

ECO APPLE QUICK GUIDE V 10.8 – 2025 GROWING SEASON – 03/12/2025

The Quick Guide serves as a spray guide which highlights approved pesticides on the Eco Apple Supplement based on apple growth stages. All applications should be supported by the IPM program including scouting, trapping, weather, predictive models and using a season-long approach. **It will not be necessary to take action at every growth stage.** There may be other products available that are not listed here and not all products listed here may be available in every state. **FOLLOW THE ECO APPLE SUPPLEMENT, YOUR STATE REGULATIONS AND ALL LABEL DIRECTIONS.**

CHANGES FOR 2025

- A phaseout of nitroguanidine neonicotinoids starts in 2025 and proposed to be completed by 2027. **Only one application of nitroguanidine neonicotinoids allowed in 2025, and an exemption for a second application may be requested.** Page 4. of the Core Eco Protocol outlines provisions for emergencies. Requesting an additional neonicotinoid application should be managed through this process. These active ingredients include clothianidin (Belay – not registered in NY), imidacloprid (Admire Pro, Wrangler, Alias, Montana) and thiamethoxam (Actara). In this guide these products are included with a ~~strikeout~~ to reflect this phaseout.
- The following efficacy ratings for alternatives to nitroguanidine neonicotinoids, adapted from the Michigan Commercial Fruit Guide were added to page 17: Beleaf 50 SG (flonicamid), Grandevo (*Chromobacterium subtsugae strain*), Sivanto (flupyradifurone), Transform (sulfoxaflor), Venerate (*Burkholderia spp.*), Verdepryn (cyclaniliprole), Versys/Sefina (afidopyropen).
- The Eco Apple App is now web-based, and available online: <https://ecoapple.net/>

Get the latest version of the *Eco Apple Supplement* and *Quick Guide*, <https://ipminstitute.org/services/eco-apple/>.

PEST AND MATERIALS		RATE PER ACRE
Dormant to Silver Tip		
Fire blight		
Champ Flowable		5.33 - 10.5 pt.
C-O-C-S WDG		8 - 15 lb.
Cuprofix Ultra 40 Disperss		5 - 7.5 lb.
Kocide 2000		6 - 12 lb.
Kocide 3000		3.5 - 7 lb.
Early-season copper applications may reduce apple scab, fire blight and black, white and bitter rot inoculum.		
Apple scab		
Spraying the surface of the leaves with urea will reduce spores by about 66%. Use feed-grade urea (46-0-0) and mix a 5% solution in water. Feed-grade urea dissolves in water much easier than granular (fertilizer-grade) urea. For greatest efficacy make applications in the autumn before leaf drop. If applied after leaf drop, make applications at least two weeks prior to bud break using a boom sprayer or an air-blast sprayer with only the lower nozzle(s) turned on. A 5% urea solution supplies about 20 lb. of actual nitrogen per acre. Nitrogen fertilizer application rates must be adjusted accordingly. NOTE: Do not apply to highly vigorous growing trees or trees with history of fire blight.		
Urea 5% solution (46-0-0)		44 lb. per 100 gal.
NOTE: If 46-0-0 urea is not available, the amount of urea mixed to 100 gallons of water must be adjusted to maintain a 5% solution.		
Green Tip		
Fire blight		
Late dormant or silver-tip application of copper is preferred, if none was made it can be made at this time.		
Apple scab		
Copper offers limited protection against apple scab for five to seven days in orchards with low inoculum, e.g., without significant scab the previous season. Copper is the first choice for orchards with low inoculum. See rates for fire blight above.		
In orchards with significant scab the previous season, Syllit (dodine) or Vanguard (cyprodinil) plus Captan or a mancozeb product is suggested as the first choice . Syllit should not be used with copper or where resistance is suspected. Mancozeb plus copper or a low rate of Captan may be applied as a second choice . Manzate and Penncozeb are trade names for mancozeb and are virtually the same.		
When weather is cool and wet, e.g., $\leq 70^{\circ}\text{F}$, Vanguard may offer better performance than strobilurin (Qol) or sterol inhibitor (DMI) fungicides.		
Syllit 65 WP		1 lb.
Vanguard WG		3 - 5 oz.
NOTE: Tank mix all single-site fungicides with a half rate of Captan or an EBDC. If a protectant fungicide is used alone apply within the recommended label rate.		

PEST AND MATERIALS	RATE PER ACRE
Green Tip (continued)	
Captan 4L	3 - 4 qt.
Captan 50 WP	8 lb.
Captan 80 WP	5 lb.
NOTE: Do not use Captan within 10 days of an oil application.	
Penncozeb 75 DF or similar mancozeb product	6.4 lb.
Penncozeb 80 WP or similar mancozeb product	6 lb.
NOTE: Mancozeb can be applied on a pre-bloom or extended-spray schedule. During the pre-bloom schedule, full-rate applications may be applied through bloom. The extended-spray schedule allows half-rate applications up to 77 days before harvest. Do not mix the pre-bloom and extended-spray schedule.	
Half-Inch Green	
Apple scab: Same options as Green Tip, except DO NOT USE COPPER.	
Mites and scale insects	
Horticultural oil (listed rate is for products comprised of 98% mineral oil) ..	3 - 8 gal.
Scale insects	
All insecticides targeting scale insects need should be applied as a full dilute spray. Apply 100 gal. of water per acre in high-density plantings and 400 gal. of water per acre to standard trees in low-density plantings.	
Centaur WDG	34.5 oz.
Esteem 35 WP	4 - 5 oz.
Sivanto 200 SL	10.5 - 14 fl. oz.
NOTE: Combine with a horticultural oil for early season applications targeting San Jose scale.	
Rosy apple aphid (timing is critical for effective control)	
Beleaf 50 SG	2 - 2.8 oz
Esteem 35 WP	3 - 5 oz.
Sivanto 200 SL (aphid species, except woolly apple aphid)	7 - 10.5 fl. oz.
Versys (aphid species, except woolly apple aphid)	1.5 fl. oz.
Tight Cluster	
Apple scab	
All single-site fungicides are at risk for resistance development; all applications must be tank-mixed with a protectant fungicide, e.g., Captan or EBDC. EBDCs also control rust diseases where inoculum is low to moderate. Reference product label for restrictions on reapplication intervals and maximum number of applications per season.	
If weather is persistently cool and wet, e.g., $\leq 70^{\circ}\text{F}$ from pink to bloom, Inspire Super (difenoconazole + cyprodinil), may be applied. Cyprodinil is an anilinopyrimidine (AP) and may perform better than QoI or DMI fungicides when it is cool and wet.	
Aprovia	5.5 - 7 fl. oz.

PEST AND MATERIALS	RATE PER ACRE
Tight Cluster (continued)	
Apple scab (continued) Cevya..... Excalia..... Flint Extra Fontelis Inspire Super Indar 2F Luna Sensation Merivon Miravis..... Rally 40 WSP Sercadis Sovran Topguard Specialty Vanguard WG	4 - 5 fl. oz. 3 – 4 fl. oz. 2.5 – 2.9 fl. oz. 16 - 20 fl. oz. 12 fl. oz. 6 - 8 fl. oz. 4 - 5.8 fl. oz. 4 - 5.5 fl. oz. 3.4 fl. oz. 5 - 8 oz. 3.5 - 4.5 fl. oz. 3.2 - 6.4 oz. 13 fl. oz. 3 - 5 oz.
Tank mix all single-site fungicides with a half rate of Captan or an EBDC. If a protectant fungicide is used alone apply within the recommended label rate. Captan 4L Captan 50 WP Captan 80 WP NOTE: Do not use Captan within 10 days of an oil application. Penncozeb 75 DF or similar mancozeb formulated products Penncozeb 80 WP or similar mancozeb formulated products	
Cedar apple rust EBDCs control rust diseases where inoculum is low to moderate. Additional fungicide treatments targeting rusts before petal fall may not be necessary in dry years or under low/moderate pressure. Pre-bloom treatment of rusts may be advised where there is a history of rust infections or if spring weather consistently cool and wet. Powdery mildew and apple scab are often prioritized over rust at Tight Cluster, and only fungicides that offer strong efficacy on apple scab, powdery mildew and rust are included. Ceyva..... Fontelis..... Miravis..... Topguard Specialty.....	3 - 4 qt. 8 lb. 5 lb. 6.4 lb. 6 lb. 4 - 5 fl. oz. 16 - 20 fl. oz. 3.4 fl. oz. 13 fl. oz.

PEST AND MATERIALS	RATE PER ACRE
Tight Cluster (continued)	
Powdery mildew Fungicide applications target powdery mildew between tight cluster and petal fall. Severe infections may continue until terminal shoot growth stops. Factors that influence infection risk may include amount of shoot growth, unprotected tissue and warm temperatures. Powdery mildew thrives during warm-dry weather, i.e., 50° - 70°F. The following products have been identified because of their good ability to manage powdery mildew. Cevya..... 4 - 5 fl. oz. Excalia..... 3 - 4 fl. oz. Fontelis 16 - 20 fl. oz. Inspire Super 12 fl. oz. Luna Sensation 5 - 5.8 fl. oz. Merivon 4 - 5.5 fl. oz. Miravis..... 3.4 fl. oz. Pristine..... 14.5 - 18.5 oz. Procure 480 SC 8 - 16 fl. oz. Sercadis..... 3.5 - 4.5 fl. oz. Rally 40 WSP 5 - 10 oz. Topguard Specialty 8 - 13 fl. oz. Kumulus DF (sulfur) 10 - 20 lb. NOTE: Tank mix all single-site fungicides with a protectant fungicide appropriate for the target disease, e.g., Captan or an EBDC for scab; EBDC for rust or sulfur for powdery mildew. Captan and EBDCs do not control powdery mildew. NOTE: Sulfur is a broad-spectrum protectant and may be tank mixed with sterol inhibitors (DMIs) or strobilurins (Qols) for added protection and resistance management for powdery mildew. Do not apply sulfur within 14 days of an oil application. Do not use Captan in combination with or closely following or in alternation with sulfur products. Use product label to verify use restrictions.	
Mites or San Jose scale Horticultural oil (listed rate is for products comprised of 98% mineral oil)..	3 - 8 gal.
Mites: Only if oil is not used. Zeal SC.....	4 - 6 fl. oz.
Scale insects: Only if oil is not used. Centaur WDG 34.5 oz. Esteem 35 WP 4 - 5 fl. oz. Sivanto 200 SL 10.5 - 14 fl. oz. NOTE: Combine with a horticultural oil for early-season applications targeting San Jose scale.	

PEST AND MATERIALS	RATE PER ACRE
Tight Cluster (continued)	
Tarnished plant bug: If over threshold on white rectangle traps.	
Avaunt	5 - 6 oz.
Beleaf 50 SG	2 - 2.8 oz.
Rosy apple aphid	
Esteem 35 WP	3 - 5 oz.
Beleaf 50 SG	2 - 2.8 oz.
Sivanto 200 SL (aphid species, except woolly apple aphid)	7 - 10.5 fl. oz.
Versys (aphid species, except woolly apple aphid)	1.5 fl. oz.
Pink	
Apple scab: Same as Tight Cluster.	
Powdery mildew: Same options as Tight Cluster.	
Cedar apple rust: Same options as Tight Cluster.	
Mites: If needed, same as Tight Cluster (excluding oil, which can damage flower buds).	
Tarnished plant bug: If over threshold on white rectangle traps, same as Tight Cluster.	
Bloom	
Apple scab: Same as Tight Cluster.	
Powdery mildew: Same as Tight Cluster.	
Cedar apple rust: Same options as Tight Cluster.	
Fire blight NOTE: Streptomycin or oxytetracycline must be applied for fire blight only according to a weather-based forecasting program such as Maryblyt or CougarBlight. Kasumin 2L may be used where resistance is suspected. After bloom, streptomycin may only be applied if hail or high wind damage occurs in orchards with existing infections. Blossom blight Agri-Mycin 17 WP OR A COMBINATION OF Regulaid (nonionic surfactant) If in 2 - 4 days a second application is needed Serenade Opti If in 2 - 4 days a third application is needed, repeat streptomycin. See rates above.	24 - 48 oz. 1 - 2 pt. per 100 gal. (do not concentrate) 14 - 20 oz.

PEST AND MATERIALS	RATE PER ACRE
Bloom (continued)	
Shoot blight (late bloom or early petal fall)	
Trees > 5 years old Apogee 27.5 DF 18 - 36 oz. Trees < 5 years old Apogee 27.5 DF 9 - 18 oz. NOTE: Applying Apogee will help suppress shoot blight and reduce vegetative growth. Begin applications when shoot growth is less than three inches in length; approximately a seven to ten-day window beginning at the king bloom petal fall stage. Most years, all varieties can be treated at this time. Apply a second application two weeks later and a third application two weeks after the second. A fourth application is optional and need should be determined by assessing crop load and tree vigor. Rates used to control shoot growth are dependent on tree vigor and vary from 9 - 36 oz. per acre. Cueva..... 0.5-2 gal. NOTE: Cueva should only be used for shoot blight post bloom.	
Codling moth/oriental fruit moth: Pheromones for mating disruption. Isomate CTT 100 - 200 dispensers Checkmate CM-F 2.4 - 4.8 fl. oz. Cidetrak CMDA Combo Meso-A 18 – 36 dispensers Cidetrak CMDA + OFM Meso 30 – 38 dispensers NOTE: Apply pheromone mating disruption before initiation of moth flight (e.g., bloom for first generation, by late June for second generation); supplemental insecticide sprays timed to coincide with egg hatch may be needed and could include border sprays in blocks adjacent to sources of adult immigration or other high-pressure situations.	
Obliquebanded leafroller: If needed, based on $\geq 3\%$ infested blossom clusters. Agree WG 1 - 2 lb. DiPel DF 0.5 - 2 lb. Spear LEP..... 1-2 pt. NOTE: Recommended as a tank mix with Bt products. Spear LEP in combination with Bt is only effective on the larval stages of listed lepidopteran pests. Repeat applications at three to ten day intervals (or at intervals necessary to maintain control) depending upon plant growth rate, pest activity and other factors. Intrepid 2F 8 – 16 fl. Oz.	

PEST AND MATERIALS	RATE PER ACRE
Petal Fall (continued)	
Mites: Make no more than two post-bloom miticide applications per season (except for oil). Horticultural Oil (listed rate is for products comprised of 98% mineral oil).. Envirdor 2 SC Portal Nealta Zeal SC Acramite 50 WS Kanemite 15 SC (Acramite and Kanemite are effective aduclicides and thus may be best reserved for later in the season)	1.5 gal 16 – 18 oz. 2 pt. 13.7 fl. Oz. 4 – 6 fl. Oz. 0.75 – 1 lb. 21 – 31 fl. Oz.
Plum curculio or European apple sawfly: Application based on scouting, block or region history. Actara Assail 30 SG (European apple sawfly) Assail 30 SG (plum curculio) Avaunt Exirel (European apple sawfly) Exirel (plum curculio) Verdepryn 100SL (plum curculio, European apple sawfly) NOTE: Carbaryl applied as a thinner may also suppress plum curculio or European apple sawfly, but may only be applied for thinning purposes.	4.5 – 5.5 oz. 5 – 8 oz 8 oz 5 – 6 oz. 8.5 – 17 fl. Oz. 13.5 – 20.5 fl. Oz. 5.5 - 11 fl. oz.
Obliquebanded leafroller and red banded leafroller: If needed based on $\geq 3\%$ infested blossom clusters (only if not treated at bloom). Altacor * Delegate WG * Exirel * NOTE: * Do not expose more than one generation of the target pest to this mode of action alone. Agree WG DiPel DF Spear LEP NOTE: Recommended as a tank mix with Bt products (Agree, Dipel DF). Spear LEP in combination with Bt is only effective on the larval stages of listed lepidopteran pests. Repeat applications at three to ten day intervals (or at intervals necessary to maintain control) depending upon plant growth rate, pest activity and other factors. Intrepid 2F Verdepyryn 100SL (Obliquebanded leafroller, redbanded leafroller)	2.5 – 4.5 oz. 4.5 – 7 oz. 8.5 – 17 fl. Oz. 1 – 2 lb. 0.5 – 2 lb. 1 - 2 pt. 8 - 16 fl. oz. 5.5 - 11 fl. oz.

PEST AND MATERIALS	RATE PER ACRE
Petal Fall (continued)	
Rosy apple aphid	
Admire Pro	2.8 fl. oz.
Alias 4F (Montana 4F and Wrangler)	1.6 — 3.2 fl. oz.
Assail 30 SG	2.5 - 4 oz.
Beleaf 50 SG	2 - 2.8 oz.
Sivanto 200 SL	7 - 10.5 fl. oz.
Versys (aphid species, except wooly apple aphid)	1.5 fl. oz.
Woolly apple aphid: If needed based on block history.	
Beleaf 50 SG	2 - 2.8 oz.
Movento	6 - 9 fl. oz.
Dogwood borer: If needed based on block history.	
Isomate DWB	100 - 200 dispensers
First Cover	
Apple scab: Same as Petal Fall. NOTE: If visible scab lesions are found during scouting a protectant-only program is recommended. To delay resistance avoid applications of SDHI, DMI and strobilurin fungicides which have strong activity on apple scab.	
Powdery mildew and rust diseases: Same as Petal Fall NOTE: For powdery mildew control after Second Cover, make applications based on previous history and scouting.	
Cedar Apple Rust: Same options as Tight Cluster.	
Brown marmorated stink bug (BMSB) See management guidelines on page 12.	
Plum curculio Same as Petal Fall, except after the 1 st application for plum curculio, base any additional treatment decisions on scouting for fresh injury and/ or a degree-day based oviposition model. After the first application for plum curculio, use perimeter row sprays rather than whole-block treatments. NOTE: For trees less than seven feet in height, or where scouting indicates fresh injury in the interior of a block, full-block applications may be made.	
San Jose scale: If needed based on block history. Make first application at 500 DD, base 50°F, from March 1 st and a second 14 days later. If pressure is severe as indicated by pheromone traps or fruit damage, an additional treatment against second-generation crawlers at 1450 DD from March 1 st (in late July to August) with a second application 14 days later.	
Centaur WDG	34.5 oz.
Esteem 35 WP	4 - 5 oz.
Grandevo	2 - 3 lb.
Movento	6 - 9 fl. oz.
Sivanto 200 SL	10.5 - 14 fl. oz.
Venerate	2 - 4 qt.

PEST AND MATERIALS		RATE PER ACRE
First Cover (Continued)		
Codling moth: If needed based on block or region history.		
Altacor		2.5 - 4.5 oz.
Delegate WG		4.5 - 7 oz.
Exirel		8.5 - 17 fl. oz.
Assail 30 SG		4 - 8 oz.
Verdepryn 100SL.....		5.5 - 11 fl. oz.
NOTE: Apply first treatment no earlier than 250-degree days (DD), base 50°F, have accumulated after the first sustained pheromone trap catch (biofix) followed by a second at 10 to 14-day interval. Ovicides may be applied no earlier than 50 to 100 DD from codling moth biofix. If pressure is severe as indicated by pheromone traps or fruit damage, an additional application may be made 10 to 14 days later. Do not expose more than one generation of the target pest to this mode of action alone, e.g., use an alternative material for the other codling moth generation.		
Carpovirusine (codling moth only) *.....		6.8 - 13.5 fl. oz.
CYD-X (codling moth only) *.....		1 - 6 fl. oz.
Madex HP (codling moth and oriental fruit moth only)		0.5 - 3 fl. oz.
NOTE: *Active ingredient contains granulosis virus which only attacks codling moth larvae and work well in combination with mating disruption. These pesticides must be applied starting at first egg hatch and every 7 - 8 days during the moth flight, or about four applications per generation. Multiple applications at low rates are preferred.		
Second Cover		
Apple scab		
Captan 4L		2 - 4 lb.
Captan 50 WP		4 - 8 lb.
Captan 80 WP		2.5 - 5 lb.
Powdery mildew: Same as Petal Fall, use previous history and scouting to determine need for applications after Second Cover.		
Plum curculio: See First Cover.		
Japanese beetle		
Actara		5.5 oz
Assail 30 SG		5 - 8 oz.
Multiple applications may be needed. Spot treatments should be considered where activity is limited within the orchard. Applications limited to the top of the canopy where feeding is occurring may be effective. Sample to determine if broad spectrum insecticides applied for other pests reduce or eliminate the need to apply an insecticide for Japanese beetle.		
San Jose scale: See First Cover.		
Woolly apple aphid: Same as Petal Fall and only if needed based on block history.		
BMSB: See management guidelines on page 12.		

PEST AND MATERIALS		RATE PER ACRE
Second Cover (continued)		
Codling moth and oriental fruit moth: See ‘First Cover’ for insecticide options and ‘Bloom’ for mating disruption recommendations. Note: Mating disruption should be applied at least two weeks before the earliest-anticipated flight, i.e., bloom or earlier.		
Third Cover		
Sooty blotch and flyspeck (SBFS) and select fruit rots Do not treat for SBFS and/or fruit rots unless need is indicated by previous history and/or weather monitoring for wetting hours. Fungicides for SBFS may be applied after 185 wetting hours have accumulated from McIntosh petal fall. Track wetting hours from petal fall using a weather station. If wetting data are not available, early July may be used as an estimated date to begin applications.		
Indar 2F	6 - 8 fl. oz.	
Inspire Super	12 fl. oz.	
Flint Extra.....	2.5 – 2.9 fl. oz.	
Pristine	14.5 - 18.5 oz.	
Sovran	3.2 - 6.4 oz.	
Topsin M WSB	0.75 - 1 lb.	
Captan 4L	2 - 4 lb.	
Captan 50 WP	4 - 8 lb.	
Captan 80 WP	2.5 - 5 lb.	
ADDITIONAL NOTES:		
1. Fungicide wash-off and reapplication intervals for SBFS control:		
Fungicide	Rate per acre	Minimum interval (days)
Captan 80	2.5 lb.	
plus Topsin M	9 oz.	
or ProPhyte 4.2 L	48 fl. oz.	21
or Sovran	6.4 oz.	
or Flint Extra	2.5 oz.	
Captan 80	3 lb.	14
Pristine	14.5 oz.	21
2. Flint Extra, Pristine, Sovran and Topsin manage select fruit rots. See label.		
3. Use Topsin M only where summer disease pressure is heavy indicated by block history. Use no more than 4 lb. per acre per year.		
4. When tank mixing Captan with single-site fungicide, apply a half rate of Captan. If Captan is used alone apply within the recommended label rate.		

PEST AND MATERIALS	RATE PER ACRE
Third Cover (continued)	
Bitter rot If needed based on block or region history. Apply one of the following PLUS Captan before a predicted heatwave ($\geq 90^{\circ}\text{F}$). Applying the fungicide cover after the heat wave before any precipitation may also work. Flint Extra 2.9 fl. oz. Merivon 4 - 5.5 fl. oz. Pristine 14.5 - 18.5 oz. PLUS Tank mix all single-site fungicides with Captan. Captan 80 WDG..... 4 - 5 lb. Apply Captan 80 WDG (4 – 5 lb./A) on a 14-day interval when bitter pit inoculum is present and weather is favorable for infection. NOTE: Activating trickle irrigation three to five days before the heat arrives ($\geq 90^{\circ}\text{F}$) will help ensure that soil moisture is near saturation levels and trees are not water stressed when the heat arrives. Heat injury may be a predisposing factor to infection.	
Obliquebanded leafroller: Base application timing on trap catches and degree-day model (360 DD, base 43°F, after first adult catch). Altacor * 2.5 - 4.5 oz. Delegate WG * 4.5 - 7 oz. Exirel * 8.5 - 17 fl. oz. NOTE: *Do not expose more than one generation of the target pest to this mode of action alone. Agree WG 1 - 2 lb. DiPel DF 0.5 - 2 lb. Entrust SC 6 - 10 fl. oz. Additional sprays may be required after 10 - 14 days, to treat all first-generation larva.	
Fruit sunburn: If needed based on cultivar, block or region history. Purshade 2 - 3 gal. <i>Grower comments: growers do not usually apply Purshade after end of July because it is difficult to wash off harvested fruit.</i> Raynox Apple Sunburn Protectant..... 2.5 gal. <i>Grower comments: Raynox is difficult to mix in the spray tank and there can be issues with the materials clogging nozzles.</i> Surround WP 25 - 50 lb. NOTE: The impacts of sunburn can be mitigated by scheduling frequent irrigation to avoid tree-water stress; avoiding excessive summer pruning, especially before or during hot weather; protecting picked fruit in bins from direct sunlight and improving air flow in the orchard to keep fruit cool.	

PEST AND MATERIALS	RATE PER ACRE
After Third Cover	
Apple scab, sooty blotch and fly speck, fruit rots: Same as Third Cover NOTE: Single-site fungicides may be used alone within 30 days of harvest, however, must be tank mixed with a protectant if active scab lesions are present at time of application.	
Apple maggot: Base applications on monitoring traps (threshold of ≥ 1 for unbaited spheres or ≥ 5 for baited spheres) or use trap-out spheres. Admire Pro (suppression only) Alias 4F (Montana 4F and Wrangler) (suppression only) Assail 30 SG Belay Exirel Venerate	2.8 fl. oz. 1.6 - 3.2 fl. oz. 8 oz. 6 fl. oz. 13.5 - 20.5 fl. oz. 4 - 8 qt.
BMSB: See management guidelines on page 15.	
Codling moth and oriental fruit moth Base applications on trap catch (1 st adult flight biofix) and degree-day models (CM: 250 DD, base 50°F, from biofix; OFM: 170 DD, base 45°F, from biofix), plus follow-up application 10 -14 days later for each brood. If lesser appleworm is a problem indicated by block history or monitoring, Delegate or Altacor may be applied just prior to egg hatch followed by a second application 10 - 14 days later. Any codling moth applications are also likely to control lesser appleworm, thus in orchards treating for codling moth, applications specifically for lesser appleworm are not likely to be needed. Altacor * Delegate WG * Exirel * Assail 30 SG * NOTE: * Do not expose more than one generation of the target pest to this mode of action alone. Avaunt Intrepid 2F Suppression only for codling moth, use maximum label rate. Carpovirusine (codling moth only) CYD-X (codling moth only) Madex HP (codling moth and oriental fruit moth only)	2.5 - 4.5 oz. 4.5 - 7 oz. 8.5 - 17 fl. oz. 5 - 8 oz. 5 - 6 oz. 12 - 16 fl. oz. 6.8 - 13.5 fl. oz. 1 - 6 fl. oz. 0.5 - 3 fl. oz.
Mites: Make no more than two post-bloom miticide applications per season. Acramite 50 WS Envior 2 SC Portal Kanemite 15 SC Nealta Zeal SC	0.75 - 1 lb. 16 - 18 oz. 2 pt. 21 - 31 fl. oz. 13.7 fl. oz. 4 - 6 fl. oz.

Management Guidelines for Brown Marmorated Stink Bug (BMSB)	
BMSB High-Risk Blocks	RATE PER ACRE
Has a history of confirmed BMSB damage to fruit, or after third cover, BMSB nymphs or adults found during scouting or in traps, or feeding injury to fruit. NOTE: Injury caused by over wintering adults in June and early July is not likely to result in economic losses.	
Actara * + Surround WP Actara * Surround WP NOTE: Tank mixing Surround with Actara is recommended to increase efficacy. Actara * without Surround Assail Belay ** Baythroid XL Danitol 2.4 EC * Brigade WSB *** Bifenture 10DF *** Bifenture EC *** Scorpion ** Venerate Venom ** Warrior II	5.5 oz. 25 to 50 lb. 5.5 oz. 8 oz. 6 fl. oz. 2.4 fl. oz. 21 1/3 fl. oz. 12.8 - 32 oz. 12.8 - 32 oz. 5.2 - 12.8 fl. oz. 8 - 12 fl. oz. 4 - 8 qt. 4 - 6.75 oz. 2.56 fl. oz.
NOTES: - Processors may have special restrictions on fruit treated with Surround. - Scorpion and Venom (dinotefuran) may not be used for BMSB until after petal fall according to the manufacture label restrictions. - Use of pyrethroids (Danitol, Baythroid, Warrior II) or Lannate is likely to eliminate or greatly reduce effectiveness of bio-control for mites and other pests. * Additional use restrictions for New York producers, see product label. ** Not registered for use in New York. *** Pending Section 18 approval.	

Weed Management

Always begin your weed management program by identifying target weeds from scouting reports and weed maps from the previous season.

NOTES:

- Rotate herbicide mode of action between applications (during and between seasons). Weed Science Society of America (WSSA) herbicide-herbicide group codes help identify product rotations. Each application must rotate to an herbicide with a different WSSA grouping number unless the product is tank mixed with an herbicide with an alternative WSSA grouping number.
- Weed species that have developed resistance to glyphosate include rigid ryegrass, horseweed (marestail), Italian ryegrass, common ragweed, palmer amaranth, waterhemp.
- Pre-emergent herbicides may be applied in spring or fall
- Where herbicide labels allow tank mixes, special application rates may apply. Growers may also be required to have supplemental labels on hand for tank-mix applications.
- * Rely 280 (glufosinate-ammonium): To avoid serious damage avoid contact of spray, drift or mist with green bark, stems or foliage. See product label for advisory statement.
- ** Chateau: Do not apply after green tip (label change for 2022).

STAGE	WSSA Group	PEST AND MATERIALS	RATE PER ACRE
Dormant to terminal-bud set		Pre and/or post-emergence weed suppression	
	5	Princep 4L	2 - 4 qt.
	5	Sinbar WDG	2 - 4 lb.
	14	**Chateau EZ or Chateau SW	6 - 12 oz.
	2	Matrix	4 oz.
	29	Alion	5 - 6.5 fl. oz.
		If actively growing weeds are present include one of the following:	
	9	Glyphosate based herbicides (products and rate vary) ..	See label
Early summer (after terminal-bud set)	10	Rely 280 *	48 - 82 fl. oz.
	14	Aim EC	1 - 2 fl. oz.
	27	Scythe	4 - 132 fl. oz.
	22	Gramoxone SL	2.5 - 4 pts.
		Post-emergent grass suppression	
	1	Poast Herbicide	2 - 4 pt.
	1	Select Plus (CAUTION label, non-bearing trees only).	
Fall		See dormant to terminal-bud set.	
Spot treatment of post-emergent weeds	9	Glyphosate based herbicides (Rate varies by product) ..	See label
	10	Rely 280 *	48 - 82 fl. oz.
	14	Aim EC	1 - 2 fl. oz.
	4	Stinger	1/3 - 2/3 pt.
		Burn down of root suckers	
	14	Aim EC	2 fl. oz.
		NOTE: Apply when tissue is young and not hardened off.	
	22	Gramoxone SL	2.5 - 4 pts.
	27	OR Scythe	6.6 - 88 fl. oz.

THIS IS NOT THE PROTOCOL - USE ONLY AS A REFERENCE

Neonicotinoids and Alternatives for Management of Selected Pests									
Trade Name	Active Ingredient	AM	INT	PLH	PC	RAA	SJS	TPB	WAA
Neonicotinoids									
*Actara	thiamethoxam	1	1	3	3	3	0	2	
*Admire Pro	imidacloprid	X		3		3	2		
*Assail	acetamiprid	3	3	3	2	3	2	2	2
*Belay	clothianidin	X	2	3	X	3	X		
Neonicotinoid alternatives									
*Altacor	chlorantraniliprole	2	3	S	S				
Avaunt	indoxacarb	2	2	3	3			2	
Beleaf 50 SG	flonicamid					E	G	G	X
Dipel	<i>Bacillus thuringiensis</i>		2						
*Delegate	spinetoram	S	3		S				
Esteem	pyriproxyfen		2			3	3		
*Exirel	cyantraniliprole	S	3		3	X			
Grandevo	<i>Chromobacterium subtsugae strain</i>					E			G
Intrepid	methoxyfenozide		2			X			
Movento	spirotetramat						3		3
Neemix	azadirachtin		2	2		2			
Centaur	buprofezin			2			3		
Sivanto	flupyradifurone					E	E		
Transform	sulfoxaflor					E			E
Venerate	<i>Burkholderia spp</i>	X	X		X	G	G		E
*Verdepryn	cyclaniliprole	G	E		G	E			
*Versys/Sefina	afidopyropen					G			S
Key to control ratings Cornell rating: 3 - Good, 2 - Fair, 1 - Poor, X - Pest on product label, S - Product labeled suppression only Michigan State rating: E – Excellent, G – Good, F – Fair, P – Poor Apple maggot - AM , Internal feeding lepidoptera (codling moth, lesser appleworm or oriental fruit moth) - INT , Potato leaf hopper - PLH , Plum curculio - PC , Rosy apple aphid - RAA , San Jose scale - SJS , Tarnished plant bug - TPB , Woolly apple aphid - WAA Adapted from the <i>Cornell Crop and Pest Management Guidelines</i> , Table 7.1.1 Activity of spectrum of pome fruit insecticides and acaricides, https://cropandpestguides.cce.cornell.edu/Preview/2019/Tree_Fruit_Promo_19.pdf Clothianidin (Belay) rating was adapted from the <i>Penn State Tree Fruit Production Guide</i> , extension.psu.edu/plants/tree-fruit/tfpg Ratings for flonicamid, <i>Chromobacterium subtsugae strain</i> , flupyradifurone, sulfoxaflor, <i>Burkholderia spp</i> , cyclaniliprole and afidopyropen, adapted from Michigan Fruit Management Guide, https://www.canr.msu.edu/resources/fruit_management_guide_e0154									
NOTE: *USE WITH RESTRICTIONS (MODERATE to HIGH-RISK PESTICIDES), RESTRICTIONS WHICH EXCEED THE PRODUCT LABEL' classification.									

Insect Trap Counts

[illegible]

Checklist for Certification	
Check if Complete	Core Eco Protocol and Eco Apple Supplement
	Cover sheet is completed with grower contact information.
	Orchard-block list identifying block names, acreage, cultivars and estimated annual production.
	Grower meets all minimum requirements (pg. 2 - 8 in the <i>Eco Apple Supplement</i>) and provides brief justification for any N/A or Fail.
Documentation of scouting and monitoring activities	
	Scouting and monitoring records include: Date, block(s), pest scouted and result, e.g., captures per trap, mites per leaf, weather data and degree-day models.
	Mites: Scouting records include threshold counts for mites, e.g., number of mites per leaf and number of leaves sampled.
	Tarnished plant bug: Trap counts from white sticky boards and blocks exceeding thresholds are documented in scouting reports.
	Fire blight: Monitoring data from Maryblyt or CougarBlight model is included if antibiotics were applied for fire blight.
	Plum curculio: Visual scouting for plum curculio damage is documented.
	Codling moth: Scouting records include trap captures, degree-day accumulations and biofix date.
	Obliquebanded leafroller: Visual scouting of infested fruit clusters and terminal is documented and identifies blocks which exceed thresholds.
	Summer diseases: Accumulated wetting hours from petal fall are documented.
	Apple maggot: Trap counts are documented and identify blocks exceeding thresholds.
	Brown marmorated stink bug: Visual scouting results for fresh BMSB feeding damage are documented.
	Weed management: Weed species and location, e.g., tree row or row middle, are documented.
	Redbanded leafroller: Scouting records include trap counts and sampling data from visual inspection of fruiting clusters and terminals.
	Additional pests: Visual scouting data and/or trap counts are provided for aphids, leafhoppers, scales and additional pests, as per Extension recommendations for monitoring. Consult the Cornell, New England, Mid-Atlantic or Pennsylvania tree fruit pest management guidelines for monitoring guidance not listed in the Eco Apple Supplement.
	Pesticide application records include: - Date of application - Blocks and acreage treated - Trade name, product formulation, EPA registration number, target pest - Rate per acre (oz., gal. or lb./ acre) - Application method - Time, air temperature, average wind speed and direction during application.
Records available for on-farm audit	
	Soil and foliar nutrient testing results are available for inspection.
	Nutrient records from the past 12 months are available for inspection.
	Procedures, results and adjustments from the most recent calibration are available for inspection.
	Scouting records for the current and previous season are available for inspection.