Control of *Prionus* Beetles in Sweet Cherry with Admire™



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extending usu to you

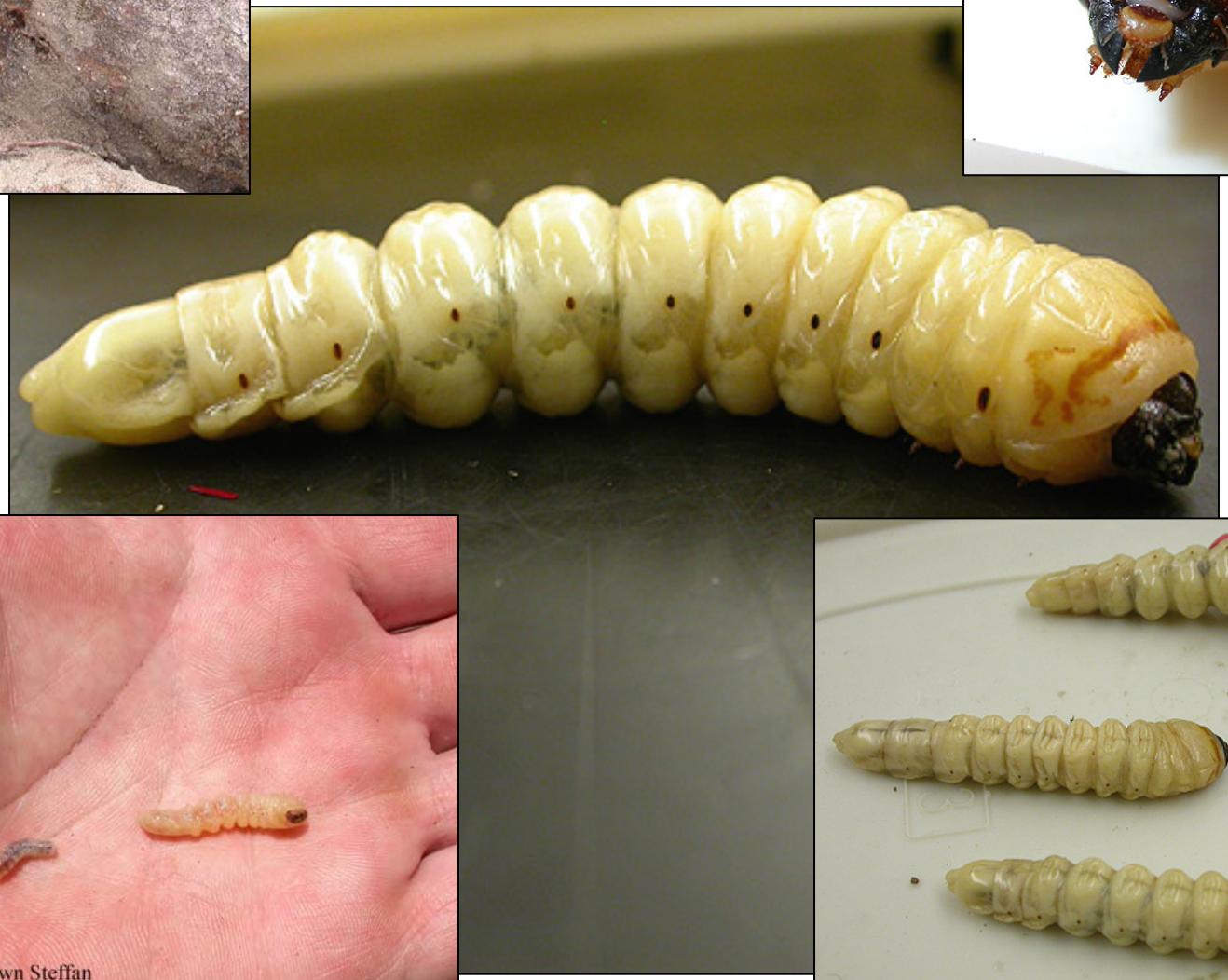
Giant California Prionus



Prionus Larvae





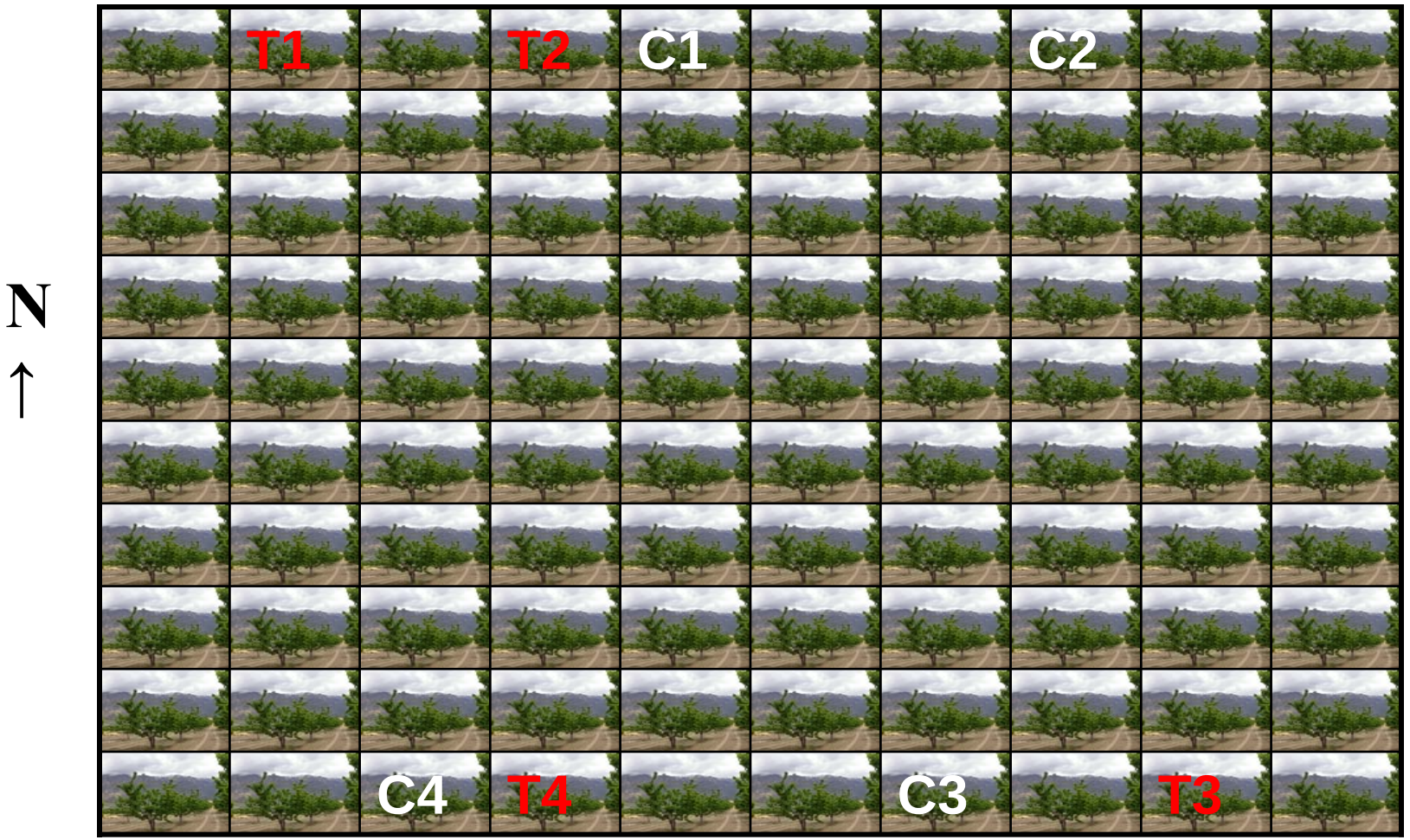


Sweet Cherries: Pettingill Farms, Willard, UT (Box Elder Co.)



Five-acre block—8 trees examined.

4 treated trees (T1-T4), 4 controls (C1-C4)



Infested Sweet Cherry Trees: note *canopy dieback*





Clearing weeds from drip-zone





Delivery of Admire at Each Emitter (May 12th, 2004)





• ADMIRE delivered to trees at a rate corresponding to 24 fl oz/A.
• This meant 0.18 fl oz/tree (5.3 ml/tree), since there were 134 trees/A (18'-by-18' planting).

Confining Admire to the Soil under Each of the Emitters





Excavation of trees
July 14th-16th, 2004









Root Sampling





Photo Courtesy Shawn Steffan
Utah State University Extension

Soil Sampling







Sampling of the tree crown







The Raw Data

- Tremendous variability in the number of larvae / tree (ranged from 2 to 41 larvae per tree).
- A total of 131 larvae were found.
- Overall, *more* larvae were found on the ADMIRE trees.
- Average for treated trees: **18.5 larvae/tree**
- Average for control trees: **14.2 larvae/tree**
- Due to the tree-to-tree variability, no strong conclusion can yet be drawn about the efficacy of ADMIRE on *Prionus*.

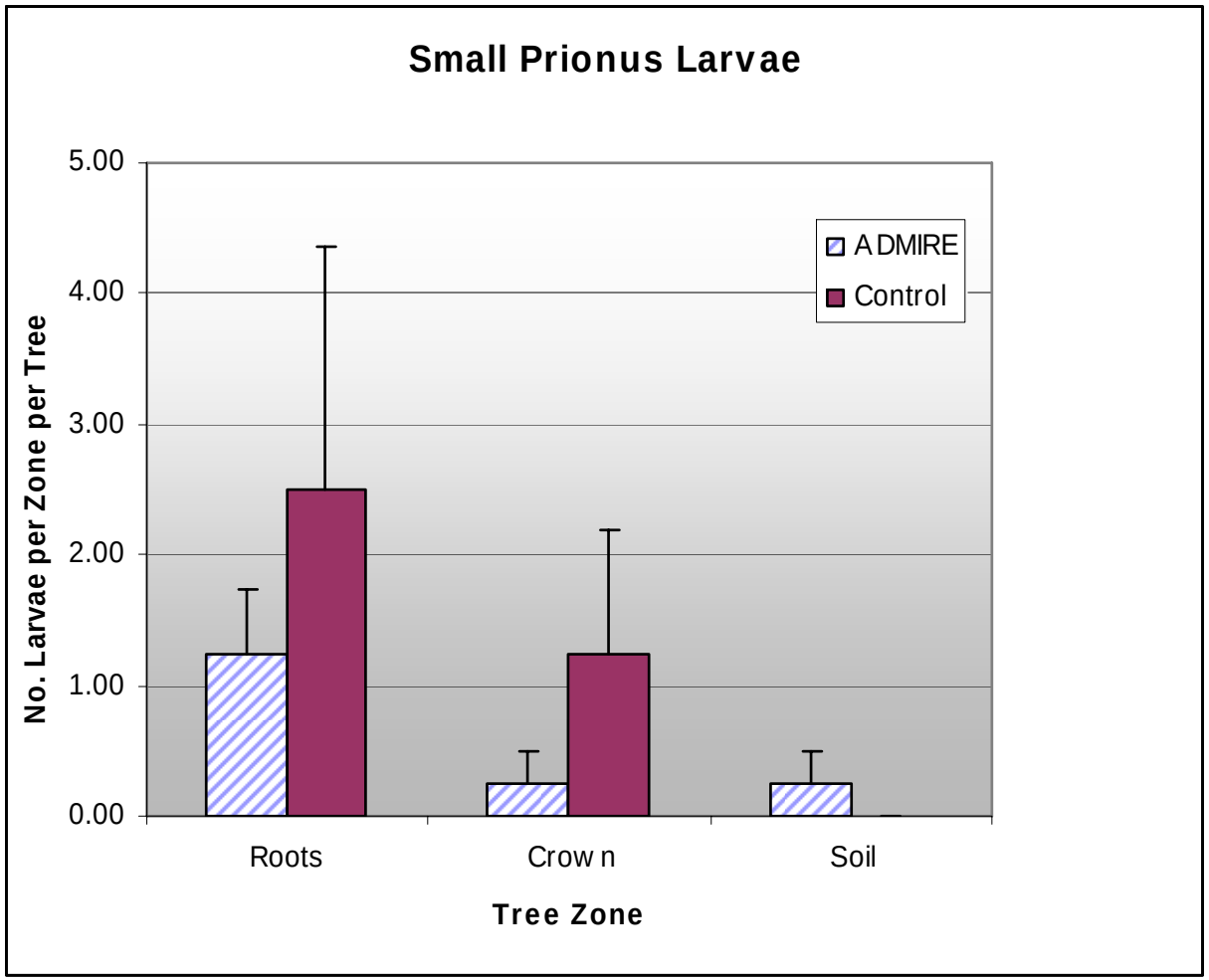
Tree	Roots	Crown	Soil	Total
T-1	4	3	0	7
T-2	13	4	0	17
T-3	8	10	6	24
T-4	11	9	6	26
Total	**36**	**26**	**12**	**74**
C-1	1	3	0	4
C-2	23	11	7	41
C-3	1	0	1	2
C-4	4	3	3	10
Total	**29**	**17**	**11**	**57**

Greater Mortality in Young Larvae?

- Treated trees had fewer young larvae than control trees.
- Average for ADMIRE trees: **1.3** larvae/tree
- Average for control trees: **2.5** larvae/tree



Abundance of Young Larvae



Explanation?

Root Damage: spiraling furrows, infections, necrosis











Root Damage: death of older roots







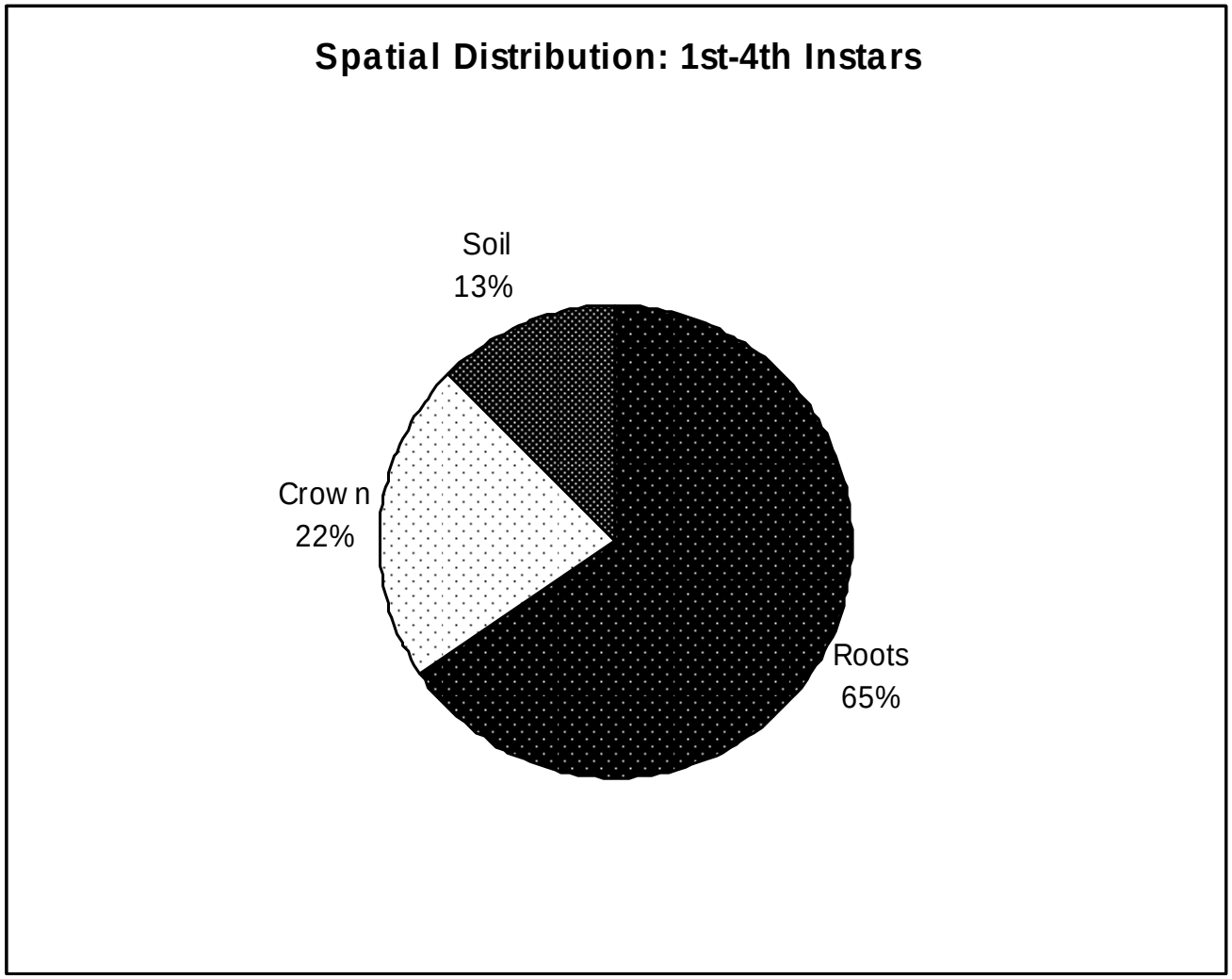


Beetle Biology Recon

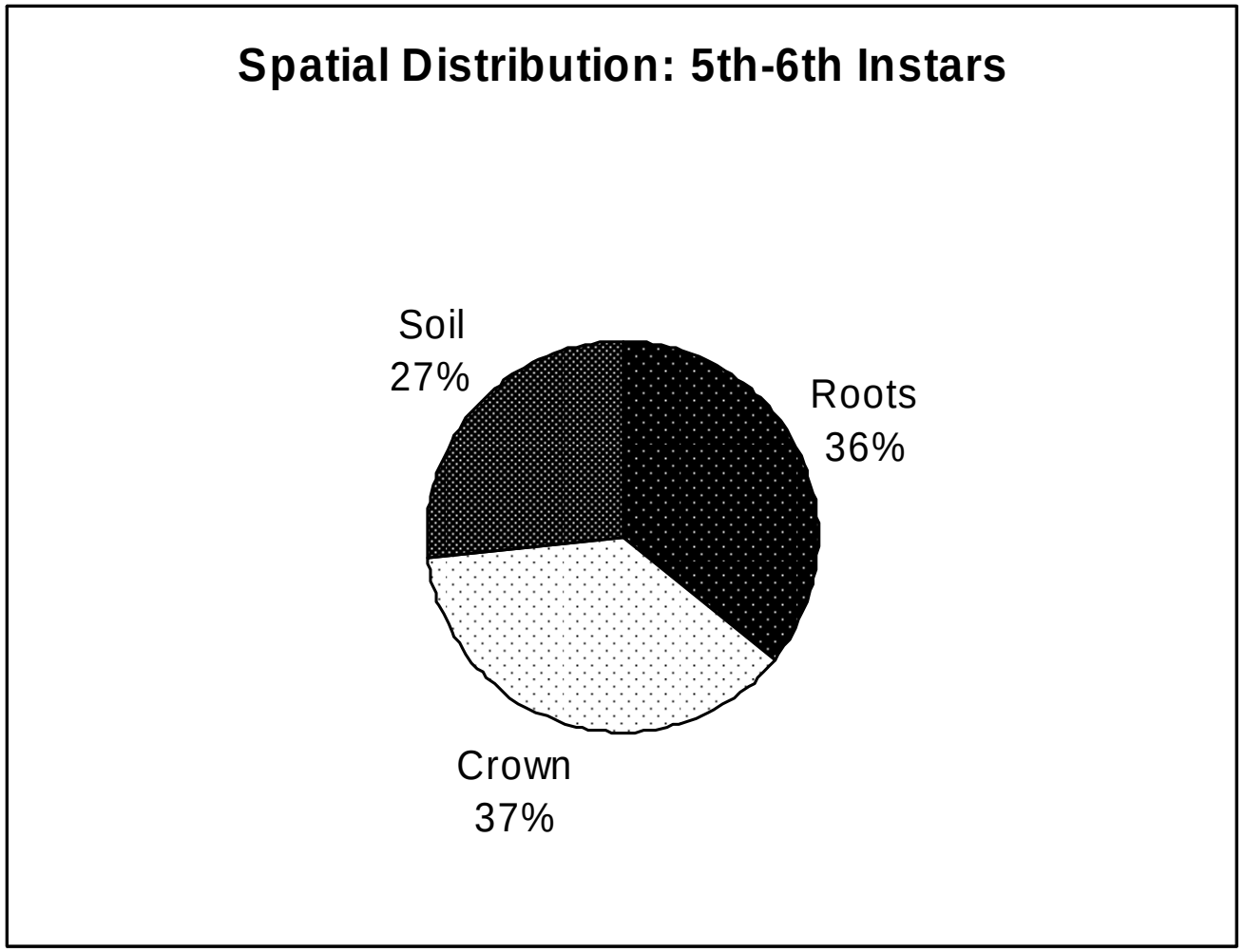
- Important to gain greater understanding of the biology of *Prionus.*
- Where do they feed?
- What is the age distribution within the roots? the crown?
- What are the effects of age-related feeding on the roots? the crown?



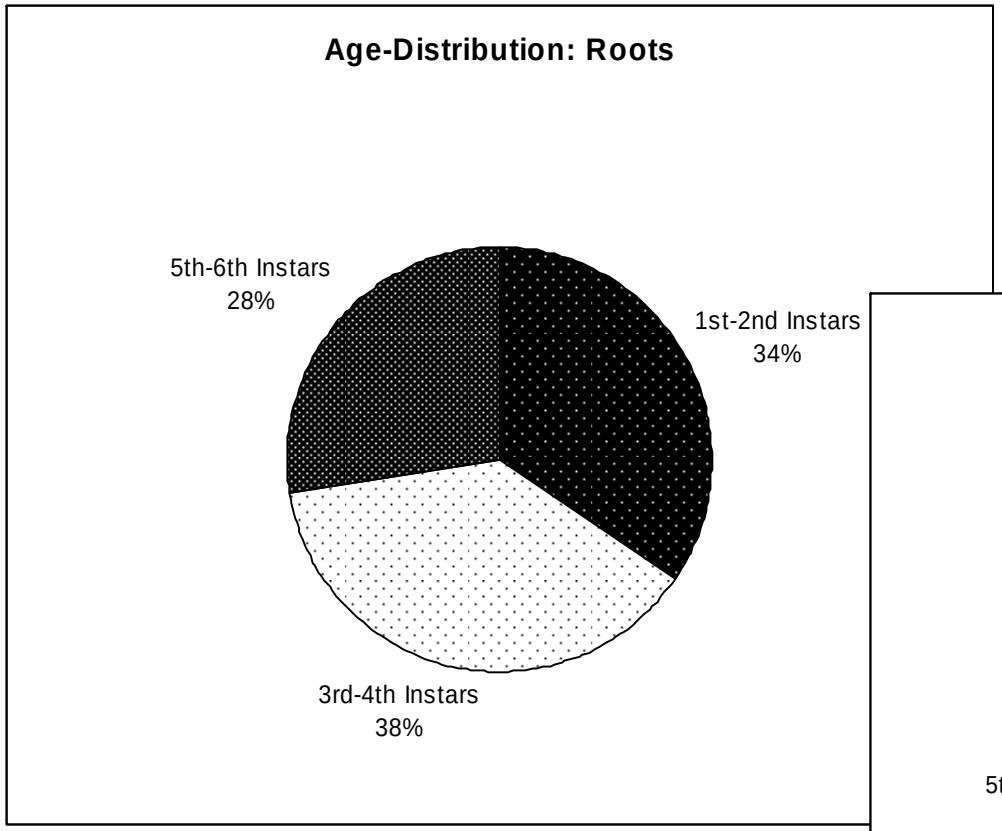
Distribution of Young Larvae

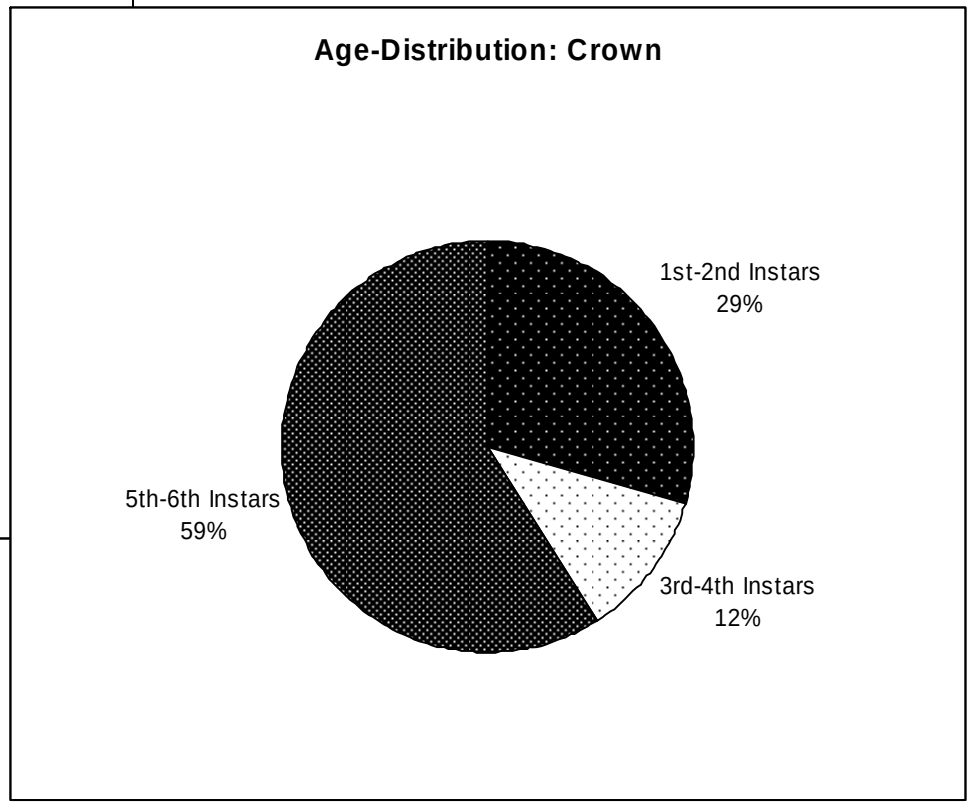


Distribution of Older Larvae



Age-Distribution within the Roots and Crown





Crown Damage







Heartwood Damage









Recap of Beetle Biology and Movement



- Assuming it takes 3-5 years for the larvae to develop, there is some “reaction time” for growers.
- As a tree is dying, it may be a race to the crown (a “race to the top”) for the larvae in the tree’s roots.
- As many of the roots die, parts of the crown may also be dying which could force larvae deeper and higher up the trunk.



- Dripping in a systemic may not work for the older, larger larvae because of the effects of dilution and insecticide degradation (the *ai* has a longer wait before reaching the heartwood of the crown).
- Our data indicate that younger larvae were more often found in the roots than in the crown, and when treated with Admire, the young larvae were less abundant in the roots than in the untreated trees.

Recommendations for Future Research

- Repeat the trial with many more trees.
- Post-harvest apps (less irrigation = less dilution)
- Multiple apps over 4-5 year period.
- Deploy lures to monitor adult flights (lures being developed by researchers in CA).
- For now, keep trees as healthy as possible.
- Where infestations are *known* to exist, applications with materials registered for ground covers may work (acephate is an option, and it's downwardly systemic).

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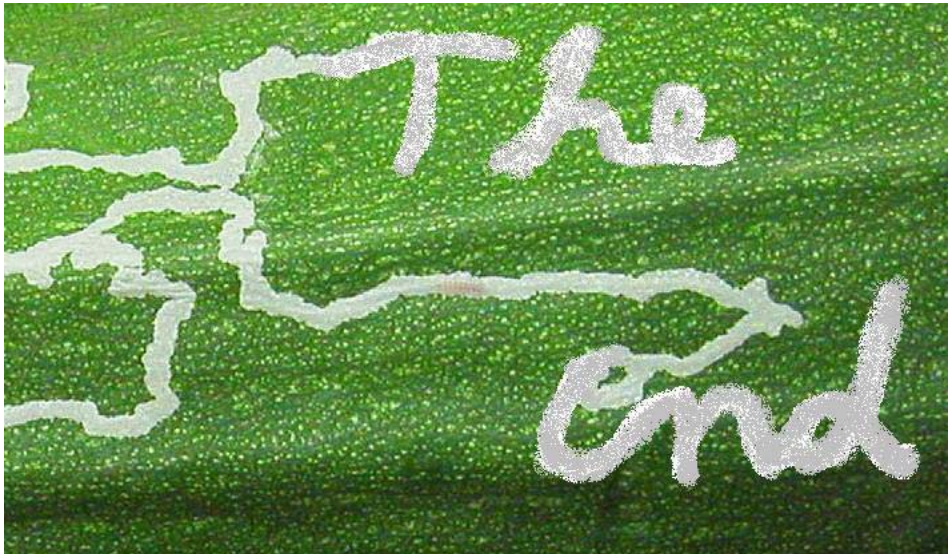
Website & Contact Info



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