

TAXONOMICAL AND ECOLOGICAL STUDIES OF THRIPS SPECIES IN AN OLIVE GROVE IN ISMAILIA GOVERNORATE

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ABSTRACT

Survey and taxonomy of thrips species in olive groves at Ismailia governorate were studied during 2013 and 2014 on different cultivars (El-Agizi; Manzanillo and Picual) and associated weeds in olive groves. The effect of some weather factors and plant heights on seasonal abundance of certain dominant species (*Haplothrips cahirensis* Karny; *Dendrothrips eremicola* Priesener) were investigated. The primers ITS4A, 28S rRNA, 18S rRNA and the primer pairs COI-1 + COI-2 + COI-3 were used to identify the dominant thrips species and *Sericothrips kassimanus* Priesener). Seven species belong to six genera, four subfamilies and two families were recorded throughout this study i.e.: *H. cahirensis* Karny; *S. kassimanus* Priesener; *D. eremicola* Priesener; *Frankliniella occidentalis* (Pergande); *Thrips tabaci* Lindeman; *T. microchatus* Karny and *Scirtothrips aurantii* Faure. A significant positive correlation between the mean temperature and the mean numbers of thrips and negative correlation between the mean relative humidity and thrips population have been noticed. The highest number of dominant species was observed at low level (60cm.) followed by medium (120cm.) while high level (200 cm.) harboured the lowest numbers. DNA sequence data for 18S rRNA gene showed apposite response to the three species. DNA sequences of the species based on 18S rRNA were recorded in the Gene Bank. The phylogenetic tree of the three thrips species was given also.

Keywords: Thysanoptera, thrips, olive, Ecology, Morphology, 18S rRNA.

DEDICATION

I dedicate this work to whom my heart felt thanks; to my mother and my father for their patience and help, as well as to my brother Sameh, hasband Ahmed ,my children Maryam , Menna and Aser and all my ferriends for all the support they lovely offered along the period of my post graduation.

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INTRODUCTION

The olive trees, *Olea europaea* L. is an important economically subtropical crop. The olive is used in many purposes such as pickling, oil extraction and the remains of fruits are used as fodder for domestic animals. The olive trees originated in the Eastern Mediterranean area since ancient times. In Egypt, it has been cultivated for thousands of years. It is considered as the second crop after citrus. The area under cultivation with olive reached 237,454 feddans (Fed = 2400 m²) in 2014. Ismailia governorate has the largest area in Lower Egypt *i.e.* 19,691 feddans. (Ministry of Agriculture and land reclamation, Economic Affairs Sector, 2014)

Olive tree is attacked by a wide range of arthropods, but little attention has been given to thrips (Insecta: Thysanoptera). Thrips feed by puncturing the epidermal (outer) layer of host tissue and sucking out the cell contents, which results in stippling, discolored flecking, or silvering of the leaf surface. They can induce a range of symptoms in plant tissue by their feeding as scarring on fruits or leaves and flower deformation or reducing pollen critical levels. Also, thrips are vectors of a series of plant damaging viruses (tospoviruses). Moreover, it is inducing leaf gall in some ornamental plants. Thrips feeds on tender parts of the olive tree such as buds, developing leaves, developing inflorescences, flowers, fruits and tender bark causing leaf deformation, yellowish white blotches on lower surfaces, leaf curl, leaf defoliation, fruit deformation with deep hollows in ripe olive, fruit defoliation when attacked in early season, and also infested fruit become smaller. Furthermore, in 2009 the thrips