

Don't Let Spider Mites Get the Best of your Silage

Carol Frate, Farm Advisor

UCCE – Tulare County

World Ag Expo Forage Seminar

Feb. 12, 2013



Walter Martinez, Katie Wilson, Kerista Hernandez, and Yvonne Lopez

Two spotted spider mite



Tetranychus urticae

Pacific spider mite



Tetranychus pacificus

Strawberry spider mite



Tetranychus turkestanii

Banks Grass spider mite



Oligonychus pratensis



Spider mite nymphs



Spider mite eggs

Beneficial Insects that feed on spider mites

6-spotted thrips



Adult minute pirate bug



Geocoris spp.



Galendromus occidentalis



Other Strategies to Reduce Spider Mites

- Reduce dust
- Avoid water stress
- Control weeds

CA Registered Corn Miticides – Mode of Action

	Chemical Name	Mode of Action	Resistance Class
Comite	propargite	Inhibit mitochondria/energy	12 C
Oberon	spiromesifen	Interferes w/lipid synthesis	23
Onager	hexythiazox	Growth inhibitor	10 A
Zeal	etoxazol	Ovicide & inhibits molting; translaminar	10 B

Currently registered Miticides on Corn in CA

Miticide	Rate/A/App	Apps per Season	Total per Season	PHI (days)	REI
Comite	2 -3 pts	1	3 pts	30	13 days
Oberon	5.7 - 16 fl oz	2	17 fl oz	5	12 hr
Onager	10 – 24 fl oz	1	24 fl oz	30	12 hr
Zeal	1-3 oz	2	6 oz	21	12 hr



2010 & 2012 Trials

- Large scale trials with commercial applicator
(12 rows wide in 2010 & 24 rows in 2012 except UTC was 12)
- 4 Replications
- Drop nozzles, 20 gpa
- Collected leaves from both ends

16 total in 2010 & 12 total in 2012
- Center 5 rows harvested for yield & quality
- Both trials were non-BMR

Spider mites appear to be even worse on BMR corn
More numerous, harder to control

2010 & 2012 Spider Mite Trials

Treatments

	2010	2012
Untreated		
Oberon	12.8 fl oz	12.8 fl oz
Oberon	16 fl oz	no
Onager	16 fl oz	16 fl oz
Comite	3 pts	3 pts
Zeal	no	3 oz

	Max Rate/A/App
Oberon	16 fl oz
Onager	24 fl oz
Comite	3 pts
Zeal	3 oz

Treatments applied in 2010 on June 23 and in 2012 on May 31 by ground in 20 gpa
 Harvested in 2010 on August 31 and in 2012 on August 14
 All treatments except Comite applied with NIS (In 2012 @ 1 pt/100 gal; In 2010 @ 0.25% v/v)

2010 Spider Mite Trial



Sprayed: June 23
Harvested: August 31



Corn in 2012 was smaller at time of application than in 2010.

Planted: April 20
Sprayed: May 31
Harvested: August 14



Thank you Vieira Custom Spraying

2010 Total Spider mite counts: spider mites per leaf

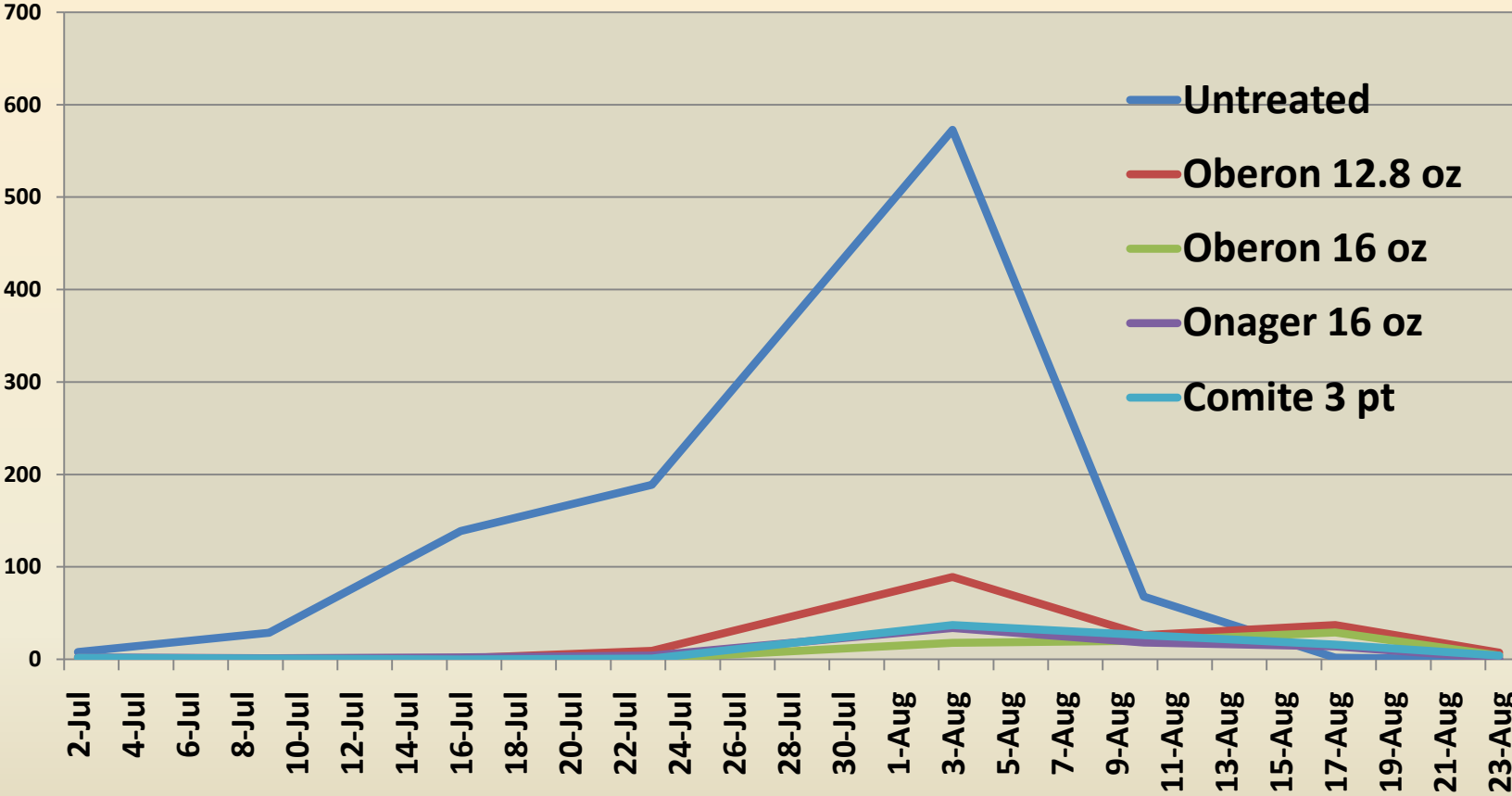
Treatment		Total Spider Mite
Untreated		999
Oberon	12.8 oz	161
Oberon	16 oz	67
Onager	16 oz	73
Comite	3 pts	101

	Max Rate/A/App
Oberon	16 fl oz
Onager	24 fl oz
Comite	3 pts

Treatments applied June 23, 2010 by ground in 20 gpa
All treatments except Comite applied with NIS @ 0.25% v/v

Silage Corn Trial 2010

Average Number Spider Mites/Leaf*

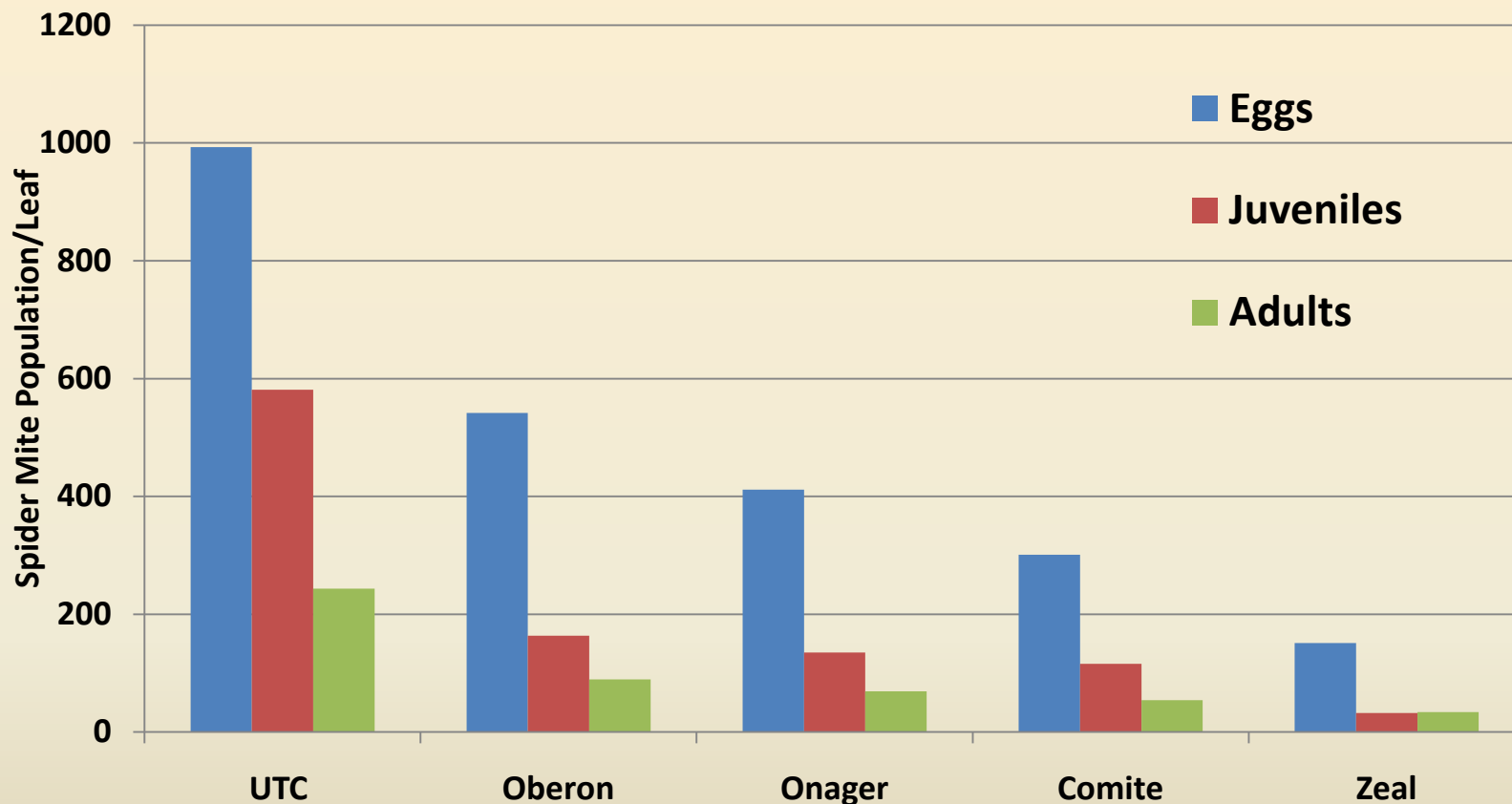


Sprayed June 23

Based on 16 leaves
Adults & Juveniles

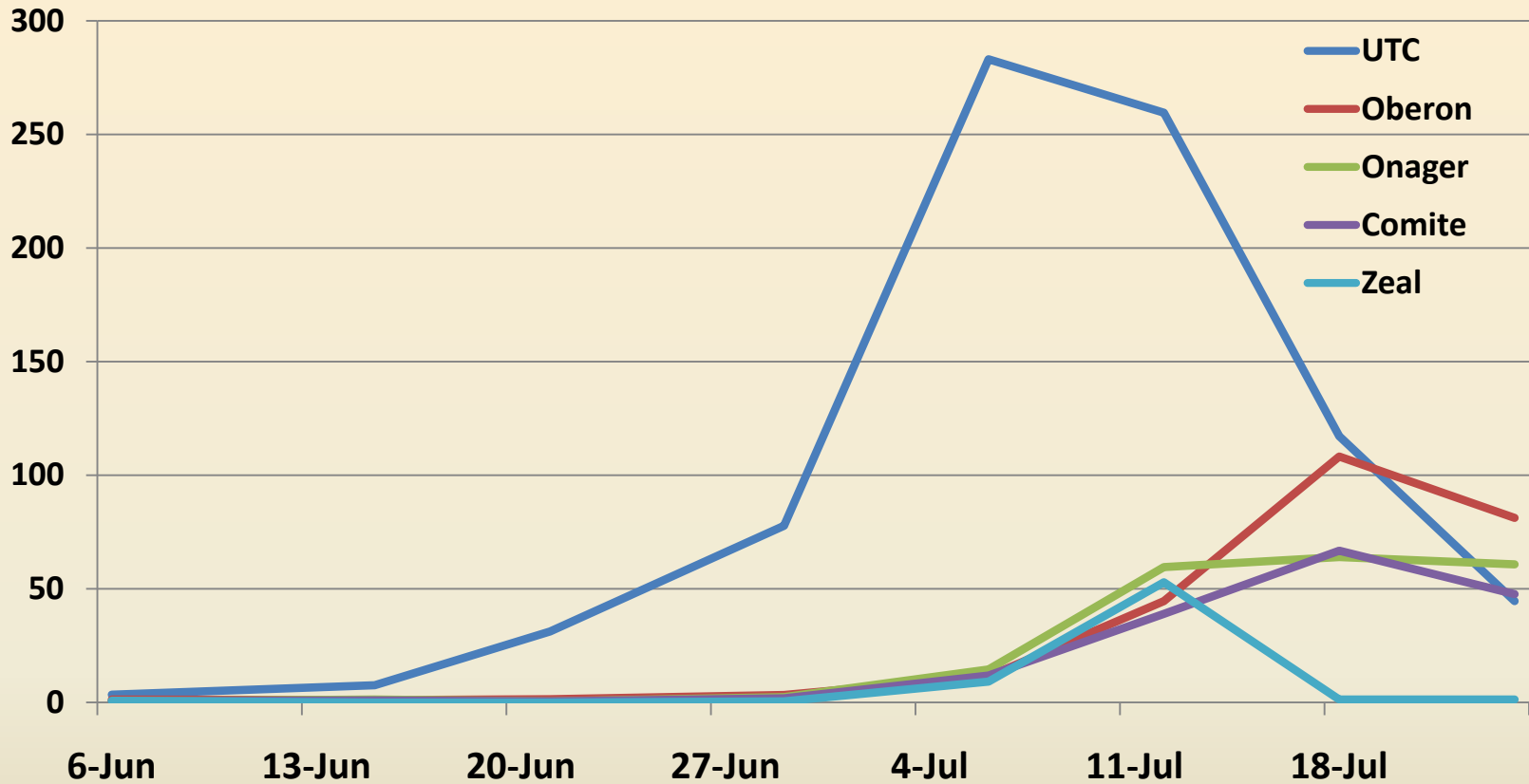
Silage Corn 2012

Total Spider Mites/Leaf for the Season



Silage Corn 2012

Average Number of Spider Mites/Leaf *



Sprayed May 31

*based on 12 leaves
Adults & Juveniles

Yield



Quality



Silage pile



2010 & 2012 Spider Mite Trial

Moisture At Harvest

Treatment	2010	2012
Untreated	68	60
Oberon 12.8 oz	68	63
Oberon 16 oz	67	-
Onager 16 fl oz	68	63
Comite 3 pts	68	64
Zeal 3 oz	-	64

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2010 & 2012 Spider Mite Trial

Tons per Acre Adjusted to 70% Moisture

Treatment	2010	2012
Untreated	33.0	
Oberon 12.8 oz	39.4	
Oberon 16 oz	38.4	
Onager 16 fl oz	39.3	
Comite 3 pts	38.9	
Zeal 3 oz	-	

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2010 & 2012 Spider Mite Trial

Tons per Acre Adjusted to 70% Moisture

Treatment	2010	2012
Untreated	33.0	32.4 d
Oberon 12.8 oz	39.4	34.3 cd
Oberon 16 oz	38.4	-
Onager 16 fl oz	39.3	36.3 bc
Comite 3 pts	38.9	37.7 b
Zeal 3 oz	-	41.4 a

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2010 & 2012 Spider Mite Trial

Quality Results - % ADF

Treatment	2010	2012
Untreated	30.1	
Oberon 12.8 oz	28.0	
Oberon 16 oz	28.5	
Onager 16 fl oz	27.9	
Comite 3 pts	28.4	
Zeal 3 oz	-	

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2010 & 2012 Spider Mite Trial

Quality Results - % ADF

Treatment	2010	2012
Untreated	30.1	32.3 a
Oberon 12.8 oz	28.0	30.3 ab
Oberon 16 oz	28.5	-
Onager 16 fl oz	27.9	28.0 bc
Comite 3 pts	28.4	27.3 bc
Zeal 3 oz	-	25.8 c

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2010 & 2012 Spider Mite Trial

Quality Results - % NDF

Treatment	2010	2012
Untreated	48	
Oberon 12.8 oz	44	
Oberon 16 oz	46	
Onager 16 fl oz	45	
Comite 3 pts	46	
Zeal 3 oz	-	

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2010 & 2012 Spider Mite Trial

Quality Results - % NDF

Treatment	2010	2012
Untreated	48	50.7 a
Oberon 12.8 oz	44	47.7 ab
Oberon 16 oz	46	-
Onager 16 fl oz	45	43.5 bc
Comite 3 pts	46	43.1 bc
Zeal 3 oz	-	40.4 c

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2010 & 2012 Spider Mite Trial

Quality Results % TDN

Treatment	2010	2012
Untreated	53.8	
Oberon 12.8 oz	55.2	
Oberon 16 oz	54.8	
Onager 16 fl oz	55.3	
Comite 3 pts	54.9	
Zeal 3 oz	-	

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2010 & 2012 Spider Mite Trial

Quality Results % TDN

Treatment	2010	2012
Untreated	53.8	65.0 c
Oberon 12.8 oz	55.2	66.7 bc
Oberon 16 oz	54.8	-
Onager 16 fl oz	55.3	68.3 ab
Comite 3 pts	54.9	69.2 ab
Zeal 3 oz	-	70.2 a

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2010 & 2012 Spider Mite Trial

Quality Results - % Crude Protein

Treatment	2010	2012
Untreated	7.3	
Oberon 12.8 oz	7.4	
Oberon 16 oz	7.6	
Onager 16 fl oz	7.4	
Comite 3 pts	7.6	
Zeal 3 oz	-	

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2010 & 2012 Spider Mite Trial

Quality Results - % Crude Protein

Treatment	2010	2012
Untreated	7.3	6.9 b
Oberon 12.8 oz	7.4	7.3 ab
Oberon 16 oz	7.6	-
Onager 16 fl oz	7.4	7.3 ab
Comite 3 pts	7.6	7.5 a
Zeal 3 oz	-	7.7 a

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2010 & 2012 Spider Mite Trial

Quality Results - % Starch

Treatment	2010	2012
Untreated	24.5	
Oberon 12.8 oz	25.3	
Oberon 16 oz	22.8	
Onager 16 fl oz	25.2	
Comite 3 pts	24.7	
Zeal 3 oz	-	

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2010 & 2012 Spider Mite Trial

Quality Results - % Starch

Treatment	2010	2012
Untreated	24.5	24.8 b
Oberon 12.8 oz	25.3	26.9 ab
Oberon 16 oz	22.8	-
Onager 16 fl oz	25.2	30.9 a
Comite 3 pts	24.7	30.6 a
Zeal 3 oz	-	31.9 a

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Spider Mite Trials – Summary

- **Uncontrolled spider mites reduced yield (6-10 T/A)**
- Uncontrolled spider mites reduce quality
- Spray by ground***
- Zeal (“new kid on the block”) performed well
- Hard to compare miticides because of the different rates but looks like there might be some advantage to using the high rates
- Rotate mode of action

Spider Mite Trials – Summary

- Uncontrolled spider mites reduced yield (*6-10 T/A*)
- **Uncontrolled spider mites reduce quality**
(*higher fiber, less TDN, lower protein & in 1 of 2 trials lower starch*)
- Spray by ground***
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Looking to the Future

Trade Name	Company	Chemical Name
Comite	Chemtura	propargite
Oberon	Gowan	hexythiazox
Oberon	Bayer CropScience	spiromesifen
Zeal	Valent USA	etoxazole
Miteus*	Nichino America	fenpyroximate

*Possible new material for 2014: Called Portal back east
& has been tested here as Fujimite

2012 Spider Mite Trial - UCD

Total Mite Counts/Leaf

Product	Rate per Acre	6 DAT	13 DAT	21 DAT	27 DAT	35 DAT	42 DAT Ear Leaf
Untreated	-	4	6	28	33	187	1936
Zeal	3 oz	4	3	16	6	24	490
<u>Fujimite 5EC</u>	<u>2 pts</u>	4	5	24	36	78	1325

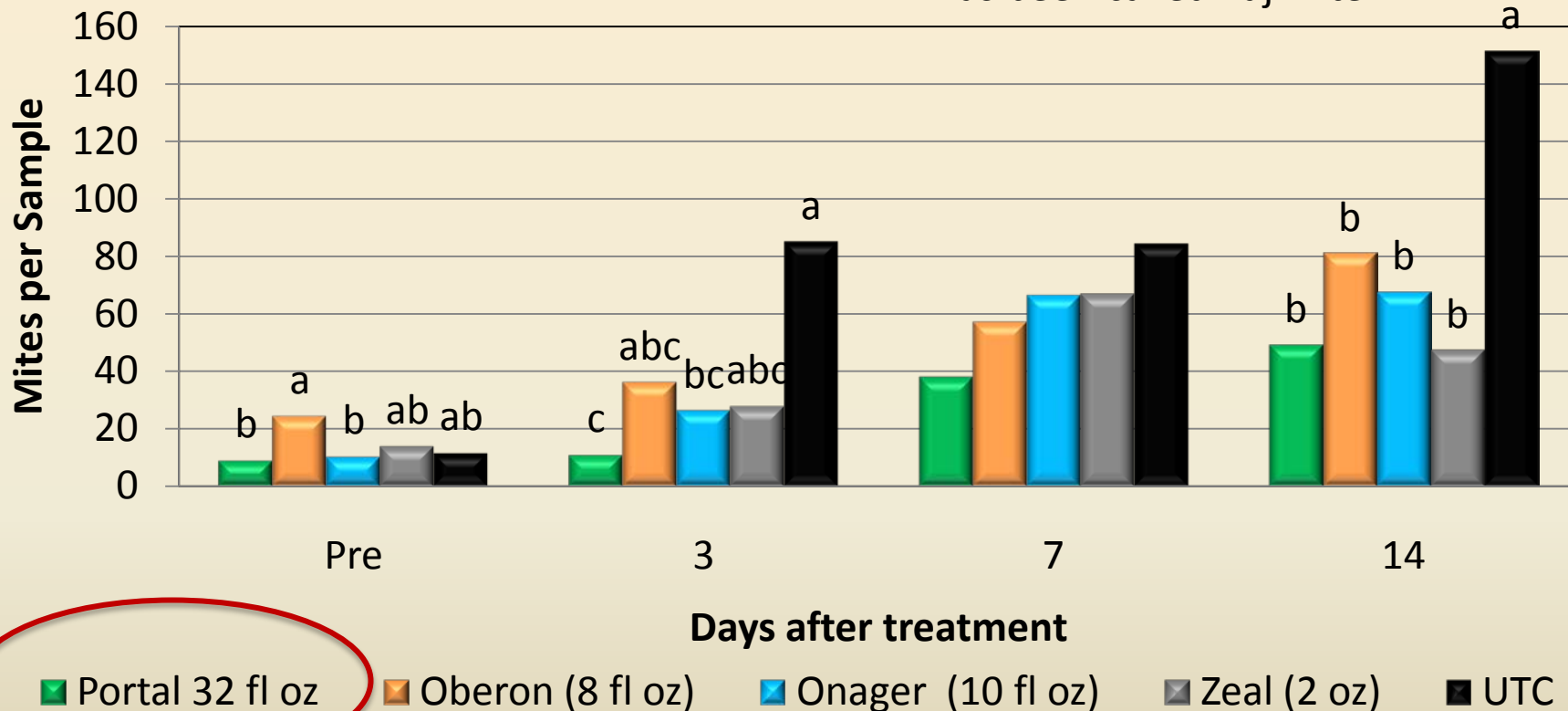
Dr. L. Godfrey
UC Davis

Slide courtesy of Pedro Hernandez, Nichino
 Application date: 7/16/2012
 15 GPA, 30 PSI
 Portal applied with 0.25% NIS, Zeal with 0.1% NIS
 P=0.1, Duncan's Multiple Range Test

Banks Grass Mite Efficacy - 2012
 Olan Moore (Springlake, TX)



Will be called Miteus in California
 Has been called Fujimite



Portal 32 fl oz

Thank you for your time and attention!

Any questions?

