2022

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EXTENSION AND ADVISORY TEAM

POME FRUIT PEST MANAGEMENT GUIDE

A guide to insect, mite, and disease management in apple and pear orchards in Nova Scotia



Discard old editions of the pesticide spray guide. Each year, the Perennia Tree Fruit Specialist updates the pesticides and information contained in this publication.

Editor and Production
Michelle Cortens, Tree Fruit Specialist
Perennia Food & Agriculture Inc.
32 Main Street
Kentville, NS, B4N 1J5
mcortens@perennia.ca

Note: Perennia offers supplemental guides for stone fruit, organic production, thinners and growth regulators, and weed management on our website at www.perennia.ca > Agriculture > Product Information > Fruits > Tree Fruit

Emergency and First Aid Procedure for Pesticide Poisoning

- Become familiar with the chemicals you are using. Keep a list of common and active ingredient names in case of accidents or emergencies. This information can be found on product labels and cross-referenced in this publication.

- If poisoning from exposure to a pesticide by swallowing, inhalation or contact with skin or eyes is suspected, read the product label of the pesticide container and carry out first aid treatment as suggested.

- If a person is seriously injured, call **911** immediately.

- Emergency advice on pesticide poisoning is available 24 hours/day from the IWK Regional Poison Information Centre, Halifax, NS. Phone: 1-800-565-8161 (NS & PEI).

Sources of Information on Pesticides
Information Service of the Pest Management Regulatory Agency
Phone: 1-800-267-6315
Web Site: http://www.hc-sc.gc.ca/cps-spc/pest/index-eng.php

Pest Management Regulatory Agency –Electronic Labels: Search Tool
Web Site: http://pr-rp.hc-sc.gc.ca/ls-re/index-eng.php

Ontario Pesticides Classification Database
Web Site: https://www.lrcsde.lrc.gov.on.ca/PCDWeb/showSearch.action

National Pesticide Information Centre
Web Site: http://npic.orst.edu/

Environmental Emergencies – Nova Scotia
Pesticide and Chemical spills
Phone: 1-800-565-1633

Organic Agriculture Centre of Canada
Web Site: http://www.organicagcentre.ca/

Table of Contents

1. Pesticide Handling and Application

Registration of Pesticides

A pesticide that is used in Nova Scotia must be registered by the Pest Management Regulatory Agency (PMRA) of Health Canada, and be approved for use in the province of Nova Scotia. All registered pesticides may be re-evaluated and are subject to discontinuation if they do not meet current standards. The pesticide product label is a legal document, and all label directions must be followed.

- To search for product labels, visit the Health Canada website: http://pr-rp.hc-sc.gc.ca/ls-re/index-eng.php
- To download the smartphone application, search for the app "Pesticide Labels" by Health Canada.

Applicator Pesticide Certification

Applicators must hold a valid applicator certificate of qualification to apply a commercial class pesticide in Nova Scotia. The regional offices for Nova Scotia Environment offer certificates, approvals, exams and exam study materials.

- Central Region: Halifax and Hants Counties, (902) 424-7773
- Western Region: Kings, Annapolis, Digby, Yarmouth, Shelburne, Queens and Lunenburg, (902) 679-6086

Environmental Stewardship

Environmental stewardship and food safety programs are important components of best management practice for fruit production. Guidelines and fact sheets have been developed under the Nova Scotia Environmental Farm Program for the best means to store, handle, and apply pesticides. Factsheets on the NS Federation website (http://www.nsfa-fane.ca/efp/resources/factsheets/) include:

- On-farm Pesticide Use
- Pesticide Storage and Handling
- Air-Blast Sprayer Calibration for Orchard and Vineyards
- Tree-Row Volume: Concept, Calculations and Application

Food Safety

The CHC CanadaGap on-farm food safety manual provides procedures and guidelines with regard to the safe handling, storage and record keeping for tree fruit pesticides and fertilizers: http://www.canadagap.ca/manuals/downloads/

Buffer Zones

Most pesticide labels have a required distance between site of spray application and a buffer zone. A buffer zone is the distance between the point of direct pesticide application and the nearest downwind boundary of a sensitive habitat. A buffer zone is a no-spray area because the sensitive habitat contains organisms that are affected by the pesticide being applied. A sensitive area may be aquatic, terrestrial (shelterbelts and woodlots) or a combination (wetlands, marshes etc). It is the applicator's responsibility to identify the sensitive areas within and adjacent to treated fields.

Pesticide Formulation Abbreviations

DF	dry flowable	SG	soluble granules
DP	dispersible powder	SN	solution
DU	dust	SP	soluble powder
EC	emulsifiable concentrate	SU	suspension
F or FLO	flowable solution	SURF	surfactant
GR or G	granular	W or WP	wettable powder
OD	oil dispersible	WSP	water soluble pouch
SC	spray concentrate	WDG or DG	water dispersible granules

Warning

Please note that we make no warranty or guarantee of any kind, expressed or implied, concerning the use of products listed in this publication. The user assumes all risks, whether recommendations are followed or not. This publication is intended as a guide only.

For specific product information always refer to and follow directions on the label.

2. Pest Problem Codes

The following codes can be used on the spray record sheet when recording your monitoring and spray activities. These codes are the same as those used in the Orchard Outlook newsletter. We encourage you to use these codes, as they may make record-keeping easier.

Insects	
Apple Brown Bug	ABB
Apple Grain Aphid	AGA
Apple Leaf-Curling Midge	ALM
Apple Maggot	AM
Codling Moth	CM
Xyleborus spp. borer	EFTB
European Fruit Scale	EFS
European Apple Sawfly	EAS
Eyespotted Bud Moth	ESBM
Fruittree Leafroller	FTR
Green Apple Aphid	GAA
Green Pug Moth	GPM
Leafrollers	LR
Lecanium Scale	LS
Mullein Bug	MB
Oystershell Scale	OS
Obliquebanded Leafroller	OBL
Pale Apple Leafroller	PAL
Pear Psylla	PP
Plum Curculio	PC
Rosy Apple Aphid	RAA
San Jose Scale	SJS
Speckled Green Fruitworm	SGFW
Stinging Mirids (ABB & MB)	SM

Insects	
Tarnished Plant Bug	TPB
Tent Caterpillar	TC
White Apple Leafhopper	WALH
Winter Moth	WM
Mites	
Apple Rust Mite	ARM
European Red Mite	ERM
Lemon Yellow Mite	LYM
Pear Leaf Blister Mite	PLBM
Pear Rust Mite	PRM
Two-spotted Spider Mite	TSSM
Typhlodromus pyri	TYPH
Diseases	
Apple Scab	AS
Bitter Pit	BP
Blossom End Rot	BER
European Canker	EC
Fire Blight	FB
Fly Speck	FS
Gleosporium Canker	GC
Powdery Mildew	PM
Sooty Blotch	SB

3. Pesticides Listed in this Schedule

This listing includes all the registered pesticides (excluding herbicides) detailed in the Pome Fruit Management Guide. Products registered for suppression only are listed in this guide as an option for resistance management. Products are listed according to primary insects and diseases in Nova Scotia pome fruits. Secondary diseases and pests may be present on some labels. Consult product labels for additional information. Please note: Red text is new to this guide in 2022

Active Ingredient	Product	Group Name	Group	Relative Toxicitiy Ratings			Preharvest Interval (days)	Re-Entry Interval (REI)(minimum)	Management Activity for REI	Diseases/Insects Controlled
				Acute (1=Low 4=High)	Bee (1=Low 3=High)	Typhs, Predatory mites (1=Low 4=High)				
FUNGICIDES										
prohexadione-calcium	Apogee	Growth Regulator	NC	1	1	1	45	12 h		Fire blight – shoot blight suppression
hydrogen peroxide + peroxyacetic acid	OxiDate	Inorganic	NC	2	1	-	4 h	0		Powdery mildew suppression
copper hydroxide	Parasol Flowable	Inorganic	M	1	1	-	dormant only	48 h		Fire blight
sulphur	Kumulus	Inorganic	M1	1	1	3	1	24 h		Powdery mildew, apple & pear scab
sulphur	Microscopic Sulphur	Inorganic	M1	2	1	3	1	24 h		Powdery mildew, apple & pear scab
sulphur	Microthiol Disperss	Inorganic	M1	2	1	3	1	24 h		Powdery mildew, apple & pear scab
copper octanoate	Cueva	Inorganic	M2	1	1	2	1	4 h		Apple and pear scab
copper oxychloride	Copper Spray Fungicide	Inorganic	M2	3	1	2	2	48 h		Fire blight – overwintering bacteria
mancozeb	Dithane Rainshield	EBDC	M3	3	1	3	45	12 h		Apple scab, rust
mancozeb	Manzate	EBDC	M3	3	1	3	45	24 h		Apple scab, rust
mancozeb	Penncozeb	EBDC	M3	1	1	3	45	24 h		Apple scab, rust
captan	Maestro 80 WSP and Supra Captan	Phthalimide	M4	1	2	2	*15/19		**High Density**	Apple & pear scab, black rot, flyspeck, sooty blotch, brook's spot, bitter rot, bull's eye rot
								2 d	General	
								6 d	Pruning, training	
								15 d	Hand thinning, harvesting	*The PHI is 7 days but due to worker safety if the REI for hand harvesting and the pre-harvest interval (PHI) are different, follow the longer of the two intervals.
									Standard	
								2 d	General	
								4 d	Pruning, training	
								19 d	Hand harvesting	
								24 d	Hand thinning	
folpet	Folpan/Follow	Phthalimide	M4	-	-	-	1	1 d	Hand harvesting	Apple scab, alternaria leaf spot, black rot, Brooks spot, fly-speck, sooty blotch
								6 d	Hand thinning	
								12 h	All other activities	
thiophanate-methyl	Senator	MBC	1	1	1	1	1	12 h		Apple & pear scab, powdery mildew
thiabendazole	Mertect	Imidazole	1	1	1	N/A	NA	12 h		Storage rots (blue and grey mold)
flutriafol	Fullback	DMI	3	1	2	1	14	12 h		Powdery mildew, rust
myclobutanil	Nova	DMI	3	2	1	1	14	12 d	Hand thinning	Powdery mildew, rust
								12 h	All other	
mefentrifluconazole	Cevya	DMI	3	-	-	-	0	12 h		Apple scab, powdery mildew suppression
difenoconazole + cyprodinil	Inspire Super	DMI + AP	3, 9	1	1	1	14	12 h		Apple & pear scab, rust, flyspeck, sooty blotch, brooks spot, powdery mildew suppression

Active Ingredient	Product	Group Name	Group	Relative Toxicitiy Ratings			Preharvest Interval (days)	Re-Entry Interval (REI)(minimum)	Management Activity for REI	Diseases/Insects Controlled
				Acute (1=Low 4=High)	Bee (1=Low 3=High)	Typhs, Predatory mites (1=Low 4=High)				
difenoconazole + benzovindiflupyr	Aprovia Top	DMI + SDHI	3, 7	3	1	1	30	12 h		Apple & pear scab, powdery mildew, rust, flyspeck, sooty blotch, brooks spot
metalaxyl-M and S	Ridomil Gold	PA	4	-	-	-	1 yr	12 h		Phytophthora collar rot
penthiopyrad	Fontelis	SDHI	7	1	1	1	28	12 h		Apple & pear scab, powdery mildew, rust
fluxapyroxad	Sercadis	SDHI	7	1	1	1	0	12 h		Apple & pear scab, powdery mildew
fluopyram	Velum Prime	SDHI	7	-	-	-	7	12 h		Soil-dwelling, root-feeding nematodes of pome
inpyrfluxam	Excalia	SDHI	7	-	-	-	Petal fall	12 h		Apple scab, powdery mildew
fluopyram + pyrimethanil	Luna Tranquility	SDHI+ AP	7, 9	1	1	1	14	12 h		Apple scab, powdery mildew
isofetamid	Kenja	SDHI	7	1	1	1	20	12 h		Apple scab
boscalid + pyraclostrobin	Pristine	SDHI + QoI	7, 11	1	1	1	5	0+ d		Apple & pear scab, powdery mildew, black rot, flyspeck, sooty blotch, brooks spot
pyraclostrobin + fluxapyroxad	Merivon	SDHI + QoI	7, 11	1	1	1	0	12 d 5 d 12 h	Hand thinning Hand harvesting Mechanical harvesting and all other activities	Apple and pear scab, powdery mildew, bitter rot, black rot, flyspeck, sooty blotch
cyprodinil	Vangard	AP	9	2	1	1	72	72 h		Apple scab
pyrimethanil	Scala	AP	9	2	1	1	14	24 h		Apple & pear scab, storage rots
kresoxim-methyl	Sovran	QoI	11	2	1	1	30	48 h		Apple & pear scab, powdery mildew
trifloxystrobin	Flint	QoI	11	1	1	1	14	4 d		Apple & pear scab, powdery mildew, sooty blotch, flyspeck, rust
fludioxonil	Scholar	Phenylpyroles	12	1	1	N/A	NA	NA		Storage rots (blue and grey mold)
dodine	Equal/Syllit	Guanidine	U12	2	1	2	7	48 h		Apple & pear scab
polyoxin d zinc salt	Diplomat SC	polyoxin	19	1	1	N/A	0	when dry		Powdery mildew suppression
kasugamycin	Kasumin	Antibiotic	24	1	1	1	90	12 h		Fire blight – blossom blight
streptomycin sulfate	Streptomycin	Antibiotic	25	1	1	1	50	24 h 14 d	General Hand thinning	Fire blight – blossom blight, trauma blight prevention
fluazinam	Allegro	Phenylpyridinylamine	29	2	1	1	28	3 d		Apple scab, flyspeck and sooty blotch
fosetyl al	Aliette	Phosphonate	P7	-	-	-	30 d	4 d 12 h	Hand thinning All other activities	Phytophthora crown and root rot
QST 713 strain of dried Bacillus subtilis	Serenade OPTI	Biofungicide	BM02	-	-	-	0	when dry		Apple and pear scab suppression, powdery mildew suppression
Garlic powder	Buran	Biofungicide	NC	-	-	-	0	when dry		Powdery mildew suppression
INSECTICIDES/MITICIDES										
potassium salt of fatty acids	Kopa	Insecticidal soap	NC	-	-	-	12h	12 h		Two-spotted spider mite
petroleum oil	Superior Oil	Mineral oil	NC	4	1	3	0	12 h		European red mite, scale
mineral oil	Purespray Green	Mineral oil	NC	1	1	3	0	12 h		European red mite, scale
bifenazate	Acramite	Carbazate	UN	1	2	3	7	12 h		European red mite, two-spotted spider mite

Active Ingredient	Product	Group Name	Group	Relative Toxicitiy Ratings			Preharvest Interval (days)	Re-Entry Interval (REI)(minimum)	Management Activity for REI	Diseases/Insects Controlled
				Acute (1=Low 4=High)	Bee (1=Low 3=High)	Typhs, Predatory mites (1=Low 4=High)				
oxamyl	Vydate	Carbamate	1A	4	4	4	1 yr	12 h 7 d 30 d	General Scouting, pruning/training Hand thinning	Root lesion nematode (drench & foliar), foliar: Green apple aphid, rosy apple aphid, leafhoppers, leaf rollers, tarnished plant bug, apple rust mites, two spotted spider mites and European red mites
phosmet	Imidan	Organophosphate	1B	4	3	1	14	14 d 30 d	General Hand thinning	Leafrollers, fruitworm, green pug moth, eyespotted budmoth, plum curculio, codling moth, apple maggot
cypermethrin	Mako/UP-cyde	Pyrethroid	3	2	3	4	7	12 h		Winter moth, eyespotted bud moth, leafrollers, tarnished plant bug, pear psylla
deltamethrin	Decis/Poleci	Pyrethroid	3	4	3	4	1	12 h		Aphids, brown bug, leaf curling midge, codling moth, leafrollers, leafminer, white apple leafhopper, winter moth, eye spotted budmoth, pear psylla
lambda-cyhalothrin	Matador/Warrior/Silencer/Labamba	Pyrethroid	3	4	3	4	7	24 h		Aphids, brown bug, leaf curling midge, codling moth, leafrollers, leafminer, white apple leafhopper, winter moth, plum curculio, tarnished plant bug, woolly apple aphid, pear psylla
permethrin	Pounce	Pyrethroid	3	2	3	4	7	12 h		Winter moth, fruitworm, bud moth, pear psylla
permethrin	Ambush	Pyrethroid	3	-	3	-	7	when dry		Plum curculio
fenpropathrin	Danitol	Pyrethroid	3	4	3	-	16	23 d 16 d 7 d 24 h	Hand thinning Hand harvesting Scouting, hand pruning All other activities	Apple maggot, codling moth, Japanese beetle, leafhoppers, leafrollers, leafminer, spotted wing drosophila, pear green fruitworm (pear psylla suppression)
acetamiprid	Assail/Aceta	Neonicotinoid	4	3	2	2	7	6 d 48 h 12 h	Hand thinning Scouting General	Aphids, apple maggot, European apple sawfly, leafminer, leafhoppers, codling moth, mullein bug, pear psylla, plum curculio
thiacloprid	Calypso/Theme	Neonicotinoid	4	4	1	1	30	12 h		Codling moth, plum curculio, apple maggot, mullein bug, leafhoppers, leafminer ,aphids, European apple sawfly, pear psylla
acetamiprid and novaluron	Cormoran	Neonicotinoid + IGR	4, 15	3	2	2	14	12 h 7 d	General Hand thinning	Leafhoppers, leafminers, aphids, mullein bug, apple maggot, codling moth, European apple sawfly, plum curculio, tarnished plant bug
sulfoxaflor	Closer	Sulfoximines	4C	1	3	2	7	12 h		Green apple and rosy apple aphid, tarnished plant bug, mullein bug
flupyradifurone	Sivanto Prime	Butenolides	4D	1	1	1	14	12 h		Aphids, leafhoppers, scales
sulfoxaflor + spinetoram	Twinguard	Neonicotinoid + Naturalyte	4C, 5	1	2	1	7	12 h		Aphids, codling moth, leafrollers, tarnished plant bug
spinosad	Success	Naturalyte	5	1	3	2	7	12 h		Leafrollers, eyespotted budmoth
spinetoram	Delegate	Naturalyte	5	1	3	3	7	12 h		Codling moth, eyespotted budmoth, leafrollers, apple maggot (suppression)

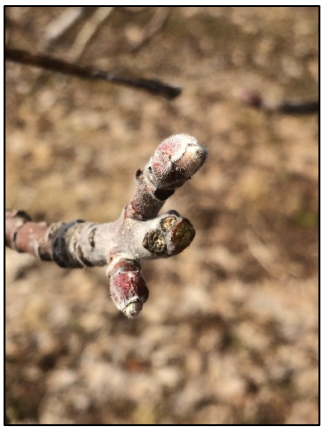
Active Ingredient	Product	Group Name	Group	Relative Toxicitiy Ratings			Preharvest Interval (days)	Re-Entry Interval (REI)(minimum)	Management Activity for REI	Diseases/Insects Controlled
				Acute (1=Low 4=High)	Bee (1=Low 3=High)	Typhs, Predatory mites (1=Low 4=High)				
abamectin	Agri-Mek	Avermectin	6	4	3	3	28	12 h		European red mite, two-spotted spider mite, pear psylla
afidopyropen	Versys	Pyropenes	9D	-	-	-	7	12 h		Rosy apple aphid, green apple aphid
clofentezine	Apollo	Tetrazine	10	2	1	2	21	12 h		European red mite, two-spotted spider mite
bacillus thuringienis	Dipel 2XDF	Bt Microbial	11	1	1	1	0	12 h		Winter moth, leafrollers
bacillus thuringienis	Bioprotec PLUS	Bt Microbial	11	1	1	1	0	4 h		Winter moth, leafrollers, fruitworms
bacillus thuringienis	XenTari WG	Bt Microbial	11	1	2	-	0	12 h		Obliquebanded leafroller, codling moth, winter moth
novaluron	Rimon	IGR	15	1	2	1	14	12 h		Codling moth
methoxyfenozide	Intrepid	Ecdysone Disrupter	18	1	1	1	14	12 h		Leafrollers, codling moth
tebufenozide	Confirm	Ecdysone Disrupter	18	1	1	1	14	12 h		Obliquebanded leafroller, codling moth, winter moth, green pug moth
acequinocyl	Kanemite	Quinolinone	20B	1	1	2	14	12 h		European red mite, two-spotted spider mite
bifenazate	Acramite	Bifenazate	20D	-	2	2	7 d	12 h		Two-spotted spider mite, European red mite
pyridaben	Nexter	Pyridazinone	21	3	3	4	25	24 h		European red mite, two-spotted spider mite, apple rust mite
spirotetramat	Movento	Tetronic Acid	23	1	3	1	7	12 h		Aphids, scale, pear psylla
spirodiclofen	Envidor	Tetronic Acid	23	2	2	1	7	12 h		European red mite, two-spotted spider mite, apple rust mite
cyflumetofen	Nealta	Benzoylacetonitrile	25	1	1	1	7	12 h		European red mite, two-spotted spider mite
chlorantraniliprole	Altacor	Ryanodine receptors	28	1	1	1	5	12 h		Codling moth, obliquebanded leafroller, European apple sawfly, speckled green fruitworm
cyantraniliprole	Exirel	Ryanodine receptors	28	1	3	1	3	12 h		Codling moth, leafminer, leafrollers, eyespotted bud moth, rosy apple aphid, apple maggot, plum curculio, white apple leaf hopper, European apple sawfly
cyclaniliprole	Harvanta	Ryanodine receptors	28	1	3	-	7	12 h		Codling moth, leafrollers (suppression of apple maggot and plum curculio)
tetraniliprole	Vayego	Ryanodine receptors	28	-	3	-	7	12 h		Codling moth, obliquebanded leafroller, European apple sawfly (suppression of aphids, mullein bug, plum curculio, apple maggot)
cyantraniliprole + abamectin	Minecto Pro	Ryanodine receptors, avermectins	28, 6	3	3	-	28	12 h		Codling moth, obliquebanded leafroller, two-spotted spider mite, European red mite, European apple sawfly
flonicamid	Beleaf	Pyridinecarboxamide	29	1	1	1	21	48 h		Aphids

4. Overview of Apple Pest Management

Stage	Problem	Management Options			
		Monitoring	Physical Control	Chemical Control	Other
April	Xyleborus spp. borer	x			
	European Red Mite	x			
	Fire Blight Cankers	x	x	x	
May	Canker		x		
	Xyleborus spp. borer			x	
Green Tip	Apple Scab			x	
	European Red Mite	x	x		
15 mm Green to Tight Cluster	Apple Scab			x	
	Powdery Mildew	x		x	
	European Red Mite	x	x		
	Spotted Tentiform Leafminer	x			
	Winter Moth	x			
Bud Separation	Apple Scab			x	
	Powdery Mildew	x		x	
	Fruitworm			x	
	Winter Moth			x	
Pink	Apple Scab			x	
	Powdery Mildew	x		x	
	European Red Mite	x		x	
	Rosy Apple Aphid	x		x	
	Oblique Banded and Three	x		x	
	Lined Leafroller	x		x	
	Tarnished Plant Bug				
Bloom	Apple Sawfly		x		
	Pollination				x
	Wild Apple Tree		x		
	Fire Blight	x		x	
Calyx	Apple Scab	x		x	
	Powdery Mildew	x		x	
	European Red Mite	x		x	
	Apple Sawfly	x		x	
	Twospotted Spider Mite	x		x	
	Pale Apple, Oblique-banded	x		x	
	Three Lined Leafroller	x		x	
	Rosy Apple Aphid	x		x	
	Stinging Bugs	x		x	
	Tarnished Plant Bug	x		x	
	White Apple Leafhopper	x		x	
	Winter Moth	x		x	
	Fruitworm	x		x	

		Monitoring	Physical Control	Chemical Control	Other
First Cover	Apple Scab	x		x	
	Powdery Mildew	x		x	
	Codling Moth	x			
	European Red Mite	x		x	
	Apple Rust Mite	x		x	
	Twospotted Spider Mite	x		x	
Second Cover	Apple Scab	x		x	
	Powdery Mildew	x		x	
	Fire Blight	x	x		
	Codling Moth	x		x	
Third Cover	Apple Scab	x		x	
	Powdery Mildew	x		x	
	Fire Blight	x	x		
	Apple Maggot	x	x	x	
	Codling Moth	x		x	
	European Red Mite	x		x	
	Twospotted Spider Mite	x		x	
	Apple Rust Mite	x		x	
	Spotted Tentiform Leafminer	x		x	
Fourth Cover	Apple Scab	x		x	
	Apple Maggot	x	x	x	
	European Red Mite	x		x	
	Two-spotted Spider Mite	x		x	
	Apple Rust Mite	x		x	
	Codling Moth	x		x	
	Eyespotted Bud Moth			x	
	White Apple Leafhopper	x		x	
	Potato Leafhopper	x		x	
Early August	Soil & Leaf Analysis	x			
Late August	Storage Rots			x	
	Phytophthora crown or root rot			x	
Pre Harvest	Fruit Injury	x			
Post Harvest	Storage Rots			x	
	Mice	x	x	x	

5. Apple Bud Growth Stages



1. SILVER TIP

2. GREEN TIP

3. HALF-INCH GREEN

4. TIGHT CLUSTER

5. BUD SEPARATION

6. FULL PINK

7. FIRST BLOOM

8. FULL BLOOM

9. POST BLOOM-CALYX

6. Apple Orchard Calendar

A guide to insect, mite, and disease management in bearing apple orchards.

Please note: Red text is new to this guide in 2022 and/or serves as an alert.

All rates are per hectare of mature ("standard") trees or full dilute volume of about 3,370 L of water/ha unless specified as 1,000 L. To adjust for smaller trees and higher density plantings, refer to Crop Adapted Spraying at http://sprayers101.com/.

All rates are based on label rates. In some cases, reduced rates can be used based on factors other than tree size. Please refer to specific notes or your agricultural advisor for details.

Always read the label before using any pesticide. Where differences between the label and this guide occur, label information prevails.

Solupacks - Many pesticides have been packed into solupacks. Be aware that these may not dissolve properly in the presence of oil, boron or chlorine in the spray tank.

Disease & Insect	Products	Group	Formulation	Rate	Notes
GREEN TIP					
Apple Scab	Use one of the following listed fungicides. Apply fungicides on a preventative schedule and keep new tissue covered. Check compatibility with oil. For all single site fungicides, include a protectant fungicide from Group M3 or M4 for resistance management. Early in the season, there is no need to control powdery mildew so products with activity on powdery mildew can be saved for application at half inch green and later.				
	► Cueva	M2	1.8 S	0.5-2.0% solution	Do not exceed 1.0% solution on russet-sensitive varieties. Apply at 5-10 day intervals. Do not make more than 10 applications per year.
	► Dithane Rainshield	M3		6.00 kg/ha	Compatible with oil. Transition to newly amended labels by November 19, 2022.
	► Manzate	M3	75 DF	6.00 kg/ha	
	► Penncozeb	M3	75 DF	2.00 kg/1,000 L	
	► Maestro	M4	80 WSP	3.00 kg/ha	Not compatible with strongly alkaline materials. Do not use 7-14 days before or after an oil application. Early season sprays may cause injury to the foliage of Red Delicious. Use caution in tank-mixes with surfactants. Refer to re-entry intervals for specific activities (ranging from 2 to 24 days). If the REI for hand harvesting and the pre-harvest interval (PHI) are different, follow the longer of the two intervals. For high density, do not use more than 10 applications per year and for low density do not use more than 2 applications per year.
	► Supra Captan	M	80 WSP	3.00 kg/ha	
	► Folpan/Follow	M4	80 WDG	3.0-3.75 kg/ha	Treatments during the critical period (just before bloom until 30 days after petal fall) may cause russetting to sensitive varieties such as Golden Delicious, Red Delicious and Stayman Winesap. Do not use within 14 days of oil. Do not apply more than 6 applications per season, with a minimal retreatment interval of 10 days. Note newly amended labels are effective January 23, 2022 including updated re-entry interval.
	► Senator	1	50 SC	250 mL/1,000 L	Do not mix with lime or other alkaline materials. Not compatible with oil applications. Historically resistance has been an issue. Increased risk reduction measures expected by Dec 3, 2022.
	► Fullback	3	125 SC	950 mL/ha	
	► Nova	3	40 WSP	340 g/ha	Resistance to group 3 fungicides is widespread in the apple scab population in Nova Scotia. For use on powdery mildew, include a protectant fungicide from Group M3 or M4 to also control apple scab.
	► Cevya	3	SC	0.25-0.375 L/ha	
	► Inspire Super	3, 9	SC	560-836 mL/ha	Apply at 7-10 day intervals from green tip to petal fall. Do not make more than two consecutive applications or more than four applications per year. Include a protectant fungicide from Group M3 or M4.
	► Aprovia Top	3, 7	EC	386-643 mL/ha	Apply at 7-10 day intervals from green tip. Use the higher rate and shorter interval when disease pressure is high. Do not make more than two consecutive applications or use more than 2.57 L/ha per year.
	► Fontelis	7	200 SU	1.0-1.5 L/ha	Apply at 7-10 day intervals from green tip. Use the higher rate and shorter interval when disease pressure is high. Do not make more than two consecutive applications or use more than 4.5 L/ha per year. Contains a mineral oil in the formulation that may cause issues in tank mixes.
	► Sercadis	7	300 SU	300 mL/ha	Apply at 7-14 day intervals from green tip and up to full bloom. Do not make more than two consecutive applications or more than four applications per year.
	► Kenja	7	400 SC	0.913 L/ha	Apply at 10-14 day intervals from green tip. Use the higher rate and shorter interval when disease pressure is high. Do not make more than two consecutive applications or more than six applications per year.

Disease & Insect	Products	Group	Formulation	Rate		Notes
	► Excalia	7	SC	146-219 mL/ha		Apply from green tip through petal fall at a retreatment interval of 10 days. Do not apply after petal fall due to PHI. Do not make more than two applications per year and/or more than 438 mL/ha per year.
	► Luna Tranquility	7, 9	SU	800 mL/ha		Apply at 7-14 day intervals from green tip. Do not make more than two consecutive applications or more than three applications per year.
	► Scala	9	400 SC	0.75-1.0 L/ha		Apply at 7-12 day intervals from green tip to petal fall. Do not apply post bloom. Do not make more than four applications per year.
	► Vangard	9	75 WP	190-370 g/ha		Apply at 7-12 day intervals from green tip to petal fall. Do not apply post bloom. Do not make more than two applications per year without including a protectant fungicide from Group M3 or M4.
	► Flint	11	50 WG	140-175 g/ha		Apply at 7-10 day intervals from green tip. Use the higher rate and shorter interval under high disease pressure. Do not make more than two consecutive applications or more than four applications per year.
	► Sovran	11	50 WG	180-360 g/ha		Apply at 7-14 day intervals from green tip. Use the higher rate and shorter interval under high disease pressure. Do not make more than two consecutive applications or more than four applications per year. Spray drift can be phototoxic to some sweet cherry cultivars. Transition to newly amended labels by December 22, 2023.
	► Syllit	U12	400 FL	1.75-3.65 L/ha		Apply at 7 day intervals from green tip. Use the higher rate under high disease pressure.
	► Equal	U12	65 WP	1.08-2.25 kg/ha		Apply at 7 day intervals from green tip. Use the higher rate under high disease pressure.
	► Allegro	29	500 F	0.5-1.0 L/ha		Apply at 7-14 day intervals from green tip. Use the higher rate under high disease pressure. Do not make more than three consecutive applications or more than nine applications per year.
Fire Blight	Copper application at silver tip to green tip can be effective in reducing the overwintering bacterial population and is a useful component of an overall fire blight management strategy. Thorough coverage of limbs and trunk is essential for good control. This spray does not eliminate the need for blossom blight management.					
	► Copper Spray Fungicide	M2	50 WP	3.2 kg/ha		Compatible with oil. Will also provide apple scab control but contact activity only. Do not make more than two applications per year. Use of copper after green tip may increase the risk of fruit russetting.
European Red Mite	Assess winter eggs on twigs and bark, refer to Best Management Practices for NS Apple Production by visiting www.perennia.ca > Agriculture > Commodity Information > Fruits > Tree Fruit > Perennia Publication and Fact Sheets.					
	► Superior Oil	NC	70 EC	20 L/1,000 L L/ha	60	Best results are obtained when applied with a high volume of water 1,500 to 3,370 L/ha. Do not apply oil during or just prior to expected freezing temperatures or immediately following a frost. Check compatibility with fungicide. May cause bark injury on Red Delicious, Empire, and Ambrosia.
	► Purespray Green Spray Oil	NC	13 E	20 L/1,000 L L/ha	60	Suppression only.
HALF-INCH GREEN & TIGHT CLUSTER						
Apple Scab	Use one of the fungicides as listed under Green Tip. Check fungicide compatibility with oil treatments for mites. For all single site fungicides, include a protectant fungicide from Group M3 or M4 for resistance management.					
Powdery Mildew	If mildew pressure was high during the previous growing season select an appropriate fungicide listed below. In most cases mildew treatment should begin around the tight cluster stage of bud development.					
	► Microscopic Sulphur	M1	92 WP	6.5 kg/1,000 L		Do not apply within 30 days of an oil treatment. Do not apply if high temperatures (>26º C) and humidity prevail or are expected during the three days following application. Do not use on Delicious. Usage may result in elevated populations of European red mite and scale.
	► Kumulus	M1	80 DF	7.5 kg/1,000 L		
	► Microthiol Disperss	M1	80 WP	7.5 kg/1,000 L		
	► Fullback	3	125 SC	585-877 mL/ha		Apply at 7-10 day intervals. Use higher rate and shorter interval under high disease pressure. Do not use more than 2.05 L/ha/year. Include a protectant fungicide from Group M3 or M4 to also control apple scab.
	► Nova	3	40 WSP	340 g/ha		Apply at 7-10 day intervals. Do not make more than six applications per year. Resistance to Nova is widespread in apple scab in Nova Scotia. Include a protectant fungicide from Group M3 or M4 to also control apple scab.
	► Aprovia Top	3, 7	EC	643 mL/ha		Apply at 7-10 day intervals from green tip. Do not make more than two consecutive applications or use more than 2.57 L/ha per year. Will also control apple scab.

Disease & Insect	Products	Group	Formulation	Rate	Notes
	► Fontelis	7	200 SU	1.0-1.5 L/ha	Apply at 7-10 day intervals. Use higher rate and shorter interval when disease pressure is high. Do not make more than two consecutive applications or use more than 4.5 L/ha/year. Will also control apple scab. Contains a mineral oil in the formulation that may cause issues in tank mixes.
	► Sercadis	7	300 SU	167-333 mL/ha	Apply at 7-14 day intervals. Do not make more than two consecutive applications or more than 4 applications per year. Will also control apple scab.
	► Excalia	7	SC	146-219 mL/ha	Do not apply after petal fall due to PHI. Do not make more than two applications per year and/or more than 438 mL/ha per year. For powdery mildew, application must include a 100% organosilicone adjuvant such as Xiameter. Will also control scab.
	► Luna Tranquility	7, 9	SU	600 mL/ha	Apply at 7-14 day intervals. Do not make more than two consecutive applications or more than three applications per year. Will also control apple scab when applied at 800 mL/ha.
	► Pristine	7, 11	WG	1.0-1.2 kg/ha	Apply at 7-10 day intervals. Use the higher rate and shorter interval under high disease pressure. Do not make more than four applications per year. Will also control apple scab.
	► Merivon	7, 11	SU	0.3-0.4 L product/ha	Apply at 7-14 day intervals. Use the higher rate and shorter interval under high disease pressure. Do not make more than four applications per year. Will also control apple scab. Caution should be exercised if MERIVON Fungicide is tank mixed with products formulated as emulsifiable concentrates (EC) or containing high amounts of solvents.
	► Sovran	11	50 WG	240-450 g/ha	Apply at 10-14 day intervals. Use higher rate and shorter interval under high disease pressure. Do not make more than 2 consecutive applications or more than 4 applications/year. Historically resistance has been an issue. Will also control apple scab. Transition to newly amended labels by December 22, 2023.
	► Flint	11	50 WG	140-210 g/ha	Apply at 7-10 day intervals. Use higher rate and shorter interval under high disease pressure. Do not make more than 2 consecutive applications or more than 4 applications/year. Historically resistance has been an issue. Will also control apple scab.
	► Diplomat	19	5SC	259-926 mL/ha	Suppression only. Apply preventatively and at 7-10 day intervals. Do not apply more than 2.78 L/ha in one year.
	► Serenade OPTI	BM02	WP	1.7-3.3 kg/ha	Suppression only. Apply preventatively and at 7-10 day intervals. Use in conjunction with other cultural or chemical controls.
	► Buran	NC	SN	9 L/ha	Suppression only. This is a new product and local efficacy data is not available. Control can be achieved under low to moderate disease pressure with addition og a nono-ionic surfactant at a rate of 0.1% v/v. Begin applications preventatively when conditions are conducive to disease development. Reapply every 7-20 days if needed. Do not apply if rain is forecast within 48 hours.
	► OxiDate 2.0	NC	SN	1.0% v/v, 100 mL product in 10 L of water	Suppression only. For increased coverage, use a compatible wetting agent/surfactant. Do not spray during conditions of intense heat, drought, or poor plant vigour. Avoid application before rain or when bees and beneficial insects are active.
Winter Moth	Assess larvae at this stage and refer to Best Management Practices for NS Apple Production. For more information visit www.perennia.ca > Agriculture > Commodity Information > Fruits > Tree Fruit > Perennia Publication and Fact Sheets.				
Spotted Tentiform Leafminer	Assess adult activity at this time and refer to Best Management Practices for NS Apple Production. For more information visit www.perennia.ca > Agriculture > Commodity Information > Fruits > Tree Fruit > Perennia Publication and Fact Sheets.				
European Red Mite	Treatments listed under Green Tip may be used.				

BUD SEPARATION

Apple Scab	Use one of the fungicides as listed under Green Tip. Check fungicide compatibility with oil treatments for mites. For all single site fungicides, include a protectant fungicide from Group M3 or M4 for resistance management.
Powdery Mildew	Use one of the fungicides listed for Half-inch Green & Tight Cluster. Check fungicide compatibility with oil treatments for mites. Do not apply Excalia after petal fall due to PHI.
Winter Moth, Green Pug Moth	Application timing is late tight cluster to pink.

Disease & Insect		Products	Group	Formulation	Rate	Notes
	►	Matador/ Warrior/ Silencer/ Labamba	3	120 EC	83 mL/ha	Pyrethroids (Group 3) are disruptive to IPM programs leading to mite flare ups and therefore should be avoided if alternatives are available. Mako is somewhat less disruptive to predatory mites while Decis/Poleci is broad spectrum and one of the most powerful synthetic pyrethroids. Avoid applying synthetic pyrethroids when temperatures rise above 20°C because they are much less effective under these conditions. Do not make more than three applications per year. Increased risk reduction measures expected by April 29, 2023.
	►	Mako	3	400 EC	125 mL/ha	
	►	Decis	3	5.0 EC	150 mL/ha (50 mL/1000 L of water)	Pyrethroids (Group 3) are disruptive to IPM programs leading to mite flare ups and therefore should be avoided if alternatives are available. Mako is somewhat less disruptive to predatory mites while Decis/Poleci is broad spectrum and one of the most powerful synthetic pyrethroids. Avoid applying synthetic pyrethroids when temperatures rise above 20°C because they are much less effective under these conditions. Do not make more than three applications per year.
	►	Poleci	3	2.5 EC	300 mL/ha (100 mL/1000 L of water)	
	►	Pounce	3	384 EC	260 mL/ha	
	►	Ripcord	3	400 EC	125-250 mL/ha	Only one application per year. For use on winter moth in Nova Scotia only.
	►	Dipel	11	WP	560 g/ha	More effective on early instar caterpillars. Less disruptive to predatory mites than other synthetic pyrethroids. Do not make more than one application per year. Ripcord is for use on winter moth in Nova Scotia only.
		+ Ripcord	3	400 EC	12.5 mL/ha	
	►	Bioprotec PLUS	11	SU	1.8-2.5 L/ha	Product must be consumed by the target insect to be effective. Apply in a high- volume spray to young larvae, early in infestation. Best results are obtained if applications are made in the evening or on a cloudy day.
	►	Confirm	18	240 F	1.00 L/ha	Confirm will also suppress green pug moth and spotted tentiform leafminer larvae. Do not make more than four applications per year. Increased risk reduction measures expected by January 21, 2023.
Speckled Green Fruitworm		Refer to Best Management Practices for NS Apple Production for larval assessment by visiting www.perennia.ca > Agriculture > Commodity Information > Fruits > Tree Fruit. Treatments for winter moth may also control speckled green fruit worm.				
	►	Imidan	1B	70 WP	2.68 kg/ha	Do not mix with alkaline materials. Will also control winter moth and green pug moth. Do not make more than five applications per year. Transition to newly amended labels by October 30, 2022.
	►	Bioprotec PLUS	11	SU	1.8-2.5 L/ha	Product must be consumed by the target insect to be effective. Apply in a high- volume spray to young larvae, early in infestation. Best results are obtained if applications are made in the evening or on a cloudy day.
	►	Altacor	28	WG	145-285 g/ha	Reapply if necessary, 10-14 days later. Use high rate when pest pressure is high.
Rosy Apple Aphid		Assess at this time. Refer to Best Management Practices for NS Apple Production by visiting www.perennia.ca > Agriculture > Commodity Information > Fruits > Tree Fruit.				
	►	Assail/Aceta	4	70 WP	80-120 g/ha	Use the higher rate for greater pest populations. Do not make more than four applications per year. Do not apply when bloom or flowering weeds are present.
	►	Calypso	4	480 SC	145-290 mL/ha	Use the higher rate for greater pest populations and/or dense foliage. Do not make more than three applications per season.
	►	Cormoran	4A, 15	EC	0.7-1.05 L/ha	Maximum of 2 applications of products from Group 4A per season. Do not allow Cormoran to drift onto grapes as leaf spotting may occur.
	►	Closer	4C	SC	100-200 mL/ha	Do not apply when bloom or flowering weeds are present. Do not make more than two applications per year.
	►	Sivanto Prime	4D	200 S	500-750 mL/ha	Do not use more than 2.0 L/ha per year.
	►	Twinguard	4C, 5	WDG	250 g/ha	Do not apply when bloom is present or when flowering weeds are present. Do not apply more than twice per year.
	►	Versys	9D	EC	100 mL/ha	DO NOT make more than 2 sequential applications of insecticides with the same mode of action.
	►	Exirel	28	100 SU	1.5 L/ha	Do not apply when bloom or flowering weeds are present. Do not make more than four applications per year. See label for incompatible products.
	►	Beleaf	29	50 SG	120-160 g/ha	Use the higher rate for greater pest populations and/or dense foliage. Do not make more than three applications per season.
Phytophthora crown and root rot	►	Aliette	P7	WDG	3-5 kg/ha	Apply as foliar spray only. Apply from tight cluster to pink and again 6 weeks later when there is enough leaf area to take up the spray. Treat again after harvest.

Disease & Insect		Products	Group	Formulation	Rate	Notes
Nematodes	►	Velum Prime	7	SC	500 mL/ha	Apply specified dosage by chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment. For optimum results, apply to trees previously trained to drip, trickle or micro- sprinkler irrigation. Young trees have the most potential benefit. Soil must be lightly pre-wetted prior to application. Do not apply more than 500 g fluopyram/ha per year, noting that the foliar fungicide Luna Tranquility also contains fluopyram.
PINK						
Apple Scab		Use one of the fungicides as listed under Green Tip. Check fungicide compatibility with oil treatments for mites. For all single site fungicides, include a protectant fungicide from Group M3 or M4 for resistance management.				
Powdery Mildew		Use one of the fungicides listed for Half-inch Green & Tight Cluster. Check fungicide compatibility with oil treatments for mites.				
Rosy Apple Aphid		Assess at this time. Refer to Best Management Practices for NS Apple Production by visiting www.perennia.ca > Agriculture > Commodity Information > Fruits > Tree Fruit. If thresholds warrant, treat using an insecticide listed under Bud Separation.				
Tarnished Plant Bug		Assess need for treatment based on orchard history and monitoring. Treatments for tarnished plant bug pre-bloom will not affect populations of other stinging bugs such as apple brown bug or mullein bug which are not present until petal fall/calyx.				
	►	Ambush	3	500 EC	400 mL/ha	Pyrethroids (Group 3) are disruptive to IPM programs leading to mite flare ups and therefore should be avoided if alternatives are available. Do not make more than three applications per year. Avoid applying synthetic pyrethroids when temperatures rise above 20°C because they are much less effective under these conditions. Do not apply when bloom is present.
	►	Mako	3	400 EC	250 mL/ha	
	►	Up-Cyde	3	2.5 EC	400 mL/ha	
	►	Matador/ Warrior/ Silencer/ Labamba	3	120 EC	104 mL/ha	Pyrethroids (Group 3) are disruptive to IPM programs leading to mite flare ups and therefore should be avoided if alternatives are available. Do not make more than three applications per year. Avoid applying synthetic pyrethroids when temperatures rise above 20°C because they are much less effective under these conditions. Do not apply when bloom is present. Increased risk reduction measures expected by April 29, 2023.
	►	Cormoran	4A, 15	EC	1.26 L/ha	Do not allow Cormoran to drift onto grapes as leaf spotting may occur.
	►	Closer	4C		300 mL/ha	Do not apply more than 600 mL/ha per growing season.
	►	Twinguard	4C, 5		360 g/ha	No comments.
Obliquebanded Leafroller		Assess at this time. Refer to Best Management Practices for NS Apple Production. Oblique-banded leafroller is often controlled by pesticides that are applied at this time of year for more common insect pests. If a specific treatment is required to control a high overwintering population of oblique-banded leafroller then select one of the following pesticides.				
	►	Danitol	3	EC	779-1559 mL/ha	Do not exceed 1 application per year or 1559 mL/ha total application of Danitol per year. Pyrethroids (Group 3) are disruptive to IPM programs leading to mite flare ups and therefore should be avoided if alternatives are available.
	►	Twinguard	4C, 5	WDG	250-500 g/ha	Apply when overwintering larvae are active and before they roll up in leaves. Use the higher rate under high pressure. Do not apply when bloom or flowering weeds are present. Do not apply more than twice per year.
	►	Delegate	5	25 WG	210-420 g/ha	Apply when overwintering larvae are active and before they roll up in leaves. Use the higher rate for greater pest populations. Do not make more than 3 applications per year.
	►	Success	5	480 SC	182 mL/ha	Apply when overwintering larvae are active and before they roll up in leaves. Do not make more than 3 applications per year.
	►	Bioprotec PLUS	11	SU	440 mL/ha	Product must be consumed by the target insect to be effective. Apply in a high- volume spray to young larvae, early in infestation. Best results are obtained if applications are made in the evening or on a cloudy day.
	►	Confirm	18	240 F	1.0 L/ha	Maximum of 4 applications per season. If split application is used (0.5 L/ha), apply second application 10 to 14 days after the initial treatment for control of overwintering populations. Increased risk reduction measures expected by January 21, 2023.
	►	Altacor	28	35 WG	145-285 g/ha	Apply when overwintering larvae are active and before they roll up in leaves. Use the higher rate for greater pest populations. Do not make more than 3 applications per year.
	►	Exirel	28	100 SU	0.5-1.0 L/ha	Apply when overwintering larvae are active and before they roll up in leaves. Do not apply when bloom or flowering weeds are present. Do not make more than four applications per year. See label for incompatible products.
European Apple Sawfly		Assess need for pre-bloom treatment based on orchard history of damage.				
	►	Assail/Aceta	4	70 WP	120-240 g/ha	Use the higher rate for greater pest populations. Do not make more than four applications per year. Do not apply when bloom or flowering weeds are present.

Disease & Insect		Products	Group	Formulation	Rate	Notes
	►	Calypso	4	480 SC	290-440 mL/ha	Use the higher rate for greater pest populations and/or dense foliage. Do not make more than three applications per season.
	►	Cormoran	4A, 15		1.05-1.26 L/ha	Do not allow Cormoran to drift onto grapes as leaf spotting may occur.
	►	Delegate	5	25 WG	420 g/ha	Do not apply when bloom or flowering weeds are present. Do not make more than 3 applications per year.
	►	Altacor	28	35 WG	145-215 g/ha	Use the higher rate for greater pest populations. Do not make more than three applications per year.
	►	Exirel	28	100 SU	1 L/ha	Do not apply when bloom or flowering weeds are present. Do not make more than four applications per year. See label for incompatible products.
	►	Minecto Pro	28, 6	SC	496 mL/ha	
BLOOM						
Apple Scab		Use one of the fungicides listed under Green Tip. For all single site fungicides, include a protectant fungicide from Group M3 or M4 for resistance management.				
Insects		**DO NOT USE INSECTICIDES DURING BLOOM.**				
Mites		**DO NOT USE MITICIDES DURING BLOOM.**				
Pollination		Place bee hives (2-3 per hectare) in orchards at 10% bloom.				
Wild Apple Trees		Flag during bloom for removal to eliminate unmanaged hosts for diseases and pests (e.g. apple maggot).				
Fire Blight		Use Maryblyt™ or other prediction models to determine the risk of fire blight infections during the bloom period. See below for product choices when risk is high.				
	►	Kasumin	24	2 L	5 L/1,000 L	Apply prior to a wetting period when there is a high risk of blossom blight infection. Re-application may be needed if warm, wet conditions (>20ºC) prevail in days following application. Maryblyt™ can be used to determine re-application necessity. Do not apply more than four times per season. Do not apply after petal fall or with more than 1,000 L/ha of water.
	►	Streptomycin	25	17 WP	600 g/1,000 L	Apply prior to a wetting period when there is a high risk of blossom blight infection. Re-application may be needed if warm, wet conditions (>20ºC) prevail in days following application. Maryblyt™ can be used to determine re-application necessity. Do not apply more than three times per season.
LATE BLOOM/PETAL FALL						
Fire Blight	►	Apogee (suppression of shoot blight)	NC	27.5 WG	450 g/1,000 L	Apogee can effectively suppress shoot blight by reducing shoot growth when applied at the right timing. Apply at 2.5 to 5.0 cm of new shoot growth. Subsequent applications can be made at 14-21 day intervals to a maximum of 4 applications per season. A reduction in shoot growth may be undesirable for young orchards. Refer to the label for specific information on vegetative growth control.
PETAL FALL/CALYX						
Apple Scab		Use one of the following listed fungicides. **Do not use Sercadis, Scala, Nova, Fullback, or Aprovia Top after bloom for control of fruit scab or after primary scab is complete.** For all single site fungicides, include a protectant fungicide from Group M3 or M4 for resistance management.				
	►	Cueva	M2	1.8 S	0.5-2.0% solution	Do not exceed 1.0% solution on russet-sensitive varieties. Apply at 5-10 day intervals. Do not make more than 10 applications per year.
	►	Dithane	M3	75 DG	6.00 kg/ha	Not effective for control of most secondary diseases such as Black Rot & Bitter Rot. Transition to newly amended labels by November 19, 2022.
	►	Manzate	M3	75 DF	6.00 kg/ha	
	►	Penncozeb	M3	75 DF	2.00 kg/1,000 L	
	►	Maestro	M4	80 WSP	3.00 kg/ha	Not compatible with strongly alkaline materials. Do not use 7-14 days before or after an oil application. Use caution in tank-mixes with surfactants. Refer to re-entry intervals for specific activities (ranging from 2 to 24 days). If the REI for hand harvesting and the pre-harvest interval (PHI) are different, follow the longer of the two intervals. For high density, do not use more than 10 applications per year and for low density do not use more than 2 applications per year.
	►	Supra Captan	M	80 WSP	3.00 kg/ha	
	►	Folpan	M4	80 WDG	3.0-3.75 kg/ha	Treatments during the critical period (just before bloom until 30 days after petal fall) may cause russetting to sensitive varieties such as Golden Delicious, Red Delicious and Stayman Winesap. Do not use within 14 days of oil. Do not apply more than 6 applications per season. Note newly amended labels are effective January 23, 2022 including updated re-entry interval.

Disease & Insect	Products	Group	Formulation	Rate	Notes
	► Senator	1	50 SC	250 mL/1,000 L	Do not mix with lime or other alkaline materials. Not compatible with oil applications. Historically resistance has been an issue. Increased risk reduction measures expected by Dec 3, 2022.
	► Inspire Super	3, 9	SC	560-836 mL/ha	Apply at 7-10 day intervals from green tip to petal fall. Do not make more than two consecutive applications or more than four applications per year. Include a protectant fungicide from Group M3 or M4. Will also control Brooks Spot and Sooty Blotch/Flyspeck.
	► Aprovia Top	3, 7	EC	386-643 mL/ha	Apply at 7-10 day intervals from green tip. Use the higher rate and shorter interval when disease pressure is high. Do not make more than two consecutive applications or use more than 2.57 L/ha per year. Include a protectant fungicide from Group M3 or M4 for improved fruit scab control. Will also control powdery mildew, Brooks Spot and Sooty Blotch/Flyspeck.
	► Fontelis	7	200 SU	1.0-1.5 L/ha	Apply at 7-10 day intervals from green tip. Use the higher rate and shorter interval when disease pressure is high. Do not make more than two consecutive applications or use more than 4.5 L/ha per year. Will also control Powdery Mildew. Contains a mineral oil in the formulation that may cause issues in tank mixes.
	► Kenja	7	400 SC	0.913 L/ha	Apply at 10-14 day intervals from green tip. Use the higher rate and shorter interval when disease pressure is high. Do not make more than two consecutive applications or more than six applications per year.
	► Excalia	7	SC	146-219 mL/ha	Apply from green tip through petal fall at a retreatment interval of 10 days. Do not apply after petal fall due to PHI. Do not make more than two applications per year and/or more than 438 mL/ha per year.
	► Luna Tranquility	7, 9	SU	800 mL/ha	Apply at 7-14 day intervals from green tip. Do not make more than two consecutive applications or more than four applications per year. Include a protectant fungicide from Group M3 or M4. Will also control Powdery Mildew.
	► Pristine	7, 11	WG	1.0-1.2 kg/ha	Apply at 7-10 day intervals from green tip. Use the higher rate and shorter interval under high disease pressure. Do not make more than four applications per year. Will also control Powdery Mildew, Sooty Blotch/Flyspeck, and Brooks Spot.
	► Merivon	7, 11	SU	0.3-0.4 L product/ha	Apply at 7-14 day intervals. Use the higher rate and shorter interval under high disease pressure. Do not make more than four applications per year. Will also control apple scab. Caution should be exercised if MERIVON Fungicide is tank mixed with products formulated as emulsifiable concentrates (EC) or containing high amounts of solvents.
	► Flint	11	50 WG	140-175 g/ha	Apply at 7-10 day intervals from green tip. Use the higher rate and shorter interval under high disease pressure. Do not make more than two consecutive applications or more than four applications per year. Will also control Powdery Mildew and Sooty Blotch/Flyspeck. Include a protectant fungicide from Group M for resistance management.
	► Sovran	11	50 WG	180-360 g/ha	Apply at 7-14 day intervals from green tip. Use the higher rate and shorter interval under high disease pressure. Do not make more than two consecutive applications or more than four applications per year. Spray drift can be phototoxic to some sweet cherry cultivars. Will also control Powdery Mildew. Include a protectant fungicide from Group M for resistance management. Transition to newly amended labels by December 22, 2023.
	► Allegro	29	500 F	0.5-1.0 L/ha	Apply at 7-14 day intervals from green tip. Use the higher rate under high disease pressure. Do not make more than three consecutive applications or more than nine applications per year. Will also control Bitter Rot and Sooty Blotch/Flyspeck.
	► Serenade OPTI	BM02	WP	1.7-3.3 kg/ha	Suppression only. Apply preventatively at 7-10 day intervals. Use in conjunction with other cultural or chemical controls.
Powdery Mildew	Use one of the fungicides listed for Half-inch Green. Some Apple Scab fungicides also have activity on Powdery Mildew - refer to product label. Do not use Sercadis after petal fall.				
Winter Moth Fruitworms	Assess and refer to Best Management Practices for NS Apple Production by visiting www.perennia.ca > Agriculture > Commodity Information > Fruits > Tree Fruit. Use one of the treatments listed under Bud Separation.				
Apple Leafrollers	Assess at this time for Pale apple, Obliquebanded, Fruittree or Threelined leafroller. These leafrollers are often adequately controlled by treatments for other common insects at this time.				
	► Twinguard	4C, 5	WDG	250-500 g/ha	For the control of overwintering generation, apply when larvae are feeding, before they have rolled up in the leaves. Use the higher rate under high pressure. Do not apply when bloom or flowering weeds are present. Do not apply more than twice per year. Registered for obliquebanded and threelined leafroller only.
	► Delegate	5	25 WG	210-420 g/ha	Use the higher rate for greater pest populations. Do not make more than 3 applications per year.
	► Success	5	480 SC	182 mL/ha	Do not make more than 3 applications per year.
	► Entrust	5	80 WG	109 g/ha	Do not make more than 3 applications per year.

Disease & Insect		Products	Group	Formulation	Rate	Notes
	►	Dipel	11	2X DF	1.12-1.68 kg/ha	Best results if applications made in evening or on cloudy day.
	►	Bioprotec	11	CAF	4.0 L/ha	Best results if applications made in evening or on cloudy day.
	►	Foray	11	48 BA	2.8-4.0 L/ha	Apply when pests are actively feeding.
	►	XenTari	11	WG	500-1600 g/ha	Product must be consumed to be effective. Spray when and where pests are actively feeding. Apply to young larvae, early in infestation. Death of insect may take several days. Apply on cloudy days or in the evening.
	►	Confirm	18	240 F	1.0 L/ha	Maximum of 4 applications per season. If split application is used (0.5 L/ha), apply second application 10 to 14 days after the initial treatment. Increased risk reduction measures expected by January 21, 2023.
	►	Intrepid	18	240 F	750 mL/ha	Do not make more than 2 applications per year.
	►	Altacor	28	35 WG	145-285 g/ha	Use the higher rate for greater pest populations. Do not make more than three applications per year.
	►	Harvanta	28	50 SL	1.2-1.6 L/ha	Apply when overwintering larvae become active. Can also be used late in the growing season just prior to egg hatch. Toxic to bees. Avoid applying consecutively more than 2 times within a 30 day period.
	►	Exirel	28	100 SU	0.5-1.0 L/ha	Use the higher rate under high pressure. Do not apply when bloom or flowering weeds are present. Do not make more than four applications per year. See label for incompatible products.
	►	Vayego	28	200 SC	225 mL/ha	Apply only post-bloom for all labelled insect pests. For control of obliquebanded leafroller, monitor adult moth flight, and apply at first egg hatch. Do not make more than three applications per year and do not exceed 900 mL/ha per year.
	►	Minecto Pro	28, 6	SC	496 mL/ha	Apply when overwintering larvae become active. For summer generations, monitor adult moth flight, and apply at first egg hatch (170 to 240 degree days Celsius) after the first sustained moth catch. Toxic to bees. See product label for tank-mix restrictions.
Mites		Assess active mites and mite eggs on leaves. Treat only when thresholds are reached.				
	►	Acramite	UN	50 WS	568-851 g/ha	Apply lower rate for two-spotted spider mite and higher rate for European red mite. Do not make more than one application per year. Primarily active on motile stage of mites.
	►	Agri-Mek	6	8.4 SC	170 mL/ha	Applications of AGRI-MEK SC for spider mite control should be limited to a period extending from petal fall through six weeks following petal fall. May cause russeting on Golden Delicious and other light-skinned varieties. Do not apply with Captan/Maestro or within 14 days of a Captan/Maestro application. Do not make more than one application year year.
		+ Superior Oil	NC	70 EC	10-20 L/ha	
	►	Apollo	10	500 SC	300-600 mL/ha	Apply within 14 days of petal fall. Active on eggs or young motile stages. Not effective on adults. Do not make more than one application per year.
	►	Kanemite	20	15 SC	2.1 L/ha	Effective on all life stages of European red and two-spotted mites. Apply with a minimum of 1000 L of water/ha. Do not make more than two applications per year.
	►	Nexter	21	75 WP	300-600 g/ha	Apply lower rate for European red mite and higher rate for two-spotted spider mite. Effective on immature stages but not eggs of European red mite, two-spotted spider mite and apple rust mite.
	►	Envidor	23	240 SC	750 mL/ha	Apply with a minimum of 1,000 L of water/ha. Effective on eggs, all nymphal stages and adult females. Do not make more than one application per year. **Product being discontinued but is available for 2020 and 2021 seasons while replacement miticide options are evaluated.**
	►	Nealta	25	500 SC	1 L/ha	Apply with a minimum of 500 L/ha of water. Higher water volumes are recommended to ensure thorough coverage. Do not apply more than twice per season. Effective on all stages of European red mite, two-spotted spider mite, and McDaniel mite.
	►	Minecto Pro	28, 6	SC	496 mL/ha	Apply before a threshold of 5 mites/leaf is reached for best results. Residual spider mite control is greater from spray deposits on newer leaves compared to older. For best results, use product within petal fall to 6 weeks post-petal fall. Toxic to bees. See label for tank-mix restrictions.
Rosy Apple Aphid		Assess at this time. For more information visit www.perennia.ca > Agriculture > Commodity Information > Fruits > Tree Fruit.				
	►	Assail/Aceta	4	70 WP	80-120 g/ha	Use the higher rate for greater pest populations. Do not make more than four applications per year. Do not apply when bloom or flowering weeds are present.
	►	Calypso	4	480 SC	145-290 mL/ha	Use the higher rate for greater pest populations and/or dense foliage. Do not make more than three applications per season.
	►	Closer	4C	SC	100-200 mL/ha	Do not apply when bloom or flowering weeds are present. Do not make more than two applications per year.

Disease & Insect		Products	Group	Formulation	Rate	Notes
	►	Sivanto Prime	4D	200 S	500-750 mL/ha	Do not use more than 2.0 L/ha per year.
	►	Twinguard	4C, 5	WDG	250 g/ha	Do not apply when bloom or flowering weeds are present. Do not apply more than twice per year.
	►	Versys	9D		100 mL/ha	DO NOT make more than 2 sequential applications of insecticides with the same mode of action.
	►	Movento	23	240 SC	365-435 mL/ha	Do not apply when bloom or flowering weeds are present. Do not apply more than 1.83 L/ha per year. Control may not be visible for 2-3 weeks after treatment.
	►	Exirel	28	100 SU	1.5 L/ha	Do not apply when bloom or flowering weeds are present. Do not make more than four applications per year. See label for incompatible products.
	►	Beleaf	29	50 SG	120-160 g/ha	Allow a minimum of 7 days between applications. Do not apply more than 3 times per year.
Stinging Bugs		Assess as close to petal fall as possible. Consult with crop advisor as pesticides applied at this time of year for other pests may provide control of stinging bugs. Pyrethroids (Group 3) are disruptive to IPM programs leading to mite flare ups and therefore should be avoided if alternatives are available. Mako is somewhat less disruptive to predatory mites while Decis/Poleci is broad spectrum and one of the most powerful synthetic pyrethroids. Do not make more than three applications per year. Avoid applying synthetic pyrethroids when temperatures rise above 20°C because they are much less effective under these conditions. Do not apply when bloom is present.				
	►	Mako	3	400 EC	250 mL/ha	Apple brown bug, mullein bug. Make no more than 3 applications per year.
	►	Matador/ Warrior/ Silencer/ Labamba	3	120 EC	83 mL/ha	Apple brown bug. Apply at 7 day intervals. Do not make more than 3 applications per year. Increased risk reduction measures expected by April 29, 2023.
	►	Decis	3	5.0 EC	200 mL/ha (68 mL/1000 L of water)	Apple brown bug, mullein bug. Do not make more than 3 applications per year.
	►	Poleci	3	2.5 EC	400 mL/ha (136 mL/1000 L of water)	Apple brown bug, mullein bug. Do not make more than 3 applications per year.
	►	Assail/Aceta	4	70 WP	80-160 g/ha	Mullein bug. Will also control rosy and green aphids. Use the higher rate for greater pest populations. Do not make more than four applications per year. Do not apply when bloom or flowering weeds are present.
	►	Calypso/Theme	4	480 SC	145-290 mL/ha	Mullein bug. Will also control rosy and green aphids and white apple leafhopper. Use the higher rate for greater pest populations and/or dense foliage. Do not make more than three applications per season.
	►	Cormoran	4A, 15		1.05-1.26 L/ha	Do not allow Cormoran to drift onto grapes as leaf spotting may occur.
	►	Closer	4C	SC	400 mL/ha	Do not apply when bloom or flowering weeds are present. Do not make more than two applications per year.
	►	Twinguard	4C, 5	WDG	500 g/ha	Do not make more than two applications per year.
White Apple Leafhopper		Assess at this time. For more information visit www.perennia.ca > Agriculture > Commodity Information > Fruits > Tree Fruit.				
	►	Assail/Aceta	4	70 WP	80 g/ha	Do not make more than four applications per year. Do not apply when bloom or flowering weeds are present.
	►	Calypso/Theme	4	480 SC	145 mL/ha	Do not make more than three applications per season.
	►	Sivanto Prime	4D	200 S	500-750 mL/ha	Do not use more than 2.0 L/ha per year.
	►	Exirel	28	100 SU	0.75-1.5 L/ha	Do not apply when bloom or flowering weeds are present. Do not make more than four applications per year. See label for incompatible products. Use high rate under heavy pest pressure.
European Apple Sawfly		Treat as a special spray where there has been a history of damage. Apply as soon as petals have fallen. Use of the insecticides listed under Pink with the added option of using Vayego post-bloom.				

FIRST COVER (7-14 days after petal fall)	
Apple Scab	Use one of the recommended fungicides listed under Petal Fall/Calyx. Cueva may cause russeting of light skinned cultivars. **Do not use Sercadis, Scala, Nova, Fullback, Excalia or Aprovia Top after bloom for control of fruit scab or after primary scab is complete.** For all single site fungicides, include a protectant fungicide from Group M3 or M4 for resistance management.
Powdery Mildew	If history of high pressure, use one of the fungicides listed for 15 mm-Green to Tight Cluster. Some Apple Scab fungicides also have activity on Powdery Mildew - refer to product label. Do not use Sercadis after petal fall.
Codling Moth	Hang pheromone traps at this time (1 trap per 2 hectares). Approximate date June 10.
Mites	Assess mites and mite eggs on leaves. Treat only when thresholds are reached. Use one of the miticides listed under Petal Fall/Calyx.
Black Rot	Black rot often appears just before harvest when it is too late to manage the ongoing infections. Apply fungicides preventatively to blocks with a history of black rot infections, particularly during wet weather. Black rot products control scab but not all scab fungicides control black rot.

Disease & Insect	Products	Group	Formulation	Rate	Notes
	► Folpan/Follow	M4	80 WDG	3.0-3.75 kg/ha	Treatments during the critical period (just before bloom until 30 days after petal fall) may cause russetting to sensitive varieties such as Golden Delicious, Red Delicious and Stayman Winesap. Do not use within 14 days of oil. Do not apply more than 6 applications per season. Note newly amended labels are effective January 23, 2022 including updated re-entry interval.
	► Maestro	M4	80 WSP	3.00 kg/ha	Not compatible with strongly alkaline materials. Do not use 7-14 days before or after an oil application. Use caution in tank-mixes with surfactants. Refer to re-entry intervals for specific activities (ranging from 2 to 24 days). If the REI for hand harvesting and the pre-harvest interval (PHI) are different, follow the longer of the two intervals. For high density, do not use more than 10 applications per year and for low density do not use more than 2 applications per year.
	► Supra Captan	M	80 WSP	3.00 kg/ha	
	► Pristine	7, 11	WG	1.0-1.2 kg/ha	Apply at 7-10 day intervals from green tip. Use the higher rate and shorter interval under high disease pressure. Do not make more than four applications per year.
	► Merivon	7, 11	SU	0.3-0.4 L product/ha	Apply at 7-14 day intervals. Use the higher rate and shorter interval under high disease pressure. Do not make more than four applications per year. Will also control apple scab. Caution should be exercised if MERIVON Fungicide is tank mixed with products formulated as emulsifiable concentrates (EC) or containing high amounts of solvents.
SECOND COVER					
Apple Scab	Use one of the recommended fungicides listed under Petal Fall/Calyx. Cueva may cause russeting of light skinned cultivars. **Do not use Sercadis, Scala, Nova, Fullback, Excalia or Aprovia Top after bloom for control of fruit scab or after primary scab is complete**. For all single site fungicides, include a protectant fungicide from Group M3 or M4 for resistance management.				
Codling Moth	Monitor trap captures and if captures warrant, use one of the recommended insecticides listed below according to degree day model timing provided in Orchard Outlook.				
	► Imidan	1B	70 WP	2.68 kg/ha	Target 3% egg hatch based on 140 degree days after the biofix date. Do not make more than five applications per year. Transition to newly amended labels by October 30, 2022.
	► Danitol	3	EC	779-1559 mL/ha	Do not exceed 1 application per year or 1559 mL/ha total application of Danitol per year. Pyrethroids (Group 3) are disruptive to IPM programs leading to mite flare ups and therefore should be avoided if alternatives are available.
	► Assail/Aceta	4	70 WP	120-240 g/ha	Apply at 100 degree days after the biofix date. Use the higher rate for greater pest populations. Do not make more than four applications per year.
	► Calypso/Theme	4	480 SC	290-440 mL/ha	Apply just prior to first generation egg hatch (80-100 degree days after the biofix date). Use the higher rate for greater pest populations. Do not make more than three applications per year.
	► Cormoran	4A, 15		1.05-1.26 L/ha	Do not allow Cormoran to drift onto grapes as leaf spotting may occur.
	► TwinGuard	4C, 5	WDG	500 g/ha	Apply at 100 degree days after the biofix date. Do not make more than two applications per year.
	► Delegate	5	25 WG	420 g/ha	Apply at 100 degree days after the biofix date. Do not make more than three applications per year.
	► XenTari	11	WG	500-1600 g/ha	Product must be consumed to be effective. Spray when and where pests are actively feeding. Apply to young larvae, early in infestation. Death of insect may take several days. Apply on cloudy days or in the evening.
	► Rimon	15	10 EC	0.93-1.4 L /1,000 L	Apply at 100 degree days after biofix date just prior to or after egg laying. Do not make more than four applications per year. See label for adjusting rates based upon volume of water per hectare.
	► Confirm	18	240 F	1.0 L/ha	Apply at 100 degree days after biofix date. Do not make more than four applications per year. Increased risk reduction measures expected by January 21, 2023.
	► Intrepid	18	240 F	1.0 L/ha	Apply at 80-110 degree days after the biofix date. Do not make more than two applications per year.
	► Altacor	28	35 WG	145-215 g/ha	Apply just prior to first generation egg hatch (80-100 degree days after the biofix date). Use the higher rate for greater pest populations. Do not make more than three applications per year.
	► Exirel	28	100 SU	0.5-0.75 L/ha	Apply just prior to first generation egg hatch (80-110 degree days after the biofix date). Do not make more than four applications per year. See label for incompatible products.
	► Vayego	28	200 SC	225 mL/ha	Apply only post-bloom for all labelled insect pests. Apply before first egg hatch (80-110 degree days Celsius after biofix date). Do not make more than three applications per year and do not exceed 900 mL/ha per year.
	► Harvanta	28	50 SL	1.2-1.6 L/ha	Make first application just prior to or at the beginning of egg hatch. Reapply in 10-14 days if required. Do not apply group 28 insecticides more than 2 times within a single generation (30-day period). Do not make more than five applications per year.
	► Minecto Pro	28, 6	SC	496 mL/ha	Apply before egg hatch at 80-110 days after biofix. Toxic to bees. See label for tank-mix restictions.

Disease & Insect		Products	Group	Formulation	Rate	Notes
	►	CYD-X	NC	SU	250 mL/ha	May provide control of codling moth when used in conjunction with other active ingredients. Virus must be ingested to be effective. After death, larvae will disintegrate and release new viral bodies which may infect other codling moth larvae. Apply in late afternoon or on a cloudy day to avoid exposure to sunlight. Reapply every 7-14 days. Target early egg hatch
	►	Virosoft CP-4	NC	SU	250 mL/ha	Initiate application just prior to egg hatch. Apply at 7-14 day intervals. Do not apply more than twice per pest generation. Apply in late afternoon or on a cloudy day to avoid exposure to sunlight.
THIRD COVER						
Apple Scab		Use one of the fungicides listed under Petal Fall/Calyx. **Do not use Sercadis, Scala, Nova, Fullback, Excalia or Aprovia Top after bloom for control of fruit scab or after primary scab is complete.** Depending on primary scab season length and freedom from primary infections, reduced rates of fungicides from classes M3 and M4 may be used. Inspect orchards for primary scab and refer to label instructions before reducing rates of these fungicides.				
Apple Maggot		Hang traps in early July. Monitoring traps will determine when first maggot flies appear and when control is needed. It is recommended that yellow cards be replaced after 30 days of field exposure. Treatment is recommended 7 days after the first adult is caught on a yellow card.				
	►	Imidan	1B	70 WP	2.68 kg/ha	Do not make more than five applications per year. Transition to newly amended labels by October 30, 2022.
	►	Danitol	3	EC	779-1559 mL/ha	Do not exceed 1 application per year or 1559 mL/ha total application of Danitol per year. Pyrethroids (Group 3) are disruptive to IPM programs leading to mite flare ups and therefore should be avoided if alternatives are available.
	►	Assail/Aceta	4A	70 WP	120-240 g/ha	Use the higher rate for greater pest populations. Do not make more than four applications per year.
	►	Calypso/Theme	4A	480 SC	440 mL/ha	Use the higher rate for greater pest populations. Do not make more than three applications per year.
	►	Cormoran	4A, 15	EC	1050-1260 mL/ha	Maximum of 2 applications of products from Group 4A per season. Do not allow Cormoran to drift onto grapes as leaf spotting may occur.
	►	Delegate	5	25 WG	420 g/ha	Do not make more than 3 applications per year.
	►	Exirel	28	100 SU	1.0-1.5 L/ha	Use the higher rate for greater pest populations. Do not make more than four applications per year. See label for incompatible products.
Mites		Assess mites and mite eggs on leaves. Treat only when thresholds are reached. Use one of the miticides listed under Petal Fall/Calyx.				
Obliquebanded Leafroller		Assess larval population. If treatment is required, use one of the leafroller products listed under Petal Fall/Calyx with the added option of using Vayego post-bloom.				
Codling Moth		Generally, a second treatment is only needed after 10 or more moths have been trapped following the first treatment. If a second application is needed, use one of the insecticides listed under Second Cover after 10-14 days from initial treatment. Any treatments made at the same timing for apple maggot would also control codling moth.				
FOURTH COVER						
Apple Scab		Use one of the fungicides listed under Petal Fall/Calyx. **Do not use Sercadis, Scala, Nova, Fullback, Excalia or Aprovia Top after bloom for control of fruit scab or after primary scab is complete.** Depending on primary scab season length and freedom from primary infections, reduced rates of fungicides from classes M3 and M4 may be used. Inspect orchards for primary scab and refer to label instructions before reducing rates of these fungicides.				
Sooty Blotch **Fly Speck**		If sooty blotch or fly speck has been a problem, use a fungicide that controls apple scab as well as sooty blotch and fly speck, if possible.				
Apple Maggot		Clean out or replace traps after first treatment. When using Imidan make additional applications based on monitoring trap captures. For all other products, maintain pesticide residues until egg laying activities are finished (usually by end of August). Use one of the insecticides listed under Third Cover.				
Mites		Assess mites and mite eggs on leaves. Treat only when thresholds are reached. Use one of the miticides listed under Third Cover.				
White Apple Leafhopper		Asses at this time. Treat when population reaches an average of one nymph per leaf based on a 100 leaf count. Use one of the insecticides listed under Petal Fall/Calyx.				
Potato Leafhopper		Potato leafhoppers do not overwinter in Nova Scotia but they are carried to us each year on warm wind currents. Potato leafhoppers can transmit fire blight. Their presence in young plantings and nurseries is concerning, especially in areas of active fire blight infections.				
	►	Assail/Aceta	4	70 WP	80 g/ha	Do not make more than four applications per year.
	►	Calypso	4	480 SC	145 mL/ha	Do not make more than three applications per season.
	►	Cormoran	4A, 15	EC	700 mL/ha	Maximum of 2 applications of products from Group 4A per season. Do not allow Cormoran to drift onto grapes as leaf spotting may occur.
	►	Sivanto Prime	4D	200 S	500-750 mL/ha	Do not use more than 2.0 L/ha per year.

Disease & Insect		Products	Group	Formulation	Rate	Notes
AUGUST TO NOVEMBER						
Leaf Tissue Analysis		Collect tissue samples for nutrient analysis the first week of August or when terminal growth has completed for the season.				
Phytophthora crown or root rot	►	Aliette	P7	WDG	3-5 kg/ha	Apply as foliar spray only. Apply from tight cluster to pink and again 6 weeks later when there is enough leaf area to take up the spray. Treat again after harvest.
Storage Rots		Consider a preharvest application of fungicide if storage rots have been a problem in the past. Use one of the fungicides listed under Petal Fall/Calyx with activity on secondary diseases.				
Postharvest Dip for Rot	►	Mertect	1	SC	1 L/1,000 L	Post-harvest dip.
	►	Scholar	12	230 SC	496 mL/378 L	Post-harvest dip or drench.
Mice/Voles		Assess and treat when populations warrant.				
	►	Ramik Brown			2 X 11 kg/ha	Apply after harvestable fruit has been removed. Commence baiting in late fall before first snowfall. Make two applications at 11 kg/ha 20-40 days apart, no later than March 1st. Post areas. Make inaccessible to children, pets and wildlife.
	►	Rozol			12.5 kg/ha	Apply after harvestable fruit has been removed. Commence baiting in late fall before first snowfall. A second application can be made 20-60 days later if populations warrant.
	►	Zinc Phosphide Bait			4.5-9.0 kg/ha	Apply in early fall or prior to snow. Base broadcast rate on infestation levels, or use 25 bait stations/ha of 15 g each.

Additions for Non-Bearing Orchard

Additional products for pest management in non-bearing apple orchards.

Disease & Insect		Products	Group	Formulation	Rate	Notes
Phytophthora crown or root rot		Required only if phtophthora is a concern based on historical observations and/or laboratory analysis.				
	►	Ridomil Gold	4	480 SL	1 mL/tree in 5 L of water	Nonbearing only. Apply using handgun to drench trunk and soil surrounding tree. Apply before new growth begins as a thorough drench to soil around base of tree. Do not apply as a foliar spray.
Nematodes		Sites with sandy soils are more prone to nematodes but clay and clay-loam soils should still be tested. Sample for nematode presence and density by collecting root or soil samples from an orchard block. Refer to Apple Replant Disease in Nova Scotia by visiting www.perennia.ca > Agriculture > Commodity Information > Fruits > Tree Fruit > Perennia Publication and Fact Sheets.				
	►	Vydate	1A	L	1.25 L Vydate/1000 L water. Drench 3.5 to 10 L/tree.	Nonbearing only. Very toxic to the applicator. Apply in spring just as active root and green leaf growth commences on young whips and non-bearing trees already established. Temperatures should be over 7°C. Do not apply to trees under water stress or if not actively growing. Do not dip nursery stock.
	►	Vydate	1A	L	4.1 to 7 L Vydate/1000 L water. Apply as a dilute spray.	Nonbearing only. Very toxic to the applicator. For best results apply a foliar spray in addition to a soil drench. Do not apply more than 7 litres Vydate Nematicide/ Insecticide per hectare in one application. Apply first spray at first full leaf or when plants are in a period of active growth. Apply on a 2-3 week schedule for a total of three applications. Do not apply to plants under water stress or to plants not actively growing. This treatment will also control insect pests present at time of spraying. The maximum application rate is 1.68 kg active ingredient/ha for foliar application of Oxamyl on non-bearing apple trees.
	►	Velum Prime	7	SC	500 mL/ha	Apply specified dosage by chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment. For optimum results, apply to newly planted trees or those previously trained to drip, trickle or micro- sprinkler irrigation. Soil must be lightly pre-wetted prior to application. Do not apply more than 500 g fluopyram/ha per year, noting that the foliar fungicide Luna Tranquility also contains fluopyram.

7. Overview of Pear Pest Management

Stage	Problem	Management Options			
		Monitoring	Physical Control	Chemical Control	Other
April	Pear Psylla Pear Leaf Blister Mite	x	x x	x x	
Swollen Bud	Pear Scab Pear Psylla	 x	 x	x x	
Bud Burst to Tight Cluster	Pear Scab			x	
White Bud	Pear Scab Winter Moth Fruitworm	 x x		x x x	
Bloom	Pear Scab Pollination			x	 x
Calyx	Pear Scab Winter Moth Fruitworm Plum Curculio European Red Mite	 x x x x		x x x x x	
First Cover	Pear Scab Pear Psylla Pear Rust Mite European Red Mite Pear Leaf Blister Mite Codling Moth	x x x x x x		x x x x x	
Cover Sprays	Pear Scab Pear Psylla Pear Rust Mite European Red Mite Twospotted Spider Mite Codling Moth	x x x x x x		x x x x x x	
Early August	Soil & Leaf Analysis	x			
Late August	Storage Rots			x	
Pre Harvest	Fruit Injury	x			
Post Harvest	Storage Rots Mice	 x	 x	x x	

9. Pear Bud Growth Stages

1. DORMANT

2. SWOLLEN BUD

3. BUD BURST

4. TIGHT CLUSTER

5. WHITE BUD

6. BLOOM

7. PETAL FALL-CALYX

8. FRUIT SET

10. Pear Orchard Calendar

A guide to insect, mite, and disease management in pear orchards

Please note: Red text is new to this guide in 2021 and/or serves as an alert.

All rates are per hectare of mature ("standard") trees or full dilute volume of about 3,370 litres of water/ha unless specified as 1,000 L. To adjust for smaller trees and higher density plantings, refer to Tree Row Volume factsheet.
All rates are based on label rates. In some cases, reduced rates can be used based on factors other than tree size. Please refer to specific notes or your agricultural advisor for details.
Always read the label before using any pesticide. Where differences between the label and this schedule occur, label information prevails.
Solupacks - Many pesticides have been packed into solupacks. Be aware that these may not dissolve properly in the presence of oil, boron or chlorine in the spray tank.

Disease & Insect		Products	Group	Formulation	Rate	Notes
DORMANT						
Pear Psylla		Start checking in early April when day time temperatures are near 10ºC for the presence of adults and egg laying activity. Oil application will also impact populations of European red mite.				
	►	Superior Oil	NC	70 EC	20 L/1,000 L 60 L/ha	Apply late dormant season when first adults are observed on a sunny day. Good coverage is essential; use a minimum of 1000 L of water per hectare. 2,000-3,000 L of water will provide the best results. Check 10 to 14 days following treatment for signs of new egg laying and the need to apply a second treatment. Pear leaf blister mite would also be controlled. Do not use within 14 days of Supra Captan or Maestro and refer to label for additional precautions.
	►	Purespray Green Spray Oil	NC	13 E	20 L/1,000 L 60 L/ha	
SCALE SEPARATION/GREEN TIP						
Pear Scab		Use one of the following listed fungicides. Check fungicide compatibility with oil treatments for pear psylla and mites. For all single site fungicides, include a protectant fungicide from Group M3 or M4 for resistance management.				
	►	Cueva	M2	1.8 S	0.5-2.0% solution	Do not exceed 1.0% solution on russet-sensitive varieties. Apply at 5-10 day intervals. Do not make more than 10 applications per year.
	►	Supra Captan	M	80 WSP	3.00 kg/ha	Not compatible with strongly alkaline materials. Do not use 7-14 days before or after an oil application. Do not use on d'Anjou pears. Refer to re-entry intervals for specific activities (ranging from 2 to 24 days). If the REI for hand harvesting and the pre-harvest interval (PHI) are different, follow the longer of the two intervals. For high density, do not use more than 10 applications per year and for low density do not use more than 2 applications per year.
	►	Maestro	M4	80 WSP	3.00 kg/ha	
	►	Senator	1	50 SC	250 mL/1,000 L	Must be mixed with Captan for resistance management. Do not mix with lime or other alkaline materials. Not compatible with oil applications. Do not use on d'Anjou pears. Increased risk reduction measures expected by Dec 3, 2022.
	►	Inspire Super	3, 9	SC	560-836 mL/ha	Apply at 7-10 day intervals from green tip to petal fall. Do not make more than two consecutive applications or more than four applications per year. Include a protectant fungicide from Group M3 or M4.
	►	Aprovia Top	3, 7	EC	386-643 mL/ha	Apply at 7-10 day intervals from green tip. Use the higher rate and shorter interval when disease pressure is high. Do not make more than two consecutive applications or use more than 2.57 L/ha per year. Include a protectant fungicide from Group M3 or M4 for improved fruit scab control.
	►	Fontelis	7	200 SU	1.0-1.5 L/ha	Apply at 7-10 day intervals from green tip. Use the higher rate and shorter interval when disease pressure is high. Do not make more than two consecutive applications or use more than 4.5 L/ha per year.
	►	Sercadis	7	300 SU	300 mL/ha	Apply at 7-14 day intervals from green tip. Do not make more than two consecutive applications or more than four applications per year.
	►	Luna Tranquility	7, 9	SU	800 mL/ha	Apply at 7-14 day intervals from green tip. Do not make more than two consecutive applications or more than three applications per year.
	►	Pristine	7, 11	WG	1.0-1.2 kg/ha	Apply at 7-10 day intervals from green tip. Use the higher rate and shorter interval under high disease pressure. Do not make more than four applications per year.
	►	Merivon	7, 11	SU	0.3-0.4 L product/ha	Apply at 7-14 day intervals. Use the higher rate and shorter interval under high disease pressure. Do not make more than four applications per year. Caution should be exercised if MERIVON Fungicide is tank mixed with products formulated as emulsifiable concentrates (EC) or containing high amounts of solvents. For pears, DO NOT use MERIVON Fungicide with horticultural mineral oil as crop response to foliage and/or fruit can occur under certain conditions.

Disease & Insect		Products	Group	Formulation	Rate	Notes
	►	Scala	9	400 SC	0.75-1.0 L/ha	Apply at 7-12 day intervals from green tip to petal fall. Do not apply post bloom. Do not make more than four applications per year.
	►	Flint	11	50 WG	140-175 g/ha	Apply at 7-10 day intervals from green tip. Use the higher rate and shorter interval under high disease pressure. Do not make more than two consecutive applications or more than four applications per year.
	►	Sovran	11	50 WG	240-360 g/ha	Apply at 7-14 day intervals from green tip. Use the higher rate and shorter interval under high disease pressure. Do not make more than two consecutive applications or more than four applications per year. Spray drift can be phototoxic to some sweet cherry cultivars.
	►	Serenade OPTI	BM02	WP	1.7-3.3 kg/ha	Suppression only. Apply preventatively at 7-10 day intervals. Use in conjunction with other cultural or chemical controls.
	►	Syllit + Captan	U12 M4	400 FL 80 WDG	1.75-3.65 L/ha 2.8 kg/ha	Apply at 7 day intervals from green tip. Use the higher rate under high disease pressure. Not compatible with oil applications. Do not use on d'Anjou pears.
	►	Equal	U12	65 WP	2.25-3.25 kg/ha	Apply high rate at first application timing, reduce to low rate for subsequent applications at 7 day intervals as needed.
Nematodes	►	Velum Prime	7	SC	500 mL/ha	Apply specified dosage by chemigation into root-zone through low-pressure drip, trickle, micro-sprinkler or equivalent equipment. For optimum results, apply to trees previously trained to drip, trickle or micro- sprinkler irrigation. Young trees have the most potential benefit. Soil must be lightly pre-wetted prior to application. Do not apply more than 500 g fluopyram/ha per year, noting that the foliar fungicide Luna Tranquility also contains fluopyram.
BLOSSOM BUD EXPOSED TO TIGHT CLUSTER						
Pear Scab		Use one of the fungicides listed under Scale Separation/Green Tip. Check fungicide compatibility with oil treatments for pear psylla and mites.				
FULL WHITE						
Pear Scab		Use one of the fungicides listed under Scale Separation/Green Tip.				
Winter Moth and Fruit Worm		Assess larvae at this stage and for more information visit www.perennia.ca > Agriculture > Commodity Information > Fruits > Tree Fruit. Use one of the following insecticides if treatment is required.				
	►	Imidan	1B	70 WP	2.68 kg/ha	Do not mix with alkaline materials. Do not make more than five applications per year. Transition to newly amended labels by October 30, 2022.
	►	Danitol	3	EC	779-1559 mL/ha	For control of green fruitworm. Do not exceed 1 application per year or 1559 mL/ha total application of Danitol per year. Pyrethroids (Group 3) are disruptive to IPM programs leading to mite flare ups and therefore should be avoided if alternatives are available.
	►	Dipel	11	2X DF	1.1-1.7 kg/ha	Best results are obtained when applied in the evening or on cloudy days. Two applications 5-7 days apart may be required to obtain control.
	►	Bioprotec PLUS	11	SU	1.8-2.5 L/ha	Product must be consumed by the target insect to be effective. Apply in a high- volume spray to young larvae, early in infestation. Best results are obtained when applied in the evening or on cloudy days. Two applications 5-7 days apart may be required to obtain control.
	►	Altacor	28	35 WG	145-215 g/ha	For control of green fruitworm. Use the higher rate for greater pest populations. Do not make more than 3 applications per year.
BLOOM						
Fire Blight		Use Maryblyt™ or other prediction models to determine the risk of fire blight infections during the bloom period. See below for product choices when risk is high.				
	►	Copper Spray Fungicide	M2	50 WP	2.2 kg/ha	To reduce blossom infection, apply 2.2 kg per 1000 L per hectare when blossoms open. In case of hail damage, immediately repeat this treatment. Do not apply on Anjou. Apply a maximum of 10 applications per year, leaving a minimum of 5 days between applications.
	►	Kasumin	24	2 L	5 L/1,000 L	Apply prior to a wetting period when there is a high risk of blossom blight infection. Re-application may be needed if warm, wet conditions (>20ºC) prevail in days following application. Maryblyt™ can be used to determine re-application necessity. Do not apply more than four times per season. Do not apply after petal fall or with more than 1,000 L/ha of water.
	►	Streptomycin	25	17 WP	600 g/1,000 L	Apply prior to a wetting period when there is a high risk of blossom blight infection. Re-application may be needed if warm, wet conditions (>20ºC) prevail in days following application. Maryblyt™ can be used to determine re-application necessity. Do not apply more than three times per season.
Pear Scab		Use one of the fungicides listed under Scale Separation/Green Tip.				

Disease & Insect		Products	Group	Formulation	Rate	Notes
Insects		**DO NOT USE INSECTICIDES DURING BLOOM.**				
Pollination		Pear bloom is not highly attractive to bees therefore the number of hives per hectare should be high (3-4 per hectare) and should be placed in the orchard at 25% bloom.				
PETAL FALL/CALYX						
Pear Scab		Use one of the following listed fungicides. For all single site fungicides, include a protectant fungicide from Group M3 or M4 for resistance management.				
	►	Cueva	M2	1.8 S	0.5-2.0% solution	Do not exceed 1.0% solution on russet-sensitive varieties. Apply at 5-10 day intervals. Do not make more than 10 applications per year.
	►	Supra Captan	M	80 WSP	3.00 kg/ha	Not compatible with strongly alkaline materials. Do not use 7-14 days before or after an oil application. Do not use on d'Anjou pears. Refer to re-entry intervals for specific activities (ranging from 2 to 24 days). If the REI for hand harvesting and the pre-harvest interval (PHI) are different, follow the longer of the two intervals. For high density, do not use more than 10 applications per year and for low density do not use more than 2 applications per year.
	►	Maestro	M4	80 WSP	3.00 kg/ha	
	►	Senator	1	50 SC	250 mL/1,000 L	Must be mixed with Captan for resistance management. Do not mix with lime or other alkaline materials. Not compatible with oil applications. Do not use on d'Anjou pears. Increased risk reduction measures expected by Dec 3, 2022.
	►	Inspire Super	3, 9	SC	560-836 mL/ha	Apply at 7-10 day intervals from green tip to petal fall. Do not make more than two consecutive applications or more than four applications per year. Include a protectant fungicide from Group M3 or M4.
	►	Aprovia Top	3, 7	EC	386-643 mL/ha	Apply at 7-10 day intervals from green tip. Use the higher rate and shorter interval when disease pressure is high. Do not make more than two consecutive applications or use more than 2.57 L/ha per year. Include a protectant fungicide from Group M3 or M4 for improved fruit scab control.
	►	Fontelis	7	200 SU	1.0-1.5 L/ha	Apply at 7-10 day intervals from green tip. Use the higher rate and shorter interval when disease pressure is high. Do not make more than two consecutive applications or use more than 4.5 L/ha per year.
	►	Sercadis	7	300 SU	300 mL/ha	Apply at 7-14 day intervals from green tip. Do not make more than two consecutive applications or more than four applications per year.
	►	Luna Tranquility	7, 9	SU	800 mL/ha	Apply at 7-14 day intervals from green tip. Do not make more than two consecutive applications or more than three applications per year.
	►	Pristine	7, 11	WG	1.0-1.2 kg/ha	Apply at 7-10 day intervals from green tip. Use the higher rate and shorter interval under high disease pressure. Do not make more than four applications per year.
	►	Merivon	7, 11	SU	0.3-0.4 L product/ha	Apply at 7-14 day intervals. Use the higher rate and shorter interval under high disease pressure. Do not make more than four applications per year. Caution should be exercised if MERIVON Fungicide is tank mixed with products formulated as emulsifiable concentrates (EC) or containing high amounts of solvents. For pears, DO NOT use MERIVON Fungicide with horticultural mineral oil as crop response to foliage and/or fruit can occur under certain conditions.
	►	Flint	11	50 WG	140-175 g/ha	Apply at 7-10 day intervals from green tip. Use the higher rate and shorter interval under high disease pressure. Do not make more than two consecutive applications or more than four applications per year.
	►	Sovran	11	50 WG	180-360 g/ha	Apply at 7-14 day intervals from green tip. Use the higher rate and shorter interval under high disease pressure. Do not make more than two consecutive applications or more than four applications per year. Spray drift can be phototoxic to some sweet cherry cultivars.
	►	Syllit	U12	400 FL	1.75-3.65 L/ha	Apply at 7 day intervals from green tip. Use the higher rate under high disease pressure. Not compatible with oil applications. Do not use on d'Anjou pears.
		+ Captan	M4	80 WDG	2.8 kg/ha	
	►	Equal	U12	65 WP	2.25-3.25 kg/ha	Apply high rate at first application timing, reduce to low rate for subsequent applications at 7 day intervals as needed.
		+ Captan	M4	80 WDG	2.8 kg/ha	
Winter Moth and Green Fruitworm		Assess and refer to Best Management Practices for NS Apple Production by visiting www.perennia.ca > Agriculture > Commodity Information > Fruits > Tree Fruit. Use one of the treatments listed under Bud Separation.				
Pear Psylla		Monitor populations and use one of the following listed insecticides if treatments are needed.				
	►	Matador/ Warrior/ Silencer/ Labamba	3	120 EC	83 mL/ha	Increased risk reduction measures expected by April 29, 2023.

Disease & Insect		Products	Group	Formulation	Rate	Notes
	►	Pounce	3	384 EC	520 mL/ha	
	►	Mako	3	400 EC	250 mL/ha	Pyrethroids (Group 3) are disruptive to IPM programs leading to mite flare ups and therefore should be avoided if alternatives are available. Mako is somewhat less disruptive to predatory mites while Decis is broad spectrum and one of the most powerful synthetic pyrethroids. Do not make more than three applications per year. Avoid applying synthetic pyrethroids when temperatures rise above 20°C because they are much less effective under these conditions. Do not apply when bloom is present. Repeat applications of Ambush not recommended due to severe impact on beneficial arthropods.
	►	Decis	3	5.0 EC	350 mL/ha	
	►	Poleci	3	2.5 EC	700 mL/ha (236 mL/1000 L of water)	
	►	Ambush	3	500 EC	400 mL/ha	
	►	Assail/Aceta	4	70 WP	80-160 g/ha	Use the higher rate under heavy pressure. Do not make more than four applications per year. Do not apply when bloom or flowering weeds are present.
	►	Calypso/Theme	4	480 SC	290-440 mL/ha	Apply when population is at early instar stage. Will also control plum curculio at this time. Use higher rate when pest pressure is high. Do not make more than three applications per year.
	►	Agri-Mek	6	8.4 SC	170-340 mL/ha	May cause injury to d'Anjou and other sensitive varieties. Do not use within 14 days of a Captan or Maestro application. Do not make more than two applications per year. Apply with a minimum of 1,000 L of water per hectare. Will also control mites. Best efficacy close to petal fall.
		+ Superior Oil	NC	70 EC	10-20 L/ha	
	►	Nexter	21	75 WP	600-720 g/ha	Do not make more than two applications per year. Will also control mites.
	►	Movento	23	240 SC	365-435 mL/ha	Do not use more than 1.8 L/ha per year. Must be tank mixed with an adjuvant. Do not apply once fruit has formed to avoid fruit damage. Do not apply when bloom or flowering weeds are present.
	►	Minecto Pro	28, 6	SC	496-1000 mL/ha	Tank mix with 0.25-1% spray oil. See label for tank-mix restrictions. If monitoring indicates, second application may be made 21 days later.
Plum Curculio		Monitor pest pressure. Use one of the following insecticides if treatments are required. Treatments may also control apple curculio.				
	►	Calypso/Theme	4	480 SC	290-440 mL/ha	Apply when population is at early instar stage. Will also control pear psylla at this time. Use higher rate when pest pressure is high. Do not make more than three applications per year.
	►	Twinguard	4C, 5	WDG	500 g/ha	Do not make more than two applications per year. Do not apply when bloom or flowering weeds are present.
	►	Harvanta	28	50 SL	1.2-1.6 L/ha	Suppression only. Avoid applying twice consecutively in a 30 day period, or within a single pest generation.
	►	Exirel	28	100 SU	1.0-1.5 L/ha	Do not make more than four applications per year. See label for incompatible products. Do not apply when bloom or flowering weeds are present.
	►	Minecto Pro	28, 6	SC	741-919 mL/ha	Tank mix with 0.25-1% spray oil. See label for tank-mix restrictions.
Mites		Assess mites and mite eggs on leaves. Treat only when thresholds are reached. Use one of the miticides listed below.				
	►	Agri-Mek	6	8.4 SC	170-340 mL/ha	May cause injury to d'Anjou and other sensitive varieties. Do not use within 14 days of a Captan or Maestro application. Do not make more than two applications per year. Apply with a minimum of 1,000 L of water per hectare. Will also control mites. Best efficacy close to petal fall.
		+ Superior Oil	NC	70 EC	10-20 L/ha	
	►	Apollo	10	500 SC	300-600 mL/ha	Apply within 14 days of petal fall. Active on eggs or young motile stages. Not effective on adults. Do not make more than one application per year. Will not control pear rust mite.
	►	Kanemite	20	15 SC	2.1 L/ha	Effective on all life stages of European red and two-spotted mites. Apply with a minimum of 1000 L of water/ha. Do not make more than two applications per year. Will not control pear rust mite.
	►	Nexter	21	75 WP	300-600 g/ha	Apply lower rate for European red mite and higher rate for two-spotted spider mite. Effective on immature stages but not eggs of European red mite, two-spotted spider mite and pear rust mite.
	►	Envidor	23	240 SC	750 mL/ha	Apply with a minimum of 1,000 L of water/ha. Effective on eggs, all nymphal stages and adult females. Do not make more than one application per year. Will control pear rust mite. Product being discontinued but is available for 2020 and 2021 seasons while replacement miticide options are evaluated.
	►	Nealta	25	500 SC	1 L/ha	Apply with a minimum of 500 L/ha of water. Higher water volumes are recommended to ensure thorough coverage. Do not apply more than twice per season. Effective on all stages of European red mite, two-spotted spider mite, and McDaniel mite. Is not effective on rust mites.
	►	Minecto Pro	28, 6	SC	496-1000 mL/ha	Tank mix with 0.25-1% spray oil. See label for tank-mix restrictions. For best results, apply before a threshold of 5 spider mites per leaf is reached. Residual spider mite control is greater from spray deposits on newer leaves than older leaves. A second application may be made at a 21 day interval if monitoring indicates.

Disease & Insect	Products	Group	Formulation	Rate	Notes
FIRST COVER (7-14 days after petal fall)					
Pear Scab	Use one of the fungicides listed under Petal Fall/Calyx.				
Pear Psylla	Assess and use one of the insecticides listed under Petal Fall/Calyx if treatment is required.				
European Red and Pear Rust Mite	Assess mites and mite eggs on leaves. Treat only when thresholds are reached. Use one of the miticides under Petal Fall/Calyx.				
Pear Leaf Blister Mite	Monitor populations and consult crop advisor if treatment may be needed.				
Codling Moth	Hang pheromone traps at this time (1 trap per 2 hectares). Approximate date June 10.				
COVER SPRAYS					
Pear Scab	Use one of the fungicides listed under Petal Fall/Calyx.				
Pear Psylla	Treat only when it becomes a problem, use insecticide listed under Petal Fall/Calyx with the exception of Agri-Mek and Movento.				
European Red and Pear Rust Mite	Assess mites and mite eggs on leaves. Treat only when thresholds are reached. Use one of the miticides under Petal Fall/Calyx, with the exception of Agri-Mek.				
Codling Moth	Monitor trap captures and if captures warrant, use one of the recommended insecticides listed below according to degree day model timing provided in Orchard Outlook. Generally, a second treatment is only needed after 10 or more moths have been trapped following the first treatment. If a second application is needed, repeat 10-14 days after the initial application.				
	► Imidan	1B	70 WP	2.68 kg/ha	Target 3% egg hatch based on 140 degree days after the biofix date. Do not make more than five applications per year. Transition to newly amended labels by October 30, 2022.
	► Danitol	3	EC	779-1559 mL/ha	Do not exceed 1 application per year or 1559 mL/ha total application of Danitol per year. Pyrethroids (Group 3) are disruptive to IPM programs leading to mite flare ups and therefore should be avoided if alternatives are available.
	► Assail/Aceta	4	70 WP	120-240 g/ha	Apply at 100 degree days after the biofix date. Use the higher rate for greater pest populations. Do not make more than four applications per year.
	► Calypso/Theme	4	480 SC	290-440 mL/ha	Apply just prior to first generation egg hatch (80-100 degree days after the biofix date). Use the higher rate for greater pest populations. Do not make more than three applications per year.
	► Twinguard	4C, 5	WDG	500 g/ha	Apply at 100 degree days after the biofix date. Do not make more than two applications per year.
	► Delegate	5	25 WG	420 g/ha	Apply at 100 degree days after the biofix date. Do not make more than three applications per year.
	► Altacor	28	35 WG	145-215 g/ha	Apply just prior to first generation egg hatch (80-100 degree days after the biofix date). Use the higher rate for greater pest populations. Do not make more than three applications per year.
	► Harvanta	28	50 SL	1.2-1.6 L/ha	Avoid applying consecutively more than 2 times within a 30 day period, or within a single pest generation.
	► Exirel	28	100 SU	0.5-0.75 L/ha	Apply just prior to first generation egg hatch (80-110 degree days after the biofix date). Do not make more than four applications per year. See label for incompatible products.
	► Vayego	28	200 SC	225 mL/ha	Apply only post-bloom for all labelled insect pests. Apply before first egg hatch (80-110 degree days Celsius after biofix date). Do not make more than three applications per year and do not exceed 900 mL/ha per year.
AUGUST TO NOVEMBER					
Leaf Tissue Analysis	Collect tissue samples for nutrient analysis the first week of August or when terminal growth has completed for the season.				
Storage Rots	Consider a preharvest application of fungicide if storage rots have been a problem in the past. Use one of the fungicides listed under Petal Fall/Calyx.				
	► Supra Captan	M	80 WSP	3.00 kg/ha	Not compatible with strongly alkaline materials. Refer to re-entry intervals for specific activities. NOTE THAT HAND HARVESTING REI IS EXTENDED TO 15 DAYS FOR HIGH DENSITY AND 19 DAYS FOR LOW DENSITY. If the REI for hand harvesting and the pre-harvest interval (PHI) are different, follow the longer of the two intervals. For high density, do not use more than 10 applications per year and for low density do not use more than 2 applications per year.
	► Maestro	M4	80 WSP	3.00 kg/ha	
	► Mertect	1	SC	1 L/1,000 L	Post-harvest dip.
	► Scholar	2	230 SC	496 mL/378 L	Post-harvest dip or drench.
Mice/Voles	Assess and treat when populations warrant.				
	► Ramik Brown			2 X 11 kg/ha	Apply after harvestable fruit has been removed. Commence baiting in late fall before first snowfall. Make two applications at 11 kg/ha 20-40 days apart, no later than March 1st. Post areas. Make inaccessible to children, pets and wildlife.

Disease & Insect	Products	Group	Formulation	Rate	Notes
	► Rozol			12.5 kg/ha	Apply after harvestable fruit has been removed. Commence baiting in late fall before first snowfall. A second application can be made 20-60 days later if populations warrant.