

Fruit Production Recommendations 2010-2011

Ontario Ministry of Agriculture, Food & Rural Affairs

Chapter 4: Apples



Apple Calendar

- Read the product label and follow all safety precautions.
- Consult the product label for suggested water volumes. Otherwise, use enough water to ensure thorough spray coverage. Where the product rate is listed in amount per 1,000 L, and if a water volume is not provided on the label, use enough water to wet the foliage to the near drip point.
- For information on identifying pests and monitoring apple orchards, refer to OMAFRA Publication 310, *Integrated Pest Management for Apples*.
- Products are listed according to insecticide and fungicide group. Use products from different groups to prevent the development of pest resistance. For resistance management, refer to *Pest Resistance to Insecticides, Fungicides, Miticides*, page 23.
- For preharvest interval, re-entry period, maximum number of applications and chemical group, see Table 4-7. *Products Used on Apples*, page 68.

Diseases and Insects	Products	Rate	Comments
Dormant			
San Jose scale European fruit scale Lecanium scale	<ul style="list-style-type: none"> • Superior 70 Oil 	20 L of oil/1,000 L of water	Oil may cause bark injury on Red Delicious, Empire and Mutsu. Apply full rate of oil in 2,000–3,000 L of water per ha. On large standard trees, use 90 L of oil in 4,500 L of water per ha. Do not use oil within 48 hours of freezing temperatures or within 14 days of Captan or Maestro. Use a maximum of one application per season.
Green tip up to half-inch green			
Apple scab protectants	<ul style="list-style-type: none"> • Manzate Pro-stick or Dithane DG or Penncozeb 75 DF • Polyram DF • Dikar • Supra Captan 80 WDG or Maestro 80 DF • Vanguard 75 WG • Scala SC 	6.0 kg/ha 6.0 kg/ha see label 6.0 kg/ha 6.75 kg/ha 3.75 kg/ha 3.75 kg/ha 370 g/ha 1.0 L/ha	Apply fungicides before spore release and keep growing leaves covered. See <i>Apple scab</i> , page 74 for information on infection periods. Alternate materials from different groups. Dikar: When used in a full season program, Dikar will suppress mites. Higher water volumes help mite suppression. Consult label. Vanguard or Scala: These products do not control other foliar or fruit diseases. Use once then rotate to a different group. Use a maximum of two applications per season, prebloom only. Serenade MAX: Provides suppression of apple scab. See Table 2-6. <i>Efficacy Ratings for Pesticides</i> , page 12 and <i>Bacillus subtilis (Serenade ASO, Serenade MAX)</i> , page 14.
Powdery mildew	Use one of the fungicides listed at Tight cluster to pink , page 55.		If powdery mildew was a problem in previous years, then a fungicide is necessary at this stage.
Half-inch green to tight cluster			

Diseases and Insects	Products	Rate	Comments
European red mite	<ul style="list-style-type: none"> Superior 70 Oil 	20 L of oil/1,000 L of water	<p>Oil may cause bark injury on Red Delicious, Empire and Mutsu. Apply before overwintering eggs hatch. Usually the best timing is between Half-inch green to tight cluster when temperatures are getting warmer.</p> <p>Do not apply full rate of oil more than once per season. Apply oil in 2,000–3,000 L of water per ha. On large standard trees, use 90 L of oil in 4,500 L of water per ha. Do not use oil within 14 days of spraying Captan or Maestro.</p>
Rosy apple aphid	<ul style="list-style-type: none"> Assail 70 WP Actara 25 WG Movento 240 SC 	120 g/ha 160 g/ha 365 mL/ha	<p>Spray if 20 or more clusters in a 100-cluster sample are infested.</p> <p>Assail and Actara (neonicotinoids): Use a maximum of two neonicotinoid applications per season. Repeated use of some neonicotinoids may result in mite outbreaks.</p> <p>Actara: Highly toxic to bees exposed to direct treatment or to residues on blooming crops and weeds. Do not apply during bloom, and wait at least 5 days after treatment before placing beehives in or near treated fields.</p> <p>Movento: Has slow activity; control may not be apparent for 2–3 weeks. Under high pest pressure a second application may be necessary 2 weeks later. See the Movento label for additional details. Do not tank-mix with sulfur.</p>
Scab	<ul style="list-style-type: none"> Manzate Pro-stick or Dithane DG or Penncozeb 75 DF Polyram DF Supra Captan 80 WDG or Maestro 80 DF Dikar Sovran Flint 50 WG Pristine WG Nova 40 W plus Dithane DG Nova 40 W plus Polyram DF Nova 40 W plus Maestro 80 DF Nustar plus Manzate Pro-stick Vanguard 75 WG Scala SC 	6.0 kg/ha 6.0 kg/ha see label 6.0 kg/ha 3.75 kg/ha 3.75 kg/ha 6.75 kg/ha 240 g/ha 140 g/ha 1.0-1.2 kg/ha 340 g/ha 3.0 kg /ha 340 g /ha 3.0 kg/ha 340 g /ha 1.9 kg/ha 100 g/ha 3.0 kg/ha 370 g/ha 1.0 L/ha	<p>Resistance to Group 3 and Group 11 fungicides has been confirmed in Ontario. Check the status of these products before using them in your orchard.</p> <p>The following products are compatible with oil: Polyram DF Dithane DG Manzate Pro-Stick</p> <p>When mixing fungicides with oil, add fungicide to tank when $\frac{1}{4}$ to $\frac{1}{2}$ full of water and mix thoroughly. Add Superior 70 Oil last when tank is at least $\frac{1}{2}$ full of water. Do not use oil within 14 days of Captan or Maestro.</p> <p>Sovran, Flint, Nova, Nustar and Pristine: Do not use earlier than Tight cluster. After last application, tissue is protected from infection for 5–8 days. In conditions of rapid growth, shorten intervals between applications. Do not use if apple scab is present. Use of these products as eradicants may result in the development of fungicide resistance.</p> <p>Pristine: Use the higher rate and a shorter interval during periods of rapid growth or when disease pressure is high.</p> <p>Vanguard, Scala: These products do not control other foliar or fruit diseases. Use once then rotate to a different group. Use a maximum of two applications per season, prebloom only. Do not apply if apple scab is present.</p> <p>Serenade MAX: Provides suppression of apple scab. See Table 2-6. <i>Efficacy Ratings for Pesticides</i>, page 12 and <i>Bacillus subtilis (Serenade ASO, Serenade MAX)</i> page 14.</p> <p>See <i>Strategies for managing resistance to fungicides</i>, page 23.</p>
Powdery mildew	Use one of the products listed at Tight cluster to pink .		
Oriental fruit moth	<ul style="list-style-type: none"> Isomate-M 100 Isomate-M Rosso 	250 dispensers/ha 500 dispensers/ha	<p>Management of Oriental fruit moth (OFM) is only necessary in orchards where there is a history of damage. Place dispensers in orchards in late April before flight begins. Initial OFM population must be low for good results. Apply to square or rectangular orchard blocks at least 4 ha in size. For more information, see <i>Using mating disruption to control oriental fruit moth</i>, page 19.</p> <p>Isomate-M 100: Dispensers release pheromone for up to 90 days. Make a second application 75–80 days after initial application for late season varieties.</p> <p>Isomate-M Rosso: Provides control for up to 120 days.</p> <p>Outbreaks of other pests may occur when insecticides are not</p>

Diseases and Insects	Products	Rate	Comments
			used for OFM. Monitoring is extremely important where using mating disruption. Insecticides may be needed in late varieties where high OFM populations exist.
Tight cluster to pink			
Tentiform leafminer	<ul style="list-style-type: none"> Assail 70 WP Actara 25 WG Calypso 480 SC Intrepid 240 F Confirm 240 F Altacor Delegate WG Pounce or Perm-Up or Ambush 500 EC Decis 5 EC Ripcord 400 EC or Up-Cyde 2.5 EC Matador 120 EC or Silencer 120 EC 	80 g/ha 315 g/ha 145 mL/ha 500 mL/ha 1.0 L/ha 215 g/ha 420 g/ha 520 mL/ha 520 mL/ha 400 mL/ha 250 mL/ha 250 mL/ha 250 mL/ha 400 mL/ha 83 mL/ha 83 mL/ha	Apply if there are three or more eggs per spur or one or more sapfeeders per leaf. Assail, Actara, Calypso (neonicotinoid insecticides): Apply when population is mainly in the sapfeeder stage. Use a maximum of two neonicotinoid applications per season. Repeated use of some neonicotinoids may result in mite outbreaks. Actara: Highly toxic to bees exposed to direct treatment or to residues on blooming crops and weeds. Do not apply during bloom, and wait at least 5 days after treatment before placing beehives in or near treated fields. Intrepid, Confirm: Apply at first egg hatch. Confirm provides suppression rather than control of leafminer populations. Continue monitoring after application. Altacor, Delegate: Apply when population is mainly in the sapfeeder stage. Pounce, Ambush, Perm-Up, Ripcord, Up-Cyde, Decis, Matador, Silencer (pyrethroids): Apply at first egg hatch. Pyrethroids are highly toxic to beneficial insects, and may lead to outbreaks of European red mite. Use a maximum of one application per season.
Scab	Use one of the fungicides listed at Half-inch green to tight cluster .		
Powdery mildew	<ul style="list-style-type: none"> Nova 40 W Nustar Sovran Flint 50 WG Pristine WG Dikar Microscopic Sulphur Kumulus DF 	340 g/ha 200 g/ha 240 g/ha 140–210 g/ha 1.0–1.2 kg/ha 6.75 kg/ha See label 22.5 kg/ha	Spray susceptible varieties. If powdery mildew was prevalent the previous year, apply fungicides beginning at Green tip . Otherwise, begin application at Tight cluster and continue to First summer spray . Additional sprays beyond First summer spray may be needed on susceptible varieties or if disease pressure is severe. Nova, Nustar: These products do not control scab and should be tank-mixed with a protectant fungicide. See options for apple scab control at Half-inch green to tight cluster . Flint: For powdery mildew control, use 210 g/ha during pink to bloom stage. Pristine: Use the higher rate and a shorter interval during periods of rapid growth or when disease pressure is high. Microscopic Sulphur, Kumulus: Do not use on Delicious because these products can cause an increase in red mite and scale insect populations. Serenade MAX: Provides suppression of powdery mildew. See Table 2-6. <i>Efficacy Ratings for Pesticides</i> , page 12 and <i>Bacillus subtilis (Serenade ASO, Serenade MAX)</i> , page 14.
Rust	<ul style="list-style-type: none"> Ferbam 76 WDG Dikar Polyram DF Dithane DG or Penncozeb 75 DF Nova 40 W Flint 50 WG 	see label 6.75 kg/ha 6.0 kg/ha 6.0 kg/ha see label 340 g/ha 140 g/ha	Spray if the alternate host, Eastern red cedar is nearby. Fungicides should be applied preventatively. Include in each spray up to and including First summer spray . Ferbam: May cause russetting on Golden Delicious and other sensitive varieties. Nova: Should be used with a protectant fungicide. See options for apple scab control at Half-inch green to tight cluster .
Plant bugs	<ul style="list-style-type: none"> Ripcord 400 EC Matador 120 EC or Silencer 120 EC Ambush 500 EC 	250 mL/ha 104 mL/ha 104 mL/ha 400 mL/ha	Apply only in orchards where monitoring indicates plant bugs are active. Ripcord, Matador, Silencer and Ambush (pyrethroids): Are highly toxic to beneficial insects, and may lead to outbreaks of European red mite.

Diseases and Insects	Products	Rate	Comments
Codling moth and Oriental fruit moth	<ul style="list-style-type: none"> Isomate-CFM/OFM TT 	500 dispensers/ha	<p>Reduces mating of codling moth (CM) and oriental fruit moth (OFM). Use mating disruption only if initial pest populations are low. Apply to square or rectangular orchard blocks at least 4 ha in size. Place pheromone traps for monitoring codling moth in orchard by bloom. Apply dispensers no later than petal fall, before first codling moth flight.</p> <p>Dispensers last for up to 150 days for codling moth and up to 90 days for OFM. Apply dispensers on lateral branches in upper third of tree canopy. Double the rate of dispensers at edges of orchards.</p> <p>Most orchards will require insecticides for one or both CM generations to prevent fruit damage. Insecticides for OFM may be needed in late varieties where high OFM populations exist. Outbreaks of other pests may occur when insecticides are not used for codling moth. Pest monitoring is extremely important where using mating disruption.</p> <p>See <i>Using mating disruption to control codling moth and oriental fruit moth (Isomate-CFM/OFM TT)</i>, page 20.</p>
Spring-feeding caterpillars	<ul style="list-style-type: none"> Imidan 50 WP Guthion 50 WSB or Sniper Zolone Flo 	3.75 kg/ha see label see label 2.0 L/ha	Apply if there are 12 to 15 larvae in 100 terminals.
Pink			
Scab	Use one of the fungicides listed at Half-inch green to tight cluster .		
Black rot	<ul style="list-style-type: none"> Maestro 80 DF Supra Captan 80 WDG 	3.75 kg/ha 3.75 kg/ha	Apply fungicides preventatively to susceptible varieties in orchards with a history of black rot infections. Do not use oil within 14 days of Maestro or Captan.
European red mite	<ul style="list-style-type: none"> Carzol SP 	1.1 kg/ha	Miticides are most effective when used alone. Carzol is harsh on beneficial mite species and bees.
Rosy apple aphid	<ul style="list-style-type: none"> Assail 70 WP Movento 240 SC Zolone Flo 	120 g/ha 365 mL/ha 2.0 L/ha	<p>Pink is the preferred time for control. Spray if 20 or more clusters in a 100-cluster sample are infested.</p> <p>See Table 11-3. <i>Relative Toxicity of Pesticides to Honeybees</i>, page 215.</p> <p>Assail: Use a maximum of two applications of neonicotinoid insecticides per season. Repeated use of this group may result in mite outbreaks. See Table 4-7. <i>Products Used on Apples</i>, page 68.</p> <p>Movento: Has slow activity; control may not be apparent for 2–3 weeks. Under high pressure a second application may be necessary 2 weeks later. See the Movento label for additional details. Do not tank-mix with sulfur.</p>
Bloom			
DO NOT APPLY INSECTICIDES WHILE APPLE TREES ARE IN BLOOM. SEE BEE POISONING ON PAGE 214.			

Diseases and Insects	Products	Rate	Comments
Scab	<ul style="list-style-type: none"> Manzate Pro-stick or Dithane DG or Penncozeb 75 DF Polyram DF Supra Captan 80 WDG or Maestro 80 DF Dikar Sovran Flint 50 WG Pristine WG Nova 40 W plus Dithane DG Nova 40 W plus Polyram DF Nova 40 W plus Maestro 80 DF Nustar plus Manzate Pro-stick 	6.0 kg/ha 6.0 kg/ha see label 6.0 kg/ha 3.75 kg/ha 3.75 kg/ha 6.75 kg/ha 240 g/ha 140 g/ha 1.0–1.2 kg/ha 340 g/ha 3.0 kg/ha 340 g/ha 3.0 kg/ha 340 g/ha 1.9 kg/ha 100 g/ha 3.0 kg/ha	<p>Resistance to Group 3 and Group 11 fungicides has been confirmed in Ontario. Check the status of these products before using them in your orchard.</p> <p>Sovran, Flint, Pristine, Nova, Nustar: Do not use earlier than Tight cluster. See Table 2-11. <i>Fungicide/Bactericide Groupings Based on Sites of Action</i>, page 26. After last application of Sovran, Flint, Nova or Nustar tissue is protected from infection for 5–8 days. In conditions of rapid growth, shorten intervals between applications. Check label for details.</p> <p>Do not use Nova, Nustar, Flint, Pristine or Sovran if apple scab is present. Use of these products as eradicants may result in the development of fungicide resistance.</p> <p>Pristine: Use the higher rate and a shorter interval during periods of rapid growth or when disease pressure is high.</p> <p>Serenade MAX: Provides suppression of apple scab. See Table 2-6. <i>Efficacy Ratings for Pesticides</i>, page 12 and <i>Bacillus subtilis (Serenade ASO, Serenade MAX)</i>, page 14.</p>
Fire blight	<ul style="list-style-type: none"> Streptomycin 17 	600 g/1,000 L	<p>A model to time fire blight sprays is available. See information on MaryBlyt in OMAFRA Publication 310, <i>Integrated Pest Management for Apples</i>.</p> <p>Otherwise, apply sprays if temperatures over 18° C are accompanied by high humidity (over 69%), heavy dews or rainfall. Spray susceptible varieties beginning at first bloom until petal fall. Streptomycin is most effective when applied in high volumes of water prior to an infection period. Use alone for best results. Streptomycin 17 is UV light sensitive and is only effective for 2–3 days. Re-application is needed after 2–3 days if warm, wet conditions (above 20°C) are forecast. Use a maximum of three applications per season.</p> <p>Biopesticides are available for fire blight suppression. See Table 2-6. <i>Efficacy Ratings for Pesticides</i>, page 12 and notes on Serenade MAX, Bacillus subtilis (Serenade ASO, Serenade MAX), page 14.</p>
Late Bloom/Early Petal Fall			
Fire blight (Suppression of shoot blight stage)	<ul style="list-style-type: none"> Apogee 	1.35 kg/ha	<p>Apogee: Reduces vegetative growth, making trees less susceptible to fire blight infections of shoots. Apogee has no impact on blossom blight or the fire blight bacteria. Apply in late bloom or early petal fall when shoots are 2.5–5.5 cm long. Accurate timing is critical. Apogee will help suppress fire blight infections from this point on. Re-apply spray 14–21 days later.</p> <p>In plantings with low vigour, a reduction in shoot growth caused by the high rate of Apogee for fire blight suppression may be undesirable.</p> <p>For more information on the use of Apogee refer to <i>Vegetative growth control in apples</i>, page 90.</p>
Petal fall (Calyx) when most petals have fallen			
Some products control more than one pest. See Table 4-8. <i>Activity of Petal Fall Insecticides Against Orchard Pests</i> , page 70.			
Scab	Use one of the fungicides recommended at Bloom .		
Black rot	Use one of the fungicides listed at Pink .		

Diseases and Insects	Products	Rate	Comments
Tentiform leafminer	<ul style="list-style-type: none"> • Agri-Mek 1.9% EC • Admire 240 F or Alias 240 SC • Assail 70 WP • Actara 25 WG • Calypso 480 SC • Altacor • Delegate WG • Pounce or Perm-Up or Ambush 500 EC • Decis 5 EC • Ripcord 400 EC or Up-Cycle 2.5 EC • Matador 120 EC or Silencer 120 EC 	<p>750 mL/ha</p> <p>380 mL/ha 380 mL/ha</p> <p>80 g/ha</p> <p>315 g/ha</p> <p>145 mL/ha</p> <p>215 g/ha</p> <p>420 g/ha</p> <p>520 mL/ha 520 mL/ha 400 mL/ha</p> <p>250 mL/ha</p> <p>250 mL/ha</p> <p>400 mL/ha</p> <p>83 mL/ha 83 mL/ha</p>	<p>Apply after egg hatch begins, if there is one or more sapfeeding mines per leaf. See Table 11-3. <i>Relative Toxicity of Pesticides to Honeybees</i>, page 215.</p> <p>Agri-Mek: Do not apply later than 21 days after petal fall. Apply with 10 L of Superior 70 Oil and a minimum of 1,000 L of water per ha. Agri-Mek plus oil may cause russetting on Golden Delicious and other light-skinned cultivars. Do not tank mix Agri-Mek plus oil with other products and do not use within 14 days of Captan or Maestro application.</p> <p>Admire, Alias, Assail, Actara, Calypso: Apply these insecticides when population is mainly in the sapfeeder stage. Repeated use of some products in this group may result in mite outbreaks. Use a maximum of two applications per season.</p> <p>Actara: Highly toxic to bees exposed to direct treatment or to residues on blooming crops and weeds. Do not apply during bloom, and wait at least 5 days after treatment before placing beehives in or near treated fields.</p> <p>Altacor, Delegate: Apply when population is mainly in the sapfeeder stage.</p> <p>Pounce, Ambush, Perm-Up, Ripcord, Up-Cycle, Decis, Matador, Silencer (pyrethroids): Pyrethroids are highly toxic to beneficial insects, and may lead to outbreaks of European red mite. In years where leafminer egg hatch is delayed, a pyrethroid can be applied at petal fall when first sapfeeding mine is detected. Use a maximum of one pyrethroid application per season.</p>
Rosy apple aphid	<ul style="list-style-type: none"> • Admire 240 F or Alias 240 SC • Assail 70 WP • Actara 25 WG • Movento 240 SC • Zolone Flo 	<p>230 mL/ha 230 mL/ha</p> <p>120 g/ha 160 g/ha</p> <p>365 mL/ha</p> <p>2.0 L/ha</p>	<p>Spray if 20 or more clusters in a 100-cluster sample are infested.</p> <p>Admire, Alias, Assail, Actara (neonicotinoids): Some neonicotinoids are toxic to bees. Repeated use may result in mite outbreaks. Use a maximum of two applications per season.</p> <p>Actara: Highly toxic to bees exposed to direct treatment or to residues on blooming crops and weeds. Do not apply during bloom, and wait at least 5 days after treatment before placing beehives in or near treated fields.</p> <p>Movento: Has slow activity; control may not be apparent for 2–3 weeks. Under high pressure a second application may be necessary 2 weeks later. See the Movento label for additional details. Do not tank-mix with sulfur.</p>
Mullein leaf bug	<ul style="list-style-type: none"> • Calypso 480 SC • Actara 25 WG • Admire 240 F or Alias 240 SC • Diazinon 50 W 	<p>290 mL/ha 315 g/ha</p> <p>380 mL/ha 380 mL/ha</p> <p>3.25 kg/ha</p>	<p>Apply controls where 7–9 nymphs are caught per 25 taps.</p> <p>Admire, Alias, Assail, Actara (neonicotinoids): Note that some neonicotinoids are toxic to bees. Repeated use of some neonicotinoids may result in mite outbreaks. Use a maximum of two neonicotinoid applications per season.</p> <p>Diazinon is very toxic to bees and some beneficial insects.</p>
Oystershell scale San Jose scale	<ul style="list-style-type: none"> • Guthion 50 WSB or Sniper • Movento 240 SC 	<p>see label see label</p> <p>365 mL/ha</p>	<p>Apply when the crawlers are active in orchards with a history of scale.</p>
Plum curculio	<ul style="list-style-type: none"> • Actara 25 WG • Calypso 480 SC • Imidan 50 WP • Zolone Flo • Guthion 50 WSB or Sniper • Surround WP 	<p>385 g/ha 440 mL/ha</p> <p>3.75 kg/ha 3.0 L/ha</p> <p>see label see label</p> <p>50.0 kg/ha</p>	<p>Actara, Calypso: Optimal timing is at petal fall plus 3 days. However if monitoring indicates plum curculio is in the orchard prior to this timing, then insecticides should be applied at petal fall. Do not use Calypso/Actara in border sprays. Note that some neonicotinoids are toxic to bees. Repeated use of some neonicotinoids may result in mite outbreaks. Use a maximum of two neonicotinoid applications per season.</p> <p>Actara: Highly toxic to bees exposed to direct treatment or to residues on blooming crops and weeds. Do not apply during bloom, and wait at least 5 days after treatment before placing beehives in or near treated orchards.</p>

Diseases and Insects	Products	Rate	Comments
			<p>Guthion, Sniper, Imidan, and Zolone: Apply immediately at petal fall, or when monitoring indicates plum curculio is in the orchard.</p> <p>Surround: Must be applied before plum curculio is present in orchard. Make two applications, 7 days apart, at 50 kg/ha, to establish a base layer. Continue at 7–14 day intervals, using a reduced rate of 25 kg/ha, to maintain even coverage of developing fruits. Do not use Surround in border sprays. See notes on <i>Kaolin Clay (Surround WP)</i>, page 17.</p>
European apple sawfly	<ul style="list-style-type: none"> Guthion 50 WSB or Sniper 	<p>See label</p> <p>See label</p>	Apply where there has been a history of damage. Use yellow sticky traps to monitor for sawfly adults. If a prebloom insecticide has been applied, spray postbloom when six sawflies have been caught per trap. Where no prebloom insecticides have been applied, spray postbloom when three sawflies have been caught per trap.
European red mite	<ul style="list-style-type: none"> Agri-Mek 1.9% EC Acramite 50 WS Envidor 240 SC Kanemite 15 SC Apollo SC Carzol SP 	<p>750 mL/ha</p> <p>851 g/ha or 3.75 pouches/ha</p> <p>750 mL/ha</p> <p>2.1 L/ha</p> <p>300 mL/ha</p> <p>1.1 kg/ha</p>	<p>Thorough spray coverage is essential for good control with miticides. See Table 4-9. <i>Activity of Miticides Registered on Apple and/or Pear in Ontario</i>, page 70.</p> <p>Agri-Mek: Apply when there are 5–7 active mites/leaf timed for 50% egg hatch, no later than 21 days after petal fall. Apply with 10 L Superior 70 Oil and a minimum of 1,000 L of water per ha. Agri-Mek plus oil may cause russetting on Golden Delicious and other light-skinned varieties. Do not use Agri-Mek plus oil within 14 days of a Captan or Maestro application. Alternate yearly with other early season miticides (e.g., Superior 70 Oil, Apollo).</p> <p>Acramite, Envidor and Kanemite: Apply when there are five or more active mites per leaf.</p> <p>Agri-Mek and Envidor: Also control apple rust mites.</p> <p>Envidor: Has slow activity and results may not be apparent for up to 1 week.</p> <p>Apollo: Kills mite eggs. Apply when mites are mostly in the egg stage and before there are more than three active mites per leaf. Apply Apollo alone in a minimum of 1,100 L of water per ha.</p> <p>Carzol: Harsh on beneficial insects, mites and bees.</p> <p>Do not apply any miticide more than once per season. To prevent development of pesticide resistance, rotate products from different groups. See <i>Strategies for managing resistance to insecticides</i>, page 25.</p> <p>Miticides are best applied alone.</p>
Blister spot	<ul style="list-style-type: none"> Aliette WDG 	2.0 kg/ha	Apply preventatively to susceptible varieties such as Mutsu and Golden Delicious. Begin applications at petal fall with 1–2 subsequent sprays at 7 day intervals. Do not mix with copper compounds.
Obliquebanded leafroller	<ul style="list-style-type: none"> Success 480 SC Entrust 80 W Delegate WG Dipel 2X DF or Foray 48BA or Bioprotect CAF Intrepid 240 F Confirm 240 F Altacor 	<p>182 mL/ha</p> <p>109 g/ha</p> <p>420 g/ha</p> <p>1.12 kg/ha</p> <p>2.8 L/ha</p> <p>4.0 L/ha</p> <p>750 mL/ha</p> <p>1.0 L/ha</p> <p>215 g/ha</p>	<p>For overwintering obliquebanded leafroller, apply at petal fall. Spray in orchards with historical pest problems or high pest pressure (1–2% of the terminals or buds have larvae or damage).</p> <p>OBLR are resistant to organophosphate insecticides in most commercial apple orchards. Cross-resistance to pyrethroids, Confirm and Intrepid is possible. Avoid treating sequential generations with products from the same chemical group. See <i>Strategies for managing resistance to insecticides</i>, page 25.</p> <p>Dipel, Foray, Bioprotec (B.t. products): Make two applications at 5–7 day intervals if activity of the larvae is extended. For best results when using B.t. products, acidify spray mix to below pH 7.0 and apply at dusk or on overcast days. See <i>Biopesticides and reduced risk products for insect control</i>, page 17.</p> <p>Place pheromone traps in orchards at petal fall to monitor OBLR adults.</p>

Diseases and Insects	Products	Rate	Comments
Oriental fruit moth	<ul style="list-style-type: none"> • Intrepid 240 F • Assail 70 WP • Calypso 480 SC • Rimon 10 EC • Altacor • Delegate WG • Decis 5 EC 	<p>1.0 L/ha</p> <p>240 g/ha 440 mL/ha</p> <p>1.4 L/1,000 L</p> <p>215 g/ha</p> <p>420 g/ha</p> <p>250 mL/ha</p>	<p>This is a special spray for orchards where there is a history of damage or pressure. Timing is critical for effective control; use monitoring results to adjust spray timing. Apply insecticides 6-10 days after upswing in pheromone trap catches, which often coincides with petal fall.</p> <p>Alternatively, use this degree-day model to time the application of insecticides for OFM. Begin accumulating degree days (base 7.2° C) at first sustained moth catch (biofix). Apply insecticides targeting first generation larvae:</p> <p>Intrepid: Apply at 139–153 DDC for hatching eggs and young larvae.</p> <p>Rimon: Apply at 111–139 DDC. Use for first generation only. See notes for codling moth, below.</p> <p>Assail, Calypso: Apply at 139–153 DDC for eggs or larvae.</p> <p>Delegate, Altacor: Apply at 194–208 DDC or earlier if using as an ovi-larvicide.</p> <p>Decis: Apply Decis at 194–208 DDC or earlier.</p> <p>See <i>Degree-day modeling and determining a biofix</i>, page 8.</p> <p>Assail, Calypso: Repeated use of some neonicotinoids may result in mite outbreaks. Use a maximum of two products in this group per season.</p> <p>Decis: Highly toxic to beneficial insects and may lead to outbreaks of European red mite. Use only as a last resort. Use a maximum of 1 application per season.</p> <p>If an insecticide is used at this time to manage OFM the application of mating disruption products may be delayed until mid-June.</p>
Codling moth	<ul style="list-style-type: none"> • Rimon 10 EC 	1.4 L/1,000L	<p>Rimon: Has a unique mode of action and should be applied earlier than other products for codling moth. Apply Rimon at petal fall and re-apply 10–14 days later. Use for first generation only. See label for additional information on rates and volumes. Do not allow Rimon to drift onto grapes as leaf spotting may occur. The application of Rimon at this time will provide subsequent control of OBLR and OFM.</p>
Powdery mildew	Use one of the fungicides listed at Tight cluster to pink .		
First summer spray (7–14 days after Petal fall (Calyx))			
Scab	Use one of the fungicides recommended at Bloom . An extra scab spray may be required between Petal fall (Calyx) and First summer spray . See <i>Control of apple scab under adverse weather conditions</i> , page 76.		
Plum curculio	Use one of the insecticides listed under Petal fall (Calyx) .		
Fire blight	<ul style="list-style-type: none"> • Streptomycin 17 	600 g/1,000 L	Apply to control shoot blight especially if blossom blight has occurred.
European red mite	<ul style="list-style-type: none"> • Agri-Mek 1.9% EC • Acramite 50 WS • Envidor 240 SC • Kanemite 15 SC • Apollo SC 	<p>750 mL/ha</p> <p>851 g/ha or 3.75 pouches/ha</p> <p>0.75 L/ha</p> <p>2.1 L/ha</p> <p>300 mL/ha</p>	<p>Thorough coverage is essential for good control with miticides. See Table 4-9. <i>Activity of Miticides Registered on Apple and/or Pear in Ontario</i>, page 70.</p> <p>Agri-Mek: Apply when there are 5–7 mites/leaf timed for 50% egg hatch. Apply when mites are in the nymph stage, no later than 21 days after petal fall. Apply with 10 L of Superior 70 Oil and a minimum of 1,000 L of water per ha. Agri-Mek plus oil may cause russetting on Golden Delicious and other light-skinned cultivars. Do not apply within 14 days of Captan or Maestro application. Ideally, alternate yearly with other early season miticides (e.g. Superior 70 Oil, Apollo).</p>

Diseases and Insects	Products	Rate	Comments
Two-spotted spider mite	<ul style="list-style-type: none"> • Agri-Mek 1.9% EC • Acramite 50 WS • Envidor 240 SC • Kanemite 15 SC • Apollo SC 	750 mL/ha 567 g/ha or 2.5 pouches/ha 0.75 L/ha 2.1 L/ha 300 mL/ha	<p>Acramite, Envidor and Kanemite: Should be applied when there are five or more active mites per leaf before bronzing occurs.</p> <p>Agri-Mek and Envidor: Also control rust mites.</p> <p>Envidor: Activity is slow; control may not be apparent for up to one week.</p> <p>Apollo: Apply no later than 14 days after petal fall. Apollo kills mite eggs. Apply when mites are mostly in the egg stage and before there are more than three active mites per leaf. Thorough coverage is essential for good control. Apply Apollo alone in a minimum of 1,100 L of water per ha.</p> <p>Do not apply any miticide more than once per season. To prevent development of pesticide resistance, rotate products from different groups. See <i>Strategies for managing resistance to insecticides</i>, page 25.</p>
Rosy apple aphid	<ul style="list-style-type: none"> • Admire 240 F or Alias 240 SC • Assail 70 WP • Actara 25 WG • Movento 240 SC • Zolone Flo 	230 mL/ha 230 mL/ha 120 g/ha 160 g/ha 365 mL/ha 2.0 L/ha	<p>Controls should be applied if 20 or more infested clusters are present in a sample of 100 clusters.</p> <p>See comments at Petal fall.</p>
Powdery mildew	Use one of the fungicides listed under Tight cluster to pink .		
Blister spot	<ul style="list-style-type: none"> • Copper 53 W • Aliette WDG 	3.0 kg/ha 2.0 kg/ha	<p>Apply preventatively to Mutsu, Golden Delicious and other susceptible varieties.</p> <p>Copper 53 W: To reduce the incidence of blister spot lesions, apply up to three sprays beginning 10 days after petal fall. Use hydrated lime to reduce the risk of phytotoxicity at a rate of 6 kg per 1 kg of Copper 53 W per 1,000 L of water. Apply in 3,000 L of water per ha.</p> <p>Aliette: Begin applications at petal fall and spray at 7 day intervals. Do not mix with copper compounds. Use a maximum of three applications per season.</p>
Oriental fruit moth	<ul style="list-style-type: none"> • Isomate-M 100 • Isomate-M Rosso 	250 dispensers/ha 500 dispensers/ha	<p>Refer to mating disruption comments listed under Half-inch green to tight cluster.</p> <p>Isomate-M 100: Make a second application of 75–80 days after the first.</p> <p>Isomate-M Rosso: Will provide control for up to 120 days.</p>
Codling moth (first generation)	<ul style="list-style-type: none"> • Intrepid 240 F • Confirm 240 F • Assail 70 WP • Calypso 480 SC • Altacor • Delegate WG • Imidan 50 WP • Guthion 50 WSB or Sniper • Zolone Flo 	1.0 L/ha 1.0 L/ha 170 g/ha 440 mL/ha 215 g/ha 420 g/ha 3.75 kg/ha see label see label 2.0 L/ha	<p>Timing is critical for effective control. Use pheromone traps to time sprays. Apply insecticides between 83-138 DDC (base 10°C) after first sustained moth catch. See <i>Degree-day modeling and determining a biofix</i>, page 8.</p> <p>Some products also control apple maggot or other pests. See Table 4-10. <i>Activity of Insecticides and Miticides on Apple Pests</i>, page 71.</p> <p>Imidan, Guthion, Sniper, Zolone (OP insecticides): Apply for first generation codling moth at 138 DDC.</p> <p>Intrepid and Confirm: Apply Intrepid or Confirm 2–3 days earlier than OP insecticides (83–111 DDC). Intrepid residues last 14 or more days. Do not apply as a border spray.</p> <p>Assail and Calypso: Apply 1–2 days earlier (at 111–138 DDC) than OP insecticides. Calypso/Assail residues last 10–14 days. Do not apply as a border spray.</p> <p>Altacor and Delegate: Apply at 138 DDC. Residues last 10–14 days. Do not apply as a border spray.</p> <p>Virosoft CP4 (granulosis virus) is a biopesticide that provides suppression of codling moth. For more information on this</p>

Diseases and Insects	Products	Rate	Comments
			product, see <i>Biopesticides and reduced risk products for insect control</i> , page 17 and notes on <i>Cydia pomonella granulosus virus (Virosoft)</i> , page 18.
Subsequent summer sprays			
Scab	Until the end of the primary scab season use one of the fungicides recommended at Bloom . For summer (secondary) scab control, use one of the following:		
	<ul style="list-style-type: none"> • Supra Captan 80 WDG or Maestro 80 DF • Dikar WP • Polyram DF • Manzate Pro-stick or Dithane DG or Penncozeb 75 DF 	3.75 kg/ha (1.9) 3.75 kg/ha (1.9) 6.75 kg/ha 6.0 kg/ha (4.5) 6.0 kg/ha (5.0) 6.0 kg/ha (5.0) See label	If scab is controlled in your orchard use the lower rate given in brackets. Do not apply Polyram, Dikar, Manzate, Dithane or Penncozeb within 45 days of harvest.
Sooty blotch Fly speck	<ul style="list-style-type: none"> • Supra Captan 80 WDG or Maestro 80 DF • Flint 50 WG • Pristine WG 	3.75 kg/ha 3.75 kg/ha 140 g/ha 0.6-0.8 kg	Captan or Maestro: Repeat application in 2 weeks. At full rates these products protect against black rot. Pristine: Use the higher rate and a shorter interval during periods of rapid growth or when disease pressure is high.
Codling moth (second generation)	<ul style="list-style-type: none"> • Intrepid 240 F • Confirm 240 F • Assail 70 WP • Calypso 480 SC • Imidan 50 WP • Guthion 50 WSB or Sniper • Zolone Flo • Altacor • Delegate WG 	1.0 L/ha 1.0 L/ha 170 g/ha 440 mL/ha 3.75 kg/ha see label 2.0 L/ha 215 g/ha 420 g/ha	Timing is critical for effective control. Use pheromone traps to time sprays. For second generation codling moth, spray at 611–694 DDC (base 10° C) after first generation sustained moth catch . See <i>Degree-day modeling and determining a biofix</i> , page 8. Some products also control apple maggot or other pests. See Table 4-10. <i>Activity of Insecticides and Miticides on Apple Pests</i> , page 71. Intrepid and Confirm: Apply 2–3 days earlier than OP insecticides (611–639 DDC). Intrepid residues last 14+ days. Do not apply as a border spray. Assail and Calypso: Apply 1–2 days earlier than OP insecticides (639–667 DDC). Assail and Calypso residues last 10–14 days. Do not apply as a border spray. Imidan, Guthion, Sniper, Zolone (OP insecticides): Apply at 667–694 DDC. Do not apply as a border spray. Delegate and Altacor: Apply at 667–694 DDC. Do not apply as a border spray. Virosoft CP4 (granulosis virus) is biopesticide that is registered for codling moth. For more information on this product, refer to notes on <i>Cydia pomonella granulosus virus (Virosoft)</i> , page 18.
Oriental fruit moth	<ul style="list-style-type: none"> • Isomate-M 100 • Isomate-M Rosso 	250 dispensers/ha 500 dispensers/ha	Refer to mating disruption comments listed under Half-inch green to tight cluster . Isomate-M 100: Make a second application 75–80 days following first application. Isomate-M Rosso: Provides control for up to 120 days.

Diseases and Insects	Products	Rate	Comments
Apple maggot	<ul style="list-style-type: none"> Imidan 50 WP Guthion 50 WSB or Sniper Zolone Flo Diazinon 50 W Calypso 480 SC Surround WP 	3.75 kg/ha see label see label 3.0 L/ha see label 440 mL/ha 50.0 kg/ha	<p>Use trap catches to time the first spray. Make subsequent applications at 14–21 day intervals or as required based on monitoring.</p> <p>Imidan, Guthion, Sniper, Zolone, Diazinon: Apply 7 days after the first adult maggot is caught on a sticky board. Residues last approximately 18–21 days.</p> <p>Calypso: Apply 7 days after the first adult maggot is caught on a sticky board. Calypso residue lasts 14 days. Use a maximum of two neonicotinoid applications per season. Repeated use of neonicotinoids may result in mite outbreaks. Not recommended as a border spray.</p> <p>Surround: Begin applications well before first maggot flies are trapped in commercial orchards, and continue at 7–14 day intervals to maintain even coverage of fruit as long as flies continue to be captured. Use 50 kg/ha for the first two applications of the season, continue at 25 kg/ha. Do not use Surround in border sprays. See notes on <i>Kaolin Clay (Surround WP)</i>, page 17.</p> <p>GF-120 NF (spinosad bait): Provides suppression of apple maggot. See notes on <i>Spinosad + bait (GF-120)</i>, page 18.</p>
Special summer sprays			
Blister spot	<ul style="list-style-type: none"> Copper 53 W Aliette WDG 	3.0 kg/ha 2.0 kg/ha	See comments on blister spot control under First summer spray .
Green apple aphid (GAA) Rosy apple aphid (RAA)	<ul style="list-style-type: none"> Admire 240 F or Alias 240 SC Assail 70 WP Movento 240 SC Zolone Flo Diazinon 50 W Thionex 50 W 	230 mL/ha 230 mL/ha 120 g/ha 365 mL/ha 2.0 L/ha see label 4.5 kg/ha	<p>Spray for GAA if 10% of terminals are infested. Sprays can be delayed or avoided if predators are present on more than 20% of infested terminals.</p> <p>Apply RAA sprays if 20 or more infested clusters are present per 100 clusters examined.</p> <p>Admire, Alias and Assail (neonicotinoids): Use a maximum of two applications per season. Repeated use of products in this group may result in mite outbreaks.</p> <p>Movento: Has slow activity; control may not be apparent for 2–3 weeks. Under high pressure a second application may be necessary 2 weeks later. See the Movento label for additional details. Do not tank-mix with sulfur.</p>
Woolly apple aphid	<ul style="list-style-type: none"> Diazinon 500 E Malathion 25 W or Malathion 85 E Zolone Flo Movento 240 SC 	see label see label see label 2.0 L/ha 365 mL/ha	<p>Spray if aphid colonies are close to fruit clusters or on young trees and nursery stock. Use high volumes of water and ensure spray contacts trunk and scaffold limbs. Repeat application in 14 days if woolly apple aphid is still present.</p> <p>Malathion 85 E may cause injury to McIntosh and Cortland if applied within 4 weeks of harvest.</p> <p>Movento: Has slow activity; control may not be apparent for 2–3 weeks. Under high pressure a second application may be necessary 2 weeks later. See the Movento label for additional details. Do not tank-mix with sulfur.</p>
White apple leafhopper	<ul style="list-style-type: none"> Admire 240 F or Alias 240 SC Calypso 480 SC Sevin XLR Carzol SP Thionex 50 W 	200 mL/ha 200 mL/ha 145 mL/ha 3.1 L/ha 1.1 kg/ha 2.6 kg/ha	<p>Spray when nymphs are present (2–5 per leaf). There are two generations of nymphs per season, in mid-June and early August. Control of adults is very difficult.</p> <p>Assail: Applied at a rate of 120 g/ha for aphids will control leafhoppers.</p> <p>Admire, Alias and Assail (neonicotinoids): Use a maximum of two applications per season. Repeated use of products in this group may result in mite outbreaks.</p>

Diseases and Insects	Products	Rate	Comments
Potato leafhopper	<ul style="list-style-type: none"> Thionex 50 W Calypso 480 SC 	2.6 kg/ha 145 mL/ha	Apply where monitoring indicates a potential problem. Assail: Applied at a rate of 120 g/ha for aphids will also control leafhoppers.
Tentiform leafminer	<ul style="list-style-type: none"> Admire 240 F or Alias 240 SC Assail 70 WP Calypso 480 SC Altacor Delegate WG Pounce or Perm-Up or Ambush 500 EC Decis 5 EC Ripcord 400 EC or Up-Cycle 2.5 EC Matador 120 EC or Silencer 120 EC 	380 mL/ha 380 mL/ha 80 g/ha 290 mL/ha 215 g/ha 420 g/ha 520 mL/ha 520 mL/ha 400 mL/ha 250 mL/ha 250 mL/ha 400 mL/ha 83 mL/ha 83 mL/ha	From petal fall through July: Apply controls where there are one or more sapfeeding mines per leaf. From mid to late June through July: Apply where there are two mines per leaf (stressed trees) or four mines per leaf (healthy trees). Admire, Alias, Assail and Calypso: Apply when populations are mainly in the sapfeeder stage. Calypso: Note rate change from first to second generation. Use a maximum of two neonicotinoid applications per season. Repeated use of neonicotinoids may result in mite outbreaks. Pounce, Ambush, Perm-Up, Ripcord, Up-Cycle, Decis, Matador, Silencer (pyrethroids): Use is discouraged for summer generations of tentiform leafminer. Pyrethroids are highly toxic to beneficial insects and may lead to outbreaks of European red mite. These products do not control larvae within the mines.
Dogwood borer Apple bark borer	<ul style="list-style-type: none"> Pounce plus Superior Oil or Perm-Up plus Superior Oil 	22 mL/100 L water with 2 L oil 22 mL/100 L water with 2 L oil	Apply insecticides to tree trunk seven days after peak flight of adults in orchards with a history of borer problems. Make two applications at 2–3 week intervals. Soak the trunk.
Obliquebanded leafroller	<ul style="list-style-type: none"> Success 480 SC Entrust 80 W Dipel 2X DF or Foray 48BA or Bioprotec CAF Intrepid 240 F Confirm 240 F Altacor Delegate WG 	182 mL/ha 109 g/ha 1.12 kg/ha 2.8 L/ha 4.0 L/ha 750 mL/ha 1.0 L/ha 215 g/ha 420 g/ha	Place pheromone traps in orchards by June to monitor adult populations. Insecticides for summer generation larvae should be applied at 240–280 DDC after first sustained moth catch (base 6.1°C). See <i>Degree-day modeling and determining a biofix</i> , page 8. When applied for leafroller control, these products also control other leaf-feeding caterpillars. OBLR are resistant to organophosphate insecticides in most commercial apple orchards. Cross-resistance to pyrethroids, Confirm, and Intrepid is possible. Avoid treating sequential generations with the products from the same chemical group. See Table 2-12. <i>Insecticide and Miticide Groups Based on Sites of Action</i> , page 27. Success, Entrust: Monitor populations and re-apply as necessary on a 7–10 day schedule. Use a maximum of three applications per season. Intrepid, Confirm: Note these products provide suppression of OBLR at this timing. Apply a second spray 10–14 days after the first application. See label for specific timing. Use a maximum of two applications per season. Dipel, Foray, or Bioprotec: Make two applications at 5–7 day intervals if activity of the larvae is extended. For best results acidify spray mix to below pH 7.0 and apply at dusk or on overcast days. See <i>Biopesticides and reduced risk products for insect control</i> , page 17.
Oriental fruit moth	<ul style="list-style-type: none"> Assail 70 WP Calypso 480 SC Decis 5 EC Intrepid 240 F Altacor 	240 g/ha 440 mL/ha 250 mL/ha 1.0 L/ha 215 g/ha 420 g/ha	This is a special spray for orchards where there is a history of damage or pressure. Timing is critical for effective control; use monitoring results to adjust spray timing. Apply sprays 3–6 days after the upswing in moth flight for subsequent generations. If using the degree day model for OFM sprays, begin accumulating degree days (base 7.2 C) after first sustained moth catch of the first generation. See <i>Degree-day modeling and determining a biofix</i> , page 8. Apply insecticides for second generation OFM as follows: Assail, Calypso, Intrepid: 750–778 DDC

Diseases and Insects	Products	Rate	Comments
	<ul style="list-style-type: none"> Delegate WG 		<p>Decis, Altacor, Delegate: 778–833 DDC For 3rd generation OFM (first spray): Assail, Calypso, Intrepid: 1305–1333 DDC Decis, Delegate, Altacor: 1361–1389 DDC Decis: Highly toxic to beneficial insects and may lead to outbreaks of European red mite. Use only as a last resort. Rotate between products in different chemical families to deter the development of pesticide resistance. See Table 2-12. <i>Insecticide and Miticide Groups Based on Sites of Action</i>, page 27.</p>
European red mite	<ul style="list-style-type: none"> Pyramite or Nexter Acramite 50 WS Envidor 240 SC Kanemite 15 SC Carzol SP 	<p>300 g/ha 300 g/ha</p> <p>851 g/ha or 3.75 pouches/ha</p> <p>0.75 L/ha</p> <p>2.1 L/ha</p> <p>1.1 kg/ha</p>	<p>Thorough coverage is essential for good control with miticides. Use a minimum of 1,000 L/ha of water when applying summer miticides. See Table 4-9. <i>Activity of Miticides Registered on Apple and/or Pear in Ontario</i>, page 70. Pyramite, Nexter, Carzol: Apply when there are 7–10 active mites/leaf in June to mid-July or 10–15 active mites/leaf in July and August. Acramite, Envidor, Kanemite: Apply when there are five active mites/leaf. Envidor, Pyramite, Nexter or Kelthane: Also control rust mite. Envidor: Has slow activity; control may not be apparent for up to one week. Carzol: Harsh on beneficial mite species. Do not apply any miticide more than once per season. To prevent development of pesticide resistance, rotate products from different groups. See <i>Strategies for managing resistance to insecticides</i>, page 25. Miticides are best used alone.</p>
Two-spotted spider mite	<ul style="list-style-type: none"> Pyramite or Nexter Carzol SP Acramite 50 WS Envidor 240 SC Kanemite 15 SC 	<p>600 g/ha 600 g/ha</p> <p>1.1 kg/ha</p> <p>567 g/ha or 2.5 pouches/ha</p> <p>0.75 L/ha</p> <p>2.1 L/ha</p>	<p>Do not apply any miticide more than once per season. To prevent development of pesticide resistance, rotate products from different groups. See <i>Strategies for managing resistance to insecticides</i>, page 25. Miticides are best used alone.</p>
Japanese beetle	<ul style="list-style-type: none"> Imidan 50 WP 	3.75 kg/ha	Japanese beetles are a recent problem in some Ontario orchards, especially in young plantings of Honeycrisp. If Japanese beetles cause economic damage, insecticides may be necessary.
Pinpoint and storage scab	Use one of the fungicides recommended for secondary scab in Subsequent summer sprays . Do not use fungicides closer than the stated interval to harvest. See Table 4-7. <i>Products Used on Apples</i> , page 68.		
Preharvest sprays			
Botrytis grey mould Penicillium storage diseases (suppression)	<ul style="list-style-type: none"> Scala SC 	2.0 L/ha	<p>Scala: Apply 2 weeks before harvest. Captan and Maestro: Summer applications provide some protection against storage rots.</p>
Postharvest treatment			
Blue mould Grey mould	<ul style="list-style-type: none"> Mertect SC Scholar 50 WP 	0.50 L/500 L 227 g of product in 378 L of water	<p>Mertect: Continuous agitation is required. Follow label instructions. Does not control blue mould (<i>Penicillium</i>) or grey mould (<i>Botrytis</i>), that are resistant to benzimidazole fungicides. Scholar: For use in dip tank or drencher. Treats up to 90,000 kg of fruit. For dip treatments, dip fruit for approximately 30 seconds, then allow fruit to drain.</p>

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