/v
Pre-application counts: 6 thrips total/plant

Torac Rotation Program Efficacy on Western Flower Thrips in Lettuce

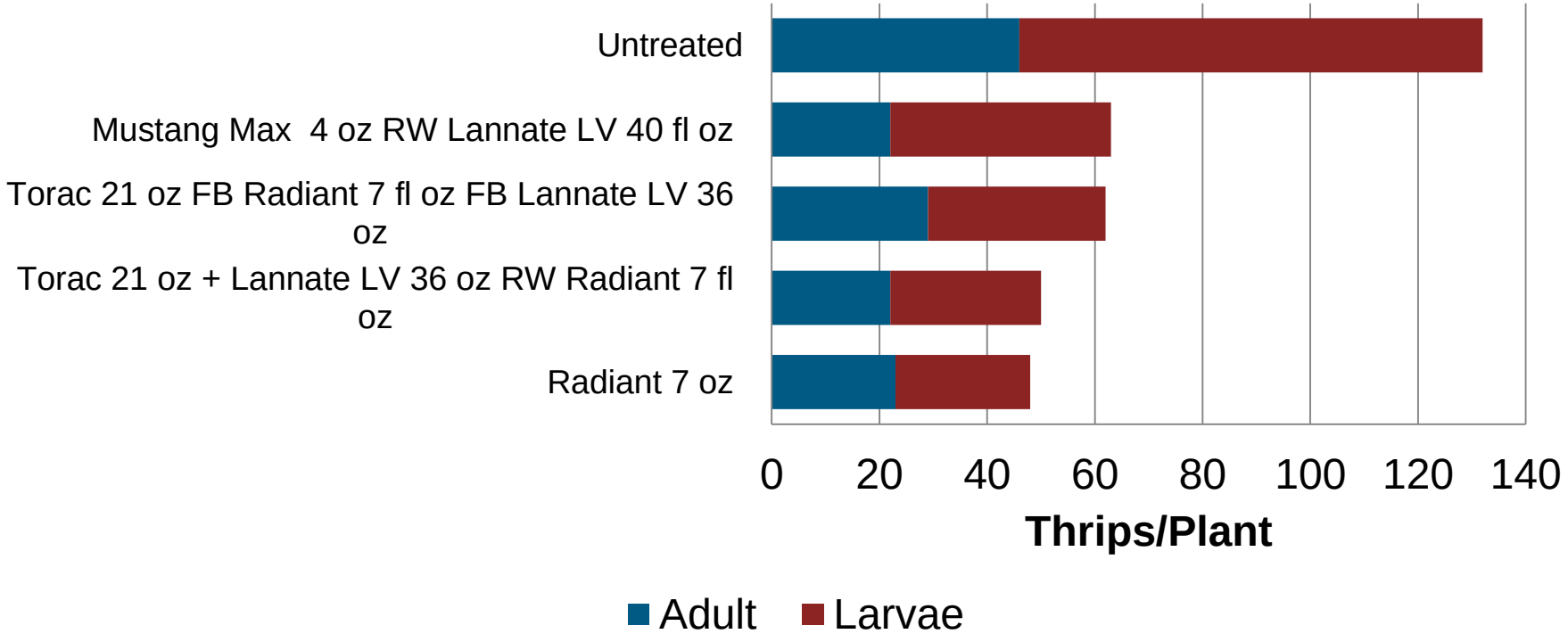
Eric Natwick UCCE Holtville, CA 2013
Post Treatment Average Thrips/Plant



4 applications at 10 day interval
Spray volume: 53 GPA
NIS 0.25% v/v
Pre-application counts: 281 thrips/plant

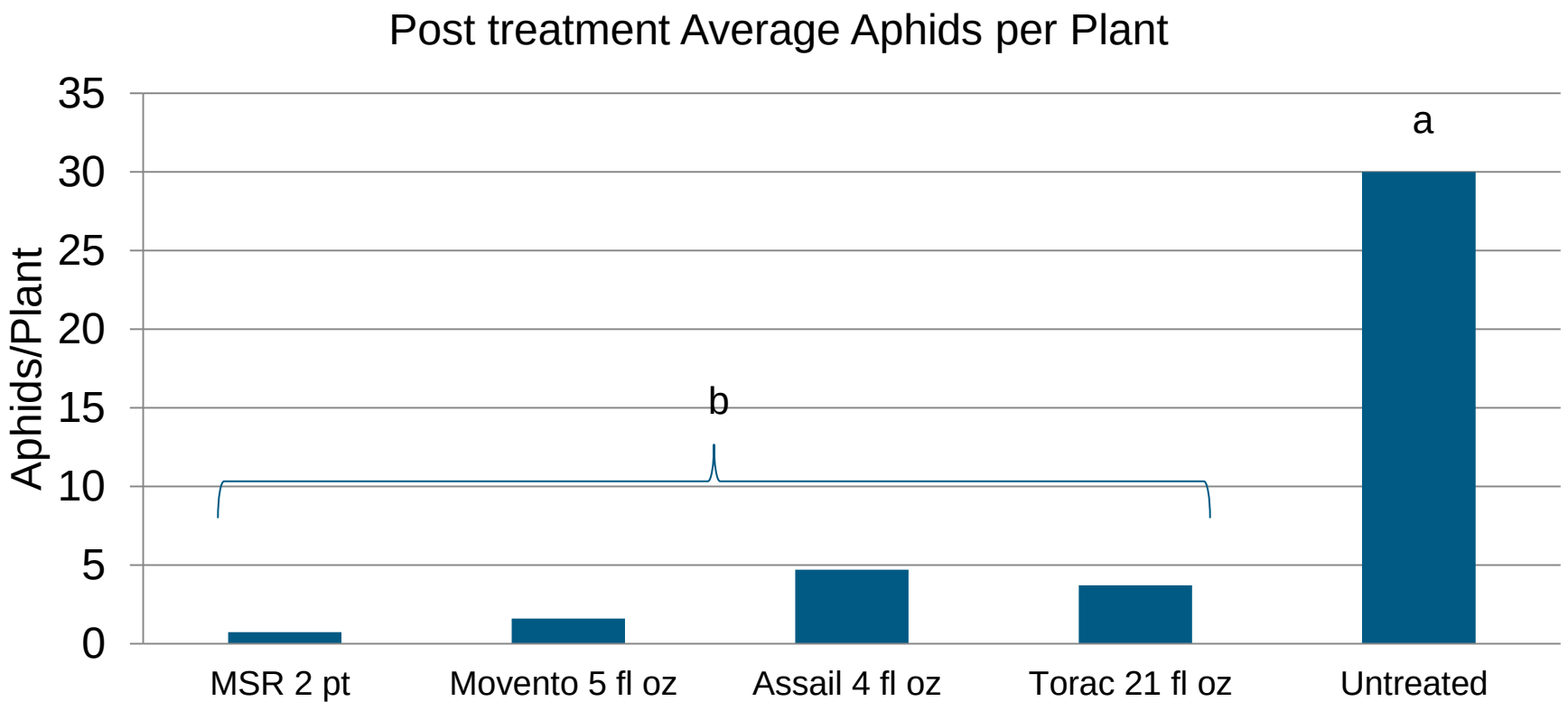
Torac Rotation Program Efficacy on Western Flower Thrips in Head Lettuce

Eric Natwick UCCE Holtville, CA 2013
Post Treatment Average Thrips/Plant



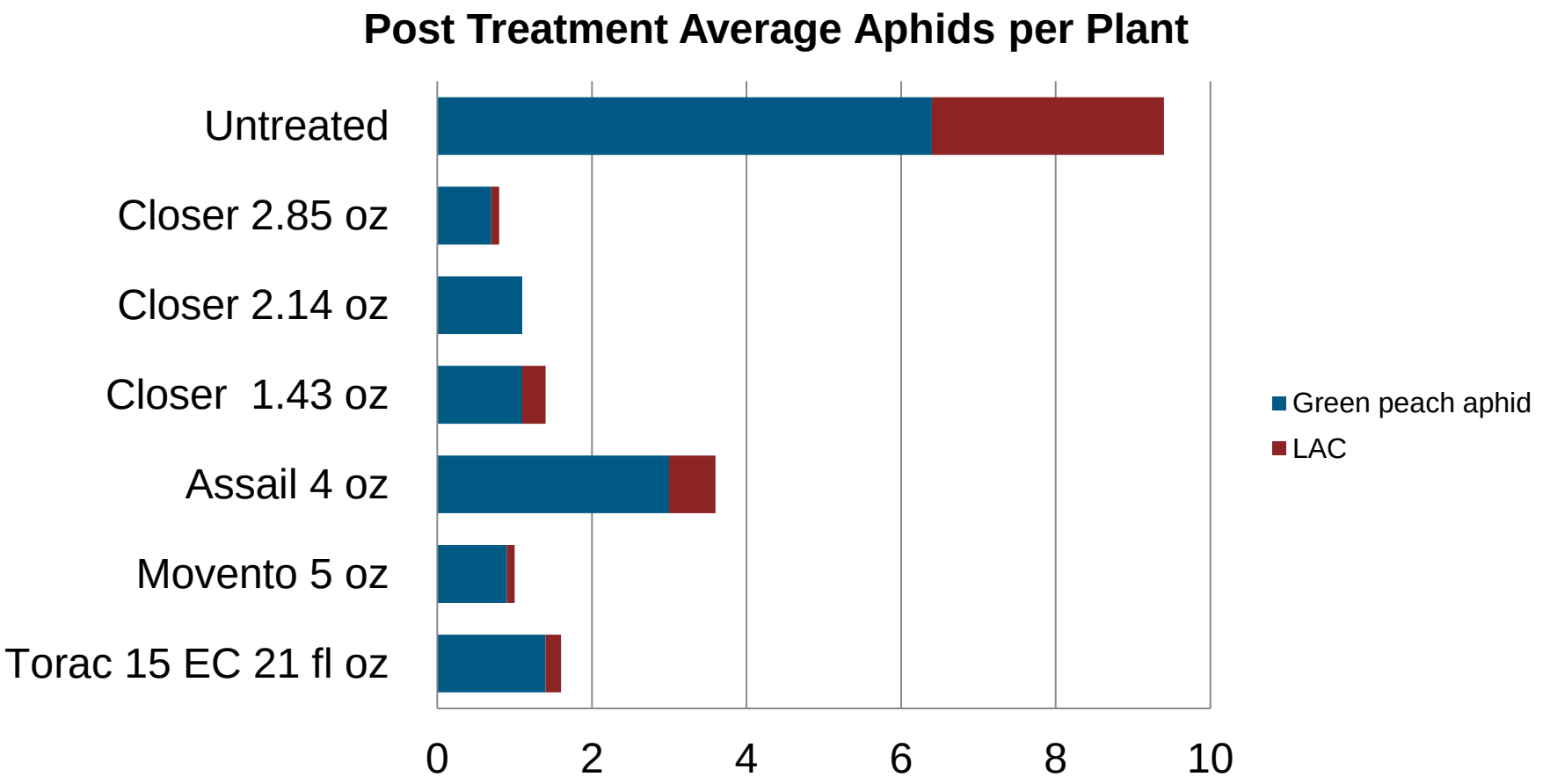
Three applications at 11 day interval
Spray volume: 53 GPA
NIS 0.25% v/v
Pre application counts 106 thrips/plant

Torac 15EC Efficacy on Green Peach Aphid in Head Lettuce
San Luis Obispo, CA 2010



Applications: Total of 4 spaced at 8-11 day interval
Spray volume: 50 GPA
Timing: November-December
LSD P= 0.05

Torac Aphid Control in Head Lettuce
Yuma, AZ
John Palumbo 2012



Two applications 18 days apart
Spray volume 20 GPA

Torac Efficacy on Downy Mildew: *Bremia lactucae* in Lettuce
Yuma, AZ
Michael Matheron UA 2011

	Average number plants with Downy mildew lesions per plot
Forum 6 fl oz	1.2
Presidio 4 fl oz	1.4
Quadris 2.08 SC 15.5 fl oz	2.8
Manzate Pro Stick 2.1 lb	3.4
Torac 21 fl oz	4.4 b
UTC	8 a

LSD (Least Significant Difference, *P=0.05)*

4 applications 10-14 day interval
GPA 50
Plot: 2 beds 25 ft X 4 reps
Tractor mounted sprayer

Torac Efficacy on Powdery Mildew: *Erysiphe cichoracearum* in Head Lettuce
Yuma, AZ
Michael Matheron UA 2011

	Mean Value Disease Rating Per Plot
Quintec 5 fl oz	0.8 b
Rally 5 oz	1.0 b
Torac 21 fl oz	1.2 b
UTC	3.2 a

LSD (Least Significant Difference, *P=0.05)*

4 applications 10-14 day interval
GPA 50
Plot: 2 beds 25 ft X 4 reps
Tractor mounted sprayer

Disease Rating Scale

0 = No powdery mildew colonies present on plant.
1 = Powdery mildew present on bottom leaves.
2 = Powdery mildew present on bottom leaves and lower wrapper leaves.
3 = Powdery mildew present on bottom leaves and all wrapper leaves.
4 = Powdery mildew present on bottom leaves, wrapper leaves, and cap leaf.
5 = Powdery mildew present on entire head.

Summary

- **Torac and Bexar are new Nichino products**
- **EPA Registered in February 2014**
  - California registration pending
- **Broad spectrum contact insecticides**
- **Show good- Excellent efficacy on target pests**
- **Offer new mode of action for most target pests**
- **Excellent rotational products**

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THANK YOU