Trapping in coffee berry borer management

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Trapping in pest management

- Trap crops – plant that attracts pests; can be sprayed with insecticide.
- Attract-and-kill: pests attracted to a pesticide laced lure.
- Physical traps – with or without lures; different colors; light traps.
- For monitoring pests; sometimes useful in pest suppression through mass trapping.

Types of chemical attractants

- Pheromones – sexual signals; aggregation signals; alarm signals.
- Kairomones – signals perceived by pest, not primary role of stimulant.
- Analogues of the above – often use easy to obtain chemicals that can be used in traps, mimic pheromones or kairomones.

Uses of traps

- Monitoring – track flights of insects; biofix data; influx of pests.
- Determine distribution of insects.
- Draw pests away from fruit etc.
- Mass trapping as a suppression option.

Scenarios where trapping may suppress pests

- In closed systems – greenhouses;
- Where pests can be adequately drawn away from the target crop;
- In situations where there is not extensive immigration of pests into the crop system.

Trapping coffee berry borer

- What trap designs are available and effective?
- What lures are most suitable?
- How useful is trapping for monitoring vs. suppression?
- How can trapping be integrated with other suppression options?

Trap designs

- Modified plastic bottle (da Silva et al. 2006); transparent green most effective (with high release rate of attractant).
- White and red multi-funnel traps (Lindgren 1983).
- BROCAP® trap (Dufour et al. 2004) – resulted in ~80% reduction in infestation levels.
- Dufour & Frerot (2008) showed that red traps are more effective.

Lindgren multi-funnel trap

BROCAP Trap (CIRAD)

Japanese beetle Trap – Burbano (2010), showed that this is more effective than Lingren traps for black twig borer in coffee

DIY plastic bottle trap;

Instructions at
http://www.ctahr.hawaii.edu/Site/TrapCBB.aspx

(Burbano 2010)

Lures

- Methanol, ethanol mixes: da Silva et al. (2006) used 1:1 ratio. 720 mg.day^{-1} release rate best, with green bottle trap.
- Methylated spirits (methanol) shown to be effective (Magina et al. 2006).
- Inclusion of coffee extracts, berries etc no more effective than meth: eth. (Dufour & Frerot 2008).
- Commercial lures, methanol: ethanol 3:1 (AgBio, Colorado).

Trap height

- Maximum trap rate with traps at 0.5, 1.0 and 1.5 m above ground (Uemura-Lima et al. 2010).

- 1.2 m above ground superior to ground level (Dufour & Frerot 2008).

Monitoring

- Literature suggests that 1:1 ratio of methanol: ethanol effective; some traps more useful; homemade traps probably adequate.

- Commercial lure is 3:1 meth:eth.

- Traps suspended at 1.2 m above ground should be suitable.

Pest suppression

- Dufour & Frerot (2008) suggest 22 traps per hectare for suppressive mass trapping.
- Dufour et al. (2004) showed that BROCAP traps can catch massive numbers of CBB; reduced infestation by ~85% (with about 22 traps per hectare).
- Dufour suggests that ~90% suppression can be achieved if effective sanitation (removal of infested dropped berries) is applied in concert with intensive trapping.

Prospects for suppression in Hawaii

- Extensive feral coffee, abandoned farms, other neglect – extensive CBB breeding grounds; mass trapping is unlikely to suppress the pest if this persists.

- Mass trapping may be useful in pest suppression if an area-wide approach is adopted – requires collaboration of all growers in an area.

- Integration with other options such as *B. bassiana*, CBB deterrents, with trapping primarily for monitoring is probably the most useful application currently.