



Walnut Husk Fly Management



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Trap Placement

- Crucial when monitoring low population
- Influences how well traps catch flies
- Areas with previous damage “hot spots”
- Upper 1/3 of canopy on north side
- Cool, damp, shaded areas are preferred
- Black walnut trees are a good location



Trap Numbers

- Hot spots
- Small orchards at least 3 traps
- 30 to 100 acres – 1 trap per 10 acres
- Over 100 acres – 1 trap per 20 acres



Trap Limitations

- Traps are not good at predicting population size or damage potential
- No numerical treatment thresholds are available
- Traps will catch females with eggs allowing you to follow egg laying

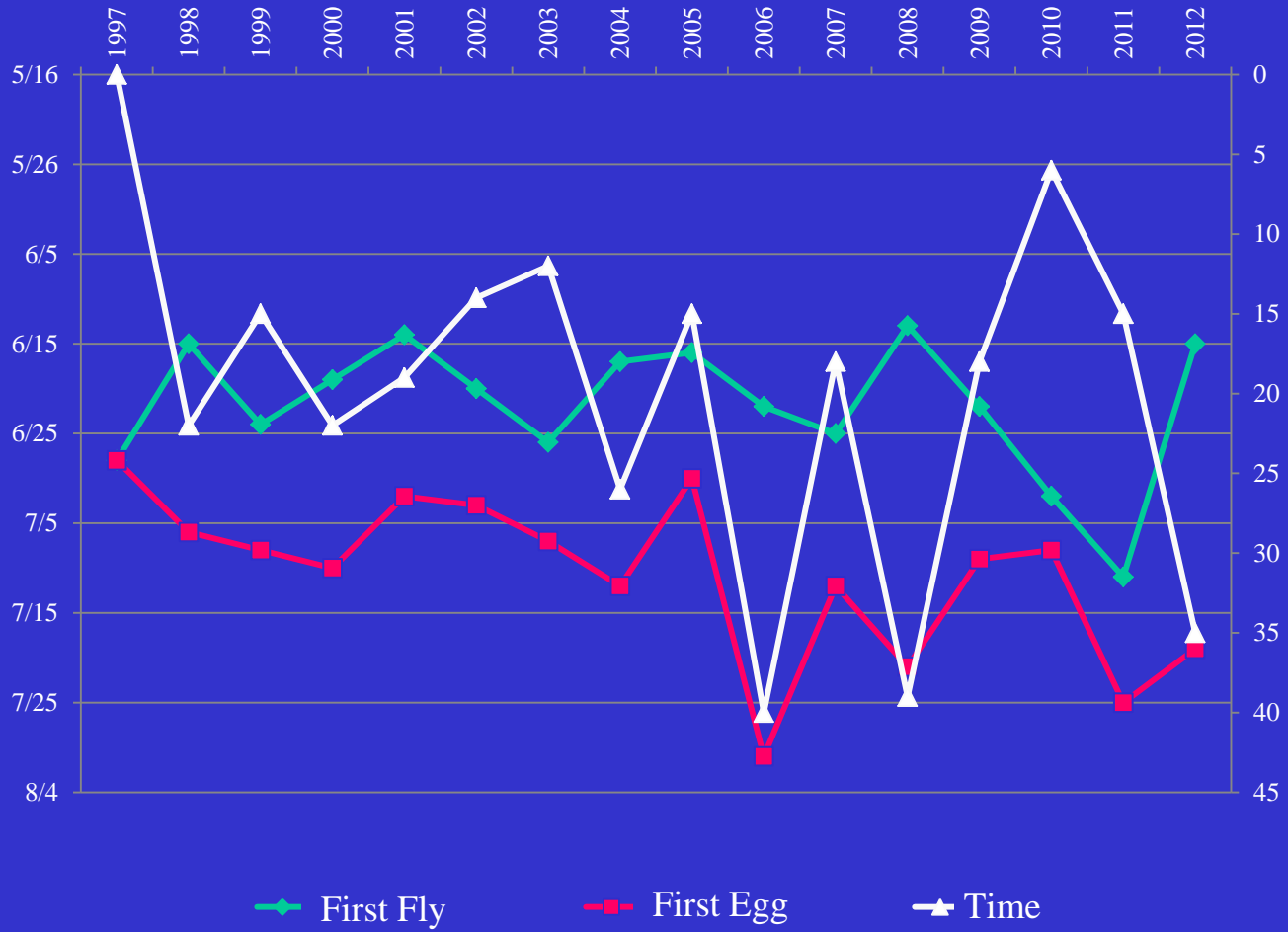


16 Year WHF Behavior for the Dairyville Area

Buchner and Gilles

Year	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
First Husk Fly caught	6/28	6/15	6/24	6/19	6/14	6/20	6/26	6/17	6/16	6/22	6/25	6/13	6/22	7/2	7/11	6/15
First Female w/ Eggs	6/28	7/6	7/8	7/10	7/2	7/3	7/7	7/12	6/30	7/31	7/12 gushy	7/21 gushy	7/9	? Spray on 7/8	7/25	7/19
# of Sprays	3	2	3	2	2	4	5	3	4	2	3	4	5	5	4	5
Spray Dates in June	6/29															
Spray Dates in July		7/10	7/8	7/11	7/2	7/3 7/13	7/19	7/12	7/2 7/25		7/15	7/20	7/13 7/29	7/8 7/28	7/26	7/20
Spray Dates in August	8/17		8/8	8/16	8/19	8/3 8/28	8/8 8/27	8/2	8/17	8/1	8/7 8/27	8/10 8/20 8/30	8/11 8/25	8/24	8/15 8/26	8/4 8/13 8/29
Spray Dates in September	9/2	9/15	9/4				9/9 9/16	9/4	9/2	9/2			9/12	9/1 9/14	9/16	9/11

Date of Husk fly caught



Days between first fly and first eggs



Trap Improvement

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- Trap comparisons: Trécé and Alpha Scents
- Bait Comparisons:
 - Ammonium carbonate v. bicarbonate
 - GL alcohol & caryophyllene
 - Commercial lures: Trécé and Alpha Scents
- Trap Height





Experimental Design

- 10 trap-lure combinations were replicated 4 times in three orchards
 - Rio Oso, (Sutter Co.), Linden (San Joaquin Co.), Hollister (San Benito Co.)
- Traps hung in top 5 feet of canopy or ~6 ft off ground
- Trap positions were rotated weekly to account for position effects
- 3-5 buffer trees between replicates; high-low traps of each treatment hung in adjacent trees

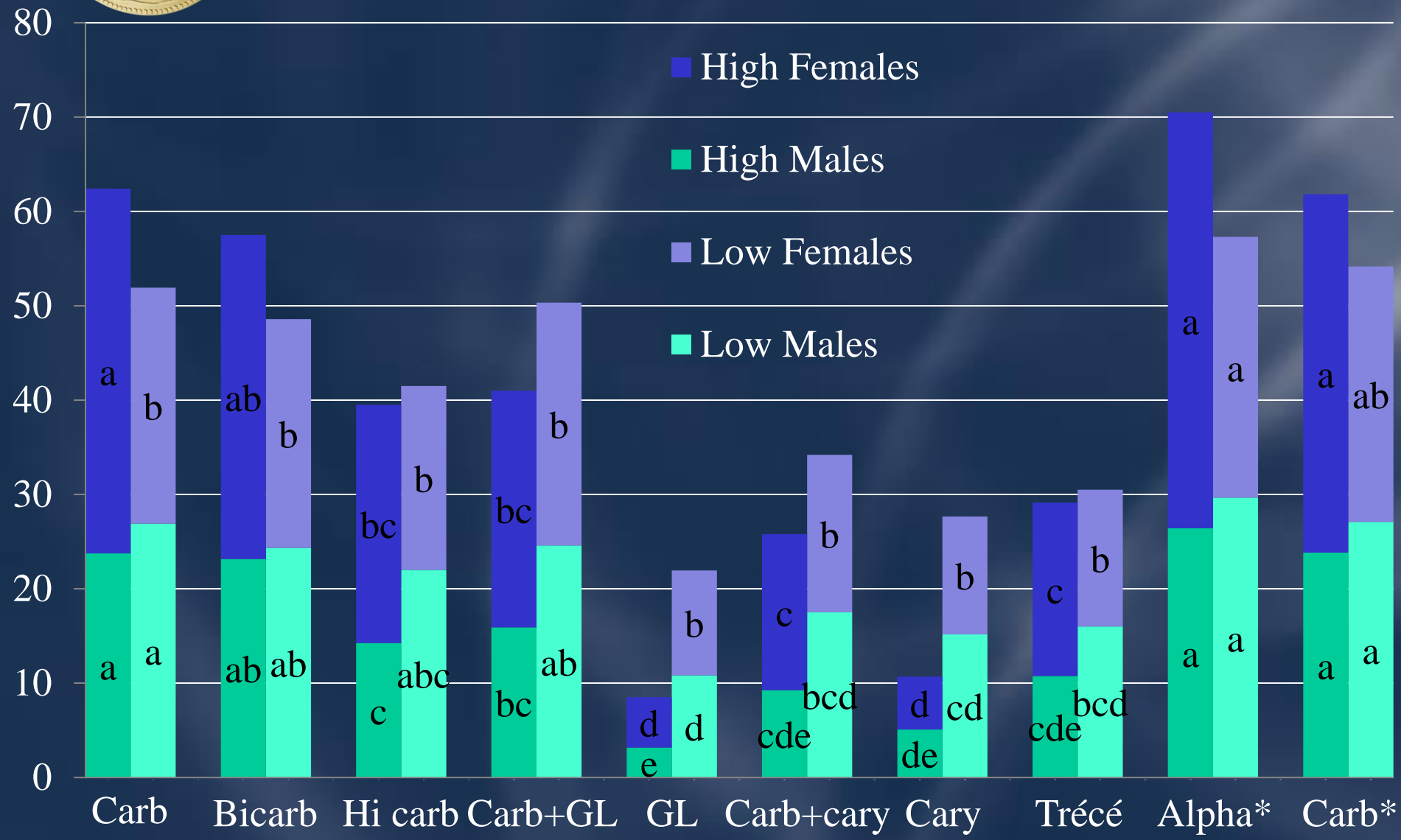


Trap & Lure Combinations

Trap	Lure	Abbr.
1. Trécé	Ammonium carbonate (3.9 g)	Carb
2. Trécé	Ammonium bicarbonate (3.9 g)	Bicarb
3. Trécé	Ammonium carbonate (3.9 g in a high output bag)	Hi carb
4. Trécé	Ammonium carbonate (3.9 g) + GL alcohol blend	Carb + GL
5. Trécé	GL alcohol blend	GL
6. Trécé	Ammonium carbonate (3.9 g) + Caryophyllene	Carb + cary
7. Trécé	Caryophyllene	Cary
8. Trécé	Trécé (2.2 g total)	Trécé
9. Alpha Scents	Alpha Scents (7.7 g total)	Alpha*
10. Alpha Scents	Ammonium carbonate (3.9 g)	Carb*



Mean # WHF per Trap Season Total – 3 Orchards





Trapping Conclusions

- No difference between trap types
- No apparent difference between Alpha Scents lure, ammonium carbonate and bicarbonate
- GL alcohol & caryophyllene decrease attractiveness of ammonium carbonate





Trapping Conclusions

- Mixed results with trap height efficacy:
 - More females caught in low traps
 - More males caught in high traps
 - Canopy conditions were a confounding factor





EVALUATION OF NEW AND EXISTING INSECTICIDES FOR THE CONTROL OF WALNUT HUSK FLY - 2012

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Procedures

- The test orchard was a block of 'Hartley' walnuts near Hollister, CA noted for high walnut husk fly (WHF) populations in the past.
- Foliar applications were applied utilizing a hand-gun orchard sprayer operating at 250 psi with a spray volume of 300 gal/acre.
- All treatments, including the treated check, had additions of Nu-Lure Insect Bait at 0.365% and Dyne-Amic at 0.0625% V/V.
- Each treatment was replicated four times with single tree replicates in a randomized complete block design.



Procedures (cont)

- The adult WHF population was monitored using two yellow un-baited apple maggot traps “super-charged” with ammonium carbonate dispensers.
- Traps were inspected weekly and the ammonium carbonate replaced
- Treatments were applied 24 July, 14 August and 31 August.
- WHF damage was evaluated 29 August by visual non-destructive examination of 100 nuts per treatment.
- At the beginning of husk-split on September 19, just prior to harvest, 250 nuts per replicate were evaluated for infestation. These were dissected to determine larval instar.

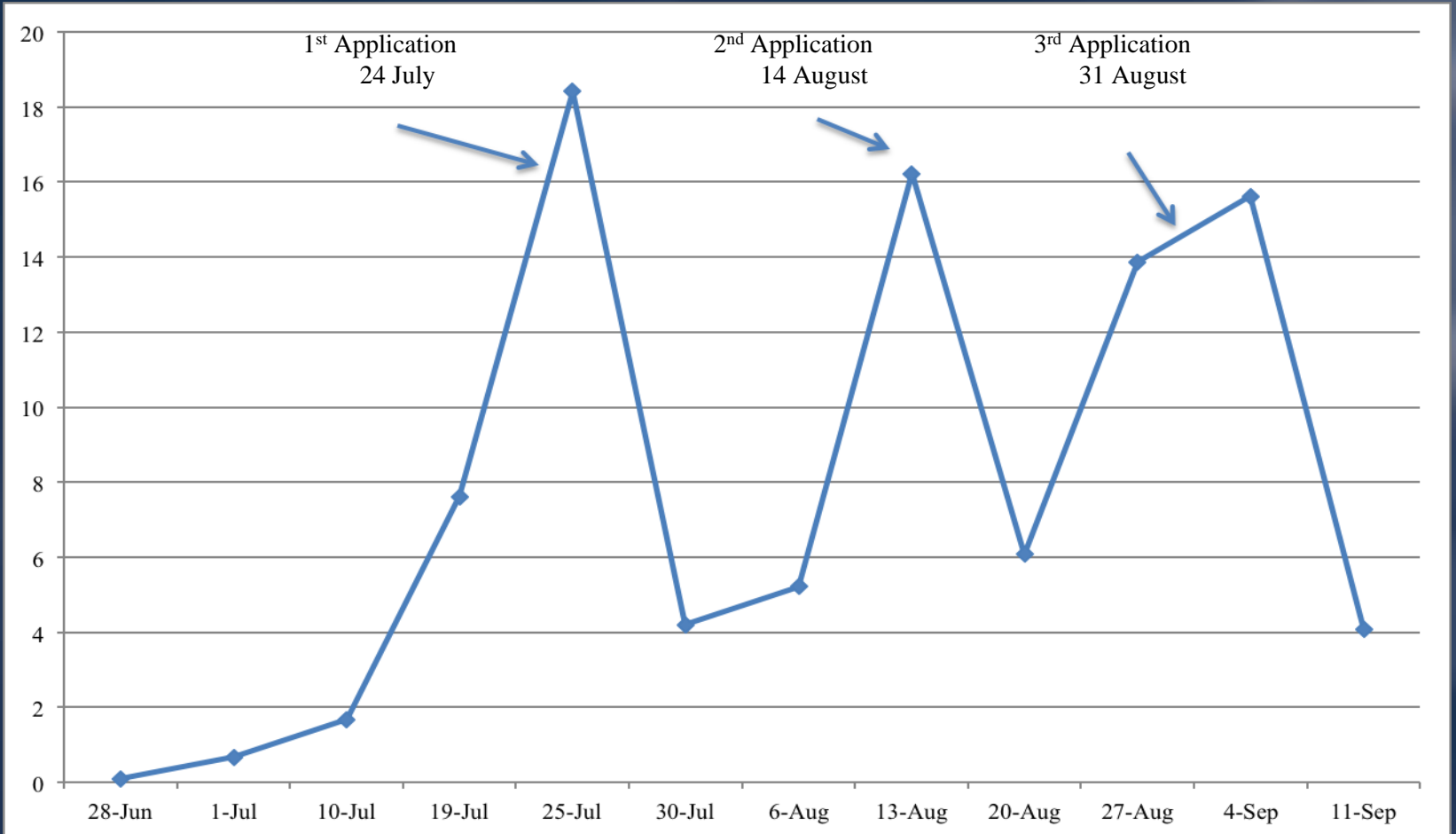


Materials

1. Danitol 2.4EC (21.3 fl oz/ac) fenpropathrin (Pyr)
+ Belay 2.13SC (3.0 fl oz/ac) clothianidin (Neo)
2. Belay 2.13SC (3.0 fl oz/ac) clothianidin (Neo)
3. Brigadier (12.8 fl oz/ac) bifenthrin (Pyr) + imidacloprid (Neo)
4. Triple Crown (10.3 fl oz/ac) zeta-cypermethrin (Pyr) + bifenthrin (Pyr) +
imidacloprid (Neo)
5. Assail 30SG (6.0 oz/ac) acetamiprid (Neo)
6. Assail 30 SG (4.0 oz/ac) acetamiprid (Neo)
7. Exirel 10SE (20.5 fl oz/ac) cyantraniliprole (anthranilic diamide)
8. Warrior II (2.56 fl oz/ac) lamda-cyhalothrin (Pyr)
9. Malathion 57% (48.0 fl oz/ac) malathion (OP)
10. Treated check



Fig. 1 Mean number of WHF captured per trap per day in Hollister, CA – 2012.





Infested Walnuts: 19 September

3rd Instar / Exits

1. Danitol + Belay	3.4	d
2. Belay	11.1	abc
3. Brigadier	4.5	cd
4. Triple Crown	7.7	bcd
5. Assail 6.0 fl oz rate	4.5	cd
6. Assail 4.0 fl oz rate	5.7	cd
7. Exirel	16.1	a
8. Warrior II	9.1	abcd
9. Malathion	9.6	abcd
10. Treated Check	14.0	ab



Conclusions

- Danitol + Belay, Brigadier, and Assail at both rates provided significantly better control than the treated check.
- Belay, Triple Crown, Warrior II and Malathion provided numerically better control than the treated check.
- Exirel was numerically higher than the treated check and statistically the same. Exirel does not appear to control WHF.
- It appears we started applications about a week late after some stings had occurred. This resulted in significantly better results from neonicotinoid treatments versus pyrethroid or organophosphate treatments. This was due to the mild systemic insecticidal effects of neonicotinoids on first instar WHF larvae.