

Identification of Male-Specific Volatiles Released by *Pissodes castaneus* (Coleoptera: Curculionidae): Evidence of a Sex Pheromone

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In Brazil, pine plantations occupy an area of 1,840,050 ha, 57.6% of this area in the southern states of Paraná (32.9%), Rio Grande do Sul (7.4%), and Santa Catarina (17.3%). The pine species most frequently planted in the South are *Pinus taeda* and *P. elliottii*, which are attacked by the siricid woodwasp *Sirex noctilio*, aphids of the genus *Cinara*, and most recently by the banded pine weevil *Pissodes castaneus* (De Geer, 1775) (Coleoptera, Curculionidae), a forest pest introduced into Brazil in June 2001. Gas chromatographic (GC) analysis of airborne volatiles released by males or females of *P. castaneus* showed the presence of two male-specific compounds. Using GC-mass spectrometry (MS), these compounds were identified to be grandisol and grandisol. Treatment of the natural extract with LiAlH₄ produced grandisol, which was analyzed by enantioselective GC by using a β -cyclodextrin column and synthetic standards. As a result, (1*R*,2*S*)-grandisol was obtained in an enantiomeric excess >95%. This shows that in *P. castaneus* both grandisol and grandisol keep (1*R*,2*S*)-configuration in high enantiomeric purity. In laboratory bioassays using a Y-olfactometer, males attracted only females, indicating that these compounds are likely to be sex pheromones. The current status of the investigations is discussed.

We acknowledge Conselho Nacional de Desenvolvimento Científico e Tecnológico (CNPq) for financial support.