

**University of California**

Agriculture and Natural Resources

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# **Thrips Control on Lettuce and European Pepper Moth**

**Surendra Dara**

**Strawberry and Vegetable Crops Advisor**

**University of California Cooperative Extension**

**San Luis Obispo, California, USA**

# Western flower thrips



# Experimental design

## Treatments

1. Untreated control
2. Assail 70 WP (acetamiprid) 1.7 oz  
+ DyneAmic (NIS) 0.25% v/v
3. Radiant SC (spinetoram) 7 fl oz  
+ Dyne Amic 0.25%
4. Lannate SP (methomyl) 0.75 lb  
+ DyneAmic 0.25%
5. Torac 15 EC (tolfenpyrad) 21 fl oz  
+ DyneAmic 0.25%
6. Lannate SP 0.75 lb + Torac 15EC 21 fl oz  
+ DyneAmic 0.25%



2	3
3	1
1	2
6	5
5	6
4	4
5	6
4	5
6	4
3	2
1	3
2	1

**Spraying**                    35 gal/acre at 55 psi with flat fan nozzle

**Plot size**                    5 rows, 5.33' wide 10' long replicated 4 times

**Head lettuce**                Cultivar Durango

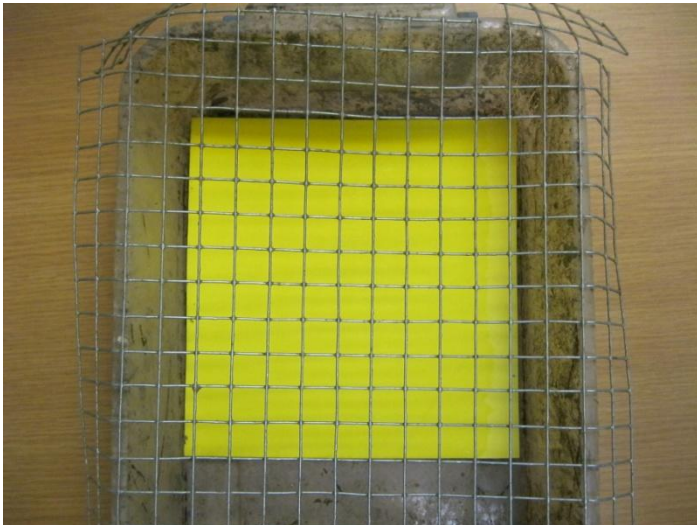
**Planted**                        8 June, 2011

**Treated on**                    13 July, 2011

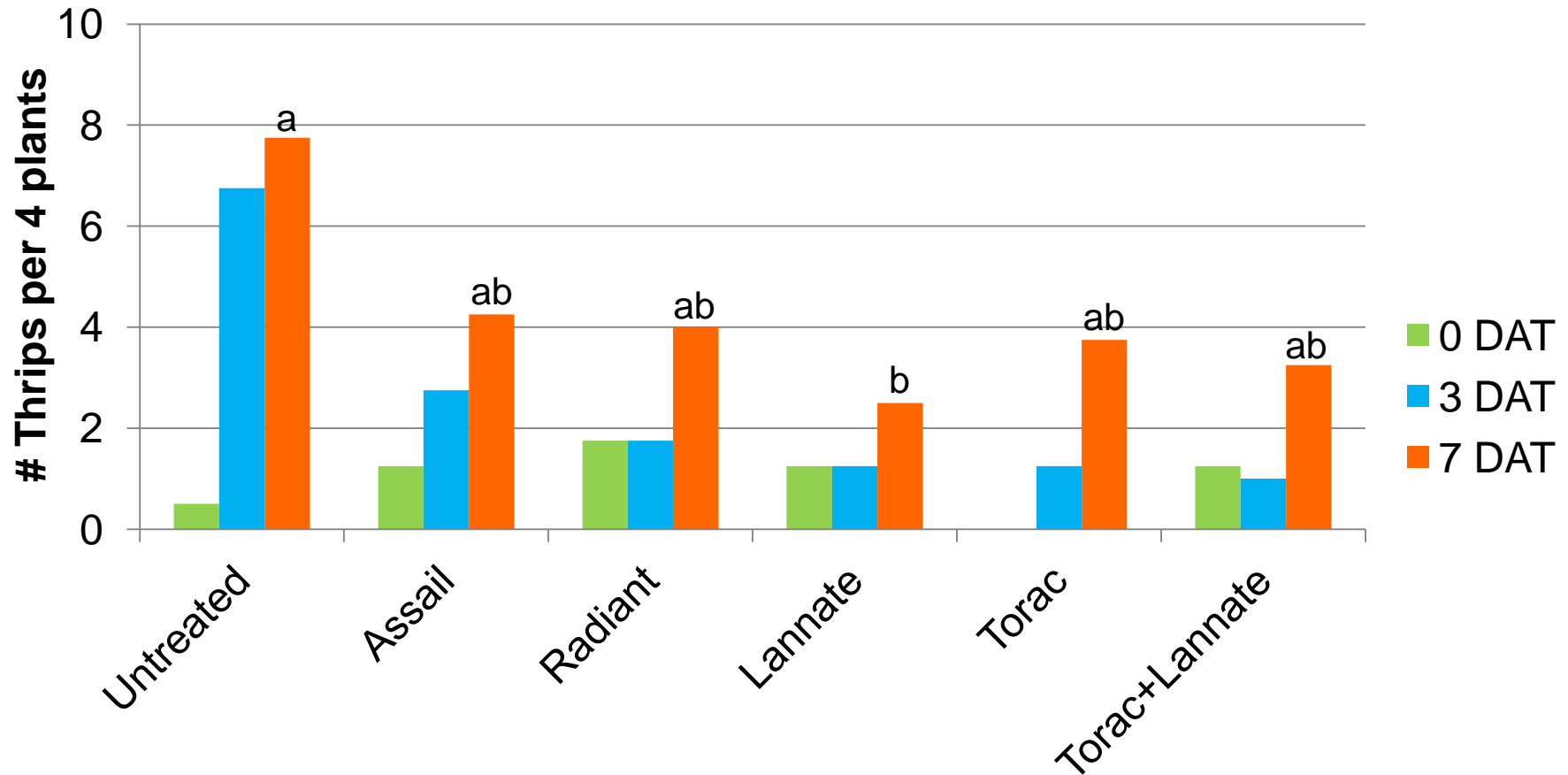
# Sampling

## Treatment and sampling

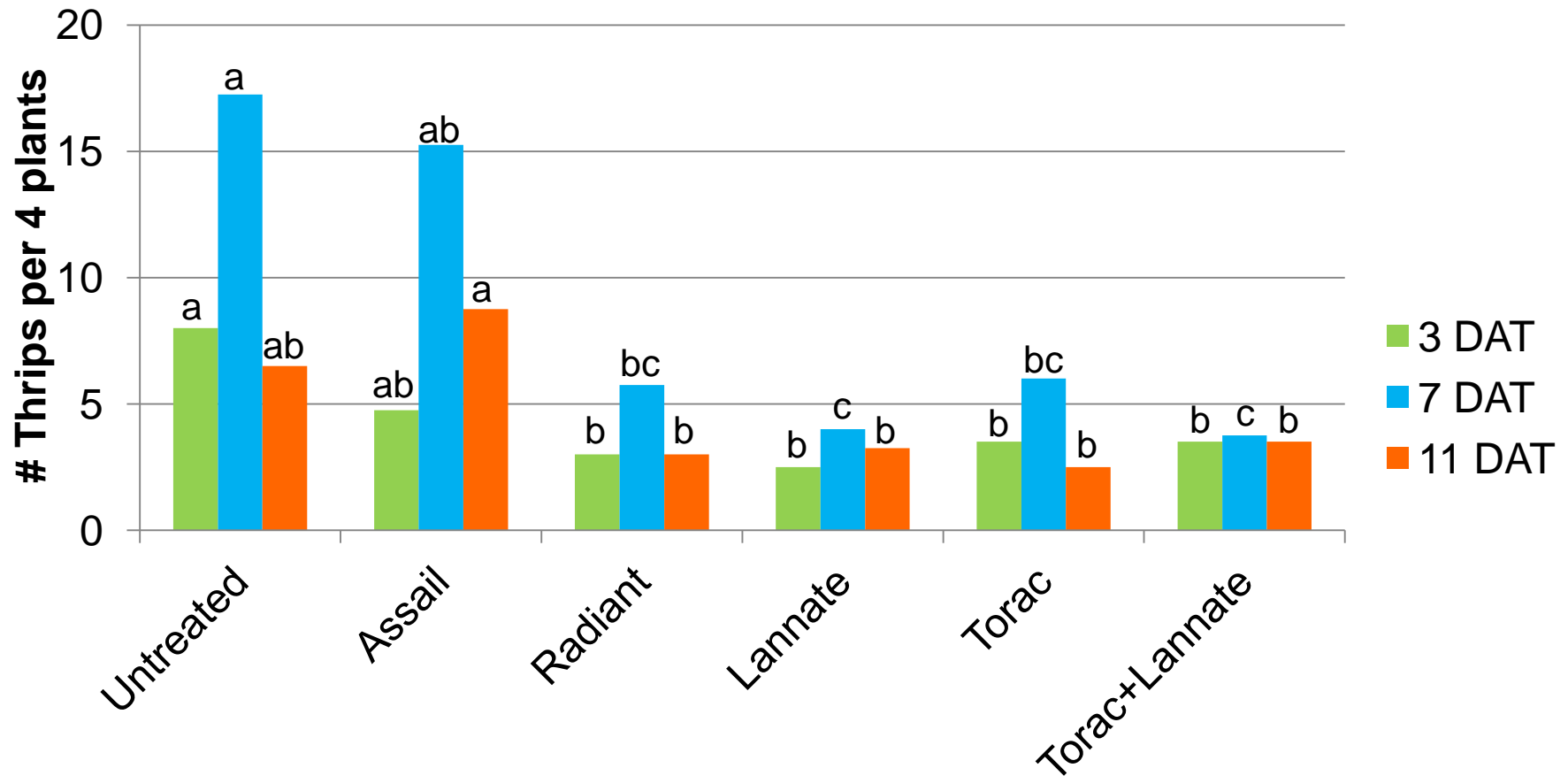
- Pre-treatment sampling
- 1<sup>st</sup> spray on 7/13/11 and sampling 3 and 7 days after treatment (DAT)
- 2<sup>nd</sup> spray on 7/22/11 and sampling on 3, 7 and 11 DAT
- 3<sup>rd</sup> spray on 8/3/11 and sampling on 3 and 7 DAT
  
- Thrips sampled from 4 random plants from each plot



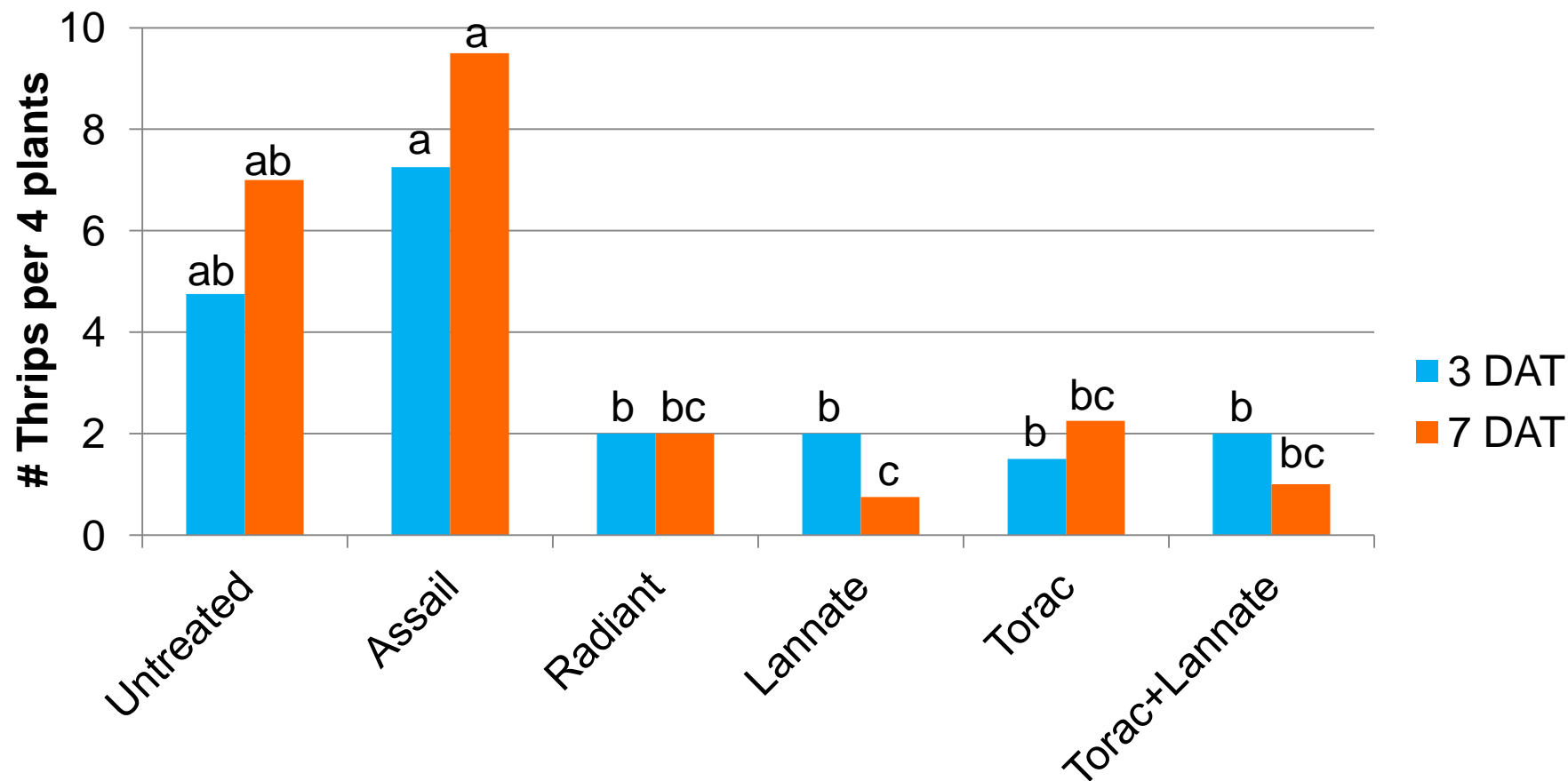
# Results – 1<sup>st</sup> spray treatment



# Results – 2nd spray treatment



# Results – 3<sup>rd</sup> spray treatment



# Acknowledgments

- Frank Costa, Ocean View Flowers
- Pedro Hernandez, Nichino America, Inc.
- Curtis Engle, United Phosphorus, Inc.



# European pepper moth

- *Duponchelia fovealis* belongs to the grass moth or close-wing moth family Crambidae
- Native to the Mediterranean region and a greenhouse pest in the Netherlands
- First discovered in San Diego Co in 2004
- Widespread in California
- Present in Arizona, Colorado, Florida, Georgia, Oklahoma, and Texas
- Wide host range including corn, peppers, tomatoes, squash, strawberries, and ornamentals



# European pepper moth-Life stages



# European pepper moth-Eggs



- Eggs 0.5-0.7 mm and oval shaped
- Whitish green initially, turn pink, then red and eventually brown with mature
- Laid singly or in groups of 3-10 in roof-tile pattern
- Females lay up to 200 eggs
- Duration 4-9 days
- Found underside of leaves, on stems, plant base and in top layer of soil



# European pepper moth-Larvae

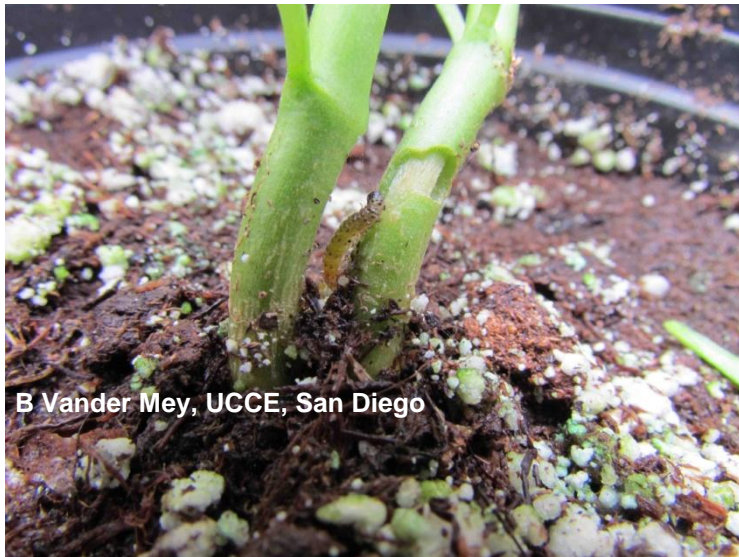


- Creamy white to light brown with dark head capsule and brown or gray spots

- Grow from 1.5 mm at hatching to 20-30 mm at maturity

- Duration 3-4 weeks

- Feed on roots, stems, foliage, inflorescence and fruits



# European pepper moth-Pupae



James Hayden, Florida DACS, Divi of Plant Industry

- Yellowish to light brown initially and turn dark with maturity
- About 9-12 mm long
- Cocoon 15-19 mm long and spun with silk, frass, and soil particles under the foliage, below the soil line or attached to the pots.
- Duration 1-2 weeks



# European pepper moth-Adults



- Adults have brown to grey wings with a wing span of about 20 mm and are good fliers.
- Males have a long, slender abdomen that is turned upwards.
- Length of the life cycle depends on temperature, but varies from 6-8 weeks.



# European pepper moth-Detection

- Look for signs of damage (leaf wilting, stem collapse) and presence (webbing, frass, life stages)
- Check where leaves touch the soil
- Base of the pots in container plants



Lyle Buss, University of Florida



# European pepper moth-Control

- Chemical control:** Acephate, azadirachtin, chlorpyrifos, emamectin, imidacloprid, pyrethrins, and spinosad
- Cultural control:** Sanitation and using drier potting medium
- Biological control:** *Bt* products, predatory mites (*Stratiolaelaps miles*, *Hypoaspis miles* and *H. aculeifer*), predatory beetle (*Dalotia coriaria*), parasitoid wasps (*Trichogramma evanescens* and *T. cacoeciae*), and entomopathogenic nematodes (*Heterorhabditis bacteriophora* and *Steinernema* sp.)
- <http://ucanr.org/blogs/strawberries-vegetables>



# Thank you!

**Surendra Dara** PhD, DAIT

Strawberry and Vegetable Crops Advisor

UC Cooperative Extension

2156 Sierra Way, Ste. C

San Luis Obispo, CA 93401

Phone: 805-781-5940

Fax: 805-781-4316

Blogs: <http://ucanr.org/blogs/strawberries-vegetables/>  
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