

The Role of the Monoterpene Composition in *Pinus* spp. Needles, in Host Selection by the Pine Processionary Caterpillar, *Thaumetopoea pityocampa*

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This paper presents preliminary results on attempts to extract and characterize the volatile secondary metabolites contained in needles of different *Pinus* species and to ascertain the role played by these substances on the behavior of *Thaumetopoea pityocampa* (Denis et Schiffermüller) females, which show a marked preference, during the oviposition period, for some indigenous and exotic species of host plants existing in mixed formation. Limonene is the most abundant monoterpene extracted from *P. pinea* needles, the least favored species of pine processionary caterpillar (PPC) females, although it is present in only very low amounts in other *Pinus* species. An increase was observed in limonene production by *P. pinea* at the start of the flight period of the PPC adult, and subsequently at the beginning of the females' oviposition period. Assays carried out in two pine stands in central Italy showed that limonene, emulsified with water and sprayed on foliage of four different pine species plants, *P. sylvestris*, *P. nigra*, *P. pinaster* and *P. radiata*, during the PPC oviposition period, provided a satisfactory degree of protection. In fact, the number of egg clusters collected from treated plants was often lower than the number of egg clusters collected from control plants and was comparable to the number of egg clusters laid on *P. pinea* plants. In particular (R)-(+)-limonene, although not produced in nature by pines, was the most effective deterrent. However, the effect of (S)-(-)-limonene, the enantiomer biosynthesized by pines, was also adequate.

KEY WORDS: *Pinus* spp.; *Thaumetopoea pityocampa*; terpenes; limonene; bioassays.

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