

## Seasonal synchrony between *Saissetia oleae* and coccinellid species in Portuguese olive groves in different management systems

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### Abstract

The black scale, *Saissetia oleae* (Olivier) (Hemiptera Coccidae), is one of the main olive pests and coccinellids are among the principal predators that feed on scales. The relationships between the temporal abundance of five common coccinellid species [*Chilocorus bipustulatus* L., *Scymnus subvillosus* (Goeze), *Scymnus mediterraneus* Iablokoff-Khnzorian, *Scymnus interruptus* (Goeze), *Rhyzobius chrysomeloides* (Herbst)] and the different phenological stages of *S. oleae* were investigated in two olive groves managed under two different systems (Integrated Pest Management and Organic Farming) during 2002 and 2003. Coccinellids and black scale were randomly sampled on a fortnightly basis and correlation analyses between the abundance of the coccinellid species and the different stages of the pest were carried out. Results showed that the abundance of *S. oleae* was similar between olive groves and years. However, significant differences were found for adult and larvae of coccinellid species. In both years and groves, the greatest abundance of coccinellids occurred between June and November, also corresponding to the period of greatest abundance of the first and second instar nymphs of *S. oleae*. Significant positive correlations were obtained between the second instar nymph and four out of five coccinellid species, being potentially the most predated stage of the pest. On the contrary, no significant positive correlations were found between the third instar nymph and the coccinellid species. *S. subvillosus* and *S. interruptus* were the coccinellid species that showed a higher number of significant positive correlations with the different stages of the pest indicating their potential as biological agents of *S. oleae*.

**Key words:** coccinellids, integrated pest management, organic farming, predator-prey interactions, *Saissetia oleae*.

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