

Section VIII.  
Mites & Sap-Sucking Pests

CONTROL OF MELON APHID, *Aphis gossypii*  
IN VEGETABLE SPAGHETTI SQUASH – 2002

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Products	Active Ingredient	Timing	Formulation	G ai/ha
1. Fulfill	Pymetrozine	Foliar	50 WG	96
2. Fulfill	Pymetrozine	Foliar	50 WG	140
3. Actara	Thiamethoxam	Foliar	25 WG	53
4. Platinum + Fulfill	Thiamethoxam	Soil	2 SC	140
5. Platinum + Fulfill	Thiamethoxam	Soil	2 SC	193
6. Admire + Fulfill	Imidacloprid	Soil	2 SC	280
7. 140-F01	Unknown	Foliar	20% SC	12.5
8. 140-F01	Unknown	Foliar	20% SC	50
9. Insecticidal Soap	Potassium Salts	Foliar	49% EC	
10. Erase	Jjoba Oil	Foliar	97%	
11. Organocide	Sesame + Fish oil	Foliar	5% Sesame, 92% Fish oil	
12. Calypso	Thiocloprid	Foliar	40% SC	53
13. Warrior + Knack	Lambda-Cyhalothrin	Foliar	1 CS	28
14. Hexacide	Rosemary oil	Foliar	5% SC	
15. Untreated Control				

This trial was established at the BASF Experimental Farm in Tracy, California, in order to evaluate the effectiveness of the listed materials on Melon Aphid, *Aphis gossypii*, in Vegetable Spaghetti Squash. The plants were spaced 18 inches apart in 60-inch wide beds. Plot size was one bed wide by 36 feet long. The field was furrow irrigated.

The first application on July 10 included both soil-applied and foliar-applied treatments as indicated in **Table 1**. The foliar application was made with a CO<sub>2</sub> backpack sprayer using 3 TXVS 6 nozzles operating at 30 psi using 18 gallons per acre volume of water. The soil application was made with a B&G termite injector system shanking in the treatments six inches deep and on both sides of each plant in a given treatment. A volume of 150 gallons per acre was used in the soil treatments.

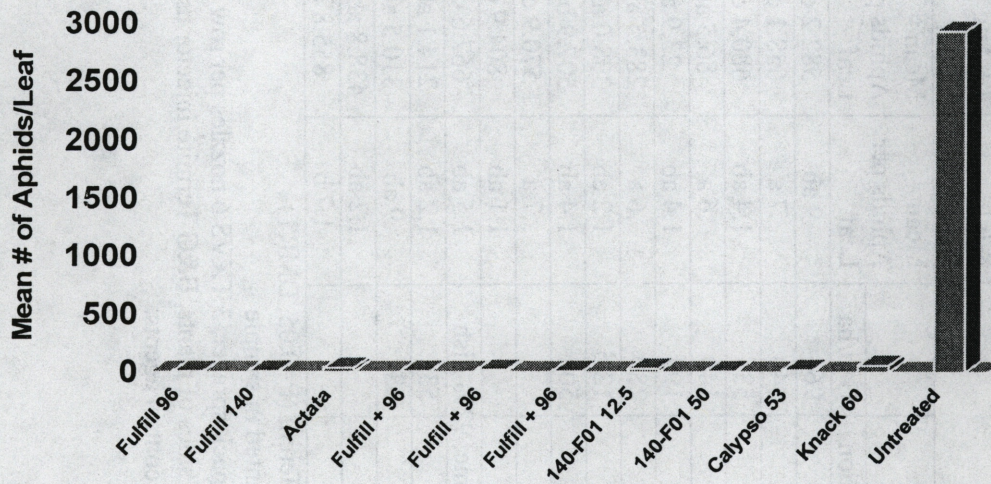
The second, third and fourth applications were made with a Solo 5 hp backpack sprayer at 100 gallons per acre. The beds were treated from both sides for thorough coverage of leaves and crowns of plants. The soil treatments 4, 5 and 6 were followed by a foliar spray of the low rate of Fulfill. The Warrior treatment was followed by a Knack treatment. (see **Table 2**).

Leaves were sampled at random from the center of the plots. Ten leaves were removed and the numbers of aphids were counted along with beneficial insects present in the trial. The numbers of beneficial insects present were in a direct relationship to the number of aphids on the leaves and are not reported. Ladybird beetles and lacewings were the primary insects responsible for predation of aphids. Numbers of mite colonies were counted and recorded as 10 leaves per plot were examined on each evaluation date. Colonies averaged approximately one inch in diameter and were often under biological control by either thrips or minute pirate bugs.

The Platinum soil treatments provided the best protection of plants following the first application. The high rate of Platinum also produced a significant increase in the number of mite colonies. This amount of mites could be tolerated by most growers but would have required treatment if it had become any worse. All rates of Fulfill, Actara, 140-F01, Calypso and Knack provided excellent control of melon aphids following the second application. Of the materials suitable for use by Certified Organic Growers, only the Hexacide provided substantial control of the aphids. It is not known why the second application of Hexacide caused an apparent increase in the number of aphids. It may be that the second application was detrimental to the biological control agents in those plots. In last year's research, repeat applications of pyrethrums produced an increase in numbers of melon aphids in test plots.

The soil applications of Platinum provided excellent control of aphids, however there was increased mite pressure in those plots. The convenience of being able to have a month or more of freedom from aphid build up is a valuable tool for cucurbit growers. Organically certified producers of cucurbits should consider using Hexacide for control of melon aphids. It appears that little is gained by the weekly applications of soaps and oils for control of this pest. Multiple applications of some materials may not provide any increased benefit in control of melon aphid populations.

Melon Aphid Trial - Farmington, California 2002  
 6-September Evaluation  
 Treatment Rates in Grams Active Ingredient per Hectare



Melon Aphid Trial - Farmington, California 2002  
 29 August Evaluation  
 Treatments Suitable for Organic Growers

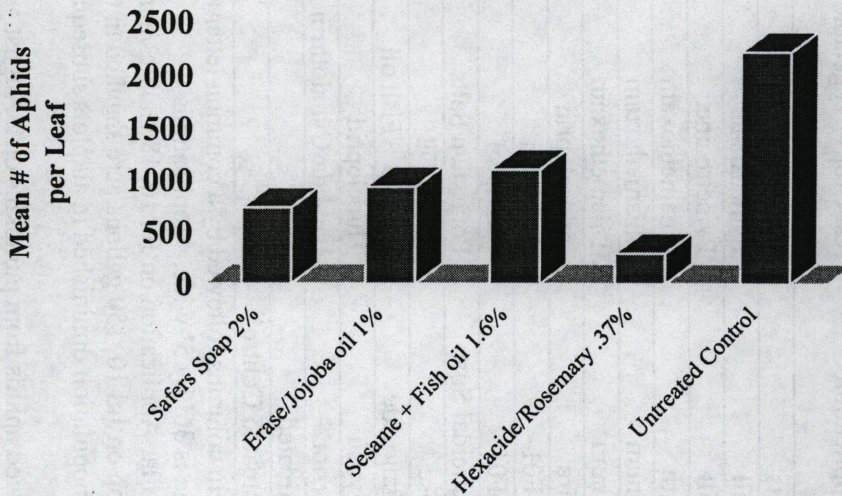


Table 1. UCCE Aphid Trial – 2002 – Farmington, California

First Application	Test Crop – Vegetable Spaghetti Squash				Melon Aphid- <i>Aphis gossypii</i>	Twospotted Spider Mites, <i>Tetranychus urticae</i>	
	Active Ingredient	Timing	Formulation	G ai/ha		8-Jul Pre-Count Mean # Aphids per Leaf	14-Aug Mean # Aphids per Leaf
1. Fulfill	Pymetrozine	Foliar	50 WG	96	.9 ab	582.2 cd	0.28 abc
2. Fulfill	Pymetrozine	Foliar	50 WG	140	.7 a	658.1 cd	0.58 cd
3. Actara	Thiamethoxam	Foliar	25 WG	53	1.4 ab	680.4 cd	0.53 bcd
4. Platinum	Thiamethoxam	Soil	2 SC	140	.6 a	86.5 ab	0.75 d
5. Platinum	Thiamethoxam	Soil	2 SC	193	1.4 ab	23.9 a	1.20 e
6. Admire	Imidacloprid	Soil	2 SC	280	.6 a	283.5 abc	0.33 abc
7. 140-F01	Unknown	Foliar	20% SC	12.5	1.2 ab	308.0 abc	0.30 abc
8. 140-F01	Unknown	Foliar	20% SC	50	1.4 ab	507.9 bcd	0.25 abc
9. Insecticidal Soap	Potassium Salts	Foliar	49% EC		.7 a	570.9 cd	0.35 abc
10. Erase	Jjoba Oil	Foliar	97.00%		1.1 ab	804.9 d	0.55 bcd
11. Organocide	Sesame + Fish oil	Foliar	5% Sesame, 92% Fish		1.5 ab	667.6 cd	0.44 abcd
12. Calypso	Thiocloprid	Foliar	40% SC	53	1.2 ab	214.1 abc	0.23 abc
13. Warrior	Lambda-Cyhalothrin	Foliar	1 CS	28	.9 ab	310.5 abc	0.20 ab
14. Untreated					1.2 ab	438.8 abcd	0.25 abc
15. Untreated Control					1.7 b	855.8 d	0.10 a

Means in columns followed by a common letter are not significantly different (P=0.05, DMRT)

Plot size is 36' by 5' wide, 4 replications

10 leaves per plot counted in sample

First Foliar Application on Jul 10, 18 Gallons/acre for foliar – CO<sub>2</sub> backpack sprayer, 3 TXVS 6 nozzles per row at 30 psi.

Soil App on Jul 10, 150 gallons/acre shanked in 6" below soil line, both sides of plants. B&G Termite Injector used with 6 hole tip

Aphid population diminished in all plots subsequently due to biological control agents.

Introduced aphids from pumpkins on 2 August.

Table 2. UCCE Aphid Trial – 2002 Farmington, California			Mean # of Melon Aphids – <i>Aphis gossypii</i> – per leaf, 10 leaf sample			
Test Crop – Vegetable Spaghetti Squash	Second, Third and Fourth Applications		14-Aug		6-Sep	
	Applications	G ai/Ha	Post Inoculation	20-Aug	29-Aug	6-Sep
1. Fulfill	14-Aug	96	Prior to Second App	5.1 a	1.8 a	2.9 a
2. Fulfill	14-Aug	140	582.2 cd	2.8 a	1.0 a	4.9 a
3. Actara	14-Aug	53	658.1 cd	.1 a	7.0	34.2 a
4. Fulfill over Platinum	14-Aug	96	680.4 cd	1.1 a	1.5 a	7.0 a
5. Fulfill over Platinum	14-Aug	96	86.5 ab	1.3 a	1.8 a	12.9 a
6. Fulfill over Admire	14-Aug	96	23.9 a	1.3 a	2.2 a	6.7 a
7. 140-F01	14-Aug	12.5	283.5 abc	5.2 a	2.5 a	28.6 a
8. 140-F01	14-Aug	50	308.0 abc	1.1 a	0.8 a	7.0 a
9. Soap	14-Aug, 21-Aug, 29-Aug	2% of Volume	507.9 bcd	617.4 c	736.1 cd	1770.9 c
10. Erase	14-Aug, 21-Aug, 29-Aug	1% of Volume	804.9 d	556.6 c	934.3 de	1433.4 c
11. Organocide	14-Aug, 21-Aug, 29-Aug	1.6% of Volume	667.6 cd	513.5 bc	1101.9 e	1424.4 c
12. Calypso	14-Aug	53	214.1 abc	.1 a	3.4 a	15.4 a
13. Knack	14-Aug	60	310.5 abc	349.5 abc	457.5 bc	56.1 a
14. Hexacide	14-Aug, 29-Aug	1.5 qt/Acre	438.8 abcd	152.5 ab	295.7 ab	764.0 b
15. Untreated Control			855.8 d	2110.1 d	2217.0 f	2926.8 d

Means in columns followed by a common letter are not significantly different (P=0.0f, DMRT)  
 Introduced aphids from pumpkins on 2 August to reestablish population, which had declined due to biological control.  
 Second application with 5-hp backpack blower at 100 gallons/acre  
 Number 3 setting on nozzle, 20 seconds spray each side of bed  
 Plot size is 36' x 5' with 4 replications.

**Melon Aphid Trial – Farmington, California 2002**

**14-Aug, 35 days after first application**

**Number following treatment name is Grams Active Ingredient per Hectare**

