

WEED AND NON-ONION CROP HOSTS OF ONION THRIPS

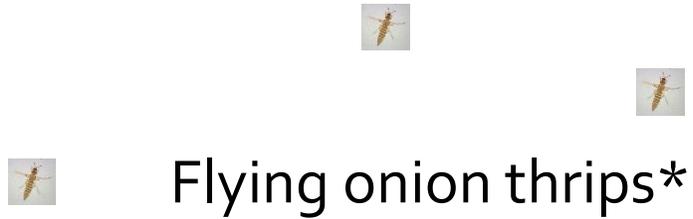
Diane Alston & Bonnie Bunn (MS Student)
Utah State University

Utah Onion Association Meeting
February 11, 2014
Brigham City, UT

EXTENSION
UtahStateUniversity

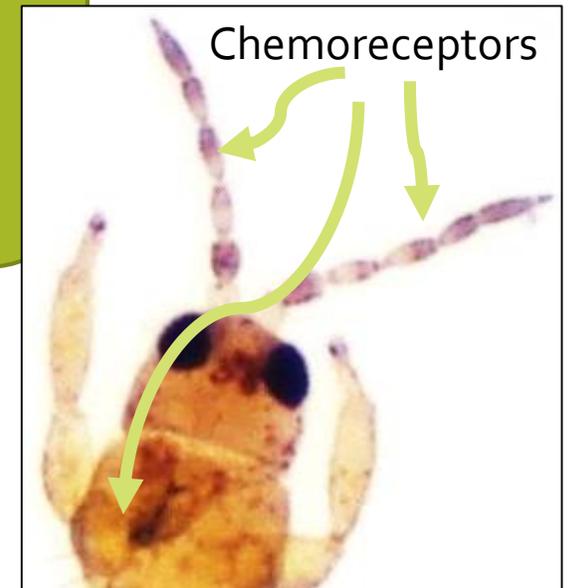


How do onion thrips find onion plants?



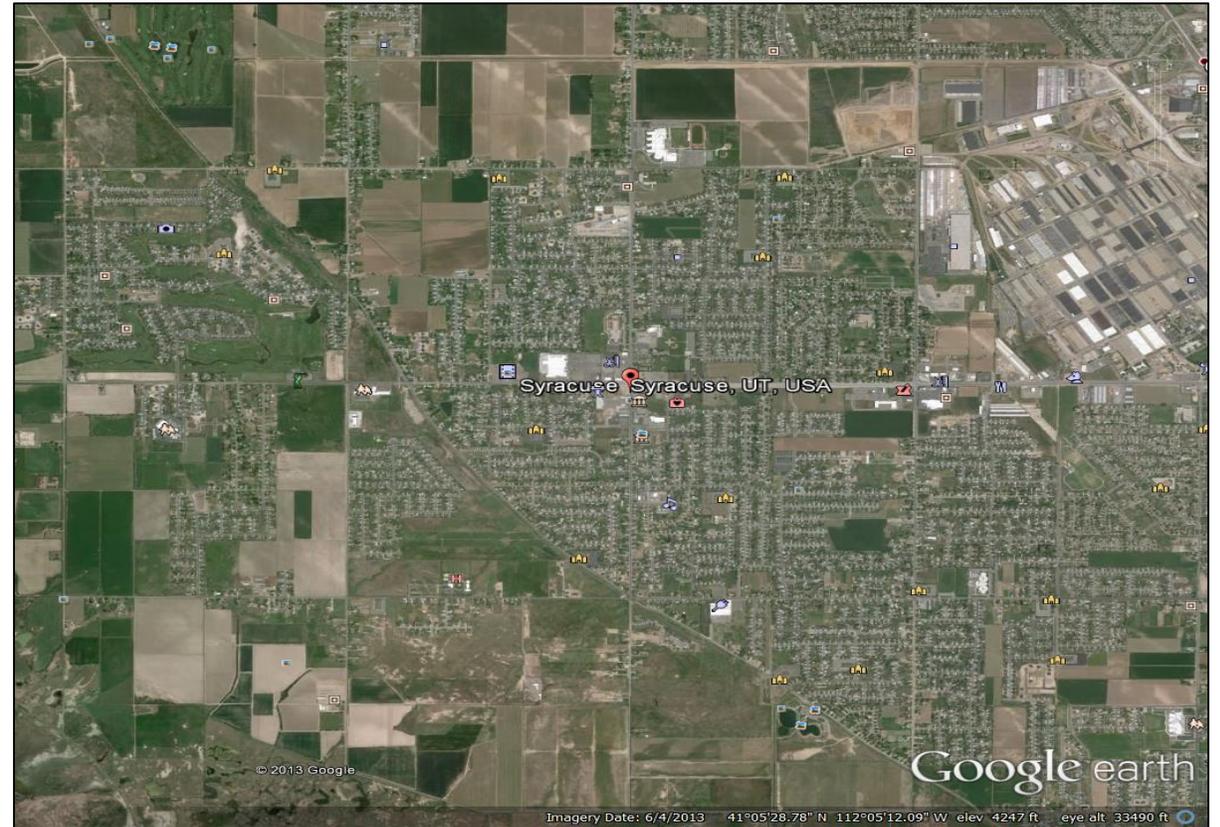
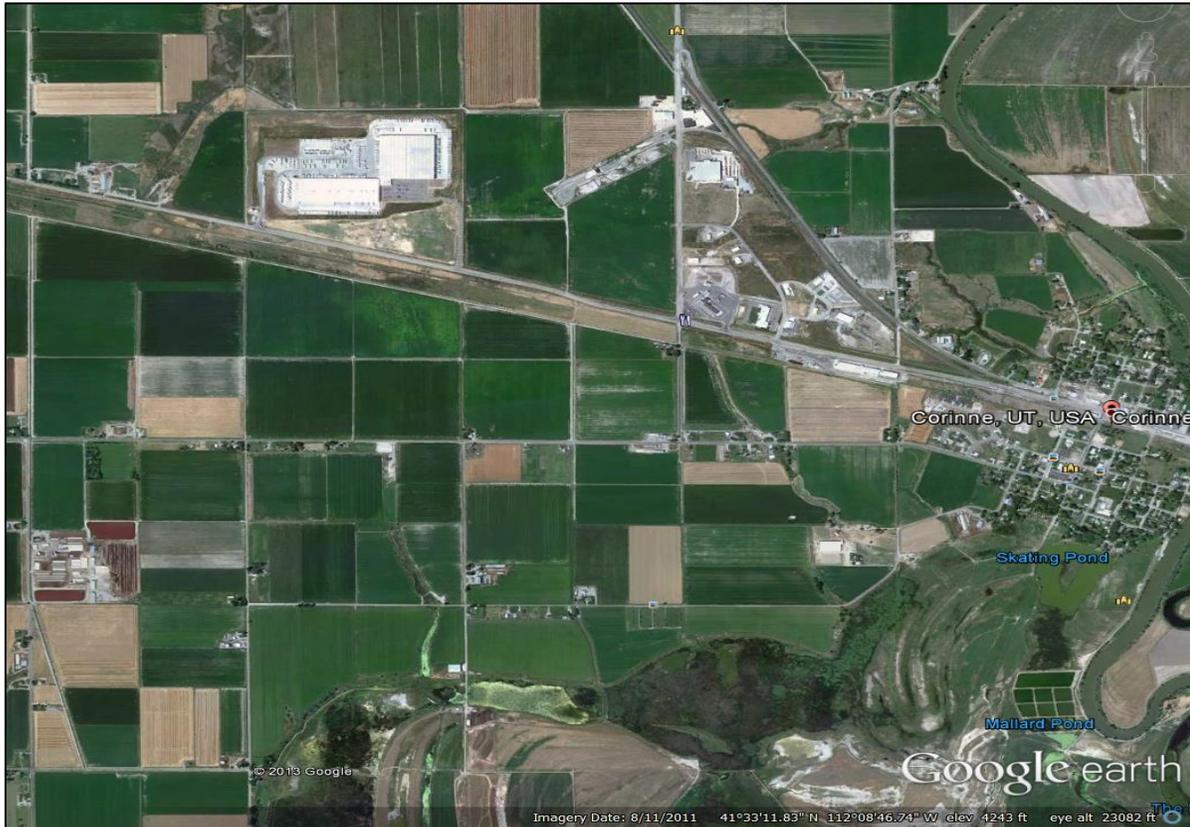
Distance: Visual
Color – reflected light
from leaves

Close-up: Chemical
Odor & taste

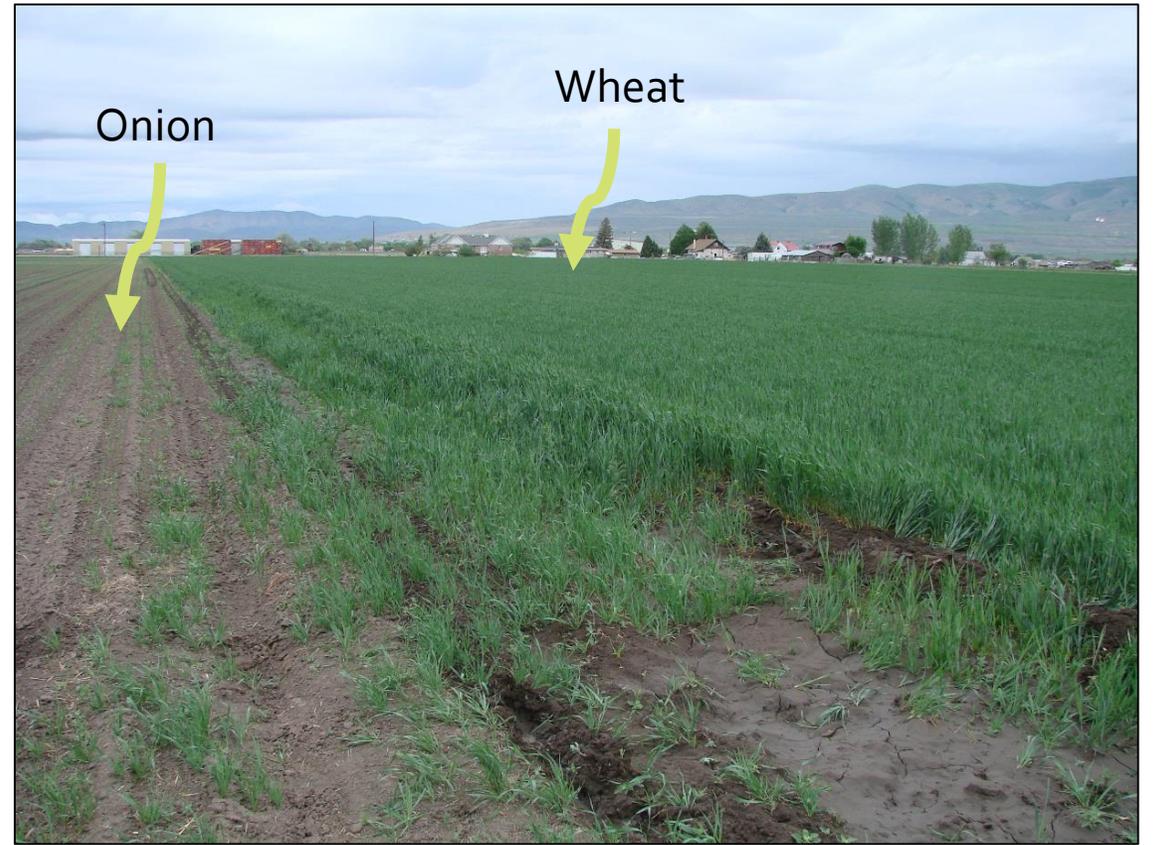
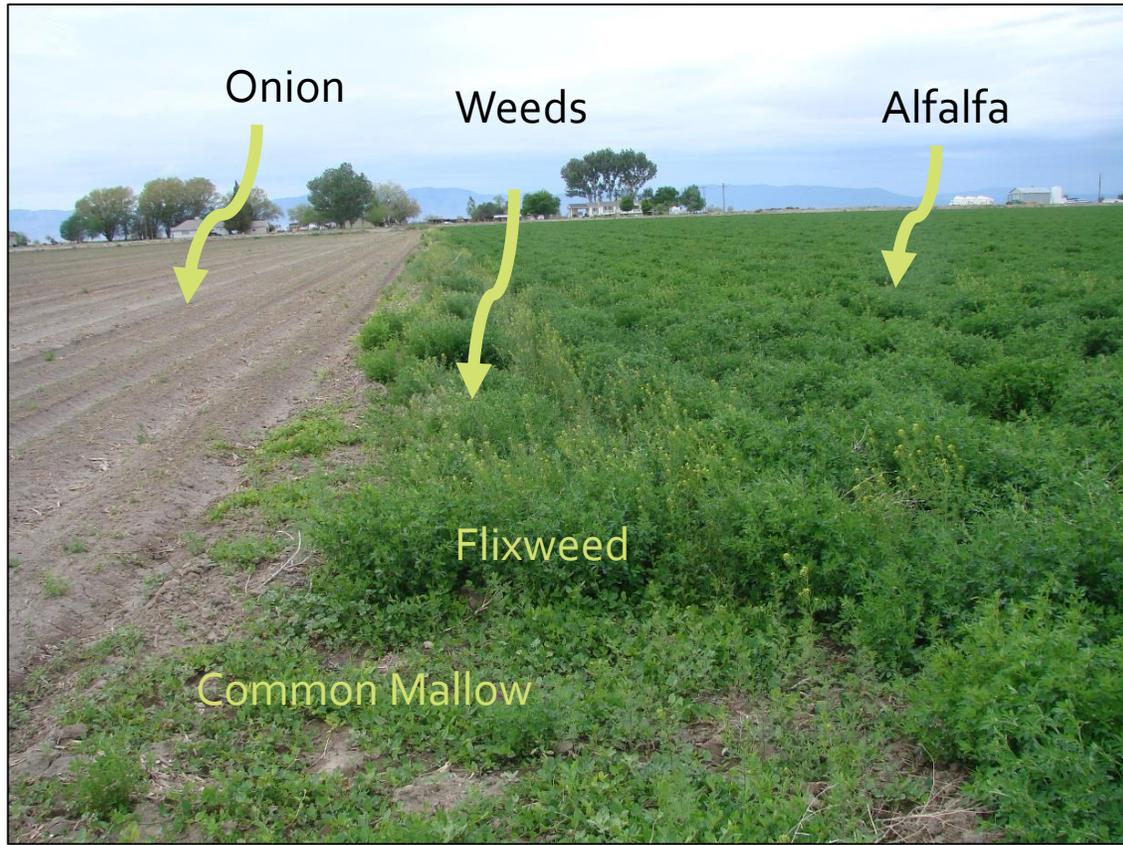


*Not to scale

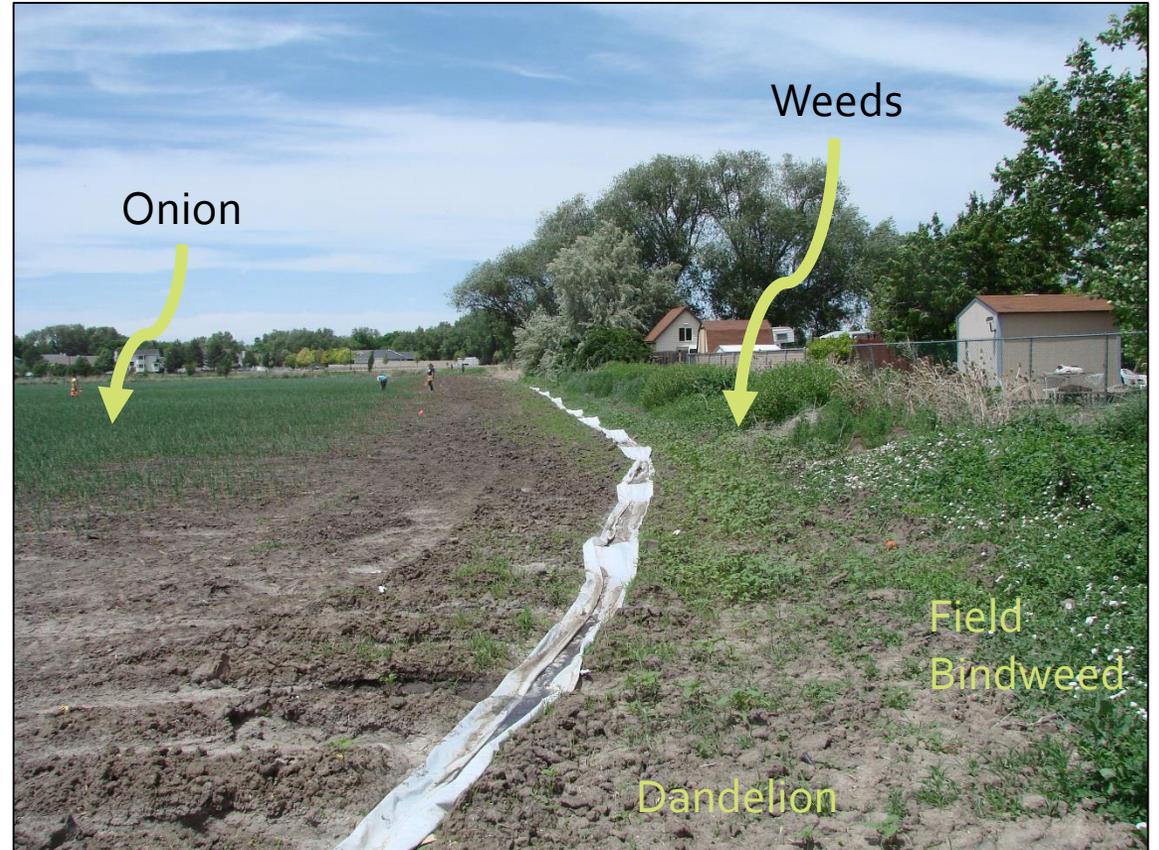
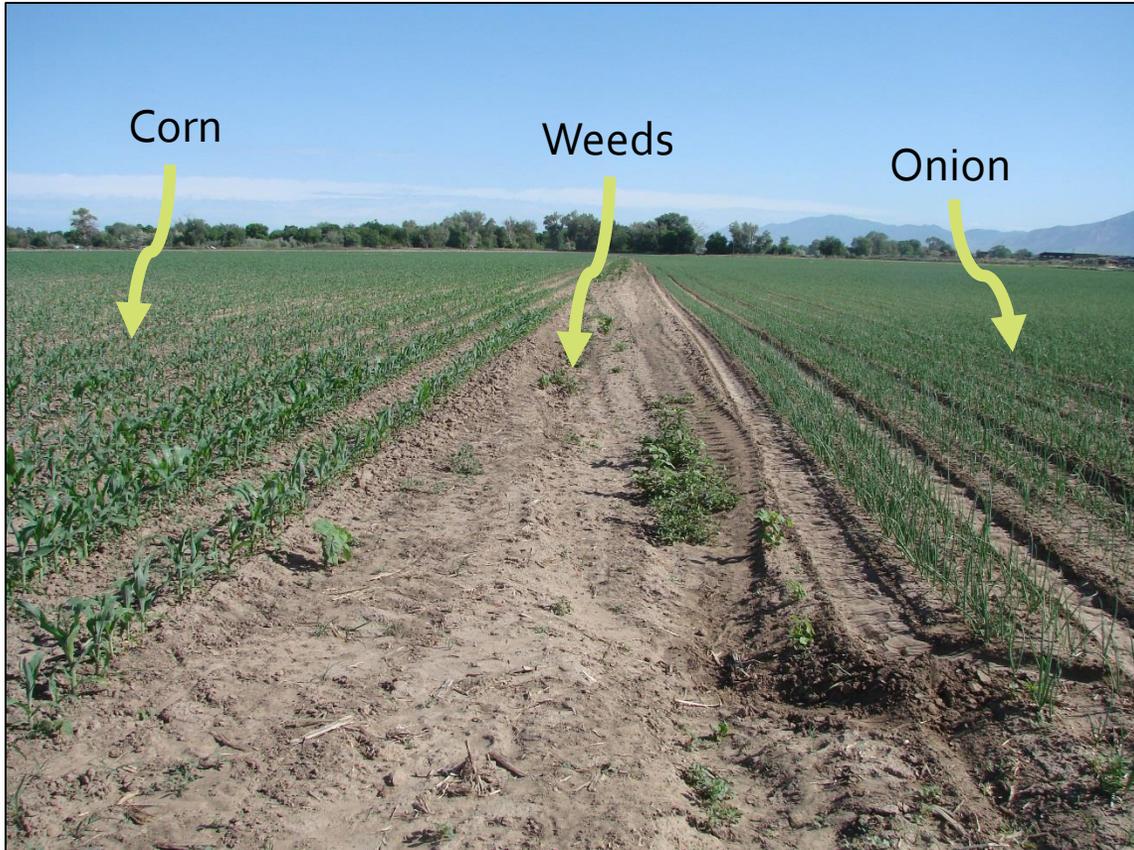
Utah Agricultural Landscapes: Corinne vs. Syracuse



Utah Onion Landscapes

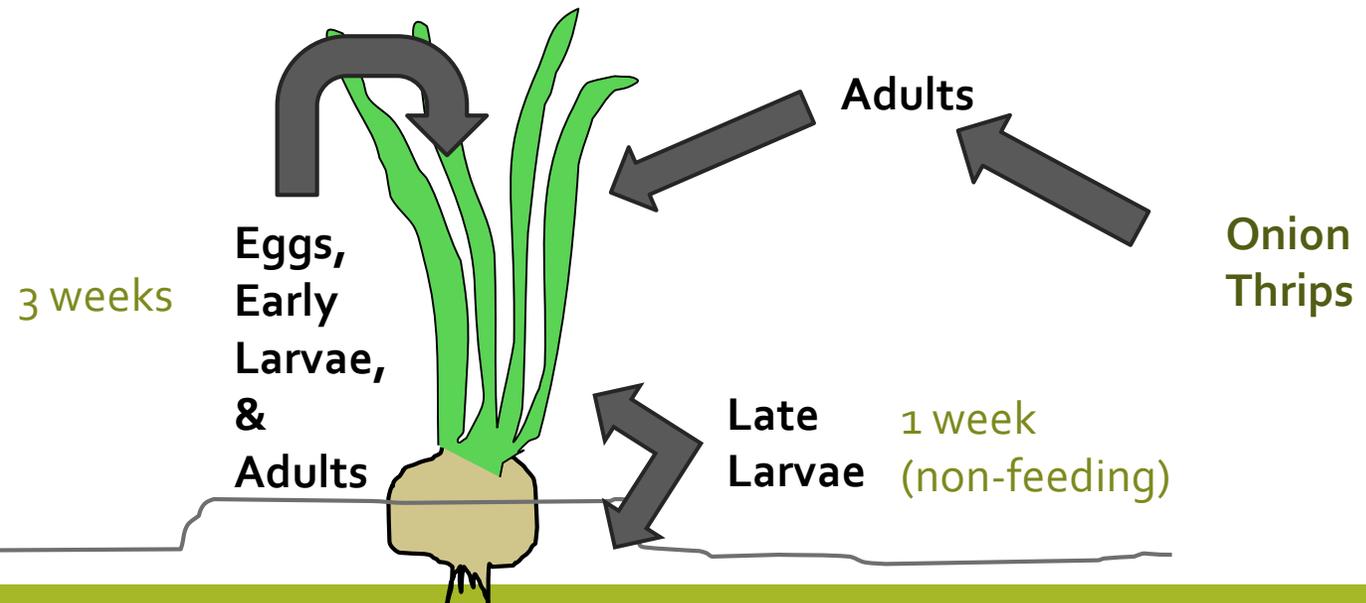


Utah Onion Landscapes



Onion Thrips Vector Iris Yellow Spot Virus (IYSV)

- IYSV transmission: persistent, propagative
- IYSV acquired only by early larvae
- Virus must circulate & replicate in thrips' midgut; moves to salivary glands
- Adults must lay eggs on IYSV-infected plants for larvae to acquire the virus
- Reducing thrips re-infestation will reduce IYSV spread



Green-Bridge Between Growing Seasons & Host Plants

Fall

Spring



Onion



Alfalfa or Weeds



Weeds to Onion

Host Range

Onion Thrips

- Very broad
- Grass & broadleaf plants
 - Vegetables
 - Monocots: onion, leek, garlic
 - Dicots: cabbage, bean, tomato
 - Forage & field crops
 - alfalfa, wheat, corn
 - Ornamentals
 - Fruits
 - Weeds



Onion (*Allium*) is a Monocot (grass)

Iris Yellow Spot Virus

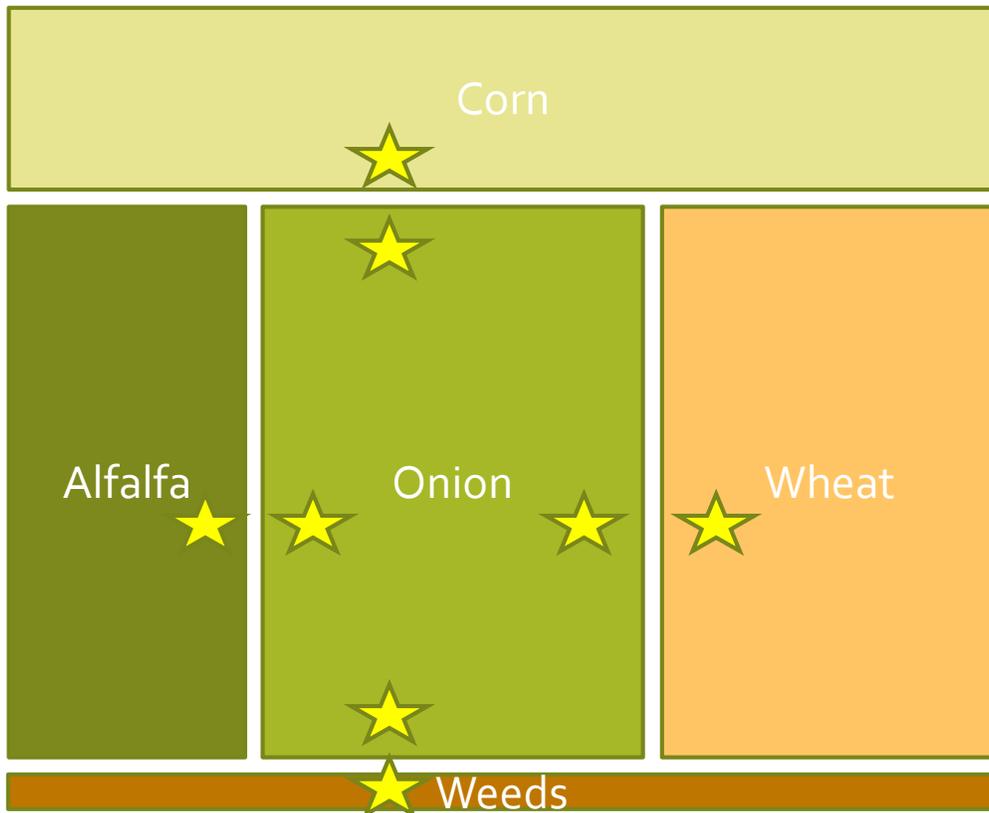
- First identified in iris (Netherlands, 1998)
- Grass & broadleaf plants
 - Vegetables
 - Monocots: onion, garlic, chives
 - Weeds
 - pigweed, saltbush, lambsquarter, green foxtail, purslane, sowthistle, others
 - Legumes
 - vetch, cowpea
 - Flowers
 - iris, lily, rose, others



Thrips Sampling on Weeds & Adjacent Crops

Bonnie Bunn (MS Student Project): 2011 & 2012

2013: Sampled targeted weeds in May/early June



Perennial
Biennial
Winter Annual



Sampled weeds
along onion
field edges

Thrips Sampling Methods

1. Whole plant wash



2. Stain 3rd youngest leaf

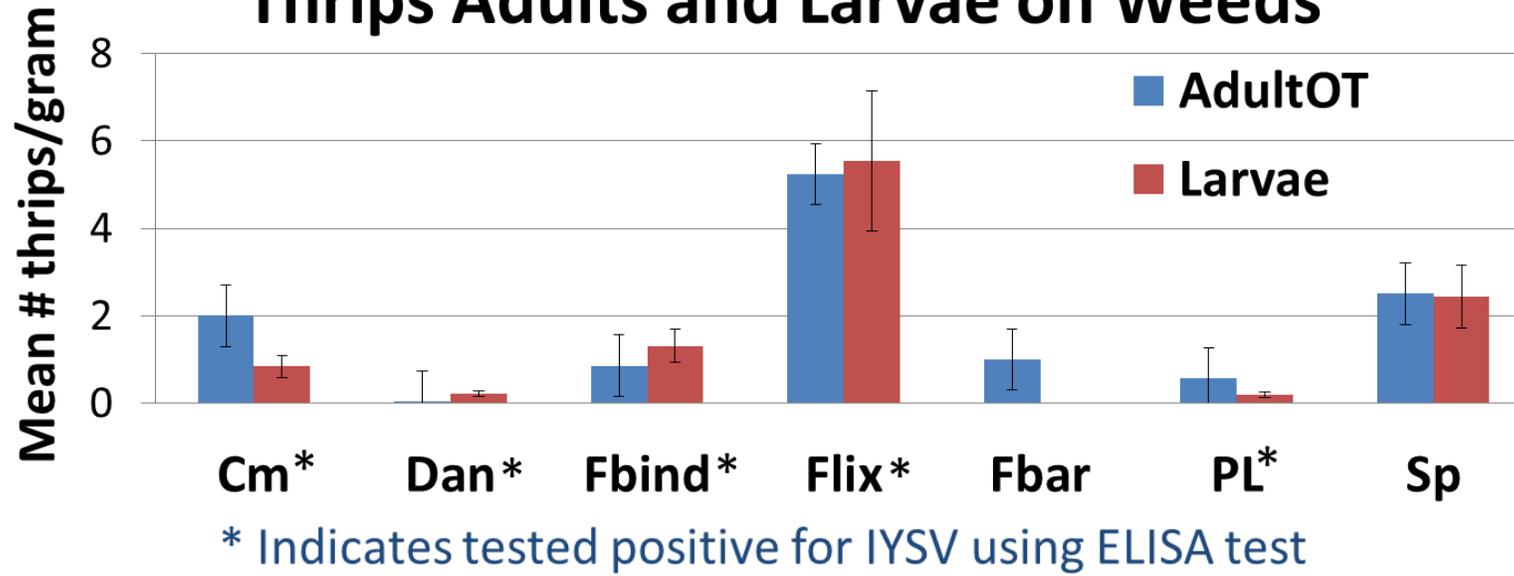


3. Hatch

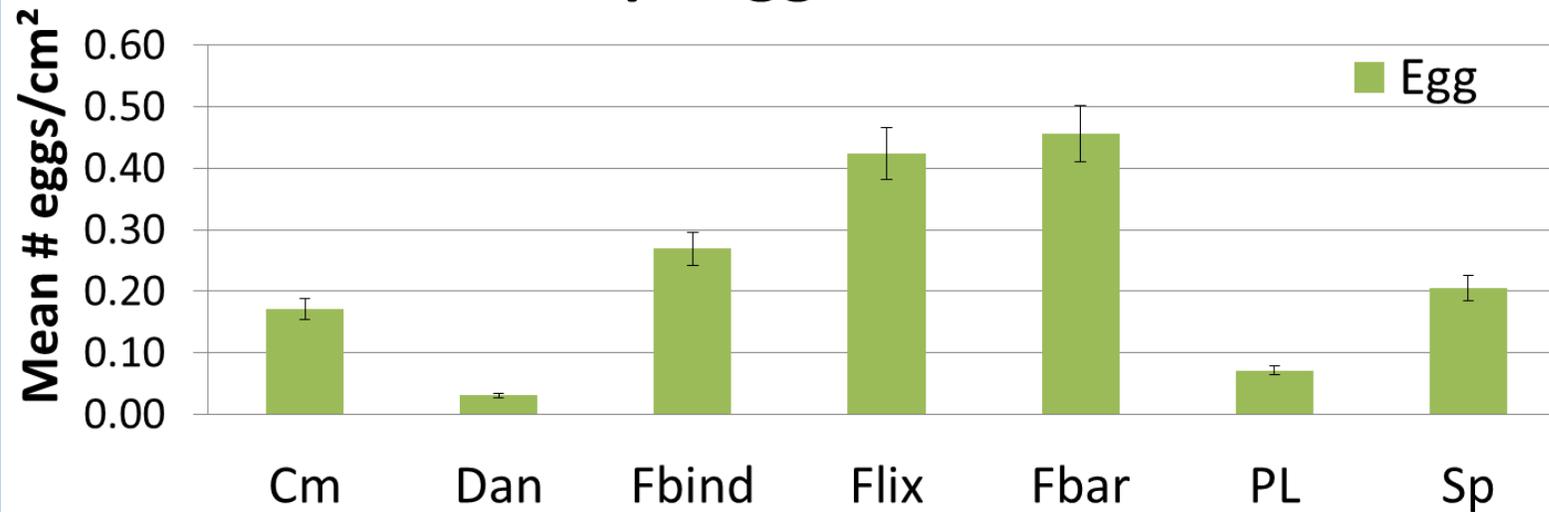
25°C/16 hr light
– 7 days



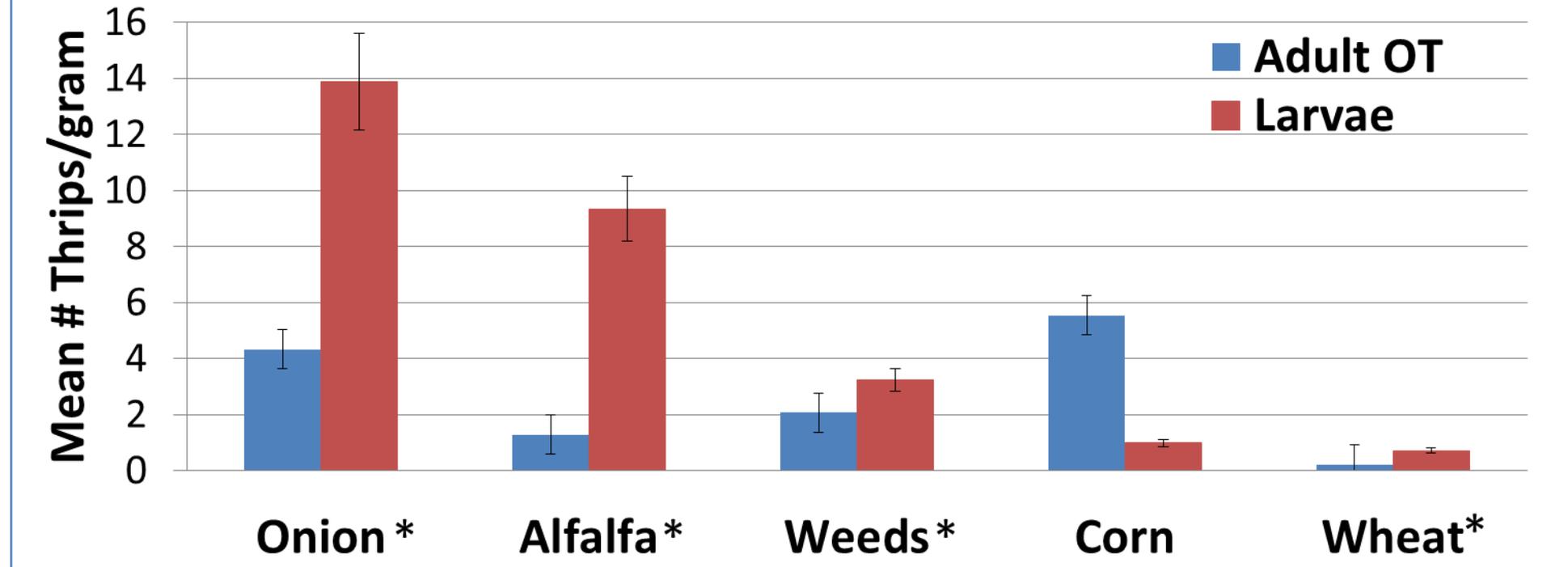
Thrips Adults and Larvae on Weeds



Thrips Eggs on Weeds



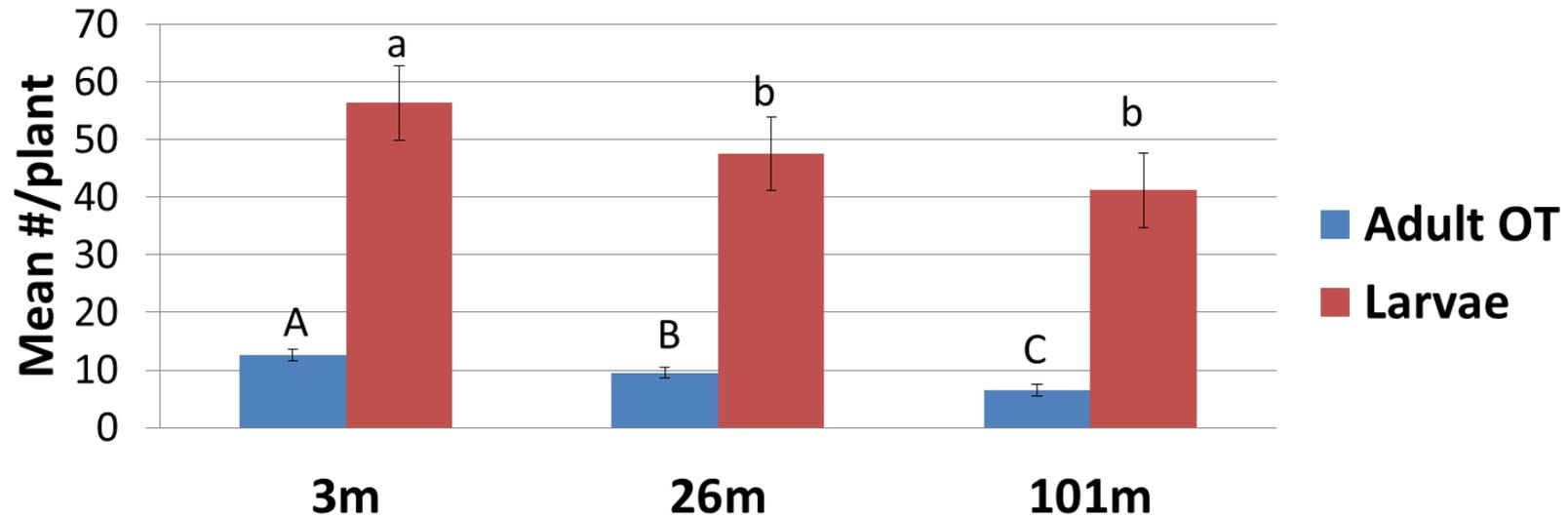
Thrips on Alternate Crops and Weeds



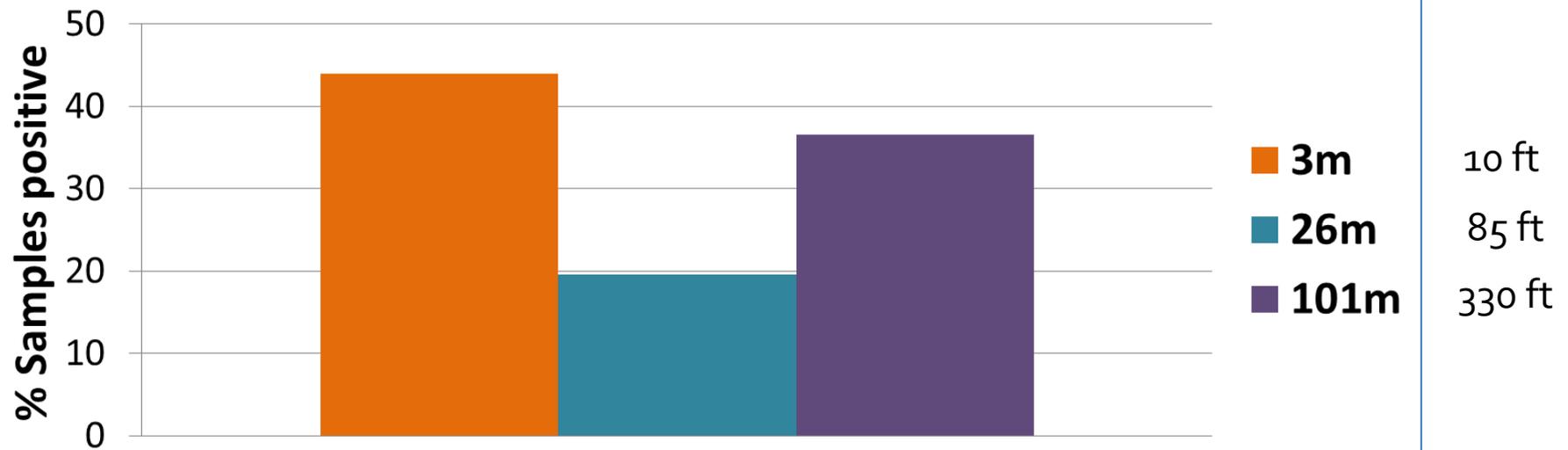
* Indicates tested positive for IYSV using ELISA test

Effect of distance from onion field edge on numbers of thrips and IYSV incidence

2012 Thrips on Onion



2012 IYSV

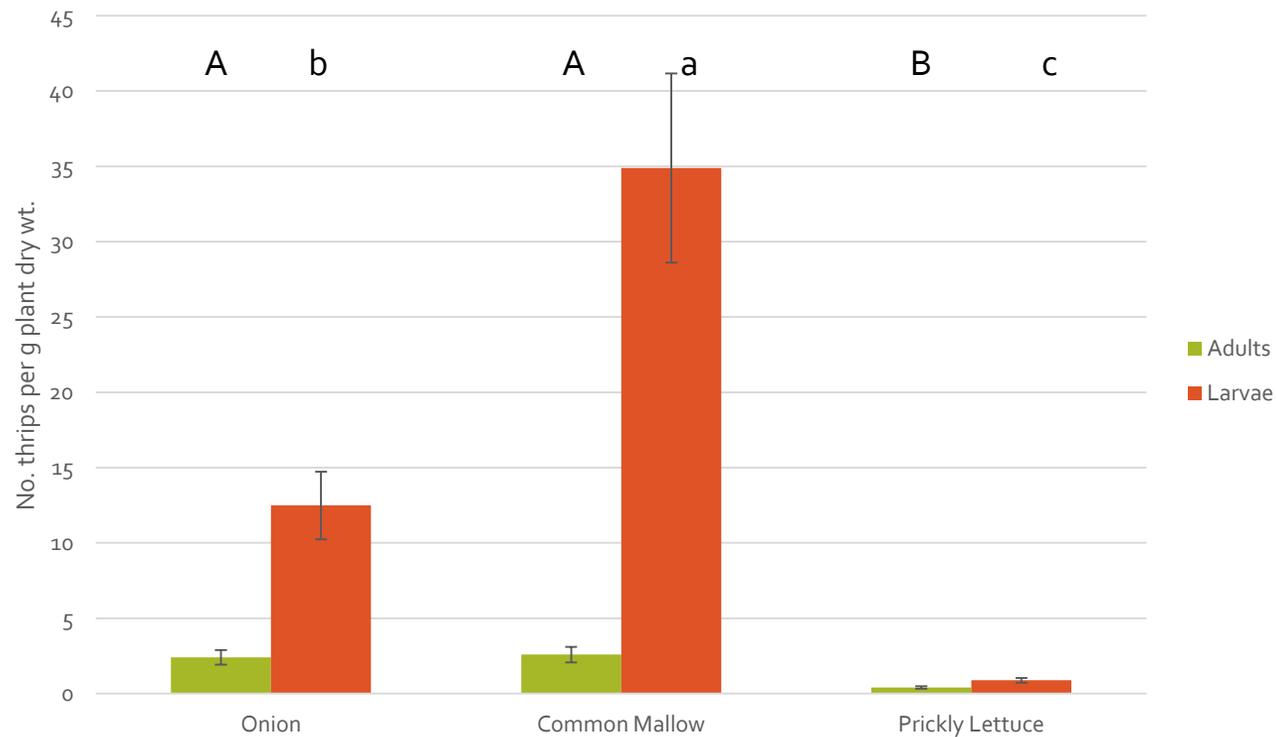


Data from 5 sentinel fields in 2012; data in 2011 was similar

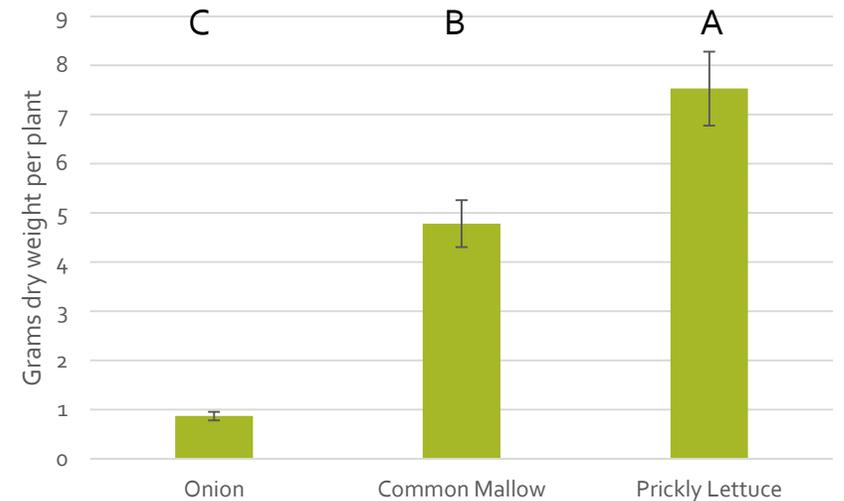
Greenhouse Expt: Thrips on Weeds



Onion Thrips Adults and Larvae on Onion & Weeds



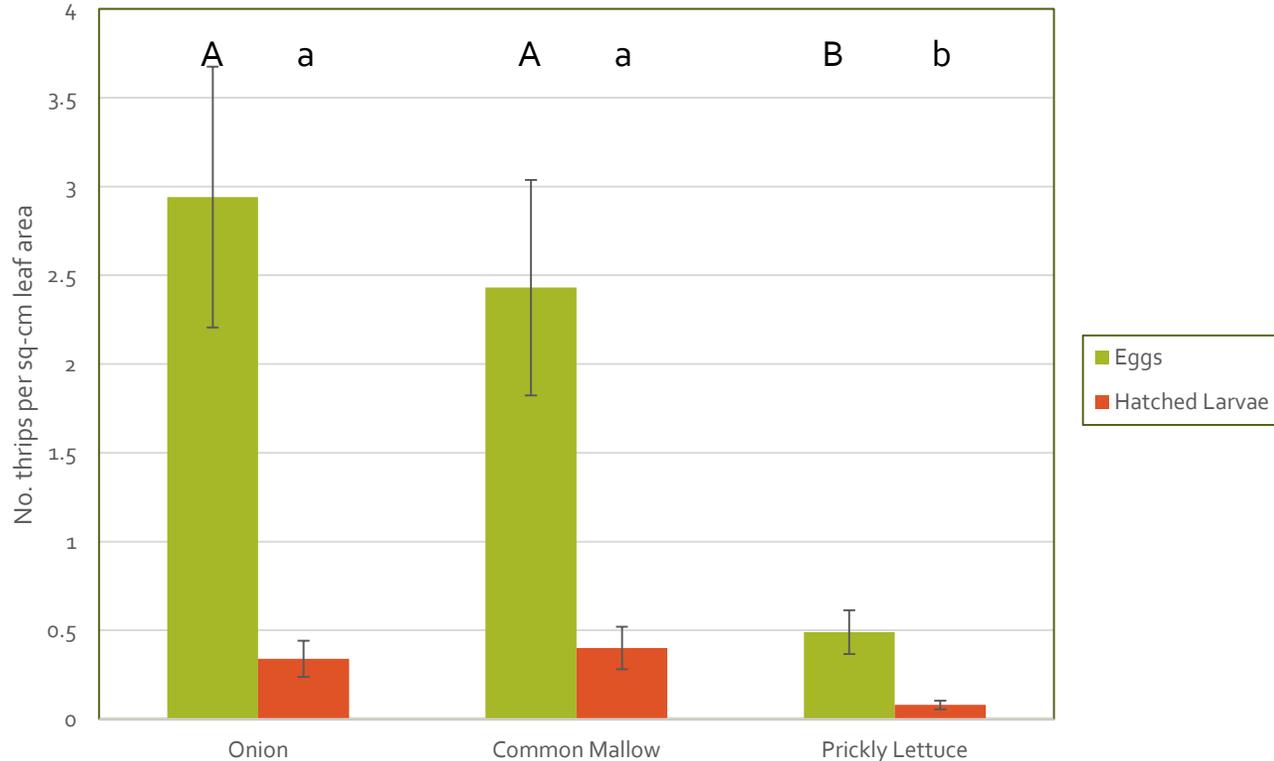
Plant Dry Weight



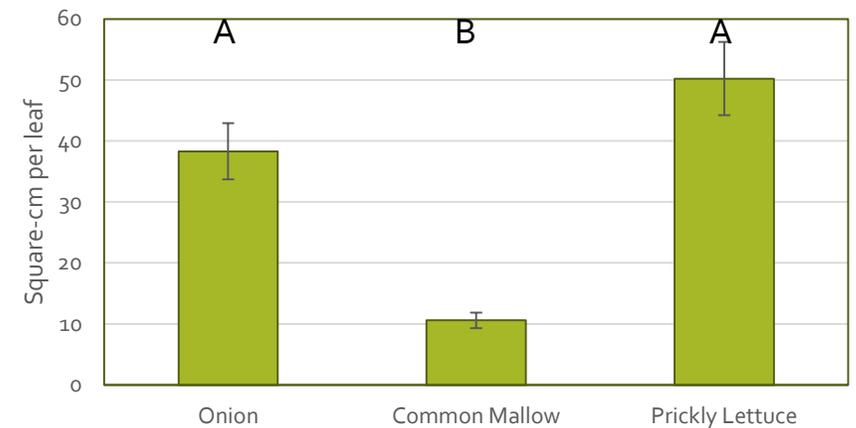
Greenhouse Expt: Thrips on Weeds



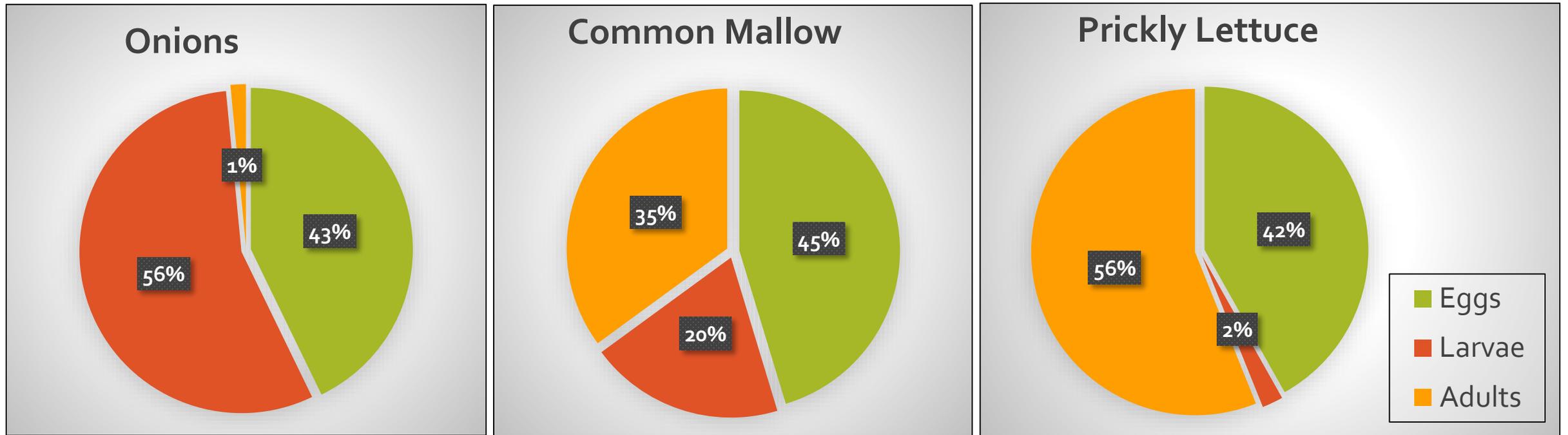
Onion Thrips Eggs and Hatched Larvae on Onion & Weeds



Plant Leaf Area



Greenhouse Expt.: Proportion of Thrips Life Stages



Healthiest &
most robust
populations

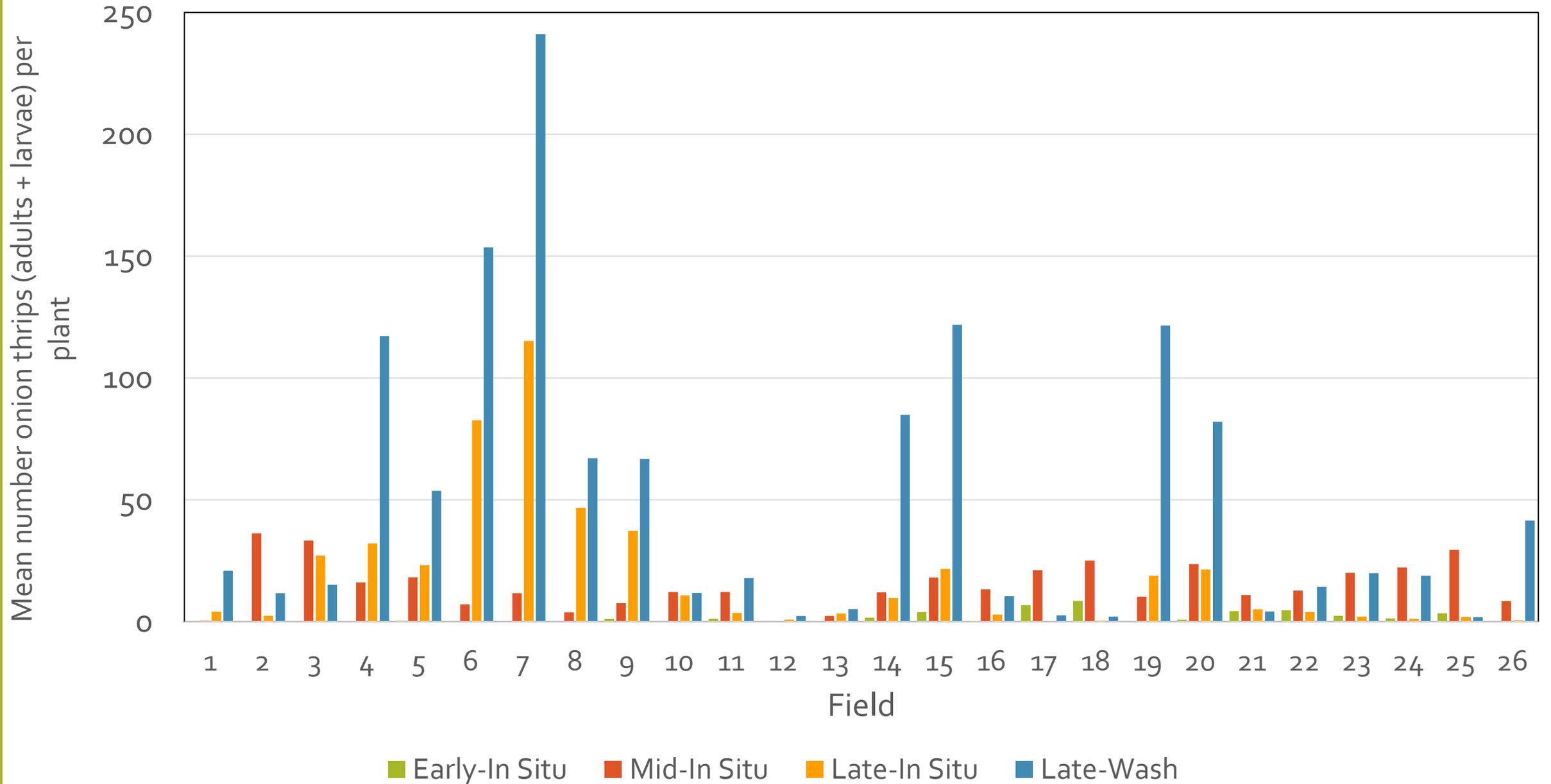


2013 Commercial Field Survey: Onion Thrips Samples

- 26 fields were sampled; 12 plots per field
- Three sample dates:
 - Early season: May 17-Jun 12
 - Mid season: Jun 17-Jul 1
 - Late season: Jul 22-Aug 15
- *In situ* (in place) counts were collected from 3 onion plants per plot
- In addition, on late-season sample dates, 3 onion plants were collected and processed with a washing technique to collect thrips
- Onion bulb diameter was measured for 3 *in situ* plants on late season sample date

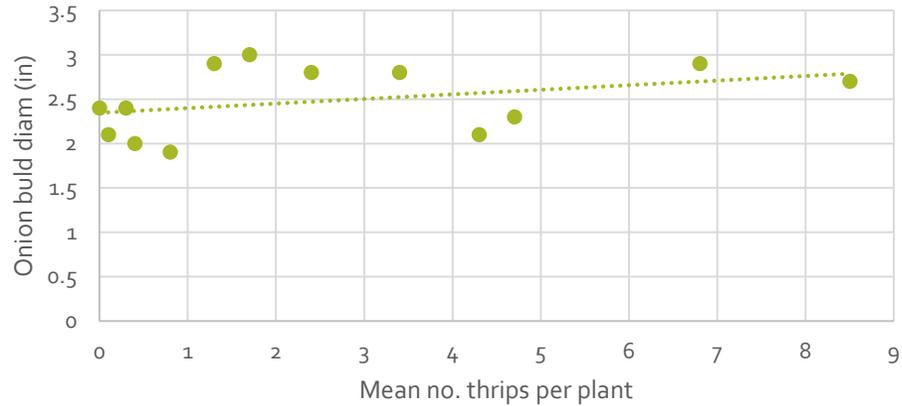


Range of onion thrips densities per plant across the 26 fields for 3 sample dates: *in situ* and whole plant wash

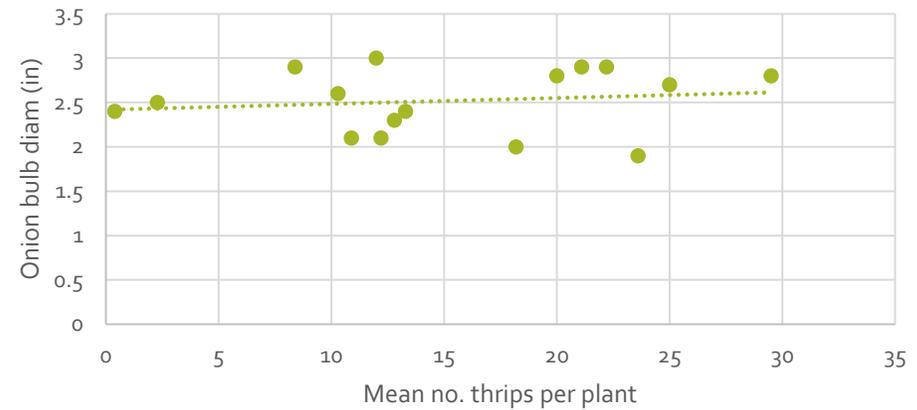


Weak relationship between bulb size on the late sample date and onion thrips densities on plants in early, mid, or late season (*in situ* or whole plant wash samples)

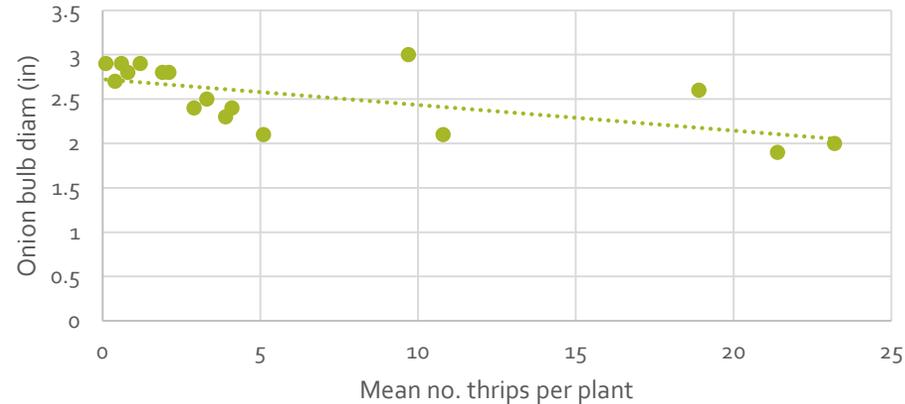
Bulb Size in August vs Early Season In Situ Thrips Counts



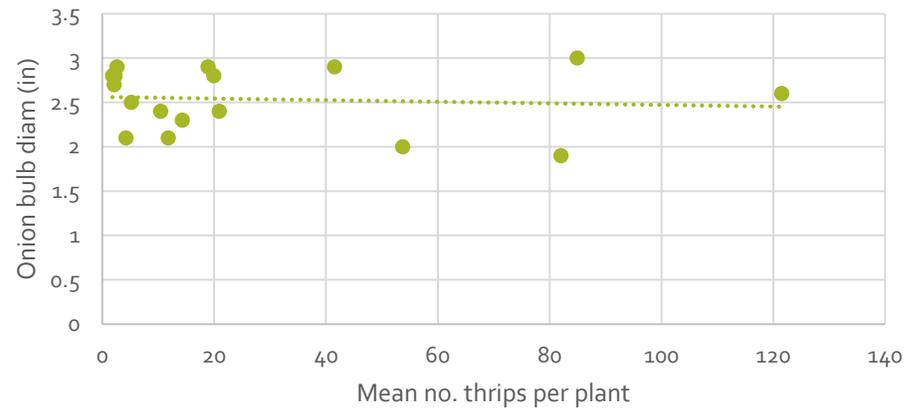
Bulb Size in August vs. Mid Season In Situ Thrips Counts



Bulb Size in August vs. Late Season In Situ Thrips Counts



Bulb Size in August vs. Late Season Whole Plant Wash Thrips Counts



Continue Commercial Field Surveys in 2014



Thank you to our 2013 cooperators!! Looking for more cooperators for 2014.

Acknowledge

- Students!!
 - Megan O’Laughlin, Jessica Larsen, Anne Leschen, Katelyn Clark, Tyler Shumway, Erika Rowley
- Grower Cooperators
- USU Onion Team
 - Dan Drost, Claudia Nischwitz, Jennifer Reeve, Corey Ransom, Ruby Ward
- Funding
 - Western Sustainable Agriculture Research and Education
 - Utah State University Agricultural Experiment Station



REGISTER NOW

URBAN & SMALL FARMS CONFERENCE

FEB. 19-20, 2014

Thanksgiving Point Gardens Visitor Center | 3900 N. Garden Drive, Lehi, Utah

ORGANIC GROWING WORKSHOP: WEDNESDAY, FEB. 19, 2014

BREAKOUT SESSIONS: THURSDAY, FEB. 20, 2014

- Utah Berry Growers Association
- Protected Cultivation
- Aquaponics
- Vegetables
- Farm to Table
- Management
- Direct Marketing
- Land Leasing

For more information about the workshop or conference, go to DiverseAg.org or contact **Salt Lake County Extension** at 385-468-4824 or tessa.groff@usu.edu.

Registration is \$20 per day (\$30 per day if you register after Feb. 12)

DiverseAg.org



Organic Fruit and Vegetable Workshop (draft program)

Wednesday, February 19, 2014

8:00	Registration
8:20	Welcome
8:30	"Organic peach tree and root growth in response to understory and fertility management", Mae Culumber, Utah State University
9:15	"Arthropod and weed management in organic peach systems", Andrew Tebeau, Utah State University
10:00	Break
10:30	"Organic fruit production from a grower perspective", Steve Ela, Ela Family Farms, Hotchkiss, CO
11:15	"Consumer preferences and willingness to pay for differentiated peaches", Kynda Curtis, Utah State University
12:00	Open discussion, Q&A, and group interaction
12:30	Lunch
1:30	"Organic bramble production: management ideas based on research findings", Dr. Bernadine Strik, Oregon State University
2:15	"Organic greenhouse vegetable production from a grower perspective", Jerry Harris, Castle Valley Farms, Moab, UT
3:00	Break
3:30	"USU organic vegetable research update", Dr. Dan Drost, Utah State University
4:15	Open discussion, Q&A, and group interaction
5:00	Workshop concludes

Urban and Small Farms Conference Breakout Sessions

Thursday, February 20, 2014

	Berry/Vegetable	Farm to Table	Direct marketing and Management
UBGA session			
8:00 AM	Grey mold - Claudia Nischwitz, USU	Soil Contamination Concerns in Urban Soils - Grant Cardon, Utah State University	USDA Rural Development
	Mite management and RHT update - Diane Alston, USU		USDA Natural Resource Conservation Service
9:00 AM	Blackberry production systems in Oregon & how to best manage primocane-fruiting types - Berndine Strik, Oregon State University	An Introduction to Hydroponic and Aquaponic Systems - Nate Storey, Bright Agrotech	USDA Farm Service Agency Programs
			Financing Small Farms
10:00 AM	BREAK		
10:30 AM	Protected cultivation - part 1 Fans, flames and fumes: Freeze protection in the field- Brent Black, USU	Challenges and Opportunities of Processing and Selling Local Meat and Poultry - Utah Department of Agriculture & Food and Local Producer	Lease Issues and Other Liability Concerns for the Urban Farmer - Todd Hallock, Hallock & Hallock
11:00 AM	Low tunnel and high tunnel strawberry update - Tiffany Maughan, USU		
	Low cost/low energy tunnel automation- Britney Hunter and Brent Black, USU		
Noon Lunch break			
1:00 PM	protected cultivation - part 2 Commercial shading of raspberries - Jeff Mitchell, Utah County grower	Customer Preferences - Maryann Alston, Wasatch Front Farmer's Market	Farm Camps for Kids - Sara Harward and Brandon Law, Black Island Farms
	Pepper shading - Sam Day, USU	Linking Local Foods with Local Schools - Julie Peck-Dabbling, Salt Lake County	
	Ron Patterson, USU	Urban Farming	
2:30 PM	BREAK		
3:00 PM	Bean and pepper production in tunnels - Dan Drost, USU	Refugee Programs Panel - People's Market, Goat Grazing Project, New Roots Garden, Slow Food Utah	Winter Farm Marketing Strategies - Kynda Curtis, USU and Alison Einerson, Downtown Alliance
	Field vegetables Pumpkin trial- Taun Beddes, Utah State University		
4:00 PM	Cucurbit disease - Claudia Nischwitz, USU	Utah Farm-Chef-Fork - Roslynn Brain, Utah State University	Grocery Store Selling Local Products
	Corn earworm - Diane Alston, USU		
5:00 PM			

This Slideshow is Posted

www.utahpests.usu.edu

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Utah State University

UTAH PESTS

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Just \$7 gets your pest problem diagnosed or insect identified.

Integrated Pest Management
Your source for fruit, vegetable, and landscape pest problems.

School Integrated Pest Management
Teaching responsible pest management for a healthy learning environment.

Cooperative Agriculture Pest Survey
CAPS protects Utah agriculture through statewide monitoring of invasive pests.

In the News
Example of Invasive Bumblebee
Jan 27, 2014
Increased Risk of Parkinson's Disease from Pesticide Exposure
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Exotic Gifts: Butterfly and Tarantula Taxidermy
Dec 06, 2013

UTAH PESTS' is a group of Extension entomologists and plant pathologists that helps to solve the thousands of plant pest issues that concern Utah citizens every day. The UPPDL identifies, the IPM Program educates, and the CAPS Program investigates. Open one of the websites to get answers!

Landscape Ornamental Slideshows