

Tree Fruit Pest Advisory

University of Idaho, U.S. Department of Agriculture, and Idaho counties cooperating.

Spring 2010 Issue 1

Protect Yourself

Codling Moth degree day Temperatures are indicating Adult flight on apples and pears began during the warm spell the last week of April. However cold temperatures slowed them down considerably. We started seeing trap catches again in Payette on May 8th. 5 percent of adults have emerged. Using temperature data from Nampa and Parma weather stations and J.Bruners 2008 no biofix model. Readings indicate that the cool temperatures have stretched out this period significantly. Insecticides that target egg stages will be more needed this year. Apply an application of an Ovicide between May 12 and May 20 such as:

Commercial

Intrepid, Esteem, Rimon

Homeowners should use

1% horticulture oil , Neem Oil, or Acetamiprid This active ingredient was released in 2009 and will work well for backyard growers. It has a 14 day residual that effects both moth larvae

and eggs. Spectracide and Ortho have acetamiprid products.

Oil alone will smother unhatched eggs and insecticides mode of action is to provide a chemical as the eggs hatch. Good residue coverage on your fruit is vital during the first generation. Research shows the better the protection and coverage during the first generation the less pressure for subsequent generations.

Alerts will be sent out May 23rd when Egg hatch is expected to occur. An additional alert will be sent out via the phone alert system when Peak egg hatch critical temperatures occurs, approximately June 5. We are currently one week behind last years temperatures.

Fire Blight is not benefiting from the low temperatures seen in the Treasure Valley. If temperatures increase to

the mid 70's during these humid and rainy weather conditions, you can expect fire blight to be infecting your trees.

Rosy Apple Aphids have hatched and will build populations as the weather warms. At this time of year, they are tucked away at the bases of blossom clusters, feeding on newly expanding leaves. As they feed, their saliva causes the developing fruit to become distorted.

If you have not made an application and know that this aphid is a problem in your trees, make an inspection for activity. Shake a limb over a cloth tray to look for dislodged, rosy-colored aphids, and look for damage (curled leaves) on at least 10 terminals per tree, especially toward the center of the tree. If you find one colony per tree, make an application at petal fall. (Rosy Apple Aphid recommendations by: Marion Murray USU)

Degree Day no-biofix (5/10/10)

Look out for:

<u>Sta. Elevation</u>	<u>CM/PTB</u>	<u>Est.Hatch</u>	<u>WCFF</u>
Payette(2150)	237	May 24	412
Emmett(2390)	194	May 29	356
Caldwell(2431)	191	May 29	419
Parma(2290)	216	May 25	451
Ontario(2188)	205	May 26	436
WallaWalla(1375)	285	May 18	555

- Check codling moth traps daily to monitor pressure and mark the dates of High pressure days. Approximately 10 days after those days make sure you have coverage on the trees.
- Examine apple and cherry leaves for white powdery spores of powdery mildew
- Examine apple, peach, and cherry leaves for new colonies of aphids forming

Tips for the Sustainable Orchardist: Building a Safe Arsenal against Codling Moth

By Tony McCammon with reference to work done by Marion Murray of Utah State University

Orchard management strategies have evolved of necessity as EPA regulations have limited use past effective chemicals. This has decreased the efficacy of controls on key pests. The answer is integrated pest management (IPM). IPM plans have reduced inputs and have increased production despite the reduction of Guthion and other effective products of the past. Today's high density, expensive orchards must have sophisticated operating systems to insure maximum sustainable production over long periods of time. Inputs must be quantified to meet critical needs, and they must be timed for maximum effectiveness.

Integrated pest management (IPM) is a concept that has been used

grower should develop a set of guidelines for each situation that guides his/her decision-making on unacceptable levels of pest injury or pressure. A low level can perhaps be ignored if the loss will not justify the cost of control. The economic and aesthetic values of the situation need to be considered, and will most likely be the primary factors driving pest control decisions.

Time pest controls with "windows of opportunity" — In the life of a Codling Moth only a given period of about 15 days the insect is susceptible to insecticides. Now multiply that by tens of thousands per tree hatching at different times over a month period and you have a terrible mess. However with Temperature readings average windows of

in U.S. agricultural industry for about 40 years. It is "a comprehensive approach to pest management that uses a combination of cultural, biological, and chemical controls to reduce the status of pests to tolerable levels while maintaining a quality environment".

IPM attempts to combine appropriate and effective pest management tactics to target the problem pests in a crop. With that said, let's walk through an IPM program as a sustainable approach to controlling Codling Moth.

Proper identification of the pest or problem

— Before deciding to take any pest control action, be sure you have correctly identified the pest (insect, mite, disease, weed, vertebrate, etc.) It is safe to say that if you have apples or pears you have codling moth. However, trapping is effective in monitoring the pressure of the insects.

Monitor for pests and injury caused by pests or problem

— It is opportunity where large portions of hatchlings are susceptible can be targeted.

Consider all available pest management options and select the "best" ones

— The easiest, lowest cost and often most reliable way to avoid many pest problems is to provide a healthy environment that discourages pest activities and/or reduces the host's (plant, animal, or ecosystem) susceptibility to damage. In general, take care of your trees and ask your neighbor to do the same. Also, remove clippings or burn them to reduce overwintering adults.

PEST MANAGEMENT OPTIONS

Many different types of pest management tactics are available for different



very important to look for pests and injury symptoms on a regular basis. It is best to use a consistent sample or survey method. Monitoring pheromone traps for codling moths every 1-2 weeks during the main growing season will help determine control strategies depending on moth pressure.

Control action guidelines — A

types of pests. They can be grouped into categories such as cultural, mechanical, biological, and chemical. An IPM approach is not focused on pest elimination, but on reducing pest densities to tolerable levels.

Examples of general pest management tactics for Codling moth in Orchards:

Cultural controls

There are several methods for reducing codling moth that do not require the use of insecticides. Selecting varieties that are less susceptible to damage, such as early maturing apples and pears, can greatly reduce the potential for damage. Once trees are planted, the most effective nonchemical control methods in-

clude sanitation, mass trapping, and trunk banding. Pruning trees to a height where the canopy is easy to reach also will facilitate nonchemical management of this pest.

If a backyard tree or orchard has a very high moth population, it may take several seasons diligently practicing these nonchemical control methods to reduce codling moth damage to about 10 to 20% of fruit infested. Nearby orchards or backyard trees in which no control program is in place can serve as a continual source of codling moths, thus making it even more difficult to limit damage through nonchemical means alone.

Mechanical controls

Bagging Fruit. Excellent control can be achieved by enclosing young fruit in bags right on the tree to protect them from the codling moth. This is the only nonchemical control method that is effective enough to be used alone and in higher population situations. However, it is quite time consuming to apply the bags so this method is most manageable on smaller trees with fewer fruit. This approach is more suited to low wind areas.

Using traps to mass trap moths, bug zappers (as codling moth fly at night), and mating disruption are other mechanical applications of control. In particular mating disruption has had a lot of use and success as a sustainable approach to reducing pressure in orchards. Small scale orchards have not seen a positive effect in studies.

Biological controls

Although a few predators such as spiders or carabid beetles may

feed on codling moth larvae or pupae, naturally occurring biological control is not effective. In commercial orchards, releases of the tiny wasp, *Trichogramma platneri*, has been used successfully to manage codling moth in combination with mating disruption or soft pesticides, but this method has not been tested in backyards.

Chemical controls

The proper timing of insecticide sprays is critical if they are to be effective against codling moth; they should be applied before or just as eggs are hatching. Once the worm has gone into the fruit or nut, it is protected from pesticides. The most effective way to time insecticide sprays is with a pheromone trap and a degree-day calculation. This is what commercial growers use. The trap lets them know when each generation or flight begins. The degree-day calculation lets them know just when egg hatch will occur and when the next generation should begin to fly. You can calculate degree-days with a maximum-minimum thermometer and a degree-day chart or you can use the www.pnwpestalet.net system to be alerted to timing of your sprays.

Home orchards may be able to achieve an acceptable level of control by spraying the first spring generation and using nonchemical methods to maintain a low population for the rest of the season. However, if heavy infestations have occurred in previous years, or there are unmanaged host trees nearby, or if tolerance for damage is very low, the summer generation(s) may also need to be treated.

For Commercial Growers

The following list is not all-inclusive, but includes some of the newer products for codling moth control. As commercial growers must shift away from Guthion and pyrethroids (to avoid mite outbreaks), it is important to understand the alternative options. (USU Marion Murray)

Altacor (rynaxypyr): Altacor has been shown to have excellent control of both first and second generation codling moth. Washington State University (WSU) research has shown that it also kills eggs. It should be applied at 220 DD after biofix. It lasts 14 days.

Assail (acetamiprid): In WSU studies, Assail performed similarly to Imidan (and almost as well as Guthion). Assail is primarily a larvicide, but WSU found that Assail is also highly toxic to codling moth eggs. Assail lasts approximately 14 days and has a PHI of 12 hr, and 7-day PHI. Good coverage is essential. Michigan State University (MSU) reports that the higher rate on the label is most effective, especially for the second generation. This is a fairly broad spectrum product (neonicotinoid).

Belt (flubendiamide): Belt has the same mode of action as Altacor, but is not as effective.

Calypso (thiacloprid): Calypso is similar to Assail in mode of action, efficacy against codling moth, and mammalian toxicity, but has a 30 day PHI. The application rate at the high end works best. This is a fairly broad spectrum product (neonicotinoid).

Clutch (clothianidin): WSU field trials found that Clutch, which works against newly hatched larvae, is not a highly effective material for codling moth.

Delegate (spinetoram): Like Altacor, Delegate is very lethal to codling moth larvae. Field testing at WSU and MSU showed that Delegate provides excellent control of first and second generation larvae. The larvae must consume the material to die, so Delegate should be applied at the start of egg hatch (220 DD after biofix). It lasts 14-21 days depending on codling moth density and rate. A program rotating Delegate and Altacor has shown to be as effective as Guthion.

Esteem (pyriproxyfen): Esteem is an insect growth regulator and it has activity primarily against the eggs. WSU found that in order for it to be effective, the insecticide must be present BEFORE eggs are laid. Therefore, Esteem should be applied at the petal fall stage. This may not be a good product for locations with high populations, but could be a good supplement to mating disruption.

Intrepid (methoxyfenozide): Intrepid is also an insect growth regulator. WSU studies found that in some cases Intrepid might not kill the larva but the subsequent adult will not be able to reproduce, which is considered a sub-lethal effect. Intrepid must be ingested by larvae to have a toxic effect. Intrepid has strong ovicidal activity whether applied after eggs are laid, or if eggs are laid on residues. Intrepid lasts about 14 days, but is not a good alternative to Guthion, but could be used as an early application

(petal fall) to kill eggs, delaying the second cover spray.

Backyard Growers

The following list includes the chemical name of the active ingredient (carbaryl, for example). Brand names (Sevin, for example) are not used because there are many different brands that carry the same active ingredient, and individual suppliers do not all carry the same brands, but most should have products with the same active ingredients. Look at the small print on the front of the label for "active ingredient."

Acetamiprid: This active ingredient was made available in 2009 and is a good option for backyard growers. It lasts approximately 14 days and is very effective against codling moth larvae and eggs. Spectracide and Ortho have acetamiprid products.

Spinosad: Spinosad is a low toxicity product that is soft on beneficials. It must be applied every 10 days, and is moderately effective.

Carbaryl: Carbaryl is a broad spectrum insecticide with good efficacy against codling moth and many other pests. It lasts 14 days for heavy populations, and possibly up to 21 days in areas of light infestations. It is a fruit thinner, so using carbaryl 4-6 weeks after petal fall will cause fruit drop. It is toxic to natural enemies and honeybees, and can cause spider mite outbreaks.

Malathion: Malathion is a broad spectrum insecticide that has good efficacy against codling moth, but must be applied every 7 days. Not all malathion prod-

ucts are the same, so be sure to read the label for application information.

Horticultural oil: Oil at the 1% rate can be used during the egg laying stage at the beginning of each generation (for example, 7-10 days after full bloom for first generation) to kill eggs. It has no residual activity, so another material should be used 7-14 days later.

Azadirachtin: These products are softer on beneficial insects and mammals, but not as effective on codling moth.

Bt (*Bacillus thuringiensis*), Pyrethrum, insecticidal soap, and pyrethrin/rotenone are not effective against codling moth.

Two backyard growers, one in Utah County, and one in Cache County, reported using banana bait in 2009. They filled milk gallon jugs with a mixture of 1 cup apple cider vinegar, 1 cup sugar, 1 banana peel, and water to full, and hung 1 jug in each tree. The Utah County grower reported trapping thousands of moths in her jugs and ending up with about 15% injury (but it was a bumper crop, anyway). She did not apply any supplemental sprays. The Cache County grower did not trap as many codling moths with this method, and had more severe injury.

Chemical Information written by Marion Murray Utah State University IPM Project Leader.

PayetteCounty

ALWAYS read and follow the instructions printed on the pesticide label. The pesticide recommendations in this UI publication do not substitute for instructions on the label. Pesticide laws and labels change frequently and may have changed since this publication was written. Some pesticides may have been withdrawn or had certain uses prohibited. Use pesticides with care. Do not use a pesticide unless the specific plant, animal, or other application site is specifically listed on the label. Store pesticides in their original containers and keep them out of the reach of children, pets, and livestock.

Trade Names--To simplify information, trade names have been used. No endorsement of named products is intended nor is criticism implied of similar products not mentioned.

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