

## **Section VIII Sap-sucking Insects**

### **WASHINGTON GREEN PEACH APHID TRIAL - 1998**

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#### **Materials and Methods**

**Test site:** The field site was near Eureka, Washington on the UAP Northwest research facility. The variety was Russet Burbank. The plots were planted on April 23 and were irrigated using an overhead center pivot.

**Plot Establishment:** Each plot was 19 (six rows) by 50 feet. The trial had 20 treatments with each having 4 replications.

**Test Substances:** The following unregistered compounds were tested: Pirimor (primicarb), Adage (thiamethoxam), Fulfill (pymetrozine) and GWN-1725. Agri-Mek (abamectin), Ecozin (azadirachtin) and Admire (imidacloprid), all registered compounds, were also tested. Temik (aldicarb) and Monitor (methamidophos) are the industry standards.

In addition to the 20 treatments for green peach aphid, the same trial had 20 treatments for Colorado potato beetle. In the case of Temik + Monitor, Monitor alone, Agri-Mek alone and selected other treatments, the test substances for both pest were the same, in other treatments different test substances were applied for each pest. Appendix 1 contains a complete list of test substances.

**Treatment Dates:** Application were made on the following dates: Temik was applied on April 23 at planting using a Gandy box applicator calibrated by Rhone-Poulenc personnel, two rates each of Admire and Adage were applied on May 21 at layby and all foliar treatments were applied on June 27. Applications made at planting were incorporated, applications at layby were sprayed on as a banded spray and incorporated by damming and diking, and the remaining applications were applied as a broadcast spray with a boom mounted on a tractor. The ground application system was equipped with 8003 nozzles. Treatments were applied at 30 psi and 31.25 gallons per acre.

A description of each treatment is as follows (most treatments were paired with another active ingredient for control of Colorado potato beetle, products listed multiple times were paired with differing beetle products.



## Results and Discussion

**Efficacy.** On June 25, Temik and both rates of application of Adage layby and Admire planted at layby were the only treatments that had less than one aphid per treatment (Table 1). The remaining treatments had more than one aphid per leaf. After the first application, Monitor, Pirimor and Fulfill provided significant control of aphid populations. Aphid populations remained low and by July 23 there was no significant difference in treatments. The aphid population did not increase to a sufficient number to allow a subsequent treatment.

Treatments containing combinations of products applied at planting and to the foliage, Temik+Monitor, Admire+Fulfill and Adage+Fulfill, provided excellent control of green peach aphid. It is likely that acceptable control for aphids could have been achieved with use of an at-plant treatment only during the growing season at this location due to the low and short duration of aphid populations. Application of Monitor alone provided excellent control as well.

Fulfill was included at a single rate in four separate treatments. The only difference between these treatments was the materials used to control Colorado potato beetle. Products used to control CPB are not thought to influence aphid populations. In two Fulfill treatments, aphid numbers were reduced to a level numerically similar to the most effective treatments. In the other two treatments, aphid numbers did not decline as significantly, although in all cases the levels were not significantly different from the most effective treatments. Due to the sublethal effect of Fulfill on aphids, it is possible that these aphids were in the process of dying, but had not yet done so at the time of evaluations. The results from the grow out trial will provide the most effective evaluation of the Fulfill treatments.

Pirimor was included in four treatments, similar to Fulfill. In three of four treatments, it provided good control of green peach aphid. In the fourth treatment aphid numbers did not decline as significantly, although in all four treatments the levels were not significantly different from the most effective treatments. Agri-Mek provided poor control at the first evaluation and moderate control by the second evaluation. GWN-1725 and Ecozin did not provide appreciable control at either evaluation.

**Yield.** Care must be given not to place undue significance on yield. Yield results are often of questionable value in small plot insect efficacy trials. Complicating these results is that separate Colorado potato beetle and aphid insecticides were applied to many of the same plots. A product that provided a high level of efficacy for aphids, may have been paired with a product that provided poor control of Colorado potato beetle. Also, Newleaf potato provided excellent control, although not perfect control, of Colorado potato beetle; however, the plants did not seem as vigorous as other plots and appeared to senesce before other plots. Treatment 6, NewLeaf and Pirimor, had the lowest yield of all treatments even though the aphid control material was very effective. It is likely that the low yield is due to the influence of NewLeaf rather than Pirimor.

It is interesting to note that Treatment 4, Adage + Fulfill had the highest yield.



**Table 1.** Total number of wingless-aphid on potatoes (treatment date was June 27.)

Treatments	Rate ai (lb)/a	Pre-application		Post-application	
		06/22	06/25	06/29	07/01
1. Untreated		11.8 abcde	21.3 a	12.3 a	4.3 abcd
2. Temik +Monitor	2.25 + 0.25	3.3 def	0.0 e	0.0 d	0.0 d
3. Admire + Fulfill	0.22 + 0.086	0.5 f	3.5 cde	0.3 d	0.3 cd
4. Adage+ Fulfill	0.05 + 0.086	0.3 f	0.0 e	0.3 d	0.3 cd
5. Monitor	0.25	9.0 abcdef	11.3 bc	0.0 d	0.8 bcd
6. Pirimor	0.125	13.8 abc	12.5 abc	0.8 d	0.3 cd
7. Fulfill	0.086	16.0 a	9.8 bcde	3.0 cd	1.5 abcd
8. Agri-Mek	0.15	6.0 bcdef	10.8 bc	4.5 bcd	2.0 abc
9. Fulfill	0.086	12.5 abcd	12.3 abc	7.0 bc	0.3 cd
10. Pirimor	0.33	15.3 ab	15.5 ab	0.8 d	0.3 cd
11. Fulfill	0.086	11.8 abcde	10.8 bcd	4.5 bcd	0.3 cd
12. Pirimor	0.33	9.5 abcdef	9.0 bcde	1.0 d	0.3 cd
13. Adage + Fulfill	0.10 + 0.086	0.8 f	0.8 de	0.0 d	0.0 cd
14. GWN-1725	0.025	7.5 abcdef	9.5 bcde	4.8 bcd	1.3 abcd
15. Ecozin	0.165	8.8 abcdef	9.5 bcde	6.8 bc	1.5 abcd
16. Ecozin	0.33	10.8 abcde	13.8 ab	9.3 ab	2.3 ab
17. GWN-1725	0.012	8.8 abcdef	11.3 bc	9.8 ab	3.0 a
18. Fulfill	0.086	4.5 cdef	11.5 bc	6.5 bc	1.3 abcd
19. Pirimor	0.33	6.8 abcdef	9.3 bcde	0.3 d	0.0 d
20. Admire + Fulfill	0.31 + 0.086	2.5 ef	0.8 de	1.0 d	1.5 abcd

Means followed by same letter do not significantly differ ( $P=0.05$ ), Duncan's NMRT



**Table 2.** Total yield (lbs.) of potatoes in 2 ten-foot rows and in tons per acre.

Treatments (GPA)	Rate ai (lb)/a	Treatments(CPB)	Rate ai (lb)/a	Culls	4-10 oz	Over 10 oz	Total Yield (Tons per Acre)
1. Untreated		Untreated		6.37 bc	24.46 b	6.71 b	37.55 bc (14.44)
2. Temik + Monitor	2.25 + 0.5	Temik + Monitor	2.25+0.5	15.61 a	31.60 ab	12.44 ab	59.65 ab (22.95)
3. Admire + Fulfill	0.22 + 0.086	Admire + Success	0.22 + 0.047	12.93 ab	22.46 b	10.11 ab	45.50 abc (17.50)
4. Adage + Fulfill	0.10 + 0.086	Adage + Pounce	0.5 + 0.2	8.10 abc	41.67 a	14.29 ab	64.06 a (24.64)
5. Monitor	0.5	Monitor	0.5	9.10 abc	22.38 b	18.28 ab	49.75 abc (19.44)
6. Pirimor	0.125	NewLeaf		3.76 c	21.16 b	8.65 ab	33.58 c (12.92)
7. Fulfill	0.086	NewLeaf		9.70 abc	26.58 ab	9.13 ab	45.40 abc (17.47)
8. Agri-Mek	0.15	Agri-Mek	0.15	15.19 a	33.69 ab	10.15 ab	59.03 ab (22.71)
9. Fulfill	0.086	Agri-Mek	0.075	10.09 abc	21.13 b	6.15 b	37.36 bc (14.38)
10. Pirimor	0.33	Agri-Mek	0.15	8.28 abc	30.03 ab	14.76 ab	53.06 abc (20.42)
11. Fulfill	0.086	Success	0.047	7.30 abc	23.63 b	18.93 ab	49.85 abc (19.18)
12. Pirimor	0.33	Success	0.094	8.89 abc	34.14 ab	15.78 ab	58.80 ab (22.63)
13. Adage+ Fulfill	0.1+0.086	Adage + Pounce	0.1 + 0.2	11.30 abc	24.98 b	12.18 ab	48.45 abc (18.64)
14. GWN-1725	0.025	Imidan	0.933	9.63 abc	30.26 ab	11.54 ab	51.43 abc (19.79)
15. Ecozin	0.165	Ecozin	0.165	9.23 abc	24.35 b	12.53 ab	46.10 abc (17.74)
16. Ecozin	0.33	Ecozin	0.33	7.16 abc	30.83 ab	10.48 ab	48.46 abc (18.65)
17. GWN-1725	0.012	Baythroid	0.04	9.03 abc	29.00 ab	10.58 ab	48.60 abc (18.70)
18. Fulfill	0.086	Agenda	0.025	8.91 abc	27.28 ab	20.73 a	56.93 abc (21.91)
19. Pirimor	0.33	Agenda	0.05	8.75 abc	31.58 ab	11.34 ab	51.66 abc (19.88)
20. Admire + Fulfill	0.31 + 0.086	Admire + Success	0.31 + 0.094	12.60 ab	27.61 ab	8.76 ab	48.97 abc (18.84)

Means followed by same letter do not significantly differ (P=.05), Duncan's NMRT)



**Appendix 1:** Environmental conditions on treatment dates

Date	Wind Speed	Temperature	Relative Humidity
April 23	9.2 MPH	61.0 F	
May 21	11.0 MPH	57.1 F	
June 27	5.3 MPH	66.8 F	