

Where Do CBB Live Between Seasons on Managed Farms?

SAMUEL FORTNA, LINDSEY HAMILTON, ROBERT G. HOLLINGSWORTH

DANIEL K. INOUE PACIFIC BASIN AGRICULTURAL RESEARCH CENTER

USDA-ARS, HILO HI



CBB Management Challenges

- Varying environmental conditions
- Variation in pruning methods and harvesting practices
- Labor shortages and high production costs
- CBB survive between seasons
- **Where do CBB live on managed farms between seasons?**



Methods

- 6 farms selected on Big Island
- Farms chosen based on crop characteristics
- Farms divided into evenly sized plots for sampling



Methods Cont.



What Was Sampled?



Raisins



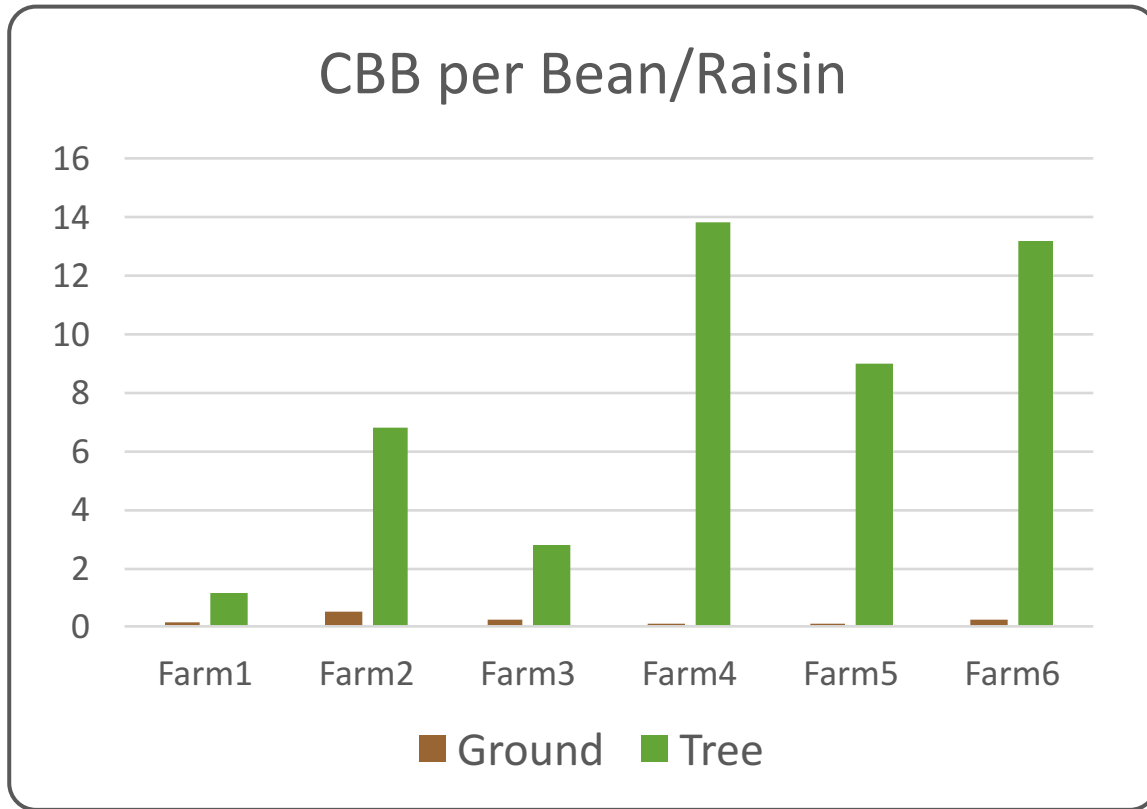
Beans and Raisins

Results: Population Trends

- CBB/Acre highly variable across sampled farms
 - 1000's to >800,000 per acre
- Ground had largest CBB population for 4 or 6 farms
- Ground population declined as season progressed
- Tree raisin population did not show obvious pattern
- Ground and tree raisin population early in the season is large enough to account for infestation the following season

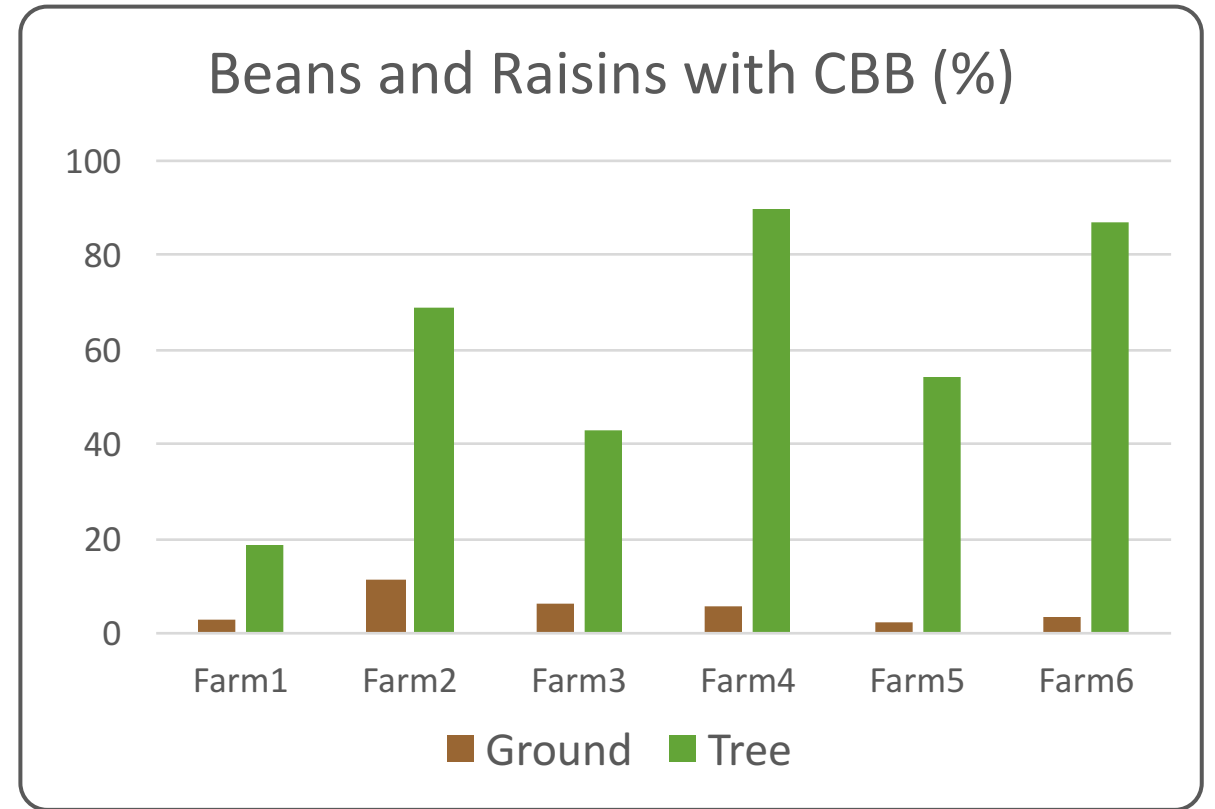


Results: Ground vs Tree



Ground Avg: 0.20

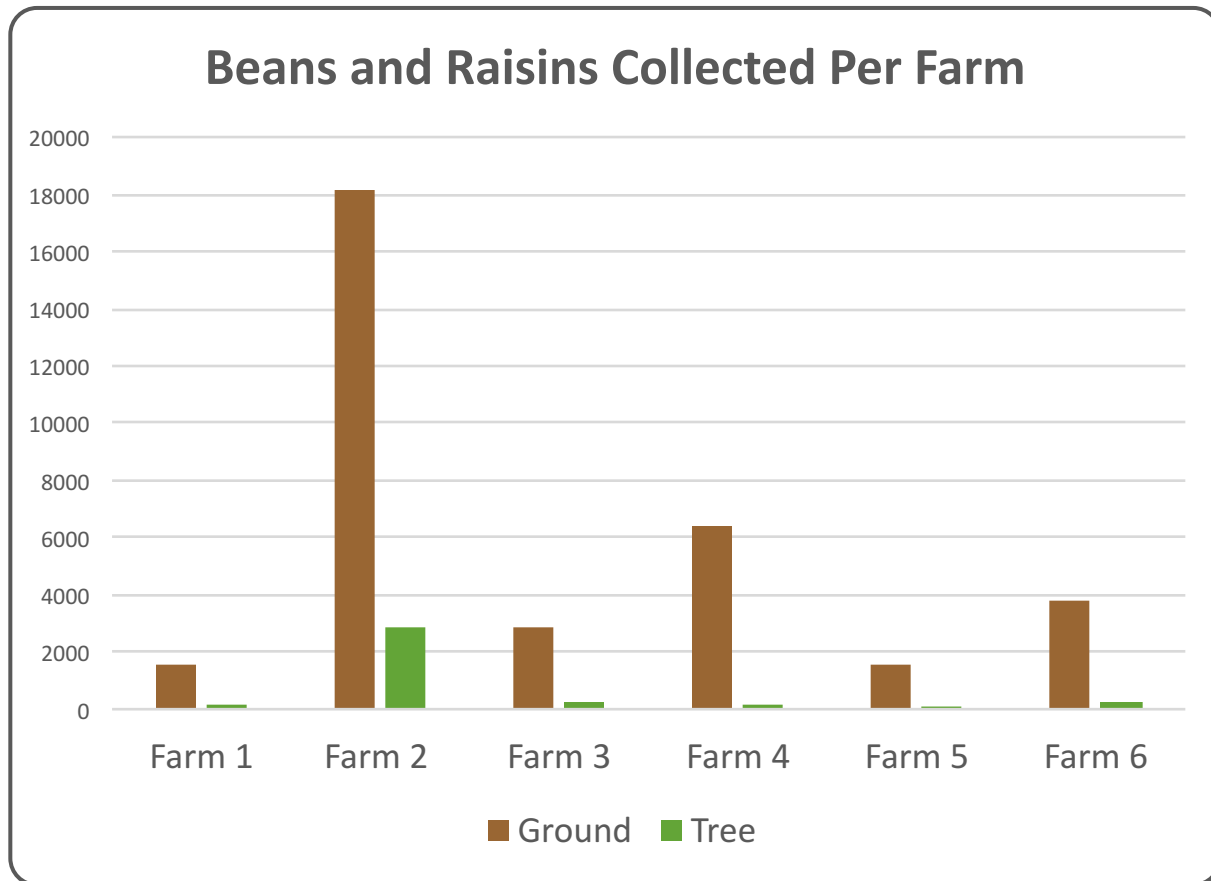
Tree Avg: 7.77



Ground Avg: 5.4%

Tree Avg: 60.2%

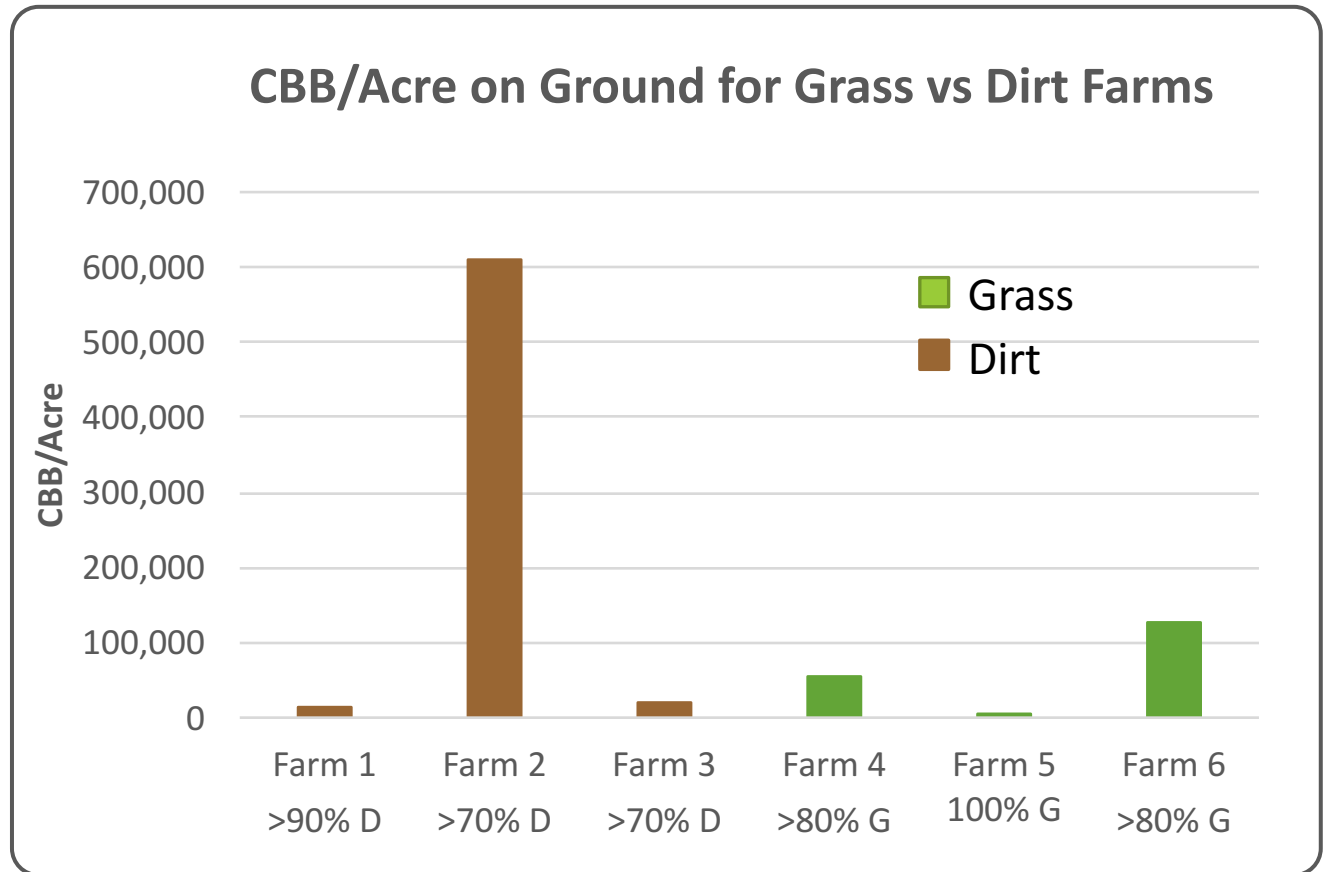
Results: Ground and Tree Collection



- Raisins from trees <10% of total collection
- Aisles had only 15% of ground collection and lowest rate of CBB/Bean
- Base of tree had 85% of ground collection and higher rate of CBB/Bean

Results: Ground cover

- No relationship between ground cover and CBB/Acre
- Relationship between beans and raisins on ground and CBB/Acre



Feral and Unmanaged Sites

Feral Sites

- High infestation rates (>50%)
- Low production
- Low trap captures (<1,000)
- Generally low carrying capacity



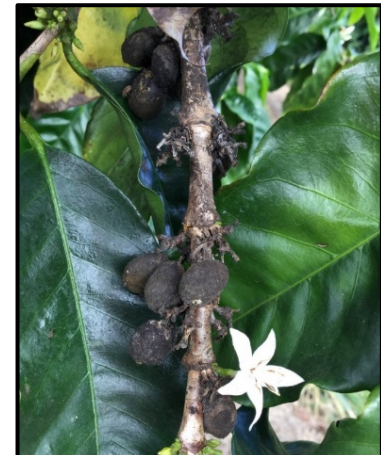
Unmanaged Sites

- High infestation rates
- Declining production with time
- Trap captures variable
- Can have a low to high carrying capacity



Conclusions

- The ground is IMPORTANT!
- Beans and raisins on the ground harbored more CBB than raisins left in the trees for 4 out of 6 farms
- Ground CBB populations are highest early in the season
- CBB ground population not affected by ground cover type
- CBB living in leftover raisins and beans can account for following season's crop infestation



Control Ideas and Recommendations

- Try picking with tarps, umbrellas, shade cloth
- Strip-pick at the end of each season (check stumps)
- Traps in early season



Control Ideas and Recommendations

- Consider collecting beans on ground at end of season
 - Rake into center
 - Mow, collect/mulch, burn, plow/burrry
 - Prioritize hot spots
- Spray ground with pyronyl, pure cinnamon oil, Azatrol, or BTI (future studies needed)



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