

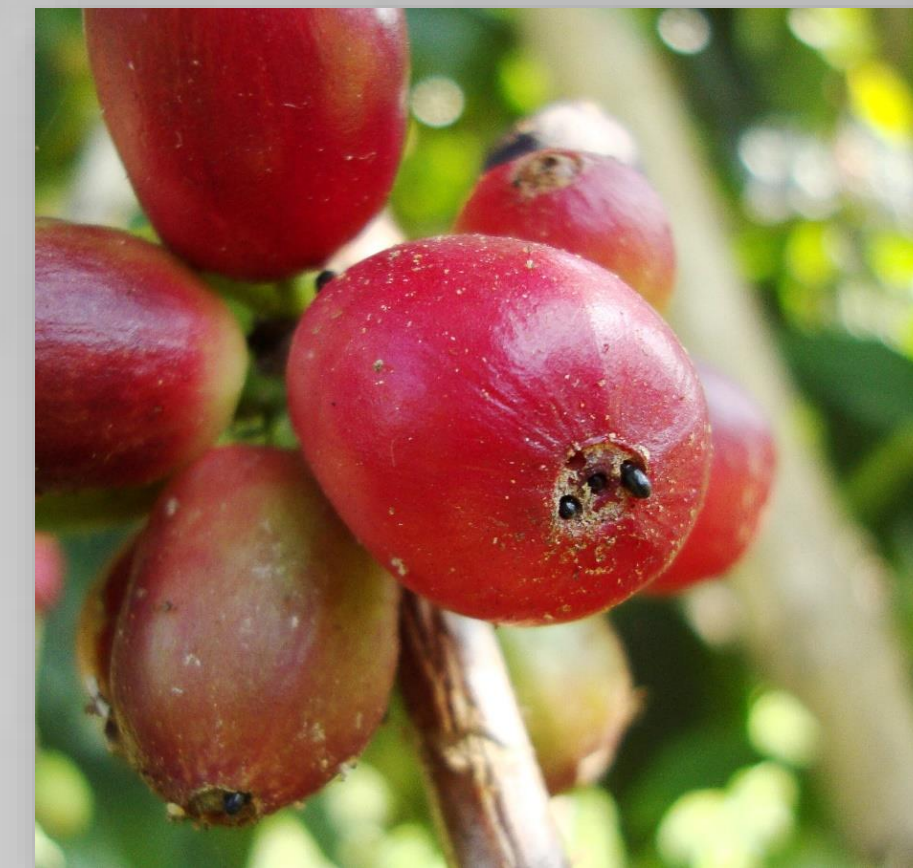
# Augmenting Field Populations of Flat Bark Beetles: An Additional Tool for CBB IPM in Hawai'i

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## Beetles Eating Beetles

Coffee Berry Borer (CBB), *Hypothenemus hampei*, is a devastating pest for the coffee industry. It bores into the coffee endosperm, which negatively impacts marketable yields and cup (flavor, aroma, etc.) quality of roasted coffee. Research on *Cathartus quadricollis* and *Leptophloeus* sp. validates that these flat bark beetles (FBB) predate on CBB eggs, larvae and pupae. However, predation primarily occurs within dried "raisin" berries remaining on coffee trees at the end of the harvest season. Therefore, they are not the silver bullet for CBB control. Instead, they can be utilized as an additional IPM tool for reducing CBB by augmenting FBB field populations. The adoption and implementation of augmented releases of FBB by coffee growers has been successful as a result of research awareness and outreach by providing growers with FBB rearing kits and additional instructions through FBB-specific webpage, workshops, educational booths, videos and publications.



Coffee berry infested by CBB

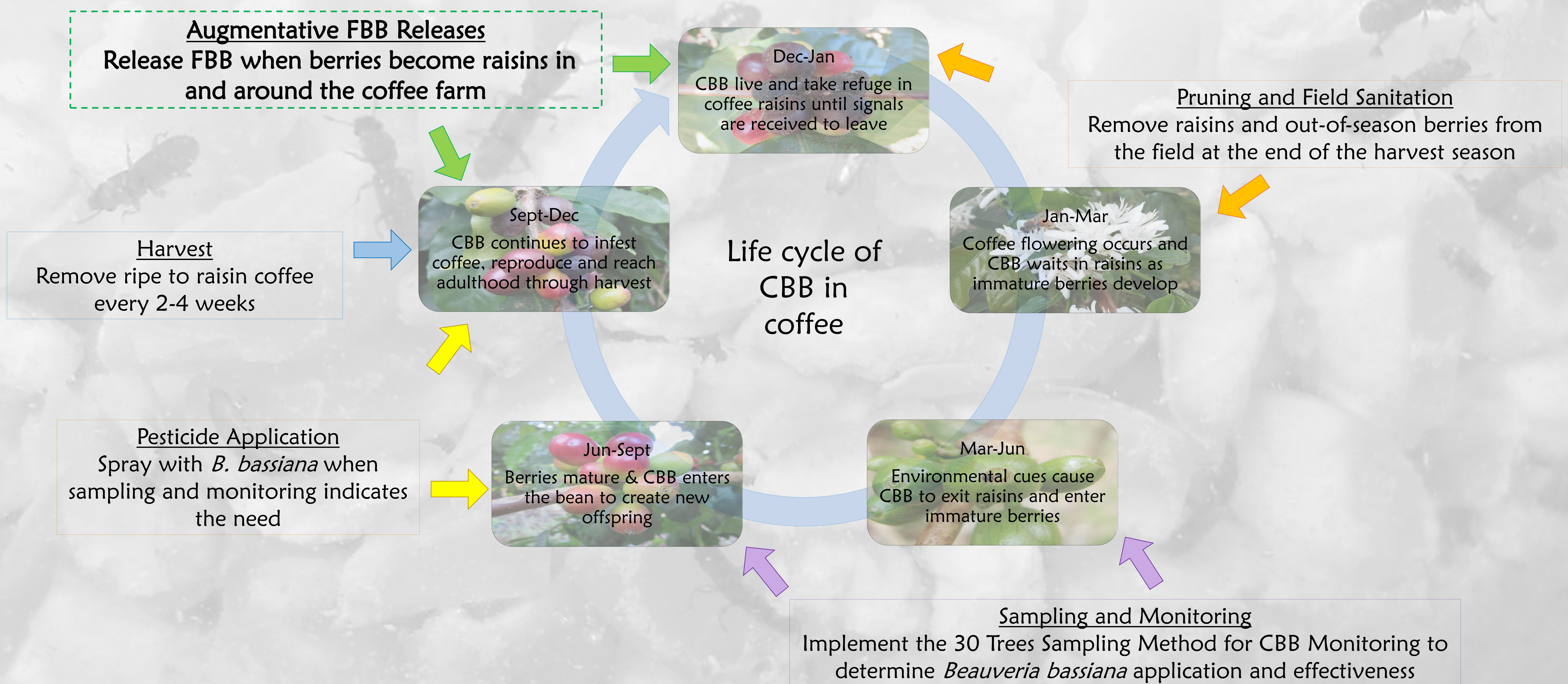


CBB-damaged coffee bean



FBB attacking CBB larvae in a coffee bean

## Incorporating Augmented FBB Releases into CBB Integrated Pest Management\*



\*Based on a general, low-elevation coffee farm

## Adoption of FBB Rear & Release

212 FBB starter kits have been provided to coffee farmers since 2014. Additional rearing materials and beetles have been requested by 30 growers. Responses (n=29) to a survey sent to the first cohort of cooperators indicated that 90% set up their kits within a week of receipt. 48% released FBB (*C. quadricollis* only) in and around their farm within four months.



## Next Steps

*Leptophloeus* sp. are more commonly found in raisins. However, *C. quadricollis* were selected for current FBB kits because they were easier to raise on corn. Diet studies will help to improve rearing techniques of FBB. Further, due to the cryptic nature of FBB, it is challenging to document the impact of FBB predation on CBB populations in the field. Future studies will help to better understand the direct impact of augmentative releases of FBB in the coffee farm.



*C. quadricollis* adults and larvae feeding on a piece of bee pollen patty

Visit <http://hawaiicoffee.weebly.com/predators-of-cbb.html> for FBB information.

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