

# Population Density and Biological Studies of Two Cucurbit Flies Species :*Dacus ciliates* Loew and *Dacus frontalis* Beecker (Diptera: Tephritidae)

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## Abstract

Population density of cucurbit flies *Dacus ciliates* and *Dacus frontalis* were studied in Suwaira and Tuwaitha areas in addition to percentage of infestation by these two species on three varieties of vegetables: Cucumber, Snake Cucumber and Squash. Results showed that no significant differences in the number of eggs laid and percent of its hatching for the wild and laboratory strains mated separately for each species.

## I . INTRODUCTION

The cucurbit fly regards as an important species in family Tephritidae, that they infect cucurbitaceous plants that have large distribution in the world and in the Iraq because they are cultivated twice a year this provided suitable conditions for insect development moreover, the natural enemies were rarely found this resulted to serious economic damage in various parts of Iraq by this pest. The genus *Dacus* include large species causing damage to vegetables and fruits that often have puncture marks made by the entry of the females ovipositor, while larvae hatched inside the fruits, a sign of

mould growth on vegetables started to develop, larvae usually do not obtain sufficient nourishment that causing more decompose to infested cucurbit, Some species have become pest in regions far removed from their native range. So additional first record for the new species *D. frontalis* in Iraq has been reported for three years ago from which it attacks cucurbit crops on large scale. This pest is worldwide distributed, it has been recorded in Australia from snake gourd by [1,2]. In Africa it was found with cultivated and wild cucurbit [3,4], Heavy infestations of cucurbits by *Dacus ciliates* have been reported in Egypt [5]. There were confirmed records from Middle and Eastern Asia [6]. In India was

described by [7]. While [8] indicated a substantial proportion of many species in Palestine. White showed that the host plant was visited only by the females during oviposition period while they mates on rest plants included : maize and sunflower. The first recording of *D. ciliatus* Lowe as a pest of cucumber in Iraq was by [10]. This research aim to study the biology and distribution of these two species which were *D.ciliatus* in and *D.frontalis* in two regions around Baghdad

## II. MATERIALS AND METHODS

### A. Sample collection

Infested cucurbits, including cucumber, snake cucumber and squash from two different regions Tuwaitha and Suwaira were collected from May till October – 2010, then kept in carton boxes and covered by smooth fabric mesh till the emerging adults. flies were identified in Iraqi Natural History Museum.

### B. Preparation of Colony

In order to get laboratory strain the collected and identified flies were kept to inbreed for at least six generations inside laboratory in cubic cages (40×40×40cm<sup>3</sup>) made from Perspex glass with upper side open which covered by smooth fabric mesh, a fresh cucurbit was put inside the cage every day for oviposition, a Petri – dish contain cotton dipped in 5% sugar solution 20×20×20 for adult nutrition.

### C. Mating cages

In addition cubic cages (20x20x20 cm<sup>3</sup>) supplied with fresh squash and sugar solution as mentioned above were prepared to make multiple mating

of one virgin female with 2 males to determine fecundity and percent of egg hatching for both species; *D. ciliatus* and *D. frontalis*, each mating were repeated for 25 times.

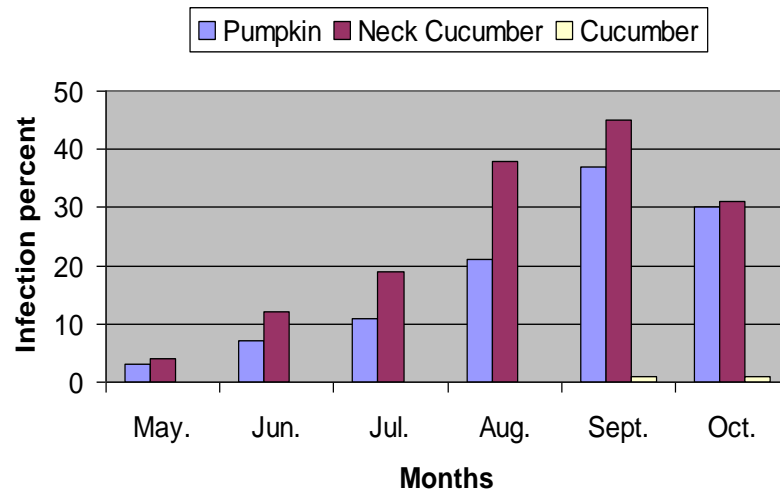
## III. RESULTS AND DISUSSION

The distribution of cucurbit flies in Suwaira and Tuwaitha regions were illustrated in figs 1, and 2 for *D. frontalis* and figs 3 and 4 for *D. ciliatus* respectively, the percent of cucurbit infestation increased gradually with cucurbit ripeness during May and reaching the peak in August as a result of increasing temperatures in the field, after that the infestation descended with the beginning of Autumn season for the three varieties with the snake cucumber appeared to be more preferable than the others [11].

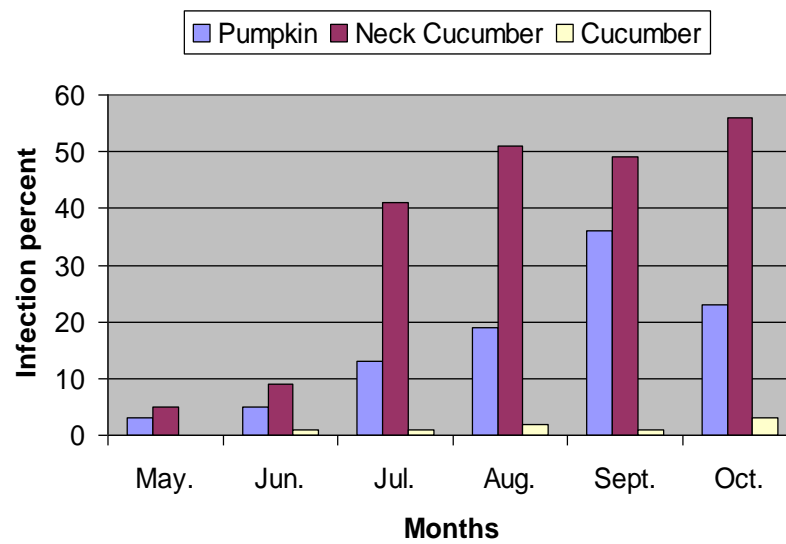
Biological studies presented in Table (1) which showed reproduction ability of both species, the average number of eggs were (26.7 and 22.2%) for *D. ciliatus* and *D. frontalis* respectively, while the percent of egge hatching were 88.69% for *D. ciliatus* and 88.68% for *D. frontalis* in wild type mating [12]. Heavy infestations of cucurbits indicated by [5] in *D. ciliates* that have been reported in Egypt and South Africa, damage in some areas was similar injury as caused by a closely related species, *D. longistylus*

Both cucurbit pests *D. ciliatus* and *D. rontalis* they were very similar probably difficult to differentiate except of the two circular dark spot on the dorsal abdomen segment in *D.f rontalis* while the spot is dark and appeared to be diffused in *D. ciliatus* [3].

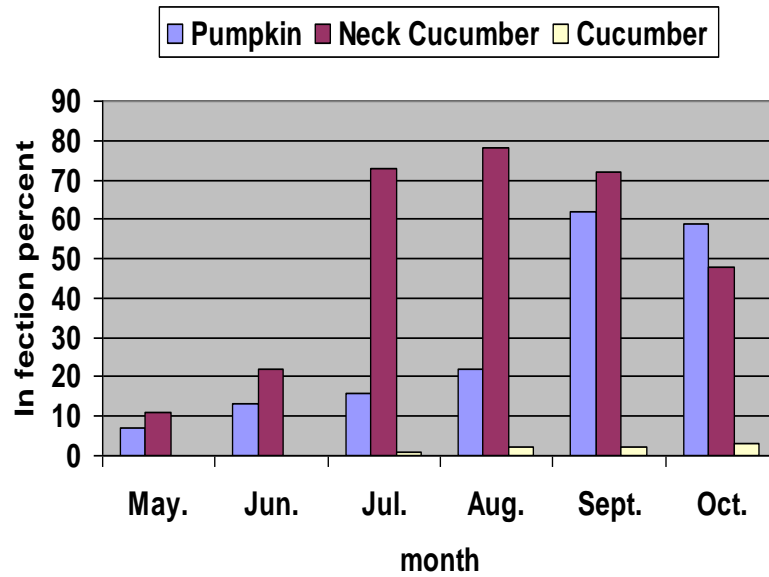
**Fig.1: Distribution of Dacus frontalis.in Swaria**



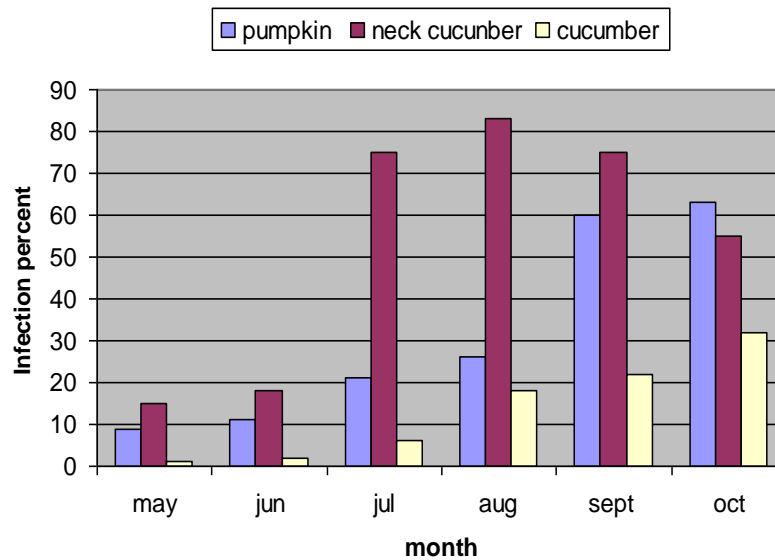
**Fig.2: Distribution of Dacus frontalis.in Tawithia**



**Fig.3: Distribution of *Dacus ciliatus* in Swaria**



**Fig 4 Distribution of *D.ciliatis* in swaria**



TABL 1 : Mating Capacity for both two species *D.ciliatus* and *D. frontalis*

Cucurbit pest	Mating type	Average No. of eggs for (10) days Mean $\pm$ S.D.	% hatch Mean $\pm$ s.D.
<i>D.ciliatus</i>	Wild strain $\times$ wild strain	26.7 $\pm$ 6.0 a	88.7 $\pm$ 4.8 a
	Lab. strain $\times$ Lab strain	25.0 $\pm$ 6.3 ab	89.9 $\pm$ 13.1 a
<i>D. frontalis</i>	Wild strain $\times$ wild strain	22.2 $\pm$ 7.0 b	88.7 $\pm$ 3.9 a
	Lab. strain $\times$ Lab strain	22.0 $\pm$ 8.9 b	89.0 $\pm$ 13.8 a

دراسة الكثافة السكانية والحياتية لنوعين من ذباب القرعيات:

***Dacus ciliates* Loew, *Dacus frontalis* Beecker**  
(Diptera : Tephritidae)

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### الملخص

درست الكثافة السكانية لنوعين من ذباب القرعيات *Dacus ciliates*, *Dacus frontalis* في منطقتي الصويرة والتويثة من خلال إصابتهما لثلاث عوائل نباتية: قرع الكوسة وخيار القثاء وخيار الماء. أظهرت النتائج عدم وجود فروقات معنوية من حيث معدل عدد البيض الملقى ونسبة فقسه عند المقارنة بين السلالة البرية والمختبرية لكل نوع .

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