

Description of an IPM Program for Peaches

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Developing an Integrated Pest Management (IPM) program for peaches involves more than putting together a pest spray program. It involves a pro-active approach to growing, beginning with site and cultivar selection, and an understanding of cultural practices that will help to delay, reduce or eliminate potential problems. It also involves an understanding of the life cycle of the pest, (whether it be insect, mite, disease pathogen, weed, nematode, etc); knowing which insect vectors which disease pathogen; being able to identify beneficial and understanding their life cycles; understand how the environment impacts potential pest problems and plant health; an understanding of how different pesticides work and the proper timing; understanding and utilizing alternative management methods; and understanding economic and injury thresholds.

Cultural practices:

1. Avoid varieties susceptible to bacterial spot. When sighting a new peach block, keep it away from an existing block of susceptible varieties.
2. Maintain healthy trees
 - a. Prune correctly. Opening up the tree allows for rapid drying, reduces disease incidence and allows for optimum spray penetration. Remove small weak shoots in the center of trees to reduce Perennial canker incidence.
 - b. Prune at the proper time. Peaches are best pruned once growth has started in the spring to reduce cold injury. Open wounds are entry sites for perennial canker organisms.
 - c. Maintain healthy trees with appropriate nutrient levels in the soil and trees. Use routine soil and foliar analysis. Avoid late summer and fall nitrogen applications that will encourage trees to grow late into the fall.
 - d. Avoid damaging trees with mowers and other equipment. These wounds are entry sites for borers and canker development.
 - e. Thin fruit to avoid limb breakage. Open wounds are disease and insect entry sites.
3. Remove and destroy mummified fruit and cankers to reduce disease inoculum.
4. Thin fruit so no two fruit are touching. This reduces moisture buildup which is needed for disease development, and reduces the potential spread of brown rot from one fruit to another.
5. Thin fruit for maximum size development and to avoid limb breakage.
6. Control broadleaf weeds that harbor plant bugs and native stinkbugs

Understanding potential pest problems, life cycles, number of generations/year, overwintering sites:

1. Major disease problems
 - a. Bacterial Spot, *Xanthomonas pruni*: infects leaf scars at leaf drop; infect in the spring around petal fall/shuck split and for ~ 3 weeks after.

- b. Brown Rot, *Monilinia fructicola*: greatest susceptibility is PF-3 weeks after and the 3 weeks prior to harvest. Control insects to reduce disease entry sites. Remove mummified fruit at pruning to reduce inoculum.
 - c. Peach Scab, *Cladosporium carpophilum*: warm wet weather beginning at shuck split
 - d. Perennial Canker: also called Cytospora canker, Valsa canker, Leucostoma canker: control by pruning
2. Major Insect problems
- a. Borers-PTB and LPTB: can be effectively controlled with mating disruption. Avoid bark splitting.
 - b. Oriental Fruit Moth: adults out ~ PF; mating disruption is effective if 2-3 sprays are normally applied.
 - c. Plum Curculio overwinter in hedgerows/woods. Problems generally highest in border rows. Stop migrating at 308DDs after Mac PF, base 50⁰.
 - d. Catfacing insects - Plant bugs, stink bugs: majority of damage is done by shuck split
 - e. Scale: overwinter on the trees; early season oil application against OW stage followed by insecticide against crawlers ~mid-June
3. Mites
- a. ERM overwinters on the tree; ~ 40 days to complete a generation at 55⁰F and 10 days at 75⁰F. Heat loving, summer problem.
4. Weeds: a plant growing where it is not wanted. Harbor insect pests (plant bugs, Stinkbugs)
- a. Annual, perennial, biennial, grass, broadleaf
 - b. Some are easier to control with late summer-fall herbicide applications.
 - c. Some are easier to control with spring herbicide applications.
 - d. Management options: cultivation, herbicides, landscape fabric, mulch, flaming

Biological Control

- 1. Predators of mites:
 - a. *Stethorus punctum*, a lady beetle, overwinters in weeds and leaf litter around the base of trees
 - b. *Orius insidiosus*, Minute Pirate bug, overwinters in leaf litter in the orchard
- 2. Predators of Green Peach aphid, *Myzus persicae*
 - a. lady beetles, lacewings, syrphid flies, soldier beetles and predaceous bugs

Monitoring & Record Keeping

- 1. Keep records of emergence time, location, numbers of insect & mite pests. Maintain environmental records combined with management tools utilized to better understand factors that increased or reduced insect and disease problems. Historical records are important to understanding what was done and what can be tweaked for better control in upcoming seasons.
- 2. Monitor and record trap captures. Understand how trap captures correlate to potential problems and when pesticides or other management tools are needed.
 - a. OFM: >15 moths/trap 1st generation, >10 moths/trap later generations.
 - b. PTB, LPTB: >10 moths/trap/week

3. Monitor trees, fruit
 - a. Green peach aphid – 2 colonies/tree between PF and shuck split, 5 or more/tree after
4. Temperatures
 - a. Plum Curculio adults become active when temperatures exceed 60⁰F
5. Using Degree days calculations:
 - a. OFM second spray application suggested at 360 DDs after first trap catch
 - b. Plum Curculio predicted to end migration into orchards at 308 DD after Mac PF, base 50⁰.

Economic and Injury Thresholds

Economic thresholds are used to determine the point at which if a management tool (usually a pesticide application) is not used, the dollar value of the crop loss exceeds the cost of the pesticide application. Economic thresholds have not been established for all insect pests. Injury thresholds are subjective and are determined by the individual grower. For example, one grower may have a zero tolerance for damage from plant bug while another may tolerate 4% damage.

1. Plant bug and Plum Curculio suggested injury level is 1-2% new damage
2. OFM has no economic threshold
3. Bacterial Spot treatment level has been suggested as 5% of fruit infected or 20 leaves show lesions.
4. Brown rot blossom blight suggested treatment level is more than 2 infected fruit/10 acres. However, if you have a history of Brown rot, have mummified fruit and/or cankers, and the weather conditions are conducive, preventative fungicide applications are recommended

Alternative Management Options

Mating disruption uses dispensers to emit the female pheromone while playing with the male psyche, tricking the males into believing they are following the scent of the female when they aren't. Isomate PTB-Dual has been used successfully for the management of both PTB and LPTB while Isomate OFM-TT is for Oriental fruit moth control.