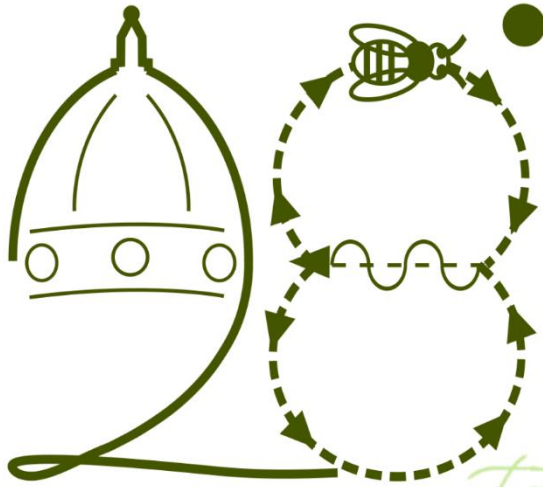


XXVIII Convegno Nazionale della Società Italiana di Etologia



Firenze, 9-12 Settembre 2019



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# XXVIII CONVEGNO NAZIONALE DELLA SOCIETA' ITALIANA DI ETOLOGIA SIE

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Firenze, 9-12 Settembre 2019

Palazzo Nonfinito  
Via del Proconsolo, 12

Polo di Novoli  
Via delle Pandette, 3

Con il Patrocinio di Università degli Studi di Firenze e il contributo della  
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## Trophobiosis between ants and mealybugs: ant behaviour as a useful tool for pest monitoring in vineyard IPM

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The vine mealybug *Planococcus ficus* (Hemiptera: Pseudococcidae) is a worldwide pest of grapevine. It is present in several grape-growing countries, including regions of Middle East, Pakistan, India, South Africa, South America, Mexico, California and of Mediterranean Basin (e.g. Italy, Spain, Turkey). *Planococcus ficus* infestations lead to severe economic losses, both on wine and table grape. Damages on plant range from early defoliation to fruit injuries due to *P. ficus* clustering behaviour on fruits during summer with consistent production of wax, honeydew, sooty-mod fungi, attraction of secondary pests and transmission of leafroll-associated viruses (GLRaVs). The result is a great reduction of table grape market value and reduced crop yield and wine production quality. Several ant species (Hymenoptera: Formicidae) establish mutualistic relationships with mealybugs that can be led back to trophobiosis where honeydew excretion produced by mealybugs is traded for enemy's protection by ants. Consequently, in Integrated Pest Management (IPM) programs for vineyards, ant control is usually recommended to enhance the activity of mealybug natural enemies. However, along our studies on ant-mealybugs interactions, we developed the idea that trophobiotic relationships can be useful also in the monitoring phase of IPM. Our research focused on the vine mealybug *P. ficus* infesting vineyards in Trentino-Alto Adige region (Italy) and on its relationship with some ant species. We found that, although several ant species regularly visit the vineyards, only few establish mutualistic relationships with the mealybugs. In addition, we developed a protocol based on ant behaviour to locate the mealybugs when they are not immediately visible, as in the first part of the season, when they tend to colonize the deeper part of the trunk and only successively move to the leaves where their detection is easier. The early discovery of infestation is a crucial step that can enhance other IPM actions such as pest control through sexual confusion.

**Keywords:** IPM, *Planococcus ficus*, ants, trophobiosis, pest monitoring