Section VIII
Mites & Sap-Sucking Pests

INSECTICIDE EFFICACY FOR STRAWBERRY AND RASPBERRY APHIDS

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A greenhouse infestation of strawberry aphid, *Chaetosiphon fragaefolii*, on 'Totem' strawberries was sprayed with several experimental aphicides on 15 July. These were Actara (thiamethoxam), Assail (acetamiprid), Fulfill (pymetrozine), Turbine (flonicamid) compared with Guthion and recently registered Admire/Provado (imidacloprid). Individual potted plants were arranged in a randomized complete block design replicated ten times with nine treatments. These infested plants were individually treated with a Hudson hand sprayer to run-off. Samples consisted of three randomly picked leaflets per plant.

The recent registration of the neonicotinoid imidacloprid (Admire, Provado) is a significant addition to our arsenal of older and at risk insecticides. Compared with the untreated checks, all of the designated aphicides provided significant strawberry aphid knockdown after 3 days posttreatment (Table 1). The neural inhibition of feeding behavior by Fulfill occurs within a few hours; however, the absence of aphid contaminating life stages on strawberry may require several days compared with traditional nerve disrupting aphicides. The prospects for additional aphid active insecticides in strawberry are very good.

Table 1. 2003 Strawberry aphid trial

		Aphids/Leaflet			
Treatment	lb (AI)/acre	1DAT	2DAT	3DAT	6DAT
Actara 25WG	0.05	1.7b	0.0b	0.2b	0.1b
Admire 2F	0.1	0.2b	0.1b	0.0b	0.0b
Assail 70WP	0.04	1.3b	0.0b	0.0b	2.0b
Fulfill 50WG	0.09	14.3b	1.4b	0.8b	0.2b
Fulfill 50WG	0.13	7.8b	2.8b	0.3b	0.4b
Turbine 50WG	0.04	2.9b	1.6b	0.0b	0.0b
Turbine 50WG	0.1	5.2b	3.9b	1.0b	0.2b
Guthion 50WP	0.5	0.4b	0.0b	0.1b	0.0b
Untreated Check		41.7a	45.2a	55.2a	38.3a

Mean within columns followed by the same letter are not significantly different (Tukey HSD test, $P < 0.05$).

Late September, a population of the raspberry aphid, *Amphorophora agathonica* was collected at from red raspberry in Lynden, WA. Insecticides known to have activity for sucking insects were applied at recommended field rates to red raspberry terminal leaflets with a Precision Spray Tower. Ten wingless adults were then placed on the air-dried, treated leaflets and replicated 10 times for each treatment. Compared with the untreated checks, all treatments at both dates were significantly different at the 5% level through 4 days posttreatment (Table 2). At 2 days after treatment, the standard Malathion along with the three related neonicotinoids (i.e., Provado (registered on strawberry, Actara, Assail) provided excellent aphid knockdown. By the 3rd to 4th day, all compounds provided economic raspberry aphid control. The highly selective, systemic aphicide Fulfill affects aphids by paralyzing their sucking pump mechanism within a few hours. This unique mode of action results in their eventual death by starvation. This novel, reduced risk product is difficult to evaluate because the aphid may appear normal on red raspberry foliage but in reality has stopped feeding and is non-economic. As with spider mites, there are several excellent new aphicide chemistries that are registered for major crops and are pending registration through the EPA/IR-4 program.

Table 2. 2003 Raspberry Aphid Trial

Sprayed: Sept. 29, 2003

		Mean Mortality			
Treatment	lb (AI)/acre	1DAT	2DAT	3DAT	4DAT
Actara 25WG	0.05	0.6ab	0.9a	1.0ab	
Assail 70WP	0.04	0.6a	0.9a	1.0ab	
Provado 1.6F	0.1	0.8a	1.0a		
Malathion 8F	2pt/A	0.7a	1.0a		
Imidan 70 W	0.94	0.4bc	0.7b	0.8c	0.9b
Fulfill 50WG	0.07	0.3c	0.6b	0.8bc	0.9ab
Untreated Check		0.03d	0.06c	0.1d	0.2c

Mean within columns followed by the same letter are not significantly different (Tukey HSD test, $P< 0.05$).