

Aggregation pheromone for monitoring stink bug populations in orchard borders

Christian Krupke and Jay Brunner

Washington State University

Tree Fruit Research and Extension Center

Wenatchee, WA

Aggregation pheromone

- ◆ produced by male adult stink bugs
- ◆ primary component is attractive to adult males, adult females, and nymphs
- ◆ NOT a sex pheromone - responders will approach, but not necessarily contact, pheromone sources



Makes trapping difficult!

Stink bug monitoring

In general, successful insect monitoring programs require:

- ✓ 1) attractive compound (i.e. pheromone)
- ? 2) release device to assure longevity and stability of the compound under field conditions
- ? 3) a method of trapping/retaining responders

Aggregation pheromone has been identified;
1999 research focused upon objectives 2 and 3.

Stink bug species complex

Two primary stink bug species found
in Wenatchee/Chelan-orchards:



Euschistus conspersus
(predominant species)



Chlorochroa ligata

Pheromone release devices

3 slow-release devices were tested in 1999:

Polyethylene vial
(IPM Tech. Inc.)

Wax puck
(Scenturion Inc.)

Polyethylene cap
(‘WSU’ lure)

Pheromone release devices: Methods

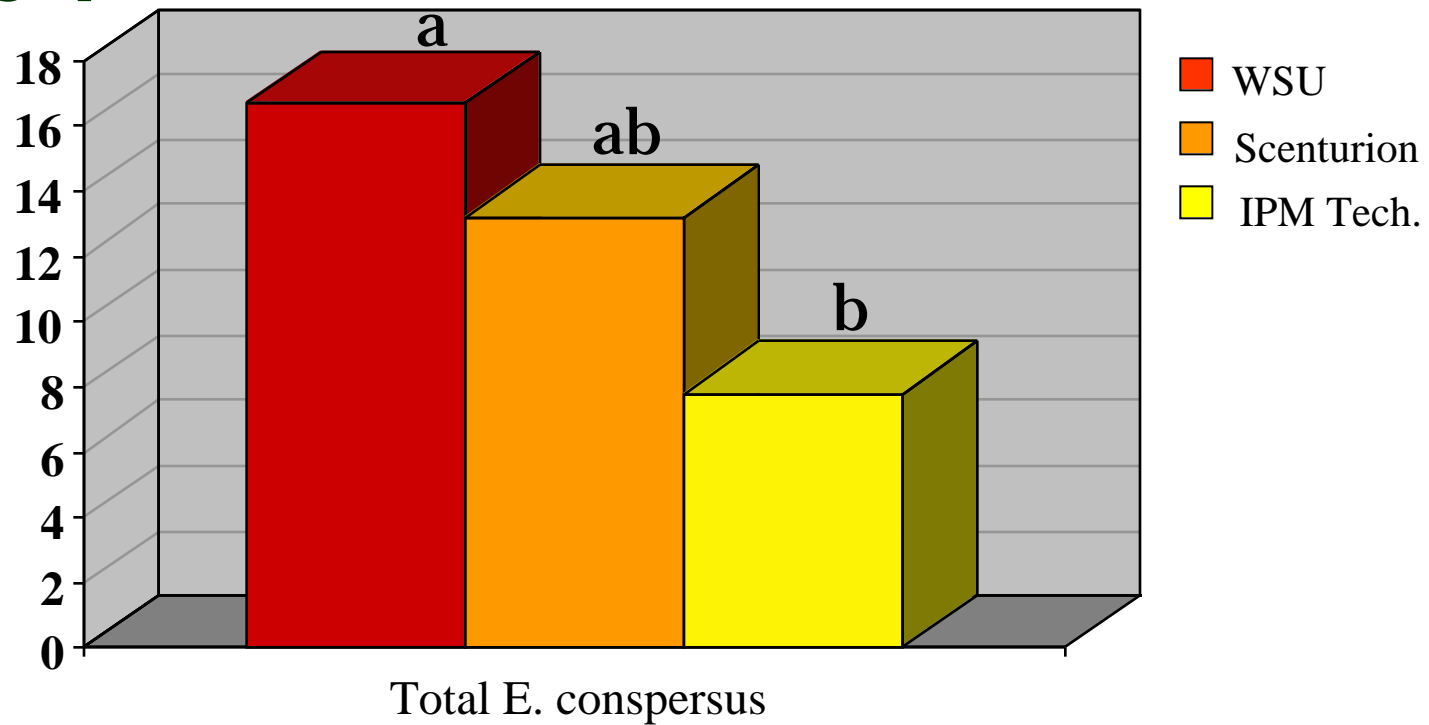
- ◆ Lures affixed to mullein plants in brush bordering orchards with history of SB damage
- ◆ Plants inspected at 3-day intervals through July/August and all SB* counted and removed

**E. conspersus* comprised > 95% of total catch



Pheromone release devices: Results

bugs/plant/count



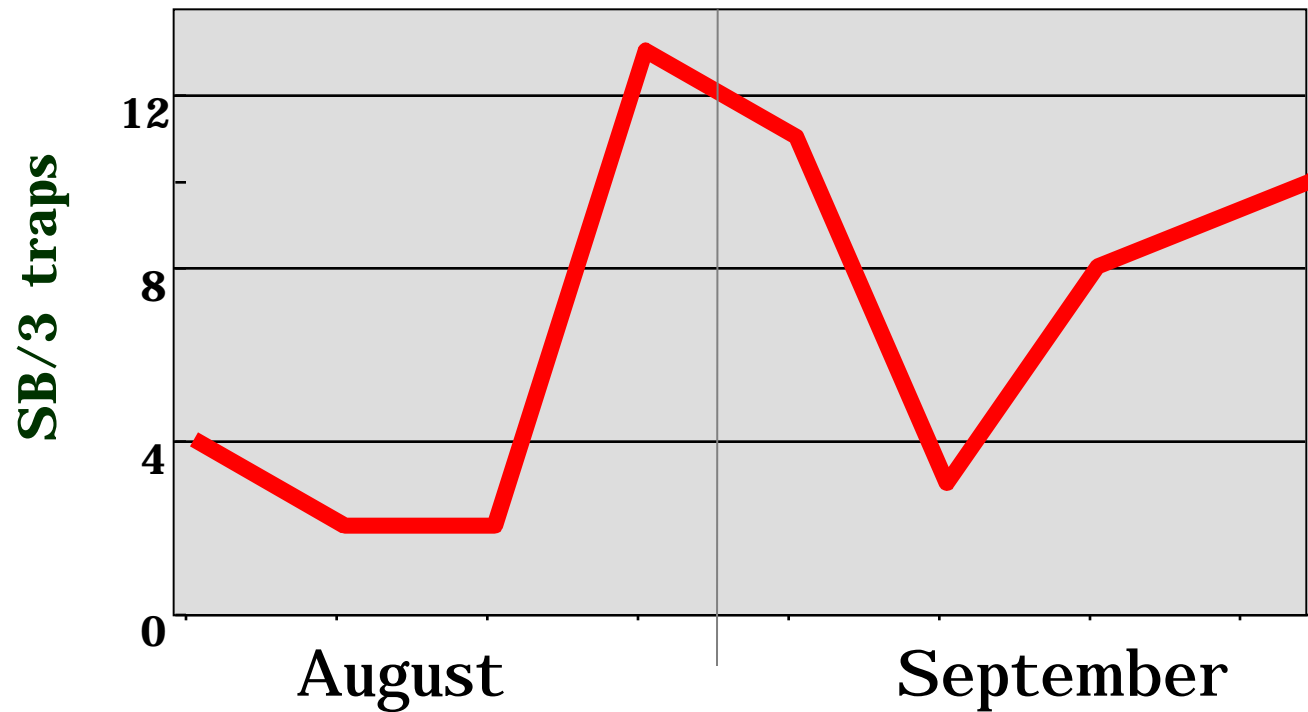
Monitoring tools: Baited plants vs. traps

PROBLEM: Stink bugs are attracted to the vicinity of traps, but do not enter or enter and leave.

SOLUTION: Use baited plants to assess stink bug densities, population trends, and life cycle stages.

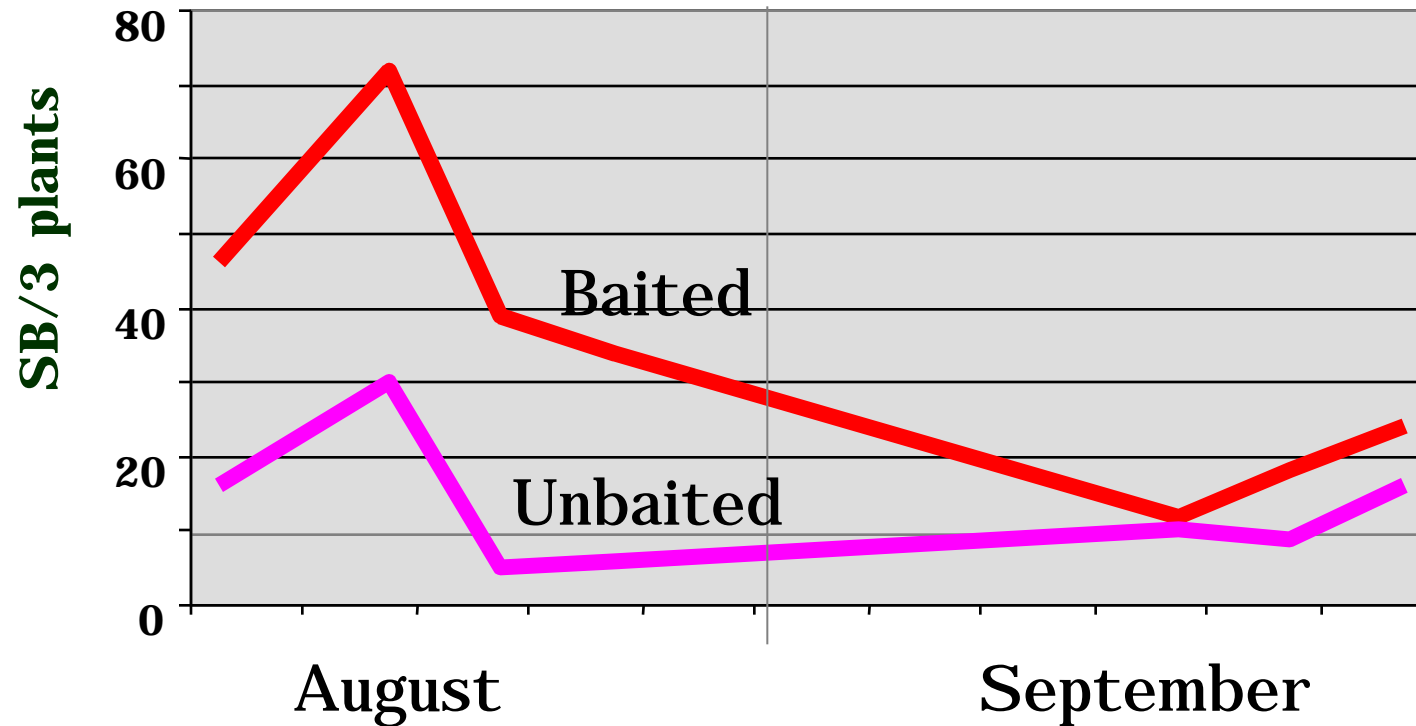
Jug traps - 1998

Cumulative SB catch



Baited plants (WSU lure) - 1999

Cumulative SB catch



Trap trees

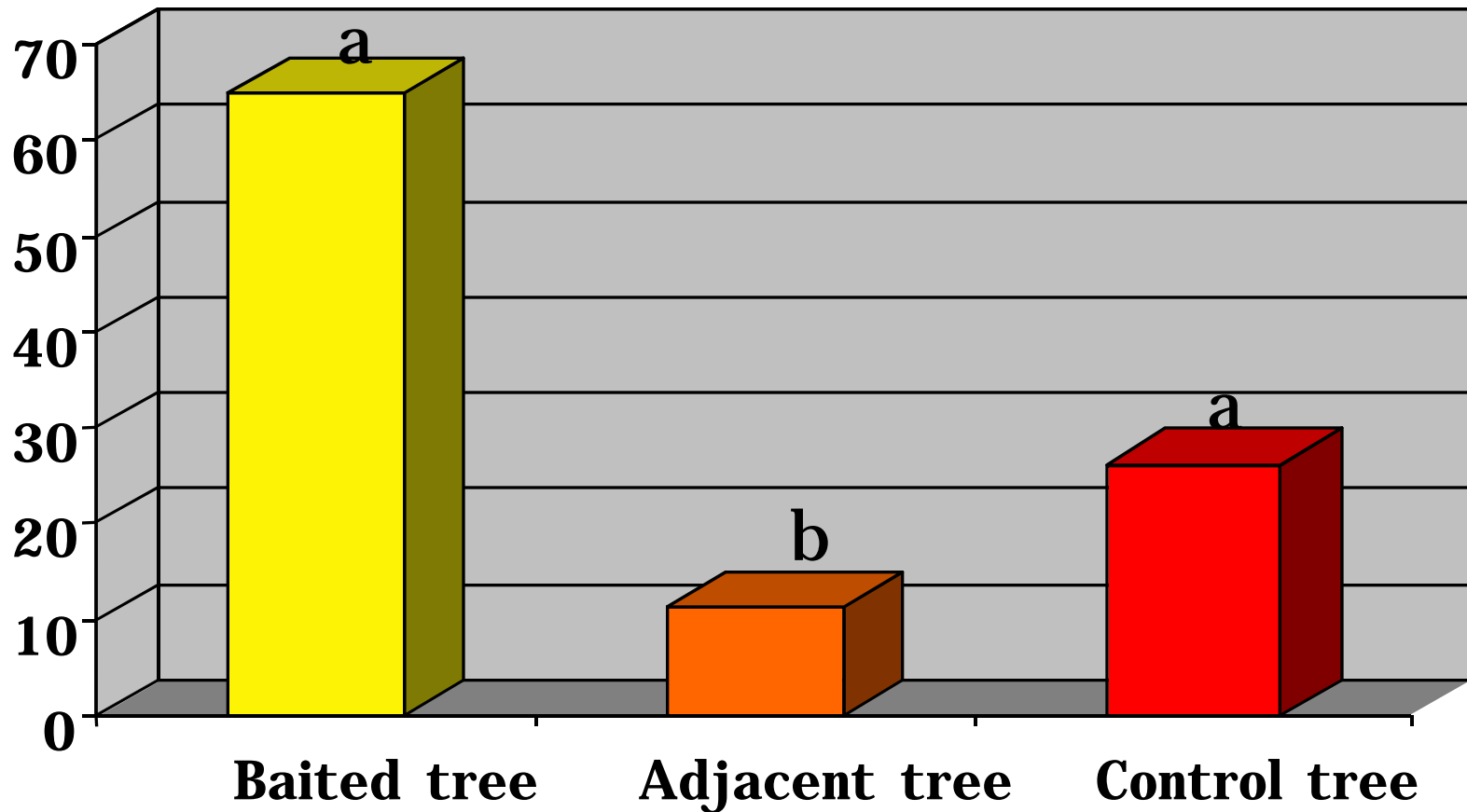
- strategy of pheromone-baiting orchard trees on high pressure borders when SB begin movement into orchards
- attempts to localize/concentrate SB and damage on baited trees only, while minimizing damage elsewhere



**Pheromone
Lure
(2/tree)**

Trap trees - Results

% fruit damage



Review and Future goals

- ◆ Each of the release devices tested in 1999 attracted significant numbers of stink bugs, with the WSU lure being the most attractive
- ◆ Baited plants attracted and retained large numbers of stink bugs and may represent an alternative to current, ineffective trapping techniques
- ◆ ‘Trap trees’ exhibited significantly higher SB damage than unbaited adjacent trees
- ◆ Research in 2000 will focus on determining optimum release rates to aggregate SB’s to improve trapping/monitoring systems
- ◆ Research into the ‘trap tree’ concept will also be expanded to further assess its feasibility as a management option