

# Trapping of *Retrachydes thoracicus thoracicus* and other South American cerambycid beetles in combined pheromone and plant kairomone traps

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## ABSTRACT

Sex-aggregation pheromones in longhorn beetles show remarkable chemical parsimony. Similar structural motifs such as  $\alpha$ -hydroxyketones have been found in numerous species, sometimes working in combination with plant volatile kairomones. *Retrachydes thoracicus thoracicus* (Olivier, 1790) is a polyphagous South American cerambycine beetle with unknown pheromone chemistry. Over the past 4 years, we have been conducting field studies with cerambycid pheromones in citrus orchards located in southern Uruguay, with significant incidental captures of *R. thoracicus thoracicus* in cross-vane traps lured with racemic 3-hydroxy-2-hexanone. In the 2020-21 summer season, an experiment was performed to compare the attraction of lures composed of neat 3-hydroxy-2-hexanone, 3-hydroxy-2-hexanone plus lemon essential oil, and 3-hydroxy-2-hexanone plus ethanol. An absolute control with empty lures was also performed. After eight weeks of captures, the results showed a remarkable increase in *R. thoracicus thoracicus* trap captures when 3-hydroxy-2-hexanone was added with ethanol ( $43 \pm 6$  insects) compared to 3-hydroxy-2-hexanone plus citrus volatiles ( $0.6 \pm 1.1$ ) and 3-hydroxy-2-hexanone alone ( $1 \pm 1$ ). Consistently, more females (132) than males (3) were caught. Smaller numbers of eight other native cerambycid species were also caught in pheromone-lured traps, suggesting that they either produce 3-hydroxy-2-hexanone for intraspecific communication, or they “eavesdrop” on the pheromone communication system of other guild members, as has been reported for other species. The strong synergistic effect of ethanol in the attractiveness of 3-hydroxy-2-hexanone is likely explained by its kairomonal role as a cue for plant stress or ripeness.

**Keywords:** Longhorn beetles; Cerambycinae; kairomone-pheromone synergism; 3-hydroxy-2-hexanone; ethanol