WALNUT PEST MANAGEMENT ALLIANCE 2002

Mating Disruption and DA Lure Performance for Codling Moth

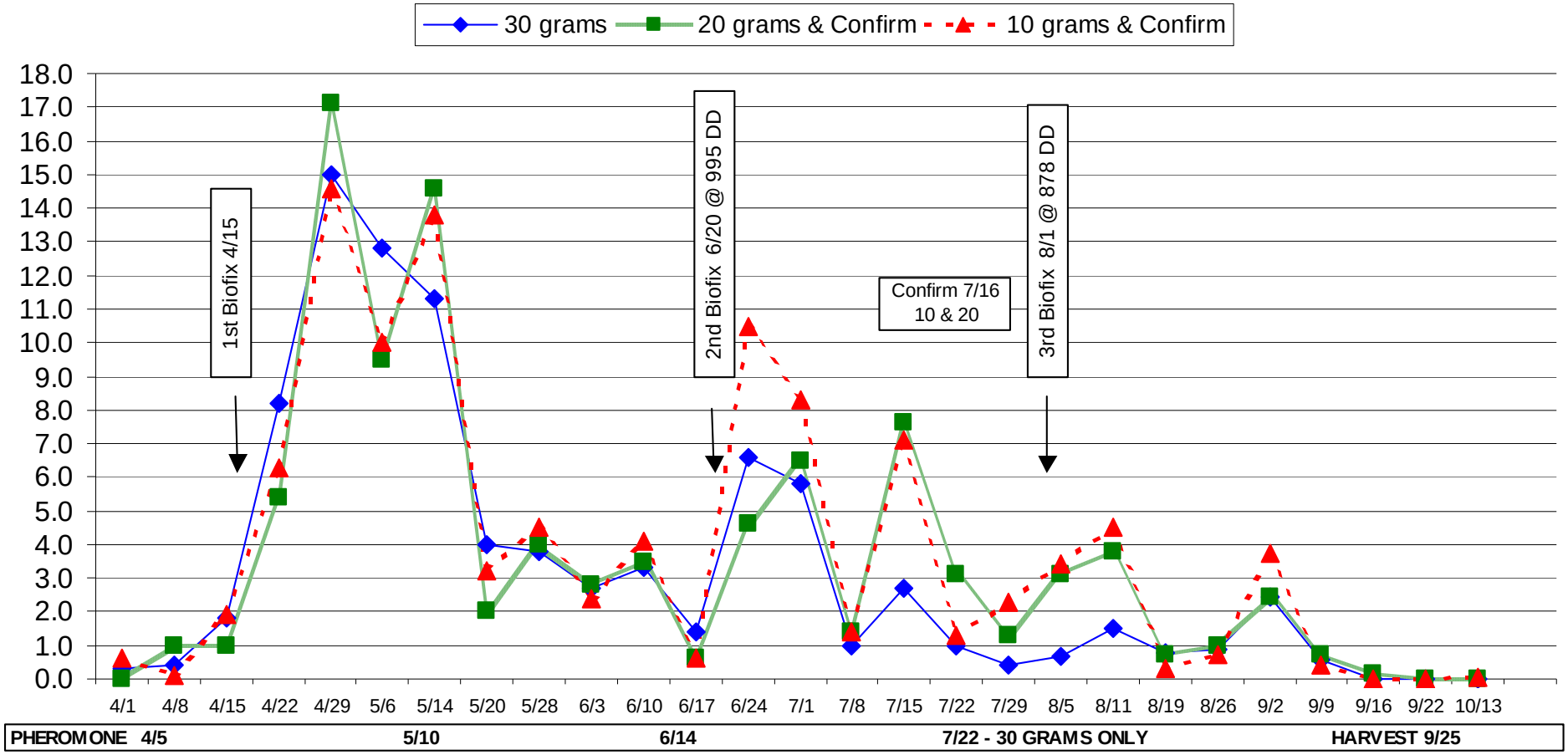
Year 4 Update

CODLING MOTH TREE CANOPY WALNUT DAMAGE EVALUATION AND HARVEST EVALUATION FOR TEHAMA COUNTY SPRAYABLE PHEROMONE TREATMENTS

Treatment	Total Dropped Walnuts	Canopy Count Evaluation (%)			Harvest Worm Damage (percent)	
		6/21	7/12	8/2	CM	NOW
30 grams ai/ac (4 pheromone sprays)	18.93 ab	1.23 a	2.40 a	2.10 a	.06	4.60 a
20 grams ai/ac (3 pheromone + 1 confirm spray)	24.26 a	2.35 a	2.93 a	2.61 a	.06	6.60 a
10 grams ai/ac (3 pheromone + 1 confirm spray)	11.26 b	1.26 a	2.13 a	2.85 a	.06	3.86 a
Control	9.60 b	1.56 a	1.00 a	1.42 a	.0	5.06 a

Figure 3. Canopy counts and harvest evaluation for the sprayable pheromone treatments. Canopy counts represent percent damage for five tree subplots. Harvest worm evaluation represents percent damage from 500 walnuts per subplot. Numbers followed by the same letter are not significantly different at the 5% level. Note, data are taken from subplots within large treated areas and not true statistical replicates.

TEHAMA COUNTY - REPANICH WPMA 2002
DA CM TRAP CATCHES
Buchner and Gilles
MOTHS PER NIGHT



PHEROMONE TRAP CATCHES – MONTHLY TOTALS

Plot	Trap	April	May	June	July	Aug	Sept	Oct
30 gram ai/ac	DA high	90	114	54	29	21	2	0
	10x high	21	2	4	5	1	1	0
	1x high	5	5	1	1	2	0	0
20 gram ai/ac	DA high	86	109	49	57	36	3	0
	10x high	13	2	2	7	22	1	0
	1x high	4	1	1	5	22	1	0
10 gram ai/ac	DA high	81	114	72	56	33	5	1
	10x high	11	1	1	7	10	2	0
	1x high	3	4	4	18	21	1	1
Control	DA high	115	139	80	45	63	4	0
	10x high	18	39	31	41	20	3	0
	1x high	22	10	7	59	17	1	0

Figure 1. Codling moth trap catches per month per trap for DA, 10x and 1x traps all high in the tree canopy. Approximate height is 15-20 feet.

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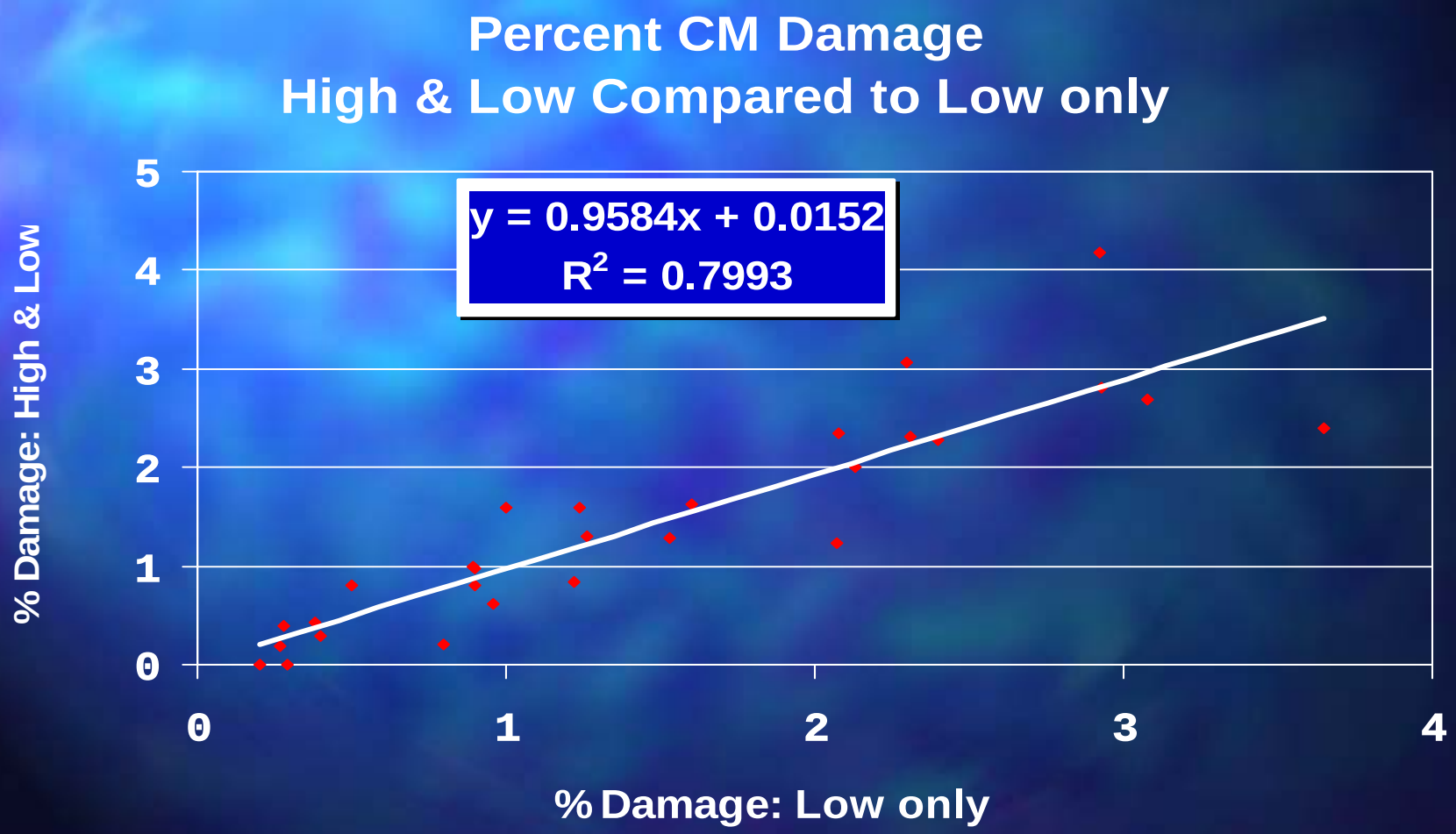
Walnut PMA 2002
Percent CM Damage at Harvest

Site	**Suterra** Checkmate @10g/ac	**Suterra** Checkmate @20g/ac	**Suterra** Checkmate @30g/ac	Untreated Check
Yuba 1[1]	1.2	2.1	2.1	1.2
Butte[2]	1.3	2.2	1.8	3
Tehama 1[3]	0.07	0.07	0.07	0.0
SJ 1	1.6	2.5	0.5	4.7
SJ 2	4.7	4.5	5.2	8.3
Tulare	0.0	0.0	0.0	0.2
Average	1.5	1.9	1.6	2.9
St. Dev.	1.71	1.69	1.97	3.19

* 3-M product rates varied by site
[1] 10g, 20g, 3-M plots supplemented with Lorsban, 8/15/02
[2] 10g, 20g, 3-M plots supplemented with Lorsban, 8/8/02
[3] 10g and 20g plots supplemented with Confirm, 7/16/02

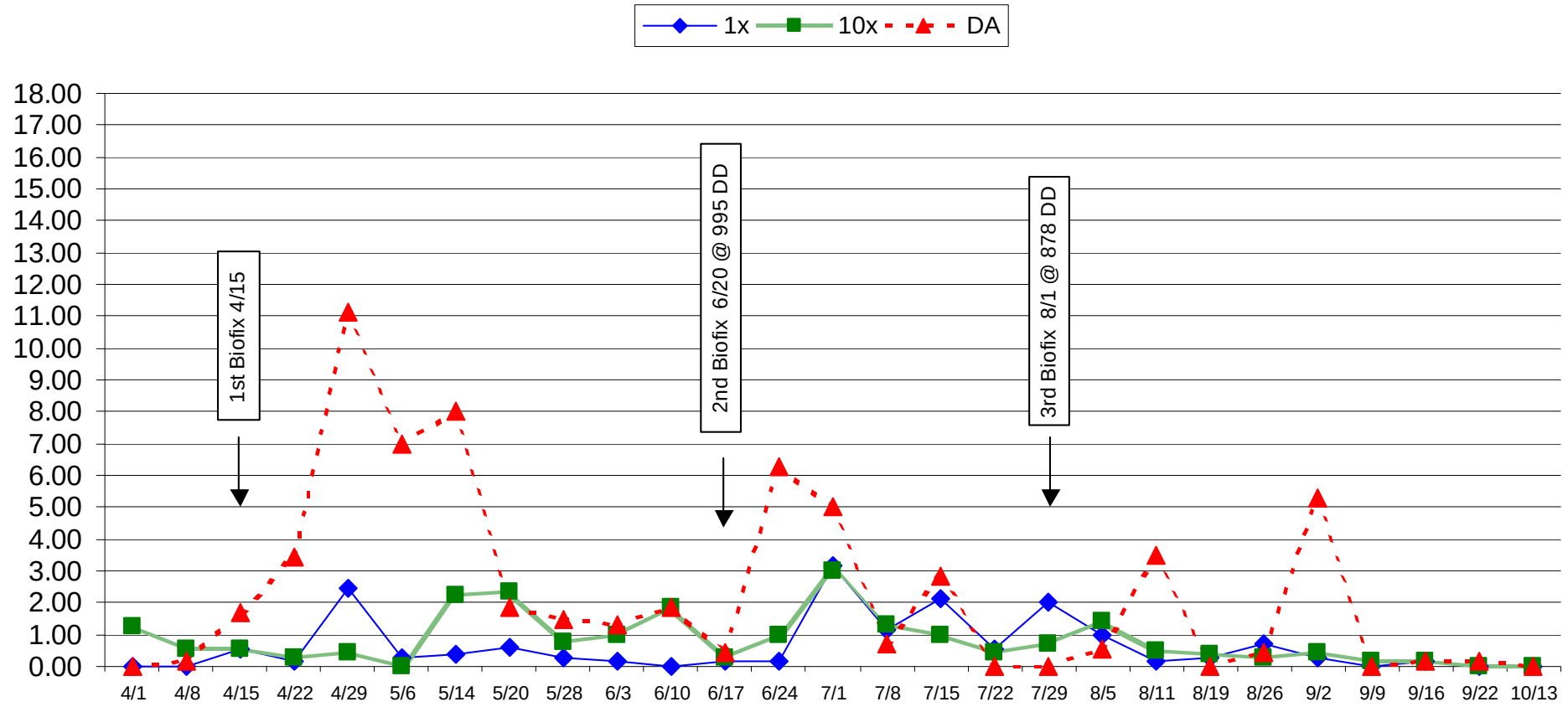
Walnut PMA 2002



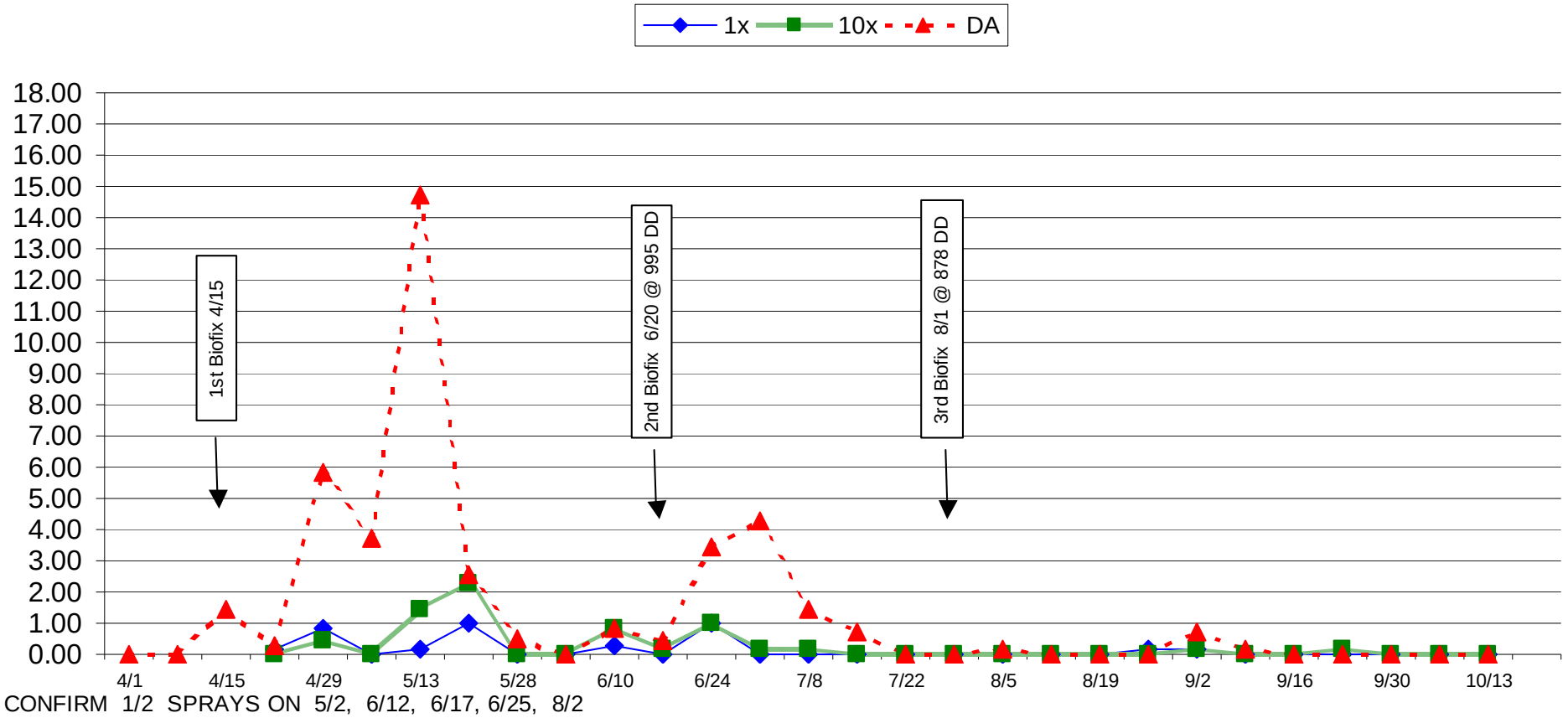
Using Sprayable Pheromone for Codling Moth Mating Disruption

- Knowledge is improving but we still have a lot to learn
- Stand alone pheromone programs are risky
- How to stay out of trouble when using sprayable pheromone
  1) Need DA lures to track moth activity
  2) Pheromone trap catches suggest failure
  3) CM damage in dropped walnuts
  4) Canopy counts for moth damage
  5) Follow Degree Days

TEHAMA COUNTY - REPANICH 2002 - UNTREATED
LURE COMPARISON
Buchner and Gilles
MOTHS PER NIGHT



TEHAMA COUNTY - CONE GROVE 2002 - TREATED
LURE COMPARISON
Buchner and Gilles
MOTHS PER NIGHT



CONFIRM 1/2 SPRAYS ON 5/2, 6/12, 6/17, 6/25, 8/2

WALNUT BLIGHT

Richard P. Buchner, William H. Olson,
Jim Adaskaveg, Steve Lindow,
Carolyn Pickel, Cyndi K. Gilles
and Jed Walton

EFFICACY OF SERENADE FOR WALNUT BLIGHT CONTROL – TEHAMA COUNTY

Treatment	% Blight	Phytotoxicity[2] Leaf	Nut
1. Kocide 2000 + Manex	.36 a	1	1
2. Kocide 2000	1.04 a	1	1
3. Seranade + Kocide 2000	1.04 a	1	1
4. Manex	.68 a	1	1
5. Untreated Control	.84 a	1	1

Table 4. Performance of Seranade plus copper for walnut blight control. Application by handgun at 400 gpa.

[1]Numbers followed by the same letter are not significantly different at the 5% level.

[2]Phytotoxicity was visually rated using a 1-5 scale. A rating of 1 represents no observable phytotoxicity. A rating of 5 represents severe phytotoxicity.

PERFORMANCE OF NEW COPPER FORMULATIONS FOR WALNUT BLIGHT CONTROL

Treatment	% Blight[1]	Phytoxicity[2] Leaf	Nut
1. Kocide 2000 + Manex	.36 a	1	1
2. GX-306 + Manex	.74 a	1	1
3. Kocide 101 + Manex	.23 a	1	1
4. GX-435 + Manex	0.00 a	1	1
5. GX-569 + Manex	.24 a	1	1
6. GX-569 + Manex	1.06 a	1	1
7. Kocide 2000	1.04 a	1	1
8. Manex	.64 a	1	1
9. Untreated Control	.84 a	1	1

Table 2. Applications at handgun 400 gpa.

[1]Numbers followed by the same letter are not significantly different at the 5% level.

[2]Phytotoxicity was visually rated using a 1-5 scale. A rating of 1 represents no observable phytotoxicity.

EFFICACY OF DBNPA AND BIOACUMAN FOR WALNUT BLIGHT CONTROL – TEHAMA COUNTY

Treatment	% Blight	Phytotoxicity[2] Leaf	Nut
1. Kocide 2000 + Manex	.36 a	1	1
2. Kocide 2000	1.04 a	1	1
3. DBNPA #1 + surfactant	.44 a	1	1
4. DBNPA #2 + surfactant	.45 a	1	1
5. DBNPA #3 + surfactant	.63 a	1	1
6. Bioacuman	.68 a	5	1
7. Untreated Control	.84 a	1	1

Table 3. Performance of DBNPA and Bioacuman (new liquid copper formulation) for walnut blight control. Applications by handgun at 400 gpa.

[1]Numbers followed by the same letter are not significantly different at the 5% level.

[2]Phytotoxicity was visually rated using a 1-5 scale. A rating of 1 represents no observable phytotoxicity. A rating of 5 represents severe phytotoxicity.

EVALUATE THE EFFICACY OF SPRAYS BASED UPON THE TEMPERATURE THRESHOLD PREDICTIVE MODEL DEVELOPED BY ADASKAVEG, ET. AL. – TEHAMA COUNTY

	Research Spray	Grower Spray	Xanthocast Spray	Erradicant Spray	Untreated Control
	4/6	3/28	–	3/29	–
	4/12	4/1	4/12	–	–
	4/25	4/10	–	–	–
	5/3	4/20	5/3	–	–
	5/13	4/29	–	–	–
	5/22	5/1	5/17	–	–
# sprays	6	6 (half)	3	1	0
% blight	.36 a	.54 a	.88 a	.77 a	.84 a

Table 6. Xanthocast spray timing compared to a Research, Grower and Erradicant strategy. The grower treatment was applied by air blast at 100 gpa. The others were by handgun at 400 gpa. Numbers followed by the same letter are not significantly different at the 5% level.

New Materials Evaluated for Control of Walnut Blight in 2002

Jim Adaskaveg, Richard Buchner and Cyndi Gilles

Product	Efficacy	A.I.	Remarks
Cuprofix-DF	++++	Cu	Excellent - Continue evaluations
NuCop	+++	Cu	Effective - Continue evaluations
Axenohl	+	Cu-Ag	Register-able?
Bioacumen	++++	Cu-Pectin	Phytotoxic-Cancelled
DBNPA	+++	Biocide	Very Good - Continue evaluations
Zerotol	+++	Acidified hydrogen peroxide	Very Good - Continue evaluations
Serenade Organic	++	Biocontrol	Variable - Continue evaluations
Starner	++	Antibiotic	Cancelled by registrant

Walnut Blight Control Summary

- All copper products are about the same.
- The addition of Manex improves copper efficacy.
- Surfactants have not improved blight spray efficacy
- Follow label rates.
- Critical time is early bloom to late May.
- Effective copper residue is roughly 7 days.
- Under dry conditions treatment intervals can be “stretched.”
- “Erradicant” or population reduction spray is untested.
- Xanthocast is available from Fieldwise.com