

CODLING MOTH SPRAY SELECTION & TIMING– 2021

COVER SPRAYS

A cover spray is recommended if:

codling moth traps in an orchard average 2 moths/trap/week for 2 consecutive weeks;
for more valuable fruit varieties, consider using 1 moth/trap/week for 2 consecutive weeks.
Do not rely on traps alone. It is important to scout for codling moth damage, especially near orchard edges and wood piles. Call your area supervisor if you find unexpected damage.

Check the SIR web site: www.oksir.org for your trap captures and the Degree Day (DD) total for your area.

TIMING & SELECTION OF COVER SPRAYS

- 🍏 The following table lists the accumulated degree day totals at which codling moth development stages will appear in your orchard.
- 🍏 After 100 DD, watch your trap captures but do not spray yet. If a spray threshold is reached apply a cover spray at *220 DD.
 - 🍏 After *220 DD apply a cover spray if/when trap threshold is reached - only spray if weather is favourable.
 - 🍏 A properly calibrated sprayer and well-pruned trees improve spray coverage.
- 🍏 Most common reasons for continued codling moth pressure are: Poor spray timing and/or coverage of trees in yards, on fence lines, slopes, edges or where other obstacles prevent proper spray application.

Over the past 2 years, the critical control period to be covered for codling moth was late June to end of July.

Well-timed sprays keep *your* money in *your* pocket - Questions on timing?

Give us a call. 1-800-363-6684

DEGREE DAYS	CODLING MOTH STAGE	RECOMMENDED PRODUCTS & PRACTICES
100	Flight of overwintering moths starts (1 st generation begins)	Follow trap counts with the online trap-viewer (oksir.org) and follow codling moth model predictions on DAS (ca.decsonaid.systems).
150	Egg laying of 1 st generation starts	Apply an ovicide (Assail, Calypso, Intrepid, or Rimon) only if high damage the previous year and weather looks hot and dry.
* 220	Eggs from 1st generation start to hatch (larvae appear, risk of fruit damage begins)	After eggs begin to hatch apply any of these products when trap threshold is reached or if you had significant damage last year: Altacor, Assail, Calypso, Confirm, Cyd-X*, Delegate, Entrust*, Exirel, Harvanta Intrepid, Rimon, TwinGuard, Virosoft* (*certified for organic production)
500	Emergence of overwinter moths ends (flight of 1 st generation should decline)	NOTE: To kill codling moth larvae, the recommended products must be eaten. Remove and destroy infested fruit throughout the season.
575	Flight of 2 nd generation moths starts (larvae from 1 st generation are now adults)	
650	No more new eggs from 1 st generation will hatch	
700	Egg hatch of 2 nd generation starts (1 st generation damage, if present, will be apparent)	Apply any of these products when 2 nd brood thresholds are reached after eggs begin to hatch: Thorough coverage is essential.
1140	End of emergence of 2 nd generation adult moths (flight should decline)	Altacor, Assail, Calypso, Confirm, Cyd-X*, Delegate, Entrust*, Exirel, Harvanta, Intrepid, Rimon, TwinGuard, Virosoft* (*certified for organic production)
1160	3 rd generation moth emergence starts	
1275	No more new eggs from 2 nd generation will hatch	Remove and destroy infested fruit throughout the season.
1300	Eggs from 3 rd generation start to hatch	See above recommendations; read label for pre-harvest interval limits

Table 1. Characteristics of Codling Moth Control Products – Orchards-Current to March 2021 – Always Refer to Label

This table presents information on control products recommended for the control of codling moth using air-blast sprayer application to commercial pome fruit plantings. Applicators are encouraged to only apply control products when codling moth adults reach recommended action thresholds. All the products except Imidan must be eaten by the larvae to be most effective. **Always read the product labels before mixing and applying any control product. Use of products from the different Groups in consecutive generations to minimize insecticide resistance.**

Product	Group No.	Rate/ ha	Stable pH	Target life stage	Max. appl'ns/ year	Spray Interval (days)	Label REI	PHI (days)	General Notes
Imidan 50 WP (Phosmet)	1 B	3.75 kg	5 – 6	Larvae	5	14-21	7 days	14	The only product that has contact toxicity against larvae. Also controls obliquebanded and threelined leafroller and bud moth larvae. Apply after eggs hatch begins. Check water pH and buffer if needed.
Assail 70 WP (acetamiprid)	4	120-240 g	5 - 6	Eggs, larvae	2 or 960 g	12-14	2-6 days	7	Apply Assail and Calypso when codling moth are laying eggs (early in the generation). High Larval toxicity. Both products also control aphids, leafhoppers, leafminer, and pear psylla; they do not control leafrollers or bud moth. Do not apply this group of products more than twice/ season to avoid mite problems (REI 2 days for scouting, 6 days for hand thinning).
Calypso 480 SC (thiacloprid)	4	290 - 440 mL	5 - 9	Eggs, larvae	2 or 875 g	14-21	12 hr	30	
Delegate WG (spinetoram)	5	420 g	5 - 9	Larvae	3	14	12 hr	7	Apply after eggs begin hatching; very effective against larvae. Also controls all leafroller and bud moth larvae present. Some control of twospotted spider mite.
Entrust (spinosad)	5	364 mL	6 - 9	Larvae	3	7-10	4 hr	7	Organic Certified. Suppresses (does not control) codling moth and not guaranteed to reduce damage to commercially acceptable levels. Also controls all leafroller species and bud moth larvae.
Rimon 10 EC (novaluron)	15	0.9 – 1.4 L	5 - 9	Eggs, larvae	4 or 11.0 L	10-14	12 hr	14	Strong ovicide, apply when codling moths are laying eggs (residues more effective under eggs). Do not use more than twice per season to avoid mite problems.
Confirm 240 F (tebufenozide)	18	1L	5 - 9	Larvae	4	10-14	12 hr	14	Limited activity against eggs. Also effective against obliquebanded, threelined and bud moth, but not fruittree or European leafroller. Use only under low codling moth pressure.
Intrepid 240 F (methoxyfenozide)	18	1L	5 - 9	Eggs, larvae	2	14-21	12 hr	14	Strong ovicide, (more effective early in the generation). Also effective against obliquebanded, threelined and bud moth larvae, but not fruittree or European leafroller. Use under moderate to high codling moth pressure.
Altacor (chlorantraniliprole)	28	145 - 215 g	5 - 9	Eggs, larvae	3	10-14	12 hr	5	Apply just prior to and during egg-laying. Also controls leafroller, fruitworm and bud moth larvae.
Exirel (cyantraniliprole)	28	500-750 mL	5-9	Larvae	4	10-14	12 hr	3	Apply just prior to and during egg-laying. Also controls leafroller and bud moth larvae, rosy apple aphid, and leafhopper.
Harvanta 50SL (cyclaniliprole)	28	1.2-1.6 L	5-9	Larvae	3	10-14	12 h	7	Similar to Altacor and Exirel. Do not use more than 2 times/generation.
Virosoft CP4 (granulovirus)	U	250 mL	5 - 8	Larvae	n/a	5-7	4 hr	0	Organic Certified. Virus only affects codling moth larvae (will not harm other pests or beneficial insects). Slow acting. Spray in the evening or under cloudy, dry conditions. CYD-X is similar to Virosoft, but is a different strain of granulovirus. Consider alternating CYD-X and Virosoft between generations to minimize insecticide resistance.
CYD-X (granulovirus)	U	250 mL	7	Larvae	n/a	7	4 hr	0	

Table 2. Summary of Risks to Human and Environmental Health by Codling Moth Control Products

This table summarizes the toxicity and safety of the recommended codling moth control products. Applicators should consult this table when selecting control products in order not to disrupt or interfere with observed beneficial insects (bees, ladybugs, lacewings, etc.) or nearby water courses. All the products except Imidan are generally accepted as reduced risk to humans and the environment; however personal protective equipment should still be worn when making applications as stated on product labels.

Product	Oral Toxicity (LD ₅₀)	Dermal Toxicity (LD ₅₀)	EIQ ¹	Bee Toxicity ²	EIQ Field Use Rating ³	Label buffers ⁴ (m)	Rainfastness on fruit ⁵		General Notes
							12.5 mm	25 mm	
Imidan 50 WP (Phosmet)	Moderate	Low	32.82	I	61.54	25	S	S	Toxic to most beneficial insects by direct and residual contact.
Assail 70 WP (acetamiprid)	Low	Low	28.73	III	0.8 – 1.6	30	S	I	Toxic to predatory mites
Calypso 480 SC (thiacloprid)	Low	Low	31.33	IV	1.4 – 2.2	20	S	I	Toxic to lacewings.
TwinGuard (sulfoxaflur+ spinetoram)	Low	Low		I		See BZ calculator	-	-	TOXIC TO BEES. Safe for most beneficial insects and mites.
Delegate WG (spinetoram)	Low	Low	27.78	III	1.0	30	S	S	Moderate to high toxicity to predatory mites.
Entrust (spinosad)	Low	Low	14.38	III	0.4	1	S	S	Toxic to earwigs and adult parasitic wasps.
Rimon 10 EC (novaluron)	Low	Low	14.33	I	1.3 – 2.0	65	S	I	Moderate to high toxicity to predatory mites.
Confirm 240 F (tebufenozide)	Low	Low	16.44	IV	1.3	15	I	-	Safe to all beneficials
Intrepid 240 F (methoxyfenozide)	Low	Low	32.08	IV	2.56	4	S	-	Safe for all beneficials
Altacor (chlorantraniliprole)	Low	Low	18.34	IV	0.3 – 0.5	5	S	S	Toxic to certain beneficial insects.
Exirel (cyantraniliprole)	Low	Low	-	I	-	3	S	S	Toxic to certain beneficial insects.
Harvanta 50SL (cyclaniliprole)	Low	Low	-	I	-	3	-	-	Toxic to certain beneficial insects.
Virosoft CP4 (granulovirus)	Low	Low	0	IV	0	0	-	-	Extremely safe; specific for codling moth larvae.

¹ The EIQ measures a number of factors that affect how an active ingredient can impact human health and the environment. For more information on how the EIQ is calculated, go to www.nysipm.cornell.edu/publications/eiq

² Bee toxicity ratings: I, do NOT apply on any blooming crops or plants; II, apply in evening after bees have stopped foraging; III, apply in late evening after bees have stopped foraging until early morning before they start foraging; IV, can be applied any time with reasonable safety to bees.

³ EIQ Field Use Rating: EIQ x % ai of product x rate (kg or L)/1000 L

⁴ Buffer distances recommended on product labels for late-growth stage application by air-blast sprayers near freshwater habitats less than 1 metre deep.

⁵ Rainfastness on fruit 1 day after application: S = Sufficient residue to kill larvae; I = insufficient residue to kill larvae; - = no data. (Source: Dr. John Wise (Michigan State Univ.).