

TREE FRUITS

(Apple, apricot, cherry, nectarine, peach, pear, prune/plum)

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The control products recommended in this section are for application in commercial orchards. The application rates are expressed per hectare (ha) and per acre as listed on recommended product labels or derived from dilute rates listed on recommended product labels. The rates are for application by air-assisted orchard sprayers. To assist with pesticide resistance management, the chemical class Group Number is listed with each recommended product as well as compiled in a table at the end of this section.

Pyrethroids registered for use on tree fruits are not recommended due to their adverse impact on beneficial insects and mites that provide biological control of many of the pest groups listed in this section. Avoid applying more than two applications per season of control products in Group 4 (neonicotinoids) – Actara, Admire, Alias, Assail, Calypso, Clutch – to minimize the risk of increased mite populations.

Consult with local pest management advisors for product availability, proper timing of treatment(s) and compatibility with local integrated pest management programs. Unmanaged and wild trees should be removed where possible to eliminate uncontrolled pest population development and movement into nearby orchards. **Always consult product labels before application to confirm target pests, crops, application rates and timing, buffer zones, re-entry intervals and pre-harvest intervals. It is also important that sprayers be properly maintained, calibrated and operated to ensure optimum performance of the products.**

APHIDS

Aphids : Apple grain (*Rhopalosiphum fitchii*), Black cherry (*Myzus cerasi*), Green apple (*Aphis pomi*), Green peach (*Myzus persicae*), Mealy plum (*Hyalopterus pruni*), Rosy apple (*Dysaphis plantaginea*) and Woolly apple aphids (*Eriosoma lanigerum*)

Biological Control -

Preservation of aphid predators and parasites can maintain aphid numbers below damaging levels. Use control products that are least harmful to predators and parasites. Some species of predators are commercially available for release.

Cultural Control - Avoiding excessive nitrogen application will limit aphid populations by reducing succulent growth that is attractive to aphids.

Chemical Control -

Trade name	Crop	Rate (/ha)	Rate (/acre)	Pre-harvest Interval (days)
Admire 240 FL, Alias 240 SC (4)	apple peach (Admire only)	230 mL	93 mL	7
Assail 70 WP (4)	apple, pear	80 – 120 g	32 – 48 g	7
*Beleaf (9C)	apple, pear, stone fruit	120 – 160 g	49 – 65 g	21
Clutch (4)	all fruit	140 – 210 g	57 – 85	7
Cygon 480, 480 - AG,	pear, non-bearing peach	3.0 - 375 L	1.2 – 1.5 L	14
Lagon 480E (1B)		3.0 - 375 L	1.2 – 1.5 L	n/a
Diazinon 50 WP, 50 EC, 500 E (1B)	apple, pear	4.5 kg or L	1.8 kg or L	14
	apricot, cherry, plum	4.5 kg or L	1.8 kg or L	10
	peach	4.5 kg or L	1.8 kg or L	20
Imidan 50 WP (1B)	apple	3.75 kg	1.5 kg	14
Malathion 50 EC, 500E (1B)	apple, cherry, plum	1.25 – 1.8 L	500 – 728 mL	3
	apricot	1.25 – 1.8 L	500 – 728 mL	7
Malathion 25 WP (1B)	apple, cherry, plum	2.5 – 3.6 kg	1.0 – 1.45 kg	3
	apricot	2.5 – 3.6 kg	1.0 – 1.45 kg	7
Movento 240 SC (23)	all fruit	365 – 435 mL	148 – 176 mL	7
Thionex 50 WP (2A)	all fruit	3.25 – 4.25 kg	1.3 – 1.7 kg	15
Zolone Flo (1B)	apple, pear	2.0 – 3.0 L	0.8 – 1.2 L	30
	cherry	2.0 L	0.8 L	14
	plum	2.0 L	0.8 L	30

Precautions -

Admire, Alias: For control of green apple, green peach (Admire only) and rosy apple aphids; apply after pollination is complete and bees are no longer foraging in the orchard. Do not apply more than 2 times/year.

Assail: Do not apply more than 2 times/year to avoid possible mite build-up.

Ready to use (RTU) product is available for non-commercial trees.

Diazinon: Russetting of certain varieties of apple (e.g., Golden Delicious) may occur.

Malathion: For best results, apply when temperature is above 20°C.

Movento: Do not apply more than 4 times/year to pome fruit, or more than 2 times/year to stone fruit. Do not apply at intervals of less than 14 days.

Thionex 50 WP: Use high rate against woolly apple aphid.

APPLE CLEARWING MOTH (*Synanthedon myopaeformis*)

Cultural Control – Destroy larvae by probing larval tunnels with flexible wire or open tunnels and destroy larvae. Do not import host root stocks or trees from infested areas.

Chemical Control

Trade name	Crop	Rate (/ha)	Rate (/acre)	Pre-harvest Interval (days)
Entrust 80 W (5) Success 480 SC (5)	apple	75 g 125 ml	30 g 50 ml	7

Precautions -

Apply within 10 days of first adult emergence, and repeat 7-10 day intervals. Do not exceed 7 applications/year. Thorough coverage is essential for the control of apple clearwing moth.

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APPLE MAGGOT (*Rhagoletis pomonella*)

Cultural Control – Examine fruit for infestations and destroy by crushing or burial (minimum 30 cm deep).

Chemical Control - Suspending sticky ammonium carbonate-baited red spheres or yellow card traps can aid in detecting adult movement into and within orchards as well as aid in proper timing of recommended products against adults.

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Calypso 480 SC (4)	apple	440 mL	178 mL	30
Delegate WG (5)	apple, pear	420 g	170 g	7
Diazinon 50 WP, 50 EC, 500 E (1B)	apple, pear	3.25 kg	1.3 kg	14
	plum	3.25 kg	1.3 kg	10
GF-120	apple	1.5 in 6 L of water	0.60 in 6 L of water	0
Guthion 50 WP Sniper 50 WP* (1B)	apple	1.8 – 2.2 kg	0.7 – 0.9 kg	14 - 21
Imidan 50 WP (1B)	apple, plum	3.75 kg	1.5 kg	14
Sevin XLR (1A)	apple, pear	6.25 L	2.5 L	11
	cherry, plum	6.25 L	2.5 L	2
Zolone Flo (1B)	apple, pear, plum	3.0 L	1.2 L	30

***Special note:** The last date of use of Guthion or Sniper on all tree fruit is December 31, 2012.

Precautions -

Calypso: Do not apply more than 3 times/year for all uses, nor more than 875 mL/season.

Delegate: Do not apply more than 3 times per season, or at intervals less than 7 days.

Guthion: If last application is less than 2.24 kg/ha, allow at least 14 days between last application and harvest. If last application is equal to 2.24 kg/ha allow 21 days between last application and harvest.

CODLING MOTH (*Cydia pomonella*)

Cultural Control – Examine fruit weekly and destroy any infested fruit by crushing or burying at least 30 cm deep. Additional control can be achieved by wrapping a 10 cm-wide strip of cardboard around the base of apple and pear trees in late June. Remove and destroy the bands by mid-July. Replace with new bands that can be removed and destroyed in the fall. Remove wood ladders, support poles, bins, large prunings and other wood debris to reduce pupation/overwintering sites. Thinning apples and pears to singles will reduce damage by reducing preferred larval feeding sites between touching fruit.

Behavioural Control (Mating Disruption) - apple, pear

Apply Isomate-C or Isomate CM/LR TT pheromone dispensers at a rate of 1000 or 750 per hectare, respectively, by suspending the dispensers in the upper third of the tree canopy. Refer to the label instructions and precautions to ensure optimal performance of this product.

Biological control –

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Virosoft – CP4 (granulosis virus)	apple, pear	250 mL	100 mL	0

Chemical Control - Use pheromone-baited traps to monitor moths and determine if and when to apply treatments.

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Altacor (28)	apple, pear	145 – 215 g	59 – 87 g	14
Assail 70 WP (4)	apple, pear	120 – 240 g	48 – 97 g	7
Calypso 480 SC (4)	apple, pear	290 – 440 mL	117 – 178 mL	30
Clutch (4)	apple, pear	210 – 420 g	85 – 170 g	7
Confirm 240 F (18)	apple, pear	1 L	405 mL	14
Delegate WG (5)	apple, pear	420 g	170 g	7
Entrust 80 W (5)	apple, pear	109 g	44 g	7
Diazinon 50 WP, 50 EC, 500 E (1B)	apple, pear	4.5 kg or L	1.8 kg or L	14
Guthion 50 WP, Sniper 50 WP* (1B)	apple, pear	1.4 – 2.24 kg	0.57 – 0.90 kg	14 – 21
Imidan 50 WP (1B)	apple, pear	3.75 kg	1.5 kg	14
Intrepid 240 F (18)	apple	1.0 L	405 mL	14
Rimon 10 EC (15)	apple	0.65 – 1.4 L	246 – 567 mL	14
Sevin XLR (1A)	apple, pear	3.1 L	1.25 L	11
Zolone Flo (1B)	apple, pear	2.0 L	0.8 L	30

*See special note under Apple maggot/

Under no-rainfall conditions, Calypso, Confirm and Guthion/Sniper provide about 2 – 3 weeks protection from codling moth damage; Assail, Delegate, Intrepid, Imidan, Rimon and Zolone about 10 – 14 days protection.

Precautions -

- Altacor: Do not apply more than 3 times/year. Do not apply more than once every 10 days. Will kill eggs laid on residues.
- Assail: Do not apply more than 2 times/year for all uses. Do not apply more than once every 12 days. Will kill eggs already laid.
- Calypso: Do not apply more than 3 times/year for all uses, nor more than 875 mL/ha/year. Use high rate against second generation. Will kill eggs already laid.
- Clutch: Do not apply more than a total of 420g/ha/year. For suppression of only.
- Confirm: Do not apply more than 4 times/year for all uses. Repeat 14-21 days later if indicated by adult monitoring. Do not use if codling moth population is resistant to organophosphate (group 1B) insecticides.
- Delegate: Do not apply more than 3 times/year, or at intervals less than 7 days.
- Entrust: Approved for organic production, for suppression only. Do not apply more than 3 times/year. Allow 7 – 10 days between applications.
- Guthion/Sniper: If last application is less than 2.24 kg/ha, allow at least 14 days between last application and harvest. If last application is equal to 2.24 kg/ha allow 21 days between last application and harvest.
- Imidan: One-day PHI for apples sold in Canada; 7 day-PHI if sold to the U.S.
- Intrepid: Do not apply more than 2 L/ha/year for all uses. Do not use if codling moth population is resistant to organophosphate (group 1B) insecticides. Will kill eggs already laid or laid on residues.
- Rimon: Do not apply more than 4 times or more than 11 L/ha/year. Repeat treatments at 10- to 14-day intervals as indicated by monitoring. Will kill eggs already laid or laid on residues.

EYESPOTTED BUD MOTH (*Spilonota ocellana*)

Chemical Control – Pheromone-baited traps are available to monitor presence of adults but do not indicate potential for crop damage. Many of the products recommended for control of leafrollers will also control any bud moth larvae present.

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Delegate (5)	apple, pear	210 – 410 g	85 – 166 g	7
Diazinon 50 WP, 50 EC, 500 E (1B)	apple, pear	4.5 kg or L	1.8 kg or L	14
	cherry, plum	4.5 kg or L	1.8 kg or L	10
Entrust 80 W (5) (approved for organic production)	apple, pear, plum, prune	109 g	44 g	7
	apricot, nectarine, peach	109 g	44 g	14
Guthion 50 WP, Sniper 50 WP* (1B)	apple, pear	1.8 – 2.2 kg	700 – 900 g	14
	cherry, plum	1.8 – 3.75 kg	0.7 – 1.5 kg	15
Imidan 50WP (1B)	apple	3.8 kg	1.5 kg	1
Sevin XLR (1A)	apple, pear	3.1 L	1.25 L	11
	cherry, plum	3.1 L	1.25 L	2
Success 480 SC (5)	apple, pear, plum, prune	182 mL	74 mL	7
	apricot, nectarine, peach	182 mL	74 mL	14

*See special note under Apple maggot.

FRUIT FLIES

Fruit Flies : Western cherry (*Rhagoletis indifferens*) and Black cherry (*Rhagoletis fausta*) fruit flies

Chemical Control -

Yellow sticky traps or delta traps baited with ammonium carbonate suspended in trees will aid in detecting adult flies. Apply control products within 6 days of first capture. Apply a post-harvest spray to prevent infestation of unharvested fruit.

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Admire 240 FL, Alias 240 SC (4)	cherry	233 mL	94 mL	10
Cygon 480 - AG Lagon 480 E (1B)	cherry	2.25 L	910 mL	21
Diazinon 50 WP, 50 EC, 500 E (1B)	cherry	4.5 kg or L	1.8 kg or L	10
Entrust 80 W (5) (approved for organic production)	cherry	109 g	44 g	7
GF-120 Bait Spray (5) (approved for organic production)	cherry	1.0 – 1.5 L	405 – 607 mL	0
Guthion 50 WP, Sniper 50 WP* (1B)	cherry	1.8 – 3.35 kg	0.7 – 1.5 kg	15
Imidan 50 WP (1B)	cherry (sour)	3.8 kg	1.3 kg	7

*See special note under Apple maggot.

Precautions -

Wettable powders may leave unsightly residue on fruit. EC formulations may burn leaves, especially when applied under full sun.

Admire, Alias: Do not apply more than 2 times/year for all uses.

Cygon, Lagon: May cause leaf burning and premature leaf drop of Lapin, Stella and Sam varieties of cherries.

Entrust, GF-120: Do not apply Entrust or GF-120 more than 4 or 10 times/year, respectively. Allow 5 – 7 days between applications. Entrust and GF-120 is approved for application to cherries grown under organic certification. Do not use an air-assisted sprayer to apply GF-120. Consult local crop advisors for information on obtaining a sprayer designed to apply GF-120 as per label instructions.

Guthion, Sniper: Do not apply more than twice/year or more than 7.72 kg/ha/year. NOTE: These products cannot be used after Dec. 31, 2012.

FRUITWORMS

Fruitworms: Brown (*Eupsilia tristigmata*), Cherry (*Grapholita packardii*), Green (*Lithophane antennata*) and Speckled (*Orthosia hibisci*) fruitworms (check product label for listed species).

Biological Control –

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Dipel 2X DF (11)	all fruit except peaches	1.13 – 1.67 kg	460 – 680 g	0
Foray 48BA (11)	apple, pear	2.8 – 4.0 L	1.13 – 1.62 L	
Bioprotec CAE (11)	all fruit	2.8 – 4.0 L	1.13 – 1.62 L	

Chemical Control –

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Diazinon 50 WP, 50 EC, 500 E (1B)	apple, pear	4.5 kg or L	1.8 kg or L	14
+ dormant oil		45 L	18.2 L	
Guthion 50 WP, Sniper 50 WP* (1B)	apple, pear	2.75 kg	1.1 kg	21
+ dormant oil	apple	45 L	18.2 L	
Imidan 50 WP (1B)	apple, pear	3.75 kg	1.5 kg	14
Sevin XLR (1A)	apple, pear	6.25 L	2.5 L	11
	cherry, plum (cherry fruitworm)	6.25 L	2.5 L	2

*See Special Note under Apple maggot.

Precautions -

Dormant oil - Combination with an insecticide is optional. May cause injury to fruit buds if applied too late, not mixed properly, or over sprayed. Avoid spraying during or just prior to freezing weather or rain.

Dipel, Bioprotec, Foray: Apply under cloudy conditions or later in the day to minimize exposure to UV radiation and extend residual activity.

LEAFROLLERS

Leafrollers: European (*Archips rosana*), Fruittree (*Archips argyrospila*), Obliquebanded (*Choristoneura rosaceana*) and Threelined (*Pandemis limitata*) leafrollers (check label for listed species).

Behavioural Control –

Apply Isomate CM/LT TT pheromone dispensers at a rate of 750/ha on lateral branches in the upper 0.7 – 1 metre of tree canopy just prior to the start of moth flight. Refer to the product label for additional instructions to optimize performance.

Biological Control –

Several species of predatory and parasitic insects, spiders and birds feed on all stages of leafrollers. Dipel 2X DF, Foray 48BA, Bioprotec CAE (*Bacillus thuringiensis* (Bt)) products do not disrupt biological control. They are most effective when applied against 3rd - 4th instar larvae, under conditions of lower UV radiation (late afternoon, cloudy days), and without the threat of rainfall within 24 hours of application.

Trade Name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Dipel 2X DF (11)	all fruit except peaches	1.13 – 1.67 kg	0.46 – 0.68 kg	0
Foray 48BA (11)	apple, pear	2.8 – 4.0 L	1.1 – 1.6 L	
BioProtec CAE (11)	all fruit	2.8 – 4.0 L	1.1 – 1.6 L	

Cultural Control –

Winter pruning will remove many overwintering European and fruittree leafroller egg masses. Thinning apples and pears to singles will reduce damage by reducing larval feeding sites between touching fruit.

Chemical Control – apply local adult and larval monitoring methods and pest development models to determine if and when control products should be applied.

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Altacor (28) (obliquebanded and threelined only)	apple, pear	145 – 285 g	59 – 115 g	14
	stone fruit	145 – 285 g	59 – 115 g	10
Confirm 240 F (18) (obliquebanded and threelined only)	apple, pear	1.0 L	404 mL	14
Delegate WG (5) (obliquebanded and threelined only)	apple, pear, cherry, plum prune	210 – 420 g	85 – 170 g	7
	apricot, nectarine, peach	210 – 420 g	85 – 170 g	14
Diazinon 50 WP, 50 EC, 500 E (1B)	apple, pear	4.5 kg or L	1.8 kg or L	14
	apricot, plum, cherry	4.5 kg or L	1.8 kg or L	10
	peach	4.5 kg or L	1.8 kg or L	20
Guthion 50 WP, Sniper 50 WP* (1B)	apple, pear	1.8 – 2.2 kg	0.7 – 0.9 kg	14
	cherry, plum	1.8 – 3.75 kg	0.7 – 1.5 kg	15
	apricot, peach	1.8 – 2.0 kg	0.7 – 0.8 kg	21
+ dormant oil	apple	45 L	18.2 L	
Imidan 50 WP (1B) (obliquebanded only)	apple, pear, peaches	3.75 kg	1.5 kg	1
Intrepid 240 F (18) (obliquebanded and threelined only)	apple	750 mL	304 mL	14
Sevin XLR (1A)	apple, pear	6.25 L	2.5 L	11
	cherry, plum	6.25 L	2.5 L	2
Entrust 80 W (5) (approved for organic production)	apple, pear, cherry, plums,	109 g	44 g	7
	apricots, nectarines, peaches	109 g	44 g	14
Success 480 SC (5)	apple, cherry, plums, prunes	182 mL	74 mL	7
	apricots, nectarines, peaches	182 mL	74 mL	14
Zolone Flo (1B)	apple, pear	2.0 L	0.8 L	30

*See special note under Apple maggot

Precautions -

Altacor: Do not apply more than 3 times/year. Do not apply more than once every 7 (stone fruit) or 10 days (pome fruit).

Confirm: For suppression of summer-generation obliquebanded (OBLR) and threelined leafroller larvae, apply at egg hatch and repeat 14-21 days later if required. For control of overwintering generation, apply at petal fall. Do not apply more than four times/year. Cross-resistance with organophosphate-resistant OBLR and fruittree leafroller has been documented in Canada.

Delegate: Do not apply more than 3 times/year, or at intervals less than 7 days.

Dipel, Foray, Bioprotec: Wait 10 days to repeat applications. Re-apply after each rainfall.

Intrepid: For suppression of summer-generation obliquebanded and threelined leafroller larvae, apply at egg hatch and repeat 14-21 days later if required. For control of overwintering generation, apply at petal fall. Do not apply more than 2 L product/ha/year. Cross-resistance with organophosphate-resistant OBLR and Fruittree leafroller has been documented in Canada.

Success, Entrust: Do not apply more than 262 g AI/ha/year.

Zolone: For control of spring-feeding leafroller larvae only.

LYGUS BUGS (*Lygus* spp.)

Chemical Control – Monitor orchard margins for immigrating adults and apply control products accordingly.

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Cygon 480-AG, Lagon 480E (1B)	pear	625 mL/1000 L water		14
Imidan 50 WP (1B)	apple, peach	3.75 kg	1.5 kg	1
Sevin XLR (1A)	apple, pear	6.25 L	2.5 L	11
*Thionex 50 WP (2A)	all fruit	3.25 kg	1.3 kg	15

*Last date of use of Thionex in apple and pear is December 31, 2012; and in apricot, cherry, peach and plum is December 31, 2016.

MITES

Mites: European red (*Panonychus ulmi*), McDaniel spider (*Tetranychus mcdanieli*) and Twospotted spider (*Tetranychus urticae*) mites

Biological Control -

Preservation of predaceous insects and mites provides satisfactory control of harmful mites. Use control products least harmful to these predators. Predatory mites are at risk if lime-sulphur, pyrethroids and other chemicals harmful to these mites are applied when present. Neonicotinoid products (Admire, Alias, Calypso, Assail) may cause increased mite populations if used against successive generations. It is recommended that not more than two applications of these Group 4 insecticides be applied per season.

Chemical Control – Alternate products with different Group Numbers to avoid development of resistance.

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Acramite 50 WS (25)	apple	568 g (spider mites)	568 g (spider mites)	7
		851g (red mite)	345 g (red mite)230 g	
Agri-Mek 1.9 EC (6)	apple	750 mL	304 mL	28
	pear	750 – 1500 mL	304 – 608 mL	
Apollo SC (7)	apple, pear	300 – 600 mL	121 – 242 mL	21
	peach, nectarine	300 mL	121 mL	
Dormant oil	apple	45 L	18.2 L	n/a
Envidor 240 SC (23)	pome and stone fruit	750 mL	304 mL	7
Kanemite 15 SC (20B)	apple, pear	2.1 L	850 mL	14
Nexter 75 WP (21)	apple, pear	300 – 600 g	121 – 242 g	25
	cherry			7

Pre-bloom treatments -

Dormant oil: Use alone or in combination with lime-sulphur for dormant control of mite eggs. Check labels for rates and mixing instructions.

Precautions -

Acramite: Do not apply more than once/year.

Agri-Mek: Must be applied in a minimum of 0.25% paraffinic oil/superior oil (not less than 10 L/ha). Do not exceed 1.5 L product per hectare per season. Do not make more than 2 applications at 0.75 L or one application at 1.5 L product/year. Some suppression of predatory mites may result.

Apollo: Do not apply more than once/year. Do not apply to apple beyond 14 days after petal fall.

Envidor: Do not apply more than once/year.

Kanemite: Do not apply more than twice/year or at intervals less than 21 days.

Nexter: Do not apply more than twice/year. Do not exceed 1.2 kg/ha/year on apple, 1.44 kg/ha on pears, or 0.6 kg /ha/year on cherries. Higher rates can cause some suppression of predatory mites.

MULLEIN BUG (*Campylomma verbasci*)

Chemical Control – the fruit of susceptible apple varieties greater than 12 mm in diameter is not affected by Mullein bug feeding. Applying products as early as possible in petal-fall stage without risk to foraging honey bees improves fruit protection.

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Admire 240 FL, Alias 240 SC (4)	apple	380 mL	154 mL	7
Calypso 480 SC (4)	apple	145 – 290 mL	59 – 117 mL	30
Diazinon 50 WP, 50 EC, 500 E (1B)	apple	2.25 kg or L	910 g of mL	14

Precautions -

Admire, Alias: Apply after pollination is complete and bees are no longer foraging in the orchard.

Do not apply more than 2 times/year for all uses.

Calypso: Do not apply more than 3 times/year for all uses, nor more than 875 mL/season.

PEACH TREE BORER (*Synanthedon exitiosa*)

Behavioural Control –

Apply Isomate-P pheromone dispensers prior to moth emergence by suspending the dispensers about the mid point of the tree canopy. Refer to the label instructions and precautions to ensure optimal performance of this product.

Trade name	Crop	Rate (dispensers/ha)	Rate (dispensers/acre)	Preharvest Interval (days)
Isomate-P dispensers	Peach, nectarine, cherry, prune, plum, apricot	250 - 625	100 – 253	0

Cultural Control -

Destroy larvae by probing larval tunnels with flexible wire or open tunnels and destroy larvae. Place 25-30 cm-high metal or cardboard conical collar over base of tree and seal top and bottom to

Chemical Control – Use pheromone-baited traps to monitor moths and determine if and when tree trunks should be treated. Use a hand-gun sprayer to ensure adequate coverage.

Trade name	Crop	Rate	Application	Preharvest Interval (days)
Thionex 50 WP (2A)	apricot, cherry, peach, plum	1.5 kg/1000 L	Trunk and lower limbs	15

Precautions -

Thionex: Do not apply more than twice/year for all uses. For pre-plant treatment, dip roots and crown in mixture of 1.25 L Endosulfan /100 L water.

PEACH TWIG BORER (<i>Anarsia lineatella</i>)

Chemical Control – Use pheromone-baited traps to monitor moths and determine if and when treatments should be applied.

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Altacor (28)	stone fruit	215 – 285 g	87 – 115 g	10
Diazinon 50 WP, 50EC, 500 E (5)	apricot	4.5 kg or L	1.8 kg or L	10
	peach	4.5 kg or L	1.8 kg or L	20
Guthion 50 WP, Sniper 50 WP* (1B)	apricot, peach	1.8 – 2.0 kg	0.7 – 0.8 kg	21
Imidan 50 WP (1B)	peach	3.75 kg	1.5 kg	1
Rimon 10 EC (15)	stone fruit	1.35 – 3.35 L	0.55 – 1.35 L	14
Sevin XLR (1A)	peach	6.25 L	2.5 L	1
	apricot	6.25 L	2.5 L	5
Entrust 80 W (5)	peach	109 g	44 g	14
Success 480 SC (5)	peach	182 mL	74 mL	14
Thionex 50 WP (2A)	apricot, peach	3.25 kg	1.3 kg	15
Zolone Flo (1B)	Peach	2.75 L	1.1 L	30

*See special note under Apple maggot.

Precautions -

Altacor: Do not apply more than 3 times/year. Do not apply more than once every 7 days.

Entrust/Success: For suppression only. Monitor adult moth flight and apply at first egg hatch. Do not apply more than 3 times/season. Do not apply when bees are actively foraging.

Rimon: Do not apply more than 3 times/season.

PEAR PSYLLA (*Cacopsylla pyricola*)

Biological Control -

A number of predaceous insects (*Campylomma verbasci*, *Deraeocoris brevis*, pirate bugs, and lacewings) can effectively keep pear psylla below damaging levels if harmful sprays are avoided (Guthion/Sniper, Diazinon, and pyrethroids). Summer pruning to remove new shoots will eliminate favoured egg laying and feeding sites.

Chemical Control -

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Agri-Mek 1.9 EC (6)	pear	750 – 1500 mL	304 – 608 mL	28
Assail 70 WP (4)	pear	67 – 240 g	27 – 97 g	7
Cygon 480, Lagon 440 (1B)	pear	3.0 – 3.75 L	1.1 – 1.5 L	14
Clutch	pear	288 – 420 g	113 – 170 g	7
Diazinon 50 WP, 50 EC, 500 E (1B)	pear	4.5 kg or L	1.8 kg or L	14
Dormant oil (pre-bloom only)	pear	60L 60 – 90L	20 – 40 L	-
Guthion 50 WP, Sniper 50 WP* (1B)	pear	1.8 – 2.2 kg	0.7 – 0.9 kg	14
Imidan 50 WP (1B)	pear	3.75 kg	1.5 kg	1
Movento 240 SC (23)	pear	365 – 435 mL	148 – 176 mL	7
Nexter 75 W (21)	pear	600 – 720 g	243 – 291 g	25
Sevin XLR (1A)	pear	6.25 L	2.5 L	11
**Thionex 50 WP (2A)	pear	6.75 kg	2.7 kg	15
**Thionex 50 WP (2A)	pear	3.25 kg	1.3 kg	Pre-bloom only
+ dormant oil		70 L	20 L	
Zolone Flo (1B)	pear	2.0 – 3.0 L	0.8 – 1.2 L	

*See special note under Apple maggot.

** Last date of use of Thionex on pear is December 31, 2012.

Precautions – Check with local authorities for presence of resistance to organophosphate products. Alternate between products with different Group Numbers to avoid or delay resistance development.

Agri-Mek: Must be applied in a minimum of 0.25% paraffinic oil/superior oil (not less than 10

L/ha). Do not make more than two applications at 0.75 L or one application at 1.5 L/year.

Assail: Best results are achieved against nymphs. Apply after pollination is complete and bees are no longer foraging in the orchard. Do not apply more than twice/year for all labelled uses.

Clutch: Do not apply more than twice/season.

Movento: Do not apply more than 4 times/year. Do not apply at intervals less than 14 days. Do not use Movento on pear trees when fruit is present due to the possibility of adverse effects on harvested fruit.

Nexter: Do not apply more than twice/year; wait 30 days to re-apply if necessary.

Sevin: Apply when eggs hatch or nymphs are present.

Zolone: Do not apply more than 3 times/year.

PLUM CURCULIO (*Conotrachelus nenuphar*)

Chemical Control – Monitor orchard margins for immigrating adults and apply control products accordingly.

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Actara 25 WG	apple	315 g (prebloom) 315 – 385 g (postbloom)	127 g 127 – 156 g	60
Calypso 480 SC	apple, pear	290 – 440 mL	117 – 178 mL	30
Clutch 50 WDG	apple, pear, cherry, plum, peach, apricot	210 g	85 g	7
Delegate WG (5)	apple, pear	420 g	170 g	7
Guthion 50 WP, Sniper 50 WP* (1B)	cherry, plum	1.8 – 3.75 kg	0.7 – 1.5 kg	15
	apricot, peach	1.8 – 2.0 kg	0.7 – 0.8 kg	21
	apple, pear	1.8 – 2.2 kg	0.7 – 0.9 kg	14
Sevin XLR (1A)	apple, pear	6.25 L	2.5 L	11
	apricot	6.25 L	2.5 L	5
	cherry, peach, plum	6.25 L	2.5 L	2
Malathion 50 EC, 500 E (1B)	apple, pear	3.0 – 6.0 L	1.2 – 2.4 L	3
	plum	3.0 – 5.5 L	1.2 – 2.2 L	3
	peach	3.0 – 5.5 L	1.2 – 2.2 L	7
Malathion 25 WP (1B)	cherry, pear, plum	5.0 kg	2.0 kg	3
	peach	5.0 kg	2.0 kg	7
Imidan 50 WP (1B)	apple, plum, peach	3.75 kg	1.5 kg	1
	cherry (sour)	3.75 kg	1.5 kg	7
Zolone Flo (1B)	apple, cherry, pear, peach, plum	2.0 – 3.0 L	0.8 – 1.2 L	30

* See special note under Apple maggot.

Precautions-

Actara: Do not apply more than 2 applications total per season (maximum 2 applications postbloom or one application prebloom plus one application postbloom). Actara is highly toxic to bees exposed to direct treatment or to residues on blooming crops and weeds. Do not apply Actara after pre-bloom (early pink growth stage) or before post bloom (petal fall growth stage). Wait for at least 5 days after treatment before placing beehives in or near treated fields.

Calypso: Do not apply more than 875/ha in a season.

Clutch: Do not exceed a total of 420 g in a season.

Delegate: Do not apply more than 3 times/year, or at intervals less than 7 days.

RUST MITES

Rust Mites: Apple (*Aculus schlechtendali*), Pear (*Epitrimerus pyri*), and Pear leaf blister (*Eriophyes pyri*) mites.

Biological Control -

Rust mites are an important early-season food source for predatory mites.

Chemical Control –

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Agri-Mek 1.9 EC (6) (pear rust mite only)	pear	750 – 1500 mL	304 – 608 mL	28
Dormant oil +Lime sulphur	pear	70 L + 125 L	20 L + 50 L	pre-bloom
Envidor 240 SC (23)	pome and stone fruit	750 mL	304 mL	7
Kelthane 50 WP (3)	apple, cherry, pear, plum/prune	3.25 – 4.5 kg	1.3 – 1.8 kg	7
	apricot, peach	3.25 – 4.5 kg	1.3 – 1.8 kg	14
Kumulus DF	apple, pear	6.0 kg	2.4 kg	1
Nexter 75 W (21)	apple, pear cherry	300 g	121 g	25
Thionex 50 WP (2A) +dormant oil	all fruit	3.25 kg	1.3 kg	Pre-bloom
		+70 L	+20 L	

Precautions -

Agri-Mek: Must be applied in a minimum of 0.25% paraffinic oil/superior oil (not less than 10 L/ha). Do not exceed 1.5 L product/ha/year. Do not make more than two applications at 0.75 L or one application at 1.5 L/year.

Envidor: Do not apply more than once/year.

Kumulus: Sulphur is phytotoxic to Anjou and Cornice pears. Do not apply within 30 days of an oil spray. Do not use under intense sunshine or when temperature is above 27°C.

Nexter: Do not apply more than twice/year; do not exceed 1.2 kg/ha/year on apple, 1.44 kg/ha on pears, or 0.6 kg /ha/year on cherries. Higher rates can cause suppression of predatory mites.

SCALE INSECTS

Scale Insects: European fruit (*Quadraspidiotus ostreaeformis*), European fruit lecanium (*Parthenolecanium corni*), Oystershell (*Lepidosaphes ulmi*), and San Jose (*Quadraspidiotus perniciosus*) scales.

Chemical Control – Apply control products thoroughly and uniformly to ensure satisfactory control of scale insects.

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Diazinon 50 WP, 50 EC, 500 E (1B)	apple, pear	4.5 kg or L	1.8 kg or L	14
	plum	4.5 kg or L	1.8 kg or L	10
	apricot	4.5 kg or L	1.8 kg or L	10
	peach	4.5 kg or L	1.8 kg or L	20
+dormant oil		45 L	20 L	
Diazinon 50 WP, 50 EC, 500 E (1B) (control of crawler stages)	apple, pear	5.5 kg or L	2.2 kg or L	14
	apricot	5.5 kg or L	2.2 kg or L	10
	peach	5.5 kg or L	2.2 kg or L	20
	plum	5.5 kg or L	2.2 kg or L	10
Dormant oil	all fruit	35 – 90 L	14 - 36 L	n/a
Guthion 50 WP, Sniper 50 WP* (1B)	apple, pear	2.0 – 2.4 kg	08 – 1.0 kg	14
	cherry, plum	2.0 – 2.4 kg	08 – 1.0 kg	15
	apricot, peach	2.0 – 2.4 kg	08 – 1.0 kg	21
Malathion 50 EC, 500 E (1B)	apricots	5.5 L	2.2 L	3
Movento 240 SC (23)	all fruit	365 – 435 mL	148 – 176 mL	7
Sevin XLR (1A)	apple, pear	6.25 L	2.5 L	11
	cherry, peach, plum	6.25 L	2.5 L	2
	apricot	6.25 L	2.5 L	5

* See special note under Apple maggot.

Precautions:

Movento: Do not apply more than 4 times/year to pome fruit, or more than 2 times/year to stone fruit. Do not apply at intervals less than 14 days.

TENTIFORM LEAFMINER (*Phyllonorycter mispilella*)

Biological Control – Several species of parasitic wasps and European Earwigs can keep leafminer populations below action thresholds in the absence of harmful control products.

Chemical Control –

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Altacor (28)	apple, pear	145 – 215 g	59 – 87 g	14
Agri-Mek 1.9 EC (6)	apple	750 mL	300 mL	28
Admire 240 FL, Alias 240 SC (4)	apple	380 mL	154 mL	7
Assail 70 WP (4)	apple, pear	80 mL	32 mL	7
Calypso 480 SC (4)	apple	145 – 290 mL	59 – 117 mL	30
Clutch 50 WDG (4)	apple, pear	140 – 210 g	57 – 85 g	7
Confirm 240 F (18)	apple	1 L	404 mL	14
Delegate WG (5)	apple, pear	420 g	170 g	7
Intrepid 240 F (18)	apple	500 mL	202 mL	14

Precautions-

Altacor: Do not apply more than 3 times/year. Do not apply more than once every 10 days.

Admire, Alias: Best results achieved when applied against eggs and sap-feeder stages. Apply after pollination is complete and bees are no longer foraging in the orchard. Do not apply more than 2 times/year for all uses.

Agri-Mek: Apply with 0.25% summer oil; do not apply more than 2 times/year.

Assail: Best results achieved when applied against the sap-feeder stages. Apply after pollination is complete and bees are no longer foraging in the orchard. Do not apply more than 2 times/year for all uses; maximum of 672 g AI/ha/year.

Calypso: Do not apply more than 3 times/year for all uses, nor more than 875 mL/year. Apply lower rate against first generation sap-feeder stage.

Clutch: Do not exceed a total of 420 g/ha/season.

Confirm: Best results achieved when applied against eggs and sap-feeder stages. Do not apply more than 4 L product/ha/year for all uses.

Delegate: Do not apply more than 3 times/year, or at intervals less than 7 days.

Intrepid: Apply at first egg hatch of first generation. Do not apply more than 2 L product/ha/year for all uses.

WHITE APPLE LEAFHOPPER (*Typhlocyba pomaria*)

Chemical Control –

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Admire 240 FL, Alias 240 SC (4)	apple	230 mL	93 mL	7
Assail 70 WP (4)	apple, pear	80 g	32 g	7
Calypso 480 SC (4)	apple	145 mL	59 mL	30
Clutch 50 WDG	apple, pear	140 – 210 g	57 – 85 g	7
Sevin XLR (1A)	apple	3.1 L	1.25 L	11
Thiodan 50 WP, Thionex 50 WP (2A)	all fruit	3.25 kg	1.3 kg	15

Precautions –

Admire, Alias: Best results are achieved against nymphs; some suppression of adults. Apply after pollination is complete and bees are no longer foraging in the orchard. Do not apply more than 2 times/year.

Assail: Best results are achieved against nymphs; some suppression of adults. Apply after pollination is complete and bees are no longer foraging in the orchard. Do not apply more than twice/year for all labelled uses.

Calypso: Do not apply more than 3 times/year, nor more than 875 mL/year. Apply lower rate against first generation sap-feeder stage.

Clutch: Do not apply more than twice/season.

Control Product Group Number, Trade and Chemical Name Cross-Reference Table

Product Group Number (Chemical group)	Trade Name	Chemical Name
1A (Carbamates)	Pirimor	Pirimicarb
	Sevin	Carbaryl
1B (Organophosphates)	Cygon	Dimethoate
	Diazinon	Diazinon
	Guthion	Azinphos-methyl
	Imidan	Phosmet
	Lagon	Dimethoate
	Malathion	Malathion
	Sniper	Azinphos-methyl
Zolone	Phosalone	

Control Product Group Number, Trade and Chemical Name Cross-Reference Table

Product Group Number (Chemical group)	Trade Name	Chemical Name
2A (Chlorinated cyclodienes)	Thionex	Endosulfan
3 (Diphenylethanes)	Kelthane	Dicofol
4 (Chloronicotines, Neonicotinoids)	Actara Assail Admire Alias Calypso Clutch	Thiamethoxam Acetamiprid Imidacloprid Imidacloprid Thiacloprid Clothianidin
5 (Spinosyns)	Entrust GF-120 Success Delegate	Spinosad Spinosad Spinosad Spinetoram
6 (Avermectins)	Agri-Mek	Abamectin
7 (Tetrazines)	Apollo	Clofentezine
9C Pyridinecarboxamide)	Beleaf	Flonicamid
11 (BT microbials)	Bioprotec Dipel Foray	<i>Bacillus thuringiensis</i> <i>Bacillus thuringiensis</i> <i>Bacillus thuringiensis</i>
15 (Benzoylphenyl ureas)	Rimon	Novaluron
18 (Benzoic acid hydrazides)	Confirm Intrepid	Tebufenozide Methoxyfenozide
20B (Unclassified)	Kanemite	Acequinocyl
21 (Pyridazinones)	Nexter	Pyridaben
23 (Tetramic acids)	Envidor Movento	Spirodiclofen Spirotetramat
25 (Carbazates)	Acramite	Bifenazate
28 (Anthranilic diamide)	Altacor	Rynaxypyr