

Not For Publication

FRUIT INSECT AND MITE
CONTROL STUDIES - EASTERN
NEW YORK - 1977

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Materials Tested

✓ Ambush 2EC
 ✓ Ambush 25W
 ✓ Carzol 92SP
 Croneton 40W
 Dipel W
 ✓ Guthion 50W
 Imidan 50W
 ✓ Lannate L
 ✓ Lorsban 50W
 ✓ Morestan 25W
 Omite 6E
 Omite 30W
 ✓ Penncap 2F
 ✓ Plictran 50W
 PP-199 2F
 ✓ SD-43775 2.4EC
 ✓ Sevin 50W
 Sumithion 40W
 ✓ Temik 15G
 ✓ Thiodan 50W
 Trithion 8E
 - UC-21865 75W
 Vendex 50W
 Vendex 50W-SB*
 ✓ ydate L
 ✓ Zolone 3EC

ICI America, Inc.
 ICI America, Inc.
 NOR-AM Agric. Prod., Inc.
 Chemagro Corporation
 Abbott Laboratories
 Chemagro Corporation
 Stauffer Chemical Co.
 DuPont Company
 Dow Chemical Company
 Chemagro Corporation
 Uniroyal Chemical
 Uniroyal Chemical
 Pennwalt Corporation
 Dow Chemical Company
 ICI America, Inc.
 Shell Development Co.
 Union Carbide Corporation
 Stauffer Chemical Co.
 Union Carbide Corporation
 FMC Corporation
 FMC Corporation
 Union Carbide Corporation
 Shell Development Co.
 Shell Development Co.
 DuPont Company
 Rhodia, Inc.

*SB = Soluble bag.

✓ BaAM - 50WP
 " 1.5EC

✓ HOE 25682 3EC

✓ DIAZINON 50WP

✓ Cygon 400 4EC

✓ Systox 2E

✓ DiSyston 156

✓ NEMACUR 3

✓ DPX-1400 106

✓ Perthane 4EC

THE UPJOHN COMPANY

AMERICAN HOESCHT

C I E B A G E I G Y

AMERICAN CYANAMIDE

1977 WEATHER CONDITIONS - NOAA STATION, NEW PALTZ, NY (ULSTER CO.
41° 41'N
74° 08'W)

Date	Temp. Max	Min	Rain in.	Date	Max	Min	Rain in.	Date	Max	Min	Rain in.
Apr. 1	63	32		21	87	57		8	76	61	.19
2	57	25	1.01	22	85	55		9	86	57	
3	63	38		23	84	50		10	87	58	
4	64	30		24	86	59		11	82	52	
5	41	34	.81	25	88	65		12	81	57	.22
6	41	34	.31	26	86	49		13	78	61	.03
7	47	22	.02	27	79	41		14	91	72	.15
8	45	34	.03	28	87	53		15	90	52	
9	41	16		29	91	42		16	91	62	
10	44	22		30	65	46		17	96	65	.40
11	59	28		31	75	42		18	90	66	.29
12	62	39		Avg. 75.9 45.5 2.57 Tot.				19	93	60	
13	89	46		June 1	82	55		20	96	66	
14	87	48		2	68	58	.02	21	94	67	
15	68	29		3	85	53		22	100	58	
16	69	30		4	72	37		23	83	42	
17	70	31		5	83	50		24	84	50	
18	69	31		6	81	42		25	88	62	T
19	75	34		7	66	48	.65	26	72	48	.91
20	78	41		8	65	45		27	77	40	
21	70	45		9	67	37	.04	28	76	40	
22	81	54		10	55	46	1.93	29	79	46	
23	88	51	.09	11	69	51	.04	30	81	55	
24	53	44	1.16	12	74	50		31	82	51	
25	45	40	.80	13	82	51		Avg. 85.4 55.7 2.31 Tot.			
26	55	33	.04	14	78	51		Aug. 1	88	58	
27	48	42	.23	15	78	57		2	83	58	.60
28	60	41		16	81	49		3	83	52	
29	65	28		17	82	54		4	74	61	.46
30	60	33		18	80	60		5	85	59	
Avg. 61.9 35.3 4.50 Tot.				19	86	64	.54	6	90	64	.72
May 1	70	31		20	83	52		7	88	67	.09
2	78	41		21	86	53		8	80	65	.08
3	68	42	.03	22	77	46		9	88	62	
4	72	33		23	75	40		10	88	52	
5	66	47	.95	24	79	48		11	81	63	.10
6	65	48	.03	25	80	58		12	91	63	.17
7	88	51	.08	26	75	60	.10	13	85	56	
8	62	52	*	27	85	52	T	14	74	61	
9	73	31	.94*	28	86	58		15	77	52	.11
10	48	33	.47	29	84	67	T	16	79	48	
11	59	36		30	84	60	.27	17	74	56	.30
12	67	37		Avg. 77.6 51.7 3.59 Tot.				18	76	51	.16
13	80	55		July 1	86	61		19	75	37	
14	73	35		2	90	54		20	75	45	
15	69	33		3	82	43		21	75	35	
16	72	34		4	80	51		22	76	48	.11
17	80	45		5	87	62		23	79	45	.12
18	91	59		6	91	51		24	80	53	
19	85	59	.07	7	77	57	.12	25	76	38	.13
20	75	51						26	75	37	

Weather Conditions, New Paltz, NY Cont.

Date	Temp. Max Min	Rain in.	Date	Temp. Max Min	Rain in.	Date	Temp. Max Min	Rain in.
27	78 50		14	66 53	.93			
28	81 59		15	76 37				
29	92 65		16	68 49	.07			
30	92 63		17	64 51	.91			
31	81 61		18	80 55				
Avg.	8 54.3	3.15 Tot.	19	81 55	.33			
			20	82 59	.83			
Sep. 1	73 63		21	67 44	1.18			
2	84 62		22	58 45				
3	93 60		23	56 44	.57			
4	88 51		24	64 51	2.40			
5	83 56		25	57 42	.63			
6	82 57		26	53 43	.10			
7	79 46		27	67 45				
8	78 48		28	75 44				
9	80 44		29	75 40				
10	80 52		30	68 36				
11	84 49		Avg.	73.6 48.5	8.04 Tot.			
12	72 30							
13	74 43							

*Fell as snow.

1977 WEATHER CONDITIONS - HUDSON VALLEY LABORATORY, HIGHLAND, NY
(Ulster Co.)

Date	Temp. Max Min	Rain in.	Date	Temp. Max Min	Rain in.	Date	Temp. Max Min	Rain in.
Apr. 1	50 31		30	67 37		27	81 48	
2	44 29		Avg.	58.5 36.9	5.18 Tot.	28	86 51	
3	61 38	0.78				29	59 43	
4	44 34		May 1	73 40		30	73 48	
5	43 34	1.20	2	66 52	0.01	31	76 56	
6	43 30	0.01	3	66 44		Avg.	73.5 49.9	3.30 Tot.
7	42 24		4	62 40				
8	37 23		5	60 47	0.81	Junel	62 58	
9	39 20		6	84 55	0.21	2	82 64	0.05
10	56 26		7	69 52		3	67 52	
11	58 34		8	64 38		4	78 42	
12	84 44		9	56 32	1.31*	5	58 78	
13	83 51		10	56 37	0.60	6	60 50	
14	62 41		11	63 43		7	60 47	0.74
15	64 34		12	78 42		8	62 44	
16	65 37		13	70 50		9	54 49	
17	65 38		14	66 41		10	64 52	2.20
18	71 37		15	70 39		11	70 55	
19	75 41		16	78 41		12	73 55	
20	64 45		17	90 56		13	73 55	
21	78 47		18	82 65		14	72 56	
22	83 55		19	76 60	0.36	15	76 60	
23	63 45		20	83 55		16	75 52	
24	45 40	2.58	21	82 61		17	75 57	
25	52 42	0.31	22	82 61		18	78 62	0.33
26	44 39		23	84 58		19	78 66	0.22
27	56 42	0.03	24	86 67		20	81 57	
28	62 62		25	83 66		21	72 53	
29	56 56		26	75 58		22	72 55	
						23	77 48	

*Fell as 6 inches of snow.

Temp.				Rain		Temp.				Rain		Temp.				Rain			
Date	Max	Min	in.	Date	Max	Min	in.	Date	Max	Min	in.	Date	Max	Min	in.	Date	Max	Min	in.
Apr. 1	46	26		25	80	61		15	93	56	0.22	15	93	56		15	93	56	
2	43	23		26	77	50		16	87	65		16	87	65		16	87	65	
3	55	36		27	73	53		17	90	66		17	90	66		17	90	66	
4	40	22		28	67	46	0.37	18	85	65	0.32	18	85	65		18	85	65	
5	45	31	0.13	29	65	34		19	95	64		19	95	64		19	95	64	
6	42	28	0.07	30	73	40		20	100	70		20	100	70		20	100	70	
7	37	15	0.13	31	70	38		21	92	73	0.54	21	92	73		21	92	73	
8	33	22	0.04					22	75	53		22	75	53		22	75	53	
9	37	10		Avg. 76.3 49.4 0.85 Tot.				23	76	49		23	76	49		23	76	49	
10	46	17						24	84	61		24	84	61		24	84	61	
11	66	22		Jun. 1	80	45	0.17	25	80	61	0.40	25	80	61		25	80	61	
12	68	51		2	78	55		26	74	47		26	74	47		26	74	47	
13	81	39		3	66	40		27	81	50		27	81	50		27	81	50	
14	54	24		4	75	42		28	80	49		28	80	49		28	80	49	
15	65	36		5	70	58		29	82	55		29	82	55		29	82	55	
16	59	31		6	69	48		30	81	57	0.30	30	81	57		30	81	57	
17	61	30		7	58	45	0.13	31	80	63		31	80	63		31	80	63	
18	67	38		8	50	45	0.02	Avg. 82.1 58.1 1.96 Tot.				Aug. 1	83	62		Aug. 1	83	62	
19	72	36		9	68	40	0.04					2	80	59		2	80	59	
20	75	43		10	65	39						3	82	54		3	82	54	
21	84	50		11	65	56						4	87	58		4	87	58	
22	74	62		12	63	55						5	84	65		5	84	65	
23	64	68	0.70	13	77	58						6	80	66		6	80	66	
24	50	40	0.80	14	78	51						7	81	61		7	81	61	
25	42	35	0.30	15	78	58						8	84	65	0.26	8	84	65	0.26
26	50	34		16	80	49						9	77	65	0.24	9	77	65	0.24
27	55	33		17	79	56						10	65	53		10	65	53	
28	58	29		18	73	58	0.50					11	80	50	0.03	11	80	50	0.03
29	53	27		19	78	60	0.30					12	80	64	0.01	12	80	64	0.01
30	67	30		20	78	55						13	53	54		13	53	54	
Avg. 56.6 32.6 2.17 Tot.				21	76	56						14	76	62		14	76	62	
				22	68	47	0.06					15	75	53		15	75	53	
				23	75	52						16	74	53	0.20	16	74	53	0.20
May 1	75	39		24	80	48	0.05					17	73	58	1.92	17	73	58	1.92
2	73	52	0.12	25	76	57	0.80					18	64	56	0.01	18	64	56	0.01
3	60	35		26	72	58	0.20					19	70	43	0.03	19	70	43	0.03
4	60	29		27	83	57						20	65	48	0.03	20	65	48	0.03
5	77	35		28	56	56						21	72	45		21	72	45	
6	83	46		29	65	65	0.15					22	72	55	0.34	22	72	55	0.34
7	73	35		30	60	60						23	75	47		23	75	47	
8	52	28		Avg. 73.8 52.3 2.42 Tot.								24	68	53	0.65	24	68	53	0.65
9	50	36										25	66	46		25	66	46	
10	52	42		Jul. 1	83	59						26	74	43		26	74	43	
11	68	34		2	78	60						27	82	50		27	82	50	
12	72	50		3	79	54						28	90	65		28	90	65	
13	65	46	0.15	4	80	60						29	92	68		29	92	68	
14	59	37		5	81	62						30	84	59	0.06	30	84	59	0.06
15	67	41		6	76	50						31	80	51		31	80	51	
16	82	50		7	78	44						Avg. 76.4 55.8 3.96 Tot				Avg. 76.4 55.8 3.96 Tot			
17	88	64		8	70	53	0.26												
18	84	60		9	80	61													
19	74	43		10	73	52													
20	77	50		11	80	65													
21	86	51		12	80	46	0.12												
22	80	57		13	87	65	0.10												
23	87	57		14	85	65													
24	85	60	0.21																

		Temp.		Rain
Date		Max	Min	in.
Sep.	1	85	60	
	2	80	62	0.04
	3	75	60	0.08
	4	73	47	
	5	73	56	0.05
	6	73	52	
	7	66	45	
	8	69	42	
	9	75	45	
	10	78	65	
	11	68	50	
	12	63	39	
	13	60	54	0.83
	14	64	53	1.06
	15	66	38	
	16	61	46	T
	17	68	55	0.40
	18	72	57	
	19	72	59	
	20	66	46	0.56
	21	54	46	0.55
	22	54	48	0.02
	23	59	47	
	24	58	48	
	25	55	40	0.03
	26	62	48	1.00
	27	60	53	0.24
	28	64	49	0.04
	29	63	47	
	30	57	41	0.31

Avg. 66.4 49.9 5.21 Tot.

APPLE: Malus sylvestris 'Tydeman'
Apple aphid: Aphis pomi DeGeer
Obliquebanded leafroller: Choristoneura
rosaceana (Harris)
Potato leafhopper: Empoasca fabae (Harris)
White apple leafhopper: Typhlocyba pomaria McAtee
European red mite: Panonychus ulmi (Koch)
Apple rust mite: Aculus schlechtendali (Nalepa)

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APPLE, INSECT CONTROL BY SOIL-APPLIED SYSTEMIC INSECTICIDE, NEW PALTZ, NY, 1977. One-year-old 'Tydeman' apple trees, spaced 15 x 22 ft, were divided into 4 trees plots (.03 acre) replicated 3 times in a randomized block design with 2 treatments and a check. Granules were shanked 1 in. into freshly disced soil using a precision cone seeder on a Planet Jr.^R Frame. Granules were applied April 22 and in 3 trenches 12 in apart starting 12 in from the trunk on both side of the trees at the low rate and 6 trenches 6 in apart on both sides for the high rate. Both treatments were applied at the rate of 6.7 oz a.i./1000 linear ft, but twice as many linear ft were treated at the high rate. Difolatan 4F, 5 qt/100 gal, was applied by handgun sprayer over the entire block on April 13, for disease control. Plots were not irrigated and rainfall (inches) during the growing period was: April 22 - April 30 (2.32), May (2.57), June (3.59), July (2.31), August (3.15), and September (8.04). The soil type was a Cossayuna gravelly loam which had been worked well before planting the previous season and was disced to keep weeds controlled during this and the previous season. Apple aphid, obliquebanded leafroller, and potatoe leafhopper were evaluated by examining 5 terminals/tree from all 4 trees in each plot. White apple leafhopper was evaluated by examining 25 leaves for damage from all 4 trees in each plot, while mites were counted by brushing 20 leaves/tree, from 4 trees/plot. All 4 trees from each plot in each replicate were also evaluated by counting shoots and measuring seasonal growth.

Both rates of Temik effectively controlled mites, aphids, and leafhoppers into July. With the low rate ca 1/5 of the terminals were infested by apple aphid on the July 15 date, while a few potato leafhopper nymphs were also present. Apparently, some leafroller suppression was obtained from the treatments and was evident at the June 15 date. Significantly more tree growth was found with both rates of Temik, although the number of shoots per tree was significantly less than in the check.

Table 1

Treatment and lb a.i./acre	Mean No. infested terminals/20				Mean No. Damaged leaves/25	
	Apple Aphid	Oblique banded leafroller	Potato Leafhopper	White Apple leafhopper		
	Jun 15	Jul 15	Jun 15	Jul 15	Jun 15	Jul 15
Tenik 15G 5	0.0a	4.3a	8.3b	10.0	2.3	0.2a
Tenik 15G 10	0.0a	0.7a	3.3a	7.3	0.0	0.0a
Check	15.0b	19.3b	14.3c	10.7	11.0	9.9b

Mean separation by Duncan's Multiple Range Test; $P = 0.05$.

Table 2

Treatment and lb a.i./acre	Mean No. mites/leaf		Mean No. shoots/tree	Total Shoot Growth/tree (cm) Aug 22	Mean Shoot length (cm) Aug 22
	$\frac{\text{ERM}^1}{\text{Jun 28}}$	$\frac{\text{ARM}^1}{\text{Jun 28}}$			
Temik 15G 5	0.1a	0.1a	8.3a	507.2b	61.1b
Temik 15G 10	0.0a	0.0a	8.5a	490.7b	58.7b
Check	3.0b	393.3b	19.6b	440.0a	41.5a

Mean separation by Duncan's Multiple Range Test; $P = 0.05$.

¹ERM = European red mite; ARM = Apple rust mite.

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APPLE: Malus sylvestris
Apple aphid: Aphis pomi DeGeer
Rosy apple aphid: Dysaphis plantaginea (Passerini)
White apple leafhopper: Typhlocyba pomaria McAtee
Tarnished plant bug: Lygus lineolaris (P. de B.)
Plum curculio: Conotrachelus nenuphar (Herbst)
Green fruitworm: Lithophane antennata (Walker)
Obliquebanded leafroller: Choristoneura rosaceana (Harris)
Codling moth: Laspeyresia pomonella (Walsh)
Oriental fruit moth: Grapholitha molesta (Busck)
Redbanded leafroller: Argyrotaenia velutinana (Walker)
Variegated leafroller: Platynota flavedana (Clemens)
Apple maggot: Rhagoletis pomonella (Walsh)
San Jose scale: Quadraspidiotus perniciosus (Comstock)

APPLE, INSECT CONTROL, HUDSON VALLEY, 1977: Insecticide treatments were evaluated in a seasonal control program conducted in a thirteen-year-old planting on the EM 2 rootstock. Eight-tree plots containing from 5 to 7 different apple cultivars were replicated 3 times in a randomized complete block design. Treatments were applied dilute to runoff using ca. 3.8 gal spray/tree (370 gal/acre) with a handgun sprayer at 425 psi. Treatments were applied at pink (McIntosh) April 19, petal fall May 13, and in 6 cover sprays--May 25, June 13, June 27, July 14, July 28, and August 11. The Ambush, Croneton + Guthion, Dipel, and Penncap treatments were applied June 9, but 2.2 in of rain fell shortly after application and prior to drying, so they were reapplied with the rest of the treatments on June 13. Additional sprays applied over the entire block for disease control included: Difolatan 4F 5 qt/100 gal, April 1 (handgun application), and Cyprex 65W 8 oz/100 gal on May 3, May 16, June 6, and June 21 (airblast application, 3X, 133 gal/acre). The 'Rome Beauty' and 'Cortland' cultivars were thinned with 8 ppm NAA, while the 'Golden Delicious' were thinned with 16 ppm NAA on May 18. A miticide (Plictran 50W 4 oz/100 gal) was applied along with the following treatments on July 14: Ambush 25W, Dipel W, Penncap 2F, SD 43775 2.4EC 1.3 oz, and Sumithion 40W. Above normal temperatures during April resulted in an early bloom and consequent early harvest. Rainfall was below normal for May and June but above normal for September. Insect pressure in the block was down from previous seasons and would be considered poor for most pest species.

All treatments except Dipel, which was only active against lepidopterous species, looked very good against Rosy apple aphid but the organophosphates and carbaryl looked weak against the apple aphid. All materials except Dipel gave good control of Plum curculio, Codling moth, Oriental fruit moth, Apple maggot and San Jose scale. Dipel gave adequate control of green fruitworm, obliquebanded leafroller, redbanded leafroller and variegated leafroller as did the other treatments. Tarnished plant bug control was variable, Penncap and Sumithion appeared weaker than the other treatments. A small but not statistically significant difference in control effectiveness was noted for most pests between the high and low rates of the SD-43775 material. Slight and moderate russetting was noted on the 'Golden Delicious' cultivar with the Penncap and Sumithion treatments, respectively.

Table 1.

Mean Index Value Mean No. Infested Terminals/25²
per 25 leaves¹

Treatment and oz/100 gal		White Apple Leafhopper	Apple Aphid	Rosy Apple Aphid
Ambush 2EC 6.4	0.3a	0.0a	0.0a	
Ambush 25W 6.4	0.7a	0.0a	0.0a	
Croneton 40W 20.0 + Guthion 50W 8.0	0.3a	0.0a	0.0a	
Dipel W 8.0 + Triton B-1956 2.0	26.7 c	16.0 c	1.7 b	
Imidan 50W 24.0 ³ , 16.0 ⁴	8.0 b	9.7 b	0.0a	
Lannate L 16.0 + Imidan 50W 12.0	2.0a	1.0a	0.0a	
Pennacap 2F 32.0	1.7a	7.7 b	0.0a	
SD 43775 2.5EC 1.3	1.0a	0.3a	0.0a	
SD 43775 2.4EC 2.6	1.0a	0.7a	0.0a	
Sumithion 40W ⁵ 32.0, Imidan 50W ⁶ 16.0	2.7ab	11.3 bc	0.3ab	
UC 21865 75W 21.3 ³ , 5.3 ⁷ , Sevin 50W ⁴	0.3a	10.7 bc	0.0a	
Check	27.0 cd	23.3 d	3.0 b	

¹ Mean separation by Duncan's Multiple Range Test; P = 0.05.² Based on evaluating 25 Red Delicious leaves/replicate on Aug 23 and assigning index value to each leaf based on the following scale: 0 = no damage; 1 = light damage-less than 1/3 of leaf surface injured; 2 = moderate damage - 1/3 to 2/3 of leaf injured; 3 = heavy damage-over 2/3 of leaf surface injured.³ Based on examining 25 McIntosh terminals/replicate for apple aphid and Cortland terminals for rosie apple aphid on June 15.⁴ Applied Apr 19, May 13.⁵ Applied Jun 13 - Aug 11.⁶ Applied May 25 - Aug 11.⁷ Applied Aug 11 with Sevin.⁸ Applied Apr 19, May 13 & 25.

Table 2.

% Fruit Injured¹

Treatment and oz/100 gal	Tarnished Plant bug						Plum curculio						GFW OBLR						CM OFM						RBLR VLR					
Ambush 2EC 6.4	1.7ab	0.1a	0.2a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a
Ambush 25W 6.4	2.1ab	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a
Croneton 40W 20.0																								
+ Guthion 50W 8.0	2.4ab	0.9a	0.6a	0.1a	0.0a	0.0a	0.6a	0.1a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a
Dipel W 8.0																								
+ Triton B-1956 2.0	2.7abc	7.7 b	0.7a	1.7 b	0.6a	0.0a	0.7a	1.7 b	0.6a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a
Imidan 50W 24.0 ² , 16.0 ³	2.9abc	0.2a	0.4a	0.0a	0.0a	0.0a	0.4a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a
Lannate L 16.0	2.7abc	0.6a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a
+ Imidan 50W 12.0																								
Pennacap 2F 32.0	3.3 bc	0.1a	0.3a	0.0a	0.0a	0.0a	0.3a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a
SD-43775 2.4EC 1.3	2.8abc	1.2a	0.8a	0.1a	0.0a	0.0a	0.8a	0.1a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a
SD-43775 2.4EC 2.6	0.9a	0.2a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a
Sumithion 40W 32.0 ⁴																								
Imidan 50W 16.0 ⁵	4.7 cd	0.3a	0.1a	0.0a	0.0a	0.0a	0.1a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a
UC-21865 75W 21.3 ² , 5.3 ⁶	2.3ab	1.2a	0.6a	0.0a	0.0a	0.0a	0.6a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a	0.0a
Sevin 50W 32.0 ³	5.6 d	18.6 c	4.2 b	4.4	c3.2 b																			
Check																								

Means not followed by same letter are significantly different by the Waller and Duncan's BSD test with an error weight ratio of 100 (P=ca.05).
 GFW=green fruitworm, OBLR=obliquebanded leafroller, CM=codling moth, OFM=oriental fruit moth, RBLR=redbanded leafroller, VLR=variegated leafroller.

- 1 Based on 100 fruits per tree from each of three cultivars per rep; cultivars and harvest dates included--'McIntosh' (Sep 12), 'Red Delicious' (Sep 19, 22) and 'Golden Delicious' (Sep 28).
- 2 Applied Apr 19, May 13, 3 Applied May 25 - Aug 11, 4 Applied Apr 19, May 13 & 25.
- 5 Applied Jun 13 - Aug 11. 6 Applied Aug 11 with Sevin.

Table 1.

Mean Index Value Mean No. Infested Terminals/25²
per 25 leaves¹

Treatment and oz/100 gal		White Apple Leafhopper	Apple Aphid	Rosy Apple Aphid
Ambush 2EC 6.4	0.3a	0.0a	0.0a	
Ambush 25W 6.4	0.7a	0.0a	0.0a	
Croneton 40W 20.0 + Guthion 50W 8.0	0.3a	0.0a	0.0a	
Dipel W 8.0 + Triton B-1956 2.0	26.7 c	16.0 c	1.7 b	
Imidan 50W 24.0 ³ , 16.0 ⁴	8.0 b	9.7 b	0.0a	
Lannate L 16.0 + Imidan 50W 12.0	2.0a	1.0a	0.0a	
Pennacap 2F 32.0	1.7a	7.7 b	0.0a	
SD 43775 2.5EC 1.3	1.0a	0.3a	0.0a	
SD 43775 2.4EC 2.6	1.0a	0.7a	0.0a	
Sumithion 40W ⁵ 32.0, Imidan 50W ⁶ 16.0	2.7ab	11.3 bc	0.3ab	
UC 21865 75W 21.3 ³ , 5.3 ⁷ , Sevin 50W ⁴	0.3a	10.7 bc	0.0a	
Check	27.0 cd	23.3 d	3.0 b	

¹Mean separation by Duncan's Multiple Range Test; P = 0.05.²Based on evaluating 25 Red Delicious leaves/replicate on Aug 23 and assigning index value to each leaf based on the following scale: 0 = no damage; 1 = light damage-less than 1/3 of leaf surface injured; 2 = moderate damage - 1/3 to 2/3 of leaf injured; 3 = heavy damage-over 2/3 of leaf surface injured.³Based on examining 25 McIntosh terminals/replicate for apple aphid and Cortland terminals for rosie apple aphid on June 15.⁴Applied Apr 19, May 13.⁵Applied Jun 13 - Aug 11.⁶Applied May 25 - Aug 11.⁷Applied Aug 11 with Sevin.⁸Applied Apr 19, May 13 & 25.

Table 3.
Treatment and
oz/100 gal

	% Fruit injured or infested ¹				% Clean Fruit
	Apple Punctures	maggot Tunnels	San Jose Scale		
Ambush 2EC 6.4	0.3a	0.2a	0.0a	97.7	c
Ambush 25W 6.4	0.1a	0.1a	0.6a	97.2	c
Croneton 40W 20.0 + Guthion 50W 8.0	0.0a	0.0a	0.0a	96.0	c
Dipel W 8.0 + Triton B-1956 2.0	1.0a	0.8a	6.9 b	74.6 b	
Imidan 50W 24.0 ² , 16.0 ³	0.1a	0.0a	0.0a	96.4	c
Lannate L 16.0 + Imidan 50W 12.0	0.0a	0.0a	0.0a	96.8	c
Pennacp 2F 32.0	0.1a	0.0a	0.0a	96.1	c
SD-43775 2.4EC 1.3	0.1a	0.1a	1.2a	93.7	c
SD-43775 2.4EC 2.6	0.0a	0.0a	0.0a	98.9	c
Sumithion 40W 32.0 ⁴ Imidan 50W 16.0 ⁵	0.0a	0.0a	0.0a	94.9	c
UC-21865 75W 21.3 ² , 5.3 ⁶	0.0a	0.0a	0.0a	95.8	c
Sevin 50W 32.0 ³	0.0a	0.0a	0.0a	95.8	c
Check	6.1 b	3.2 b	6.1 b	59.2a	

¹ Means not followed by same letter are significantly different by the Waller and Duncan's BSD test with an error weight ratio of 100 (P= ca .05).

² Based on 100 fruits per tree from each of three cultivars per rep; cultivars and harvest dates included--'McIntosh' (Sep 12), 'Red Delicious' (Sep 19, 22), and 'Golden Delicious' (Sep 28).

³ Applied Apr 19, May 13.
⁴ Applied May 25 - Aug 11
⁵ Applied Apr 19, May 13 & 25.

⁶ Applied Jun 13 - Aug 11.
Applied Aug 11 with Sevin.

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PEAR: Pyrus communis 'Bartlett'
Pear psylla: Psylla pyricola Foerster

PEAR, PEAR PSYLLA CONTROL, HUDSON VALLEY, 1977: A three-year-old pear block was divided into eight tree plots replicated three times in a randomized complete block design. The Morestan treatment was first applied at the white bud stage April 19. The two Ambush treatments were applied June 9 but 2.2 in of rain fell before these treatments dried. All seven treatments were applied or reapplied on June 13. Treatments were applied dilute to runoff with high pressure handgun sprayer at 425 psi using ca 1.2 gal per tree (225 gal/acre). Treatments were evaluated by sampling four spurs per plot and counting all pear psylla nymphs and eggs on each spur under a binocular scope in the laboratory. The pre-treatment count on June 8 indicated a good 2nd brood nymphal population was present. Post-treatment counts were made June 17 and July 11.

The June 17 post-treatment count indicated good nymphal control was obtained with all treatments. Residual activity was evident on July 11 for all treatments except the low rate of PP 199 and Morestan.

Treatment and oz/100 gal

Mean No. pear psylla nymphs
per 4 spurs

	Jun 8	Jun 17	% Reduction	Jul 11
Ambush 25WP 6.4 . . . . .	.229.0	0.3	99	0.0
Morestan 25WP 24.0 . . . . .	.185.3	5.7	97	3.7
SD-43775 2.4EC 1.3 . . . . .	.142.0	6.7	95	0.0
SD-43775 2.4EC 2.6 . . . . .	.150.0	8.3	94	0.0
Ambush 2EC 6.4221.0	28.7	87	0.3
PP 199 2F 12.891.7	14.7	84	0.0
PP 199 2F 3.2247.0	42.0	83	2.0
Check79.0	97.3	--	9.3

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APPLE: Malus sylvestris
European red mite: Panonychus
ulmi (Koch)

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Twospotted spider mite: Tetranychus urticae Koch

APPLE, EARLY MITE CONTROL, MILTON, NY, 1977: A 30-year-old Red Delicious planting spaced 22 x 36 ft was divided into three .45 acre blocks, 5 trees deep x 5 rows wide. A .18 acre portion of the planting was reserved as the check. Each block received either Vendex or Plictran applied as every row sprays on May 12 (petal fall) and again May 20 (1st cover). An adjacent 34-year-old McIntosh planting, spaced 20 x 30 ft, was divided into three .33 acre blocks, 6 trees x 4 rows, with a .11 acre check. Each block received either Vendex or Plictran as an alternate row spray May 12 and again May 20. All treatments were applied with a Bean 393 airblast sprayer at 3 x (133 gal/acre). Rates are expressed as the dilute rate per 100 gal based on 400 gal/acre. The grower's program in the blocks consisted of Guthion 50W 1/2 lb/100 gal + Captan 50W 1-1 1/2 lb/100 gal at 7-10 day intervals starting at petal fall and into August. Mites were evaluated by brushing 25 leaves/tree from 4 trees in each treatment.

Plictran provided the best control in both plantings and there appeared to be little difference whether the treatments were applied as alternate row or every row applications. Among all treatments the Vendex soluble bag every row treatment had the highest counts on July 11. Some problems had been experienced trying to get the soluble bag to dissolve properly, but once dissolved no problems had been noted.

Mean no. mites/leaf

Treatment and oz/100 gal	May 19		Jun 1		Jun 14		Jun 30		Jul 11	
	ERM	TSM	ERM	TSM	ERM	TSM	ERM	TSM	ERM	TSM
Vendex 50WP ¹ 4 . . . . .	.0.3	Tr ³	0.6	0.0	0.1	0.2	0.2	Tr	0.6	Tr
Vendex 50WP ^{1,2} 4 . . . . .	.0.2	0.1	0.2	0.1	0.1	0.1	0.2	Tr	0.6	0.2
Plictran 50WP ¹ 4 . . . . .	.0.0	Tr	0.0	0.0	Tr	Tr	0.0	0.0	Tr	Tr
Check . . . . .	.0.3	0.0	0.5	0.0	0.6	0.3	4.8	0.3	29.8	0.2
Vendex 50WP 4	Tr	Tr	Tr	0.1	Tr	0.1	0.1	0.2	0.7	0.3
Vendex 50WP ² 4 . . . . .	.0.1	0.1	0.1	0.1	0.0	0.3	0.5	0.7	4.5	1.0
Plictran 50WP 4 . . . . .	.0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
Check	Tr	Tr	0.3	0.1	0.2	0.5	0.8	2.6	9.0	4.3

¹ Alternate row applications.

² Soluble bag.

³ Tr = <.05; ERM = European red mite; TSM = twospotted spider mite.

APPLE: Malus sylvestris 'Red Delicious'
Twospotted spider mite: Tetranychus
urticae Koch
Predator: Amblyseius fallacis (Garman)

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APPLE, SUMMER MITE CONTROL, WALDEN, NY, 1977: Single tree plots of 20-year-old Red Delicious trees were arranged in a randomized block design with 4 replicates. Treatments were applied July 23 by high pressure handgun sprayer at 425 psi using 11.3 gal/tree (405 gal/acre). Mite populations were evaluated by sampling and brushing 25 leaves/tree from all 4 trees/treatment. A pre-spray count (July 20) indicated that rather uniform twospotted and predator mite populations were present.

The Plictran (all rates) and Carzol treatments showed the greatest initial knockdown of both twospotted and Amblysieus mite populations. By the August 8 count, however, all treatments except the check had very low twospotted mite numbers. The Amblysieus predator counts were very high in the check and lowest in the 8 oz/100 gal and 16 oz/100 gal Plictran treatments.

Mean no. mites or eggs/leaf

Treatment and cz/100 gal	Jul 20			Jul 27			Aug 8		
	TSM	TSME	AMB	TSM	TSME	AMB	TSM	TSME	AMB
Plictran 50WP 4	3.4	3.8	0.7	0.1	1.6	0.1	Tr ²	0.1	0.1
Plictran 50WP 8	3.7	4.5	0.6	0.1	2.2	Tr	Tr	0.1	Tr
Plictran 50WP 16	2.9	5.3	0.7	Tr	3.1	0.1	Tr	0.1	Tr
Vendex 50WP 8	2.8	5.4	0.8	1.2	3.8	0.5	0.1	0.0	0.1
Vendex 50WP ¹ 16	4.5	3.9	1.0	0.8	1.2	0.3	Tr	Tr	0.1
Omite 30WP 24	4.9	5.5	0.9	1.5	11.4	0.6	Tr	Tr	0.1
Omite 6E 10	12.2	13.9	1.1	0.4	5.4	0.4	Tr	0.1	0.1
Carzol 92SP 8	2.9	3.9	0.7	0.1	0.6	0.1	0.2	0.2	0.1
Check	4.7	5.8	0.6	4.8	7.1	0.7	2.9	0.6	1.3

¹ Soluble bag

² Tr = <.05; TSM = twospotted spider mite; TSME = twospotted spider mite eggs;
AMB = Amblyseius Pallacis.

APPLE: Malus sylvestris 'McIntosh'
European red mite: Panorychus
ulmi (Koch)
Apple Rust Mite: Aculus
schlechtendali (Nalepa)
Predator: Amblyseius fallacis
(Garman)

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APPLE, SEASONAL MITE CONTROL PROGRAMS, PERU, NY, 1977: A 14 acre block of large, 30+ year-old 'McIntosh' trees, spaced 40 x 40 ft, was divided into 12 four row x eight tree (1.3 acre) plots. Each plot was assigned a specific program during the season. One half of the block received an early 2% oil application (programs 1-6) while the remaining plots received Petal fall and 1st cover applications of Plictran in alternate row applications (programs 7 & 8) or a single every row Petal fall application (programs 9 & 10) of Plictran. Programs 11 & 12 were used as the checks but sprayed with 2 or 4 oz/100 gal of Plictran after ERM levels reached ca. 20/leaf. Lannate L was applied as an aphicide during mid-July (programs 5 & 6) and its effect on the mite population was monitored. The growers spray schedule in the block consisted of (material, form., rate/100 gal based on 400 gal dilute & dates): Glyodin 30S 1 1/3 pt, 4/19; Dichlone 50WP 1/4 lb, 4/22; 4/26, & 5/2; Imidan 50WP 1 lb, 5/2, 5/19, 5/31, 6/24, 7/9, 7/27 & 8/9; Captan 50WP 1 lb, 5/19, 5/31, 6/10, 6/24, 7/9, 7/27, & 8/9; Alar 85W 3/4 lb, 7/11. All materials were applied by airblast sprayer at 3X (133 gal/acre) prior to petal fall (May 19) and at 6X, (67 gal/acre) 2 1/2 mph, from May 19 on (except Alar at 3X). Mite populations were evaluated by sampling 25 leaves/tree from 4 trees in the two middle rows of each program at biweekly intervals. Leaves were kept in a cooler, brought in the laboratory, the mites brushed onto a plate and counted, usually on the same day samples were collected.

The 2% oil treatment provided sufficient early season mite control to allow the predator (AMB) to build up in late June and provide seasonal control with the exception of program 4, where control was supplemented with an application of Plictran on July 14. Both the alternate row and every row applications of Plictran (programs 7-10) provided sufficient control early in the season so that the AMB predator was able to control the pest mite populations during mid season. Rather high ERM populations were found in the checks, but their peak was reached on different dates, dependent apparently on overwintering egg numbers from the previous season. The Lannate application (programs 5 & 6) reduced AMB numbers and resulted in an increased ERM population late in the season.

Mean No. mites or eggs/leaf

Program No.	April 19	May 19	May 31	June 8			June 21			AMB	June 24
				ERM	ERME	ARM	ERM	ERME	ARM		
1	2% oil			0.4	0.3	38.5	0.8	2.9	91.7	.04	
2	2% oil			1.0	0.6	19.0	1.9	5.8	72.7	.04	
3	2% oil			0.4	0.4	65.5	0.4	2.0	150.1	.05	
4	2% oil			1.4	0.8	56.3	2.8	15.0	128.0	.01	
5	2% oil			0.5	0.2	172.6	0.5	1.9	388.6	.03	
6	2% oil			0.4	0.3	197.1	0.5	2.2	413.6	.07	
7		Plic.2A ¹	Plic.2A	0.5	0.3	16.1	0.1	0.9	44.7	.10	
8		Plic.2A	Plic.2A	0.6	0.3	5.2	0.9	1.6	28.6	.18	
9		Plic.2		0.7	0.2	20.0	0.2	2.0	115.0	.07	
10		Plic.2		0.4	0.1	20.3	0.1	2.7	61.6	.10	
11				3.9	2.4	73.6	2.0	8.2	199.1	.01	
12				39.7	14.7	122.9	21.4	13.6	311.8	.06	Plic.4

Program No.	July 7				July 26				Aug 25			
	ERM	ERME	ARM	AMB	ERM	ERME	ARM	AMB	ERM	ERME	ARM	AMB
1	7.2	3.7	299.0	.20	6.0	6.0	80.6	0.50	0.4	1.8	7.6	1.3
2	7.3	4.0	216.7	.19	5.2	8.8	105.8	0.64	0.3	0.5	4.3	0.8
3	4.2	3.7	366.2	.20	4.3	4.7	203.6	0.93	0.4	0.7	4.5	1.4
4	21.6	19.4	307.2	.09	0.6	1.5	9.8	0.19	0.3	0.3	22.1	0.5
5	5.2	3.6	391.2	.39	9.3	4.2	27.9	0.06	10.1	5.1	21.6	0.6
6	3.0	2.1	407.5	.21	9.0	4.4	13.9	0.10	15.4	8.4	16.1	1.0
7	0.8	1.2	208.9	.22	2.1	4.7	266.1	1.04	0.4	0.7	13.4	1.4
8	1.0	2.0	139.7	.39	1.9	4.6	275.7	1.03	0.1	0.4	5.6	1.4
9	2.7	3.8	295.7	.20	3.4	3.6	171.8	0.94	0.1	0.3	2.2	1.5
10	4.1	3.5	290.9	.38	3.2	3.7	206.9	1.37	0.1	0.3	9.4	1.1
11	18.0	11.4	294.6	.08	0.3	0.8	13.4	0.20	0.3	0.4	23.7	0.6
12	2.5	1.4	27.7	.03	0.3	0.5	21.6	0.09	0.0	0.1	10.8	0.4

ERM= European Mite, ERME= ERM eggs, ARM=Apple Rust Mite, AB= Amblyseius Fallacis,
 1Plictran 50W² 2oz/100 gal, A= Alternate row application.
²Lannate L 1 1/2 pt/100 gal.

APPLES: Malus sylvestris 'Red Delicious'
European red mite: Panonychus ulmi (Koch)
Twospotted spider mite: Tetranychus urticae Koch
Predator: Amblyseius fallacis (Garman)
Predator: Zetzellia mali (Ewing)

APPLE, MITE CONTROL, HUDSON VALLEY, 1977: Insecticide treatments were evaluated for their effects on mite populations in a seasonal control program conducted in a thirteen-year-old planting on the EM 2 root-stock. Eight-tree plots containing from 5 to 7 different apple cultivars were replicated 3 times in a randomized complete block design. Treatments were applied dilute to runoff using ca. 3.8 gal spray/tree (370 gal/acre) with a handgun sprayer at 425 psi. Treatments were applied at pink (McIntosh) April 19, petal fall May 13, and in six cover sprays-May 25, June 13, June 27, July 14, and July 28, and August 11. The Ambush, Croneton + Guthion, Dipel, and Penncap treatments were applied June 9, but 2.2 in. of rain fell shortly after application and the treatments had not dried so they were reapplied with the rest of the treatments on June 13. Additional sprays applied over the entire block for disease control included: Difolatan 4F 5 qt/100 gal, April 1 (handgun applic.), Cyprex 65WP 8 oz/100 gal on May 3, May 16, June 6, and June 21 (airblast applic. at 3X, 133 gal/acre). The 'Rome Beauty' and Cortland cultivars were thinned with 8 ppm NAA, while the Golden Delicious were thinned with 16 ppm NAA on May 18. Above normal temperatures during April resulted in early bloom, harvest also occurred 1-2 weeks earlier than usual. Rainfall was below normal for May and June but above normal for September. Mites were evaluated by sampling and brushing 25 leaves/tree from one 'Red Delicious' tree in each replicate.

Several treatments required European red mite control by the July 1 count. These treatments included Ambush 25WP, Dipel, Penncap, SD-43775 1.3 oz, and Sumithion. Plictran 50WP 4 oz/100 gal was applied to these treatments July 14 by high pressure handgun along with the treatments themselves. Mite suppression was noted until the August 1st count with Croneton, SD-43775 2.6 oz, Ambush 2EC, and UC 21865. A resurgence of twospotted spider mite was noted in several of the forementioned treatments as well as the Lannate and Imidan treatments on August 1. Both ERM and TSM counts remained high on the Croneton, Lannate, UC 21865, and synthetic pyrethroid (Ambush, SD-43775) treatments through the August 23rd count. The synthetic pyrethroids, Croneton, Lannate, and Sevin treatments suppressed both Amblyseius fallacis and Zetzellia mali populations. All treatments, with the exception of Imidan and Dipel, suppressed apple rust mites.

Table 1.

Mean No. mites/leaf

Treatment and oz/100 gal	Jul 1		Aug 1		Aug 23	
	ERM	TSM	ERM	TSM	ERM	TSM
Ambush 2EC 6.4	0.6	0.1	3.4	2.4	23.3	0.9
Ambush 25W ¹ 6.4	20.5	0.1	0.8	1.9	8.6	5.3
Croneton 40W 20.0 + Guthion 50W 8.0	Tr	0.9	0.8	78.6	0.6	19.5
Dipel W ¹ 8.0 + Triton B-1956 2.0	3.4	0.1	0.1	0.1	0.7	1.8
Imidan 50W 24.0 ² , 16.0 ³	3.0	0.1	18.8	19.9	0.3	0.6
Lannate L 16.0 + Imidan 50W 12.0	0.1	0.2	2.0	27.6	3.8	18.8
Pennacp 2F ¹ 32.0	18.3	2.0	0.3	0.2	2.5	2.2
SD 43775 2.4EC ¹ 1.3	8.0	1.3	0.3	0.1	3.0	2.4
SD 43775 2.4EC 2.6	0.2	0.0	7.4	0.9	13.7	1.5
Sumithion 40W ¹ , 4 32.0, Imidan 50W ⁵ 16.0	4.4	0.1	2.2	0.6	6.5	0.9
UC 21865 75W 21.3 ² , 5.3 ⁶ , Sevin 50W ³ 32.0	0.1	0.2	11.9	18.4	5.8	11.8
Check	10.5	0.1	0.8	1.0	0.3	1.0

ERM = European red mite; TSM = Twospotted spider mite; Tr = 0.05.

¹Plictran 50W 4.0 oz/100 gal applied Jul 14.

²Applied Apr 19, May 13.

³Applied May 25 - Aug 11.

⁴Applied Apr 19, May 13, & 25.

⁵Applied Jun 13 - Aug 11.

⁶Applied Aug 11 with Sevin.

Table 2.

Treatment and oz/100 gal	Mean no. mites/leaf									
	Jul 1		Aug 1		Aug 23					
	ARM	ZM	ARM	AMB	ZM	ARM	AMB	ZM	AMB	ZM
Ambush 2EC 6.4	0.0	0.0	0.0	0.0	Tr	0.4	0.0	0.0		
Ambush 25W ¹ 6.4	18.5	Tr	0.0	0.0	0.1	21.5	Tr	0.0		
Croneton 40W 20.0 + Guthion 50W 8.0	0.0	Tr	0.0	0.0	0.0	0.0	0.2	Tr		
Dipel W ¹ 8.0 + Triton B-1956 2.0	256.3	0.6	0.0	Tr	0.0	13.4	0.3	0.1		
Imidan 50W 24.0 ² , 16.0 ³	138.1	0.3	2.8	0.4	1.1	9.1	0.3	1.4		
Lannate L 16.0 + Imidan 50W 12.0	0.6	0.0	0.0	0.0	Tr	63.7	Tr	0.2		
Pennacp 2F ¹ 32.0	7.3	0.0	0.0	Tr	Tr	13.6	0.1	0.0		
SD 43775 2.4EC ¹ 1.3	0.0	0.0	0.0	0.0	Tr	0.0	Tr			
SD 43775 2.4EC 2.6	0.2	0.0	0.0	0.0	Tr	0.0	0.0	0.0		
Sumithion 40W ¹ , ⁴ 32.0, Imidan 50W ⁵ 16.0	7.7	0.0	0.6	0.1	Tr	28.2	0.7	0.1		
UC 21865 75W 21.3 ² , 5.6 ⁶ , Sevin 50W ³ 32.0	0.0	0.0	0.0	0.0	0.1	0.0	Tr	Tr		
Check	274.2	0.6	0.9	Tr	1.4	1.9	0.2	0.9		

ARM = Apple rust mite; AMB = Amblyseius fallacis; ZM = Zetzellia mali; Tr = <0.05

¹ Plictran 50W 4.0 oz/100 gal applied Jul 14.

² Applied Apr 19, May 13.

³ Applied May 25-Aug 11.

⁴ Applied Apr 19, May 13, & 25.

⁵ Applied Jun 13-Aug 11.

⁶ Applied Aug 11 with Sevin.

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APPLE: Malus sylvestris
'Spotted tentiform leafminer':
Phylionorycter crataegella (Clemens)

APPLE, STLM ADULT CONTROL, LIVINGSTON, NY, 1977: A mixed planting of Red and Golden Delicious trees was used to compare 10 treatments for control of spring brood adult spotted tentiform leafminer (STLM). Each treatment was replicated 3 times on single tree plots of each cultivar arranged in a randomized block design. All treatments except Vydate 2L were applied at tight cluster (April 14), pink (April 21), and petal fall (May 12). Vydate 2L was applied as two treatments, pink and petal fall. Treatments were applied by high pressure handgun sprayer at 400 psi, dilute to runoff, using 12.5 gal/tree or 450 gal/acre. Treatments were evaluated by examining 5 earliest-formed cluster leaves/cluster, 25 clusters/tree, from each tree in each replicate on June 10 and recording the number of mined leaves/125. Treatments were re-evaluated on June 24 only this time the earliest-formed leaves were ignored and only young leaves evaluated. An evaluation of several treatments thinning effects was conducted July 27.

Both Vydate applications provided excellent control, with the synthetic pyrethroids, Ambush and SD-43775 showing promise, as well as the miticide, Carzol. Trithion also provided a measure of control statistically indistinguishable from that of the best treatments. At both counts the 'Red Delicious' cultivar appeared more susceptible to the leafminer than the 'Golden Delicious' cultivar. Vydate applied at petal fall provided a measure of thinning similar to that obtained with carbaryl.

Mean no. mined leaves/125

Fruit Set¹

Treatment and oz/100 gal	Jun 10		Jun 24		July 27	
	Golden Del.	Red Del.	Golden Del.	Red Del.	Golden Del.	Red Del.
Vydate 2L 32.0 ²	0.0a	0.0a	0.0a	0.0a	4.20a	3.50 b
Vydate 2L 32.0 ³	0.0a	1.3a	0.0a	0.0a	6.97 b	4.73 c
Ambush 2EC 6.4	0.0a	0.7a	0.0a	0.0a		
SD-43775 2.4EC 2.6	0.7a	2.7a	0.7a	4.3ab		
Carzcl 92SP 8.0	0.7a	0.3a	1.7ab	1.3a		
Trithion 8EC 4.0	6.3ab	3.3a	2.0ab	1.7a		
Sevin 50WP 32.0	5.7ab	27.7 cd	5.3 bc	13.7 c	4.25a	2.91a
Guthion 50WP 8.0	9.3 b	16.0 b	7.0 cd	11.7 bc		
Penncap 2F 32.0	12.0 bc	32.7 d	5.7 c	14.0 c		
Dipel WP 8.0	18.3 cd	20.7 bc	10.0 d	13.3 c		
Check	20.0 d	33.7 d	8.3 cd	11.0 bc	7.15 b	5.01 c

¹ Mean no. fruits/cm branch circumference.

² Applied May 12.

³ Applied April 21.

APPLE: Malus sylvestris
'Spotted tentiform leafminter':
Phyllonorycter crataegella (Clemens)

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APPLE, SPOTTED TENTIFORM LEAFMINER LARVAL CONTROL, GERMANTOWN, NY, 1977: A block of McIntosh (3/4) and Red Delicious (1/4) trees was chosen to compare treatments for control of STLM larvae in the mines. Each treatment was replicated 4 times as single tree plots using a randomized block design. Treatments were applied May 27 by high pressure handgun sprayer at 400 psi, dilute to runoff, using 16 gal spray/tree (432 gal/acre). Treatments were evaluated June 3 by examining 50 mines/tree with larvae inside and recording whether the larvae was alive or dead. 19% pupation had occurred by the evaluation date, indicating the larvae were predominately in the last 2 instars when the treatments were applied.

Lannate was the most effective treatment, although it was not used at the recommended rate of 2 pt per 100 gal. None of the other treatments resulted in acceptable commercial control. Leaf injury and drop was noted with the Trithion treatment.

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APPLE: Malus sylvestris

Spotted tentiform leafminer: Phyllonorycter crataegella (Clemens)

APPLE, STLM EFFECTS ON FRUIT PRODUCTION, 1977: A 10 acre apple block near Livingston, NY was divided into a 4 acre portion treated with Lannate L at the 2 pt/100 gal rate (8 pt/acre) on May 27 and Vydate L at the 2 pt/100 gal rate (8 pt/acre) on June 29. The remaining portion of the block was not treated for STLM. Several Milton cultivars in the block received the June 29 Vydate application but not the May 27 Lannate application. A 3.5 acre Early McIntosh and McIntosh block near Red Hook, NY was divided into a 2.5 acre section treated on the forementioned dates in the same manner for the STLM, while 1.0 acre was left untreated. All STLM sprays were applied by airblast sprayer at 3X (133 gal/acre) (Red Hook) or 4X (100 gal/acre) (Livingston) concentration, traveling at 2 1/2 mph. The growers applied a regular fungicide and insecticide spray schedule over the entire blocks, but were careful not to include any treatments for STLM. Leaves were collected Aug 18 - 25 leaves/tree from 4 trees of each cultivar from the treated and 2 untreated sections of the Livingston block and from the treated and untreated sections of the Red Hook block. "Tissue-feeding" stage mines (those visible on upper leaf surface) were counted on each leaf and the mean no. of mines/leaf calculated for each cultivar and treatment. The same trees were used for the fruit drop, maturity, size, and other crop parameter measurements.

Spray injury was observed on those leaves where the level of mines averaged over 2/leaf. Considerable drop was found on the 'McIntosh' and 'Milton' cultivars when the level of mines exceeded 2/leaf, but not on the 'Early McIntosh' or 'Red Delicious' cultivars. Where STLM infestations exceeded ca. 2 mines/leaf the apples pressure tested ca. 1 lb less than those apples from trees where the STLM was controlled, except for the 'Red Delicious' cultivar, where no pressure differences were found. The lower fruit nos. and crop load of 'McIntosh' in the STLM infested sections at the Livingston site are a reflection of the fruit drop situation which had occurred by the Aug 29 evaluation. No differences in fruit nos., crop load or fruit size were noted between the infested and uninfested 'McIntosh' trees at the Red Hook site, although the level of infestation was below 2 mines/leaf. Fewer and smaller 'Red Delicious' apples were present on the STLM infested trees than on the uninfested trees. Factors which may have exacerbated the effects of the STLM in the infested plots include: the spray injury, moisture stress due to abnormally low rainfall during the season, and abnormally hot weather during the later part of August.

Site ¹ Cultivar	STLM ²		Fruit Drop		Fruit Maturity		Fruit No.		Crop load		Fruit Size	
	Mean no. mines/leaf	Aug 18	Mean no. fruits/tree	Aug 31	Fruit pressure (lbs)	Aug 30	Mean no. fruits/cm	Aug 29	branch circ.	Mean Fruit Weight(G)	Aug 29	Mean Fruit Weight(G)
A McIntosh	0.0		173		17.7		8.97 ^a	754.99 ^a		84.2 ^a		
	2.6		1658		17.1		7.76 ^b	573.46 ^b		74.6 ^b		
	5.0		2632		16.2		3.90 ^c	326.59 ^c		83.7 ^a		
B	0.0				16.5	Sep 8	7.79	888.56		114.1		
	1.6				15.3		7.53	845.00		112.3		
Early McIntosh	0.0				18.8	Aug 3						
	3.2				17.6							
A Milton	0.6		80	Aug 12	16.0	Aug 12						
	2.2		453		14.6							
Red Delicious	0.1				17.5	Sep 23	3.13 ^a	426.07 ^b		136.2 ^b		
	4.4				17.2		2.75 ^a	304.11 ^a		110.8 ^a		

59% and 91% multiple range test

¹ A = Livingston; B = Red Hook.

² STLM = Spotted tentiform leafminer.

APPLE: Malus sylvestris 'Empire'
Sparganothis fruitworm: Sparganothis
sulfureana Clemens

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APPLE, LEAFROLLER LARVAE CONTROL, CLINTONDALE, NY, 1977: A two-year-old 'Empire' block spaced 16 1/2 x 8 ft was divided into ten-tree plots replicated four times. Nine treatments were applied July 27 by high pressure handgun sprayer operating at 425 psi. Treatments were applied dilute to runoff using ca one gal of spray per tree or 332 gal/acre. Treatments were evaluated July 29 by removing and examining all leafrolls found on each tree.

The 16 oz/100 gal rate of Lannate provided the best control with the 8 oz/100 gal rate 2nd best. Although only 50% of the larvae in the Dipel treatment were dead, almost all of the larvae were sick and death appeared eminent. The remaining treatments were ineffective against the mature larvae found in this trial.

Treatment and oz/100 gal	Leafrolls ¹			% Mortality ²
	live	dead	empty	
Lannate L 16.0	0.3	3.3	7.0	92.9
Lannate L 8.0	1.0	2.3	10.5	69.2
Dipel WP 8.0	3.8	3.3	6.0	46.3
Pennacap 2F 32.0	3.0	0.8	6.8	20.0
Zolone 3EC 24.0	4.8	0.5	5.5	9.5
Imidan 50WP 24.0	7.5	0.5	3.3	6.2
Guthion 50WP 8.0	5.5	0.3	9.0	4.3
Trithion 8E 4.0	5.5	0.3	3.0	4.3
Thiodan 50WP 16.0	5.5	0.0	5.3	0.0
Check	7.5	0.0	4.0	0.0

¹ Each no. is mean/treatment derived from four replicates. "Live" refers to live larvae, "Dead" refers to dead larvae; while "Empty" refers to leafrolls with no leafroller present.

² Based on live and dead leafrollers only.