Organic Codling Moth Management Toolbox

Sterile Insect Release: Controls low to moderate populations, but won't protect your orchard from a wild population coming from outside your orchard

If you are catching wilds or finding infested fruit in your orchard, contact the SIR program and we will increase the number of sterile insects we release in your orchard if needed. If wild moths are coming from a source outside your orchard, the sterile moths released will not prevent damage from happening. The source of wild moths needs to be identified and addressed ASAP.

Organic Pesticides: Controls larger populations, from outside and inside your orchard

Codling moths have 2-3 generations per season, lasting about 6 weeks each. During this 6 week period, new eggs are laid every day. Multiple applications of pesticide are required to *cover* a generation. There are 3 types of organic pesticides that kill codling moths, **Summer Oil**, **Viruses** and **Entrust™**. **See reverse for Spray Schedules**. Shorten time between reapplications under higher pressure.

1. Virus sprays

Virus sprays, **Virosoft, Cyd-X,** and **Madex HP,** are very effective against codling moth larvae but will not kill ANY beneficial insects or pollinators. However, spray residue breaks down rapidly in sunlight, lasting only 5-7 days. Multiple applications are needed (every 5-7 days) to cover one generation, making spray programs with this pesticide more costly. Rotate virus brands between generations (or seasons) to slow pesticide resistance development. Products need to be stored at or below 5°C for the season and frozen for storage greater than 6 months. Apply sprays late in the day for best results.

2. Summer Oil Purespray Green Spray Oil 13E

Summer oil (different application rate and purity than dormant oil) kills codling moth eggs by smothering them. It is moderately effective against codling moths and soft on most beneficials. It also controls European red mite, rosey apple aphid, and suppresses powdery mildew. Start your spray program with this product at 200 DD and reapply every 80-100 DD (10-14 days weather depending) if needed. *Cannot be applied withing 14days of Sulphur containing products (Captan).

3. Entrust

Entrust is not as toxic to codling moth larvae as virus products are (rated for suppression rather than control) and it is more toxic to beneficial insects. However, residues last longer on the fruit, 7-10 days making it a cheaper alternative to Virus. Entrust can be used a maximum of 3 times per season.

Removing Infested Fruit: Get moths missed by sprays and can target hot spots

Remove infested fruit late in mid-late July, before the codling moth have a chance to leave the fruit. This will capture larvae missed by a spray program and can reduce the time and money required to clean up a codling moth infestation in the long run. Infested fruit is concentrated on the top 1/3 of the canopy. Infested fruit must be bagged and removed from the orchard or submerged in water for 1 week, before composting.

Mating Disruption: Additional layer of control. Will not stop moth from external sources

Isomate CM-FLEX uses pheromones to disrupt moth mating. Hang 200-400 dispensers per acre, in the top 1/3 of the canopy before 100 DD. Mating disruption can aid organic management. It will not protect you from moths coming from yours outside your orchard.

BC Decision Aid System: Spray on time for better results

Use the local weather stations and BC DAS to spray on time (https://ca.decisionaid.systems/).

Management Tips

Attack Codling moth problems aggressively. Preventing small problems from growing will cost you much less money in the long run than trying to solve a big problem later. Spraying enough and spraying on-time is critical for success. When problems are severe (>2% infested fruit) combine multiple tactics (e.g. virus, summer oil, and fruit removal), use full product rates, and shorten spray reapplication intervals. Because codling moths larvae feed inside the fruit, excellent spray coverage is needed to kill eggs or larvae before they get in.

Spray Timing	Best Spray Program
100 DD	Start catching wilds, but it is not time to spray yet.
210 DD (750 DD for 2nd Generation)	1st Spray: Purespray Oil 1%
280-300 DD (850 DD for 2nd Generation)	2nd Spray: Purespray Oil 1% + Virus
+ 5-7 Days	3rd Spray: Virus
+ 5-7 Days	4th Spray: Purespray Oil 1% +Virus
+ 5-7 Days	5th Spray: Virus
+ 5-7 Days	6th Spray: Purespray Oil 1%+ Virus
550 DD is when the 1st generation ends.	Contact SIR or check BC DAS to determine if the generation has ended. Evaluate damage and spray program.

Spray Timing	Budget Spray Program*
100 DD	Start catching wilds, but it is not time to spray yet.
280 DD	1st Spray: Entrust
+ 10 Days	2nd Spray: Entrust
+ 10 Days	3rd Spray: Entrust

*Entrust is only rated to "suppress" codling moth, Meaning it kills between 80-90% of the larvae that eat it (where virus and oil kill >90% of the target life stage).

Product Details: Always check product labels and your organic certification body for most up to date information.

Product	Rate	Target	REI	PHI	Max Applications	Comments
Purespray Green Spray Oil 13E	10 L oil / 1000 L water (1% vol:vol)	Eggs	12 H	0	8 per season	Do not exceed rate or apply within 2 weeks of sulphur or captain. Use a 1% solution of oil to water in spray tank.
Virosoft (CpGv-4)	250 mL/ha	Larvae	4 H	0	No Max	Virus brands have similar properties. Store at 4°C for up to 6 months or freeze for longer storage. Virus particles must be eaten to kill larvae, so excellent spray coverage is necessary.
Cyd-X (CpGv-M)	100-250 mL/ha	Larvae	4 H	0	No Max	
Madey HP (CpGv-V22)	50-100 mL/ha	Larvae	4 H	0	No Max	
Entrust (Suppression Only)	364 mL/ha	Larvae	12 H	7 Days	3 per season	Not as strong against codling moth as virus products, and harder on beneficial insects.