

## Pacific Flatheaded Borer



Photo: Heather Andrews, NWREC

The shifting of the hazelnut industry from old blighted orchards to new plantings has provided opportunity for the Pacific Flatheaded Borer (PFB) to cause major problems for hazelnut growers. Recent dry, hot summers, suboptimal planting sites, and poor management have contributed to the problem. The literature suggests that PFB, like other flatheaded borers, are attracted to the stress signals emitted by establishing and struggling young trees. Female borers find vulnerabilities in the bark to lay their eggs. Larvae hatch, burrow into the tree, and feed on the cambium layer leading to girdling and loss of transpiration, and ultimately cause dieback or death of the tree. Trees that survive initial borer attacks can be severely weakened and risk future trunk failure due to wind or nut load. Inadequate knowledge of PFB has resulted in devastating crop losses for some growers. This puts the exponential growth of the industry at risk. Understanding the phenology and effective management practices for this pest are critical to the success of local hazelnut farmers and the sustainability of the industry.



Photos: Heather Andrews & Nik Wiman, NWREC, OSU

### Continued OSU Research

#### **PFB Emergence**



We collect trees infested with PFB during fall and winter and store them in these buckets covered in mesh. Throughout the summer we count and record each emerged borer. Data predicts emergence from early June through late July.

#### **Plant Protection**



We plant whips in late May to induce stress and attack by PFB. We're evaluating various protection strategies against PFB including: physical trunk barriers, deterrents, systemic insecticides, organic, and reduced-risk insecticides as treatments.

#### **Monitoring**



There are no effective monitoring tools to identify PFB populations. We are assessing different monitoring traps with the objective to improve application timing and limit unnecessary pesticide applications when population counts are below economical thresholds.

#### **PFB Attack Period**



Trees are grouped and labeled by week then wrapped with mesh to prevent attacks throughout the season. At the beginning of each week the mesh of a new group is removed and then returned at the end of the week to determine the extent of attack during that time period.

## Pacific Flatheaded Borer Management

*Note:* A serious pest that primarily affects trees in their first leaf, but attacks can also occur on older and mature trees, especially if there is disease such as EFB present. Adult Pacific flatheaded borer (PFB) lay eggs on trunks, and larvae feed below the bark on the cambium layer and may girdle the tree. Adults generally emerge and begin egg laying in early June, but may emerge slightly earlier (late May) in warm areas. The flight period of adult borers lasts through August. Cultural methods are important to prevent problems with flatheaded borer. Prevent sunburn by painting trunks with white latex paint or use trunk guards, manage weeds that compete for moisture with trees, and prevent water stress. Growing vigorous trees is key to preventing borer attack. Practice sanitation by removing infested trunks/stems from the orchard and burning or shredding them. Symptoms of attacked trees become apparent in the fall after attack, and include profuse suckering, chlorotic leaves, swelling of trunks or visible galleries. Late spring prior to borer flight is the easiest time to diagnose symptoms from attacks sustained in the previous season.

This is an emerging issue, and management tactics currently rely on systemic protection or residue protection of trunks (trunk or cover sprays). Work in progress will ideally result in labeling of more products for Pacific flatheaded borer. In the meantime, research suggests that registered Group 4 systemic insecticides (imidacloprid, acetamiprid, clothianadin) used against scale insects and aphids can also prevent attack by Pacific flatheaded borer if applied in a manner to ensure plant uptake by the time of borer flight. Management of other insect pests in the orchard may also allow use of cover sprays of Group 1 or 3 materials that can help prevent borer attack with residue deposition on trunks. Given the long flight period of borer adults, reapplication of cover or trunk sprays will be necessary.

Admire Pro, Wrangler, Alias, others	imidacloprid	1.2–2.4 oz	Group 4A insecticide. Systemic activity. Can be applied as foliar, soil drench, or through chemigation system, rates and restrictions differ by method, see label. If applied as drench allow adequate time for uptake prior to borer emergence. Generic labels available. Labeled for aphids on hazelnuts <u>but not PFB</u> . 12-hour reentry. <b>7-day PHI.</b>
Assail 70WP, Anarchy, Omni Brand, others	acetamiprid	1.1–4.1 oz	Group 4A insecticide. Systemic activity. No more than 4 applications per season. Generic labels available. See also 30 SG formulation. Labeled for aphids and filbertworm on hazelnuts <u>but not PFB</u> . 12-hour reentry. <b>14-day PHI.</b>
Belay	clothianadin	6 oz	Group 4A insecticide. Systemic activity. Time application to beginning of adult emergence, apply to entire tree with adequate water. No more than 0.2lb AI per year. See <a href="#">FIFRA Section 2(ee) recommendation for PFB in hazelnuts</a> . 12-hour reentry. <b>21-day PHI.</b>
Lorsban Advanced	chlorpyrifos	3–4 pt	Group 1B insecticide. Restricted use. No more than 3 applications per season. Do not graze livestock in treated orchards. Extremely toxic to fish. Toxic to birds and wildlife. No more than 3 applications of chlorpyrifos per season. See <a href="#">FIFRA Section 2(ee) recommendation for PFB in hazelnuts</a> . 24-hour reentry. <b>14-day PHI.</b>

(Oregon State University Extension – 2019 Hazelnut Pest Management Guide for Willamette Valley – EM 8328 – page 9)

