

TREE FRUITS

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

H. Philip, B. Elliott

Last updated: July 2007

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 trees greater than 4.5 m high.

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 – 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, Black cherry, Green apple, Green peach, Mealy plum, Rosy apple and Woolly apple aphids

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)	Preharvest Interval (days)
Admire 240 FL, Alias 240 SC	apple peach (Admire only)	230 mL	93 mL	7
Assail 70 WP	apple, pear	80 – 120 g	32 – 48 g	7
Cygon 480-AG,	pear	3.0 - 375 L	1.2 – 1.5 L	14

	non-bearing peach	3.0 - 375 L	1.2 – 1.5 L	n/a
Diazinon 50 WP, 50 EC, 500 E	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
Dormant oil (200-220 vis)	apple	60 L	24 L	n/a
Imidan 50 WP	apple	3.75 kg	1.5 kg	1
Malathion 50 EC, 500E	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	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
Pirimor 500 F	peach	560 g	227 g	60
Thiodan 50 WP, Thionex 50 WP	all fruit	3.25 – 4.25 kg	1.3 – 1.7 kg	15
Zolone Flo	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

Pre-bloom Treatments -

Dormant oil - Use is optional, either alone or in combination with lime-sulphur for dormant control of aphid eggs. Dormant oil can also be mixed with diazinon (3.0 L/ha) to control feeding aphids. Check labels for rates and mixing instructions.

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 two times per season.

Assail: Do not apply more than two times per season to avoid possible mite build-up. RTU product is available for non-commercial trees.

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

Dormant oil: 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.

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

Pirimor: For control of green peach aphid on peach. Do not apply after husk fall; one application only per season.

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

APPLE MAGGOT

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

Chemical Control -

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Calypso 480 SC	apple	440 mL	178 mL	30
Diazinon 50 WP, 50 EC, 500 E	apple, pear	3.25 kg	1.3 kg	14
	plum	3.25 kg	1.3 kg	10
Guthion 50 WP Sniper 50 WP*	apple	1.8 – 2.2 kg	0.7 – 0.9 kg	14
Imidan 50 WP	apple, plum	3.75 kg	1.5 kg	1
Sevin XLR	apple, pear	6.25 L	2.5 L	11
	cherry, plum	6.25 L	2.5 L	2
Zolone Flo	apple, pear, plum	3.0 L	1.2 L	30

***Special note:** The revised dates for the phase out of **Guthion and Sniper** are:

Last date of sale by registrants: December 31, 2010

Last date of sale by retailers: December 31, 2011

Last date of use by users: December 31, 2012

Precautions -

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

CODLING MOTH

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.

Behavioural Control (Mating Disruption) - apple, pear

Apply Isomate-C or Isomate CM/LR pheromone dispensers at a rate of 1000 per hectare 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)
Assail 70 WP	apple, pear	120 – 240 mL	48 – 97 mL	7
Calypso 480 SC	apple	290 – 440 mL	117 – 178 mL	30
Confirm 240 F	apple, pear	1 L	404 mL	14
Diazinon 50 WP, 50 EC, 500 E	apple, pear	4.5 kg or L	1.8 kg or L	14
Guthion 50 WP, Sniper 50 WP*	apple, pear	1.4 – 2.4 kg	0.57 – 0.97 kg	14
Imidan 50 WP	apple, pear	3.8 L	1.5 L	1
Intrepid 240 F	apple	1.0 L	404 mL	14
Sevin XLR	apple, pear	3.1 L	1.25 L	11
Zolone Flo	apple, pear	2.0 L	0.8 L	30

*See special note under Apple maggot/

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

Precautions -

Assail: Do not apply more than two times per season for all uses.

Calypso: Do not apply more than 3 times/year for all uses, nor more than 875 mL/season. Use high rate against second generation.

Confirm: Do not apply more than 4 times per season for all uses. Repeat 14-21 days later if indicated by adult monitoring.

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 per season for all uses.

EYESPOTTED BUD MOTH

Chemical Control – Pheromone-baited traps are available to monitor presence of adults but do not indicate potential for crop damage.

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Diazinon 50 WP, 50 EC, 500 E	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
Guthion 50 WP, Sniper 50 WP*	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

Imidan 50WP	apple	3.8 kg	1.5 kg	1
Sevin XLR	apple, pear	3.1 L	1.25 L	11
	cherry, plum	3.1 L	1.25 L	2
Entrust 80 W	apple, pear, plum, prune	109 g	44 g	7
	apricot, nectarine, peach	109 g	44 g	14
Success 480 SC	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 and Black cherry 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	cherry	233 mL	94 mL	10
Cygon 480 - AG Lagon 480 E	cherry	2.25 L	910 mL	21
Diazinon 50 WP, 50 EC, 500 E	cherry	4.5 kg or L	1.8 kg or L	10
Entrust 80 W	cherry	109 g	44 g	7
GF-120 Bait Spray	cherry	1.0 – 1.5 L	405 – 607 mL	0
Guthion 50 WP, Sniper 50 WP*	cherry	1.8 – 3.35 kg	0.7 – 1.5 kg	15
Imidan 50 WP	cherry (sour)	3.8 kg	1.3 kg	7
Sevin XLR	cherry	6.25 L	2.5 L	2
Zolone Flo	cherry	2.0 – 3.0 L	0.8 – 1.2 L	14

*See special note under Apple maggot.

Precautions -

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

Admire, Alias: Do not apply more than two times per season 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 per season, respectively.

Allow 5 – 7 days between applications. Entrust and GF-120 is approved for application to cherries grown under organic certification.

Guthion, Sniper: Do not apply more than twice per season; maximum of 7.72 kg/year.

FRUITWORMS

Fruitworms: Brown, Cherry, Green and Speckled fruitworms (check product label for listed species).

Biological Control -

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Dipel 2X DF	all fruit except peaches	1.13 – 1.67 kg	0.46 – 0.68 kg	0
Foray 48BA	apple, pear	2.8 – 4.0 L	1.13 – 1.62 L	
Bioprotec CAE	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	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*	apple, pear	2.75 kg	1.1 kg	14
+ dormant oil		45 L	18.2 L	
Imidan 50 WP	apple, pear	3.75 kg	1.5 kg	1
Sevin XLR	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, Fruittree, Obliquebanded and Threelined leafrollers (check label for listed species).

Behavioural Control –

Apply Isomate CM/LR pheromone dispensers at a rate of 1000/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 –

Dipel 2X DF, Foray 48BA, Bioprotec CAE (*Bacillus thuringiensis* (Bt)) products are most effective when applied at the time McIntosh apple is in mid- to late bloom or when all larvae have hatched and majority are 3rd - 4th instar.

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

Cultural Control –

Winter pruning will remove many overwintering European and fruittree leafroller egg masses.

Chemical Control -

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Confirm 240 F (obliquebanded and threelined only)	apple, pear	1.0 L	404 mL	14
Diazinon 50 WP, 50 EC, 500 E	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*	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 (obliquebanded only)	apple, pear, peaches	3.75 L	1.5 L	1
Intrepid 240 F (obliquebanded and threelined only)	apple	750 mL	304 mL	14

Sevin XLR	apple, pear	6.25 L	2.5 L	11
	cherry, plum	6.25 L	2.5 L	2
Entrust 80 W	apple, pear, cherry, plums,	109 mL	44 g	7
	apricots, nectarines, peaches	109 mL	44 g	14
Success 480 SC	apple, cherry, plums, prunes	182 mL	74 mL	7
	apricots, nectarines, peaches	182 mL	74 mL	14
Zolone Flo	apple, pear	2.0 L	0.8 L	30

*See special note under Apple maggot

Precautions -

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 per season. Cross-resistance with organophosphate-resistant OBLR and fruittree leafroller has been documented in Canada.

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

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 per season. 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 per season.

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

LYGUS BUGS

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	pear	1.8 L	760 mL	14
Imidan 50 WP	apple, peach	3.75 kg	1.5 kg	1
Sevin XLR	apple, pear	6.25 L	2.5 L	11
Thiodan 50 WP, Thionex 50 WP	all fruit	3.25 kg	1.3 kg	15

MITES

Mites: European red, McDaniel spider and Twospotted spider 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) can 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 acaricides with different modes of action to avoid development of acaricide resistance

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Acramite 50 WS	apple	568 g (spider mites)	568 g (spider mites)	7
		851g (red mite)	345 g (red mite)230 g	
Agri-Mek 1.9 EC	apple	750 mL	304 mL	28
	pear	750 – 1500 mL	304 – 608 mL	
Apollo SC	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	pome and stone fruit	750 mL	304 mL	7
Kelthane 50 WP	apple, pear, cherry plum, prune	3.25 – 4.5 kg	1.3 – 1.8 kg	7
	apricot, peach			14
Nexter 75 WP	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 per season.

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 two applications at 0.75 L or one application at 1.5 L product per season. Some suppression of predatory mites may result.

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

Envidor: Do not apply more than once per season.

Kelthane: Use lower rate to trees less than 4.5 m tall. Do not apply more than once per season.

Nexter: This miticide is compatible with integrated mite management programs although some suppression of predatory mites can occur. Do not apply more than twice per season. Do not exceed 1.2 kg/ha per season on apple, 1.44 kg/ha on pears, or 0.6 kg /ha per season on cherries.

MULLEIN BUG (*Campylomma*)

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

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Admire 240 FL, Alias 240 SC	apple	380 mL	154 mL	7
Calypso 480 SC	apple	145 – 290 mL	59 – 117 mL	30
Diazinon 50 WP, 50 EC, 500 E	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

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.

Active Ingredient	Crop	Rate (dispensers/ha)	Rate (dispensers/acre)	Preharvest Interval (days)
(Z,Z)-3,13 Octadecadien Acetate plus (E,Z)-3,13 Octadecadien Acetate	-1-yl 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 prevent larvae from penetrating crown area.

Chemical Control – Use pheromone-baited traps to monitor moths and determine if and when tree trunks should be treated.

Trade name	Crop	Rate	Application	Preharvest Interval (days)
Thiodan 50 WP, Thionex 50 WP,	apricot, cherry, peach, plum	1.5 kg/1000 L	Trunk and lower limbs	15
Endosulfan 500 E	apricot, cherry, peach, plum	1.75 L/1000 L		

Precautions -

Thiodan, Thionex, Endosulfan: Do not apply more than 2 times/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

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)
Diazinon 50 WP, 50EC, 500 E	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*	apricot, peach	1.8 – 2.0 kg	0.7 – 0.8 kg	21
Imidan 50 WP	peach	3.75 kg	1.5 kg	1
Sevin XLR	peach	6.25 L	2.5 L	1
	apricot	6.25 L	2.5 L	5
Thiodan 50 WP,	apricot, peach	3.25 kg	1.3 kg	15

Thionex 50 WP				
Zolone Flo	Peach	2.75 L	1.1 L	30

*See special note under Apple maggot.

PEAR PSYLLA

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, pyrethroids and Carzol). Imidan and Assail are the least disruptive chemicals for codling moth control; alternatively, Isomate-C Plus and Isomate CM/LR can be used which is not disruptive. Imidan, *Bacillus thuringiensis* products and Success/Entrust should be used for control of fruitworms, leafrollers and bud moth in the spring and summer. 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	pear	750 – 1500 mL	304 – 608 mL	28
Assail 70 WP	pear	67 – 240 g	27 – 970 g	7
Cygon 480, Lagon 440	pear	3.0 – 3.75 L	1.1 – 1.5 L	14
Diazinon 50 WP, 50 EC, 500 E	pear	4.5 kg or L	1.8 kg or L	14
Dormant oil (pre-bloom only)	pear	65-90 L	20-40 L	-
Guthion 50 WP, Sniper 50 WP*	pear	1.8 – 2.2 kg	0.7 – 0.9 kg	14
Imidan 50 WP	pear	3.75 kg	1.5 kg	1
Mitac WP	pear	1.65 – 3.35 kg	0.67 – 1.35 kg	14
Nexter 75 W	pear	600 – 720 g	243 – 291 g	25
Sevin XLR	pear	6.25 L	2.5 L	11
Thiodan 50 WP, Thionex 50 WP	pear	6.75 kg	2.7 kg	15
Thiodan 50 WP, Thionex 50 WP	pear	3.25 kg	1.3 kg	Pre-bloom only
+ dormant oil		70 L	20 L	
Zolone Flo	pear	2.0 – 3.0 L	0.8 – 1.2 L	30

*See special note under Apple maggot.

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 exceed 0.027 kg AI (1.5 L product) per hectare per season; do not make more than two applications at 0.75 L or one application at 1.5 L per season.

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 two times per season for all uses, including aphids, codling moth, leafminer, and pear psylla.

Mitac: Do not apply more than twice per season nor more than 3.35 kg/hectare/application.

Nexter: Do not apply more than twice per season; second application, if needed, can be made 30 days after the first application. Do not exceed 1.44 kg/ha per season.

Sevin: Apply when eggs hatch or nymphs are present.

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

PLUM CURCULIO

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

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Guthion 50 WP, Sniper 50 WP*	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	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	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	cherry, pear, plum	5.0 L	2.0 L	3
	peach	5.0 L	2.0 L	7
Imidan 50 WP	apple, plum, peach	3.75 kg	1.5 kg	1
	cherry (sour)	3.75 kg	1.5 kg	7
Zolone Flo	apple, cherry, pear, peach, plum	2.0 – 3.0 L	0.8 – 1.2 L	30

* See special note under Apple maggot.

RUST MITES

Rust Mites: Apple, Pear, Pear leaf blister and Peach silver 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 (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	pome and stone fruit	750 mL	304 mL	7
Kelthane 50 WP	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	apple, pear cherry	300 g	121 g	25
Thiodan 50 WP, Thionex 50 WP +dormant oil	all fruit	3.25 kg +70 L	1.3 kg +20 L	Pre-bloom

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 per hectare per season. Do not make more than two applications at 0.75 L or one application at 1.5 L per season.

Envidor: Do not apply more than once per season.

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: This miticide is compatible with integrated mite management programs although some suppression of predatory mites can occur. Do not apply more than twice per season; do not exceed 1.2 kg/ha per season on apple, 1.44 kg/ha on pears, or 0.6 kg /ha per season on cherries

SCALE INSECTS

Scale Insects: European fruit, Lecanium, Oystershell, Soft brown and San Jose scales.

Chemical Control –

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Diazinon 50 WP, 50 EC, 500 E	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 (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*	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	apricots	5.5 L	2.2 L	3
Sevin XLR	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.

TENTIFORM LEAFMINER

Chemical Control –

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Agri-Mek 1.9 EC	apple	750 mL	300 mL	28
Admire 240 FL, Alias 240 SC	apple	380 mL	154 mL	7

Assail 70 WP	apple, pear	80 mL	32 mL	7
Calypso 480 SC	apple	145 – 290 mL	59 – 117 mL	30
Confirm 240 F	apple	1 L	404 mL	14
Intrepid 240 F	apple	500 mL	202 mL	14

Precautions-

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 two times per season for all seasons.

Agri-Mek: Apply with 0.25% summer oil; do not apply more than two times per season.

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 two times per season for all uses; maximum of 672 g AI/ha per season.

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

Confirm: Best results achieved when applied against eggs and sap-feeder stages. Do not apply more than 4 L product/ha per season including all use patterns.

Intrepid: Apply at first egg hatch of first generation. Do not apply more than 2 L product/ha per season including all use patterns.

WHITE APPLE LEAFHOPPER

Chemical Control –

Trade name	Crop	Rate (/ha)	Rate (/acre)	Preharvest Interval (days)
Admire 240 FL, Alias 240 SC	apple	230 mL	93 mL	7
Assail 70 WP	apple, pear	80 g	32 g	7
Calypso 480 SC	apple	145 mL	59 mL	30
Sevin XLR	apple	3.1 L	1.25 L	11
Thiodan 50 WP, Thionex 50 WP	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 two times per season.

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 two times per season (for all use patterns, including aphids, codling moth, leafminer, pear psylla)

Calypso: Do not apply more than 3 times/year, nor more than 875 mL/season. Apply lower rate

against first generation sap-feeder stage.

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

Product Group Number (Chemical group)	Trade Name	Chemical Name
1A (Carbamates)	Pirimor Sevin	Pirimicarb Carbaryl
1B (Organophosphates)	Cygon Diazinon Guthion Imidan Lagon Malathion Sniper Zolone	Dimethoate Diazinon Azinphos-methyl Phosmet Dimethoate Malathion Azinphos-methyl Phosalone
2A (Chlorinated cyclodienes)	Endosulfan Thiodan Thionex	Endosulfan Endosulfan Endosulfan
3 (Diphenylethanes)	Kelthane	Dicofol
4 (Chloronicotines, Neonicotinoids)	Actara Assail Admire Alias Calypso	Thiamethoxam Acetamiprid Imidacloprid Imidacloprid Thiacloprid
5 (Spinosyns)	Entrust GF-120 Success	Spinosad Spinosad Spinosad
6 (Avermectins)	Agri-Mek	Abamectin
7 (Tetrazines)	Apollo	Clofentezine
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
19 (Triazapentadienes)	Mitac	Amitraz
21 (Pyridazinones)	Pyramite	Pyridaben
23 (Tetronic acids)	Envidor	Spirodiclofen
25	Acramite	Bifenazate

(Carbazates)		
--------------	--	--