

First Record of the Eucalyptus Gall Wasp, *Ophelimus maskelli* (Ashmead) in Nineveh Governorate, Iraq

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Abstract

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Gall wasps *ophelimus maskelli* were detected for the first time in Nineveh Governorate on the foliage of Eucalyptus tree during June, 2021. Symptoms of infestation were in the form of pus-like swellings on the fresh stems and leaf blade. Leaves of *Eucalyptus camaldulensis* were heavily infested with the gall wasp, with leaves infestation rate and severity of infestation reached 42.2% and 5.2 galls/cm², respectively. The results showed that the severity of infestation at the basal and middle leaves was higher than the terminal leaves, and the averages reached 5.38, 2.73 and 1.70 galls/cm², respectively.

Keywords: Swelling wasp, Eucalyptus, rate of infestation, severity of infestation.

Introduction

The original home of *Eucalyptus* trees is the Australian continent, the islands of the Indonesian archipelago and New Guinea (Boland *et al.*, 2006). This type of trees is one of the fast-growing trees that adapt to many environmental conditions, and this explains the rapid spread of such trees in the world (Wingfield *et al.*, 2008). *Eucalyptus* was introduced to Iraq in the early fifties of the past century mainly for the purpose of producing cellulosic pulp for the paper industry, in addition to many other purposes, such as windbreaks, green belts, fuel wood, and the manufacturing of compressed wood (Ali, 1978). Studies have proven that there are only two types of *eucalyptus* that have adapted to the conditions of Iraq; namely, *E. camaldulensis* and *E. microthica* (Dawod, 1979). *Eucalyptus* is infested with various insect pests, and *Ophelimus maskelli* is a new pest infesting *eucalyptus* trees which has recently been introduced to the Mediterranean basin. It was first identified in Italy and northeastern Spain as *O. maskelli* (Pujade-Villar *et al.*, 2004; Rizzo *et al.*, 2006; Viggiani & Nicotina, 2002). In 2003, it was reported in the Middle East and Spain (Protasov *et al.*, 2007; Sánchez, 2003); in 2005, in southern France (EPPO, 2006), and in 2006, in Portugal and Turkey (Branco *et al.*, 2006; Doganlar & Mendel, 2007), in 2014 in Syria (Tracy and Fatima, 2014), and in Jordan in 2016 (Ghabeish and Araj, 2016). In Iraq, the wasp-swollen *eucalyptus* leaves (*Leptocybe invasa* Fisher & La Salle) was observed in 2012 (Hassan, 2012). In Iraq, this wasp *O. maskelli* was first recorded in Karbala 2016 (Al-Lhuf *et al.*, 2016). Infestation with this wasp stimulated gall formation on the leaves of many *Eucalyptus* species in trees and nurseries. The female length range was 0.83-1.07 mm. Females laid normally around 100 eggs, but in the case of severe infestation, the surface of the leaf was covered with a density of up to 36 tumors/cm². The larva appeared inside the tumor with a diameter of 0.9-1.2 mm (Dhahri *et al.*, 2010).

The adults emerged when the leaves became severely exposed to drought and fall, leading to a delay in tree growth and loss of its vigor.

This study aimed to assess the damage caused by this type of wasp and to estimate the rate and severity of *eucalyptus* trees infestation.

Materials and Methods

Diagnosis

Sticky color traps were set up on the *Eucalyptus* trees for the purpose of catching adult wasps, and net traps in which the infested branches and leaves were wrapped. After the adult hornets emerged, they were collected, preserved in alcohol solution and sent to the Museum of Natural History in Baghdad for identification.

Estimation of infestation rate and severity

A field survey was conducted in the Nimrud forests, Nineveh governorate planted with *E. camaludensis*, and the trees at the University of Mosul planted with *E. Macrothica*. Ten trees were randomly selected from each species. From each tree, four random one meter long branches were selected and the leaves were divided into three groups (terminal leaves, middle leaves and basal leaves). The number of infested and healthy leaves was calculated, and the infestation rate was estimated in the examined samples by using the following equation:

$$\text{Leaf infestation rate} = \frac{\text{number of infested leaves}}{\text{number of leaves in the sample}} \times 100$$

The severity of infestation was estimated by calculating the number of galls per cm² in the affected leaves. Analysis of variance (ANOVA) was performed using the statistical software Genstat (Genstat Eighteenth Edition; 18.1.0.17005, 2015, UK), and LSD test at P=0.05 was used.

Results and Discussion

Wasp diagnosis

The results of the diagnosis from the Natural History Museum, Baghdad, showed that the insect in question is the *Eucalyptus* wasp *O. maskelli*. The infestation appeared in the form of pustules on the leaf blade and concentrated in its basal part, and on the young branches (Figure 1). The pustules were spherical and showed the exit holes of adults on the side of the tumor.

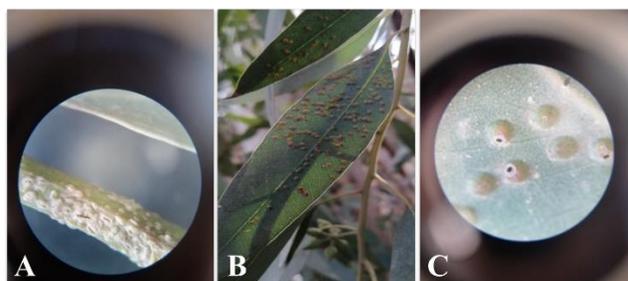


Figure 1. The infestation with *Ophelimus Maskelli* (A & B) galls on leaves, (C) galls on young stems.

When the larval and pupal stages developed inside the gall were completed, the adult insects emerged from the gall laterally, leaving a hole that represents the adults exit opening (Figure 1-C). Severe infestation caused weak leaf growth, distortion and color change, which led to poor tree growth and leaf fall. Protasov *et al.* (2007) stated that the large numbers of these wasps in the Mediterranean basin have become a source of nuisance to the population, in addition to the damage they cause to *Eucalyptus* trees, as severe infestation causes premature leaf fall.

Leaf infestation rate and severity

The average infestation rate range was 1.1-53%, and variation was influenced by the *Eucalyptus* species infested and the position of the leaf on the stem (Figure 2). The *E. camaludensis* species was significantly more susceptible than *E. microthica*, as the overall infestation rate was 42.2% and 5.2%, respectively. The middle and basal leaves were more susceptible than the terminal leaves, with average infestation rates of 30.0, 28.9 and 12.2%, respectively.

The results obtained were in agreement with what was mentioned by Dhahri *et al.* (2010), who indicated that *E. camaludensis* was more severely infested than other *Eucalyptus* species, as the infestation reached 100% in small

farms and nurseries of this species. In addition, Protasov *et al.* (2007) confirmed that the two species *E. camaludensis* and *E. tereticornis* are the most susceptible to attack among other *Eucalyptus* species.

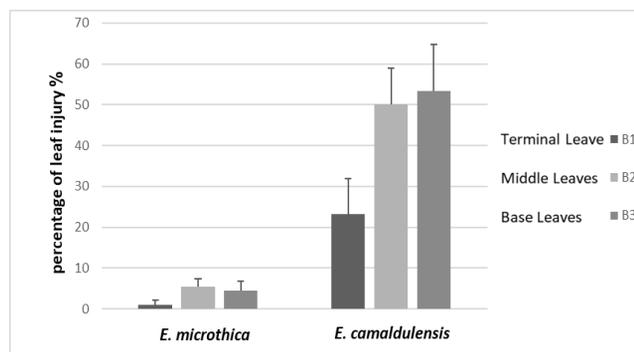


Figure 2. The effect of *Eucalyptus* species and leaf position on the stem on the infestation rate with *O. Maskelli*.

The severity of leaf infestation is represented by the number of galls on the leaf surface at a range of 0.17-9.23 galls/cm². *E. camaludensis* had more galls than *E. microthica* and reached 5.51 and 1.03 galls/cm², respectively (Figure 3). The number of galls on the leaf surface varied according to the leaf position on the stem, where the basal leaves were significantly more susceptible than middle or terminal leaves, with an average of 5.38, 2.73, 1.70 galls/cm², respectively. Dhahri *et al.* (2010) reported that galls density reached 36 galls/cm² in case of severe infestation.

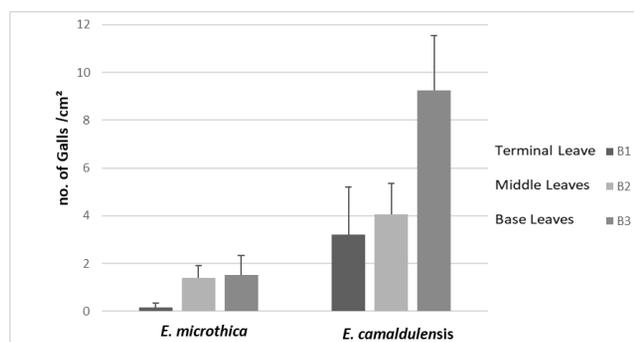


Figure 3. The Effect of *Eucalyptus* species and leaf position on the stem with the infestation severity with *O. Maskelli*.

المخلص

الجلال، هيثم محي الدين محمد ووفاء عبد يحيى. 2023. أول تقرير لوجود دبور عقد اليوكالبتوس *Ophelimus maskelli* في محافظة نينوى، العراق. مجلة وقاية النبات العربية، 41(1): 12-14. <https://doi.org/10.22268/AJPP-41.1.012014>

تم اكتشاف دبور عقد اليوكالبتوس *Ophelimus maskelli* لأول مرة في محافظة نينوى على أوراق شجرة اليوكالبتوس في شهر حزيران/يونيو من عام 2021. كانت أعراض الإصابة على شكل عقد/تورمات على السوق الحديثة ونصل الأوراق. كان النوع *Eucalyptus camaludensis* أكثر حساسية للإصابة سواء من حيث

نسبة إصابة الأوراق أو شدة الإصابة، حيث بلغت 42.2% و 5.2 عقدة/سم²، على التوالي. كما بينت النتائج أن الأوراق القاعدية والوسطية أشد قابلية للإصابة من الأوراق الطرفية، حيث بلغت متوسطاتها 5.38، 2.73، و 1.70 عقدة/سم²، على التوالي.

كلمات مفتاحية: دبور التورمات، يوكالبتوس، شدة الإصابة، نسبة الإصابة.

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