

Chemical Control/New Products

EVALUATION OF INSECTICIDES AGAINST NEW YORK APPLE ARTHROPOD PESTS,
2000

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Dilute to runoff sprays were applied with a handgun sprayer (450 psi) at pink (3 May), petal fall (15 May) and as cover sprays on 30 May, 14 June, 28 June, 12 July, 26 July, 8 August and 22 August. Treatments including an untreated check were replicated 3 times (two 6-tree plots and one 8-tree plot) and arranged in a RCB design. Treatments were: 1) Calypso 4F at pink (0.25 oz AI/100 gal), then again at petal fall and 1-7C (0.5 oz AI/100 gal); 2) Calypso 4F applied at pink (0.25 oz AI/100 gal), Guthion 50W applied at petal fall and 1-7C (4.0 oz AI/100 gal), as well as Provado 1.6F at 3C (0.4 oz AI/100 gal); 3) Lorsban 75 WG (5.28 oz AI/100 gal) applied at petal fall, 1-2C and 5-7C, Spintor 2SC was also applied at petal fall (0.25 oz AI/100 gal) and at 3-4C (0.325 oz AI/100 gal); 4) Lorsban 75WG (5.28 oz AI/100 gal) applied at petal fall and 1-7C.; 5) Lorsban 50W (5.28 oz AI/100 gal) applied at petal fall and 1-7C.; 6) Guthion 50W (4.0 oz AI/100 gal) applied at petal fall and 1-7C; 7) Danitol 2.4EC applied at pink (1.1 oz AI/100 gal), 2C and 6C (1.6 oz AI/100 gal), Guthion 50W applied at petal fall, 1C and 4-5C and 7C (4.0 oz AI/100 gal), Spintor 2SC at 3C (0.325 oz AI/100 gal); 8) Supracide 25WP applied at pink (4.0 oz AI/100 gal), Imidan 70WP at petal fall -2C, 5C and 7C (11.2 oz AI/100 gal), Confirm 2F at 3-4C (1.5 oz AI/100 gal), Provado 1.6F applied at 3C and 6C (0.26 oz AI/100 gal); 9) Actara 25WG applied at pink, petal fall and 1-7C (0.3 oz AI/100 gal); 10) Actara 25WG applied at pink, petal fall and 1-7C (0.38 oz AI/100 gal); 11) Actara 25WG applied at pink, petal fall and 1-7C (0.45 oz AI/100 gal); 12) untreated check.

ERM and predaceous mites were sampled on 25 randomly selected leaves per tree per replication on 13 July. STLM tissue mines from the first generation were counted on leaves on 15 randomly selected fruit clusters on 23 June. Second generation STLM tissue mines were counted on 5-6 distal leaves on 25 randomly selected "hardened off" terminals per replication on 29 August. First generation internal lepidoptera and PC fruit damage was assessed on 22 June and on 28 August on 100 randomly selected 'McIntosh' apples examined on the tree. Fruit damage was evaluated on 100 'McIntosh' apples examined from each tree in each replication on 12 September.

ERM severely bronzed apple leaves in some of the treatments even though counts in the samples taken on 13 July were relatively low. Probably ERM populations in the most severely damaged treatments were already declining by early July. In most cases, treatments that had an organophosphate had higher numbers of ERM than that of the check treatment. Calypso fared well when compared to the standard organophosphate programs. Results were not significantly

different for most of the major pests. The only difference was Calypso controlled STLM to near zero levels, while the OP treatments were comparable to the check. Also, although the numbers do not statistically separate, the damage from PC was also higher in the Calypso plot than that found in the standard programs. Actara also exhibited good control for most of the major pests. There was no evident rate response between the three seasonal programs evaluated. When compared to the current industry standards, there was better control of STLM from Actara. However, the levels of control against lep pests and SJS were better in the OP treatments. Typically, SJS is not uniformly distributed through out the research orchard. Therefore, it is difficult to tell the effectiveness of these materials in randomized plots. However, due to the damage found in two of the programs where Actara was applied, indications result in assuming that this compound has little or no activity against this pest. When Calypso is compared to the highest rate of Actara, there are no significant differences. Numerically, the damage level from PC is slightly higher in the Calypso plot, while the damage from internal leps is higher in the Actara treatment. Damage found in the Lorsban 75 plot is comparable to that found in the Lorsban 50 treatment. TPB was the only pest that had a significantly lower damage level from Lorsban 75. The seasonal programs that incorporated several materials were also similar to each other. All of the major fruit feeding pests did not separate between the treatments or the standards, except for two instances of TPB damage. STLM control was comparable between the combination programs but significantly different from both the OP standards and the check. Low AM pressures in the research orchard resulted in none of the programs, including the check plot, to be significantly different.

Table 1. Evaluation of insecticides against New York apple arthropod pests, 2000.

Treatment	Rate AI/100 gal	Mean ERM/leaf 13 July	Mean phytoseiids/25 leaves 13 July
1) Calypso 4F	0.75	1.2 ab	15.3 ab
Calypso 4F ^b	1.50		
2) Calypso 4F	0.75	1.7 ab	29.3 ab
Guthion 50W	12.0		
Provado 1.6F	1.2		
3) Lorsban 75WG	16.0	0.5 ab	9.3 ab
Spintor 2SC	0.75		
Spintor 2SC	1.0		
4) Lorsban 75WG	16.0	1.9 ab	13.3 ab
5) Lorsban 50W	16.0	4.2 ab	15.3 ab
6) Guthion 50W	12.0	3.0 ab	23.3 ab
7) Danitol 2.4EC	3.3	0.2 a	4.7 a
Guthion 50W	12.0		
Danitol 2.4EC	4.8		
Spintor 2SC	1.0		
8) Supracide 25WP	12.0	10.7 b	5.3 a
Imidan 70WP	33.6		
Confirm 2F	18.0		
Provado 1.6F	0.8		
9) Actara 25WG	0.9	1.7 a	23.3 ab
10) Actara 25WG	1.1	2.0 ab	22.0 ab
11) Actara 25WG	1.4	1.9 ab	35.3 b
12) Untreated Check	0.2 a	38.7 b	

Means within a column followed by the same letter are not significantly different (Fisher's Protected LSD Test, P<0.05).

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Table 1 (cont'd)

Treatment	Rate AI/ 100 gal	Mean STLM		AM harvest	Internal lep ^a		Mean % damaged fruit				% clean harvest		
		mines/ cluster gen 1	mines/ term. gen 2		gen 1	harvest	PC 22-Jun harvest	OBLR early late	SJS harvest	TPB harvest			
1) Calypso 4F ^c	0.75	0.0 a	0.1 a	0.0 a	2.3 ab	1.0 ab	16.0 bc	13.7 a	1.0 a	1.7 ab	0.3 a	0.0 a	81.7 bc
Calypso 4F ^b	1.50												
2) Calypso 4F ^c	0.75	0.3 ab	2.7 b	0.0 a	0.3 a	0.0 a	9.7 ab	9.0 a	2.3 a	0.3 a	0.0 a	0.0 a	87.7 bc
Guthion 50W ^b	12.0												
Provado 1.6F ^f	1.2												
3) Lorsban 75WG ^{dehik}	16.0	0.7 bc	3.4 bc	0.3 a	0.0 a	0.3 a	9.3 ab	14.0 a	0.3 a	0.7 a	0.0 a	0.0 a	82.3 bc
Spintor 2SC ^k	0.75												
Spintor 2SC ^{fg}	1.0												
4) Lorsban 75WG ^b	16.0	1.2 cd	14.2 d	0.0 a	0.3 a	0.0 a	1.7 ab	2.3 a	0.0 a	0.3 a	0.0 a	0.0 a	97.3 c
5) Lorsban 50W ^b	16.0	1.3 cd	9.7 cd	0.3 a	0.0 a	0.3 a	4.0 ab	5.3 a	1.0 a	0.3 a	1.0 a	1.3 c	90.0 bc
6) Guthion 50W ^b	12.0	1.3 cd	13.4 d	0.3 a	0.0 a	0.0 a	5.7 ab	4.0 a	1.3 a	0.0 a	0.0 a	0.0 a	94.0 c
7) Danitol 2.4EC ^c	3.3	0.1 ab	1.1 ab	0.0 a	0.3 a	0.0 a	6.7 ab	8.0 a	0.7 a	0.0 a	3.3 a	1.0 bc	85.3 bc
Guthion 50W ^{ehk}	12.0												
Danitol 2.4EC ^{si}	4.8												
Spintor 2SC ^f	1.0												
8) Supracide 25WP ^c	12.0	1.0 c	2.7 ab	0.0 a	0.3 a	0.0 a	7.0 ab	5.7 a	1.7 a	0.0 a	0.3 a	0.0 a	92.0 c
Imidan 70WP ^{ehk}	33.6												
Confirm 2F ^{fg}	18.0												
Provado 1.6F ^{fi}	0.8												
9) Actara 25WG ^{bc}	0.9	0.1 ab	0.0 a	0.0 a	11.3 cd	4.7 bc	0.3 a	4.0 a	1.3 a	4.7 bc	0.0 a	0.3 ab	85.0 bc
10) Actara 25WG ^{bc}	1.1	0.2 ab	0.0 a	0.0 a	5.7 bc	6.3 c	1.0 ab	5.7 a	1.7 a	6.3 c	9.3 b	0.0 a	70.3 b
11) Actara 25WG ^{bc}	1.4	0.1 a	0.1 a	0.0 a	13.0 d	2.7 ab	13.0 ab	6.3 a	1.0 a	2.7 ab	3.7 a	0.3 ab	78.7 bc
12) Untreated Check		2.3 d	14.8 d	0.0 a	22.0 e	4.7 bc	35.0 c	49.7 b	2.3 a	4.7 bc	0.3 a	0.3 ab	37.3 a

Means within a column followed by the same letter are not significantly different (Fisher's Protected LSD Test P<0.05).