

Table 1. Characteristics of Codling Moth Control Products – Orchards-Current to March 2024 – Always Refer to Label

Control products recommended for the control of codling moth using air-blast sprayer application to commercial pome fruit plantings. Only apply control products when needed. **Always read the product labels before mixing and applying any control product. Rotate Group No. between generations. Check organic status with your certifying body.**

| 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 Instapak (Phosmet) | 1 B | 3.75 kg | 5 – 6 | Larvae | 2 | 14-21 | 12 hrs to 9 days | 22 | Strong, long-lasting larvacide. Apply when egg hatch begins. Adjust tank pH to 5.5. (with an additive such as Li 700). Suitable when spray coverage is challeing and pressure is high. Also controls obliquebanded/threelined leafroller, bud moth, apple aphid, San Jose scale. |
| Assail 70 WP (acetamiprid) | 4 | 120-240 g | 5 - 6 | Eggs, larvae | 4 | 12-14 | 2-6 days | 7 | Strong larvacide, with some ovicide activity when applied over eggs. Apply Assail or Calypso when egg hatch begins. Assail provides better fruit protection while Calypso is more economical. Choose Assail when pest pressure is high. Also control aphids, leafhoppers, leafminer, and psylla. (applying Assial more than twice/season can cause mite problems). |
| Calypso 480 SC (thiacloprid) | 4 | 290 - 440 mL | 5 - 9 | Eggs, larvae | 3 or 875 mL/ha | 14-21 | 12 hr | 30 | |
| Delegate WG (spinetoram) | 5 | 420 g | 5 - 9 | Larvae | 3 | 14 | 12 hr | 7 | Larvacide, apply after eggs begin hatching. Also controls all leafroller and bud moth larvae when present. Some control of twospotted spider mite. |
| Entrust (spinosad) | 5 | 364 mL | 6 - 9 | Larvae | 3 | 7-10 | 4 hr | 7 | Will supress codling moth, but not necessarily control it to economically acceptable levels. Controls leafrollers and bud moth. Organic certified. |
| Rimon 10 EC (novaluron) | 15 | 0.9 – 1.4 L | 5 - 9 | Eggs, larvae | 4 or 11.0 L | 10-14 | 12 hr | 14 | Very effective against eggs and larvae. Apply before and during egg laying. Do not apply more than 2x times/season to avoid mite problems. |
| Confirm 240 F (tebufenozide) | 18 | 1L | 5 - 9 | Larvae | 4 | 10-14 | 12 hr | 14 | Larvacide with little activity against eggs. Also effective against obliquebanded, threelined leafrollers and bud moth, but not fruittree or European leafrollers. Use only under low codling moth pressure. |
| Intrepid (methoxyfenozide) | 18 | 1L | 5 - 9 | Eggs, larvae | 2 | 14-21 | 12 hr | 14 | Very effective against eggs and larvae. Apply at same timing as Group 15. Also effective against obliquebanded, threelined and bud moth larvae, but not fruittree or European leafroller. Use for high codling moth pressure. |
| Altacor (chlorantraniliprole) | 28 | 145 - 215 g | 5 - 9 | Eggs, larvae | 3 | 10-14 | 12 hr | 5 | Apply just prior to egg hatch and reapply as needed. 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 egg hatch and reapply as needed. Also controls leafroller and bud moth larvae, rosy apple aphid, and leafhopper. |
| Vayego 200 SC (Tetraniliprole) | 28 | 225 mL | 5-9 | Larvae | 3 | 10-14 | 12 hr | 7 | Apply just prior to egg hatch and reapply as needed . Also controls Obliquebanded leafroller. |
| Harvanta 50SL (cyclaniliprole) | 28 | 1.2-1.6 L | 5-9 | Larvae | 3 | 14 | 12 h | 7 | Apply just prior to egg hatch reapply as needed. Toxic to bees. Do not use more than 2 times/generation. Also controls obliquebanded leafroller. |
| Purespray Green (Spray Oil 13E) | U | 1% | | Eggs | 8 or 10 L/Ha | 10-14 (100 DD) | 12 h | 0 | Apply at 200 DD and delay first larvacide to 290 DD. Controls Rosey aphids, European red might and powdery mildey. Do not apply withing 14 days of Sulphur(e.g Captan, Kumulus). Suitable for organic or conventional orchards. |
| Virosoft (CpGv-4) | U | 250 mL | 5 - 8 | Larvae | NA | 5-7 | 4 hr | 0 | Virus specific to codling moth, will not affect other insects. Takes 3-7 days to kill larvae, turning them white (i.e. stings may still occur). Virus residue degrades rapidly in sunlight, lasting only 5-8 days. Apply in evenings if possible. Do not mix with copper. 6-7 applications/generation at full rate required under high codling moth pressure. Rotate virus brands between generations to manage resistance. Store below 5°C. Organic status varies. |
| CYD-X (CpGv-M) | U | 100-250 mL | 7-8.5 | Larvae | NA | 7-8 | 4 hr | 0 | |
| Madex HP (CpGv-22) | U | 50-100 mL | 5-8.5 | Larvae | NA | 6-8 | 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 | 14.67 | I | 0.7– 1.1 | 3 | S | S | Toxic to certain beneficial insects. |
| Harvanta 50SL (cyclaniliprole) | Low | Low | - | I | - | 3 | - | - | Toxic to certain beneficial insects. |
| Vayego (Tetraniliprole) | Low | Low | - | I | - | 25-35 | - | - | Good Rainfastness. |
| Virosoft/CYD-X/Madex HP (virus) | 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.).)