RESULTS OF 1996 INSECTICIDE AND ACARICIDE TRIALS IN EASTERN NEW YORK

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TABLE OF CONTENTS

APPLE: *Malus domestica* 'McIntosh'

Apple curculio (AC): *Tachypterellus quadrigibbus* (Say)
Apple maggot (AM): *Rhagoletis pomonella* (Walsh)
Codling moth (CM): *Cydia pomonella* (Linnaeus)
European apple sawfly (EAS): *Hoplocampa testudinea* (Klug)
Green fruitworm (GFW): *Lithophane antennata* (Walker)
Obliquebanded leafroller (OBLR): *Choristoneura rosaceana* (Harris)
Oriental fruit moth (OFM): *Grapholita molesta* (Busck)
Plum curculio (PC): *Conotrachelus nenuphar* (Herbst)
San Jose scale (SJS): *Quadraspidiotus perniciosus* (Comstock)
Tarnished plant bug (TPB): *Lygus lineolaris* (P. de B.)

HARVEST EVALUATION OF INSECTICIDES AGAINST ('MCINTOSH') FRUIT-FEEDING INSECTS, 1996: Treatments were applied to four-tree (of which 'McIntosh' was included) plots replicated three times in a randomized complete block design. All treatments were applied dilute to runoff using a high-pressure handgun sprayer at 300 psi delivering from 190 to 300 gal/acre depending upon foliage density. Trees on the EMII rootstock were 33 years-old, 10 ft high, and 12 ft wide. Treatments were applied on various schedules as per APPENDIX I. Damage to fruit was assessed on 28 AUGUST by randomly harvesting 100 fruits/treatment and scoring for external damage by each pest; subsequently, fruits were dissected to detect internal damage.

Most insects overwintered well because of deep snow cover. Weather for the '96 growing season was generally wet with moderate temperatures, excellent conditions for vegetative growth and fruit development (see APPENDIX IV)

Because of high overwintering success, PC pressure was high. Furthermore, we experienced an extended apple bloom period, and two of the warmest days of the season fell during bloom, allowing for inordinately early curculio feeding and oviposition. Damage to some treatments was severe (**Table 1**). Treatment #1, with full cover sprays, is considered to be the standard commercial comparison. Significantly better control of PC was achieved with Asana @ pink than with Imidan + endosulfan @ pink. Treatments #3 and #4 that included Guthion @ PF-1C-2C were not significantly different than the best treatment, suggesting the importance of the 2C application of Guthion. Treatment #2 that included Asana @ pink provided superior control of TPB. This season unusual early season damage occurred - the specific cause of this damage is unknown at this time, but it is tentatively attributed to apple curculio (AC). All treatments except #5 provided good control of early and late Lepidoptera (includes OFM, OBLR and GFW). This treatment was designed to determine if Sevin XLR applied as a thinner would substitute for organophosphate cover sprays for early season insects. All treatments provided excellent control of CM. Poor performance of treatments against SJS was probably due more to random infestations of this pest than to efficacy. All treatments that included organophosphate applications during 5C-6C-7C controlled tunneling and punctures by AM. Treatment #4, which utilized Confirm during these cover periods allowed extreme damage by this pest.

Table 1 Evaluation of insecticides for controlling fruit feeding insects on apple[1]
N.Y.S.A.E.S., Hudson Valley Lab., Highland, N.Y.-1996

Treatment	Formulation amt./100 gal.	% fruit damaged by insect species[2,3] AC	TPB	PC	Late PC	Early EAS	Late Lep	CM	SJS	Lep	AM Puncture	AM Tunnel	Clean
1 Imidan 70W	12.0 oz.	3.9 c	12.8 bc	23.2 c	2.1a	0.0a	7.5ab	0.0a	0.3a	12.3ab	2.2ab	2.4a	45.3 d
Imidan 70W	12.0 oz.												
Savey 50W	21.3 gr.												
Endosulfan 50W	12.0 oz.												
2 Asana XL	5.8 oz.	1.3a	3.3a	13.4a	8.6ab	0.0a	5.3a	0.0a	0.1a	7.4a	0.7a	0.1a	65.0 e
Guthion 3F	10.7 oz.												
Sevin XLR	32.0 oz.												
3 Confirm 70W	2.3 oz.	1.6abc	19.6 c	16.2a	2.8a	0.1a	7.3ab	0.1a	6.9 b	10.3ab	6.3 bc	2.8ab	47.5 d
Guthion 3F	10.7 oz.												
4 Confirm 70W	2.3 oz.	2.0abc	9.8 bc	18.1ab	2.2a	0.2a	4.1a	0.0a	10.5 c	16.0 b	22.1 d	29.7 d	27.0 c
Guthion 3F	10.7 oz.												
5 Guthion 3F	10.7 oz.	5.3 bc	9.4 bc	22.7 bc	24.0 c	0.4a	14.4 b	0.4a	5.2 b	46.8 d	20.3 d	25.1 c	13.0 b
Sevin XLR	32.0 oz.												
6 Untreated	-	17.8 d	38.8 d	93.1 d	62.0 d	4.4 b	30.2 c	9.0 c	0.8 a	77.7 e	21.0 d	46.3 e	0.0a

1 Data from ' McIntosh' harvested on August 28.

2 Mean separation by Fishers Protected LSD (P=<0.05). Arcsin transformation used for statistical analysis of data expressed as percentages. Treatment means followed by the same letter are not significantly different.

3 Application schedule, see Appendix I.

APPLE: Malus domestica 'Delicious'

Apple curculio (AC): *Tachypterellus quadrigibbus* (Say)
Apple maggot (AM): *Rhagoletis pomonella* (Walsh)
Codling moth (CM): *Cydia pomonella* (Linnaeus)
European apple sawfly (EAS): *Hoplocampa testudinea* (Klug)
Green fruitworm (GFW): *Lithophane antennata* (Walker)
Obliquebanded leafroller (OBLR): *Choristoneura rosaceana* (Harris)
Oriental fruit moth (OFM): *Grapholita molesta* (Busck)
Plum curculio (PC): *Conotrachelus nenuphar* (Herbst)
San Jose scale (SJS): *Quadraspidiotus perniciosus* (Comstock)
Tarnished plant bug (TPB): *Lygus lineolaris* (P. de B.)

HARVEST EVALUATION OF INSECTICIDES AGAINST ('DELICIOUS') FRUIT FEEDING INSECTS APPLE, 1996: Treatments were applied to four-tree (of which 'Delicious' was included) plots replicated three times in a randomized complete block design. All treatments were applied dilute to runoff using a high-pressure handgun sprayer at 300 psi delivering from 190 to 300 gal/acre depending upon foliage density. Trees on the EMII rootstock were 33 years-old, 10 ft high, and 12 ft wide. Treatments were applied on various schedules as per APPENDIX I. Damage to fruit was assessed by randomly selecting 100 'Delcious' fruit at harvest maturity (1 OCTOBER) and scoring for external damage by each pest; subsequently, fruits were dissected to detect internal damage. Damage by early and late Lepidoptera includes OFM, OBLR and GFW. Data were converted to % damaged fruit

Most insects overwintered well because of deep snow cover. Weather for the '96 growing season was generally wet with moderate temperatures, excellent conditions for vegetative growth and fruit development (see APPENDIX IV)

Because of high overwintering success, PC pressure was high. Furthermore, we experienced an extended apple bloom period, and two of the warmest days of the season fell during bloom, allowing for inordinately early curculio feeding and oviposition. Damage to some treatments was inordinately severe (**Table 2**). Treatment #1, with full cover sprays, is considered to be the standard commercial comparison. Pink, PF and cover sprays were based on 'McIntosh' timing; therefore early season sprays for this cultivar were not made at a time for maximum effectiveness against early season insects Under these conditions, no treatments provided acceptable control of PC, including those that received Guthion @ PF-1C-2C. This season unusual early season damage occurred - the specific cause of this damage is unknown at this time, but it is tentatively attributed to apple curculio (AC). All treatments provided control of AC. Treatment #2 that included Asana @ pink, best provided control of TPB. All treatments except #5 provided good control of early and late Lepidoptera (includes OFM, OBLR and GFW). This treatment was designed to determine if Sevin XLR applied as a thinner would substitute for organophosphate cover sprays for early season insects. All treatments except #5 provided excellent control of CM. All treatments that included organophosphate applications during 5C-6C-7C controlled tunneling and punctures by AM. Treatment #4, which utilized Confirm during these cover periods allowed extreme damage by this pest.

Table 2 Evaluation of insecticides for controling fruit feeding insects on apple[1]
N.Y.S.A.E.S., Hudson Valley Lab., Highland, N.Y.-1996

Treatment	Formulation amt./100 gal.	% fruit damaged by insect species[2,3] AC	TPB	PC	Late PC	EAS	Early Lep	CM	SJS	Late Lep	AM Puncture	AM Tunnel	Clean
1 Imidan 70W	12.0 oz.	5.4a	17.1a	11.4ab	3.6a	0.0a	1.2a	0.3ab	0.0a	6.8a	0.3a	0.8a	59.3 c
Imidan 70W	12.0 oz.												
Savey 50W	21.3 gr.												
Endosulfan 50W	12.0 oz.												
2 Asana XL	5.8 oz.	0.7a	7.2a	15.7ab	8.3a	0.0a	3.6a	0.0a	0.0a	5.4a	3.8ab	5.4a	59.5 c
Guthion 3F	10.7 oz.												
Sevin XLR	32.0 oz.												
3 Confirm 70W	2.3 oz.	5.8a	38.3 bc	16.3ab	7.0a	0.2a	6.8a	0.0a	1.3a	11.1a	5.4ab	9.4ab	35.2 bc
Guthion 3F	10.7 oz.												
4 Confirm 70W	2.3 oz.	5.7a	19.1ab	20.9ab	9.0a	0.1a	1.6a	0.5ab	5.2a	18.6a	3.4ab	81.6 d	7.2ab
Guthion 3F	10.7 oz.												
5 Guthion 3F	10.7 oz.	2.4a	18.8ab	31.4 b	35.5 b	0.1a	4.3a	12.6 c	13.8a	49.9 b	6.1ab	47.2 bcd	3.3ab
Sevin XLR	32.0 oz.												
6 Untreated	-	20.3 b	35.9 bc	92.7 c	68.4 c	0.6a	28.8 b	11.6 c	2.2a	71.3 b	9.1 b	60.1 cd	0.0a

1 Data from ' Red Delicious' harvested on October 1.

2 Mean separation by Fishers Protected LSD (P=<0.05). Arcsin transformation used for statistical analysis of data expressed as percentages. Treatment means followed by the same letter are not significantly different.

3 Application schedule, see Appendix I.

APPLE: Malus domestica 'Delicious'

Apple rust mite(ARM): Aculus schlechtendali (Nalepa)
A predatory phytoseid(AMB): Amblyseius fallacis (Garman)
European red mite(ERM): Panonychus ulmi (Koch)
Twospotted spider mite (TSM): Tetranychus urticae Koch

MITE CONTROL WITH MITICIDES, 1996: Treatments were applied to four-tree (one of which was 'Delicious') plots replicated three times in a randomized complete block design. No dormant oil or miticide was applied. All treatments were applied dilute to runoff using a high-pressure handgun sprayer at 300 psi delivering from 190 to 300 gal/acre depending upon foliage density. Trees on the EMII rootstock were 33 years-old, 10 ft high, and 12 ft wide. Treatments were applied on various schedules as per APPENDIX III. Phytophagous and predacious mite populations were evaluated by sampling 25 leaves from one 'Delicious' tree per plot. Leaves were removed to the laboratory where they were brushed with a mite brushing machine, and the mites and eggs examined using a binocular scope. ERM cumulative mite days (CMD) were calculated as: $CMD = [0.5(mpl_1 + mpl_2]*d_{1-2}$, where mpl_1 is the number of mites per leaf at time 1, mpl_2 is the number of mites per leaf at time 2, and d_{1-2} is the number of days elapsed between the 2 counts.

Weather for the '96 season was generally wet with moderate temperatures, excellent conditions for vegetative growth and fruit development (APPENDIX IV) Mites overwintered well and early TSSM populations were higher than normal. At the second evaluation (12 June) 'over-threshold' mite populations were present in both pre-bloom Lorsban treatments and in the AgriMek treatment applied without oil **(Table 3)**. In these three treatments ERM + TSSM remained over threshold on 1 July, and rescue treatments of AgriMek + oil were applied on 9 July . AgriMek was not effective as a rescue treatment. Savey, Apollo, AgriMek + oil and TD 2383-01 (applied at June threshold) maintained ERM + TSSM populations below threshold until harvest of 'Delicious'. Savey and Apollo however, because they were applied pre-bloom, and because they work primarily as ovicides, did not control ARM. On the basis of cumulative mite days Savey, Apollo, AgriMek and TD 2383-01 provided adequate performance. TD 2383 appears to be suitable as a rescue or late-season preventative miticide.

Table 3 Evaluation of early season miticides for controling mite populations on apple[1,2] N.Y.S.A.E.S., Hudson Valley Lab., Highland, N.Y.-1996

Treatment	Formulation amt./100 gal.	5/29 Mean # of mites or eggs / leaf* ERM	ERME	TSM	AMB	ARM	6/12 Mean # of mites or eggs / leaf* ERM	ERME	TSM	AMB	ARM
1. Savey 50WP	1.9 oz.	<0.1a	<0.1a	0.1 a	0.1a	1.4a-c	0.2ab	0.1a	<0.1a	0.0a	1.3ab
2. Apollo SC	1.9 oz.	<0.1a	0.3	0.0a	0.0a	3.5a-d	0.0a	<0.1a	0.0a	0.0a	1.0ab
3. TD 2383-01 5F	8.6 oz.	0.5 bcd	3.1 c-e	0.0a	0.1a	3.5a-c	1.7 bc	0.6ab	<0.1a	<0.1a	1.7 bc
4. Lorsban 4E	16.0 oz.	1.0 d	8.9 e	<0.1a	0.1a	1.2ab	7.2 de	2.0 bc	<0.1a	0.0a	1.4ab
5. Lorsban 4E Sunspray 6E	16.0 oz. 128.0 oz.	0.6 cd	5.1 de	0.0a	0.0a	1.2a-c	2.2 cd	0.6ab	<0.1a	0.0a	0.7ab
6. AgriMek Sunspray UF	3.3 oz. 32.0 oz.	0.4a-d	10.6 e	0.0a	0.1a	15.6 de	0.9abc	0.2a	0.3a	<0.1a	2.0ab
7. AgriMek	3.3 oz.	0.7 d	8.5 e	<0.1a	0.1a	1.2a-c	8.2 e	4.0	0.6a	0.0a	0.5a
8. Untreated	-	0.6 cd	2.8 b-e	<0.1a	0.0a	7.3 cd	0.7a	0.2	0.0a	0.0a	22.0 d

1 Data from ' Red Delicious'

2 Mean separation by Fishers Protected LSD (P=<0.05). Log_{10} (X + 1) used prior to transformation for statistical analysis of data. Treatment means followed by the same letter are not significantly different. Statistical analysis includes sevin treatments omitted from text.

* ERM = European Red Mite, ERME = ERM Egg, TSM = Two Spotted Mite, AMB = Amblyseius fallacis, ARM = Apple Rust Mite.

Table 3 (cont.) Evaluation of early season miticides for controling mite populations on apple[1,2] N.Y.S.A.E.S., Hudson Valley Lab., Highland, N.Y.-1996

Treatment	Formulation amt./100 gal.	7/1 Mean # of mites or eggs / leaf* ERM	ERME	TSM	AMB	ARM	7/25 Mean # of mites or eggs / leaf* ERM	ERME	TSM	AMB	ARM
1. Savey 50WP	1.9 oz.	<0.1a	0.3a	<0.1a	0.0a	18.6 c-e	1.2ab	0.8a	0.3a	<0.1a	233.4 fg
2. Apollo SC	1.9 oz.	1.4a-e	1.0a-c	1.7a	<0.1a	29.2 c-f	1.7a-d	3.0a-d	0.5a	<0.1a	82.2 d-g
3. TD 2383-01 5F	8.6 oz.	1.9a-e	0.9a	0.4a	<0.1a	28.8 c-f	1.1ab	0.7a	1.3a	<0.1a	10.1ab
4. Lorsban 4E	16.0 oz.	17.1 g	2.7a	1.7a	0.2a	9.9 bc	9.1 e-g	9.1 b-e	3.1a	0.2a	67.5 d-f
5. Lorsban 4E Sunspray 6E	16.0 oz. 128.0 oz	12.2 fg	7.2a	1.8a	0.0a	17.1 c-e	8.9 d-g	4.0a-e	0.5a	<0.1a	37.6 b-d
6. AgriMek Sunspray UF	3.3 oz. 32.0 oz	0.2ab	0.1a	0.3a	0.1a	2.1ab	0.4a	1.6a-c	<0.1	<0.1a	6.1a
7. AgriMek	3.3 oz.	2.9 c-f	0.1a	2.0a	0.1a	1.5a	1.6a-d	4.0a-e	0.4a	0.0a	12.3a-c
8. Untreated	-	5.1 d-g	4.0a	1.4a	0.2	67.1 ef	25.6 g	23.6 e	1.1a	0.3a	186.1 e-g

1 Data from ' Red Delicious'

2 Mean separation by Fishers Protected LSD (P=<0.05). Log_{10} (X + 1) used prior to transformation for statistical analysis of data. Treatment means followed by the same letter are not significantly different. Statistical analysis includes sevin treatments omitted from text.

* ERM = European Red Mite, ERME = ERM Egg, TSM = Two Spotted Mite, AMB = Amblyseius fallacis, ARM = Apple Rust Mite.

Table 3 (cont.) Evaluation of early season miticides for controling mite populations on apple[1,2] N.Y.S.A.E.S., Hudson Valley Lab., Highland, N.Y.-1996

Treatment	Formulation amt./100 gal.	8/1 Mean # of mites or eggs / leaf* ERM	ERME	TSM	AMB	ARM	8/13 Mean # of mites or eggs / leaf* ERM	ERME	TSM	AMB	ARM	ERM Cumulative mite days (CMD) (22 May - 13 Aug.)
1. Savey 50WP	1.9 oz.	0.6ab	0.1a	0.4a	0.1ab	221.3 e	2.8a-d	1.0a	0.1a-c	<0.1a	323.4 e	71
2. Apollo SC	1.9 oz.	3.0 b-f	4.9 bc	0.2a	<0.1a	270.6 e	1.1a-c	4.1a	0.5 cd	0.3a	155.0 de	102
3. TD 2383-01 5F	8.6 oz.	0.4ab	1.0ab	0.1a	0.0a	9.4a	0.4a	0.4a	0.0a	<0.1a	22.6 bc	94
4. Lorsban 4E	16.0 oz.	6.9 d-h	9.5 c	0.3a	0.0a	44.4 bc	11.3 de	5.4a	0.1a-c	<0.1a	223.9 e	708
5. Lorsban 4E Sunspray 6E	16.0 oz. 128.0 oz	3.5 b-g	1.9a-c	7.5 c	0.6 bc	81.6 cd	14.8 de	11.1a	0.2a-c	<0.1a	129.0 de	558
6. AgriMek Sunspray UF	3.3 oz. 32.0 oz	0.2a	0.1a	0.2a	0.1ab	5.3a	0.1a	0.7a	<0.1ab	<0.1a	2.0 a	29
7. AgriMek	3.3 oz.	1.0a-c	0.8ab	0.7ab	<0.1a	26.2 b	0.9abc	0.9a	<0.1a	0.0a	25.4 bc	226
8. Untreated	-	13.4 gh	9.3 c	3.0 bc	0.3ab	218.3 e	4.6 b-e	1.9	<0.1a	<0.1a	257.2 e	390

1 Data from ' Red Delicious'

2 Mean separation by Fishers Protected LSD (P=<0.05). Log_{10} (X + 1) used prior to transformation for statistical analysis of data. Treatment means followed by the same letter are not significantly different. Statistical analysis includes sevin treatments omitted from text.

* ERM = European Red Mite, ERME = ERM Egg, TSM = Two Spotted Mite, AMB = Amblyseius fallacis, ARM = Apple Rust Mite.

PEAR: *Pyrus communis* 'Bartlett'

Pear psylla (PP): *Psylla pyricola* Forester
Pear rust mite (PRM): *Epitrimerus pyri* (Nalepa)

PEAR INSECT AND MITE CONTROL, 1996: Treatments were applied to 4 tree plots, replicated 3 times in a randomized complete block design. Each plot contained 2 'Bartlett' and 2 'Bosc' cultivars, spaced 12 x 18 ft, 12 ft in height and 21 years old. Treatments were applied by high-pressure handgun sprayer, dilute to runoff, at 300 psi using from 1.7 to 2.6 gal/tree or 160 to 260 gal/acre, depending on foliage density. All plots received Guthion at PF for plum curculio. Treatments were applied on various schedules as per APPENDIX III.

Efficacy against pear psylla was evaluated by sampling 25 spur leaves from five separate spurs until 15 May, and thereafter sampling five terminals/treatment each containing one proximal, one distal, and three mid-terminal leaves. Samples were removed to the laboratory, and PP nymphs and eggs, and PRM, were counted using a binocular scope. On 29 August, 'Bartlett' trees in all treatments were rated (Barratt-Horsfall, 1 to 11 scale) for foliar damage and fruit russeting attributed to secretions of honeydew. Throughout the season, beginning 28 May, adult populations were sampled weekly by sweeping foliage of the untreated plots for nine minutes with a vacuum device. To determine the efficacy of insecticides against late-season adults, five treatments having high psylla numbers at harvest were sprayed on 11 Sept. Vacuum samples were made prior to and five days after application.

Weather for the '96 growing season was generally wet with moderate temperatures, excellent conditions for vegetative growth and fruit development (see APPENDIX IV)

The pear bloom period was prolonged, allowing for considerable hatch prior to the first cover period. Psylla populations were over threshold by 5 May in some treatments (**Table 4**). Because of poor efficacy and high foliar damage, some treatments were rescued on 1 July; either with the same material or with Mitac (See APPENDIX III). No treatments controlled psylla past 24 June, and in most cases rescue treatments with the same material did not reduce populations below threshold levels. This is expressed in the Barratt-Horsfall ratings, where perhaps only AgriMek + oil treatment(s) kept leaf damage from sooty-mold and resulting leaf necrosis to a minimum. No treatments prevented economic levels of sooty-mold on fruit (data not presented).

During most seasons, psylla populations crash during mid-July. Perhaps because of excellent growing conditions (and resultant lush sucker growth) during July and Aug of '96 however, summer-form adult populations remained high until the end of August (**Table 5**). The increase in oviposition during this period subjected treatments to unusually high nymph populations; therefore the poor leaf and fruit quality. It is likely that late-season or postharvest adulticide applications are warranted during these situations. When we evaluated five treatments for adulticide activity, only Asana effected a significant reduction in adult populations.

Table 4 Evaluations of insecticides for controling Pear Psylla on Bartlett pear[1] N.Y.S.A.E.S., Hudson Valley Lab., Highland, N.Y.-1996

	Treatment	Formulation amt./100 gal.	Timing[3]	5/20 # / Leaf* Nymphs	Eggs	PRM	5/28 # / Leaf* Nymphs	Eggs	PRM
1.	CM-006	400.0 ml.	PF	0.4a-d	1.5a	0.2	0.6 b-e	0.3a	0.3ab
2.	CM-006 + oil	400.0 ml.	PF	0.6 b-e	0.3a	<0.1	0.2ab	0.4a	0.2ab
3.	CM-007	400.0 ml.	PF	0.9 d-f	1.2a	0.2	0.8 c-f	0.3a	0.0a
4	CM-007 + oil	400.0 ml.	PF	0.7 c-f	0.3a	<0.1	0.5a-d	0.2a	0.1ab
5.	CM-002	400.0 ml.	14 d post PF	1.4 f	1.6a	2.0	0.9 d-f	0.3a	1.8 b-e
6.	CM-002 + oil	400.0 ml.	14 d post PF	1.0 d-f	0.5a	3.8	1.0 d-f	0.4a	5.0 e
7.	AgriMek / oil	148.0 ml.	14 d post PF	0.9 d-f	0.9a	2.2	1.2 ef	0.5a	4.0 de
8.	Neemix 4.2	24.0 oz.	PF	1.3 ef	0.9a	0.7	1.0 d-f	0.2a	1.1a-d
9.	Neemix 4.2	24.0 oz.	Thresh.	0.4 a-d	1.6a	0.9	0.3ab	0.4a	3.0 de
10.	Mitac 1.5EC	32.0 oz.	Thresh.	0.7 b-f	0.4a	1.4	0.9 d-f	0.5a	3.9 de
11.	Provado 1.6F	2.0 oz.	PF, 1C	0.3a-c	0.4a	1.2	0.1a	<0.1a	2.2 c-e
12	Comply	160.0 gr./A	BB	0.1ab	1.3a	5.9	0.3a-c	0.3a	5.4 e
13.	Comply	240.0 gr./A	BB	<0.1a	0.8a	1.6	0.3a-c	0.6a	4.6 e
14.	Lorsban 4E + oil	16.0 oz.	SB	0.6a-d	0.6a	<0.1	0.2ab	0.4a	0.2ab
15.	Sevin XLR	32 oz.	PF	0.8 c-f	0.7a	0.3	0.5a-e	0.7a	0.6a-c
16.	Untreated	-	-	0.5a-d	1.0a	2.8	1.4 f	0.7a	2.5 c-e

1 Treatment means followed by the same letter are not significantly different (P<0.5; Fishers protected LSD). Data treated by $\log_{10}(x+1)$ transformation prior to analysis.

2 Application Dates: Swollen Bud (SB) 4/20; Bud Burst (BB) 4/22; Petal Fall (PF) 5/17; (14 post PF) 6/1, (17 post PF) 6/5; (3C) 6/21. Treatments 1-11, 14 recieved Guthion 3F @ PF
PRM = Pear rust mite.
*Counts taken from 25 spur lvs / trmt until 5/28; thereafter 5 terminals / trmt each containing 1 proxmal, 1 distal, and 3 mid-terminal leaves were sampled.

Table 4 (cont.) Evaluations of insecticides for controling Pear Psylla on Bartlett pear[1] N.Y.S.A.E.S., Hudson Valley Lab., Highland, N.Y.-1996

Treatment	Formulation amt./100 gal.	Timing[3]	6/3 # / Leaf* Nymphs	6/3 # / Leaf* Eggs	6/3 # / Leaf* PRM	6/10 # / Leaf* Nymphs	6/10 # / Leaf* Eggs	6/10 # / Leaf* PRM
1. CM-006	400.0 ml.	PF	0.6a	2.9a	0.2a	1.0a-c	7.2a	0.3a
2. CM-006 + oil	400.0 ml.	PF	0.5a	1.6a	<0.1a	1.2 bc	8.8a	0.0a
3. CM-007	400.0 ml.	PF	0.7a	2.3a	0.1a	1.4 cd	11.9a	0.0a
4 CM-007 + oil	400.0 ml.	PF	0.3a	1.9a	<0.1a	1.3 c	13.0a	<0.1a
5. CM-002	400.0 ml.	14 d post PF	0.9a	2.5a	3.2 c-e	0.8abc	7.8a	<0.1a
6. CM-002 + oil	400.0 ml.	14 d post PF	0.9a	1.2a	4.1 c-e	0.7abc	6.3a	0.0a
7. AgriMek / oil	148.0 ml.	14 d post PF	0.6a	1.0a	0.4a	0.7abc	2.4a	<0.1a
8. Neemix 4.2	24.0 oz.	PF	0.8a	2.2a	0.9a	1.2 bc	5.0a	0.6a
9. Neemix 4.2	24.0 oz.	Thresh.	0.9a	2.2a	2.0a	1.5 cd	14.8a	0.4a
10. Mitac 1.5EC	32.0 oz.	Thresh.	1.0a	1.8a	7.4 de	1.5 cd	18.5a	0.7a
11. Provado 1.6F	2.0 oz.	PF, 1C	0.3a	0.8a	2.4 b-d	0.4a	5.6a	6.6 b
12 CGA59205	160.0 gr./A	BB	0.6a	1.9a	7.7 e	0.5ab	4.8a	0.7a
13. CGA59205	240.0 gr./A	BB	0.5a	0.9a	5.0 c-e	0.7abc	7.8a	0.5a
14. Lorsban 4E + oil	16.0 oz.	SB	0.4a	3.1a	0.3a	1.0abc	7.2a	0.2a
15. Sevin XLR	32 oz.	PF	0.9a	1.8a	0.3a	2.6 d	12.9a	0.6a
16. Untreated	-	-	1.4a	2.6a	3.2 c-e	1.0a-c	8.8a	1.2a

1 Treatment means followed by the same letter are not significantly different (P<0.5; Fishers protected LSD). Data treated by $\log_{10}(x+1)$ transformation prior to analysis.

2 Application Dates: Swollen Bud (SB) 4/20; Bud Burst (BB) 4/22; Petal Fall (PF) 5/17; (14 post PF) 6/1, (17 post PF) 6/5; (3C) 6/21. Treatments 1-11, 14 recieved Guthion 3F @ PF
PRM = Pear rust mite.
*Counts taken from 25 spur lvs / trmt until 5/28; thereafter 5 terminals / trmt each containing 1 proxmal, 1 distal, and 3 mid-terminal leaves were sampled.

Table 4 (cont.) Evaluations of insecticides for controling Pear Psylla on Bartlett pear[1] N.Y.S.A.E.S., Hudson Valley Lab., Highland, N.Y.-1996

Treatment	Formulation amt./100 gal.	Timing[3]	6/17 # / Leaf* Nymphs	6/17 # / Leaf* Eggs	6/17 # / Leaf* PRM	6/24 # / Leaf* Nymphs	6/24 # / Leaf* Eggs	6/24 # / Leaf* PRM
1. CM-006	400.0 ml.	PF	2.0a	5.2a	0.4a	3.0a	3.2a	<0.1a
2. CM-006 + oil	400.0 ml.	PF	3.0a	5.9a	<0.1a	3.0a	5.3a	<0.1a
3. CM-007	400.0 ml.	PF	2.0a	6.6a	<0.1a	1.7a	2.9a	0.3
4. CM-007 + oil	400.0 ml.	PF	2.5a	7.6a	<0.1a	3.2a	5.3a	<0.1a
5. CM-002	400.0 ml.	14 d post PF	2.9a	5.8a	<0.1a	1.7a	2.0a	0.5a
6. CM-002 + oil	400.0 ml.	14 d post PF	2.0a	7.2a	0.0a	2.8a	3.3a	0.0a
7. AgriMek / oil	148.0 ml.	14 d post PF	2.4a	4.0a	<0.1a	2.2a	2.9a	<0.1a
8. Neemix 4.2	24.0 oz.	PF	2.3a	4.5a	0.2a	2.4a	2.2a	0.0a
9. Neemix 4.2	24.0 oz.	Thresh.	3.5a	7.0a	1.4a	3.1a	2.8a	0.3a
10. Mitac 1.5EC	32.0 oz.	Thresh.	2.2a	8.4a	0.2a	2.2a	2.4a	0.4a
11. Provado 1.6F	2.0 oz.	PF, 1C	1.4a	6.1a	3.0a	1.7a	3.6a	11.4a
12 CGA59205	160.0 gr./A	BB	1.5a	8.4a	0.2a	3.0a	6.4a	0.4a
13. CGA59205	240.0 gr./A	BB	1.9a	8.6a	0.5a	2.5a	5.4a	0.1a
14. Lorsban 4E + oil	16.0 oz.	SB	3.0a	9.4a	0.0a	9.0a	8.0a	0.4a
15. Sevin XLR	32 oz.	PF	4.4a	9.4a	0.4a	2.9a	3.1a	0.6a
16. Untreated	-	-	2.3a	6.6a	<0.1a	1.6a	2.2a	0.3a

1 Treatment means followed by the same letter are not significantly different (P<0.5; Fishers protected LSD). Data treated by $\log_{10}(x+1)$ transformation prior to analysis.

2 Application Dates: Swollen Bud (SB) 4/20; Bud Burst (BB) 4/22; Petal Fall (PF) 5/17; (14 post PF) 6/1, (17 post PF) 6/5; (3C) 6/21. Treatments 1-11, 14 recieved Guthion 3F @ PF

PRM = Pear rust mite.

*Counts taken from 25 spur lvs / trmt until 5/28; thereafter 5 terminals / trmt each containing 1 proxmal, 1 distal, and 3 mid-terminal leaves were sampled.

Table 4 (cont.) Evaluations of insecticides for controling Pear Psylla on Bartlett pear[1] N.Y.S.A.E.S., Hudson Valley Lab., Highland, N.Y.-1996

	Treatment	Formulation amt./100 gal.	Timing[2]	7/8 # / Leaf* Nymphs	Eggs	PRM	7/22 # / Leaf* Nymphs	Eggs	PRM	Barratt-Horsfall[3] Leaf Rating
1.	CM-006	400.0 ml.	PF	1.2a	1.1a	0.0a	1.9 cd	4.4a	0.0a	4.9 f-h
2.	CM-006 + oil	400.0 ml.	PF	2.3a	1.6a	<0.1a	1.3 bcd	1.9a	0.0a	4.3 c-e
3.	CM-007	400.0 ml.	PF	1.7a	1.3a	0.0a	1.3 bcd	5.1a	0.0a	4.6 e-g
4	CM-007 + oil	400.0 ml.	PF	1.2a	1.7a	0.0a	1.4 bcd	3.1a	0.0a	4.3 d-f
5.	CM-002	400.0 ml.	14 d p.PF	1.3a	0.5a	<0.1a	1.3 bcd	2.9a	0.1a	5.0 gh
6.	CM-002 + oil	400.0 ml.	14 d p.PF	3.6a	2.6a	0.0a	2.3 d	4.2a	1.0a	5.2 h
7.	AgriMek / oil	148.0 ml.	14 d p.PF	<0.1a	0.3a	0.0a	0.4 ab	2.2a	0.1a	1.9a
8.	Neemix 4.2	24.0 oz.	PF	1.4a	2.2a	0.0a	1.0 a-d	2.8a	1.9a	4.8 e-h
9.	Neemix 4.2	24.0 oz.	Thresh.	1.8a	3.2a	0.2a	2.3 d	5.6a	0.4a	4.9 gh
10.	Mitac 1.5EC	32.0 oz.	Thresh.	0.4a	1.5a	<0.1a	0.7abc	2.4a	0.7a	5.0 gh
11.	Provado 1.6F	2.0 oz.	PF, 1C	1.1a	1.0a	2.0a	2.3 d	2.8a	1.1a	5.1 gh
12	CGA59205	160.0 gr./A	BB	2.1a	3.8a	0.2a	0.2a	2.5a	3.5a	3.2 b
13.	CGA59205	240.0 gr./A	BB	2.0a	2.0a	<0.1a	1.8 cd	3.5a	1.5a	3.9 cd
14.	Lorsban 4E + oil	16.0 oz.	SB	1.4a	4.4a	0.1a	1.1a-d	4.4a	<0.1a	3.8 c
15.	Sevin XLR	32 oz.	PF	3.1a	2.6a	0.2a	2.6 d	5.9a	1.3a	5.0 gh
16.	Untreated	-	-	1.2a	2.9a	0.1a	2.3 d	4.6a	0.8a	4.6 efg

1 Treatment means followed by the same letter are not significantly different (P<0.5; Fishers protected LSD). Data treated by $\log_{10}(x+1)$ transformation prior to analysis.

2 Application Dates: Swollen Bud (SB) 4/20; Bud Burst (BB) 4/22; Petal Fall (PF) 5/17; (14 post PF) 6/1, (17 post PF) 6/5; (3C) 6/21. Treatments 1-11, 14 recieved Guthion 3F @ PF
1 distal, and 3 mid-terminal leaves were sampled.

3 Ratings for leaf necrosis using Horsfall-Barrett rating system (0-11) on 29 August. The higher the number the greater the damage. Based on 20 spur leaves from 5 spurs per tree.
PRM = Pear rust mite.
*Counts taken from 25 spur lvs / trmt until 5/28; thereafter 5 terminals / trmt each containing 1 proxmal,

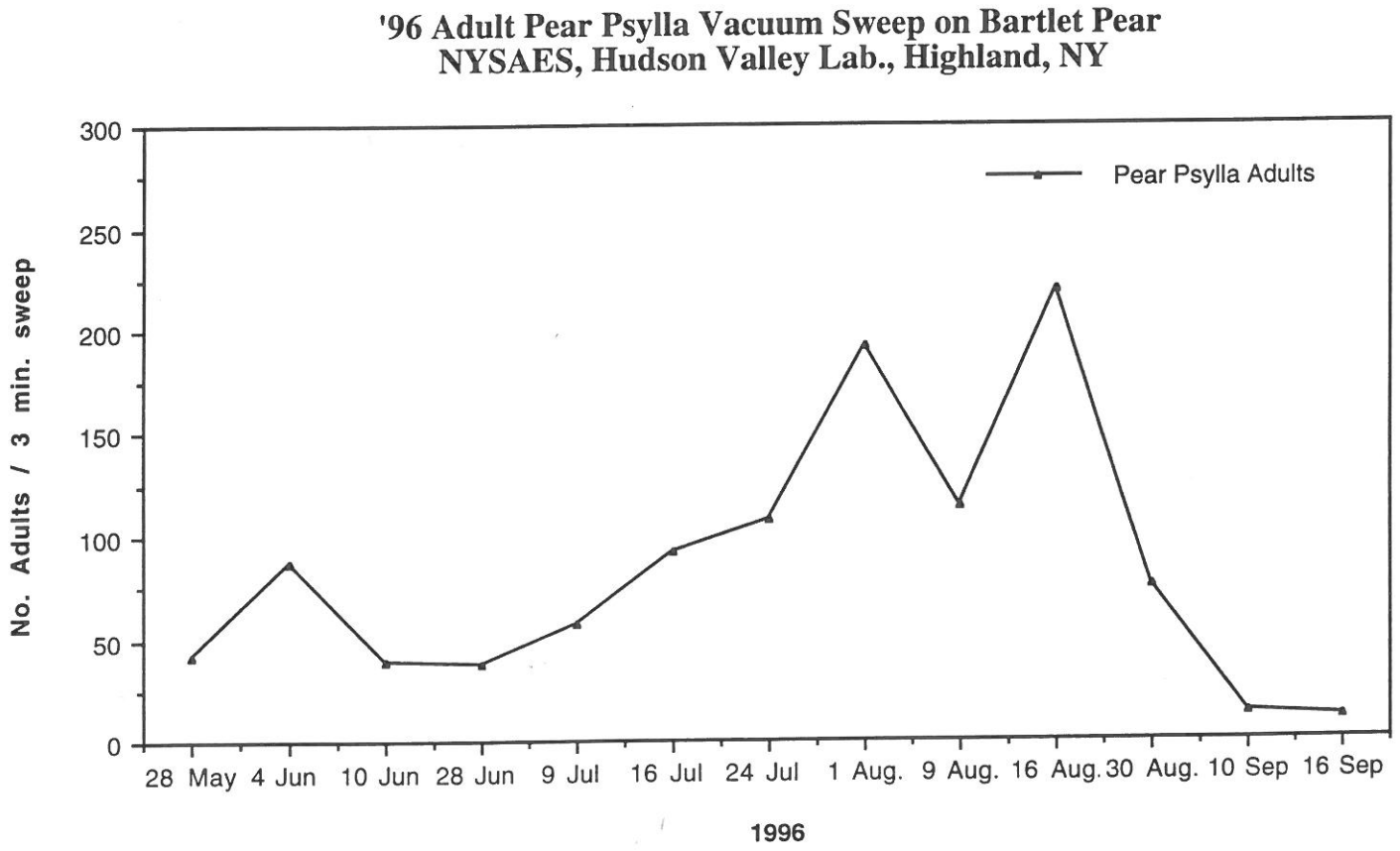
Table 5 Evaluations of post harvest Pear Psylla adulticides on Bartlett pear[1], N.Y.S.A.E.S., Hudson Valley Lab., Highland, N.Y.-1996

Treatment	Formulation amt./100 gal.	Timing[3]	9/10 (pre-trmt) # Adults*	9/16 (5 DAT) # Adults*	% Reduction	# Predators **
Asana XL	12.8 oz.	9/11	26.4a	2.5a	90.5	0.4a
AgriMek + oil	5.0 oz.	9/11	61.1a	60.8 c	0.5	1.9a
Mitac 1.5EC	32.0 oz.	9/11	58.6a	27.4 bc	53.2	0.9a
Provado 1.6F	2.0 oz.	9/11	52.5a	23.9 bc	54.5	0.8a
Neemix 4.2	24.0 oz.	9/11	28.9a	12.0 b	58.5	1.0a
Untreated	-	-	12.9a	10.7 b	17.1	3.2a

1 Treatment means followed by the same letter are not significantly different (P<0.5; Fishers protected LSD). Data treated by $\log_{10}(x+1)$ transformation prior to analysis.

* Three minute vacuum samples collected using a hand held vacuum and generator 1 day prior to application and 5 days post application (5 DAT).

** Predator counts consisting of Anthicorid's, Chrysopid's, Coccinelid's, and Nabid's.



SWEET CORN: *Zea mays* 'Sensor'

Corn earworm (CEW): *Helicoverpa zea* Boddie
European corn borer (ECB): *Ostrinia nubilalis* (Hubner)
Fall armyworm (FAW): *Spodoptera frugiperda* J.E. Smith

INSECT CONTROL ON LATE-SEASON SWEET CORN WITH FOLIAR SPRAYS OF INSECTICIDES, 1996: 'Sensor' sweet corn was planted 13 and 26 June in Tioga silt-loam soil at New Paltz, NY. Treatments were arranged in 2-row plots 488 ft. long, replicated 4 times in a randomized block design. Insecticide emulsions were applied by high-clearance sprayer, through three D3-25 cone nozzles/row, dispensing 51 GPA @ 100 PSI @ 3 MPH. Treatments to Trial #1 were applied on a 5-day schedule starting at first silk on 9 Aug., followed by sprays on 14, 19 and 23 Aug. Warrior on a 7-day schedule was treated 9 Aug., followed by sprays on 14 and 21 Aug. Treatments to Trial #2 were applied on a 5-day schedule starting at first silk on 20 August, followed by applications on 24 Aug., 29 Aug. and 3 Sept. Talstar on a 3-5 day schedule was treated 22, 26 and 29 Aug. and 3 Sept. Efficacy was evaluated by examining 30 randomly selected ears per treatment/replicate.

Weather for the '96 season was generally wet with moderate temperatures (APPENDIX IV) and corn emergence was poor or uneven throughout much of the season. Because of heavy snow cover, ECB overwintered well and infestations were much higher than normal. A hurricane blew in high numbers of FAW on 15 July. These two lepidopterous species remained at unusually high numbers for remainder of the season. CEW populations were very low.

Results of Trial #1 are presented in **Table 6**. Excellent control was provided by most treatments, with only TD2351-04 and Penncap allowing infestations over the threshold of 5% infested ears. Results of Trial #2 are presented in **Table 7**. Under higher infestation pressure conditions, only Larvin and Warrior maintained infestations below the threshold. Failure of some treatments may have been due to the unevenness of silking, unusually high insect pressure and/or a high degree of experimental error (SEM = 3.41).

Table 6. Control of late season sweet corn insects (Trial #1), Cornell's Hudson Valley Lab, 1996.

TREATMENT	TIMING*	RATE(AI)	% damaged ears ECB	FAW	Total
1. Baythroid 2E	5 da	0.031	0.0	0.0	0.0 b
2. Larvin 3.2 SC	5 da	0.5	1.0	0.0	1.0 b
3. Larvin 3.2 SC	5 da	0.75	0.0	0.0	0.0 b
4. TD2351-02 4FM	5 da	1.0	0.0	0.00	0.0 b
5. TD2351-01 4FM	5 da	1.0	0.0	3.0	3.0 b
6. TD2351-04 4FM	5 da	1.0	1.0	4.0	5.0 b
7. TD2344-02 0.8EC	5 da	0.035	0.0	0.0	0.0 b
8. Penncap 2L	5 da	1.0	3.0	3.0	6.0 b
9. Mustang 1.5E	5 da	0.0375	2.0	1.0	3.0 b
10. Mustang 1.5E	5 da	0.05	1.0	0.0	1.0 b
11. Capture 2E	5 da	0.025	0.0	0.0	0.0 b
12. Capture 2E	5 da	0.03	0.0	0.0	0.0 b
13. Capture 2E	5 da	0.04	0.0	0.0	0.0 b
14. Pounce 3.2E	5 da	0.15	1.0	2.0	3.0 b
15. Pounce 3.2E	5 da	0.2	1.0	0.0	1.0 b
16. Warrior 1E	5 da	0.025	0.0	0.0	0.0 b
17. Warrior 1E	7 da	0.025	0.0	0.0	0.0 b
18. UNTREATED			6.0	24.0	30.0 a
					SEM = 1.89

Means within a column followed by the same letter are not significantly different (DMRT; P = 0.05)
Treatment plot size = 0.25 acre
Planting date - 6/13
Application dates - 8/9; 8/14; 8/19; 8/23 - Warrior 7-day - 8/9; 8/14; 8/21
Evaluation date - 8/28

Table 7. Control of late season sweet corn insects (Trial #2), Cornell's Hudson Valley Lab., 1996.

TREATMENT	TIMING*	RATE(AI)	% damaged ears ECB	FAW	Total
1. Baythroid 2E	5 da	0.031	1.0	17.0	18.0 b
2. Larvin 3.2 SC	5 da	0.5	0.0	0.0	0.0 d
3. Mustang 1.5E	5 da	0.0375	11.0	7.0	18.0 b
4. Capture 2E	5 da	0.03	5.0	4.0	9.0 c
5. Ambush 4E	5 da	0.2	2.0	4.0	6.0 c
6. Warrior 1E	5 da	0.025	1.0	1.0	2.0 d
7. Talstar .67F	3-5 da	0.03	5.0	11.0	16.0 b
8. Talstar .67F	3-5 da	0.04	4.0	5.0	9.0 c
9. UNTREATED			21.0	36.0	57.0 a
					SEM = 3.41

Means within a column followed by the same letter are not significantly different (DMRT; P = 0.05)

Planting date - 6/26
Treatment plot size = 0.25 acre
Application dates - 8/20; 8/24; 8/29; 9/3
Talstar 7-day - 8/22; 8/26; 8/29; 9/3
Evaluation date - 8/28

ONION: *Allium cepa* L. 'Spartan Banner 80'
Onion maggot (OM): *Delia antiqua* (Meigen)

CONTROL OF ONION MAGGOT WITH SEED-FURROW INSECTICIDES, PINE ISLAND, NY, 1995: 'Spartan Banner 80' was seeded into muck soil 23 April, at Pine Island NY. Treatments were arranged in 1-row plots, 40 ft long, and replicated 4 times in a randomized block design. All treated seeds were sown and seed-furrow treatments of insecticides were applied using a hand-pushed cone seeder that planted 9 seeds/ft and delivered 43 GPA through a CO_2 pressurized system. Germination and damage data were recorded form the center 20 ft of each row. Fipronyl (1X, 5X and 10X) was applied, at Geneva NYSAES, to the seed by film coating. Trigard seed-treatment was a commercial formulation.

Growing conditions for '96 (see APPENDIX IV) were normal except for heavy rains during the middle of May that leached many in-furrow treatments in commercial plantings. This trial may have been likewise affected by leaching of toxicants. The number of maggot infested plants were assessed at regular intervals from 4 June to 1 July. The cumulative % damaged seedlings are presented in **Table 8**. Because of high standard error (SEM = 3.04), no differences among insecticide treatments were evident. Fipronyl seed-treatment at the highest rate (10.0 gm AI/kg seed) provided the best protection, compared to the standard treatment, Lorsban + Progro. Compared to Trigard and manzate, all treatments showed significant degrees of phytotoxicity.

Table 8. Control of onion maggot on onion with seed furrow treatments, Pine Island NY, 1996

Treatment	Rate	% damaged seedlings on 1 July	Stand count
fipronyl seed tmt	1.0 gm AI/kg	2.9 b	98.8 bc
fipronyl seed tmt	5.0 gm AI/kg	3.8 b	76.3 c
fipronyl seed tmt	10.0 gm AI/kg	0.4 b	71.8 c
Lorsban + Progro	1.0 lb AI/acre	2.4 b	91.5 bc
Trigard seed tmt	commercial rate	1.6 b	124.5 ab
Progro only	commercial rate	9.8 b	75.3 c
Progro only	commercial rate	6.0 b	76.0 c
manzate only	commercial rate	28.4 a	143.0 a
		SEM = 3.04	13.10

Means within a column followed by the same letter are not significantly different (DMRT; P = 0.05)

Planting date - 23 April

[a] Only last evaluation date shown; eval. dates - 6/4; 6/11; 6/19; 6/24; 7/1

ONION: *Allium cepa* L. 'Spartan Banner 80'
Onion thrips: *Thrips tabaci* Lindeman

CONTROL OF ONION THRIPS WITH INSECTICIDES, PINE ISLAND, NY 1996: Treatments were arranged in 1-row plots, 40 ft long, and replicated 4 times in a randomized block design. Insecticide emulsion treatments were applied over the plants with a CO_2 pressurized (100 PSI) back-pack sprayer dispensing 38 GPA @ 2 MPH. Seed-furrow treatments of EXP60145A (fipronyl) were applied using a hand-pushed cone seeder that planted 9 seeds/ft and delivered 43 GPA through a CO_2 pressurized system. Efficacy evaluations were made 3 - 10 days postapplication by harvesting 10 randomly selected plants per treatment-replicate, and examining for number of thrips nymphs by means of a 10-power 'OptiVisor' scope.

Unusually mild temperatures were evidenced during the '96 season, with adequate, well spaced rainfall.(see APPENDIX IV) Thrips populations were low throughout most of the season, only building to significant numbers during late August, when plants were nearing maturity and the tops going down.

Results are presented in **Table 9**. At 3DAT on Aug. 15, all treatments except the EXP seed treatments and TD2344-02 maintained thrips below 1 nymph/leaf. At 7DAT on Aug. 22, all EXP seed treatments were over threshold - given that these treatments would not improve with time, evaluations ceased. All other treatments (save TD2344-02) maintained nymphs below threshold at 7DAT. At the Sept. 2 evaluation, the tops of plants were significantly down and the evaluations may or may not present a real picture of performance. In general, under low population conditions, all treatments except seed treatments performed well.

Table 9. Control of onion thrips with foliar and seed treatment insecticides, Pine Island, NY 1996.

Treatment	Rate	Number nymphs / leaf		
		Aug 15 (3 DAT)[a]	Aug 22 (7 DAT)[a]	Sept 2 (6 DAT)[a, b]
EXP 60145A -seed tmt	1 gm/kg	0.8 abcd	3.6	-
EXP 60145A-seed tmt	5 gm/kg	1.1 abc	3.0	-
EXP 60145A-seed tmt	10 gm/kg	1.5 a	3.6	-
EXP 60145A-seed tmt	28.6 gm/kg	1.5 a	2.9	-
TD 2344-02 + X-77	0.035 AI	1.0 abcd	3.1	2.9 de
TD 2351-01 + X-77	0.5 AI	0.5 cde	2.2	4.4 de
TD 2351-02 + X-77	0.5 AI	0.7 abcd	1.7	8.2 bc
TD 2351-04 + X-77	0.5 AI	0.6 bcde	0.7	9.1 abc
Penncap + X-77	0.5 AI	0.6 bcde	2.6	8.3 bc
EXP 60145A + X-77	0.025 AI	0.4 cde	1.5	5.3 de
EXP 60145A + X-77	0.05 AI	0.3 cde	1.2	4.4 de
EXP 60145A + X-77	0.068 AI	0.3 cde	1.4	3.4 de
EXP 60145A + Larvin + X-77	0.025 + 0.6 AI	0.3 cde	1.1	2.5 e
Orthene	1.0 AI	0.2 de	0.4	5.0 de
Orthene + X-77	0.75 AI	0.4 cde	1.0	5.4 cd
Orthene +X-77	1.0 AI	0.0 e	0.6	3.7 de
V71639 + X-77	50 g AI	0.8 abcd	0.4	3.4 de
UNTREATED		1.4 ab	2.1	12.0 a
		SEM = 0.24		SEM = 0.84

Means within a column followed by the same letter are not significantly different (DMRT; P = 0.05).

[a] DAT, days after treatment; Application dates: 8/12; 8/22; 8/27

[b] Plants mature; tops fallen over; few plants for evaluation.

ONION: *Allium cepa* L. 'Spartan Banner 80'
Onion thrips: *Thrips tabaci* Lindeman

CONTROL OF ONION THRIPS WITH PYRETHROID INSECTICIDES, PINE ISLAND., NY 1996: Treatments were arranged in 1-row plots, 40 ft long, and replicated 4 times in a randomized block design. Insecticide emulsion treatments were applied over the plants with a CO_2 pressurized (100 PSI) back-pack sprayer dispensing 38 GPA @ 2 MPH. Efficacy evaluations were made 3 - 4 days postapplication by harvesting 10 randomly selected plants per treatment-replicate, and examining for number of thrips nymphs by means of a 10-power 'OptiVisor' scope.

Unusually mild temperatures were evidenced during the '96 season, with adequate, well spaced rainfall.(see APPENDIX IV) Thrips populations were low throughout most of the season, only building to significant numbers during late August, when plants were nearing maturity and the tops going down.

Results are presented in **Table 10**. At 3DAT on Aug. 15, all treatments maintained thrips below the 3 nymph/leaf threshold. At 4DAT on 4 Sept., all treatments were significantly different than UNTREATED, but at this date, the tops of plants were significantly down and the evaluations may or may not present a real picture of performance. In general, under low population conditions, all treatments performed well. Compared to organophosphates however, pyrethroids generally show weakness as quick knock-down or 'rescue' materials.

Table 10. Control of onion thrips with pyrethriod insecticides, Pine Island, NY 1996 .

Treatment	Rate(lb AI/acre)	No. thrips/leaf [a] 8/15 (3 DAT) [b]	9/4 (4 DAT) [b,c]
Ambush + X-77	0.3	1.35 b	6.6 b
Ammo + X-77	0.1	1.48 ab	5.0 b
Warrior + X-77	0.025	1.00 b	4.1 b
Baythroid + X-77	0.0375	1.45 b	4.2 b
Mustang + X-77	0.0375	1.38 b	7.7 b
UNTREATED	-	2.33 a	11.9 a
	SEM	0.26	0.94

[a] Means within a column followed by the same letter are not significantly different (DMRT: P = 0.05). Application dates: 8/12, 8/21, 8/26, 8/30

[b] DAT, days after treatment

[c] Onions mature with ca. 30% of tops down

Appendix I

Application timing of insecticides for controlling insect populations on apple. N.Y.S.A.E.S., Hudson Valley Lab., Highland, N.Y.-1996

Treatment	Formulation amt./100 gal.	Timing	5/1 P	5/20 PF	5/30 1C	6/11 2C	6/21 3C	7/12 4C	7/22 5C	8/8 6C	8/19 7C
1 Imidan 70W	12.0 oz.	P	X								
Imidan 70W	16.0 oz.	PF, 1-7C		X	X	X	X	X	X	X	X
Savey 50W	1.9 oz.	P	X								
Endosulfan 50W	12.0 oz.	P, PF	X	X							
2 Asana XL	5.8 oz.	P	X								
Guthion 3F	10.7 oz.	PF,1,4-7C		X	X			X	X	X	X
Sevin XLR	32.0 oz.	2C				X					
3 Confirm 70W	2.3 oz.	3,4C					X	X			
Guthion 3F	10.7 oz.	PF-2,5-7C		X	X	X			X	X	X
4 Confirm 70W	2.3 oz.	3-7C					X	X	X*	X*	X*
Guthion 3F	10.7 oz.	PF-2C		X	X	X					
5 Guthion 3F	10.7 oz.	PF		X							
Sevin XLR	32.0 oz.	1C			X						
6 Untreated	-	-									

*Following OBLR DD_{50} model. Applications for cover sprays: 5C on 7/30, 6C on 8/12, 7C on 8/23

Appendix II

Application timining of early season miticides for controlling mite populations on apple.[1] N.Y.S.A.E.S., Hudson Valley Lab., Highland, N.Y.-1996

	Treatment	Formulation[2] amt./100 gal.	Timing	4/20 1/2"G	5/1 P	5/20 PF	5/30 1C	6/11 2C	6/21 3C	7/9 4C	7/22 5C	8/8 6C	8/16 7C
1.	Savey 50WP	1.9 oz.	P		X								
2.	Apollo SC	1.9 oz.	1/2"G	X									
3.	TD 2383-01 5F	8.6 oz.								X			
4.	Lorsban 4E	16.0 oz.	1/2"	X									
	AgriMek +	3.3 oz.	4C							X			
	Sunspray UF	32.0 oz.											
5.	Lorsban 4E +	16.0 oz.	1/2"G	X									
	Sunspray 6E	128.0 oz.											
	AgriMek +	3.3 oz.	4C							X			
	Sunspray UF	32.0 oz.											
6.	AgriMek +	3.3 oz.	1C				X						
	Sunspray UF	32.0 oz.											
7.	AgriMek	3.3 oz.	1C				X						
	AgriMek +	3.3 oz.	4C							X			
	Sunspray UF	32.0 oz.											
8.	Untreated	-											

1 Phenological data events taken from McIntosh cultivar.

2 Dilute spray prior to petal fall based on 190 GPA. PF to EOS application rates based on 300 GPA TRV.

Appendix III

Application timing of insecticides for controlling Pear Psylla on Bartlett pear. N.Y.S.A.E.S., Hudson Valley Lab., Highland, N.Y.-1996

Treatment	Formulation amt./100 gal.	Timing	4/20 SB	4/22 BB	5/17 PF	6/1 14DPF(1C)	6/21 3C	7/1 4C
1. CM-006	400.0 ml.	PF, 4C			X			X
2. CM-006 + oil	400.0 ml.	PF, 4C			X			X
3. CM-007	400.0 ml.	PF, 4C			X			X
4. CM-007 + oil	400.0 ml.	PF, 4C			X			X
5. CM-002	400.0 ml.	14 d p. PF				X		
6. CM-002 + oil	400.0 ml.	14 d p. PF				X		
7. AgriMek / oil	148.0 ml.	14 d p. PF				X		
Mitac 1.5EC	32.0 oz.	4C						X
8. Neemix 4.2	24.0 oz.	PF, 4C			X			X
9. Neemix 4.2	24.0 oz.	3C					X	
10. Mitac 1.5EC	32.0 oz.	4C						X
11. Provado 1.6F	2.0 oz.	PF, 1C			X	X		
12 Comply	160.0 gr./A	BB, 4C		X				X
13. Comply	240.0 gr./A	BB		X				
14. Lorsban 4E +	16.0 oz.	SB	X					
Sunspray UF	128.0 oz.	SB	X					
Mitac 1.5EC	32.0 oz.	4C						X
15. Sevin XLR	32.0 oz.	PF			X			
16. Untreated								

All treatments (except 12, 13, 16) recieved Guthion 3F @ 8.0 oz./100 at PF for plum curculio control.

Appendix IV

1996 MAXIMUM AND MINIMUM TEMPERATURES AND PRECIPITATION

Hudson Valley Laboratory, Highland, NY

All readings were taken at 0800 EST on the dates indicated

	APRIL			MAY			JUNE			JULY			AUGUST			SEPTEMBER		
Date	Max	Min	Precip	Max	Min	Precip	Max	Min	Precip	Max	Min	Precip	Max	Min	Precip	Max	Min	Precip
1	58	36		69	41	0.31	78	44		67	62	0.05	69	63	0.02	80	52	
2	55	40		67	44		81	49		86	59		78	61	0.01	79	64	
3	51	29		69	40		78	47		83	64	0.37	82	64		85	59	
4	54	35		61	51	0.11	67	57	1.66	75	61	0.33	79	63		86	60	
5	53	37		54	45	0.11	76	62	0.37	71	55	0.13	84	63		80	67	0.04
6	51	27	0.02	66	44	0.18	79	51		83	57		87	64		84	64	
7	55	36	0.03	46	31	0.14	80	59		86	62		89	65		85	69	0.13
8	46	39	0.39	62	39		84	66		84	66	0.01	87	66		72	65	0.25
9	45	25	0.21	69	53		87	65	0.33	87	65	0.13	85	66		74	65	0.01
10	44	34	0.13	60	53	0.23	84	70		85	55	0.65	82	62	0.02	84	65	0.03
11	50	37		73	59	0.07	80	70		77	51		80	56		82	60	
12	63	46		78	42	0.69	83	66	0.01	78	54		76	55		74	60	
13	70	36	0.41	52	37		83	68		80	63	2.22	73	58	0.22	74	61	0.01
14	49	37	0.57	56	31		82	63	0.02	74	62	2.57	74	57		62	55	0.65
15	48	31	0.01	64	34		84	63		86	69	0.01	83	64		71	49	
16	58	40	1.24	69	44	0.01	87	61		82	65	0.50	83	62		72	53	
17	55	38		58	48	0.25	82	62		85	66	0.08	77	62	0.50	70	59	0.34
18	49	31		69	51	0.04	80	67	0.37	88	63		80	60		59	53	2.52
19	68	39		66	57	0.22	78	64		88	70	0.01	82	59		63	48	0.05
20	72	50		91	64		65	60	0.49	83	60	0.23	83	62		72	45	
21	72	56		95	65		73	62	0.04	75	59		82	67		76	48	
22	79	44		89	51	0.27	82	60		81	55		79	64		76	52	
23	76	57		79	48		72	58	0.01	80	63	0.11	87	62		64	54	1.12
24	85	41	0.64	81	58		80	56		69	60		90	69	0.67	63	40	0.01
25	58	40		73	39		78	65		79	64		80	57	0.01	59	49	0.34
26	70	54		70	44		82	54		81	67	1.26	82	58		66	41	
27	75	43	0.28	68	50	0.04	76	49		79	60	0.13	86	61		62	47	
28	58	33		69	53		81	62	0.18	79	57		83	65	0.02	66	56	
29	67	45	0.05	62	52		78	59		81	55		74	59		74	53	0.53
30	55	44	1.53	69	43	0.01	77	62	0.43	77	64	0.25	81	55		69	47	
31				62	38					72	63	0.04	79	53				
Avg/Tot	59.6	39.3	5.51	68.3	46.7	2.68	79.2	60.0	3.91	80.0	61.2	9.08	81.2	61.4	1.47	72.8	55.3	6.03