Section VI.
Soil Arthropods

BASAL SPRAY APPLICATIONS TO CONTROL BLACK VINE WEEVIL ON RED RASPBERRY, 1996

L. K. Tanigoshi, J. D. Chamberlain & T. A. Murray
Washington State University
Vancouver Research & Extension Center
Vancouver, WA 98665-9752
360/576-6030
tanigosh@wsu.edu

The main purpose for the red raspberry chemical trials was to selectively reduce the enormous biotic potential of black vine weevil (BVW), *Otiorhynchus sulcatus,* with a single ***basally applied*** adulticide. This tactic would provide a more rational method to exploit the weevil's propensity to voraciously feed on foliage for several weeks before they begin laying their eggs in the soil. By carefully timing the basal spray to coincide with a predetermined "biofix" or average degree-day accumulation for ovarian egg maturation, we hope to chemically control them as they migrate between emerging foliage and the soil. These maturing females are capable of produce between 400 to over 1000 eggs before harvest. Early control of the parental population will significantly reduce subterranean root damage by their larval progeny during the growing season and again in early spring. Since the first reported feeding of the yellow spider mite, *Eotetranychus carpini borealis,* on northwestern Washington grown red raspberry in 1992, populations of this phytophage often exceed those of the twospotted spider mite, *Tetranychus urticae.* By selectively applying adult weevilcides as a basal spray, we will minimize honey bee mortality while conserving spider mite natural enemies such as the phytoseiid mite predators, *Neoseiulus fallacis* and *Typhlodromus arboreus,* and the spider mite destroyed, *Stethorus punctum picipes*.

Trial 1: Trial were conducted in a mature field of 'Chilliwack' red raspberries in Vancouver, WA. Treatments were replicated 4 times on 9 x 30 ft plots in a RCB design. Sprays were applied on 18 June along the lower 3 feet of canes with a 2 ft hand-held boom sprayer equipped with 3 hollow cone D4-45 TeeJet nozzles at 150 psi that delivered 180 gpa at 2 mph. Field counts were made on 21 and 25 June beginning at 10 PM by placing 25 ft long x 4 ft wide strips of white linen sheet under each side of the row and simultaneouly shaking the top training wire vigorously 10 times at 2 locations, one-quarter of the way in from each end of both sheets.

There was no significantly difference between treatments at 3 days after treatment (DAT). Brigade and fipronyl were significantly better than the untreated check at 7 DAT while Alert and Guthion were not (Table 1).

Table 1.

Treatment	Rate lb (AI)/ acre	Mean weevil/plot 3 DAT	7 DAT
Alert 2SC	0.32	11.5a	5.3abc
Fipronyl 80WG	0.10	6.0a	2.3bc
Brigade 10WP	0.10	2.2a	0.5c
Guthion 50WP	0.50	6.5a	7.0ab
Check	n/a	14.0a	11.0a

Means within columns followed by the same letter are not significantly different ($P < 0.05$; LSD).

Trial 2: Four insecticide treatments were evaluated for control of preovipositional adult BVW in two mature fields of 'Willamette' red raspberries in Lynden, WA. Treatments were replicated 4 times on 9 x 30 ft plots arranged in a RCB design. Sprays were applied on 11 June along the lower 3 feet of canes with a 2 ft hand-held boom sprayer (100 psi) equipped with 3 hollow cone D4-45 TeeJet nozzles which delivered 100 gpa at 2 mph. Field counts were made on 18 and 25 June beginning at 10 PM by placing 25 ft long x 4 ft wide strips of white linen sheet under each side of the row and simultaneously shaking the top training wire vigorously 10 times at 2 locations, one-quarter of the way in from each end of both sheets.

All of the treatments significantly reduced BVW populations at Farm M. Guthion was not significantly different from the untreated check at 3 DAT for large field populations at Farm D. By 14 DAT Alert 2SC and fipronyl 80WG performed as well as the standard Brigade 10WP treament. Though significant, Guthion 50WP was marginal at 14 DAT (Table 2).

Table 2 (Farm M)

Treatment/form.	Rate lb (AI)/ acre	Mean weevil/plot 7 DAT	14 DAT
Alert 2SC	0.32	5.3b	3.5b
Fipronyl 80WG	0.10	6.3b	4.3b
Brigade 10WP	0.10	0.8b	0.8b
Guthion 50WP	0.50	11.8b	10.5b
Check	n/a	59.8a	60.0a

Means within columns followed by the same letter are not significantly different ($P < 0.05$; LSD).

Farm D	Rate lb (AI)/	Mean weevil/plot	
Treatment/form.	acre	7 DAT	14 DAT
Alert 2SC	0.32	8.3b	4.0b
Fipronyl 80WG	0.10	2.0b	2.3b
Brigade 10WP	0.10	2.3b	1.5b
Guthion 50WP	0.50	32.5ab	18.0b
Check	n/a	80.3a	102.8a

Means within columns followed by the same letter are not significantly different ($P < 0.05$; LSD).