THE CITRUS BLOSSOM MIDGE, CONTARINIA CITRI BARNES (DIPTERA: CECIDOMYIIDAE), IN ISRAEL

By

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The citrus blossom midge, Contarinia citri Barnes, was sampled in two lemon groves. Infestation lasted from December through April. Midge-infested blossoms were seldom concomitantly attacked by the citrus flower moth, Prays citri Mill. Some midge larvae completed their development in the laboratory, their numbers declining and the period required for pupation becoming shorter toward the end of the season. Very few parasitoids were obtained. It is suggested that C. citri and P. citri may be partially mutually-exclusive in lemon flowers, that the number of annual midge generations depends on the availability of blossoms, and that the midge may undergo a prolonged diapause in the soil.

KEY WORDS: Contarinia citri; Prays citri; citrus pests; larval diapause.

INTRODUCTION

The citrus blossom midge, Contarinia citri Barnes (Diptera: Cecidomyiidae), was initially described (2) from specimens collected in Mauritius. Gall midge larvae were found in the flowers of various citrus species, with as many as 100 infesting a single blossom. Many flowers failed to develop, their reproductive organs shriveled, and they dropped prematurely. Over 25% of the flowers were infested. Employment of all possible means to prevent C. citri from extending its geographical range was advocated (2).

Additional data were presented by Genduso (5), Rubin (12) and Shi (13), reporting from Sicily, Israel and mainland China, respectively. In Sicily, C. citri raised four annual generations, from November to May. During December 87% of the flowers were infested, and in April 42%. A maximum of 125 larvae were counted in a single flower. In summer the larvae rest in the soil.

The gall midge was considered a serious citrus pest in eastern China (13), where it had only a single (April) annual generation. In Israel (12) larvae were obtained from January to April, in lemon, citron, grapefruit, orange, Sour orange and Clementine flowers. Both Shi (13) and Rubin (12) reported that the larvae spend the summer in the soil.

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Some hymenopterous parasitoids were reared from *C. citri*. These include the proctotrupid *Inostemma walkeri* Kieffer (5) and the pteromalid *Systasis encyrtoides* Walker, of which Rubin (12) reared about 30 adults. Neither appears to reduce the pest's population or damage.

No data are available regarding the intensity of citrus blossom midge infestation during the years since it was first reported from Israel. However, its inclusion or non-inclusion in the annually published recommendations for the control of citrus pests (1) gives some indication of the damage attributed to *C. citri* over the years. Thus, it was first mentioned in 1966/67; again, for three consecutive years from 1969/70 on, but has not been noted since. From this source we assume that the citrus blossom midge is an infrequent pest, which appears during certain years.

The present study, conducted during the outbreak years of 1971-1972, is concerned with the phenology of the midge and the specific damage caused by it, and represents an attempt to account for the sporadic occurrence of *C. citri* in local citrus groves.

The vernacular name "citrus blossom midge" has more recently been applied to another gall midge, *Dasineura citri* (Rao & Grover), the biology of which was studied by Prasad (9). To avoid confusion, we propose that the latter species be known as the Indian citrus blossom midge.

**MATERIALS AND METHODS**

**Sampling sites**

The midge infests only citrus blossoms. To follow its annual trends, samples were taken from lemons, which flower almost the whole year round, in two well-tended groves (variety Eureka): Giv'at Brenner (Grove A), a small (0.5 acre) plantation about 10 years old; and Gan Soreq (Grove B), a larger (10 acres) and older grove. The two sites were chosen as prior observations had shown them to be heavily infested by the midge. No insecticidal treatments were applied at either grove, except for compulsory sprays against the Mediterranean fruit fly.

**Field techniques**

About 150-200 lemon blossoms and flowers were collected at random from both sites at every sampling date, during winter and spring. In summer, when blossoming becomes irregular, only smaller samples were available. However, batches of less than 50 flowers were not taken into account. Blossoms were examined as soon as possible after collection, and the following were noted: condition of infested buds and flowers, number of midge larvae present, and occurrence of other citrus flower pests, such as the citrus bud mite (*Aceria sheldoni* Ewing) and the citrus flower moth (*Prays citri* Mill.).

Lemon blossoms were collected during summer and autumn from other sites also, and examined for the presence of the above pests.