

Chemical Control/New Products

CONTROL OF WALNUT HUSKFLY WITH A SPINOSAD PLUS BAIT (GF-120)

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Abstract: A trial was conducted to evaluate the efficacy of spinosad plus bait (GF-120) for control of walnut huskfly in walnuts. The trial was conducted in an orchard with an extremely large WHF population. The number of infested nuts was significantly reduced by spinosad plus bait compared to bait without spinosad or an untreated control. Adult flies were reduced by the spinosad plus bait treatment and the bait appears to be a powerful attractant to adult flies.

Methods and Materials

A study was conducted in a mature 'Payne' walnut orchard planted on a 22 ft x 22 ft (90 trees/acre) in Hollister, CA. Three treatments were replicated three times in a completely randomized design. The three treatments were: GF-120 Fruit Fly Bait, GF-120 Fruit Fly Bait blank (containing no spinosad) and an untreated control. Each replicate was 1/2 acre or larger in size. Treatments were applied with a CO₂ backpack sprayer using a D4 nozzle without a swirl plate, operating at 40 psi and delivering a pulse of 1/4 oz of the spray solution. The pulses of spray solution reached about 25-30 ft in height. Each tree received four pulses of spray solution. The GF-120 and GF-120 blank were diluted 1:4 with water and 100 oz/acre of finished spray volume was applied between 7 a.m. to 9:00 a.m. on 17 July, 6 August and 20 August. Adult walnut huskfly (WHF), *Rhagoletis completa*, was monitored with one Trécé AM trap placed in the center of each replicate. A small vial containing NH₄CO₃ as an attractant was attached to the center of each trap. The traps were placed in the orchard early on the morning of 17 July and inspected and replaced at weekly or more frequent intervals. Control was evaluated prior to harvest on 21 August by dissecting 100 nuts per replicate in the laboratory for stings (ovipositional punctures), larvae and larval exit sites.

Results and Discussion

The trial was conducted in an orchard with an extremely large WHF population. On the day of the first application, 17 July, over 200 flies were captured per trap within a few hours and the oviposition was observed in the orchard (Table 1). The untreated control had significantly higher trap captures of adult WHF compared to GF-120 while there was no significant difference between the GF-120 and the GF-120 blank. Also the untreated control and GF-120 blank had a significantly greater percent infested walnuts compared to GF-120 (Table 2). GF-120 blank had significantly greater number of nuts with larval exit compared to the untreated control and GF-120. This would indicate that the bait was a food source for the flies early in the season (July) and allowed for earlier egg development and oviposition. GF-120 appears to be a promising new reduced risk control measure for WHF.

Table 1. Mean number of WHF captured per trap per day at Hollister, CA – 2001

Time	Checked	Date	Mean no. WHF per trap per day		
			GF-120	Bait only	Untreated
3:00	p.m.	17-Jul*	276.3 a	243.0 a	356.3 a
2:00	p.m.	18-Jul	115.3 a	183.7 ab	194.0 b
2:00	p.m.	20-Jul	36.9 a	76.4 b	67.9 ab
1:00	p.m.	23-Jul	38.0 a	74.9 a	52.2 a
10:00	a.m.	25-Jul	34.5 a	62.4 a	107.4 a
4:00	p.m.	31-Jul	35.9 a	55.2 a	70.8 a
7:00	a.m.	6-Aug	36.7 a	50.0 a	52.1 a
1:00	p.m.	6-Aug*	21.8 a	69.7 ab	128.0 b
4:00	p.m.	7-Aug	21.0 a	127.7 ab	149.0 b
10:00	a.m.	14-Aug	9.0 a	20.3 ab	42.3 b
10:00	a.m.	20-Aug	28.8 a	43.7 a	85.6 b
3:00	p.m.	21-Aug	23.7 a	31.0 a	80.7 a
3:00	p.m.	27-Aug	7.0 a	10.1 ab	34.7 b
Total			684.9 a	1048.1 ab	1421.0 b

Means followed by the same letter within a row are not significantly different (Fisher's protected LSD, $P < 0.05$).

*Indicates that traps were up for less than 24 hours.

Table 2. Mean percent WHF damage to walnuts at harvest – Hollister, CA - 2001

Treatment	Mean percent infested nuts	Mean no. stings	Mean no. larvae			Mean no. exit
			1st	2nd	3rd	
GF-120	55.3a	7.0a	11.0a	10.0a	12.0a	15.3a
Bait only	93.0b	6.7a	18.7a	17.7a	20.3a	29.7b
Untreated	93.3b	2.0b	24.0a	37.3b	20.0a	10.0a

Means followed by the same letter within a column are not significantly different (Fisher's protected LSD, $P < 0.05$).