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Development of an insecticidal bait for combined use with netting to control the invasive red-necked longhorn beetle, *Aromia bungii*, emerging from tree trunks

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Abstract

BACKGROUND
Invasive wood-boring pests cause significant damage to trees worldwide. Here we designed an insecticidal bait device to attract and kill adult red-necked longhorn beetles (*Aromia bungii*; Coleoptera: Cerambycidae) that emerge from tree trunks and are captured in netting installed around the trunks.

RESULTS
Insecticides were screened in laboratory dietary toxicity tests and attractants were evaluated in net-cage choice tests. Acetamiprid was selected as the active insecticide and sugar–vinegar solution as the attractant. Bottle-based bait devices were constructed to deliver the liquid bait via an exposed wick from which the adult beetles could feed. In a quasi-field trial, the bait devices achieved 100% mortality of adult *A. bungii* within several days of their emergence from

netted peach branches. In field trials targeting adults emerging from cherry tree trunks, mortality rates were lower and varied from 22% to 81%. Increasing the size of the bait device improved its killing efficacy.

CONCLUSION

Insecticidal baits have the potential to effectively control adult *A. bungii* emerging from netted trees. However, for practical application, further improvements in efficacy are needed, particularly through the identification of more potent attractants and the optimization of bait formulations.