Walnut Blight Control

Richard Buchner
Steve Lindow
Jim Adaskaveg


8. 3. 2005

Tehama County 2007 Blight Research

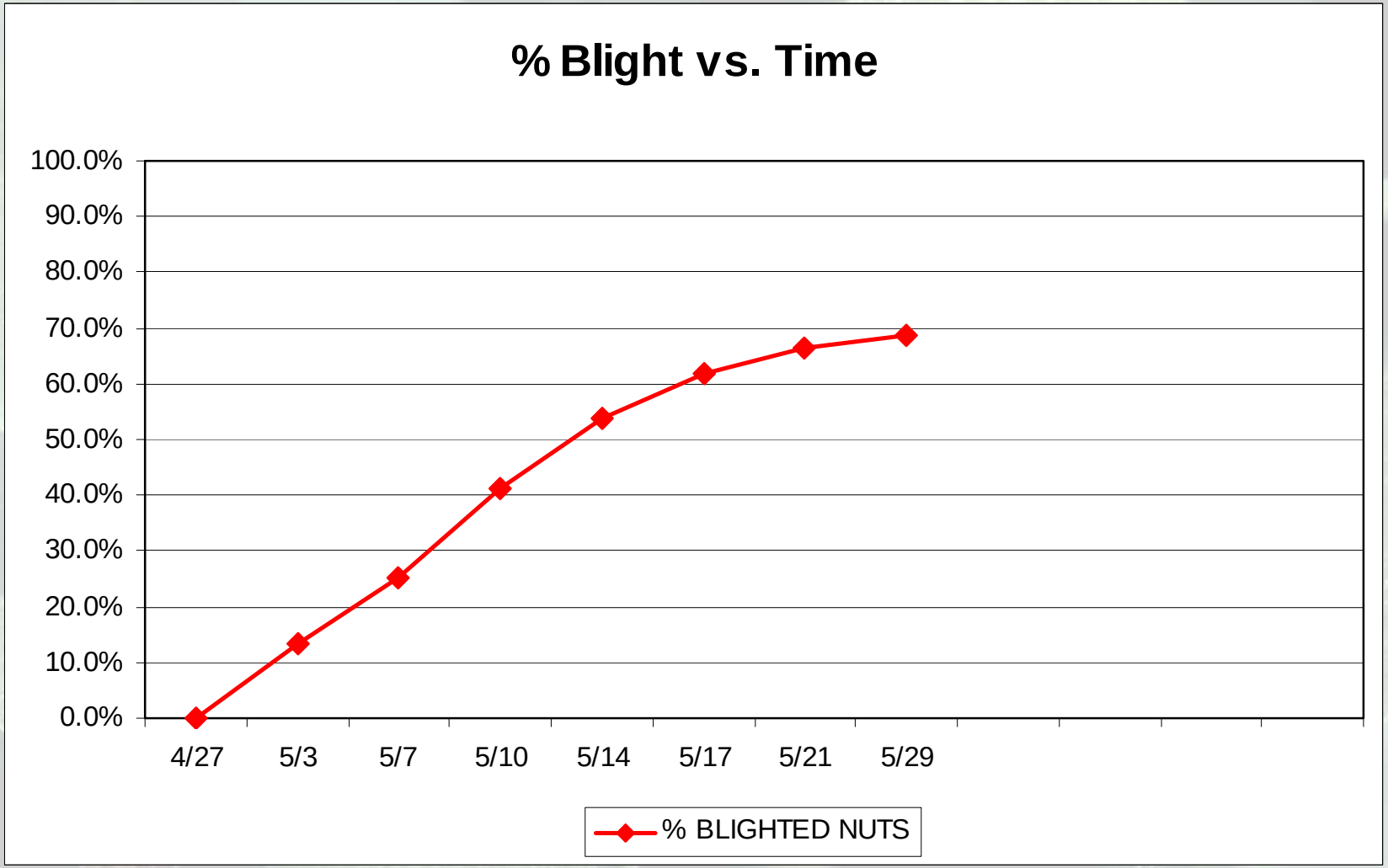
- Simulated rainfall – over tree sprinklers
- RCB with 10 treatments x 5 replicates
- Individual trees
- Dilute (400 gpa) application by handgun
- Five applications 3/30, 4/9, 4/18, 4/30 and 5/10
- First application at approx 58% Budbreak (prayer stage)
- Visually rated 400-500 nuts per tree




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

Date	Rainfall (nat)[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

[1]Natural rainfall – (CIMIS) Gerber) 7 events for .90 inches
[2]Simulated rainfall – (overhead sprinklers) 5 events for 2.99 inches



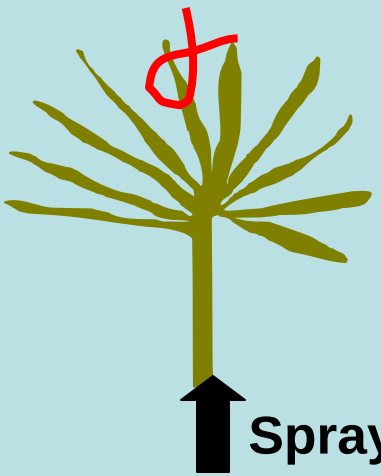
Blight Symptoms on Untreated Walnuts Under Simulated Rainfall. Tehama experiment 2007.

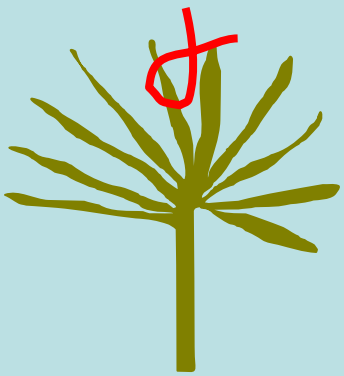
Cropping Probability for Early vs Late Prayer Stage

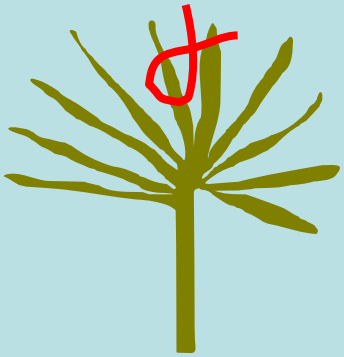
Growth Rate	#Shoots Recovered	#Walnuts Total	#Blighted Total
Prayer Stage 3/30/07	99	49	5
Prayer Stage 4/2/07	96	36	1
Prayer Stage 4/6/07	84	24	0
Prayer Stage 4/9/07	81	6	0

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

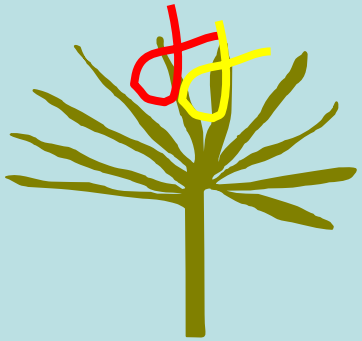
March 25

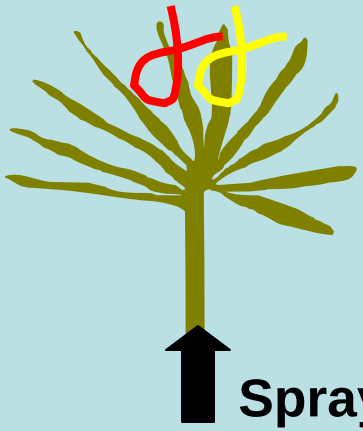


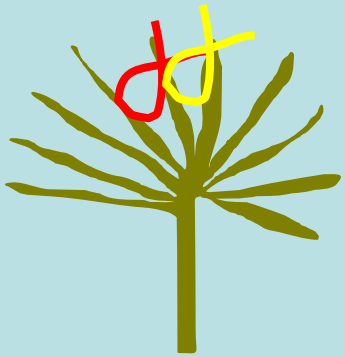




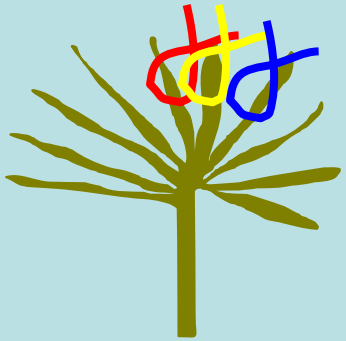
March 30

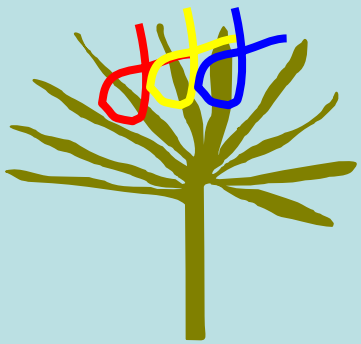


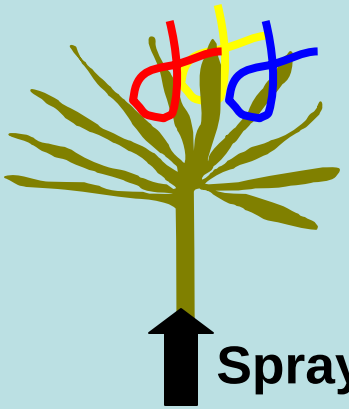




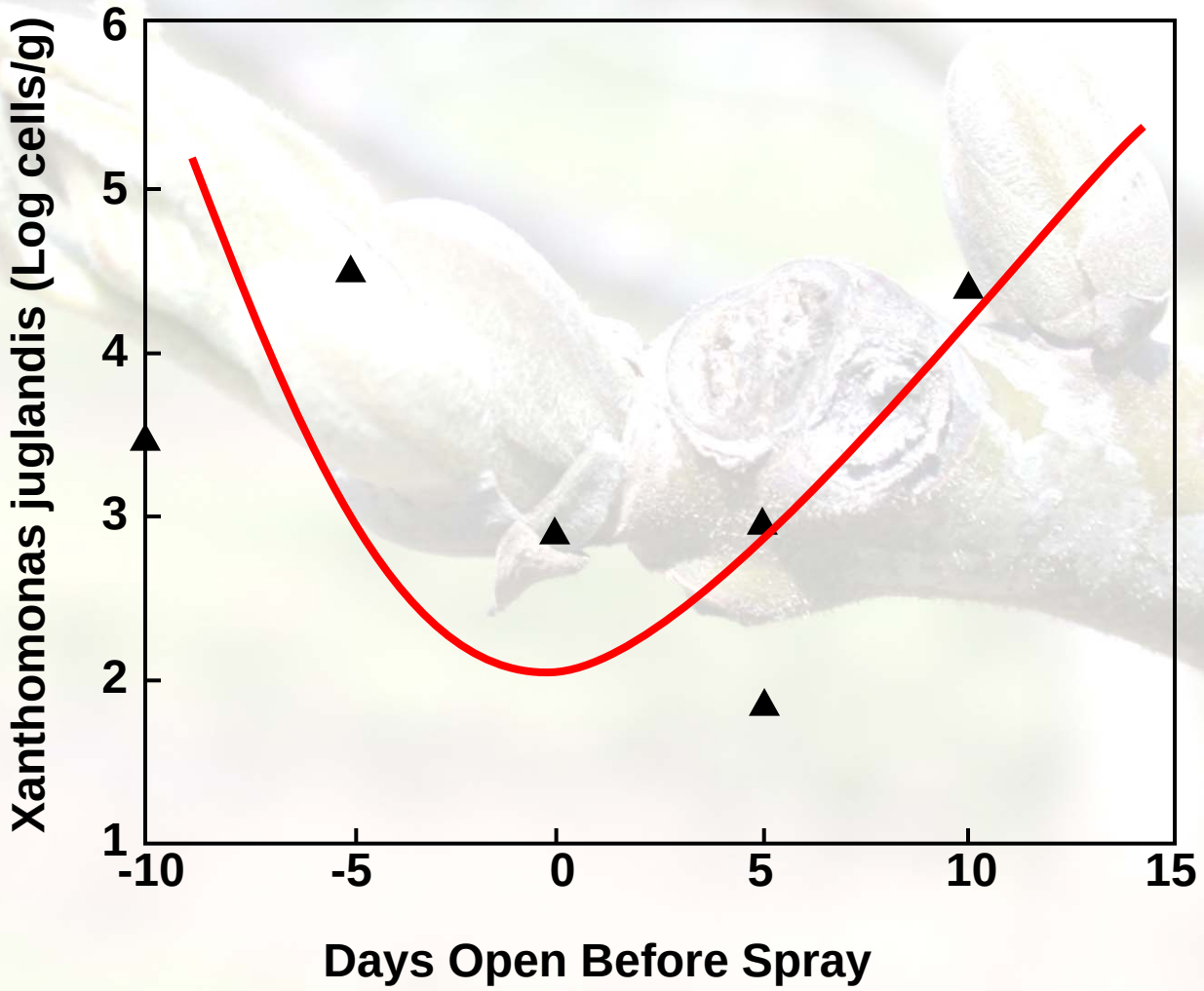
April 3







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

[1]Duncan's multiple range test for treatment means at the 5% level
[2]Kocide 101 50% metallic copper
[3]Kocide 2000 35% metallic copper
[4]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

Treatment	% Blight
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.	9.22 b
Untreated (simulated rainfall)	32.05 c
Untreated (natural rainfall)	4.04[3]

[1]Duncan's multiple range test for treatment means at the 5% level
[2]Manzate 75DF: Dupont Crop Protection, Zinc ion and Manganese ethylene-bisdithocarbamate
[3]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.

Treatment	Kernel ppm Cu
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

[1]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.
- 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

How to get this and more walnut information:

http://cetehama.ucdavis.edu

http://walnutresearch.ucdavis.edu

http://cetehama.ucdavis.edu

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4-H Program

4-H helps young people discover and develop their potential. It provides a wide variety of educational and enrichment experiences.

Irrigation and Water Resources

Support for local management of the irrigation and water resources in the northern Sacramento Valley.

Orchard Crops

Solving problems and exploring new techniques to improve the productivity of California's Walnut, Almond & Prune Industries.

Livestock

Research and educational support in the areas of marketing, ranch management, feeding and supplementation strategies, grazing and natural resources management.

Olives

The Tehama County Olive program is shared with Glenn County with Bill Krueger as the Farm Advisor providing information and assistance in the olive production area.

Nutrition, Family and Consumer Science / FSNEP

Offering opportunities for families, individuals, and youth to enhance their quality of living by providing resources that support independence and self-sufficiency.

In Tehama County, California

Tehama County is nestled in the northern Sacramento Valley, just two hours north of Sacrmento. Portraying Norman Rockwell-like Americana from fishing and hunting expeditions to fully restored Victorians to a strong western heritage to natural scenic wonders,

Calendar

02/12/08	Tulare World Ag Expo
02/15/08	Tehama's Walnut Day 2008
02/16/08	CSU- Chico Beef Day
02/29/08	Tehama Prune Day
04/25/08	Ron Knight Memorial Ag Scholarship Apps Due

Current News

Ron Knight Scholarship

- 2008 Cover Sheet
- 2008 Application Instructions

Tehama County Annual Reports

2006 Report

2004 Report

EMPLOYMENT OPPORTUNITY

University of California Application-(Microsoft Word Format)

County Information

Tehama County
Cooperative Extension Tehama County
1754 Walnut Street
Red Bluff, CA 96080
Phone: (530) 527-3101

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Orchard Crops

Tehama County farm advisor-Richard P. Buchner, backed by campus-based research specialists, searchs out practical, research-based solutions to a wide variety of challenges -- developing more productive crop varieties, pest management, new industry technologies and more.

E-Mail Web Master • ANR Non-Discrimination Statement

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Walnut Research Reports

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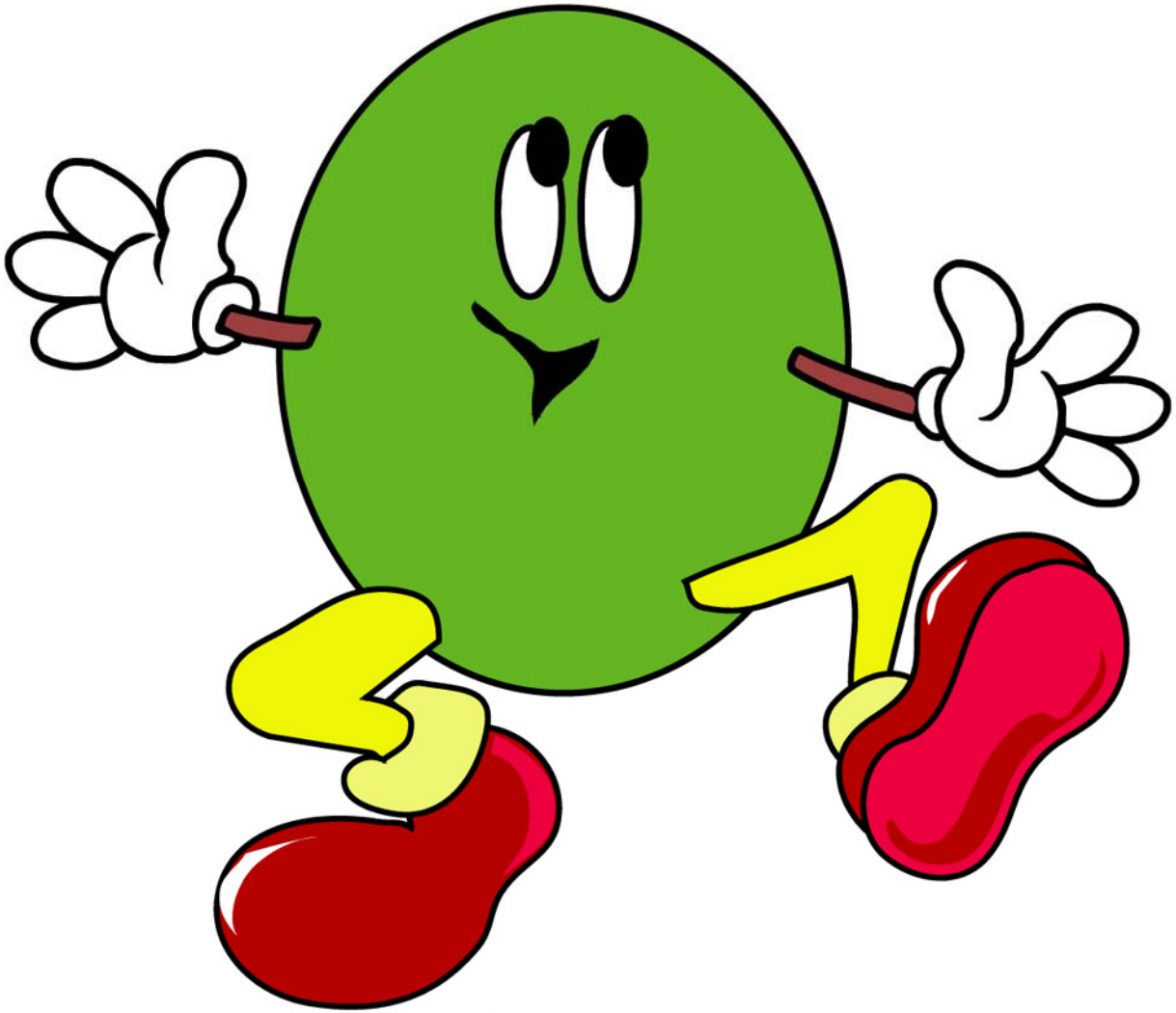
JUST SAY NO



TO BLIGHT!