



Adult sampling and larva rearing of the cork oak pest *Coraebus undatus* (Coleoptera: Buprestidae)

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**ADULT SAMPLING AND LARVA REARING OF THE
CORK OAK PEST *CORAEBUS UNDATUS* (COLEOPTERA:
BUPRESTIDAE)**

**A DISSERTATION SUBMITTED FOR THE PARTIAL ACCOMPLISHMENT OF
THE DEGREE OF MASTER OF SCIENCES IN AGRICULTURE AND
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Author

ABSTRACT

Coraebus undatus is the main insect pest of cork oak worldwide. The larvae tunnel in the cortical cambium filling the bark with galleries and causing the cork to break at harvest. The tree is apparently unaffected by this parasite, but the economic losses for the farmer are very large. Just in the Extremadura region in Spain estimated losses caused by this insect amount to 5 million € per year. In recent years the damage has increased in severity and so the interest in controlling this pest. Because the larva feeds underneath the bark it is very difficult to kill it by conventional means (insecticides, etc). An alternative means of control is to disrupt mating with sex pheromones. Live adult individuals are needed to identify the sex pheromone. Adults can be obtained either directly from the field or from field-collected larvae reared in the lab. To this date there is no effective means to collect adults or to rear the larvae of this insect. The **first objective** of this study was to test the effect of **purple traps** in the attraction of *C. undatus* because this colour is attractive to other buprestid beetles. The **second objective** was to develop a **diet** in which field-collected larvae could be reared to adulthood. Pairs of purple and clear (control) sticky traps were placed in a cork oak forest with a heavy infection of *C. undatus* in Girona, Spain, in the summer of 2008. Weekly samples from the traps provided the first adult population estimates of this insect in the world. The first insects were captured in June 24, the population peaked in July 16-31 and the last captures were on August 27. Significantly more individuals were captured in the purple than in the control traps, and all the individuals captured were females. Other species, including 3 buprestids, were also counted and analysed and the results are discussed.

Larvae were sent from Cádiz, Castellón and Girona (Spain) to the University of Lleida in the summer of 2008, and were tested in different diets. Diets without fungicide performed very poorly, independently of their nutritional composition. A final diet was chosen (diet # 9) in which mortality was relatively low (24% mortality to the date of writing this thesis for insects that have been in diet from the start for 45 to 55 days), and larvae have good aspect. This diet is composed of the natural food of *C. undatus* larvae (cortex and immature cork) plus fructose, vitamins and a fungicide (methyl paraben). To the date of writing this thesis in the overall study 29 larvae have molted once, and 3 have molted twice. The oldest larvae still alive and in good shape are almost 90 days old.

This study provides the first means to sample adult populations of *C. undatus* and a larval diet which seems to perform well. Purple colour traps can be used to monitor adult populations of this insect, and could be used to develop live insect traps designed to capture live adults for pheromone research. Since the development of the larvae is long (2 years) more time is needed to determine if the larvae can finish development in diet # 9. However this diet provides the substrate necessary to perform future experiments of diet composition and rearing conditions aimed towards the development of a completely effective diet for this insect.