

**Stage of Development: Dormant to Silver Tip**

Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
Fire blight	copper oxychloride 50% (Copper Spray)	M1	4 kg	1.6 kg	48 h	n/a	Remove cankers by March 31. See fire blight description.
	copper octanoate (Cueva Commercial)	M1	Prepare 0.5 – 2% (5 – 20L/1000L water) and apply 470-940 L/ha. (see notes)		4 h	1	Remove cankers by March 31. See fire blight description. The higher rate for dormant sprays is more likely to be effective.
Ambrosia beetle (p. 6-1)	<b>Notes:</b> There are currently no registered products for controlling ambrosia beetle on apples. Good sanitation is the best management strategy. Remove large wood piles and prunings from the orchard. Cultural control by maintaining optimum tree vigour is important as ambrosia beetles are attracted to trees weakened by drought, transplanting, disease, etc. See description of insect life cycle and methods to intercept female beetles flying into an orchard.						

**Stage of Development: 15 mm Green to Tight Cluster**

Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
Apple scab Protectant spray	copper octanoate (Cueva Commercial)	M1	Prepare 0.5 – 2% (5 – 20L/1000L water) and apply 470-940 L/ha. (see notes)		4 h	1	Do not exceed 1% rate for varieties susceptible to russetting. Repeat every 7 – 10 days as long as weather conditions favour disease development.
	metiram (Polyram 80 DF)	M3	6.0 kg	2.4 kg	24 h*	45	
	mancozeb (Manzate or Dithane DG)	M3	6.0 kg	2.4 kg	24 h	45	
	thiram (Granuflo-T)	M3	1.5 to 2.25 kg / 1000 L water		24 h	28	
	captan (Captan 80% or Maestro)	M4	3.75 kg	1.5 kg	48 h	7	Do not apply captan in combination with, immediately before or closely following oil sprays.
	fluazinam (Allegro 500F)	29	0.75-1.0 L	304-405 mL	3 days for thinning	28	Use highest rates and shortest intervals for high disease pressure. Will also suppress European red mite, apple rust mite and two-spotted spider mites.
	<b>Additional notes:</b> Foliage is susceptible to apple scab as early as green tip. Apply protective fungicides if wet weather is forecast. See apple scab description.						
Apple scab Protectant/ Eradicant spray	myclobutanil (Nova 40% WP)	3	340 g	140 g	12 h – 12 days	14	Tank mix with the full rate of a protectant (e.g. Dithane, Manzate, Polyram, captan). Limit sprays of group 3 fungicides (Nova, Inspire, Fullback, Aprovia Top) to 2 per season for resistance management.
	flutriafol (Fullback 125 SC)	3	950 mL	385 mL	12 h	14	
	difenoconazole + cyprodinil (Inspire Super)	3 + 9	560 - 836 mL	227 - 338 mL	12 h	14	Limit sprays of group 3 fungicides (Nova, Inspire, Fullback, Aprovia Top) to 2 per season. Tank mix with a protectant fungicide for resistance management.

<sup>1</sup>Group number for resistance management (See Resources). NC=not classified.<sup>2</sup>Re-entry interval on the label (See Resources-PHI-References). An asterisk (\*) indicates that no re-entry is shown on the label, but the WorkSafe BC re-entry interval may apply and is shown.<sup>3</sup>Pre-harvest interval (See Resources – PHI). Note: always read and follow the directions on the pesticide label.

Stage of Development: 15 mm Green to Tight Cluster							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
Apple scab Protectant/ Eradicant spray	benzovindiflupyr + difenoconazole (Aprovia Top)	3 + 7	386 – 643 mL	156 – 260 mL	12 h	30	Tank mix with a protectant fungicide for improved fruit scab control. Use high rate for mildew. Rotate with other fungicide groups for resistance management.
	benzovindiflupyr (Aprovia)	7	300-500 mL	121-202 mL	12 h	30	For improved fruit scab control tank mix with a protectant fungicide (see label). Rotate with other non-Group 7 fungicides.
	penthiopyrad (Fontelis)	7	1.0-1.5 L	405-607 mL	12 h	28	Do not apply more than 3 times per season, or more than twice sequentially. Use high rate for high disease pressure.
	fluxapyroxad (Sercadis)	7	167-333 mL	68-135 mL	12 h	0	Apply preventatively up to the blossom stage at 7-14 day intervals. The use of a non-ionic surfactant (0.125%) is recommended.
	fluopyram +pyrimethanil (Luna Tranquility)	7 + 9	800 mL	324 mL	12 h	14	Do not apply more than 2 times per season.
	boscalid + pyraclostrobin (Pristine WG)	7 + 11	1.0 - 1.2 kg	405 g - 485 g	dry to 12 days	5	Avoid more than 2 consecutive applications. Limit sprays of group 11 fungicides (Flint, Sovran, Pristine) to 2 per season.
	trifloxystrobin (Flint 50 WG)	11	140 -175 g	57 - 71 g	12 h to 4 days	14	Avoid more than 2 consecutive applications. Limit sprays of group 11 fungicides (Flint, Sovran, Pristine) to 2 per season.
	kresoxim-methyl (Sovran 50% WG)	11	360 g	150 g	48 h	30	Caution: drift may injure cherries. Limit sprays of group 11 fungicides (Flint, Sovran, Pristine) to 2 per season.
	cyprodinil (Vangard 75 WG)	9	370 g	150 g	12 h	0	Do not apply more than 1.5 kg product per season.
	pyrimethanil (Scala SC)	9	0.75-1.0 L	304-405 mL	24 h	72	Do not use for apple scab after bloom.
<b>Additional notes:</b> Eradicant sprays are best used preventatively. However they can be used soon after an infection period and still provide control. See description of apple scab for more information.							
Powdery mildew (foliage protection)	wettable sulphur (Kumulus 80 DF or Microthiol Disperss or Cosavet DF Edge)	M2	7.0 kg	2.8 kg	24 h	1	Do not apply sulphur in combination with, immediately before, or closely following oil sprays.
	mineral oil (Purespray Green Spray Oil 13E)	NC	10 L	4 L	12 h	0	For suppression of powdery mildew, apply in a minimum of 1000 L water/ha at tight cluster and repeat at 10-14 day intervals. Do not use in combination with or within 14 days of sulphur or captan. Do not apply during freezing temperatures.
	metrafenone (Vivando SC)	U8	0.75 - 1.12 L	304 – 453 mL	12 h	7	Use preventively. Use higher rate when disease pressure is high.
	thiophanate-methyl (Senator 50 SC)	1	3.15 L	1.27 L	24 h*	1	May harm predatory mites. Maximum 2 applications per season.

<sup>1</sup>Group number for resistance management (See Resources). NC=not classified.

<sup>2</sup>Re-entry interval on the label (See Resources-PHI-References). An asterisk (\*) indicates that no re-entry is shown on the label, but the WorkSafe BC re-entry interval may apply and is shown.

<sup>3</sup>Pre-harvest interval (See Resources – PHI). Note: always read and follow the directions on the pesticide label.

Stage of Development: 15 mm Green to Tight Cluster							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
Powdery mildew (foliage protection)	benzovindiflupyr + difenoconazole (Aprovia Top)	3 + 7	643 mL	260 mL	12 h	30	Rotate with other fungicides that do not contain group 3 or group 7 fungicides for resistance management. Do not apply more than 2 consecutive applications.
	benzovindiflupyr (Aprovia)	7	500 mL	202 mL	12 h	30	Do not apply more than 2 consecutive applications. Rotate with other non-Group 7 fungicides.
	penthiopyrad (Fontelis)	7	1.0-1.5 L	405-607 mL	12 h	28	Do not apply more than 3 times per season, or more than twice sequentially. Use high rate for high disease pressure.
	fluxapyroxad (Sercadis)	7	167-333 mL	68-135 mL	12 h	0	Apply preventatively up to the blossom stage at 7-14 day intervals. The use of a non-ionic surfactant (0.125%) is recommended. Maximum 4 applications/season.
	fluopyram +pyrimethanil (Luna Tranquility)	7 + 9	600 mL	243 mL	12 h	14	Use preventatively. Do not apply more than 2 times per season.
	boscalid + pyraclostrobin (Pristine WG)	7 + 11	1.0 - 1.2 kg	405 g - 485 g	dry to 12 days	5	Avoid more than 2 consecutive applications. Limit sprays of group 11 fungicides (Flint, Sovran, Pristine) to 2 per season.
	trifloxystrobin (Flint 50 WG)	11	140 - 210 g	57 - 85 g	12 h to 4 days	14	Use the higher rate during pink to bloom stages. Limit sprays of group 11 fungicides (Flint, Sovran, Pristine) to 2 per season.
	kresoxim-methyl (Sovran 50% WG)	11	240 - 450 g	100 - 182 g	48 h	30	Use high rate for high disease pressure. Limit group 11 fungicide sprays to 2 per season. Caution: drift may injure cherries.
	myclobutanil (Nova 40% WP)	3	340 g	140 g	12 h – 12 days	14	Limit use of Group 3 fungicides (Nova, Inspire, and Fullback) to 2 sprays per season. Rotate with fungicides from other groups.
	flutriafol (Fullback 125 SC)	3	585 - 877 mL	237 - 355 mL	12 h	14	
	difenoconazole + cyprodinil (Inspire Super)	3 + 9	836 mL	338 mL	12 h	14	Suppression of powdery mildew. Limit use of Group 3 fungicides (Nova, Inspire, Fullback, Inspire Super) to 2 sprays per season.
<b>Additional notes:</b> Early spring applications of fungicide (beginning no later than tight cluster) are necessary to prevent secondary spread of powdery mildew in susceptible apple varieties. See powdery mildew description.							
Aphids	sulfoxaflor (Closer SC)	4C	100 - 200 mL	40 - 80 mL	12 h	7	Do not apply more than 2 times/season. Will also control scales. Toxic to bees.
San Jose scale, European fruit scale	dormant oil (Guardsman)	NC	90 L	36 L	12 h	n/a	Apply once at green tip to 1 cm green stage. Do not use prior to or during freezing temperatures or rain. May cause bark damage on Red Delicious.
	Superior 70 Oil	NC	60 L	24 L	12 h	n/a	
	mineral oil (Purespray Green Spray Oil 13E)	NC	20L/1000 L of Water		12 h	0	Apply once at green tip to 1 cm green stage. Do not use prior to or during freezing temperatures or rain. May cause bark damage on Red Delicious.

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Stage of Development: 15 mm Green to Tight Cluster							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
San Jose scale, European fruit scale	sulfoxaflor (Closer SC)	4C	200 - 400 mL	80 - 160 mL	12 h	7	Do not apply more than 2 times/season. Toxic to bees.
European red mite	dormant oil (Guardman)	NC	90 L	36 L	12 h	n/a	See pages description of European red mite. Apply once at green tip to 1 cm green stage. Do not use prior to or during freezing temperatures or rain. May cause bark damage on Red Delicious.
	Superior 70 Oil	NC	60 L	24 L	12 h	n/a	
	mineral oil (Purespray Green Spray Oil 13E)	NC	20L/1000 L of Water		12 h	0	
<b>Additional notes:</b> Dormant oil is very important for an integrated mite control program.							

Stage of Development: Pink							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
Codling moth	mating disruption: Isomate-C-Plus or Isomate CM Flex or Isomate CM/LR TT	NC	1000	400	n/a	0	See description of codling moth for instructions on proper installation. CM/LR TT also aids in controls leafrollers.
		NC	1000	400			
		NC	750	300			
Leafrollers (Obliquebanded and Threelined)	<i>Bacillus thuringiensis</i> (Dipel 2X)	11	1.675 kg	678 g	24 h*	0	Will also help to control other caterpillars.
	tebufenozide (Confirm 240F)	18	1L	405 mL	dry- 12 h	14	
<b>Additional notes:</b> Confirm should only be used if leafroller damage was low to moderate at harvest the previous season.							
Eyespotted budmoth Fruitworms	chlorantraniliprole (Altacor)	28	145-285 g	59-115 g	12 h	5	Apply at pink to petal fall when larvae are active. Do not apply more than 3 times per season.
	cyantraniliprole (Exirel)	28	500-1000 mL	202-404 mL	12 h	3	Apply when larvae are active. Do not apply more than 4 times per season. Do not tank mix with Flint, Sovran, Pristine, copper or captan. Toxic to bees.
	spinetoram (Delegate WG)	5	210-420 g	85-170 g	12 h	7	Apply when larvae are active. Use the higher rate under high pest pressure and/or larger larvae.
Green fruitworm	chlorantraniliprole (Altacor)	28	145-215 g	59-87 g	12 h	5	Repeat if necessary at petal fall. Do not apply more than 3 times per season.
Apple scab Protectant spray	metiram (Polyram 80 DF)	M3	6.0 kg	2.4 kg	24 h*	45	
	mancozeb (Manzate or Dithane DG)	M3	6.0 kg	2.4 kg	24 h	45	

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<sup>3</sup>Pre-harvest interval (See Resources – PHI). Note: always read and follow the directions on the pesticide label.

Stage of Development: Pink							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
Apple scab Protectant spray	thiram (Granuflo-T)	M3	1.5 to 2.25 kg / 1000 L water		24 h	28	
	captan (Captan 80% or Maestro)	M4	3.75 kg	1.5 kg	48 h	7	Do not use during bloom.
	fluazinam (Allegra 500F)	29	0.75-1.0 L	304-405 mL	3 days for thinning	28	Use highest rates and shortest intervals for high disease pressure. Will also suppress European red mite, apple rust mite and two-spotted spider mites.
	Copper octanoate (Cueva Commercial)	M1	Prepare 0.5 – 2% (5 – 20L/1000L water) and apply 470-940 L/ha. See Notes		4 h	1	Do not exceed 1% rate for varieties susceptible to russetting. Repeat every 7 – 10 days as long as weather conditions favour disease development.
	<b>Additional notes:</b> Pink through petal fall is a high risk period for scab infection. Prevent infection by keeping trees covered with protectant fungicides during this period.						
Apple scab Protectant/ Eradicant spray	myclobutanil (Nova 40% WP)	3	340 g	140 g	12 h – 12 days	14	Tank mix with the full rate of a protectant (e.g. Dithane, Manzate, Polyram, captan). Limit sprays of group 3 fungicides (Nova, Inspire, and Fullback) to 2 per season for resistance management.
	flutriafol (Fullback 125 SC)	3	950 mL	385 mL	12 h	14	
	difenoconazole + cyprodinil (Inspire Super)	3 + 9	560 - 836 mL	227 - 338 mL	12 h	14	Limit sprays of group 3 fungicides (Nova, Inspire, Fullback, Aprovia Top) to 2 per season. Tank mix with a protectant fungicide for resistance management.
	benzovindiflupyr + difenoconazole (Aprovia Top)	3 + 7	386 – 643 mL	156 – 260 mL	12 h	30	Tank mix with a protectant fungicide for improved fruit scab control. Use high rate for mildew. Rotate with other fungicide groups for resistance management.
	benzovindiflupyr (Aprovia)	7	300-500 mL	121-202 mL	12 h	30	For improved fruit scab control tank mix with a protectant fungicide (see label). Rotate with other non-Group 7 fungicides.
	penthiopyrad (Fontelis)	7	1.0-1.5 L	405-607 mL	12 h	28	Do not apply more than 3 times per season, or more than twice sequentially. Use high rate for high disease pressure.
	fluxapyroxad (Sercadis)	7	167-333 mL	68-135 mL	12 h	0	Apply preventatively up to the blossom stage at 7-14 day intervals. The use of a non-ionic surfactant (0.125%) is recommended.
	fluopyram +pyrimethanil (Luna Tranquility)	7 + 9	800 mL	324 mL	12 h	14	Do not apply more than 2 times per season.
	boscalid + pyraclostrobin (Pristine WG)	7 + 11	1.0 – 1.2 kg	405 g – 485 g	dry to 12 days	5	Avoid more than 2 consecutive applications. Limit sprays of group 11 fungicides (Flint, Sovran, Pristine) to 2 per season.
	trifloxystrobin (Flint 50 WG)	11	140-175 g	57-71 g	12 h to 4 days	14	Avoid more than 2 consecutive applications. Limit sprays of group 11 fungicides (Flint, Sovran, Pristine) to 2 per season.
kresoxim-methyl (Sovran 50% WG)	11	360 g	150 g	48 h	30	Caution: drift may injure cherries. Limit sprays of group 11 fungicides (Flint, Sovran, Pristine) to 2 per season.	

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<sup>3</sup>Pre-harvest interval (See Resources – PHI). Note: always read and follow the directions on the pesticide label.

Stage of Development: Pink							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
Apple scab Protectant/ Eradicant spray	cyprodinil (Vangard 75 WG)	9	370 g	150 g	12 h	0	Do not apply more than 1.5 kg product per season.
	pyrimethanil (Scala SC)	9	0.75-1.0 L	304-405 mL	24 h	72	Do not use after bloom for apple scab.
	<b>Additional notes:</b> Eradicant sprays are best used in a protective program. However they can be used soon after an infection period and still provide control. See apple scab description for more information.						
Powdery mildew	wettable sulphur (Kumulus 80 DF or Microthiol Disperss or Cosavet DF Edge)	M2	7.0 kg	2.8 kg	24 h	1	See description of powdery mildew. Do not apply sulphur in combination with, immediately before, or closely following oil sprays.
	Lime sulphur 23%	M2	12.5 L/1000 L water		48 h	n/a	Lime sulphur may injure “sulphur shy” varieties. May cause injury during hot temperatures. May harm predatory mites. Note: homemade mixtures of lime-sulfur cannot be legally applied to tree fruits
	lime sulphur 30%	M2	9 L/1000 L				
	mineral oil (Purespray Green Spray Oil 13E)	NC	10 L	4 L	12 h	0	For suppression of powdery mildew, apply in a minimum of 1000 L water/ha at tight cluster and repeat at 10-14 day intervals. Do not use in combination with or within 14 days of sprays containing sulphur or captan.
	metrafenone (Vivando SC)	U8	0.75 - 1.12 L	304 – 453 mL	12 h	7	Use preventively. Use higher rate when disease pressure is high.
	thiophanate-methyl (Senator 50 SC)	1	3.15 L	1.27 L	24 h*	1	May harm predatory mites. Maximum 2 applications per season.
	penthiopyrad (Fontelis)	7	1.0-1.5 L	405-607 mL	12 h	28	Do not apply more than 3 times per season, or more than twice sequentially. Use high rate for high disease pressure.
	fluxapyroxad (Sercadis)	7	167-333 mL	68-135 mL	12 h	0	Apply preventatively up to the blossom stage at 7-14 day intervals. The use of a non-ionic surfactant (0.125%) is recommended.
	benzovindiflupyr (Aprovia)	7	500 mL	202 mL	12 h	30	Do not apply more than 2 consecutive applications. Rotate with other non-Group 7 fungicides.
	benzovindiflupyr + difenoconazole (Aprovia Top)	3 + 7	643 mL	260 mL	12 h	30	Rotate with other fungicides that do not contain group 3 or group 7 fungicides for resistance management. Do not apply more than 2 consecutive applications.
	fluopyram +pyrimethanil (Luna Tranquility)	7 + 9	600 mL	243 mL	12 h	14	Use preventatively. Do not apply more than 2 times per season.
	boscalid + pyraclostrobin (Pristine WG)	7 + 11	1.0 – 1.2 kg	405 g – 485 g	dry to 12 days	5	Avoid more than 2 consecutive applications. Limit sprays of group 11 fungicides (Flint, Sovran, Pristine) to 2 per season.
	trifloxystrobin (Flint 50 WG)	11	140 - 210 g	57 - 85 g	12 h to 4 days	14	Use the higher rate during pink to bloom. Limit sprays of group 11 fungicides (Flint, Sovran, Pristine) to 2 per season.

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<sup>3</sup>Pre-harvest interval (See Resources – PHI). Note: always read and follow the directions on the pesticide label.

**Stage of Development: Pink**

Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
Powdery mildew	kresoxim-methyl (Sovran 50% WG)	11	240 - 450 g	100 - 182 g	48 h	30	Use the higher rate during pink to bloom stages. Limit sprays of group 11 fungicides (Flint, Sovran, Pristine) to 2 per season. Caution: Sovran drift may injure cherries.
	myclobutanil (Nova 40% WP)	3	340 g	140 g	12 h – 12 days	14	Rotate with fungicides from other groups. Limit use of Group 3 fungicides (Nova, Inspire, and Fullback) to 2 sprays per season.
	flutriafol (Fullback 125 SC)	3	585 - 877 mL	237 – 355 mL	12 h	14	
	difenoconazole + cyprodinil (Inspire Super)	3 + 9	836 mL	338 mL	12 h	14	Suppression of powdery mildew. Limit use of Group 3 fungicides (Nova, Inspire, Fullback, Inspire Super) to 2 sprays per season.
	<i>Bacillus subtilis</i> (Serenade Opti)	44	1.7-3.3 kg	0.69–1.33 kg	24 h*	0	Suppression only. Apply preventatively at 7-10 day intervals.
<b>Additional notes:</b> Rotate fungicides from different groups for resistance management.							

**Stage of Development: Blossom**

Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
Crown rot	fosetyl-al (Aliette 80% WDG)	33	5.0 kg	2.0 kg	dry	30	See Crown rot, page 7-11 for additional information and instructions.
Fire blight (blossom infection)	kasugamycin (Kasumin 2L Bactericide)	24	5.0 L	2.0 L	12 h	90	Apply at 20-30% bloom or when conditions favour disease development. Do not apply after petal fall.
	streptomycin sulphate (Streptomycin 17)	25	100 ppm = 600 g of Streptomycin per 1000 L of water.		24 h to 14 days	50	Apply at blossom stage if weather conditions favour blossom infection. See fire blight, page 7-13
	<i>Aureobasidium pullulans</i> (Blossom Protect)	NC	See label		dry	n/a	Apply up to 4 times from 10-90% bloom if weather conditions favour blossom infection. Do not tank mix with other fungicides.
	<i>Bacillus subtilis</i> (Serenade Opti)	44	1.1-1.7 kg	445-688 g	24 h*	0	Apply at 1-5% bloom and repeat as needed during the blossom period.
	<i>Pantoea agglomerans</i> (Bloomtime Biological FD)	NC	375-500 g	152-202 g	4 h	n/a	Apply at 15-20% bloom, followed by a 2nd application at full bloom to petal fall. Maximum 2 applications per season. Compatible with streptomycin; not compatible with copper.
<i>Bacillus amyloliquefaciens</i> (Double Nickel 55)	44	1.0-1.5 kg	405-607 g	dry	0	Suppression only. Apply at blossom to end of flowering at 3- to 7-day intervals. Can be mixed with copper sprays. Can be applied post-bloom for shoot blight management.	

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Stage of Development: Blossom							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
Fire blight (blossom infection)	copper octanoate (Cueva Commercial)	M1	Prepare 0.5 – 2% (5 – 20L/1000L water) and apply 470-940 L/ha. See Notes		4 h	1	Do not exceed 0.8 - 1% rate for varieties susceptible to russetting. Apply in the dormant period, during bloom, or in-season cover spray applications. See Fire blight description.
	<b>Additional notes:</b> Warm weather followed by rain favours blossom infection. See description of fire blight for information on risk assessment based on temperature.						
Fire blight (shoot blight)	prohexadione calcium (Apogee Plant Growth Regulator)	n/a	1350 g	546 g	12 h	45	For suppression of shoot blight, apply at 2.5 to 7.5 cm of new shoot growth. Will also reduce shoot growth.
Leafrollers, Fruitworms	<i>Bacillus thuringiensis</i> (Foray 48 BA or Dipel 2X DF or Bioprotec CAF)	11	4.0 L 1.675kg 4.0 L	1.6 L 678 g 1.6 L	24 h*	0	See description of Leafrollers and Fruitworms. Will also control bud moth and other leaf-feeding larvae present..
	<b>Additional notes:</b> Apply <i>Bacillus thuringiensis</i> (Bt) products when bloom is 80% or more during late afternoon or on a cloudy day when no rain is forecast for 24 hours. If there is more than 2 mm rainfall within 24 h of application, re-apply product. Wait 10 days (in the absence of rain) before applying a second treatment of Bt or another product. Optimum solution pH for Bt products is 6.						

Stage of Development: Petal fall or Calyx							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
Leafrollers (Obliquebanded and threelined)	mating disruption: Isomate-CM/LR or Isomate-CM/LR TT	NC	1000 750	400 300	n/a	0	See page 6-12 for more information. Install before first moth flight. Will also aid in control of second generation codling moth.
	tebufenozide (Confirm 240F)	18	1 L	405 mL	dry - 12 h	14	Do not apply more than 4 times per season. See precaution about resistance in Leafroller description.
	methoxyfenozide (Intrepid 240 F)	18	0.75 L	304 mL	12 h	14	Do not apply more than 2 times per season.
	spinetoram (Delegate WG)	5	210-420 g	85-170 g	12 h	7	Apply when larvae are actively feeding but before they roll up in leaves. Do not apply more than 3 times per season. Use higher rate under high pest pressure &/or larger larvae.
	spinosad (Success 480 SC or Entrust SC)	5	182 mL 364 mL	74 mL 147 mL	dry	7	Do not apply more than 3 times per season. Will reduce pansy spot.
	sulfoxaflor + spinetoram (TwinGuard)	4C, 5	250-500 g	101-202 g	12 h	7	Apply when larvae are active. Do not apply more than 2 times per season. Toxic to bees.

<sup>1</sup>Group number for resistance management (See Resources). NC=not classified.

<sup>2</sup>Re-entry interval on the label (See Resources-PHI-References). An asterisk (\*) indicates that no re-entry is shown on the label, but the WorkSafe BC re-entry interval may apply and is shown.

<sup>3</sup>Pre-harvest interval (See Resources – PHI). Note: always read and follow the directions on the pesticide label.



Stage of Development: Petal fall or Calyx							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
Leafrollers (Obliquebanded and threelined)	<i>Bacillus thuringiensis</i> (Foray 48 BA or Dipel 2X DF or Bioprotec CAF)	11	4.0 L 1.67 kg 4.0 L	1.6 L 678 g 1.6 L	24 h*	0	See description of Leafrollers. Will also control bud moth.
	chlorantraniliprole (Altacor)	28	145–285 g	59 – 115 g	12 h	5	Do not apply more than 3 times /season, for rates above 215 g/ha (87 g/ac), do not apply more than twice/season.
	cyantraniliprole (Exirel)	28	500-1000 mL	202-404 mL	12 h	3	Apply when larvae are active. Do not apply more than 4 times/ season. Do not tank mix with Sovran, Flint, Pristine, copper or captan. Toxic to bees.
	<b>Additional notes:</b> Confirm, Intrepid, Delegate, Success, Entrust, Bt products, Exirel and Altacor are stomach poisons so complete coverage is important for satisfactory control. These products will also control any bud moth larvae present. Success, Entrust and Delegate will suppress thrips.						
Leafrollers (Fruittree and European)	<b>Notes:</b> Mating disruption, Bt products, Success, Entrust and Exirel are registered for fruittree and European leafrollers. Use rates for obliquebanded and threelined leafrollers above and follow indicated precautions.						
Eyespotted bud moth	spinosad (Success 480 SC or Entrust SC)	5	182 mL 364 mL	74 mL 147 mL	dry	7	Do not apply more than 3 times per season. Will reduce pansy spot. Will also control any leafroller present.
	chlorantraniliprole (Altacor)	28	145-285 g	59-115 g	12 h	5	Apply when larvae are active. Do not apply more than 3 times per season.
	cyantraniliprole (Exirel)	28	500-1000 mL	202-404 mL	12 h	3	Apply when larvae are active. Do not apply more than 4 times per season. Do not tank mix with Sovran, Flint, Pristine, copper or captan. Toxic to bees.
Fruitworms	<i>Bacillus thuringiensis</i> (Foray 48 BA or Dipel 2X DF or Bioprotec CAF)	11	4.0 L 1.67 kg 4.0 L	1.6 L 678 g 1.6 L	24 h*	0	See description of Green fruitworms. Thorough coverage is very important. Will also control bud moth and leafroller larvae present.
	chlorantraniliprole (Altacor)	28	145-215 g	59-87 g	12 h	5	Do not apply more than 3 times/season.
Apple clearwing moth	novaluron (Rimon 10 EC)	15	1.4 L/1000 L of water		12	14	Target larvae in the spring, apply when there is a lot of frass development. Direct spray on tree trunk with a hand gun or backpack sprayer. Do not apply more than 2 times/season. Not recommended for summer applications as it may disrupt biological control of mites.
White Apple Leafhopper	thiacloprid (Calypto 480 SC)	4	145 mL	59 mL	12 h	30	See Additional Notes below.
	acetamiprid (Assail 70 WP)	4	80-120 g	32-48 g	12 h	7	Will also suppress aphids and leafminers. Do not apply these products alone or alternately more than twice/season (see additional notes).

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<sup>2</sup>Re-entry interval on the label (See Resources-PHI-References). An asterisk (\*) indicates that no re-entry is shown on the label, but the WorkSafe BC re-entry interval may apply and is shown.

<sup>3</sup>Pre-harvest interval (See Resources – PHI). Note: always read and follow the directions on the pesticide label.

Stage of Development: Petal fall or Calyx							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
White Apple Leafhopper	imidacloprid (Admire 240 FL or Alias 240 SC)	4	200 mL	81 mL	24 h	7	Will also suppress aphids and leafminers. Do not apply these products alone or alternately more than twice/season (see additional notes).
	clothianidin (Clutch 50 WDG)	4A	140-210 g	57-85 g	12 h	7	Toxic to bees. See Additional Notes below.
	<b>Additional notes:</b> To prevent mite problems, avoid using Group 4 products (Calypso, Assail, Admire, Alias, Clutch) more than twice/season for all registered uses.						
Campylomma (Mullein bug)	thiacloprid (Calypso 480 SC)	4	145-290 mL	59-117 mL	12 h	30	Do not apply more than once/season. See note below regarding repeated use.
	imidacloprid (Admire 240 FL or Alias 240 SC)	4	380 mL	154 mL	24 h	7	Will also control aphids and leafhoppers. Do not apply more than once/season. See note below regarding repeated use.
	acetamiprid (Assail 70 WP)	4	80-160 g	32-64 g	12 h	7	Will also control aphids. Do not apply more than once/season. See note below regarding repeated use. Do not apply during bloom.
	<b>Additional notes:</b> Avoid using Group 4 products more than once/season for Campylomma and more than twice/season for all other registered uses to prevent mite problems. Ensure thorough coverage. Fruit greater than 12 mm diameter are not affected by campylomma feeding. Apply as early in petal fall as possible without risk of harming pollinating insects foraging in the trees or flowering ground cover.						
European fruit scale	See San Jose scale					See description of scale insects.	
San Jose scale	spirotetramat (Movento 240 SC)	23	365-585 mL	148-237 mL	12 h	7	Toxic to bees. Apply Movento with an adjuvant such as Agral 90 after petal fall. Do not exceed 1120 mL/ha/season. Also controls apple leaf curling midge.
	sulfoxaflor (Closer SC)	4C	200-400 mL	80-160 mL	12 h	7	Do not apply during bloom or when flowering weeds are present. Do not apply more than 2 times per season.
	sulfoxaflor, spinetoram (TwinGuard)	4C, 5	250-500 g	101-202 g	12 h	7	Apply when crawlers are active. Thorough coverage is important for good control. Do not apply more than 2 times per season. Toxic to bees.
European red mite, McDaniel and Two-spotted spider mites	acequinocyl (Kanemite 15 SC)	20B	2.1 L	850 mL	12 h	14	Do not apply more than twice/season. Controls all life stages. Does not control rust mite.
	clofentezine (Apollo 50% SC)	10	300-600 mL	120-240 mL	12 h	21	Do not apply more than once per season or beyond 14 days after petal fall. Controls eggs and young mites. Does not control rust mite. See page 6-19.
	bifenazate (Acramite 50 WS)	20D	568-851 g	230-345 g	12 h	7	Use higher rate for European red mite. Does not control rust mite.
	spirodiclofen (Envidor 240 SC)	23	750 mL	300 mL	12 h	7	Only once per season. Controls rust mite.

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<sup>3</sup>Pre-harvest interval (See Resources – PHI). Note: always read and follow the directions on the pesticide label.

Stage of Development: Petal fall or Calyx							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
European red mite, McDaniel and Two-spotted spider mites	pyridaben (Nexter 75 WP)	21	300-600 g	120-240 g	24 h	25	Use higher rate against spider mites. Do not apply more than twice per season. Controls rust mite.
	cyflumetofen (Nealta)	25	1 L	405 mL	12 h	7	Do not apply more than 2 times/season.
	<b>Additional notes:</b> It is important to rotate products with different group numbers to avoid development of pesticide resistance. Do not apply products from the same group more than once per season. The presence and number of predatory mites should first be determined using a mite counting service before spraying. Apply the products in sufficient water to ensure thorough and uniform coverage.						
Apple rust mite	spirodiclofen (Envidor 240 SC)	23	750 mL	300 mL	12 h	7	Apply only once per season.
	pyridaben (Nexter 75 WP)	21	300 g	120 g	24 h	25	Do not apply more than twice per season.
Leafminer	imidacloprid (Admire 240 FL or Alias 240 SC)	4	380 mL	154 mL	24 h	7	Will also control aphids, leafhoppers and campyloomma.
	acetamiprid (Assail 70 WP)	4	80-120 g	32-48 g	12 h	7	Do not apply more than twice per season alone or alternately with Admire.
	clothianidin (Clutch 50 WDG)	4A	140 -210 g	57-85 g	12 h	7	Make the first application shortly after petal fall, before insect populations reach economic thresholds. Do not apply more than twice/season.
	abamectin (Agri-Mek SC)	6	170 mL	69 mL	12 h	28	Apply with 10 L summer oil/ha; do not apply more than once per season.
	methoxyfenozide (Intrepid 240 F)	18	500 mL	200 mL	12 h	14	Apply at first egg hatch of first generation.
	spinetoram (Delegate WG)	5	210-420 g	85-170 g	12 h	7	Apply at egg hatch or first sign of sap-feeder larvae. Do not apply more than 3 times per season. Use higher rate under high pest pressure.
	sulfoxaflor, spinetoram (TwinGuard)	4C, 5	250-500 g	101-202 g	12 h	7	Apply at egg hatch or first sign of sap-feeder larvae. Do not apply more than 2 times per season. Toxic to bees.
<b>Additional notes:</b> The leafminer parasite is an effective biological control agent. 30% parasitism of first generation tissue-feeder larvae in the spring will provide control of leafminers for the rest of the season. If chemical control is needed rotate products for resistance management. Avoid using Group 4 products more than twice/season for all registered uses to prevent mite problems.							
Apple leaf curling midge	Apple leaf curling midge is not a problem in healthy mature trees but control is essential in nursery and new plantings. Movento applied for other pests at bloom to petal fall will provide control.						
Apple scab Protectant spray	metiram (Polyram 80 DF)	M3	6.0 kg	2.4 kg	24 h*	45	
	mancozeb (Manzate or Dithane DG)	M3	6.0 kg	2.4 kg	24 h	45	

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<sup>3</sup>Pre-harvest interval (See Resources – PHI). Note: always read and follow the directions on the pesticide label.

Stage of Development: Petal fall or Calyx							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
Apple scab Protectant spray	thiram (Granuflo-T)	M3	1.5 to 2.25 kg / 1000 L water		24 h	28	
	captan (Captan 80% or Maestro)	M4	3.75 kg	1.5 kg	48 h	7	Do not use during bloom
	fluazinam (Allegra 500F)	29	0.75-1.0 L	304-405 mL	3 days for thinning	28	Use highest rates and shortest intervals for high disease pressure. Will also suppress mites.
	Copper octanoate (Cueva Commercial)	M1	Prepare 0.5 – 2% (5 – 20L/1000L water) and apply 470-940 L/ha. See Notes		4 h	1	Do not exceed 0.8 - 1% rate for varieties susceptible to russetting. Repeat every 7 – 10 days as long as weather conditions favour disease development.
<b>Additional notes:</b> Pink through petal fall is a high risk period for apple scab. Prevent infection by keeping trees covered with protectant fungicides during this period.							
Apple scab Protectant/ Eradicant spray	myclobutanil (Nova 40% WP)	3	340 g	140 g	12 h – 12 days	14	Tank mix with the full rate of a protectant such as Dithane, Manzate, Polyram or captan. Limit sprays of group 3 fungicides (Nova, Inspire, Fullback, Aprovia Top) to 2 per season for resistance management.
	flutriafol (Fullback 125 SC)	3	950 mL	385 mL	12 h	14	
	difenoconazole + cyprodinil (Inspire Super)	3 + 9	560 - 836 mL	227 - 338 mL	12 h	14	Limit sprays of group 3 fungicides (Nova, Inspire, Fullback, Aprovia Top) to 2 per season. Tank mix with a protectant fungicide (e.g. Dithane, Manzate, captan, Polyram) for resistance management.
	cyprodinil (Vanguard 75 WG)	9	370 g	150 g	12 h	0	Do not apply more than 1.5 kg product per season.
	benzovindiflupyr + difenoconazole (Aprovia Top)	3 + 7	386 – 643 mL	156 – 260 mL	12 h	30	Tank mix with a protectant fungicide for improved fruit scab control. Use high rate for mildew. Rotate with other fungicide groups for resistance management.
	benzovindiflupyr (Aprovia)	7	300-500 mL	121-202 mL	12 h	30	For improved fruit scab control tank mix with a protectant fungicide (see label). Rotate with other non-Group 7 fungicides.
	penthiopyrad (Fontelis)	7	1.0-1.5 L	405-607 mL	12 h	28	Do not apply more than 3 times per season, or more than twice sequentially. Use high rate for high disease pressure.
	fluopyram +pyrimethanil (Luna Tranquility)	7 + 9	800 mL	324 mL	12 h	14	Do not apply more than 2 times per season.
	boscalid + pyraclostrobin (Pristine WG)	7 + 11	1.0 – 1.2 kg	405 g – 485 g	dry to 12 days	5	Avoid more than 2 consecutive applications. Limit sprays of group 11 fungicides (Flint, Sovran, Pristine) to 2 per season.
	trifloxystrobin (Flint 50 WG)	11	140-175 g	57-71 g	12 h to 4 days	14	Limit sprays of group 11 fungicides (Flint, Sovran, Pristine) to 2 per season. Caution: Sovran drift may injure cherries.
kresoxim-methyl (Sovran 50% WG)	11	360 g	150 g	48 h	30		
<b>Additional notes:</b> Eradicant sprays are best used in a protective program. However they can be used soon after an infection period and still provide control. See apple scab description.							

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Stage of Development: Petal fall or Calyx							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
Powdery mildew	lime sulphur 30%	M2	9 L/1000 L water		48 h	n/a	Lime sulphur may injure some varieties or may cause injury during hot temperatures. May harm predatory mites.
	Lime sulphur 23%	M2	12.5 L/1000 L water		48 h	n/a	
	wettable sulphur (Kumulus 80 DF or Microthiol Disperss or Cosavet DF Edge)	M2	7.0 kg	2.8 kg	24 h	1	Do not apply sulphur in combination with, immediately before, or closely following oil sprays. See description of powdery mildew.
	mineral oil (Purespray Green Spray Oil 13E)	NC	10 L	4 L	12 h	0	For suppression of powdery mildew, apply in a minimum of 1000 L water/ha at tight cluster and repeat at 10-14 day intervals. Do not use in combination with or within 14 days of sprays containing sulphur or captan.
	metrafenone (Vivando SC)	U8	0.75 - 1.12 L	304 – 453 mL	12 h	7	Use preventively. Use higher rate when disease pressure is high.
	thiophanate-methyl (Senator 50 SC)	1	3.15 L	1.27 L	24 h*	1	May harm predatory mites. Maximum 2 applications per season.
	penthiopyrad (Fontelis)	7	1.0-1.5 L	405-607 mL	12 h	28	Do not apply more than 3 times per season, or more than twice sequentially. Use high rate for high disease pressure.
	benzovindiflupyr (Aprovia)	7	500 mL	202 mL	12 h	30	Do not apply more than 2 consecutive applications. Rotate with other non-Group 7 fungicides.
	benzovindiflupyr + difenoconazole (Aprovia Top)	3 + 7	643 mL	260 mL	12 h	30	Rotate with other fungicides that do not contain group 3 or group 7 fungicides for resistance management. Do not apply more than 2 consecutive applications.
	fluopyram +pyrimethanil (Luna Tranquility)	7 + 9	600 mL	243 mL	12 h	14	Use preventatively. Do not apply more than 2 times per season.
	boscalid + pyraclostrobin (Pristine WG)	7 + 11	1.0 – 1.2 kg	405 – 485 g	dry to 12 days	5	Limit sprays of group 11 fungicides (Flint, Sovran, and Pristine) to 2 per season for resistance management. Rotate with other fungicides. Use the higher rate during pink to bloom stages. Caution: Sovran drift may injure cherries.
	trifloxystrobin (Flint 50 WG)	11	140 - 210 g	57-85 g	12 h to 4 days	14	
	kresoxim-methyl (Sovran 50% WG)	11	240-450 g	100-182 g	48 h	30	
	myclobutanil (Nova 40% WP)	3	340 g	140 g	12 h – 12 days	14	Limit use of group 3 fungicides (Nova, Inspire, Fullback) to 2 sprays/season. Rotate with fungicides from other groups.
	flutriafol (Fullback 125 SC)	3	585 - 877 mL	237 – 355 mL	12 h	14	
	difenoconazole + cyprodinil (Inspire Super)	3 + 9	836 mL	338 mL	12 h	14	Suppression of powdery mildew. Limit use of group 3 fungicides (Nova, Inspire, Fullback) to 2 sprays per season.
<i>Bacillus subtilis</i> (Serenade Opti)	44	1.7-3.3 kg	0.69–1.33 kg	24 h*	0	Suppression only. Apply preventatively at 7-10 day intervals.	
<b>Additional notes:</b> Rotate fungicides from different groups for resistance management.							

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<sup>3</sup>Pre-harvest interval (See Resources – PHI). Note: always read and follow the directions on the pesticide label.

Stage of Development: Petal fall or Calyx							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
Fire blight (shoot blight)	prohexadione calcium (Apogee Plant Growth Regulator)	n/a	1350 g	546 g	12 h	45	For suppression of shoot blight, apply at 2.5 to 7.5 cm of new shoot growth with subsequent applications at 14-21 day intervals. Max. 4 sprays/yr. Will reduce shoot growth.
	Copper octanoate (Cueva Commercial)	M1	Prepare 0.5 – 2% (5 – 20L/1000L water) and apply 470-940 L/ha. See Notes		4 h	1	Do not exceed 0.8 - 1% rate for varieties susceptible to russeting. Apply in the dormant period, during bloom, or in-season cover spray applications. Maximum 10 sprays/season. See Fire blight description.

Stage of Development: Summer							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
Apple clearwing moth	spinosad (Success 480 SC or Entrust SC)	5	125 mL 364 mL	50 mL 147 mL	dry	7	Thoroughly spray lower trunk using a hand gun sprayer. Apply within 10 days of first adult emergence, and repeat at 7-10 day intervals up to a maximum of 7 applications.
	spinetoram (Delegate WG)	5	420 g	170 g	12 h	7	Target first instar larvae before pupation. Direct spray on trunk particularly on graft unions and pruning cuts using a handgun or backpack sprayer. Thorough coverage is essential. Do not apply more than 2 times per season.
	<b>Additional notes:</b> Use pheromone traps to determine the timing of adult emergence. Adult activity may occur from early June to mid August, but monitoring is required to ensure proper timing.						
Codling moth	thiacloprid (Calypso 480 SC)	4	290-440 mL	117-178 mL	12 h	30	Controls larvae, will also control aphids. Does not control leafrollers. Low toxicity to bees, but high toxicity to lacewings. Use low rate for first brood if low to moderate pressure. Do not exceed a total of 870 mL/ ha (352 mL/ac) per season.
	acetamiprid (Assail 70 WP)	4	240 g	97 g	12 h	7	Do not apply more than twice per season. Will also control aphids, leafminer & leafhoppers. Does not control leafrollers. Toxic to bees.
	clothianidin (Clutch 50 WDG)	4A	210 -420 g	85 – 170 g	12 h	7	For suppression only. Do not apply more than a total of 420 g/ha/ (170 g/ac)/season.
	spinetoram (Delegate WG)	5	420 g	170 g	12 h	7	Apply at first egg hatch based on pheromone trap catches and degree days after biofix. Control larvae before they enter fruit. Do not apply more than 3 times per season. Use higher rate under high pest pressure. Also controls leafroller.

<sup>1</sup>Group number for resistance management (See Resources). NC=not classified.

<sup>2</sup>Re-entry interval on the label (See Resources-PHI-References). An asterisk (\*) indicates that no re-entry is shown on the label, but the WorkSafe BC re-entry interval may apply and is shown.

<sup>3</sup>Pre-harvest interval (See Resources – PHI). Note: always read and follow the directions on the pesticide label.

Stage of Development: Summer							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
Codling moth	spinosad (Entrust SC)	5	364 mL	147 mL	dry	7	Suppression only. Approved for organic fruit production.
	Sulfoxaflor + spinetoram (TwinGuard)	4C, 5	500 g	202 g	12 h	7	Apply at first egg hatch based on pheromone trap catches and degree days after biofix. Controls larvae. Do not apply more than 2 times per season. Toxic to bees. Also controls leafroller.
	chlorantraniliprole (Altacor)	28	145 -215 g	58 - 86 g	12 h	5	Apply at first egg hatch based on pheromone trap catches and degree days after biofix. Controls eggs and larvae. Also controls leafroller. Do not exceed 645 g/ha (261 g/ac) per season. Will provide control of apple clearwing moth.
	cyantraniliprole (Exirel)	28	500-750 mL	202-304 mL	12 h	3	Apply before egg hatch for first generation and at first egg hatch for second generation codling moth based on pheromone trap catches and degree days after biofix. Also controls leafroller. Do not tank mix with Sovran, Flint, Pristine, copper or captan fungicides. Toxic to bees.
	novaluron (Rimon 10 EC)	15	2.8 – 4.2 L	1.1 – 1.7 L	12 h	14	Controls eggs and larvae. Will also control leafroller eggs. Do not apply more than 4 times or 11 L/ha/season. May disrupt biological control of mites.
	granulovirus (Virosoft CP4)	NC	250 mL	100 mL	24 h*	0	Slow acting, with no leafroller control. Virus must be ingested to be effective. Apply in late afternoon or on a cloudy day to avoid product exposure to sunlight. Target small larvae just after egg hatch, and prior to entering fruit. Repeat applications 7-14 days.
	tebufenozide (Confirm 240 F)	18	1 L	405 mL	dry - 12 h	14	Controls eggs and larvae. Spray timing is critical for optimum control. Do not use if there is resistance to Group 1 insecticides or if pest pressure is moderate to high. Do not apply more than 4 times/season.
	methoxyfenozide (Intrepid 240 F)	18	1 L	405 mL	12 h	14	Controls eggs and larvae. Do not apply more than 2 times per season.
	phosmet (Imidan 50% WP)	1B	3.75 kg	1.5 kg	7 days	14	Controls larvae. Highly toxic to bees.
	<b>Additional notes:</b> Thorough and timely spray coverage is essential for good control. All products except in Groups 1B and 4-4A will also control any leafroller and bud moth larvae present. Avoid using Group 4 products more than twice/season for all registered uses to prevent mite problems. Group 4 products will also control aphids and leafhoppers present. To minimize the development of resistance, if a product was used in the spring, do not use again in the summer.						
White Apple Leafhopper	imidacloprid (Admire 240 FL or Alias 240SC)	4	230 mL	93 mL	24 h	7	Will also control aphid and leafminer. Do not apply more than twice per season. See note below.

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<sup>2</sup>Re-entry interval on the label (See Resources-PHI-References). An asterisk (\*) indicates that no re-entry is shown on the label, but the WorkSafe BC re-entry interval may apply and is shown.

<sup>3</sup>Pre-harvest interval (See Resources – PHI). Note: always read and follow the directions on the pesticide label.

Stage of Development: Summer							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
White Apple Leafhopper	acetamiprid (Assail 70 WP)	4	80-120 g	32-48 g	12 h	7	
	thiacloprid (Calypto 480 SC)	4	145 mL	59 mL	12 h	30	Do not apply more than twice/season.
	clothianidin (Clutch 50 WDG)	4A	140 g-210 g	57-85 g	12 h	7	Do not apply more than twice/season.
	flupyradifurone (Sivanto Prime)	4D	500-750 mL	202-304 mL	12 h	14	10-day minimum interval between applications. Maximum amount per season: 2L/ha (810 mL/acre)
<b>Additional notes:</b> Avoid using Group 4 products more than twice/season for all registered uses to prevent mite problems.							
Leafrollers (Obliquebanded and Threelined)	mating disruption: Isomate-CM/LR TT	NC	750	300	n/a	0	See description of leafrollers for more information. Install before first moth flight. Will also aid in control of summer generation of codling moth.
	methoxyfenozide (Intrepid 240 F)	18	0.75 L	304 mL	12 h	14	Maximum applications per season: Confirm, 4; Intrepid 2. See resistance precaution in Leafroller description. Both products will aid in control of bud moth.
	tebufenozide (Confirm 240 F)	18	1 L	405 mL	dry - 12 h	14	Do not apply more than 4 times per season.
	spinetoram (Delegate WG)	5	210 – 420 g	85-170 g	12 h	7	Do not apply more than 3 times per season. Use the higher rate under high pest pressure and/or larger larvae. Will also control eyespotted bud moth present.
	Spinosad (Success 480 SC or Entrust SC)	5	182 mL 364 mL	74 mL 147 mL	dry	7	Do not apply Success or Entrust more than 3 times per season. Will also control eyespotted bud moth. Will reduce pansy spot.
	Sulfoxaflor + spinetoram (TwinGuard)	4C, 5	250-500 g	101-202 g	12 h	7	Apply at first egg hatch. Do not apply more than 2 times per season. Toxic to bees.
	chlorantraniliprole (Altacor)	28	145 – 285 g	59-115 g	12 h	5	Monitor adult moth flight and apply at first egg hatch. Do not apply more than 3 times /season, for rates above 215 g/ha (87 g/ac), do not apply more than twice/season.
	cyantraniliprole (Exirel)	28	500-1000 mL	202-404 mL	12 h	3	Monitor adult moth flight and apply at first egg hatch. Do not tank mix with Sovran, Flint, Pristine, copper or captan fungicides. Toxic to bees.
<b>Additional notes:</b> All the recommended products except Isomate CM/LT TT are stomach poisons so complete coverage is important for satisfactory control.							
Eyespotted Bud Moth	Spinosad (Success 480 SC or Entrust SC)	5	182 mL 364 mL	74 mL 147 mL	dry	7	Do not apply Success or Entrust more than 3 times per season.

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<sup>3</sup>Pre-harvest interval (See Resources – PHI). Note: always read and follow the directions on the pesticide label.



Stage of Development: Summer							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
Eyespotted Bud Moth	spinetoram (Delegate WG)	5	210-420 g	85-170 g	12 h	7	Apply at first egg hatch. Use the higher rate under high pest pressure and/or larger larvae.
	chlorantraniliprole (Altacor)	28	145-285 g	59-115 g	12 h	5	Do not apply more than 3 times/season.
	cyantraniliprole (Exirel)	28	500-1000 mL	202-404 mL	12 h	3	Do not apply more than 4 times per season. Do not tank mix with Sovran, Flint, Pristine, copper or captan fungicides. Toxic to bees.
	<b>Additional notes:</b> Blocks with high populations the previous summer should be sprayed at pink followed by a petal fall spray. Blossom sprays applied against leafroller will also control bud moth larvae present. An effective spring control program will reduce the need to control the summer generation.						
Rosy apple and apple aphids	imidacloprid (Admire 240 FL or Alias 240 SC)	4	230 mL	93 mL	24 h	7	Will also control leafminer and leafhopper. Because use of these products has resulted in mite problems, do not apply more than twice per season alone or alternately or against any other pests the remainder of the season.
	Mineral oil (Purespray Green Spray Oil 13E)	NC	10 L/1000 L of water		12 h	0	Maximum of 8 applications per season. Do not use within 14 days before or after captan or sulphur.
	flupyradifurone (Sivanto Prime)	4D	500-750 mL	202-304 mL	12 h	14	10-day minimum interval between applications. Maximum amount per season: 2L/ha (810 mL/acre)
	acetamiprid (Assail 70 WP)	4	80-120 g	32-48 g	12 h	7	
	clothianidin (Clutch 50 WDG)	4A	140-210 g	57-85 g	12 h	7	Do not apply more than twice/season.
	sulfoxaflor (Closer SC)	4C	100-200 mL	40-80 mL	12 h	7	Do not apply more than 2 times/season.
	sulfoxaflor + spinetoram (TwinGuard)	4C, 5	250 g	101 g	12 h	7	Do not apply more than 2 times per season. Toxic to bees.
	flonicamid (Beleaf 50 SG)	9C	160 g	65 g	12-48 h	21	Experience in the field indicates there may be issues with current label rate.
	spirotetramat (Movento 240 SC)	23	365-435 mL	148-176 mL	12 h	7	Apply Movento with an adjuvant such as Agral 90. Do not exceed 1830 mL/ha/season. Also controls woolly apple aphid and apple leaf curling midge.
Rosy apple aphids	malathion (Malathion 85E)	1B	610-880 mL/1000 L		12 h – 3 days	3	Harmful to beneficial insects that attack aphids. Do not apply more than twice/season.
	cyantraniliprole (Exirel)	28	750-1500 mL	304-607 mL	12 h	3	Do not apply more than 4 times/season. Do not tank mix with Sovran, Flint, Pristine, copper or captan fungicides. Toxic to bees.

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<sup>3</sup>Pre-harvest interval (See Resources – PHI). Note: always read and follow the directions on the pesticide label.

Stage of Development: Summer							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
Woolly apple aphids	malathion (Malathion 85E)	1B	610/1000 L		12 h – 3 days	3	Harmful to beneficial insects that attack aphids. Do not apply more than twice/season.
	clothianidin (Clutch 50 WDG)	4A	140-210 g	57-85 g	12 h	7	Do not apply more than twice/season.
	sulfoxaflor (Closer SC)	4C	200 mL	80 mL	12 h	7	For suppression only. Do not apply more than twice/season.
	sulfoxaflor + spinetoram (TwinGuard)	4C, 5	250 g	101 g	12 h	7	For suppression only. Do not apply more than 2 times per season. Toxic to bees.
	flonicamid (Beleaf 50 SG)	9C	160 g	65 g	12-48 h	21	Experience in the field indicates there may be issues with current label rate.
<b>Additional notes:</b> Many kinds of beneficial insects feed on aphids (see descriptions of beneficial insects). Avoid using Group 4 products more than twice/season for all registered uses to prevent mite problems.							
San Jose scale	spirotetramat (Movento 240 SC)	23	365-585 mL	148-237 mL	12 h	7	Apply Movento with an adjuvant such as Agral 90. Do not exceed 1830 mL Movento/ha/season. Toxic to bees.
	sulfoxaflor (Closer SC)	4C	200-400 mL	80-160 mL	12 h	7	Do not apply more than twice/season.
	sulfoxaflor + spinetoram (TwinGuard)	4C, 5	250-500 g	101-202 g	12 h	7	Apply when crawlers are active. Thorough coverage is important for good control. Do not apply more than 2 times per season. Toxic to bees.
	flupyradifurone (Sivanto Prime)	4D	500-750 mL	202-304 mL	12 h	14	10-day minimum interval between applications. Maximum amount per season: 2L/ha (810 mL/acre)
<b>Additional notes:</b> Use sufficient water volume to ensure thorough and uniform coverage of the tree limbs and trunks. Leave lower nozzles on when spraying high density trees in order to control scales on the trunks.							
European red mite, McDaniel and Two-spotted spider mites	abamectin (Agri-Mek SC)	6	170 mL	69 mL	12 h	28	Apply with 0.25% superior oil. Do not apply more than once/season. Will also control rust mites and leafminer larvae.
	pyridaben (Nexter 75% WP)	21	300-600 g	120 – 240 g	24 h	25	Recommended for rust mite control.
	bifenazate (Acramite 50 WS)	20D	568-851 g	230-345 g	12 h	7	Not for rust mite control. Use higher rate for European red mite.
	spirodiclofen (Envidor 240 SC)	23	750 mL	300 mL	12 h	7	Use Envidor only once per season.
	cyflumetofen (Nealta)	25	1 L	405 mL	12 h	7	For control of all life stages. Do not apply more than 2 times/season. Not for rust mite control.
Two-spotted and European red mites	acequinocyl (Kanemite)	20B	2.1 L	850 mL	12 h	14	Do not apply more than twice per season. For control of all life stages.

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Stage of Development: Summer							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
European red mite	mineral oil (Purespray Green Spray Oil 13E)	NC	10L	4	12 h	0	For suppression only. Begin applications when mites first appear, allow 10-14 days between applications. Do not use within 14 days of captan or sulphur. Post harvest sprays may be made to reduce over-wintering pressure.
Rust mites	spirodiclofen (Envidor 240 SC)	23	750 mL	300 mL	12 h	7	Use Envidor only once per season.
	pyridaben (Nexter 75% WP)	21	300-600 g	120 – 240 g	24 h	25	Recommended for rust mite control.
	abamectin (Agri-Mek SC)	6	170 mL	69 mL	12 h	28	Apply with 0.25% superior oil. Do not apply more than once/season. Will also control rust mites and leafminer larvae.
	wettable sulphur (Cosavet DF Edge)	M	6 kg	2.4	24 h	1	Do not apply at temperatures above 27°C and high humidity or if these conditions are expected within 3 days after spray application.
Mites	<b>Additional notes:</b> Rotate products with different group numbers to avoid development of pesticide resistance. Do not apply products from the same group more than once per season. The presence and number of predatory mites should first be determined using a mite counting service before spraying. Apply the products in sufficient water to ensure thorough and uniform coverage.						
Leafminer	imidacloprid (Admire 240 FL or Alias 240 SC)	4	380 mL	154 mL	24 h	7	Will also control aphids and leafhoppers. Do not apply more than twice per season alone or alternately.
	acetamiprid (Assail 70 WP)	4	80-120 g	32-48 g	12 h	7	
	abamectin (Agri-Mek SC)	6	170 mL	69 mL	12 h	28	Apply with 0.25% superior oil. Do not apply more than once/season. Will also control mites.
	spinetoram (Delegate WG)	5	210-420 g	85-170 g	12 h	7	Apply at egg hatch or first sign of sap-feeder larvae. Do not apply more than 3 times per season. Use higher rate under high pest pressure.
	sulfoxaflor + spinetoram (TwinGuard)	4C, 5	250-500 g	101-202 g	12 h	7	Apply at egg hatch or first sign of sap-feeder larvae. Do not apply more than 2 times per season. Toxic to bees.
<b>Additional notes:</b> The leafminer parasite is an effective biological control agent. 30% parasitism of first generation tissue-feeder larvae in the spring will provide control of leafminers for the rest of the season. If chemical control is needed rotate products for resistance management.							
Apple leaf curling midge	Apple leaf curling midge is not a problem in healthy mature trees but control is essential in nursery and new plantings. Movento applied for other pests will provide control.						
Powdery mildew	<b>Notes:</b> See petal fall for available fungicides. Use caution with sulphur or oil sprays during hot weather.						

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Stage of Development: Summer							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
<b>Apple scab</b>	<b>Notes:</b> If no scab is present on apple leaves or fruit by the end of June, scab sprays are not needed for the remainder of the summer. If scab symptoms are present, continue protectant fungicide coverage until harvest, with particular consideration to rainy weather. See petal fall section for available fungicides. Check pre-harvest intervals before any late-season sprays.						
<b>Fire blight (shoot blight)</b>	copper octanoate (Cueva Commercial)	M1	Prepare 0.5 – 2% (5 – 20L/1000L water) and apply 470-940 L/ha. See Notes		4 h	1	Do not exceed 0.8 - 1% rate for varieties susceptible to russetting. Maximum 10 sprays/season. See Fire blight description.
	<b>Notes:</b> There are no products that can cure fire blight infected shoots. Scout susceptible orchards for symptoms and prune out infected shoots, being careful to disinfect tools between cuts. See description of fire blight for more information on cultural control methods.						
<b>Storage diseases</b>	pyrimethanil (Scala SC)	9	1.5-2.0 L 607-810 mL		24 h	14	Apply 2 weeks before harvest to help control storage rots caused by <i>Botrytis</i> and <i>Penicillium</i> .

Stage of Development: Fall							
Insect or Disease	Recommended Product Choices	Grp <sup>1</sup>	Amount per		REI <sup>2</sup>	PHI <sup>3</sup> (days)	Precautions and Notes
			Ha	Acre			
<b>Apple clearwing moth</b>	novaluron (Rimon 10 EC)	15	1.4 L/1000 L of water		12	14	Apply in September. Direct spray on tree trunk with a hand gun or backpack sprayer. Do not apply more than 2 times/season.
<b>Crown rot</b>	fosetyl-al (Aliette 80% WDG)	33	5.0 kg	2.0 kg	dry	30	Treat soon after harvest.

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