

The background of the slide is a close-up photograph of two green walnut husks (infructescences) on a branch. The husks are round and covered in small, light-colored bumps. They are surrounded by large, dark green leaves with prominent veins. The lighting is natural, highlighting the texture of the husks and the vibrant green of the leaves.

# **Walnut Blight Control**

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8. 3. 2005



# Tehama County 2007 Blight Research

- Simulated rainfall – over tree sprinklers
- RCB with 10 treatments x 5 replicates
- Individual trees
- Dilute (400 gpa) application by handgun
- Five applications 3/30, 4/9, 4/18, 4/30 and 5/10
- First application at approx 58% Budbreak (prayer stage)
- Visually rated 400-500 nuts per tree







## Rainfall, Stage of Growth and Spray Timing for the Tehama Walnut Blight Experiment

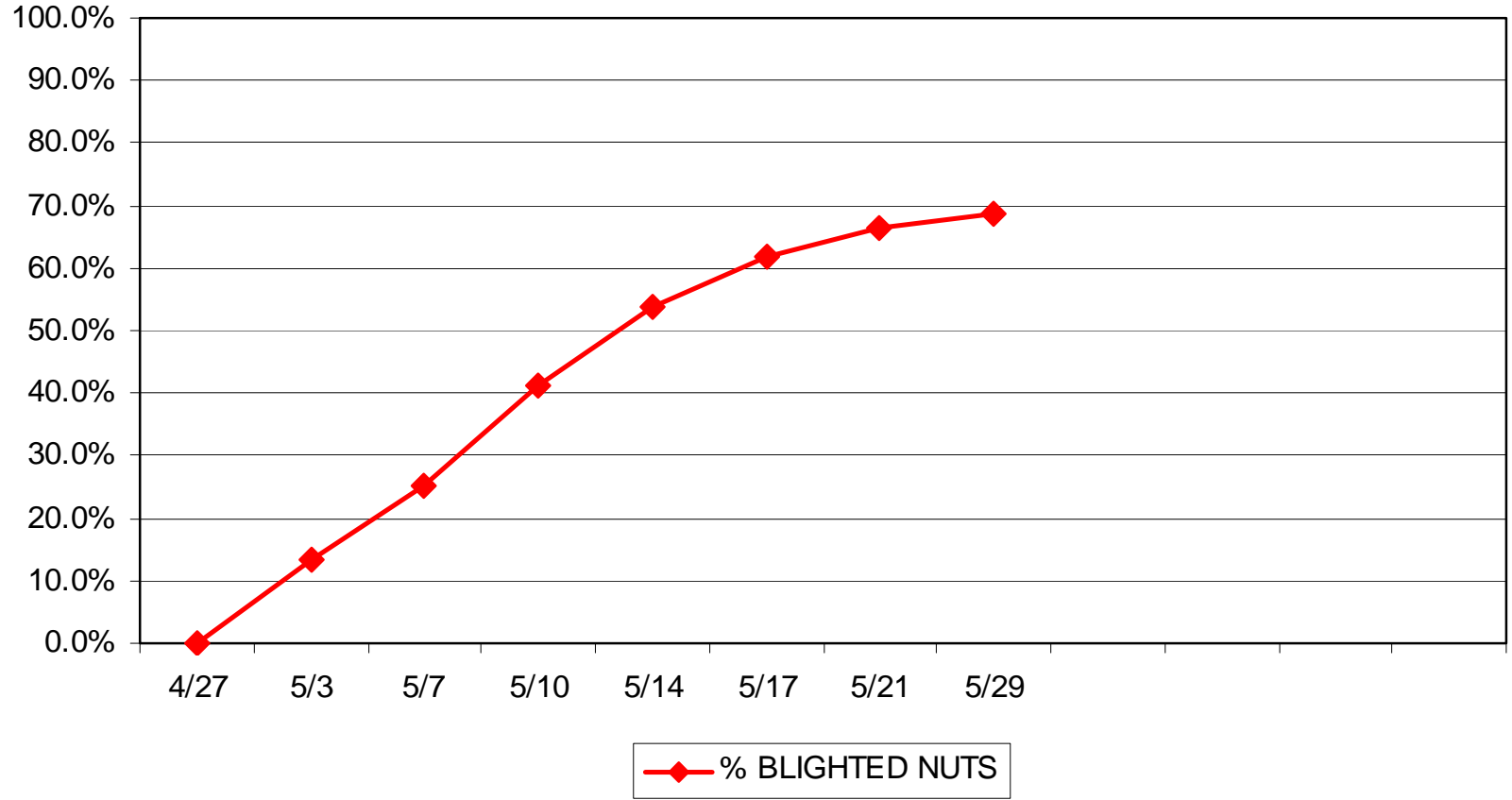
Date	Rainfall (nat) <sup>1</sup>	Rainfall (sim) <sup>2</sup>	Event
3/20/07	.13 in	—	—
3/23/07	—	—	14% prayer
3/26/07	.11 in	—	—
3/27/07	—	—	41% prayer
3/29/07	—	—	first pollen
3/30/07	—	—	58% prayer, spray #1
3/31/07	—	.72 (10 hrs)	—
4/2/07	—	—	62% prayer
4/4/07	—	.72 (10 hrs)	—
4/5/07	—	—	61% prayer, 1st flowers
4/9/07	—	—	spray #2
4/10/07	—	.72 (10 hrs)	—
4/11/07	—	—	50% prayer, full bloom
4/17/07	.05 in	—	—
4/18/07	—	.11 (1.5 hrs)	spray #3
4/19/07	—	.72 (10 hrs)	—
4/22/07	.11 in	—	—
4/30/07	—	—	spray #4
5/1/07	.12 in	—	—
5/3/07	.33 in	—	—
5/4/07	.02 in	—	—
5/10/07	—	—	spray #5

<sup>1</sup>Natural rainfall – (CIMIS) Gerber) 7 events for .90 inches

<sup>2</sup>Simulated rainfall – (overhead sprinklers) 5 events for 2.99 inches



## % Blight vs. Time



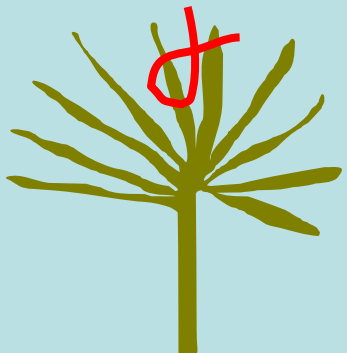
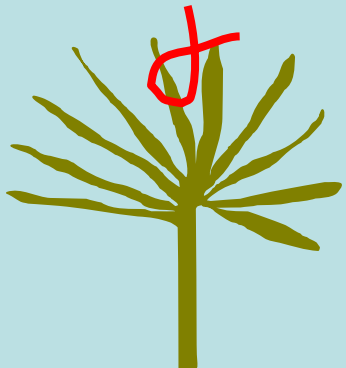
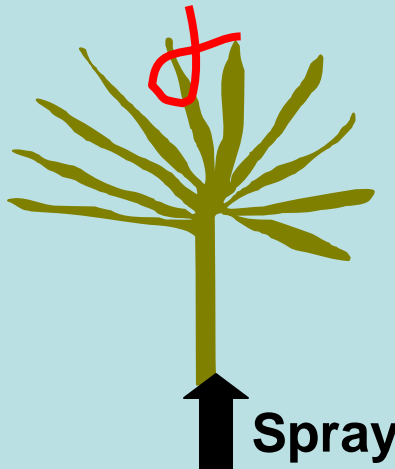
**Blight Symptoms on Untreated Walnuts Under Simulated Rainfall.  
Tehama experiment 2007.**

# Cropping Probability for Early vs Late Prayer Stage

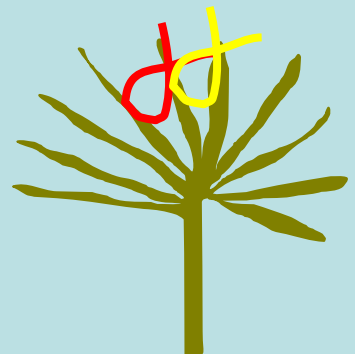
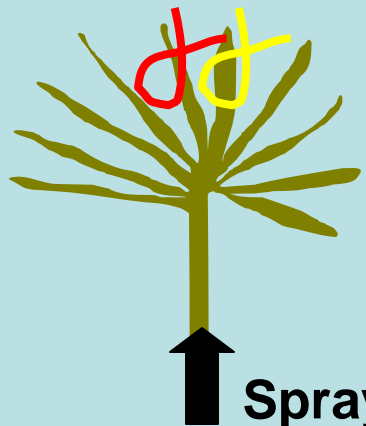
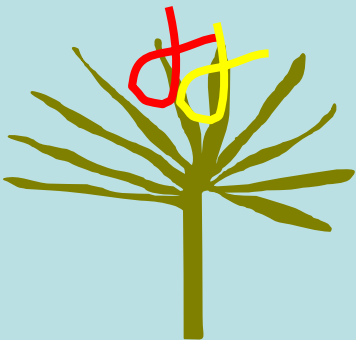
<b>Growth Rate</b>	<b>#Shoots Recovered</b>	<b>#Walnuts Total</b>	<b>#Blighted Total</b>
Prayer Stage 3/30/07	99	49	5
Prayer Stage 4/2/07	96	36	1
Prayer Stage 4/6/07	84	24	0
Prayer Stage 4/9/07	81	6	0

100 shoots were tagged at each event. Number of walnuts counted 5/29/07. Tagged trees were under grower blight control program.

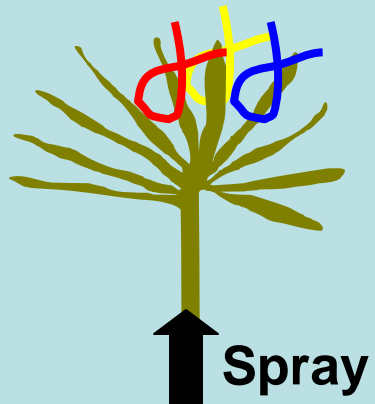
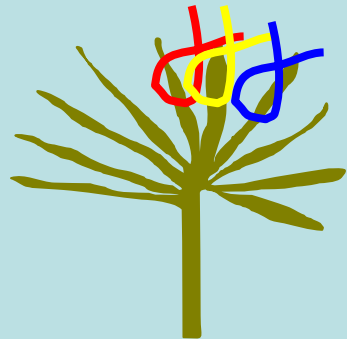
March 25



March 30

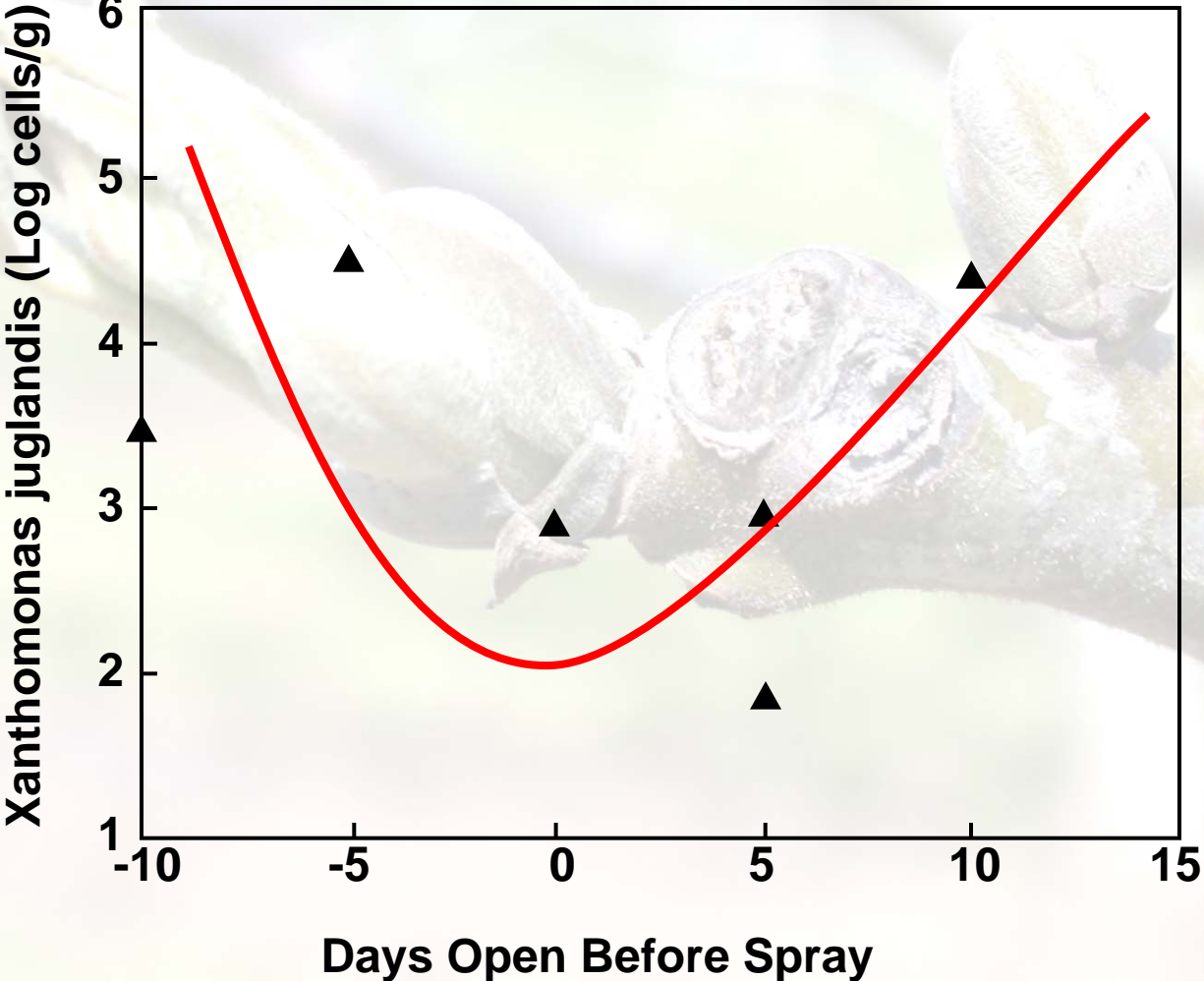


April 3





### Populations on April 25, 2007



## Formulation Comparisons for Kocide 101, Kocide 2000 and Kocide 3000

<b>Treatment</b>	<b>% Blight</b>
Kocide 101 <sup>2</sup> @ 8 lbs. + 58 oz. Manex/Ac	5.81 a <sup>1</sup>
Kocide 2000 <sup>3</sup> @ 6 lbs. + 58 oz. Manex/Ac	3.90 a
Kocide 3000 <sup>4</sup> @ 4 lbs. + 58 oz. Manex/Ac	7.80 a
Untreated (simulated rainfall)	31.98 b

<sup>1</sup>Duncan's multiple range test for treatment means at the 5% level

<sup>2</sup>Kocide 101 50% metallic copper

<sup>3</sup>Kocide 2000 35% metallic copper

<sup>4</sup>Kocide 3000 30% metallic copper

Spray application dates were: 3/30/07; 4/9/07; 4/18/07; 4/30/07  
and 5/10/07.

## Comparisons of Kocide with and without Manex and Manex vs. Manzate

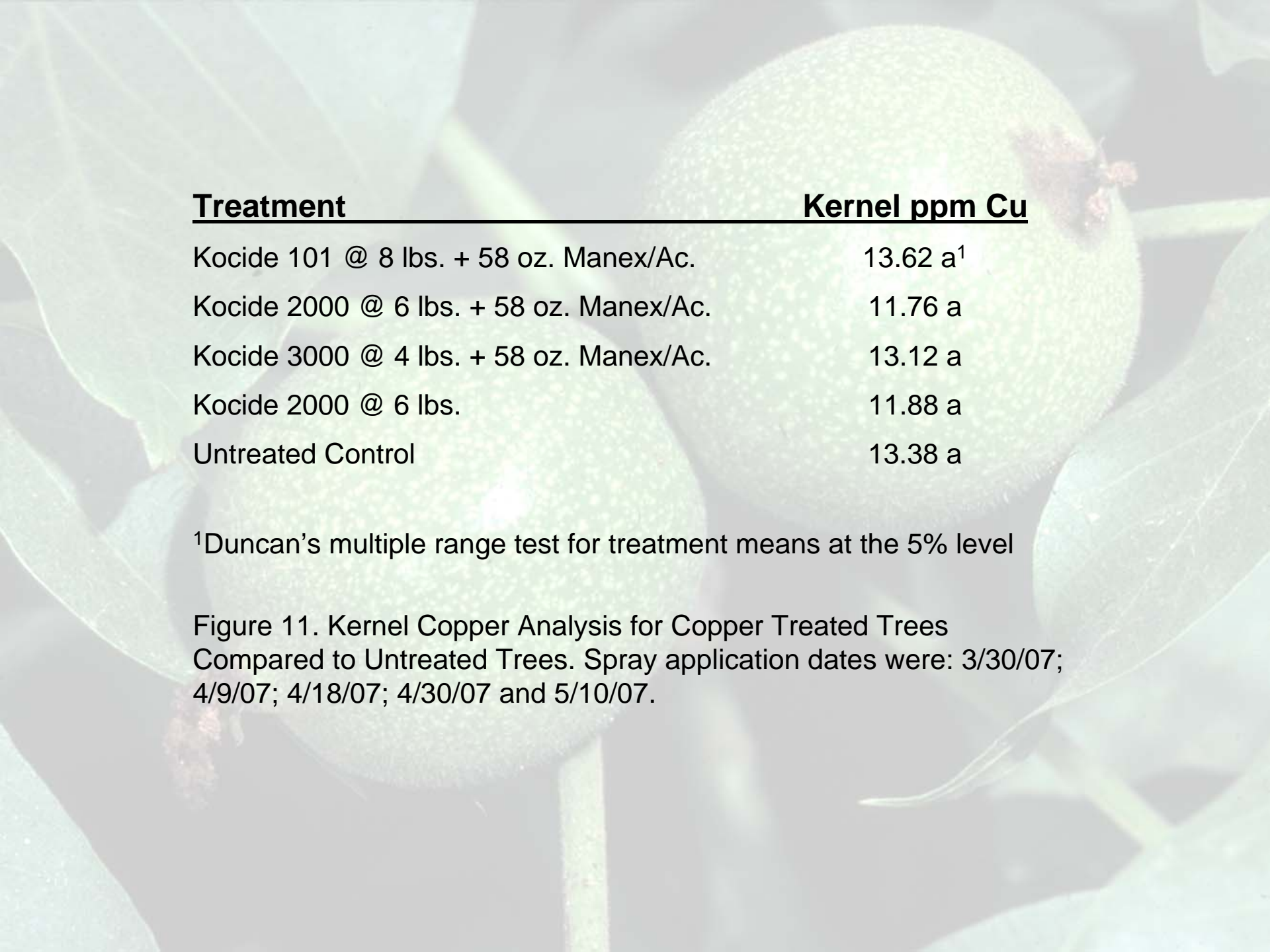
<u>Treatment</u>	<u>% Blight</u>
Kocide 2000 @ 6 lbs. + 58 oz. Manex/Ac	3.98 a <sup>1</sup>
Kocide 3000 @ 4 lbs. + 58 oz. Manex/Ac	7.80 ab
Kocide 3000 @ 4 lbs. + 2.4 lbs. Manzate <sup>2</sup> /Ac	4.01 a
Kocide 2000 @ 6 lbs. Untreated (simulated rainfall)	9.22 b 32.05 c
Untreated (natural rainfall)	4.04 <sup>3</sup>

<sup>1</sup>Duncan's multiple range test for treatment means at the 5% level

<sup>2</sup>Manzate 75DF: Dupont Crop Protection, Zinc ion and Manganese ethylene-bisdithiocarbamate

<sup>3</sup>Non replicated trees outside of the rainfall simulator

Spray application dates were: 3/30/07; 4/9/07; 4/18/07; 4/30/07  
and 5/10/07.



<u>Treatment</u>	<u>Kernel ppm Cu</u>
Kocide 101 @ 8 lbs. + 58 oz. Manex/Ac.	13.62 a <sup>1</sup>
Kocide 2000 @ 6 lbs. + 58 oz. Manex/Ac.	11.76 a
Kocide 3000 @ 4 lbs. + 58 oz. Manex/Ac.	13.12 a
Kocide 2000 @ 6 lbs.	11.88 a
Untreated Control	13.38 a

<sup>1</sup>Duncan's multiple range test for treatment means at the 5% level

Figure 11. Kernel Copper Analysis for Copper Treated Trees Compared to Untreated Trees. Spray application dates were: 3/30/07; 4/9/07; 4/18/07; 4/30/07 and 5/10/07.



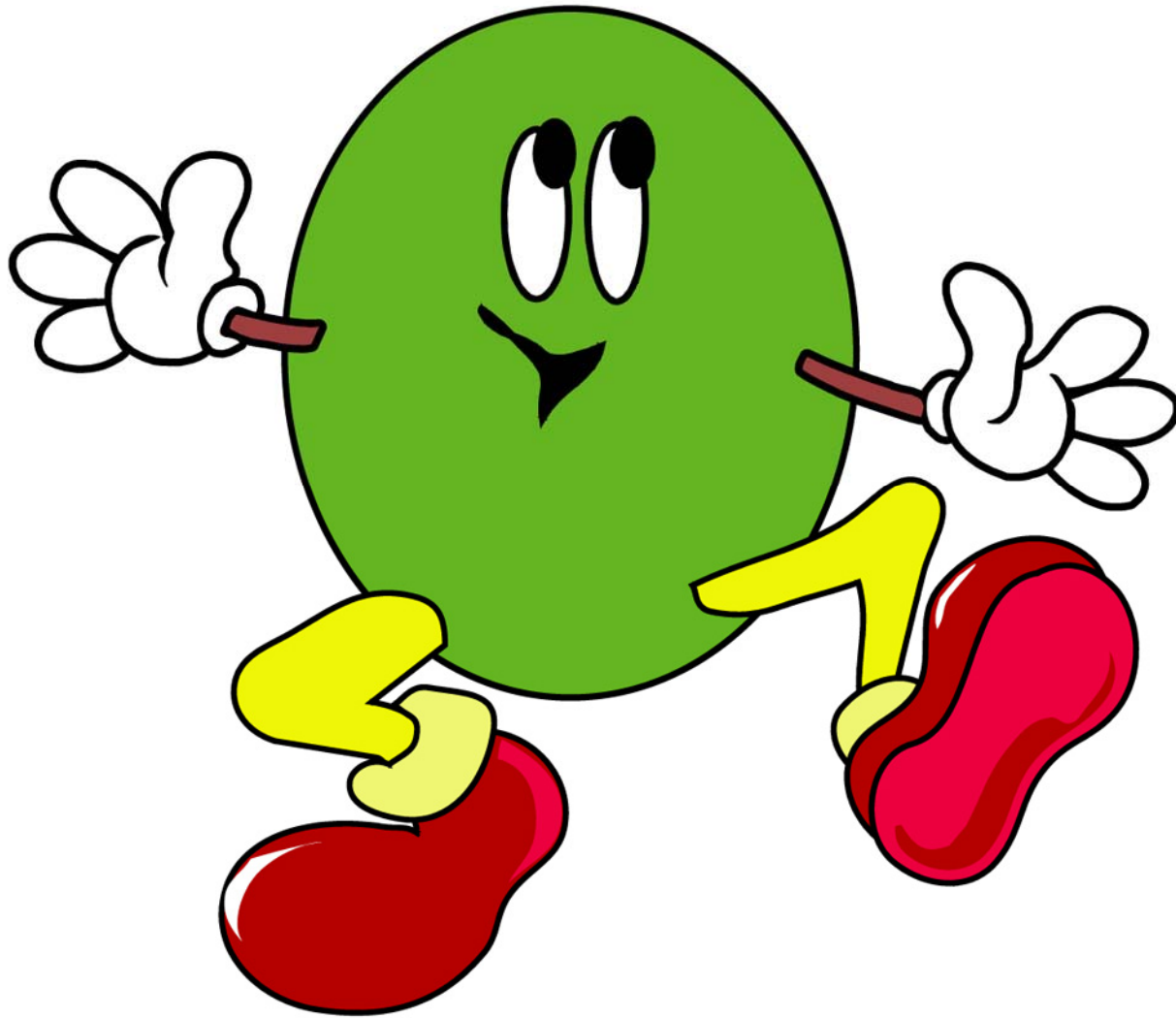
## In Summary:

- Sprays applied close to prayer stage have the greatest chance of decreasing pathogen populations.
- First opening buds are more likely to set walnuts.
- Kocide 101 @ 8 lbs. = Kocide 2000 @ 6 lbs. = Kocide 3000 @ 4 lbs.
- Manzate @ 2.4 lbs. = Manex @ 58 oz.
- Breakthru not effective if followed by an aggressive spray program.
- Blight sprays did not appear to increase kernel copper content.

# How to Kill Blight in Tehama County

- 1) First application at 40% prayer stage  
Second 7-10 days later (8 oz. Breakthru or equivalent)
- 2) Watch weather and treat accordingly  
4-6 lbs. Kocide 2000 – 35% metallic  
4.0 lbs. Kocide 3000 – 30% metallic  
58 oz. Manex / 2.4 lbs. Manzate
- 3) Full coverage for the first and second  
Watch weather and treat accordingly
- 4) Use judgment based upon location and disease severity

JUST SAY NO



TO BLIGHT!