

## Chemical Control/New Products

### WARRIOR T FOR CONTROL OF CODLING MOTH, WESTERN TENTIFORM LEAFMINER, AND ROSY APPLE APHID ON APPLES AND EFFECTS ON MITES

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#### Objectives:

1. Evaluate efficacy of WARRIOR T against major insect pests of pome fruit and effect on % marketable crop (compared to standard and untreated check).
2. Evaluate effects on mites and other secondary species.
3. Evaluate crop safety.

#### Treatment List:

- 1 UNTREATED CONTROL
- 2 A GUTHION 0.5 lbai/A  
B WARRIOR T 0.01 lbai/A  
C GUTHION 0.5 lbai/A  
D WARRIOR T 0.01 lbai/A  
E WARRIOR T 0.01 lbai/A
- 3 A GUTHION 0.5 lbai/A  
B WARRIOR T 0.02 lbai/A  
C GUTHION 0.5 lbai/A  
D WARRIOR T 0.02 lbai/A  
E WARRIOR T 0.02 lbai/A
- 4 A GUTHION 0.5 lbai/A  
B WARRIOR T 0.03 lbai/A  
C GUTHION 0.5 lbai/A  
D WARRIOR T 0.03 lbai/A  
E WARRIOR T 0.03 lbai/A
- 5 A GUTHION 0.5 lbai/A (5 applications)

#### Application Details:

<u>Date</u>	<u>Operator</u>	<u>Time</u>	<u>Temp</u>	<u>Dew</u>	<u>Wind</u>
A 22-MAY-00	Aaron Burkey	9:00 a	54F	N	0 mph
B 16-JUN-00	Aaron Burkey	8:30 a	58F	N	0 mph
C 28-JUN-00	Aaron Burkey	10:00 a	71F	N	2 mph W
D 19-JUL-00	Aaron Burkey	7:00 a	61F	N	0 mph
E 15-AUG-00	Aaron Burkey	8:00 a	66F	N	0 mph

180 gal/A @ 75 psi

**Results** (data analyzed by ANOVA & reported as simple means)

	<u>Rosy apple aphid</u>		<u>Codling moth</u>	<u>Leafminer</u>
Date:	06/19/00	06/24/00	09/13/00	09/13/00
Target Code:	DYSAPL	DYSAPL	CARPP0	LITHSP
Asm Location:	LEAF	LEAF	FRUIT	LEAF
Asm Type:	CONTROL	CONTROL	CNT.TUNNEL	CNT.TUNNEL
Asm Units: %	%	%	No.	No.
Obs Basis:	5	5	50	25
Obs Units:	leaf	leaf	fruit	leaf
Trtmt No				
1	0.0 B	0.0 B	3.75 A	63.30 A
2	93.3 A	90.0 A	0.50 B	4.50 B
3	100.0 A	100.0 A	0.25 B	2.50 B
4	93.3 A	100.0 A	0.25 B	0.25 B
5	66.7 A	63.3 A	0.25 B	72.00 A

**Zetzellia sp. Predator**

**mite**

Date:	6/13/00	07/19/00	08/14/00	09/11/00
Asm Location:	LEAF	LEAF	LEAF	LEAF
Asm Type:	PEST.CNT	PEST.CNT	PEST.CNT	PEST.CNT
Asm Units: No.	No.	No.	No.	No.
Obs Basis:	25	25	25	25
Obs Units:	leaf	leaf	leaf	leaf
Trtmt No				
1	0.01 B	0.44 B	1.00 A	0.76 A
2	0.02 B	0.04 C	0.12 B	0.00 B
3	0.00 B	0.04 C	0.08 B	0.00 B
4	0.11 A	0.00 C	0.04 B	0.00 B
5	0.12 A	0.84 A	0.68 AB	0.72 A

*Metaseiulus predator*

mite

Asm Label:	egg	mobile	egg	mobile	egg	mobile	egg
Date:	6/13/00	06/13/00	07/19/00	07/19/00	08/14/00	08/14/00	09/11/00
Target Code:	METSSP	METSSP	METSSP	METSSP	METSSP	METSSP	METSSP
Asm Location:	LEAF	LEAF	LEAF	LEAF	LEAF	LEAF	LEAF
Asm Type:	PEST.CNT	PEST.CNT	PEST.CNT	PEST.CNT	PEST.CNT	PEST.CNT	PEST.CNT
Asm Units: No.	No.	No.	No.	No.	No.	No.	No.
Obs Basis:	25	25	25	25	25	25	25
Obs Units:	leaf	leaf	leaf	leaf	leaf	leaf	leaf
Trtmt No							
1	0.00	0.02	0	0.20	0	0	0
2	0.00	0.01	0	0.04	0	0	0
3	0.00	0.00	0	0.00	0	0	0
4	0.01	0.00	0	0.00	0	0	0
5	0.00	0.02	0	0.20	0	0	0

**European Red Mite**

RMEG1	ERM1	ERM2	RMEG2	RMEG3	ERM3	RMEG4	ERM4
Date:	6/13/00	06/13/00	07/19/00	07/19/00	08/14/00	08/14/00	09/11/00 09/11/00
Trtmt							
1	0	0	0.04	0.04	0.08	0.00	1.16 0.08
2	0	0	0.16	0.48	6.84	0.60	6.00 1.44
3	0	0	0.00	0.60	6.12	0.68	2.72 0.28
4	0	0	0.00	0.00	2.48	0.08	0.68 0.28
5	0	0	0.00	0.00	0.48	0.00	0.68 0.28

Mean number/leaf based on 25 leaf sample

RMEG = European red mite egg

ERM = European red mite

**Results and Discussion**

Warrior T at 0.01, 0.02, and 0.03 lb ai/A was applied in a program incorporating early season applications of Guthion for insect control in apples. Warrior was alternated with Guthion in a program to allow early season Guthion use and extend the PHI for Guthion. The Warrior/Guthion program was contrasted with a straight, conventional Guthion program.

Warrior T at all rates provided excellent control of rosy apple aphid. Guthion did not control this pest.

Warrior T provided dramatic control of western tentiform leafminer compared to the Guthion program, which was no different from the untreated check for this pest. Both Warrior T/Guthion and Guthion programs gave excellent control of codling moth, the primary pest of apples.

Very important was the absence of mite flare-ups, which are often seen, with use of pyrethroid insecticides in tree fruit. *Zetzellia* and *Typhlodromus* (*Metaseiulus*) predator mites were absent or low in all Warrior T treatments. However, the level of two-spotted spider mites and European red mite (ERM) was also low in the Warrior T treatments with these phytophagous mites being comparable or at lower levels numerically than the untreated or Guthion program. Although not statistically significant, there was a numeric trend for higher levels of ERM mobiles and eggs in Warrior T at 0.01 and 0.02 lb ai/A compared to Warrior T at 0.03 lb ai/A. This is suggestive of good suppression or control of mites by Warrior T.