

# Brocap trap to control the coffee berry borer in Indonesia

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Installation of the Brocap trap

The coffee berry borer (CBB, *Hypothenemus hampei* Ferr.) is the most serious insect pest on coffee in Indonesia. It causes significant yield losses in terms of coffee production, but also reduces coffee bean quality, resulting in low productivity and the poor quality of Indonesian coffee. On average, CBB infestation on Indonesian coffee is more than 20%, and it results in yield losses of more than 10%. Using traps is the new CBB control method and the Brocap trap, developed by CIRAD and PROCAFE in El Salvador, is specially designed for *Hypothenemus hampei*. The trap is considered as a useful addition to IPM for CBB control in Indonesia.



## Material and methods

The Brocap trap trial was conducted in Tanggamus district, in Lampung province, Indonesia. Two treatments were compared in this trial: Brocap trap versus control (without Brocap trap). Each treatment was replicated four times, so there were four locations comprising treatment and control plots. Each plot had an area of 6400 m<sup>2</sup> (80 m x 80 m) of robusta coffee plants and was set up with 16 Brocap traps for the treatment plots. Both treatment and control plots consisted of 16 coffee trees for observation of CBB infestation and the population. Observations focused on the CBB captured in Brocap traps, CBB infestation and the population, CBB infestation on parchment and

green coffee at the final observation, and green coffee production. The CBB caught in the Brocap traps were collected and counted every week by directly counting the insects if there were fewer than 1000, and by conversion from the volume of CBB obtained. Based on previous observations, the average volume of 1000 CBB adults is 1.37 ml. So, if the volume of CBB trapped amounts to 5.7 ml, it will contain about  $(5.7/1.37) \times 1000 = 4161$  insects. The duration of attractant evaporation was also observed during the trial, to see how long the attractant lasted under the trial area conditions.



## Results and discussion

A large number of CBB was captured over the four months from the initial observation; in plot A, the number in one trap reached 2786 insects per week. On average, the largest number was found for the observation in July, after harvesting (Figure 1). Four months after trap installation, the number of CBB captured decreased substantially until the next harvesting season.

The effects of Brocap traps on CBB infestation and the population are shown in Figure 2. CBB infestation before trap installation was not significantly different between the treatment and control plots. However, from four months after trap installation up to the last observation, the figures for the treatment plot were significantly lower compared to the control, both for infestation and population size.

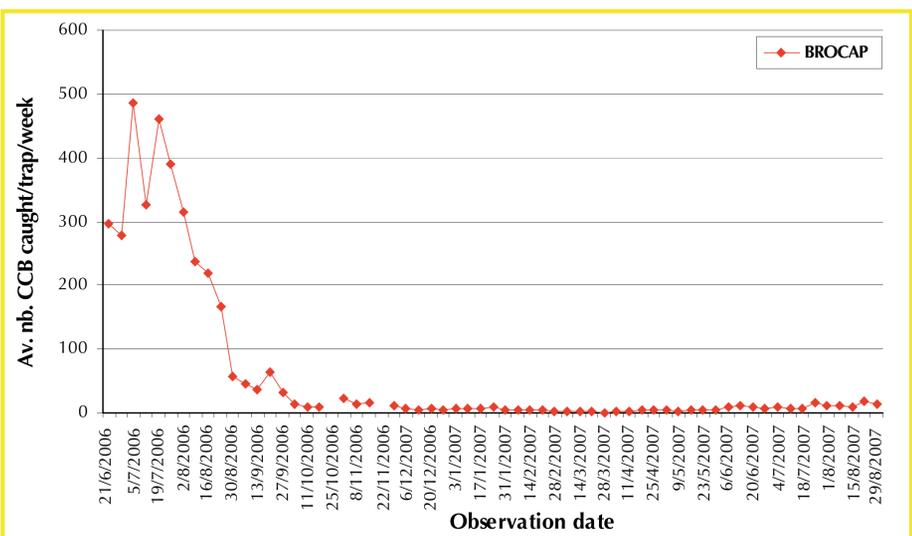


Figure 1. Number of CBB captured over 14 months of Brocap trap installation in Lampung, Indonesia.

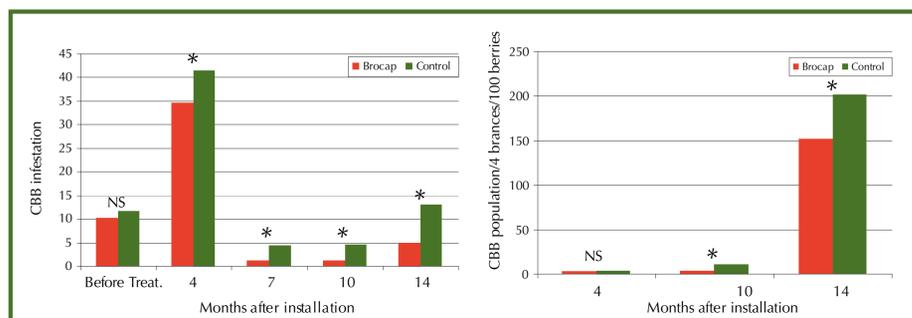


Figure 2. CBB infestation (left) and population (right) during the Brocap trap trial in Lampung, Indonesia. NS = Not Significant; (\*) = Significantly different according to the SNK test at the 5% level.

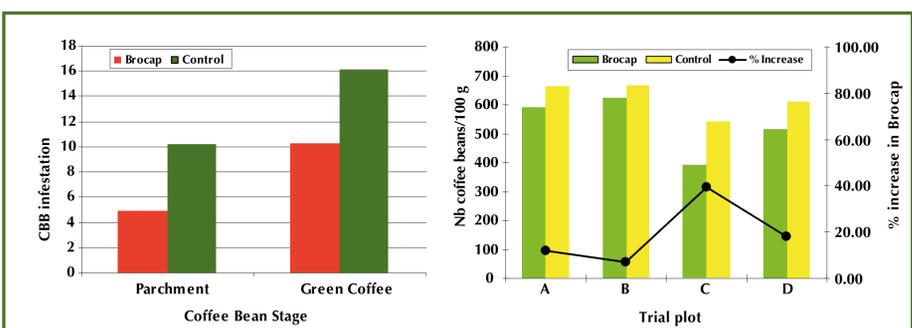


Figure 3. CBB infestation on parchment and green coffee (left) and effect of Brocap trap on green coffee production (right) processed from coffee samples taken on the last observation in the Brocap trap trial in Lampung, Indonesia. Treatment and control plots were significantly different according to the SNK test at the 5.0% level.

As regards infestation on parchment and green coffee, it was found that infestation was also significantly lower in treatment plots compared to the control plots (Figure 3). Coffee production in the treatment plots was significantly higher than in the control plots and the production increase was, on average, 19.06%. The distribution analysis results revealed that the CBB population was fitted to a negative binomial distribution, both for the high population early in the trial and for the low population at the end of the trial. From this trial it can also be seen that the attractant diffused for 137 to 156 days with an average of 146.33 days, which was longer than in trials conducted in El Salvador (Latin America) (Dufour, 2008).



Brocap trap in the field

## References

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