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***FRUIT INSECT AND MITE
CONTROL STUDIES
EASTERN NEW YORK
1985***

R.W.Weires, Entomologist

J.R.VanKirk, Research Support Specialist

P.J.Jentsch, Technician

***Amy O'Connor Jean Loricchio Toni Ringler
Summer Assistants***

**Hudson Valley Laboratory
New York State Agricultural Experiment Station
Highland, New York, 12528**

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Materials Tested

Alsystin 4F	Mobay Chemical Corp.
Ambush 2E	ICI Americas, Inc.
Apollo 50SC	Nor-Am America, Inc.
Brigade 10W	FMC Corp.
Carzol 92SP	Nor-Am America, Inc.
Dimilin 25W	Uniroyal Chemical Co.
F-4999 15SC	FMC Corp.
Guthion 50WP	Mobay Chemical Corp.
Kelthane 4F	Rohm and Haas Co.
Lorsban 50W	Dow Chemical U.S.A.
MAT 5927 50W	Mobay Chemical Corp.
Mitac 50WP	Nor-Am America, Inc.
MO070616 1.9E	Shell Chemical Co.
Omite 6E	Uniroyal Chemical Co.
Omite 30W (east and west coast)	Uniroyal Chemical Co.
Orthene 75SP	Chevron Chemical Co.
Penncap 2M	Penwalt Corp.
Penreco Superior Spray Oil	Penreco
Plictran 50W	Dow Chemical U.S.A.
Pounce 25WP	FMC Corp.
Pydrin 2.4E	Shell Chemical Co.
Savy 50W	E.I. duPont de Nemours & Co.
SD014114 4L	Shell Chemical Co.
Spur 22EW	Zoecon Corp.
Sun Oil 6E	Sun Oil Co.
Systox 6E	Mobay Chemical Corp.
Thiodan 50WP	FMC Corp.
Vydate L	E.I. DuPont de Nemours & Co.
XRM-47599 80DG	Dow Chemical U.S.A.

1985 MAXIMUM AND MINIMUM TEMPERATURES AND PRECIPITATION Hudson Valley Laboratory, Highland, NY

All readings were taken at 0800 on the dates indicated

Date	Mar			Apr			May			Jun			Jul			Aug			Sept		
	Max	Min	Precip	Max	Min	Precip	Max	Min	Precip	Max	Min	Precip	Max	Min	Precip	Max	Min	Precip	Max	Min	Precip
1	40	20		37	32	0.56	85	53		73	63	0.55	79	56		66	60	1.59	67	61	
2	56	34		48	35	0.01	79	50	0.03	74	49		81	59		76	52		72	60	
3	58	26		47	27		54	42	1.01	85	59		79	64		77	51		82	57	
4	41	20		48	35	0.09	54	30	0.30	77	48		81	59		81	55		82	68	
5	34	20	0.62	58	42		71	46		77	53		83	59		84	58		90	74	
6	45	19		79	53		73	55	0.19	61	53	0.48	85	64	0.01	85	59		90	77	
7	30	12		65	42		69	55	0.04	72	45	0.12	85	63	0.12	81	60		91	76	
8	37	27	0.18	57	31	0.77	68	46		75	55	0.11	82	58		81	65	1.34	85	76	
9	55	33		50	24		60	29		66	52	0.38	79	59		82	63	0.38	85	73	0.41
10	52	27		44	22		69	47		74	59		83	65	2.09	87	60		79	68	1.09
11	53	24		47	3		85	58		82	52		84	62		86	66		81	56	0.40
12	59	36	1.09	58	30		87	62		78	59	0.26	82	54		86	60		64	50	
13	55	40	0.03	64	40		85	63	0.04	76	51	0.04	80	56	0.09	78	53		62	50	
14	53	38		55	40	0.01	87	57		63	49		82	61		83	63	0.01	61	49	
15	50	31		52	42		77	50		69	44		86	69	0.54	92	73		69	48	
16	43	21		64	51		66	51		78	59	0.41	84	65	0.03	92	72	0.06	72	52	
17	49	31		75	36		66	56	0.02	75	58	0.72	84	56		77	58	0.02	75	47	
18	55	24		55	31		75	50	2.24	78	63	0.15	80	60		84	58		74	57	
19	33	13		67	40		66	44	0.08	81	58	0.02	86	64		82	64		78	61	
20	48	25		72	45	0.34	63	45		76	54		86	70		76	66		83	63	
21	62	21		60	45		82	57		76	49	0.01	90	62		79	60		85	66	
22	46	17		86	52		79	45	0.29	79	50		87	66	1.45	79	54		82	61	
23	51	30		89	55	0.13	73	48		80	62		84	55		80	54		72	61	
24	54	37		69	44		72	45		83	65	0.02	76	48		80	54		75	63	0.03
25	47	27		53	46		79	47		82	51	0.01	80	58		80	64	0.29	81	57	0.24
26	45	20		68	52	0.01	81	51		73	50		84	66		74	65	0.55	69	56	
27	54	24		78	49	0.01	79	58		66	55		82	64	0.25	85	72		70	58	0.53
28	73	42	0.01	62	39	0.01	84	62	0.36	65	54	0.25	83	55		84	74		82	62	2.51
29	75	51		65	45	0.01	63	52	0.52	64	55	0.76	83	59		83	66		71	56	
30	74	42		66	39		70	47		68	56		82	62		74	63		73	56	0.01
31	54	35					73	57					85	62		75	66	0.95			
Total			1.93			1.95			5.12			4.17			4.90			5.19			5.22

APPLE: *Malus domestica*
Apple aphid: *Aphis pomi* De Geer
Codling moth: *Laspeyresia pomonella* (L.)
European apple sawfly: *Hoplocampa testudinea* (Klug)
Plum curculio: *Conotrachelus nenuphar* (Herbst)
Rosy apple aphid: *Dysaphis plantaginea* (Passerini)
San Jose scale: *Quadraspidiotus perniciosus* (Comstock)
Spotted tentiform leafminer: *Phyllonorycter blancardella* (Fabr.)
Tarnished plant bug: *Lygus lineolaris* (P. de B.)
White apple leafhopper: *Typhlocyba pomaria* McAtee
Variegated Leafroller: *Platynota flavedana* Clemens

R. W. Weires & J. R. VanKirk
 Hudson Valley Laboratory
 N.Y.S. Agric. Exp. Station
 Highland, New York, 12528

APPLE, INSECT CONTROL, HUDSON VALLEY LAB, HIGHLAND, NY, 1985:
 Treatments were applied to eight tree plots replicated three times in a randomized complete block design. Treatments were applied at pink, 23 Apr, petal fall, 10 May, and in cover sprays 24 May, 6 Jun, 20 Jun, 3 Jul, 18 Jul, 3 Aug, and 17 Aug with the following exceptions: the three Dimilin treatments were applied 23 Apr, 20 Jun, and 3 Jul, with Guthion substituted in all the other applications; the 2 gal rate of oil was applied 4 Apr while the 1 gal rate was applied 20 Apr in the respective Dimilin treatments; the Apollo applications were made 3 Aug; the Spur applications were made 23 Apr, 10 May, 20 Jun, and 3 Jul, with Guthion substituted in all other applications; and the miticides XRM-47599 and Plictran were applied 3 Aug. Treatments were applied dilute to runoff using a high-pressure handgun sprayer at 400 psi delivering 4.2 gal spray/tree or 403 gal/acre. Trees were 21 years-old, 12 ft high, spaced 15 by 30 ft, and on the EMII rootstock. Additional applications over the entire block included: Difolatan 80S 16 lb/acre 12 Apr; Funginex 1.6E 16 oz/acre, 4 May; Bayleton 50W 2 oz/acre, 14 May and 21 May; Dithane M-45 78WP 4 1/2 lb/acre, 4 May and 15 May; Cyprex 65W 3 lb/acre, 15 Jun and 25 Jun; and Polyram 80W 5 lb/acre, 9 Jul. Naphthaleneacetic acid was applied in thinning sprays on 15 May in the following concentrations: "Golden Delicious" 15 ppm, "McIntosh", "Red Delicious", and "Cortland" 10 ppm, and "Jersey Mac" and "Empire" 7 1/2 ppm. Apple aphids were evaluated by examining 25 terminals on one "McIntosh" tree/plot on 12 Jun and 24 Jun. Rosy apple aphids were evaluated by examining 25 fruiting clusters from one "Cortland" tree/plot on 23 May. European apple sawfly and plum curculio were evaluated prior to Jun drop by examining all of the fruits in 50 fruiting clusters on one "Cortland" tree/plot on 22 May. Spotted tentiform leafminer was evaluated 13 Aug by counting the no. of mines on 25 leaves from one "McIntosh" tree/plot. White apple leafhopper was evaluated by counting the no. of nymphs on 25 leaves from one "Rhode Island Greening" tree/plot on 24 Jul. Insect damage to the fruit was assessed at harvest by examining 100 fruits/cultivar/plot from "Jersey Mac" 31 Jul, "McIntosh" 10 Sep, and "Golden Delicious" 25 Sep. A warm, early Spring resulted in an early bloom lasting longer than normal and during which occurred two frosts, which caused only slight damage at this site. Rainfall was very uniform throughout the season, and temperatures were generally below normal.

The Spur treatments provided no control of European apple sawfly but controlled most other pests, especially at the higher rate which was often statistically better than the other two rates. Dimilin at all rates provided excellent leafminer control but had little effect on many other species. Tarnished plant bug injury was quite severe and the MO070616 product provided the most effective control of this pest, thereby resulting in having the least damaged fruit overall. San Jose scale infestations were found in all treatments except the Penncap/Lorsban combination. Fruit finish was excellent with the possible exception of the Penncap/Lorsban combination, which resulted in some russetting of the "Golden Delicious" cultivar.

Treatment	rate form. /100 gal.	Mean no. infested clusters/50			Mean no. apple aphid infested terminals/25		Mean no. nymphs or mines/leaf	
		Rosy apple aphid	Plum curculio	European apple sawfly	Jun 12	Jun 24	WALH	STLM
1. Spur 22EW Guthion 50WP XRM-47599 80DG	1 oz 8 oz 2.5 oz.....	0.0a	7.7 b	21.3 bc	20.3a	4.3 bc	.01 b	.16abc
2. Spur 22EW Guthion 50WP Plectran 50W	2 oz 8 oz 4 oz.....	0.3a	0.3a	16.3 b	15.3a	3.0 bcd	.00 b	.31ab
3. Spur 22EW Guthion 50WP	3 oz 8 oz.....	0.0a	0.3a	19.7 bc	17.0a	2.7 cde	.00 b	.07 bc
4. Pennacp 2M + Lorsban 50W	8 oz 12 oz.....	0.0a	0.0a	0.0a	5.3 b	5.7 b	.03 b	.41a
5. Dimilin 25W Guthion 50WP Sun oil 7E Apollo 50SC	1 oz 8 oz 2 gal 2 oz.....	0.0a	2.3ab	3.3a	19.3a	24.3a	.99a	.03 bc
6. Dimilin 25W Guthion 50WP Sun oil 7E	2 oz 8 oz 1 gal.....	0.0a	2.3ab	0.7a	18.7a	24.7a	.12 b	.00 c
7. Dimilin 25W Guthion 50WP Apollo 50SC	4 oz 8 oz 1 oz.....	5.3 b	0.7a	2.7a	16.0a	24.7a	.20 b	.04 bc
8. MCO070616 1.9E + SD014114 4L	0.8 oz 2.0 oz.....	0.6a	0.7a	1.3a	2.3 b	0.3 de	.00 b	.00 c
9. MCO070616 1.9E + SD04114 4L	0.8 oz 1 oz.....	0.0a	0.0a	2.3a	1.0 b	0.0 c	.00 b	.01 bc
10. MCO070616 1.9E + SD014114 4L	0.8 oz 0.5 oz.....	0.0a	2.0ab	2.7a	0.3 b	1.3 de	.01 b	.04 bc
11. MCO070616 1.9E	0.8 oz.....	0.0a	1.3a	2.3a	1.7 b	0.3 de	.00 b	.11 bc
12. Check.....	13.0 c	28.3 c	31.7 c	18.3a	25.0a	.65a	.13abc	

Means followed by the same letter are not significantly different using Waller and Duncan's Multiple Range Test, $p=0.05$

Treatment	rate form. /100 gal.	% injured fruit						% clean fruit	Mean russet rating**
		Plum curculio	Tarnished plant bug	Codling moth	San Jose scale*	Late leafroller	European apple sawfly		
1. Spur 22EW Guthion 50WP XRM-47599 80DG	1 oz 8 oz 2.5 oz.....	11.4 b	28.3abc	0.4 b	0.6 bc	0.3 b	4.6a	57.6 de	.17 bc
2. Spur 22EW Guthion 50WP Plictran 50W	2 oz 8 oz 4 oz.....	2.9 c	25.8 bc	0.3 b	2.0 bc	0.1 b	3.9ab	67.01 bcde	.18 bc
3. Spur 22EW Guthion 50WP	3 oz 8 oz.....	1.7 c	21.6 cd	0.0 b	0.6 bc	0.0 b	2.3abc	74.2abcd	.15 c
4. Pennacp 2M + Lorsban 50W	8 oz 12 oz.....	1.3 c	25.3 bc	1.8 b	0.0 c	0.0 b	0.2 c	71.6abcd	1.26a
5. Dimilin 25W Guthion 50WP Sun oil 7E Apollo 50SC	1 oz 8 oz 2 gal 2 oz.....	4.6 bc	32.0abc	0.0 b	0.2 bc	0.0 b	4.3ab	60.8 cde	.12 c
6. Dimilin 25W Guthion 50WP Sun oil 7E	2 oz 8 oz 1 gal.....	5.4 bc	33.1ab	0.0 b	0.9 bc	0.0 b	2.8abc	59.1 de	.12 c
7. Dimilin 25W Guthion 50WP Apollo 50SC	4 oz 8 oz 1 oz.....	3.5 bc	37.1a	0.0 b	2.7 bc	0.0 b	4.1ab	54.5 e	.36 b
8. MO070616 1.9E + SD014114 4L	0.8 oz 2 oz.....	3.8 bc	12.1 d	0.0 b	2.2 bc	0.0 b	1.9abc	81.0ab	.21 bc
9. MO070616 1.9E + SD04114 4L	0.8 oz 1 oz.....	2.0 c	10.8 d	0.0 b	0.9 bc	0.0 b	1.1 bc	86.0a	.16 bc
10. MO070616 1.9E + SD014114 4L	0.8 oz 0.5 oz.....	1.8 c	10.7 d	0.0 b	0.6 bc	0.0 b	0.3 c	86.9a	.13 c
11. MO070616 1.9E	0.8 oz.....	1.6 c	12.2 d	0.0 b	10.0 b	0.3 b	1.3abc	78.1abc	.04 c
12. Check.....	64.2a	25.3 bc	6.7a	29.0a	4.0a	2.7abc	15.4 f	.21 bc	

Means followed by the same letter are not significantly different by Duncan's Multiple Range Test, $p=0.05$

* Data transformed for analysis using arcsine x transformation

** Based on 0 (best) to 3 (worst) rating of finish on "Golden Delicious" cultivar.

APPLE: *Malus domestica*
Apple rust mite: *Aculus schlechtendali* (Nalepa)
A predatory mite: *Amblyseius fallacis* (Garman)
European red mite: *Panonychus ulmi* (Koch)
Twospotted spider mite: *Tetranychus urticae* Koch

R. W. Weires & J. R. VanKirk
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APPLE, MITE CONTROL, INSECTICIDE BLOCK, HUDSON VALLEY LAB, HIGHLAND, NY, 1985: Treatments were applied to eight tree plots replicated three times in a randomized complete block design. Treatments were applied at pink, 23 Apr, petal fall, 10 May, and in cover sprays 24 May, 6 Jun, 20 Jun, 3 Jul, 18 Jul, 3 Aug, and 17 Aug with the following exceptions: the three Dimilin treatments were applied 23 Apr, 20 Jun, and 3 Jul, with Guthion substituted in all the other applications; the 2 gal rate of oil was applied 4 Apr while the 1 gal rate was applied 20 Apr in the respective Dimilin treatments; the Apollo miticide applications were made 3 Aug; the Spur applications were made 23 Apr, 10 May, 20 Jun, and 3 Jul, with Guthion substituted in all other applications; and the miticides XRM-47599 and Plictran were applied 3 Aug. Treatments were applied dilute to runoff using a high-pressure handgun sprayer at 400 psi delivering 4.2 gal spray/tree or 403 gal/acre. Trees were 21 years-old, 12 ft high, spaced 15 by 30 ft, and on the EMII rootstock. Additional applications over the entire block included: Difolatan 80S 16 lb/acre 12 Apr; Funginex 1.6E 16 oz/acre, 4 May; Bayleton 50W 2 oz/acre, 14 May and 21 May; Dithane M-45 78WP 4 1/2 lb/acre, 4 May and 15 May; Cyprax 65W 3 lb/acre, 15 Jun and 25 Jun; and Polyram 80W 5 lb/acre, 9 Jul. Naphthaleneacetic acid was applied in thinning sprays on 15 May in the following concentrations: "Golden Delicious" 15 ppm, "McIntosh", "Red Delicious", and "Cortland" 10 ppm, and "Jersey Mac" and "Empire" 7 1/2 ppm. Mite populations were evaluated by sampling 25 leaves from one "Red Delicious" tree/plot at biweekly intervals throughout the summer. The leaves were brought into the laboratory where they were brushed with a mite brushing machine, and the mites and eggs examined and counted using a binocular scope. A warm, early Spring resulted in an early bloom which lasted longer than normal and which included two frosts. Rainfall was very uniform throughout the season, and temperatures were generally below normal.

Mite suppression in the Spur plots was directly related to the amounts applied, as was the case to a lesser degree in the MO070616 plots, where control was related to the dosage of SD014114. The oil treatments provided good mite control early. The Plictran and XRM treatments provided some but not exceptional control whereas the Apollo treatments provided good control without reducing the *A. fallacis* predator. By early Aug *A. fallacis* was quite abundant in the Dimilin plots, and during the latter part of the season was also present in the Spur and MO070616 plots.

		Mean no. of mites or eggs/leaf*															
		June 3				June 13				June 26							
		ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	
Treatment	rate form. /100gal																
1. Spur 22EW	1 oz																
XRM-47599 80DG	2.5 oz	0.5	1.2	0.3	0.1	11.2	0.6	12.6	0.1	3.9	11.6	2.6	6.8	0.0	0.1	25.4	
2. Spur 22EW	2 oz																
Plectan 50W	4 oz	0.1	0.6	0.2	0.1	0.2	0.3	5.2	0.5	0.6	0.2	0.3	2.8	0.0	0.0	3.4	
3. Spur 22EW	3 oz																
Pennicap 2M	8 oz	0.1	0.2	0.0	0.0	0.6	0.2	3.3	0.1	0.9	0.1	0.1	0.7	0.0	0.1	2.2	
+ Lorsban 50W	12 oz	0.2	0.2	0.0	0.0	0.2	0.2	3.4	0.0	0.0	0.0	2.5	2.6	0.2	0.3	1.7	
5. Dimilin 25W	1 oz																
Sun oil 7E	2 gal																
Apollo 50SC	2 oz	0.2	0.2	0.0	0.0	0.0	0.1	1.3	0.1	0.1	0.8	0.5	2.5	1.0	0.2	1.3	
6. Dimilin 25W	2 oz																
Sun oil 7E	1 gal	0.0	0.0	0.1	0.0	0.4	0.1	0.8	0.2	0.1	1.1	0.3	1.2	0.7	0.7	9.2	
7. Dimilin 25W	4 oz																
Apollo 50SC	1 oz	1.8	4.1	1.5	1.4	0.0	1.9	17.3	4.4	2.3	0.6	6.1	21.2	3.2	4.2	2.1	
8. MO070616 1.9E	0.8 oz																
+ SD014114 4L	2 oz	1.7	1.7	0.3	0.0	0.0	0.8	8.2	0.0	0.0	0.4	1.8	7.2	0.1	0.0	0.2	
9. MO070616 1.9E	0.8 oz																
+ SD04114 4L	1 oz	0.9	0.2	0.2	0.1	0.0	0.1	1.4	0.0	0.0	0.0	0.4	0.7	0.0	0.0	0.2	
10. MO070616 1.9E	0.8 oz																
+ SD014114 4L	0.5 oz	0.4	0.5	0.1	0.1	0.0	0.2	4.1	0.0	0.0	0.0	1.2	3.8	0.2	0.3	0.2	
11. MO070616 1.9E	0.8 oz	0.3	0.0	0.1	0.0	3.4	0.5	3.7	0.0	0.0	4.9	0.4	5.2	0.2	0.4	23.7	
12. Check		0.9	1.2	1.2	0.7	1.1	0.5	19.4	1.2	0.7	7.3	3.3	5.3	1.2	4.3	32.5	
Treatment	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ARM	
1. Spur	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ARM	
XRM-47599	0.7	61.3	0.1	0.5	32.5	21.3	93.4	9.5	15.1	91.8	0.0	5.5	35.1	4.7	3.8	20.1	
2. Spur	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ARM	
Plectan	0.1	8.5	0.1	0.3	30.2	5.8	52.9	13.2	13.1	170.4	0.0	2.7	18.2	2.7	0.8	23.2	
3. Spur	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ARM	
+ Lorsban	0.0	1.9	0.0	0.2	0.0	2.2	9.7	1.6	0.4	83.8	0.0	6.2	31.7	9.0	0.5	200.5	
4. Pennicap	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ARM	
+ Lorsban	0.2	27.5	0.4	1.4	1.3	4.7	16.6	0.8	1.1	32.6	0.0	1.2	39.2	0.4	0.6	79.1	
5 Dimilin	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ARM	
Sun oil	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ARM	
Apollo	1.8	13.9	1.4	2.1	0.4	9.2	44.2	7.2	8.7	14.3	0.0	0.9	105.4	0.3	6.2	13.0	
6. Dimilin	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ARM	
Sun oil	0.1	5.7	0.7	2.4	6.0	4.5	35.2	8.4	15.9	30.8	0.2	1.2	31.4	1.4	1.2	169.5	
7. Dimilin	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ARM	
Apollo	1.3	56.4	0.9	2.7	0.0	11.1	40.6	0.8	1.0	10.2	0.2	1.4	68.6	0.1	1.3	8.6	
8. MO070616	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ARM	
+ SD014114	0.5	32.2	0.0	0.0	0.6	6.6	73.7	0.6	1.1	5.6	0.0	10.5	119.9	1.2	3.9	3.7	
9 MO070616	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ARM	
+ SD04114	0.1	3.2	0.0	0.2	0.2	4.3	29.4	2.3	2.4	3.4	0.0	6.2	108.9	7.7	15.0	35.7	
10 MO070616	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ARM	
+ SD014114	7.5	8.9	0.6	0.2	0.4	8.7	75.2	4.0	3.7	9.0	0.0	13.8	191.0	9.9	18.1	1.3	
11. MO070616	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ARM	
	0.2	31.1	1.0	3.9	55.3	10.6	75.2	12.6	20.5	258.7	0.1	22.3	80.2	41.6	63.6	96.5	
12. Check	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ERM	ERME	TSM	TSM E	ARM	ARM	
	3.0	27.0	1.7	1.4	26.7	3.0	10.1	0.3	0.4	137.7	0.0	0.1	6.2	0.1	0.3	91.5	
*Based on 25 leaves/tree from 1 Red Delicious tree in each tree of 3 replicates/treatment. ERM=European red mite; ERME=ERM eggs; TSM=TSM eggs; ARM=Apple rust mite; AMB=Amblyseius fallacis.																	

APPLE: *Malus domestica*
Apple rust mite: *Aculus schlechtendali* (Nalepa)
A predatory mite: *Amblyseius fallacis* (Garman)
European red mite: *Panonychus ulmi* (Koch)
Twospotted spider mite: *Tetranychus urticae* Koch
A stigmaleid predator: *Zetzellia mali* (Ewing)

R. W. Weires & J. R. VanKirk
Hudson Valley Laboratory
N.Y.S. Agric. Exp. Station
Highland, New York, 12528

APPLE, MITE CONTROL, MITICIDE BLOCK, HUDSON VALLEY LAB, HIGHLAND, NY, 1985: Treatments were applied to eight tree plots replicated three times in a randomized complete block design, except where space constraints did not allow for replication. Treatments were applied dilute to runoff on the dates indicated in the table using a high-pressure handgun sprayer at 400 psi delivering 4.2 gal spray/tree or 403 gal/acre. It should be noted that the first Penreco oil application did not include an emulsifier, whereas the second did. Trees were 21 years-old, 12 ft high, spaced 15 by 30 ft, and on the EMII rootstock. Additional applications over the entire block included: Guthion 50W 2 lb/acre, 14 May and 24 May; Difolatan 80S 16 lb/acre 12 Apr; Funginex 1.6E 16 oz/acre, 4 May; Bayleton 50W 2 oz/acre, 14 May and 21 May; Dithane M-45 78WP 4 1/2 lb/acre, 4 May and 15 May; Cyprex 65W 3 lb/acre, 15 Jun and 25 Jun; and Polyram 80W 5 lb/acre, 9 Jul. Naphthaleneacetic acid was applied in thinning sprays on 15 May in the following concentrations: "Golden Delicious" 15 ppm, "McIntosh", "Red Delicious", and "Cortland" 10 ppm, and "Jersey Mac" and "Empire" 7 1/2 ppm. Mite populations were evaluated by sampling 25 leaves from one "Red Delicious" tree/plot at biweekly intervals throughout the summer. The leaves were brought into the laboratory where they were brushed with a mite brushing machine, and the mites and eggs examined and counted using a binocular scope. A warm, early Spring resulted in an early bloom which lasted longer than normal and which included two frosts. Rainfall was very uniform throughout the season, and temperatures were generally below normal.

The DPX Y5893 treatments provided the most complete spider mite control found, the length of which was influenced by the rate and number of applications. DPX treatments did not affect eriophyid mite populations, nor did they prevent or diminish predatory phytoseiids (*A. fallacis*) or stigmaleids (*Z. mali*) from building up in the plots. The Omite and Plictran treatments initially performed satisfactorily and permitted predators to establish during the season. The early oil treatments lasted until mid-Jun, after which time the Apollo treatments were applied and provided good control of all species.

Treatment	rate form. /100 gal.	application dates	Mean # mites or eggs/leaf ¹									
			June 4					Jun 13				
			ERM	ERME	TSM	TSME	ARM	ERM	ERME	TSM	TSME	ARM
1. Penreco oil Apollo 50SC	2gal 1oz	4/4 7/18.....	1.6	2.1	0.1	0.0	0.2.....	1.1	17.7	0.2	0.5	0.4
2. Penreco Oil +Triton X-363M Apollo 50SC	1gal 1.2oz 2oz	4/20 7/18.....	0.6	0.8	0.0	0.0	0.0.....	0.8	10.5	0.0	0.1	0.0
3. DPX Y5893 50W	1oz	4/23.....	0.0	0.2	0.0	0.1	0.4.....	0.1	1.5	0.1	0.1	2.6
4. DPX Y5893 50W	1oz	4/23,6/22.....	0.0	0.3	0.1	0.4	0.4.....	0.1	1.6	0.0	0.1	14.1
5. DPX Y5893 50W	2oz	4/23.....	0.0	0.1	0.0	0.1	7.5.....	0.1	1.3	0.1	0.1	36.5
6A. DPXY 5893 50W	2oz	4/23,6/22.....	0.0	0.0	0.0	0.0	0.0.....	0.0	3.7	0.0	0.4	0.56
6B. DPX Y5893 50W	4oz	4/23.....	0.0	0.3	0.0	0.0	6.6.....	0.0	1.2	0.0	0.0	6.7
6C. DPX Y5893 50W	4oz	4/23,6/22.....	0.0	0.3	0.0	0.0	0.0.....	0.0	2.6	0.0	0.2	0.0
7. Orthene 75SP Plictran 50W	5.3oz 4 oz	4/23,6/22 6/22.....	4.0	4.9	0.4	0.5	0.6.....	2.6	38.7	0.1	1.1	13.2
8. Orthene 75SP Omite 30W	2.6oz 24oz	4/23,6/22 6/22.....	6.7	5.4	1.9	2.7	0.0.....	2.3	19.3	1.2	0.7	1.3
9. MAT 5927 50W Omite 6E	2.4oz 8oz	4/23,6/22 6/22.....	2.8	4.7	0.0	0.2	12.7.....	8.5	38.4	0.5	3.8	26.6
10. MAT 5927 50W Omite 6E	8oz 8oz	4/23,6/22 6/22.....	6.6	5.8	0.5	0.6	3.0.....	6.2	58.6	0.9	0.4	11.0
11. Shell pyrethroids* Plictran 600F	3.1oz	4/23 6/22.....	5.8	22.9	7.5	7.3	1.5.....	7.7	85.2	2.4	6.2	3.0
12. Check.....			2.7	5.8	0.9	0.7	3.4	2.1	65.7	1.7	12.6	33.7

12. Check	rate form.	June 27					July 15					
Treatment	/100gal.	ERM	ERME	TSM	TSME	ARM	ERM	ERME	TSM	TSME	ARM	AMB
1. Penreco oil	2gal											
Apollo 50SC	1oz.....	7.6	5.5	0.2	0.2	1.3.....	9.5	18.3	0.7	0.9	1.0	0.0
2. Penreco Oil	1gal											
+Triton X-363M	1.2oz											
Apollo 50SC	2oz.....	3.9	8.0	0.5	0.8	1.1.....	9.2	17.8	1.5	1.4	7.1	0.1
3. DPX Y5893 50W	1oz.....	0.4	1.7	0.6	0.5	41.1.....	0.7	3.2	1.3	1.3	78.4	0.1
4. DPX Y5893 50W	1oz.....	0.2	2.2	0.8	3.2	61.4.....	0.1	2.3	0.2	0.5	94.1	0.1
5. DPX Y5893 50W	2oz.....	0.5	0.9	0.5	0.3	52.5.....	1.0	3.0	0.5	0.8	85.9	0.0
6A. DPXY 5893 50W	2oz.....	0.1	0.5	0.0	0.1	3.9.....	0.0	0.2	0.0	0.1	1.7	0.0
6B. DPX Y5893 50W	4oz.....	0.0	2.7	0.0	0.2	70.0.....	0.3	3.5	0.3	1.6	83.4	0.1
6C. DPX Y5893 50W	4oz.....	0.0	4.0	0.0	0.0	6.7.....	0.0	0.9	0.0	0.0	8.4	0.0
7. Orthene 75SP	5.3oz											
Plictran 50W	4 oz.....	1.5	12.3	0.0	0.3	3.7.....	0.5	19.1	0.0	0.1	1.1	0.0
8. Orthene 75SP	2.6oz											
Omite 30W	24oz.....	0.9	23.2	1.2	2.8	0.2.....	0.4	8.0	1.1	0.7	2.4	0.0
9. MAT 5927 50W	2.4oz											
Omite 6E	8oz.....	2.4	23.2	0.0	1.0	27.3.....	0.2	6.2	0.0	0.0	2.1	0.0
10. MAT 5927 50W	8oz											
Omite 6E	8oz.....	1.4	44.1	1.0	1.8	4.31.....	0.3	28.5	0.1	0.5	3.5	0.0
11. Shell pyrethroids*												
Plictran 600F	3.1oz.....	0.7	49.0	0.6	1.8	3.71.....	0.4	17.9	0.2	0.2	2.6	0.0
12. Check		11.7	23.2	2.6	4.9	32.8	7.0	3.6	1.4	0.2	65.5	0.1

¹Based on 25 leaves/tree, from 1 Red Delicious tree in each of three replicates/treatment, except treatments 6a - 6c, which were unreplicated.
ERM=European Red Mite; ERME=ERM eggs; TSM=Twospotted spider mite; TSME=TSM eggs; ARM=Apple rust mite; AMB=Amblysius fallacis;
MAL=Zeitzellia mali; MALE=MAL eggs
*Treatment 11 treated with MO01716 1.9E, 2.5oz/100gal on rep.2, Pydrin 2.4E, 2.7oz/100gal on rep.3 and Pydrin 2.4E, 8.0oz/100gal on rep.1.

		Mean # mites or eggs/leaf ¹													
Treatment	rate form. /100 gal.	July 29						August 15							
		ERM	ERME	TSM	TSME	ARM	AMB	ERM	ERME	TSM	TSME	ARM	AMB	MAL	MALE
1. Penreco oil Apollo	2gal 1oz.....	0.2	27.8	0.1	0.9	22.8	0.0.....	0.0	18.7	0.0	0.0	13.8	0.1	0.0	0.0
2. Penreco Oil +Triton X-363M Apollo	1gal 1.2oz 2oz.....	2.2	18.4	0.1	0.0	11.4	0.0.....	0.0	11.8	0.0	0.2	16.4	0.0	0.0	0.0
3. DPX Y5893	1oz.....	2.2	9.8	1.2	0.3	121.0	0.3.....	0.2	4.4	0.1	0.0	124.5	0.1	0.3	0.1
4. DPX Y5893	1oz.....	0.0	2.1	0.0	0.0	73.7	0.6.....	0.0	0.8	0.0	0.1	46.5	0.1	0.0	0.0
5. DPX Y5893	2oz.....	1.2	8.9	0.7	0.1	101.0	0.2.....	0.2	9.3	0.0	0.1	45.4	0.0	1.2	0.8
6A. DPXY 5893	2oz.....	0.2	1.4	0.0	0.1	72.8	0.0.....	0.0	1.2	0.0	0.2	56.6	0.0	0.0	0.0
6B. DPX Y5893	4oz.....	0.7	4.6	0.7	0.3	126.0	0.7.....	0.1	2.3	0.0	0.5	48.2	0.3	0.0	0.1
6C. DPX Y5893	4oz.....	0.0	1.0	0.0	0.0	101.4	0.1.....	0.3	4.8	0.0	0.6	171.4	0.3	0.0	0.0
7. Orthene Plictran 50W	5.3oz 4 oz.....	1.3	18.7	0.6	0.9	12.9	0.0.....	0.7	14.6	0.1	0.1	90.0	0.2	0.1	0.0
8. Orthene Omite 30W	2.6oz 24oz.....	0.9	7.0	0.7	0.1	5.4	0.1.....	0.1	8.6	0.1	0.7	39.2	0.1	0.0	0.0
9. MAT 5927 5 Omite 6E	2.4oz 8oz.....	0.4	4.0	0.1	0.1	4.9	0.0.....	0.5	5.2	0.0	0.9	21.3	0.1	0.0	0.0
10. MAT 5927 Omite 6E	8oz 8oz.....	1.1	12.4	0.6	0.4	8.8	0.0.....	0.5	9.6	0.1	1.1	51.7	0.2	0.0	0.0
11. Shell pyrethroids* Plictran 600F	3.1oz.....	5.0	19.0	0.5	0.2	2.4	0.0.....	5.3	30.5	0.6	0.4	32.7	0.0	0.0	0.0
12. Check.....		0.4	8.8	0.0	0.1	133.5	0.1.....	0.1	1.7	0.1	0.3	47.4	0.0	0.8	0.1

		August 29													
Treatment	rate form. /100 gal.	ERM	ERME	TSM	TSME	ARM	AMB	MAL	MALE						
1. Penreco oil Apollo	2gal 1oz.....	0.0	0.8	0.0	0.0	15.3	0.1	0.0	0.0						
2. Penreco Oil +Triton X-363M Apollo	1gal 1.2oz 2oz.....	0.1	2.5	0.0	0.1	12.1	0.1	0.0	0.0						
3. DPX Y5893	1oz.....	0.1	0.6	0.0	0.3	36.2	0.0	0.3	0.2						
4. DPX Y5893	1oz.....	0.0	0.1	0.0	0.1	16.2	0.1	0.2	0.1						
5. DPX Y5893	2oz.....	0.1	0.3	0.0	0.0	37.0	0.1	0.7	0.2						
6A. DPXY 5893	2oz.....	0.2	1.2	0.0	0.0	69.4	0.4	0.1	0.0						
6B. DPX Y5893	4oz.....	0.0	0.5	0.0	0.0	32.5	0.0	0.3	0.2						
6C. DPX Y5893	4oz.....	0.0	0.4	0.0	0.2	61.0	0.2	0.0	0.1						
7. Orthene Plictran 50W	5.3oz 4 oz.....	0.4	1.1	0.0	0.1	79.0	0.2	0.1	0.0						
8. Orthene Omite 30W	2.6oz 24oz.....	0.3	1.5	0.1	0.4	103.8	0.1	0.1	0.1						
9. MAT 5927 5 Omite 6E	2.4oz 8oz.....	0.5	1.8	0.0	0.5	39.0	0.2	0.1	0.1						
10. MAT 5927 Omite 6E	8oz 8oz.....	0.2	1.0	0.0	0.0	43.5	0.2	0.2	0.0						
11. Shell pyrethroids* Plictran 600F	3.1oz.....	1.4	3.7	0.1	0.5	127.1	0.1	0.1	0.2						
12. Check.....		0.4	1.0	0.0	0.2	41.6	0.1	0.4	0.1						

¹Based on 25 leaves/tree, from 1 Red Delicious tree in each of three replicates/treatment, except treatments 6a - 6c, which were unreplicated.

ERM=European Red Mite; ERME=ERM eggs; TSM=Twospotted spider mite; TSME=TSM eggs; ARM=Apple rust mite; AMB=Amblysius fallacis; MAL=Zetzellia mali; MALE=MAL eggs

*Treatment 11 treated with MO01716 1.9E, 2.5oz/100gal on rep.2, Pydrin 2.4E, 2.7oz/100gal on rep.3 and Pydrin 2.4E, 8.0oz/100gal on rep.1.

APPLE: *Malus domestica*
Apple aphid: *Aphis pomi* De Geer
European apple sawfly: *Hoplocampa testudinea* (Klug)
Plum curculio: *Conotrachelus nenuphar* (Herbst)
Rosy apple aphid: *Dysaphis plantaginea* (Passerini)

R. W. Weires & J. R. VanKirk
Hudson Valley Laboratory
N.Y.S. Agric. Exp. Station
Highland, New York, 12528

APPLE, INSECT CONTROL, MITICIDE BLOCK, HUDSON VALLEY LAB, HIGHLAND, NY, 1985: Treatments were applied to eight tree plots replicated three times in a randomized complete block design, except where space constraints did not allow for replication. Treatments were applied dilute to runoff on the dates indicated in the table using a high-pressure handgun sprayer at 400 psi delivering 4.2 gal spray/tree or 403 gal/acre. It should be noted that the first Penreco oil application did not include an emulsifier, whereas the second did. Trees were 21 years-old, 12 ft high, spaced 15 by 30 ft, and on the EMII rootstock. Additional applications over the entire block included: Guthion 50W 2 lb/acre, 14 May and 24 May; Difolatan 80S 16 lb/acre 12 Apr; Funginex 1.6E 16 oz/acre, 4 May ; Bayleton 50W 2 oz/acre, 14 May and 21 May; Dithane M-45 78WP 4 1/2 lb/acre, 4 May and 15 May; Cyprex 65W 3 lb/acre, 15 Jun and 25 Jun; and Polyram 80W 5 lb/acre, 9 Jul. Naphthaleneacetic acid was applied in thinning sprays on 15 May in the following concentrations: "Golden Delicious" 15 ppm, "McIntosh", "Red Delicious", and "Cortland" 10 ppm, and "Jersy Mac" and "Empire" 7 1/2 ppm. Rosy apple aphids were evaluated by examining 50 fruiting clusters/tree from a "Golden Delicious" and "Cortland" tree in each plot. Plum curculio and European apple sawfly were evaluated by examining all the fruit on 50 fruiting clusters/tree from a "McIntosh" and "Cortland" tree in each plot. Apple aphids were evaluated by examining 25 terminals/tree from a "McIntosh" and a "Cortland" tree in each plot. A warm, early Spring resulted in an early bloom which lasted longer than normal and which included two frosts. Rainfall was very uniform throughout the season, and temperatures were generally below normal.

The MAT 5927 and Orthene treatments provided good control of Rosy apple aphid, as did the high rates of MO070616 and Pydrin. The MAT compound also provided exceptional control of the apple aphid during the summer. The high rates of MO070616 and Pydrin afforded good control of plum curculio and sawfly until the Guthion treatment over the entire block, which was applied late, continued to provide control.

Treatment	rate form. /100 gal	application dates	Mean no. infested clusters/50										apple aphid infested fecundity/25	
			May 23		May 22		June 24							
			Rosy apple aphid Cortland Golden Del.	Plum cureulio McIntosh Cortland	European apple sawfly McIntosh Cortland	apple aphid infested fecundity/25	June 24 Cortland							
1. Penreco oil Apollo 50SC	2 gal	4/4	2.0 ab	1.7	17.0 a	15.7 ab	15.0	17.7	19.3 abc	21.7 a				
2. Penreco oil + Triton X-363M Apollo 50SC	1 oz 1 gal 1.2 oz 2 oz	7/19 4/20 7/19	0.3 b	2.0	10.3 ab	15.7 ab	7.3	16.7	16.7 abc	20.7 a				
3. DPX Y5893 50W	1 oz	4/23	3.7 ab	6.7	10.3 ab	12.3 ab	13.0	13.3	18.0 abc	21.0 a				
4. DPX Y5893 50W	1 oz	4/23, 6/22	4.7 ab	3.0	12.3 ab	12.7 ab	13.3	15.7	17.3 abc	9.0 b				
5. DPX Y5893 50W	2 oz	4/23	4.7 ab	11.7	7.0 b	10.3 ab	13.3	21.0	20.7 ab	16.3 ab				
6. A. DPX Y5893 50W	2 oz	4/23, 6/22												
B. DPX Y5893 50W	4 oz	4/23												
C. DPX Y5893 50W	4 oz	4/23, 6/22	8.3 a	7.7	12.7 ab	15.7 ab	19.7	22.7	16.7 abcd	16.3 ab				
7. Orthene 75SP Plictran 50W	5.3 oz 4 oz	4/23, 6/22 6/22	0.0 b	0.0	5.0 b	12.3 ab	8.0	9.3	9.3 d	11.0 b				
8. Orthene 75SP Omite 30W	2.6 oz 24 oz	4/23, 6/22 6/22	0.0 b	0.0	6.0 b	11.0 ab	8.0	14.0	12.0 cd	15.3 ab				
9. MAT 5927 50W Omite 6E	4.8 oz 8 oz	4/23, 6/22 6/22	0.0 b	0.0	17.3 a	18.0 a	20.0	15.3	0.0 e	0.3 c				
10. MAT 5927 50W Omite 6E	2.4 oz 8 oz	4/23, 6/22 6/22	0.0 b	0.0	11.7 ab	12.3 ab	16.0	15.7	0.0 e	0.0 c				
11. Plictran 600F A. M0070616 1.9E + Benlate/Manzate	3.1 oz 2.5 oz	6/22 4/23												
B. Pydrin 2.4E + Benlate/Manzate	2.7 oz	4/23	2.0	2.0	14.0	10.0	3.0	5.0	18.0	17.0				
C. Pydrin 2.4E + Benlate/Manzate	8.0 oz	4/23	0.0	0.0	0.0	2.0	0.0	0.0	9.0	11.0				
12. Check			4.7 ab	5.7	11.0 ab	15.0 ab	13.7	18.3	22.7 a	20.7 a				

Means followed by the same letter are not significantly different using Waller and Duncan's Multiple Range Test, $p = .05$. For purposes of analysis, 6A-6C and 11A-11C were each treated as three replicates of one treatment.

APPLE: *Malus domestica*

European red mite: *Panonychus ulmi* (Koch)

a predator: *Amblyseius fallacis* (Garman)

a predator: *Zetzellia mali* (Ewing)

R. W. Weires and J. R. VanKirk
Hudson Valley Laboratory
NYS Agric. Exp. Station
Highland, NY 12528

APPLE, SEASONAL MITE CONTROL, APOLLO EUP, MARLBORO, NY 1985:

A 12 1/2 acre block of 'Rome Beauty' and 'Red Delicious' apple trees spaced 24 X 28 ft was divided into two 5 acre plots and one 2 1/2 acre plot. Four trees were left untreated as a check on one end of the block, but these trees probably received considerable drift from the adjacent plot. Each plot received either a petal fall, May 13, and/or first cover, May 20, application(s) of the miticides Carzol or Apollo. The Carzol plot was retreated with Apollo on Aug 14. Treatments were applied over the plots using a Bean 707® airblast sprayer delivering 100 gal/acre (4X) at a speed of 2.7 mph. Additional pesticides applied over the entire block included: Difolatan 4f, 2 1/2 gal/acre, Apr 5; Lorsban 50W, 3 lb/acre, Apr 22, & Jun 12; Manzate 200 80W, 6 lb/acre, Apr 22, May 2, & May 7; Funginex 1.6L, 10 oz/acre, May 7; Guthion 50W, 2 lb/acre, May 13, May 20, & Aug 14; Dikar, 6 lb/acre, May 28, Jun 12, & Jul 1; Imidan 50W, 4 lb/acre, Jul 1, Jul 19, & Aug 5; and Vydate 2L, 6 pt/acre, Jul 1. Mite populations were evaluated at biweekly intervals by collecting 25 leaves/tree from 4 'Red Delicious' trees in each plot. Leaf samples were brought into the laboratory where the leaves were brushed and all mites and eggs brushed off the leaves were counted and their numbers recorded.

The European red mite was the predominant pest mite species found in the study. All petal fall/first cover applications which included Apollo provided excellent mite control. Only the Carzol petal fall application required supplementary control after 9 mites/leaf were found on Aug 5. The supplementary application applied Aug 14 provided good control in the forementioned plot. The Lorsban, Dikar, and Vydate applications also provided considerable mite suppression throughout the block. Considerable numbers of *Stethorus punctum*, a ladybird beetle predator, were noted on the final Aug sampling. *Amblyseius fallacis* and *Zetzellia mali* populations were generally low, but together with the *Stethorus* populations provided considerable biological control which supplemented the chemical treatments.

Treatment	Rate form. per acre	Application dates	Mean no. mites and eggs per leaf*											
			May 21			Jun 6			Jun 19			Jul 8		
			ERM	ERME	AMB	ERM	ERME	AMB	ERM	ERME	AMB	ERM	ERME	AMB
1. Carzol 92SP Apollo 50SC	1 lb 4 oz	May 13 May 20.....	0.0	0.0	0.0	0.0	0.1	0.0	0.3	0.0	0.0	1.4		
2. Carzol 92SP Apollo 50SC	1 lb 4 oz	May 13 Aug 14.....	0.0	0.1	0.0	0.0	0.2	0.0	1.0	0.0	0.0	2.3		
3. Apollo 50SC	4 oz	May 20.....	0.1	4.8	0.4	1.6	0.0	1.2	0.1	1.5				
4. Check.....			0.0	0.3	0.2	0.6	0.1	3.3	0.1	6.6				

Treatment			Jul 24			Aug 5			Aug 28			ZM
			ERM	ERME	AMB	ERM	ERME	AMB	ERM	ERME	AMB	
1. Carzol 92SP Apollo 50SC	1 lb 4 oz	May 13 May 20.....	0.1	3.3	0.00	1.0	2.5	0.00	0.3	1.8	0.00	0.02
2. Carzol 92SP Apollo 50SC	1 lb 4 oz	May 13 Aug 14.....	1.0	17.7	0.00	9.0	39.9	0.00	0.1	7.1	0.00	0.02
3. Apollo	4 oz	May 20.....	0.2	5.6	0.00	0.9	8.9	0.02	0.0	1.6	0.01	0.00
4. Check			0.6	7.5	0.06	4.0	11.6	0.00	0.2	1.4	0.01	0.09

*Based on 25 leaves/tree, 4 trees/plot. ERM= European red mite, AMB= *Amblyseius fallacis*, ZM= *Zetzellia mali*, E= eggs.

APPLE: *Malus domestica*

European red mite: *Panonychus ulmi* (Koch)

Twospotted spider mite: *Tetranychus urticae* Koch

a predator: *Amblyseius fallacis* (Garman)

R. W. Weires and J.R. VanKirk

Hudson Valley Laboratory

NYS Agric. Exp. Station

Highland, NY 12528

APPLE, SEASONAL MITE CONTROL, APOLLO EUP, WALDEN, NY 1985. A block of mixed apple varieties spaced 21 X 22 ft and approximately 20 yrs-old was divided into 3 plots which were treated at tight cluster, Apr 18. Four trees at the corner of the block were left untreated throughout the season as a check. The first plot of 3.2 acres was treated with Superior oil, the second of 4.7 acres with Apollo, and the third of 3.4 acres with Superior oil + Apollo. The treatments were applied very close to dilute (using 295-320 gal/acre) with a Swanson airblast sprayer traveling at 1.8 mph. The plots were retreated with miticide on Jun 14, the first plot receiving Plictran and the other two plots, Apollo. Additional pesticides applied to the entire block included: Cyprex 65W, 3/4 lb/acre, Apr 18; Manzate 80W, 6 lb/acre, Apr 20A (A=alternate row spray), Apr 25A, May 3A, May 10A, May 15A, May 22A, May 28A, & Jul 1A; Pydrin 2.4E, 10 oz/acre, Apr 20A; Guthion 50W, 1 1/2 lb/acre, May 10A, May 15A, May 22A, May 28A, Jul 11, Jul 23A, Aug 7A, & Aug 20A; Dikar 8 lb/acre, Jun 14; Captan 80W, 3 lb/acre, Jul 11, Jul 23A, Aug 7A, & Aug 20A; Zineb 75W, 2 1/4 lb/acre, Jul 23A, & Aug 7A; and Vydate 2L, 4 pt/acre, Jul 11. Mite counts were made at approximately biweekly intervals during the season. Twenty-five leaves/tree, from 4 "Red Delicious" trees/plot were collected and brought into the laboratory where they were brushed and the mites and eggs counted using a binocular scope.

All three tight cluster treatments provided excellent control of the European red mite. Twospotted spider mite populations were found increasing in the treated plots during Jun. The check trees showed a continual increase of both species all season long. The Jun 14 Plictran application provided excellent control of twospotted spider mite populations but by the Aug 6 date the European red mites had re-established themselves in this plot. The initial control of the twospotted spider mite population with Apollo indicated that control occurred basically through the egg stage, as live adults continued to be found but never exceeded low (two/leaf) numbers. By the Aug 6 count mite populations were very low in the Apollo plots and predators were found in all plots. In addition to the predatory mite counts indicated we also observed that the predatory ladybird beetle, *Stethorus punctum*, was very common in all plots, but especially in the check.

Treatment	Rate form. per acre	Application dates	Mean no. mites* and eggs/leaf											
			May 24				Jun 7				Jun 13			
			ERM	ERME	TSM	TSME	ERM	ERME	TSM	TSME	ERM	ERME	TSM	TSME
1. Sun oil 6E Pictan 50W	5 gal 1 1/4 lb	Apr 18 Jun 14.....	0.0	1.2	0.4	1.3	0.1	1.3	1.6	1.7	0.1	0.6	2.8	2.8
2. Apollo 50SC Apollo 50SC	4 oz 4 oz	Apr 18 Jun 14.....	0.0	0.7	1.6	1.0	0.1	0.6	1.6	2.2	0.1	0.4	1.6	2.6
3. Sun oil 6E Apollo 50SC Apollo 50SC	5 gal 4 oz 6 oz	Apr 18 Apr 18 Jun 14.....	0.0	0.7	0.4	0.7	0.1	1.8	0.9	1.3	0.3	2.0	1.3	1.6
4. Check.....			1.0	13.8	1.0	4.6	2.9	35.0	5.7	3.0	1.8	8.1	3.4	4.1

Treatment	Jun 25					Jul 9					Aug 6				
	ERM	ERME	TSM	TSME	AMB	ERM	ERME	TSM	TSME	AMB	ERM	ERME	TSM	TSME	AMB
1. Sun oil 6E Pictan 50W.....	0.0	2.8	0.6	2.0	0.00	0.6	3.3	0.7	0.6	0.01	5.6	36.9	0.7	0.7	0.04
2. Apollo 50SC Apollo 50SC.....	0.1	3.2	2.9	8.6	0.00	0.1	13.0	2.0	13.6	0.02	0.3	7.3	0.2	0.5	0.05
3. Sun oil 6E Apollo 50SC Apollo 50SC.....	0.2	8.0	2.1	7.5	0.01	0.7	11.8	1.1	5.4	0.08	0.1	10.2	0.0	0.1	0.03
4. Check.....	2.1	65.9	3.4	10.6	0.08	19.6	46.8	9.3	6.8	0.03	3.8	39.1	1.7	3.2	0.24

*ERM= European red mite, TSM= Twospotted spider mite, AMB= *Amblyseius fallacis*.

APPLE: *Malus domestica*
European red mite: *Panonychus ulmi* (Koch)
Twospotted spider mite: *Tetranychus urticae* Koch
A predator: *Amblyseius fallacis* (Garman)

R.W. Weires and J.R. VanKirk
Hudson Valley Laboratory
N.Y.S. Agric. Exp. Station
Highland, New York 12528

APPLE, MITE CONTROL, PLICTRAN TRIAL, WALDEN, NY, 1985: A four acre block of 'Red Delicious' trees spaced 20 X 30 ft (72 trees/acre) and approximately 17 ft high was divided into two types of plots. The first four treatments consisted of single tree plots replicated 4 times in a randomized block design. The first four treatments were applied dilute to runoff with a high pressure handgun sprayer at 400 psi delivering 5 gal/tree or 363 gal/acre. The next 3 treatments were applied by airblast sprayer and calibration was done between applications so that per acre gallonage delivered ranged from 400 gal/acre (dilute) to 40 gal/acre (10X concentrate). The rate of material/acre did not vary in the latter treatments but the volume of the water carrier did. The 3 latter treatments were applied to unreplicated plots ranging in size from .7 to 1.7 acres. Check trees were included in the design with the first four treatments and were separated from these treatments by buffer trees on each side. Two of the airblast plots were retreated on Jul 20 with an airblast sprayer delivering 200 gal/acre. Additional treatments applied over the entire block by airblast sprayer delivering 100 or 200 gal/acre included: Superior oil 6 gal/acre, Apr 19; Cyprex 65W 2 oz/acre, Apr 19; Manzate 80W 6 lb/acre, Apr 21, Apr 25, May 1, May 10, May 16, & May 22; Pydrin 2.4E 10 oz/acre, Apr 21; Guthion 50W 1 1/2 lb/acre, May 10, May 22, & Aug 21; Dikar 7 lb/acre, May 30; and Captan 50W 3 lb/acre, Jul 16, & Aug 21. Mites were evaluated at biweekly intervals by sampling 25 leaves/tree from 4 'Red Delicious' trees in each treatment. Leaves were brushed in the laboratory and the number of live mites and eggs counted.

The initial Plictran handgun applications did an excellent job of providing control especially of the twospotted mites in the plots. By August, however, the Kelthane treatment appeared to have given better European red mite control than the Plictran treatments, although Kelthane did not provide as good a job of twospotted mite control. Mite control of both species was not as good in the airblast plots and this control was supplemented with a Carzol + Apollo application which provided good control. Both *Amblyseius fallacis* and *Stethorus punctum* were present and provided a measure of biological control as the season progressed.

Treatment	Rate form. /100 gal	Rate form. /acre	Gallons /acre	Application dates	Mean no. mites* or eggs/leaf											
					Jun 30			Jul 8			Jul 18			Aug 2		
					ERM	ERM	TSM	ERM	ERM	TSM	ERM	ERM	TSM	ERM	ERM	TSM
					TSM	TSM	TSM	TSM	TSM	TSM	TSM	TSM	TSM	TSM	TSM	TSM
1. Pictan 50W	2 oz			Jul 1	0.5	3.4	5.9	9.9	0.2	3.6	1.3	1.9				
2. Pictan 50W	4 oz			Jul 1	0.3	2.1	7.0	10.4	0.1	1.9	0.9	0.3				
3. Pictan 50W	8 oz			Jul 1	2.0	8.9	5.9	11.7	0.1	3.4	0.0	0.7				
4. Kelthane 4F	16 oz			Jul 1	0.2	2.3	7.8	17.3	0.3	7.2	2.9	2.7				
5. Pictan 50W	16 oz	400		Jul 1	4.4	20.3	7.7	15.0	1.4	8.6	1.8	1.7				
6. Pictan 50W Carzol 92SP	16 oz	100		Jul 1												
7. Pictan 50W + Apollo 50SC Carzol 92SP	4 oz 16 oz 16 oz	200 40		Jul 20 Jul 1	0.7	13.8	0.3	0.5	1.1	4.8	0.1	0.2				
8. Check		200		Jul 20	2.7	70.9	8.4	21.5	2.0	17.5	1.4	3.3				
					0.3	6.5	5.8	16.7	0.6	6.7	4.9	5.8				

Treatment	ERM	ERM	TSM	TSM	Mean no. mites* or eggs/leaf											
					Jul 18			Aug 2			Aug 21			Aug 21		
					ERM	ERM	TSM	ERM	ERM	TSM	ERM	ERM	TSM	ERM	ERM	TSM
					TSM	TSM	TSM	TSM	TSM	TSM	TSM	TSM	TSM	TSM	TSM	TSM
1. Pictan 50W	0.1	1.5	0.4	0.4	0.2	1.8	0.6	0.4	1.4	6.0	1.0	0.4	0.02			
2. Pictan 50W	0.1	2.4	0.1	0.1	0.3	2.1	0.2	0.3	1.9	12.4	1.0	1.3	0.0			
3. Pictan 50W	0.0	2.0	0.0	0.2	0.1	1.8	0.2	0.1	0.9	4.4	0.1	0.0	0.0			
4. Kelthane 4F	0.0	1.7	1.9	1.5	0.1	2.0	2.4	1.7	0.1	3.1	5.0	6.2	0.0			
5. Pictan 50W	3.0	31.5	2.1	2.7	3.0	27.1	1.9	2.3	1.8	5.0	1.2	0.4	0.05			
6. Pictan 50W	1.0	10.8	1.1	1.2	0.4	3.2	0.1	0.0	0.6	4.4	0.0	0.0	0.0			
7. Pictan 50W	7.3	36.9	2.6	2.5	0.4	14.9	0.2	0.1	0.4	2.1	0.1	0.1	0.0			
8. Check	1.1	11.0	15.2	16.4	1.3	15.1	4.0	2.6	1.8	8.3	1.7	0.9	0.02			

*ERM = European red mite, TSM = Twospotted spider mite, AMB = *Amblyseius fallacis*.

APPLE: *Malus domestica*

Apple rust mite: *Aculus schlechtendali* (Nalepa)

A predatory mite: *Amblyseius fallacis* (Garman)

European red mite: *Panonychus ulmi* (Koch)

twospotted spider mite: *Tetranychus urticae* Koch

Predatory Ladybird Beetle: *Stethorus punctum* (LeConte)

R.W. Weires and J.R. VanKirk

Hudson Valley Laboratory

N.Y.S. Agric. Exp. Station

Highland, New York 12528

APPLE, MITE CONTROL, KELTHANE TRIAL, CLINTONDALE, NY, 1985: A four acre block of 35 year-old 'McIntosh' trees spaced 14 X 32 ft and approximately 16 ft in height, was divided so that two types of plots could be evaluated together. The first 5 treatments and an unsprayed check were arranged in single tree plots replicated 4 times in a randomized block design. These treatments were applied dilute to runoff with a highpressure handgun sprayer at 400 psi using 10 gal/tree (970 gal/acre). Two additional treatments were applied in unreplicated, adjacent plots. The first was applied over 1.1 acres at 4X (100 gal/acre) concentration while the second was applied over 0.8 acres at 10X (40 gal/acre), both with a Friend 393® airblast sprayer driven at a ground speed of 2.5 mph. All treatments were applied on Jul 29, and mites were evaluated 7 days and 21 days after treatment application. Additional sprays applied over the entire block included: Oil 4 gal/acre, Apr 12; Ambush 2E 12.8 oz/acre, Apr 19, and May 10; Guthion 50W 1 1/2 lb/acre, May 22, Jun 25, Jul 9, Jul 24, and Aug 16; Lorsban 50W 3 lb/acre, Jun 10; Phosphamidon 8E 1/2 pt/acre, Jun 10, and Jul 9; Benlate 50W 6 oz/acre + Manzate 200 80W 3 lb/acre, Apr 23, May 1, May 10, Jun 25, Jul 9; and Jul 24; and Captan 80W 4 lb/acre, Aug 16. Mites were evaluated by sampling 25 leaves/tree from four ('McIntosh') trees per treatment. Mites were brushed from the leaves onto plates, which were examined with a binocular scope in the laboratory.

Although all treatments seemed to perform well there was a confounding factor in that the predatory ladybird beetle, *Stethorus punctum*, was found in most plots at the Aug 6 evaluation. The drop in mite numbers in the check was attributable to *Stethorus*, which was found in the plots until the last (Aug 19) evaluation, during which virtually no mites were found.

Treatment	Rate formulation		Mean no. mites or eggs/leaf											
	per 100 gal	per acre	Jul 25						Aug 6					
			ERM	ERME	TSM	TSME	ARM	AMB	ERM	ERME	TSM	TSME	ARM	AMB
Kelthane 4F	8 oz.....		5.7	48.9	0.6	0.6	34.6	0.00	0.1	17.1	0.1	0.1	16.0	0.00
Kelthane 4F	16 oz.....		3.8	25.4	0.4	0.2	24.2	0.03	0.0	17.3	0.0	0.1	24.1	0.00
Kelthane 4F	32 oz.....		3.2	38.3	1.2	1.4	25.9	0.00	0.0	20.8	0.1	0.0	18.3	0.00
Kelthane 4F + Sun oil 6E	16 oz 32 oz.....		3.9	35.0	0.4	1.7	25.5	0.01	0.1	13.9	0.1	0.1	12.3	0.00
Pictran 50W	4 oz.....		4.6	39.2	0.6	1.7	18.3	0.00	0.9	21.6	0.2	0.0	13.4	0.00
Kelthane 4F	3 pt (4X).....		2.9	17.0	0.5	0.3	22.7	0.00	0.8	12.5	0.2	0.2	28.0	0.00
Kelthane 4F	3 pt (10X).....		0.6	4.9	0.1	0.2	8.5	0.00	0.1	4.5	0.0	0.0	13.3	0.00
Check.....			6.0	45.7	1.0	3.1	23.1	0.00	0.8	16.2	0.5	0.4	25.2	0.02

ERM= European red mite, TSM= twospotted spider mite, ARM= Apple rust mite, AMB= *Amblyseius fallacis*.

Logan 518 828 5048

Chris Logan

Clarke 795 2383

APPLE: *Malus domestica*

European red mite: *Panonychus ulmi* (Koch)

Twospotted spider mite: *Tetranychus urticae* Koch

Rick Weires and J.R. VanKirk
Hudson Valley Laboratory
N.Y.S. Agric. Exp. Station
Highland, New York 12528

APPLE, MITE CONTROL, FORMULATION TRIAL, MODENA, NY, 1985: A two acre block of 17-year-old 'Red Delicious' trees was divided into four 0.5 acre plots. Trees were spaced 15 X 20 and were 16 ft in height. Treatments were applied on Jul 17 to all plots except the check plot, and again on Jul 26, this time including the check plot. Treatments were applied by airblast sprayer using 250 gal/acre at a speed of 2.7 mph. Additional sprays over the entire block included: Guthion 50W 1 1/2 lb/acre and Captan 50W 6 lb/acre at approximately biweekly intervals. Mites were evaluated prior to the first application and at weekly, then biweekly intervals until mid-Aug. Mites were evaluated by sampling 25 leaves/tree from four trees in each plot, bringing the leaves back into the laboratory, and brushing the mites from the leaves onto plates where the mites and eggs could be examined and counted under a binocular scope.

Control of both European red mite and twospotted spider mite was very good with both of the Omite formulations and with the Plictran following the first application. The second application kept the mites under control for the remainder of the season, although the initial knockdown with the Plictran application in the check plot was slower than had been observed in past seasons. No phytotoxicity or similar problems were found in any of the plots.

Treatment	Rate form. per acre	Applic. dates	Mean no. mites or eggs/leaf							
			Jul 15				Jul 23			
			ERM	ERME	TSM	TSME	ERM	ERME	TSM	TSME
Omite 30W (WC) 6 lb		Jul 16								
		Jul 26	18.7	152.2	0.6	0.8.....	1.4	72.0	0.2	0.2
Plictran 50W 1 1/2 lb		Jul 16								
		Jul 26	8.2	136.8	0.2	0.4.....	0.3	120.5	0.0	0.0
Omite 30W (EC) 6 lb		Jul 16								
		Jul 26	9.0	136.9	0.4	0.4.....	0.8	87.7	0.0	0.0
Check Plictran 50W 1 1/2 lb		Jul 16								
		Jul 26	6.8	100.5	0.6	0.5.....	25.2	130.5	0.1	1.1

			Aug 2				Aug 19			
			ERM	ERME	TSM	TSME	ERM	ERME	TSM	TSME
Omite 30W (WC) 6 lb		Jul 16								
		Jul 26	0.1	64.8	0.0	0.1.....	0.0	10.8	0.0	0.0
Plictran 50W 1 1/2 lb		Jul 16								
		Jul 26	0.3	91.1	0.0	0.0.....	0.0	20.1	0.0	0.0
Omite 30W (EC) 6 lb		Jul 16								
		Jul 26	0.4	43.4	0.0	0.3.....	0.0	20.5	0.0	0.0
Check Plictran 50W 1 1/2 lb		Jul 6								
		Jul 26	7.3	138.4	6.0	2.9.....	0.0	19.4	0.0	0.0

WC= West coast formulation, EC= East coast formulation, ERM= European red mite, TSM= twospotted spider mite.

APPLE: *Malus domestica*

Tarnished plant bug: *Lygus lineolaris* (P.de B.)

Plum curculio: *Conotrachelus nenuphar* (Herbst)

Rosy apple aphid: *Dysaphis plantaginea* (Passerini)

Spotted tentiform leafminer: *Phyllonorycter blancardella* (F.)

European red mite: *Panonychus ulmi* (Koch)

R. W. Weires and J. R. VanKirk
Hudson Valley Laboratory
N.Y.S. Agric. Exp. Station
Highland, New York 12528

APPLE, SEASONAL INSECT AND MITE CONTROL, MILTON, NY, 1985: A ten acre block of apples containing 'McIntosh', 'Red Delicious', 'Rome', and 'Golden Delicious' cultivars, was divided into six plots ranging in size from .8 to 2.7 acres. Three treatments were replicated twice among the six plots, while four 'Golden Delicious' trees located at the North end of the block were left unsprayed during the test as a check. Trees were spaced 20 X 31 ft (70 trees/acre) and were approximately 17 ft in height. Treatments were applied with a Myers airblast sprayer delivering 140 gal/acre at a ground speed of 2.7 mph. In addition to the treatments and application dates listed in the table the following materials were applied over the entire block: Vydate 2L 1 gal/acre, Jul 16; Bayleton 50W 6 oz/acre, Jun 24, & Jul 16; and Captan 50W 6 lb/acre, Apr 22, Apr 30, May 7, May 28, Jun 24, Jul 16, Aug 9, & Aug 29. Mites were evaluated by sampling 25 leaves/tree from 4 'Red Delicious' trees in each plot. These leaves were then taken back to the laboratory where they were brushed with a mite brushing machine and all live mites and eggs were counted. Leafminers were evaluated on Jun 6 by examining all the leaves (approximately 7) on 25 fruiting clusters/tree from 4 'McIntosh' trees/plot. The cluster was counted as infested upon finding one mine on any leaf in the cluster. The fruit was evaluated on Sep 11 just prior to harvest by examining 100 'McIntosh' fruits/tree from 4 trees in each plot. 'Golden Delicious' fruits were examined in the check trees.

Mite populations were lower in the Lorsban plots than in the Systox/Guthion plots, indicating that Lorsban may exhibit some mite suppressive action. There was no difference in leafminer infestation levels, and as a result Vydate was applied over the entire block for 2nd brood control. All treatments had less damaged fruit at harvest than did the check, while the lower rate of Lorsban had less damage than the higher rate.

Treatment	Rate form. /acre	Application dates	% injured fruit			% clean fruit	Mean no. STLM infested fruit clusters/25
			Plum curculio	Tarnished plant bug	Rosy apple aphid		
Lorsban 50W	2 lb	4/22,5/11,6/24 7/16,8/9,8/29	0.0	1.7	0.0	98.4	16.0
Lorsban 50W	3 lb	4/22,5/11,6/24 7/16,8/9,8/29	0.7	3.4	0.0	96.2	14.4
Systox 6E Guthion 50W	1 pt 2 lb	4/22 5/11,6/24,7/16 8/9,8/29	0.0	3.8	0.0	96.3	14.6
check			2.5	5.8	0.3	91.5	19.3

		Mean no. mites or eggs/leaf					
		Jun 18		Jul 8		Jul 25	
		ERM	ERME	ERM	ERME	ERM	ERME
Lorsban 50W	2 lb	0.1	0.9	0.5	3.9	0.4	0.3
Lorsban 50W	3 lb	0.1	0.3	0.2	1.2	0.2	0.2
Systox 6E Guthion 50W	1 pt 2 lb	0.2	2.2	1.8	6.8	1.4	1.0

ERM= European red mite, STLM= spotted tentiform leafminer

APPLE: *Malus domestica*
European red mite: *Panonychus ulmi* (Koch)
A predatory mite: *Amblyseius fallacis* (Garman)
Spotted tentiform leafminer: *Phyllonorycter*
blancardella (Fabr.)

R.W. Weires and J.R. VanKirk
Hudson Valley Laboratory
N.Y.S. Agric. Exp. Station
Highland, New York 12528

F. J. McNicholas
Extension Fruit Specialist
Plattsburgh, New York 12901

APPLE, LEAFMINER AND MITE CONTROL, PERU, NY, 1985: A 56 year-old block of 'McIntosh' trees spaced 40 X 40 ft and approximately 17 ft in height, was divided into six 4 row plots ranging in size from 2.3-2.8 acres. Three leafminer treatments were replicated twice in a randomized block design, as were three miticide treatments which were superimposed over the leafminer treatments. Four trees at the South end and four at the West end of the block were left unsprayed throughout the trial as check trees. The leafminer treatments were applied Jul 4 and the miticides Jul 30, all with a Bean 502 Speedsprayer® delivering 100 gal/acre at a ground speed of 2.5 mph. Additional sprays applied over the entire block included: Phygon 50W 2/3 lb/acre AA(AA= aerial application), May 6; Lorsban 50W 3 lb/acre, May 11 AA, and Jun 24; Cyprex 65W 3/5-1 lb/acre, May 17 AA, May 27, and Jun 5; Captan 80W 4 lb/acre, May 11 AA, and Jul 15; Sevin 80W 1 lb/acre, Jun 4; and Guthion 50W 1 lb/acre, May 29, Jul 24, and Aug 19. Mites were evaluated at biweekly intervals from Jun 14 to Aug 15. Mite evaluations were conducted by sampling 25 leaves/tree from 8 trees in each plot. The leaves were brought back in coolers to the laboratory where they were brushed over plates and the mites and eggs found on the plates were counted under a binocular scope. Leafminer control was evaluated on Aug 15 by examining 25 leaves/tree from 8 trees in each plot. All the tissue-feeding stage mines on the 25 leaf samples were counted.

Mite populations increased slowly in this trial partly due to the use of Lorsban, which was found to suppress mite populations in this block during the previous season. Vydate applied as a leafminer treatment also provided some mite control, but its elimination of *Amblyseius fallacis* and the lack of control found with Plictran resulted in the plot's having the highest mite count of the three treatments on the final evaluation date. The West Coast Omite formulation had the lowest mite counts while both Omite treatments and the check had populations of *A. fallacis* building up and providing a measure of biological control. Leafminer mine counts were lowest in the Vydate treatment, but both rates of Dimilin also provided good control. The leafminer treatments were probably applied a bit late as leafminer flight and egg-laying had occurred at least one and possibly two weeks prior to the treatment applications.

Treatment	Rate form. per acre	Application dates	Mean no. mites or eggs/leaf						
			Jun 14		Jul 2		Jul 29		
			ERM	ERME	ERM	ERME	ERM	ERME	AMB
Dimilin 25W	1 lb	Jul 4							
Omite 30W (WC)	6 lb	Jul 30.....	0.0	0.4	0.2	1.4	3.7	28.6	0.03
Dimilin 25W	1/2 lb	Jul 4							
Omite 30W (EC)	6 lb	Jul 30.....	0.0	0.3	0.1	1.2	2.5	20.0	0.05
Vydate 2L	4 pt	Jul 4							
Plictran 50W	1 lb	Jul 30.....	0.0	0.3	0.2	0.8	1.1	7.8	0.00
Check.....			0.1	1.0	0.3	3.5	3.3	18.0	0.01
			Aug 15		Aug 15				
			ERM	ERME	AMB	Mean no. STLM mines/25 leaves			
Dimilin 25W									
Omite 30W (WC).....			0.9	6.7	0.01	8.1			
Dimilin 25W									
Omite 30W (EC).....			1.9	11.7	0.03	7.3			
Vydate 2L									
Plictran 50W.....			2.1	30.8	0.00	5.2			
Check.....			5.0	56.1	0.01	35.0			

WC= West Coast, EC= East Coast, ERM= European red mite, AMB= *Amblyseius fallacis*,
STLM= spotted tentiform leafminer.

APPLE: *Malus domestica*
 Spotted tentiform leafminer: *Phyllonorycter*
blancardella (Fabr.)

R.W. Weires and J.R. VanKirk
 Hudson Valley Laboratory
 N.Y.S. Agric. Exp. Station
 Highland, New York 12528

F. J. McNicholas
 Extension Fruit Specialist
 Plattsburgh, New York 12901

APPLE, SPOTTED TENTIFORM LEAFMINER CONTROL, PERU, NY, 1985: Two sites were used for these trials. Site A consisted of a 40 year-old block of 'Cortland' and 'McIntosh' apple trees spaced 20 X 32 ft, approximately 17 ft in height, and divided into three treatments each replicated twice in 1/4 acre plots. Treatments consisted of two rates of Dimilin applied at late pink (May 13) and compared with an untreated check. Treatments were applied by the grower with an airblast sprayer delivering 350 gal/acre at a speed of 2.2 mph. The treatments were evaluated on Jun 14 by examining 25 fruiting clusters per tree from four 'McIntosh' trees in each plot. Upon finding one mine on a leaf in the cluster (approx. five leaves/cluster) the cluster was recorded as infested. Site B consisted of 10 year-old 'Spartan', 'McIntosh', and 'Cortland' trees spaced 14 X 22 ft, 14 ft in height, and divided into unreplicated 1/2 acre plots comparing Dimilin, Vydate, and an untreated check. The treatments were applied at the rate of 58 gal/acre at a speed of 2.5 mph. The site B treatments were evaluated on Aug 15 by counting the no. of mines per 25 leaves from four 'Cortland' trees in each plot.

The 1 lb rate of Dimilin gave slightly better control than the 1/2 lb rate at the site A trial. Both Vydate and Dimilin treatments gave good control at Site B. The fact that counts were higher in the 1 lb Dimilin plot than at the lower 1/2 lb rate can be explained in part by the fact that the pest pressure was much greater on the 1 lb plot, which was adjacent to the check plot.

Site A

Treatment	Rate formulation per acre	Application date	Mean no. spotted tentiform leafminer infested clusters/25
Dimilin 25WP	1/2 lb	May 13	0.6
Dimilin 25WP	1 lb	May 13	0.0
Check			7.9

Site B

Treatment	Rate formulation per acre	Application date	Mean no. spotted tentiform leafminer mines/25 leaves
Dimilin 25WP	1/2 lb	Jul 9	0.3
Dimilin 25WP	1 lb	Jul 9	2.5
Vydate 2L	4 pt	Jul 9	0.3
Check			8.6

APPLE: *Malus domestica*

Twospotted spider mite: *Tetranychus urticae* Koch

European red mite: *Panonychus ulmi* (Koch)

Green fruitworm: *Orthosia hibisci* Guenee

Plum curculio: *Conotrachelus nenuphar* (Herbst)

Spotted tentiform leafminer: *Phyllonorycter blancardella* (Fabr.)

Predatory ladybird beetle: *Stethorus punctum* (LeConte)

Tarnished plant bug: *Lygus lineolaris* (P. de B.)

European apple sawfly: *Hoplocampa testudinea* (Klug)

R. W. Weires & J. R. VanKirk
Hudson Valley Laboratory
N.Y.S. Agric. Exp. Station
Highland, New York, 12528

APPLE, EARLY SEASON INSECT CONTROL, MODENA, NY, 1985: Insecticide treatments were applied at pink (Apr 21) and petal fall (May 16) to unreplicated plots ranging in size from 1.6 to 3.0 acres. A .6 acre plot on the northeast corner of the block was left untreated at pink as a comparison. The trees had been planted in 1978, were spaced 15 X 22 ft, were approximately 14 ft in height, and consisted of 'Red Delicious' and 'Empire' cultivars on the EM/7 rootstock. Treatments were all applied with a Swanson® airblast sprayer delivering 100 gal/acre (4X conc.), at a speed of 2.5 mph. Two of the plots received a miticide treatment on Jun 29 which was applied in the same manner. Additional sprays applied over the entire block included: Benlate 50WP 8 oz/acre, Apr 21, May 16, & Jun 8; Manzate 200 80WP 3 lb/acre, Apr 21, May 16, & Jun 8; Captan 50WP 6 lb/acre, Jun 29, & Jul 15; Guthion 50WP 2 lb/acre, Jun 8, Jun 29, & Jul 15; & Phosphamidon 8E 1 pt/acre, Jun 29. Mite populations were sampled during the season by collecting 25 leaves/tree from 4 'Red Delicious' trees in each plot at biweekly intervals. The leaves were brought back into the laboratory where they were brushed and the mites and eggs found were counted. Leafminer control was evaluated on Jun 6th by inspecting 25 fruiting clusters/tree from 3 'Red Delicious' and 3 'Empire' trees/plot for the presence of any leaves having visible mines. Upon finding an infested leaf the cluster was classified as infested. Fruit injury was evaluated on Sep 11th by examining 100 'Red Delicious' and 100 'Empire' fruits/plot.

Bloom came early and lasted for almost 3 weeks, during which time two killing frosts eliminated virtually all of the fruit in the block. Fruit injury evaluation at harvest time required sampling or inspecting practically all of the trees in each plot to find a sufficient number of fruit. The two Pounce treatments showed the least damaged fruit and best tarnished plant bug control. The Lorsban treatment showed the most damage overall, principally as a result of plum curculio. Lorsban did not provide any leafminer control whereas the pyrethroid treatments did. Mites in general built up slowly in the block, but twospotted spider mite populations were found in greater numbers first in the pyrethroid treatments. The summer Kelthane application appeared to have little effect on the mite buildup in the plots where it was used. We observed *Stethorus punctum* populations building up in mid-Jul and found that this predator stabilized or sufficiently reduced both the twospotted spider mite and the European red mite populations in the plots.

Treatment	Rate form. per acre	Application dates	% Injured fruit				% Clean fruit				Mean no. mites and eggs/leaf					
			Plum curculio	Green fruitworm	Tarnished plant bug	E. apple sawfly	ERM	ERM	ERM	ERM	Jun 25	Jul 10	ERM	ERM	TSM	TSM
Pounce 25WP	9.6 oz	Apr 21 May 16														
Kelthane 4F	4 pt	Jun 29.....	0.0		0.0	1.5	0.0	98.5	0.1	1.1	1.2	2.0	0.5	11.0	3.1	
Pounce 25WP	6.4 oz	Apr 21														
+ Thiodan 50WP	2 lb	May 16.....														
Pounce 25WP	9.6 oz	Jun 29.....	1.0	0.0	1.5	0.0	97.5	0.2	1.1	0.6	1.2	0.1	7.0	2.5	4.5	
Kelthane 4F	4 pt	May 16.....														
Lorsban 50WP	3 lb	Apr 21														
Guthion 50WP	2 lb	May 16.....	4.0	0.0	2.0	0.5	93.5	0.1	1.0	0.3	0.4	0.1	2.8	0.7	1.1	
Pydrin 2.4E	10.6 oz	Apr 21														
Guthion 50WP	2 lb	May 16.....	0.0	0.0	2.5	0.5	97.0	0.0	0.3	2.3	5.0	0.1	8.2	5.8	13.3	
Guthion 50WP	2 lb	May 16.....	1.0	1.0	2.5	0.0	95.5	0.0	0.8	0.4	0.9	0.2	2.2	0.8	1.4	

x no. STL M

Mean no. mites and eggs/leaf

Treatment	Rate form. per acre	Application dates	clusters/25	Mean no. mites and eggs/leaf											
				ERM	ERM	TSM	TSM	ERM	ERM	TSM	TSM	ERM	ERM	TSM	TSM
Pounce 25WP	9.6 oz	Apr 21 May 16													
Kelthane 4F	4 pt	Jun 29.....	0.0	1.6	22.9	14.9	11.7	4.4	20.0	25.9	34.1	1.1	22.7	3.5	1.8
Pounce 25WP	6.4 oz	Apr 21													
+ Thiodan 50WP	2 lb	May 16.....													
Pounce 25WP	9.6 oz	Jun 29.....	0.0	0.9	12.6	10.1	23.6	10.0	22.8	25.5	28.1	3.4	29.2	3.2	1.4
Kelthane 4F	4 pt	May 16.....													
Lorsban 50WP	3 lb	Apr 21													
Guthion 50WP	2 lb	May 16.....	8.0	0.9	11.2	5.1	9.6	3.7	44.6	12.8	27.7	6.0	57.6	10.4	5.5
Pydrin 2.4E	10.6 oz	Apr 21													
Guthion 50WP	2 lb	May 16.....	0.3	2.6	14.5	27.2	91.1	1.5	49.8	21.0	49.8	0.9	32.7	3.4	3.0
Guthion 50WP	2 lb	May 16.....	5.2	0.4	4.4	4.1	4.9	1.9	8.9	10.4	6.6				

STLM= spotted tentiform leafminer, ERM= European red mite, TSM= twospotted spider mite

APPLE: *Malus domestica*

Apple rust mite: *Aculus schlechtendali* (Nalepa)

European red mite: *Panonychus ulmi* (Koch)

Green fruitworm: *Orthosia hibisci* Guenee

A predatory mite: *Amblyseius fallacis* (Garman)

Spotted tentiform leafminer: *Phyllonorycter blancardella* (Fabr.)

Predatory ladybird beetle: *Stethorus punctum* (LeConte)

Tarnished plant bug: *Lygus lineolaris* (P. de B.)

R. W. Weires & J. R. VanKirk
Hudson Valley Laboratory
N.Y.S. Agric. Exp. Station
Highland, New York, 12528

APPLE, INSECT AND MITE CONTROL, CLINTONDALE, NY, 1985: Three different rates of Dimilin were applied at tight cluster (Apr 17), each to one acre unreplicated plots of 'McIntosh' apple trees. The trees were 35 years-old, 17 ft in height, and spaced 14 X 32 ft. The treatments were applied with a Friend 393® airblast sprayer delivering 100 gal/acre (4X conc.) at a speed of 2.25 mph. An adjacent plot of three acres was treated by the grower with Ambush at pink (Apr 19) and again at petal fall (May 10). All treatments applied by the grower were applied with an airblast sprayer at 2.5 mph delivering 168 gal/acre. The grower's standard program (Lorsban at pink) was also evaluated in the same block of trees but across the lane. Dimilin was reapplied on Jun 25 by the grower in two of the previously treated blocks, while several trees in the third block were left untreated at that date as a check and the remaining trees in the other plots and most of the grower's orchard were treated with Vydate. Additional sprays applied over the entire block included: Oil 4 gal/acre, Apr 12; Guthion 50W 1 1/2 lb/acre, May 10 (not including Ambush plot), May 22, Jun 25, Jul 9, Jul 24, and Aug 16; Lorsban 50W 3 lb/acre, Jun 10; Phosphamidon 8E 1/2 pt/acre, Jun 10, and Jul 9; Benlate 50W 6 oz /acre + Manzate 200 80W 3 lb/acre, Apr 23, May 1, May 10, Jun 25, Jul 9; and Jul 24; and Captan 80W 4 lb/acre, Aug 16. Control of first brood leafminer was evaluated Jun 6 by examining all the leaves on 25 fruiting clusters/tree from six trees/plot for the presence of mines. Second brood was evaluated on Aug 13 by counting the number of mines found on 25 leaves/tree from four trees in each plot. Fruit injury was rated by examining 100 fruits/tree from four trees in each plot. Mites were evaluated at biweekly intervals by sampling 25 leaves/tree, brushing the leaves in the laboratory, and counting the mites and eggs under a binocular scope.

A period of cool wet weather followed the Dimilin treatments on Apr 17 and reduced their effectiveness against first brood leafminer, which emerged slowly during the long bloom period. The two Ambush treatments were much more effective since the petalfall treatment provided good control of the late emerging leafminers. The Ambush treatment also provided excellent plant bug control and very clean fruit at harvest. The European red mite build-up occurred sooner in the Ambush plot and the predatory mite *Amblyseius fallacis*, was not found in this plot. The predatory ladybird beetle, *Stethorus punctum*, was found in all the plots later in the season as mites became more numerous. The Dimilin treatments applied against second brood leafminer were more effective than those against first brood, but not as effective as the Vydate treatment, probably because the flight and egg-laying had commenced at least one week prior to the application.

Spotted tentiform leafminer

Treatments	Rate form. per acre	Application dates	x no. infest. x no. mines		% injured fruit		% clean fruit	Mean no. mites and eggs/leaf							
			clusters Jun 6	/25 leaves Aug 13	Tarnished plant bug	Green fruitworm		Jun 6			Jun 18				
								ERM	ERME	AMB	ERM	ERME	AMB		
Dimilin 25WP	1/4 lb 1 lb	Apr 17 Jun 25.....	20.0	24.0	0.8	0.0	99.3								
Dimilin 25WP	1/2 lb	Apr 17.....	18.0	57.3	0.0	0.0	100.0	0.5	1.5	0.09	0.1	3.9	0.0		
Dimilin 25WP	3/4 lb 1 lb	Apr 17 Jun 25.....	19.8	14.8	1.0	1.3	97.8	0.2	0.6	0.01	0.0	3.1	0.01		
Ambush 2E	12.8 oz	Apr 19..... May 10.....	1.2	-	0.3	0.0	99.8	0.7	1.3	0.0	0.2	5.3	0.0		
Lorsban 50WP	3 lb	Apr 19.....													
Vydate 2L	4 pt	Jun 26.....	22.3	11.5	0.8	0.3	99.0	0.3	0.5	0.01	0.0	1.9	0.0		
Mean no. mites and eggs/leaf															
Treatments	Rate form. per acre	Application dates	Jun 25			Jul 10			Jul 23						
			ERM	ERME	AMB	ERM	ERME	AMB	ERM	ERME	ARM	AMB			
Dimilin 25WP	1/4 lb 1 lb	Apr 17 Jun 25.....	0.3	4.4	0.01	0.8	8.3	0.15	0.5	7.0	24.8	0.04			
Dimilin 25WP	1/2 lb	Apr 17.....	0.7	2.2	0.04	0.4	15.1	0.02	0.7	12.8	27.9	0.06			
Dimilin 25WP	3/4 lb 1 lb	Apr 17 Jun 25.....	0.4	3.3	0.0	1.1	18.6	0.06	1.4	21.3	61.9	0.11			
Ambush 2E	12.8 oz	Apr 19..... May 10.....	0.9	6.6	0.0	1.5	41.1	0.0	3.1	32.7	37.9	0.0			
Lorsban 50WP	3 lb	Apr 19.....													
Vydate 2L	4 pt	Jun 26.....	0.4	2.4	0.01	0.3	3.9	0.02	0.7	4.9	17.5	0.02			

ERM= European red mite, ARM= Apple rust mite, AMB= Amblyseius fallacis.

ERM= European red mite, ARM= Apple rust mite, AMB= *Amblyseius fallacis*.

PEAR: *Pyris communis*
Pear Psylla: *Psylla pyricola* Forester
Pear rust mite: *Epitrimerus pyri* (Nalepa)

R. W. Weires & J. R. VanKirk
Hudson Valley Laboratory
N.Y.S. Agric. Exp. Station
Highland, New York, 12528

PEAR, PSYLLA AND MITE CONTROL, HUDSON VALLEY LAB, HIGHLAND, NY, 1985: Treatments were applied to 8 tree plots replicated 3 times in a randomized complete block design. Each plot contained 4 'Bartlett' and 4 'Bosc' cultivars, spaced 12 x 18 ft., 12 ft. in height and 11 years old. Treatments were applied by high-pressure handgun sprayer dilute to runoff at 350 psi using from 1.7 gal/tree (340 gal/acre) to 3.1 gal/tree (625 gal/acre). Treatments were applied at petal fall, May 9, and in four cover sprays, May 23, Jun 4, Jun 25, and Jul 19, except the Dimilin and Alsystin treatments which were applied on May 23, Jun 4, and Jul 19, with Guthion applied on the remaining forementioned dates. The Brigade treatment was omitted on the Jun 4th application. Additional applications over the entire block included Agri-Strep, 8 oz/100 gal, Apr 22; and Benlate 50W, 3 oz/100 gal, Jun 18 and Jul 9. Pear psylla were evaluated by collecting 5 spurs (25 leaves) from each plot and counting all live nymphs on each leaf using a binocular scope. Mites populations were assessed by sampling 25 leaves per plot on Aug 14, brushing mites onto a plate and counting all live mites and eggs with the aid of a binocular scope.

Brigade provided the best control of pear psylla. The Dimilin plus Mitac combination also provided good pear psylla control. All of the treatments looked much better than did the check at the end of the test, and based on the amount of psylla honeydew-damaged fruit, one would conclude that most provided commercially acceptable control. Pear rust mite populations were very high in the Brigade plots, and these mites caused severe fruit russet on the Bartlett cultivar.

Treatment	rate form. /100 gal	application dates	Mean no. psylla nymphs or eggs/leaf					
			May 20 nymphs eggs	May 29 nymphs eggs	June 11 nymphs eggs	June 20 nymphs eggs	July 1 nymphs eggs	
1. Dimilin 25W + Sun oil 7E Guthion 50W	2 oz 64 oz 8 oz	5/23,6/4,7/19 5/9,6/25.....	0.3 1.2	0.3 13.3	0.5 24.4	1.6 22.0	1.3 10.3	
2. Dimilin 25W + Thiodan 50W Guthion 50W	2 oz 8 oz 8 oz	5/23,6/4,7/19 5/9,6/25.....	0.6 1.6	0.1 4.8	0.8 20.0	4.5 38.4	4.7 30.1	
3. Dimilin 25W + Mitac 50W Guthion 50W	2 oz 8 oz 8 oz	5/23,6/4,7/19 5/9,6/25.....	0.5 2.4	0.1 4.2	0.2 12.4	0.5 12.4	0.5 8.7	0.4 8.5
4. Dimilin 25W Guthion 50W	4 oz 8 oz	5/23,6/4,7/19 5/9,6/25.....	0.3 1.4	0.2 16.3	1.2 32.1	2.4 37.9	5.7 25.8	
5. Brigade 10W 6. FMC F-4999 1SSC	4 oz 3.8 oz	5/9,5/23,6/25,7/19 5/9,5/23.....	0.2 0.0	0.0 0.4	0.0 0.4	2.6 2.3	11.1 0.3	0.3 5.5
7. Alsystin 4F + Sun oil 7E Guthion 50W	8 oz 64 oz 8 oz	6/4,6/25,7/19 5/23,6/4,7/19 5/9,6/25.....	0.1 2.4 0.7	0.0 5.8 13.9	0.8 28.9 1.6	1.8 22.0 34.1	5.1 23.0 1.6	23.0 41.4
8. Check.....			0.8	3.0	0.8	18.5	6.8	40.6
						4.8	15.8	6.6
								21.2

Treatment #	Mean no. psylla nymphs or eggs/leaf						Mean no. mites /leaf (August 14)		
	July 16 nymphs eggs	July 31 nymphs eggs	August 12 nymphs eggs	August 12 nymphs eggs	European Twospotted red mite	Pear spider mite	rust mite		
1. Dimilin 25W. + Sun oil 7E Guthion 50W	5.4	11.1	0.8	7.0	2.1	9.9	0.0	0.0	8.1
2. Dimilin 25W + Thiodan 50W Guthion 50W	9.7	12.7	1.6	13.0	7.0	22.0	0.2	0.1	5.4
3. Dimilin 25W + Mitac 50W Dimilin 25W Guthion 50W	0.4	2.6	0.2	2.0	2.3	18.6	0.0	0.0	5.2
5. Brigade 10W.....	8.3	19.2	1.7	24.0	1.0	14.3	0.0	0.1	9.1
6. FMC F-4999 1SSC.....	0.1	0.6	0.3	2.7	1.3	20.9	0.0	0.1	410.2
7. Alsystin 4F + Sun oil 7E Guthion 50W	12.4	15.3	3.3	21.8	5.6	15.9	0.1	0.2	32.0
8. Check.....	8.2	8.0	0.3	10.8	4.2	18.7	0.0	0.0	48.0
	5.4	9.3	2.7	24.7	14.2	76.0	0.0	0.0	8.8