

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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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







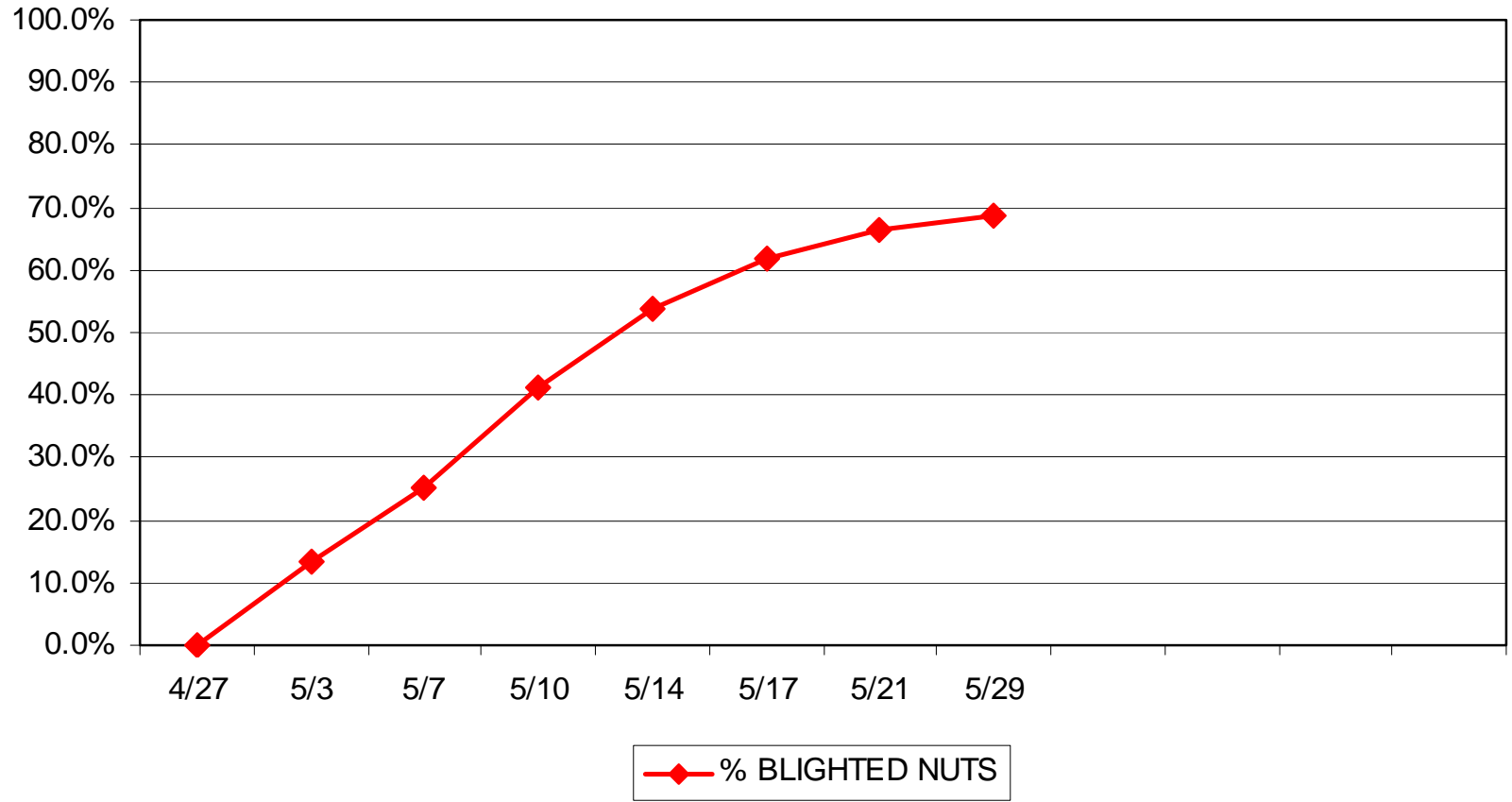
Rainfall, Stage of Growth and Spray Timing for the Tehama Walnut Blight Experiment

Date	Rainfall (nat) ¹	Rainfall (sim) ²	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

¹Natural rainfall – (CIMIS) Gerber) 7 events for .90 inches

²Simulated rainfall – (overhead sprinklers) 5 events for 2.99 inches

% Blight vs. Time



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



Bud Break Evaluation on Chandler Walnuts — 2007

Prayer Stage

Date

% Bud Break

3/23/07

14%

3/27/07

41%

3/30/07

58%

4/2/07

62%

4/5/07

61%

4/11/07

50% (full bloom)

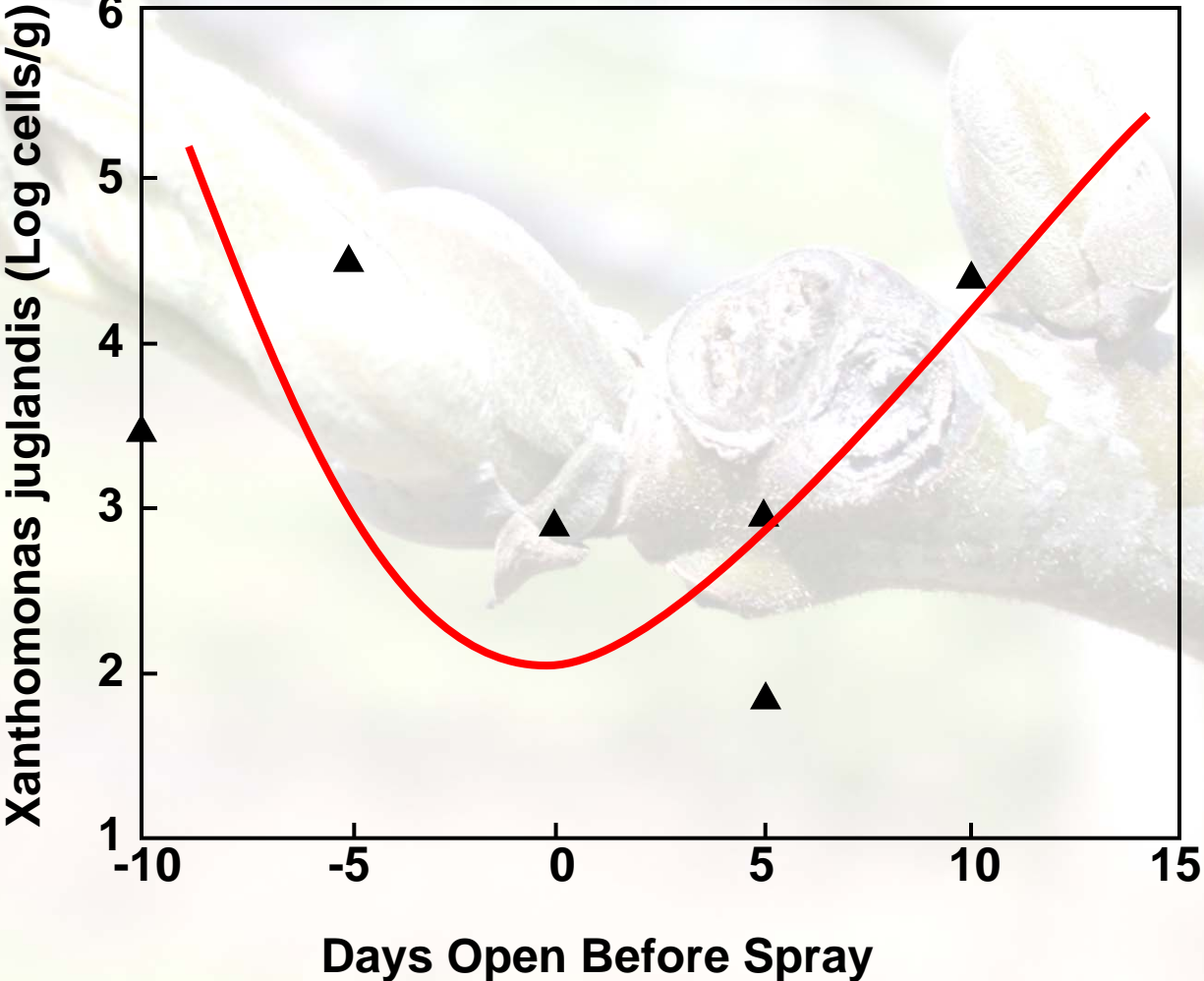
Cropping Probability for Early vs Late Prayer Stage

Growth Rate	#Shoots Recovered	#Walnuts Total	#Blighted Total
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.



Populations on April 25, 2007



Formulation Comparisons for Kocide 101, Kocide 2000 and Kocide 3000

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

¹Duncan's multiple range test for treatment means at the 5% level

²Kocide 101 50% metallic copper

³Kocide 2000 35% metallic copper

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

¹Duncan's multiple range test for treatment means at the 5% level

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

³Non 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.

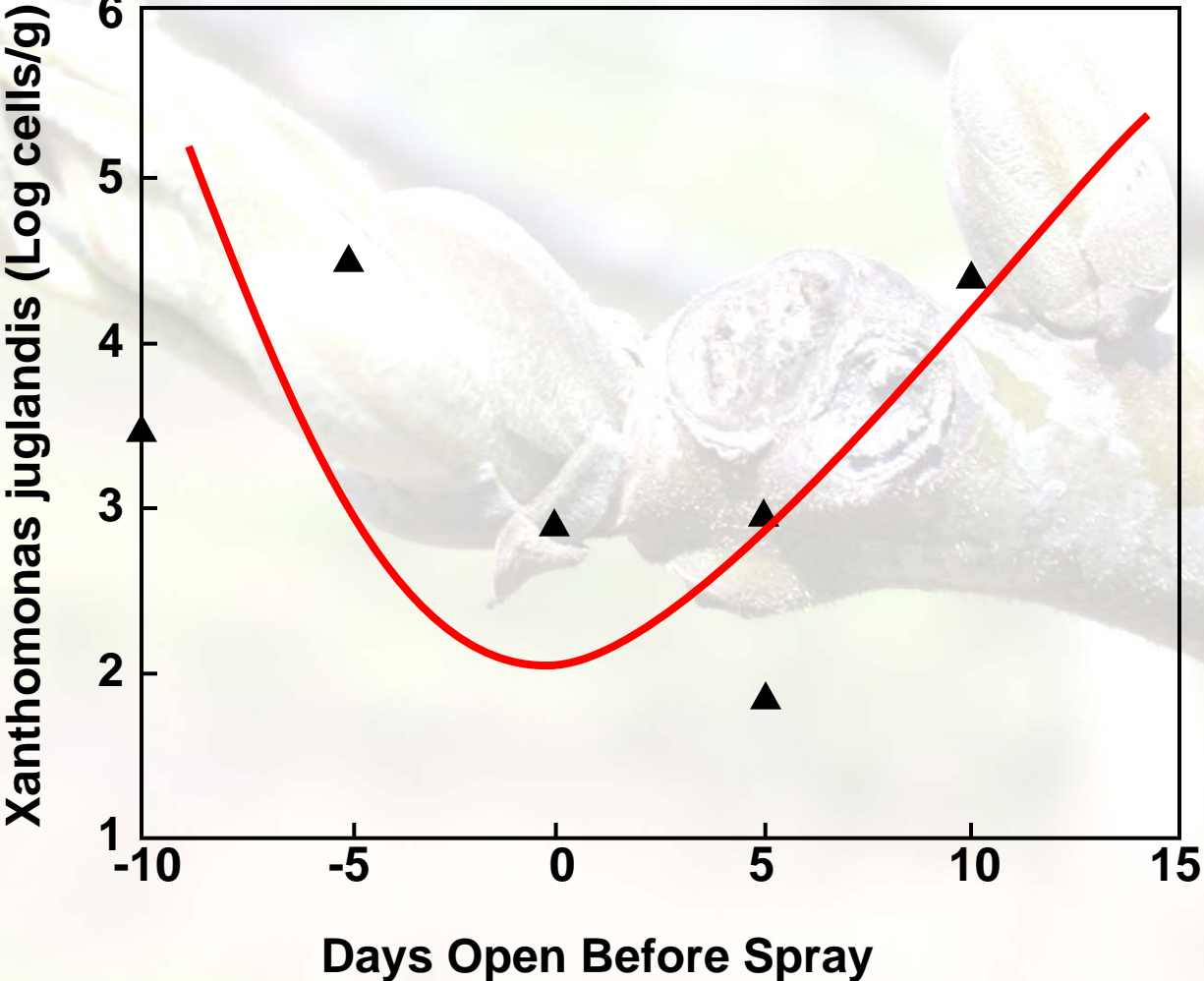
In Summary

- Simulated rainfall increased disease pressure
- The addition of Manex improves disease control
- Under severe disease pressure need 6 lbs. KOC 2000
- Kocide 3000 @ 4.0 lbs. performed well
- Manzate 75DF worked well at 2.4 lbs.

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

Populations on April 25, 2007



Bud Break Evaluation on Chandler Walnuts — 2007

Prayer Stage

Date

% Bud Break

3/23/07

14%

3/27/07

41%

3/30/07

58%

4/2/07

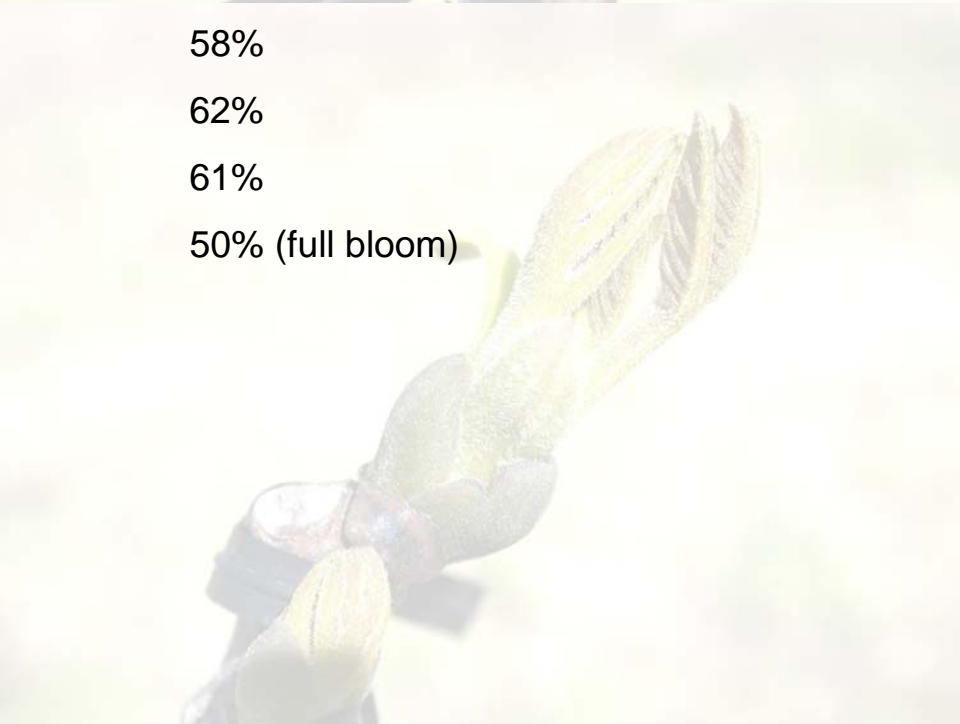
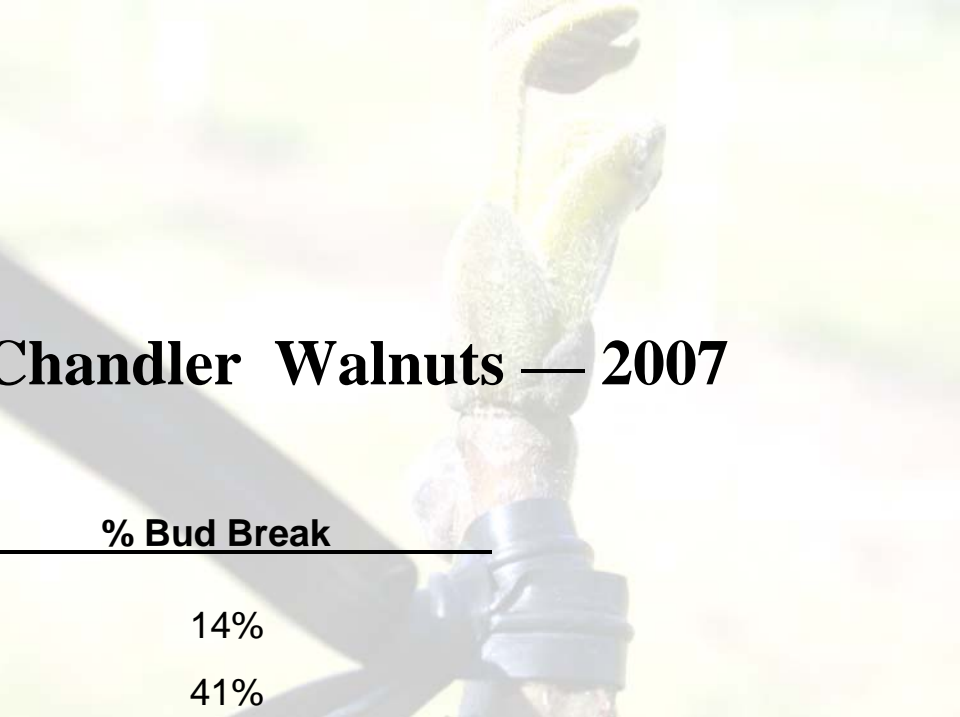
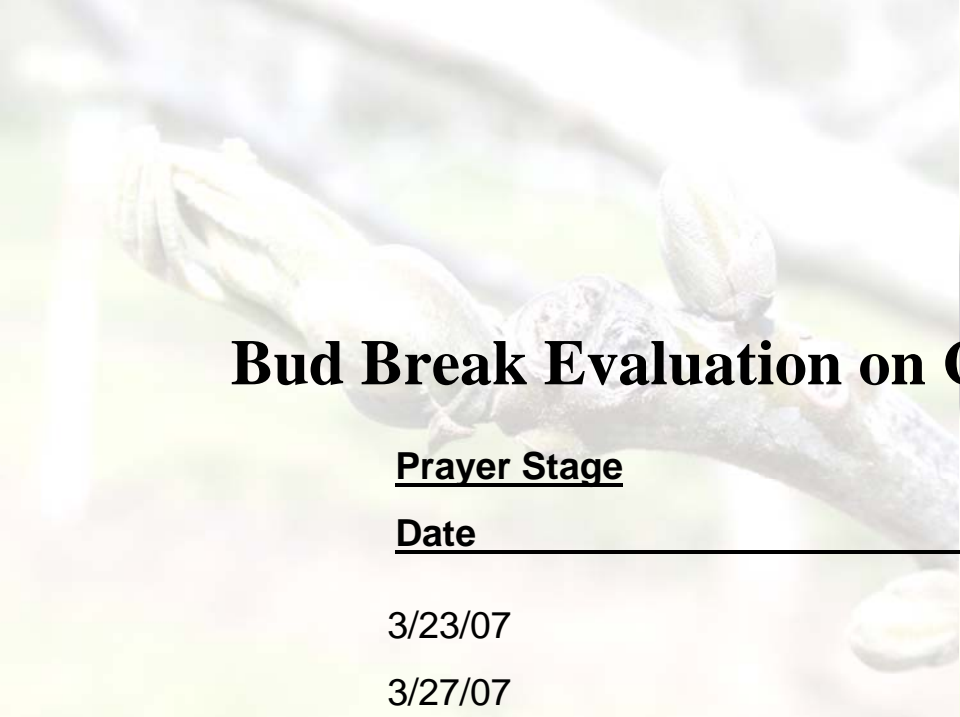
62%

4/5/07

61%

4/11/07

50% (full bloom)



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

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Kocide 2000 @ 6 lbs. Untreated (simulated rainfall)	9.22 b 32.05 c
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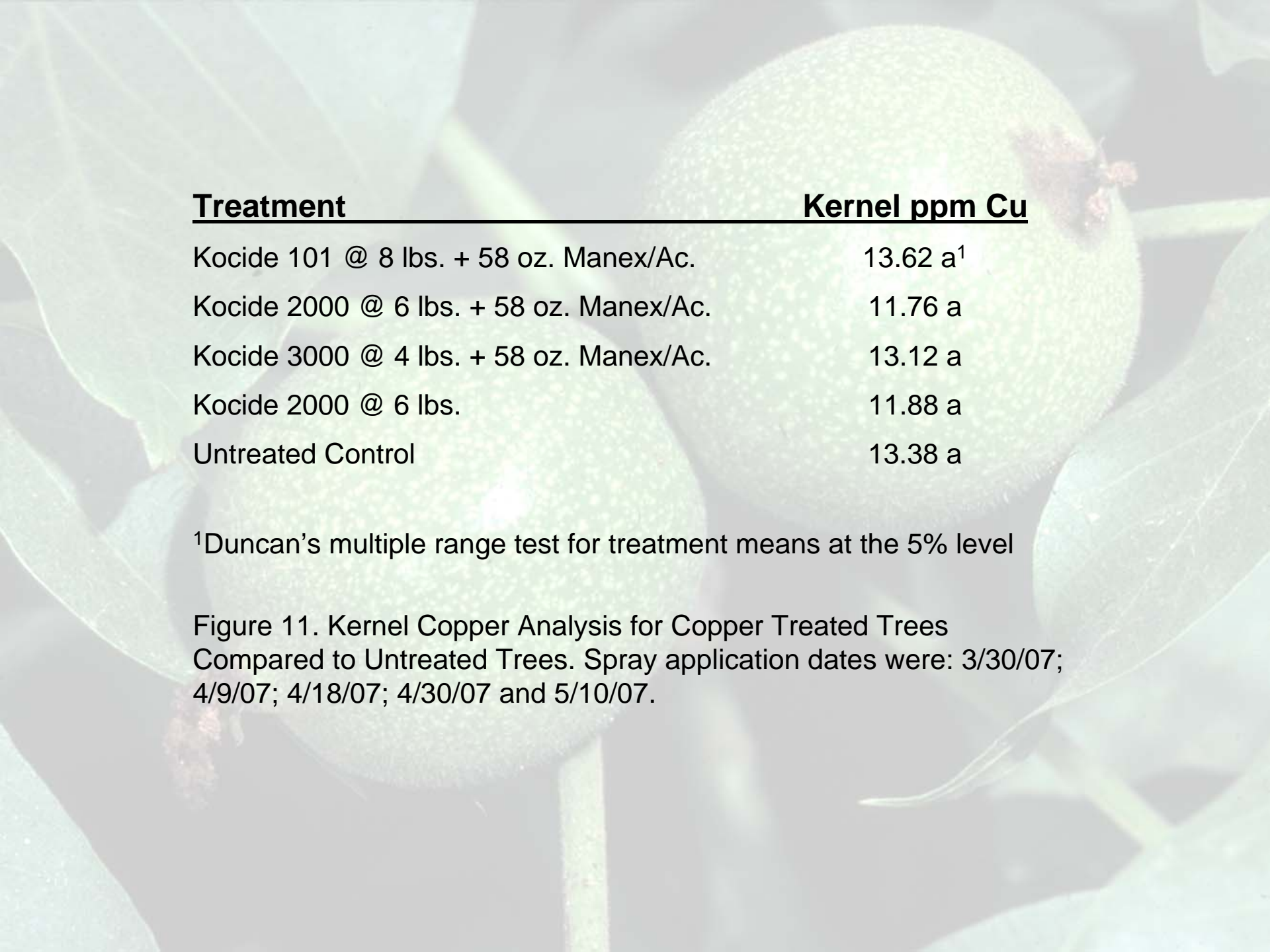
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<u>Treatment</u>	<u>Kernel ppm Cu</u>
Kocide 101 @ 8 lbs. + 58 oz. Manex/Ac.	13.62 a ¹
Kocide 2000 @ 6 lbs. + 58 oz. Manex/Ac.	11.76 a
Kocide 3000 @ 4 lbs. + 58 oz. Manex/Ac.	13.12 a
Kocide 2000 @ 6 lbs.	11.88 a
Untreated Control	13.38 a

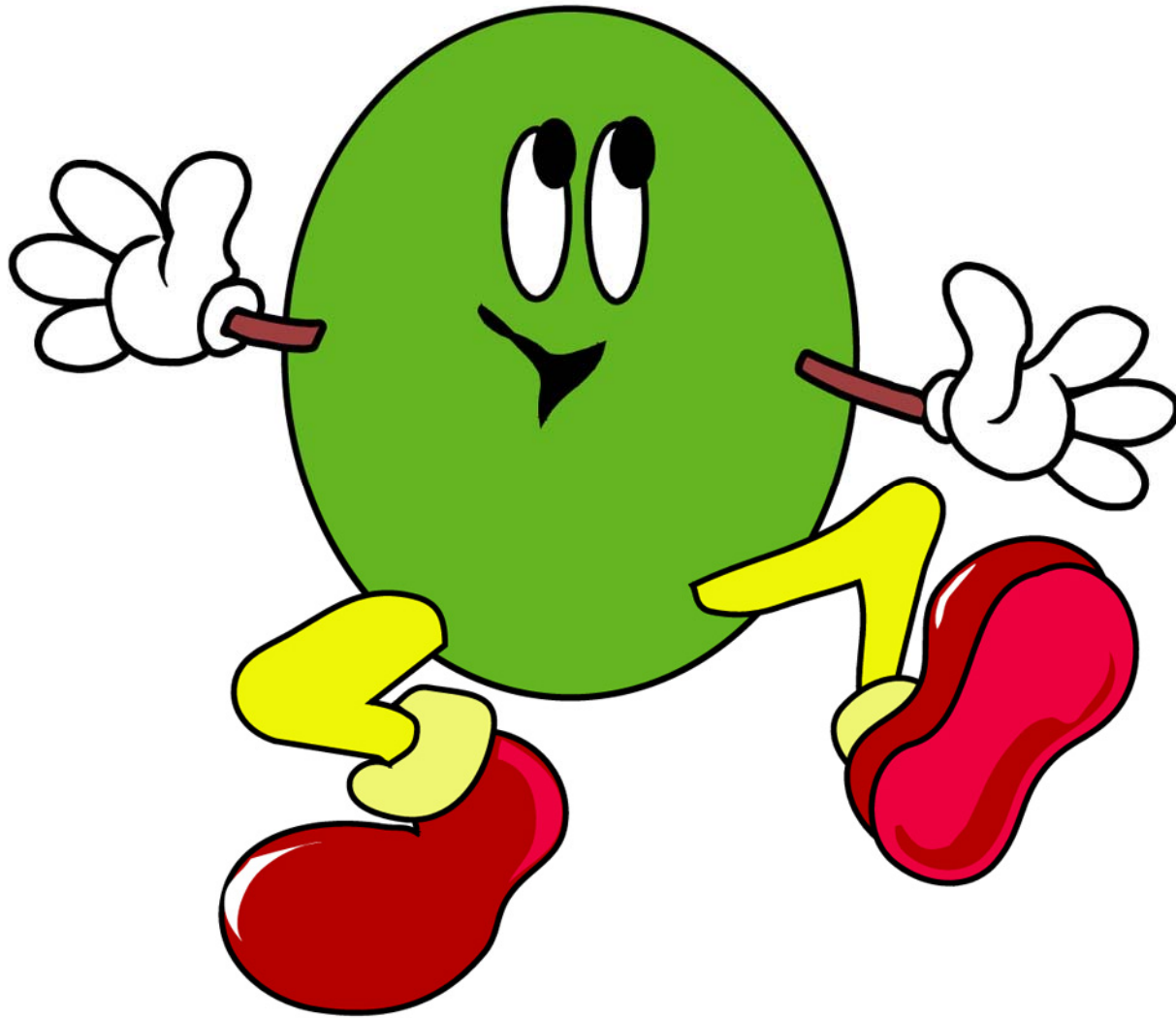
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Figure 11. Kernel Copper Analysis for Copper Treated Trees Compared to Untreated Trees. Spray application dates were: 3/30/07; 4/9/07; 4/18/07; 4/30/07 and 5/10/07.

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.

JUST SAY NO



TO BLIGHT!