EVALUATION THE ROLE OF THE ASSASSIN BUG, \textit{CORANUS AFRICANA} EL-SEBAEY (REDUVIIDAE : HETEROPTERA) IN SUPPRESSION OF DIFFERENT INFESTATION LEVELS OF \textit{APHIS GOSSYPII} GLOVER IN CUCUMBER AND SQUASH FIELDS

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\textbf{Abstract}

The evaluation of the role of the assassin bug, \textit{Coranus africanus} El-Sebaeey was studied for suppression of different populations of the cotton aphid, \textit{Aphis gossypii} Glover in cucumber and squash fields at Fayoum governorates during the successive years, 2005 and 2006. \textit{C. africanus} was released in the ratio of one predator/plant against three levels of \textit{A. gossypii} infestation in cucumber and squash fields. Reduction percentage of \textit{A. gossypii} infestation differed according to the release of predator in each treatment. In case of high infestation, the reduction was (99.9 & 92.86 %) during the first and the second years of the investigation, respectively in cucumber field opposed to (98.6 % and 90.1 %) in squash field throughout the two successive years of the study. Complete eradication of the pest population was achieved when, the infestation level was low or moderate in two crops. The basic yield parameters expressed as the weight of fruit and number of fruits/plant during the two years of the investigation in the two crops.

\textbf{INTRODUCTION}


The predator, \textit{Coranus africana} El-Sebaeey, has been recently recorded in Egyptian funa. It was found to be one of the most important predators of various insect pests of tomato, cucumber, clover and cotton (El-Sebaey, 2002, El-Sebaey \textit{et al}, 2002a). This reduvid bug was released in a cucumber green house (500 m²) against \textit{Bemisia tabaci} (El-Sebaey et al 2002b). On the other hand, it was released in tomato field plots against three tomato pests namely \textit{B. tabaci} (Genn.), \textit{Aphis gossypii} Glov. and \textit{Spodoptera liturata} (Roslin.) (El-Sebaey & Abd El-Wahab, 2003). Also the evaluation of it's ability in suppression of \textit{B. tabaci} under three levels of infestation was conducted in tomato plants (El-Sebaey et al, 2004).

The present work aimed to evaluate the role of the predator, \textit{Coranus africana} El-Sebaeey in suppression of the cotton aphid at different infestation levels of \textit{The cotton aphid A. gossypii} Glover in squash and cucumber fields.
EVALUATION THE ROLE OF THE ASSASSIN BUG, CORANUS AFRICANA EL-SEBAEY (REDUVIDAE: HETEROPTERA) IN SUPPRESSION OF DIFFERENT INFESTATION LEVELS OF APHIS GOSSYPII GLOVER IN CUCUMBER AND SQUASH FIELDS

MATERIALS AND METHODS

The predator, Coranus africana El-Sebaey (Heteroptera: Reduvidae) was collected from clover fields, located in Wadi El-Natroun district in the western desert of Egypt. Laboratory mass rearing was conducted at 30°C & 70% R.H on larvae of Anagasta kuehniella Zell as reported by (El-Sebaey & El-Bishry, 2001, El-Sebaey & El-Shazly, 2002). Laboratory emerged adult predators were used for their biocontrol assassin potential in cucumber and squash fields.

The experiments were conducted at Fayoum governorate, (Egypt) in cucumber field (1050 m² for three infestation levels) in nile loop, each level was 324 m² and surrounded by 26 m² border of maize to create a barrier (Biever & Chauvin, 1992) and reduce the movement of pests and predators. The area of each level was divided into three replicate, randomly and other three for control (replicate = control = 50 m²), each plot was separated from other by (4 m²) (El-Sebaey et al, 2002b, 2004 and El-Sebaey & Abd El-Wahab 2003). The following treatments were evaluated at separate plots:

Control (A): Cucumber plants infested with high level infestation of Aphis gossypii Glover (3 plots).

Control (B): Cucumber plants infested with moderate level infestation of A. gossypii (3 plots).

Control (C): Cucumber plants infested with low level infestation of A. gossypii (3 plots).

Experiment (A): Cucumber plants infested with high level (21-40 individual/leaf) of A. gossypii with one adult predator / plant, (3 plots).

Experiment (B): Cucumber plants infested with moderate level (11-20 individual/leaf) of A. gossypii with one adult predator / plant, (3 plots).

Experiment (C): Cucumber plants infested with low level (7-10 individual/leaf) of A. gossypii with one adult predator / plant, (3 plots).

On the other hand, the previous mentioned design was done in the squash field (1050m²).

A. gossypii attacked cucumber and squash plants before and through out the experimental period were carried out according to Metwaly et al., 1994. The adult predator, C. africana was released (plant age = 35days) manually between the rows (one adult predator / plant). After release, the plants were examined and the counts of A. gossypii were recorded weekly (Ambrose & Clever, 1999).

Comparison between the yield in the treated and control plots were determined, according to El-Sebaey et al., 2002b.
The statistical equation of Henderson and Tilton (1955) was applied to calculate the reduction percentage in the population of different levels of A. gossypii Glover in cucumber and squash plants. The data of the weight of fruit and number of fruit/plant were statistically analyzed according to sendecor and cochrane (1967).

RESULT AND DISCUSSION

In the different treatments, of the predator Coranus africana El-Sebaey were significantly suppressed the population of Aphis gossypii Glover in cucumber and squash fields during the two years of release (2005-2006).

In cucumber field, the high level infestation of A. gossypii was reduced by 99.9% and 92.86% during the first and the second years, respectively (Table 1). The complete eradication of the pest population was achieved in case of moderate and low infestation levels when using one predator/plant.

In squash field, the suppression percentage of A. gossypii at (high infestation level) were 88.6% and 90.1% during the first and the second years, respectively. At moderate and low levels of infestation, the pest was completely eradicated by using C. africana (one predator/plant).

The release of C. africana reduced the damage caused by A. gossypii in the three levels as indicated by the fruit weight and number of fruit/plant. It was highly significant reduced (P>0.005).

In the treatments, the weight of cucumber fruit increased from 0.4 to 0.46, 0.69 and 0.8 Kg/plant, at the three levels of infestation, respectively during the first year, while the increasing was from 0.39 to 0.43, 0.7 and 0.82 Kg./plant during the second year. Also the number of fruits/plant increased as a result especially at low and moderate level of infestations (Table 1).

On the other hand, the weight of squash fruit increased from 0.7 to 0.79, 0.19 and 2.3 Kg/plant, at the three levels of infestation, respectively during the first year, while it increased from 0.69 to 0.73, 1.09 and 1.2 Kg./plant) during the second year of the study, respectively.

The reduvid bug is a promising group of natural enemies that could be augmented for release in pest management programs. Thus, the reduction of infestation of Spodoptera liturata, Mylabris pustulata and Dysdercus cingulatus in cotton field cages by the reduvid Rhynocoris marginatus F. have recently been documented by Ambrose and Calver, 1999). Ambrose, (1996) reported that more than 50% suppression of Helicoverpa armigera Hubner, S. liturata and D. cingulatus was achieved by four reduvid predators, Acanthaspis pedestris stål, Cataniartus brevipennis Servile, R. marginatus and R. Kumari.
On the other hand El-Sebaey et al., (2002b) mentioned that *Coranus africana* reduced the level of infestation of *Bemisia tabaci* in cucumber green house with increasing of early and total yield. Also El-Sebaey & Abd-El-Wahab, (2003) reported that *C. africana* suppressed *B. tabaci*, *A. gossypii* and *S. littoralis* in tomato fields with increasing the obtained yield. The reduction rates of *B. tabaci* infestation levels differed to according the numbers of predator, also the parameters of yield. (El-Sebaey et al. 2004).
Table 1. Effect of the predatory assaressing bug, *Coracanus africanus* on cucumber plants infested with *Aphis gossypii* Glover and yield in nile loop during the two successive years of investigation, 2005 and 2006 at Fayoum Governate, Egypt.

<table>
<thead>
<tr>
<th>Year of treatment release</th>
<th>Effect of <em>C. africanus</em> on the plants</th>
<th>Effect of <em>C. africanus</em> on the yield</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of A. gossypii leaf</td>
<td>Weight of fruit (kg/plant)</td>
</tr>
<tr>
<td></td>
<td>Reference release</td>
<td>After release</td>
</tr>
<tr>
<td>The First year, 2005</td>
<td>A- High level 21.3±1.2</td>
<td>3.06±0.18 (99.9)</td>
</tr>
<tr>
<td></td>
<td>B- Moderate level 12.9±0.82</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>C- Low level 6.5±1.1</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Control 19.6±0.71</td>
<td>26.2±0.61</td>
</tr>
<tr>
<td>The Second year, 2006</td>
<td>A- High level 32.1±0.41</td>
<td>3.6±0.17 (92.86%)</td>
</tr>
<tr>
<td></td>
<td>B- Moderate level 14.0±0.17</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>C- Low level 9.9±0.29</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Control 25.0±0.34</td>
<td>38.1±0.29</td>
</tr>
</tbody>
</table>

Table 2. Effect of the predatory assaressing bug, *Coracanus africanus* on squash plants infested with *Aphis gossypii* Glover and yield in nile loop during the two successive years of investigation, 2005 and 2006 at Fayoum Governate, Egypt.

<table>
<thead>
<tr>
<th>Year of treatment release</th>
<th>Effect of <em>C. africanus</em> on the plants</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No. of A. gossypii leaf</td>
<td>Weight of fruit (kg/plant)</td>
</tr>
<tr>
<td></td>
<td>Reference release</td>
<td>After release</td>
</tr>
<tr>
<td>The First year, 2005</td>
<td>A- High level 38.0±0.24</td>
<td>4.3±0.02 (88.6%)</td>
</tr>
<tr>
<td></td>
<td>B- Moderate level 19.9±0.12</td>
<td>-</td>
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<tr>
<td></td>
<td>C- Low level 8.0±0.36</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Control 43.9±0.34</td>
<td>49.5±0.47</td>
</tr>
<tr>
<td>The Second year, 2006</td>
<td>A- High level 44.9±0.25</td>
<td>5.1±0.23 (91.1%)</td>
</tr>
<tr>
<td></td>
<td>B- Moderate level 25.0±0.28</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>C- Low level 10.0±0.27</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Control 47.0±0.3</td>
<td>56.0±0.30</td>
</tr>
</tbody>
</table>
REFERENCES


africana El-Sebaey (Het., Reduviidae) in tomato field., Bull. Fac. Agric. Cairo Univ. 54 (1): 141-150.


تقييم دور المفترس قرسل الأجنحة - فصيلة القفطان في خفض تعداد النمل في حقول الخيار والكوسه

 Coronus africana El-Sebaey

 إبراهيم عبد الرحمن السبعي، حورية على عبد الوهاب

 تم إطلاق المفترس بعند كم (فر) ثمانية مرات في مستويات Coronus africana El-Sebaey

 الإحصاءات المتعلقة لمن القطن Aphis gossypii على مدار عام 2006، انخفضت تعداد النمل في الأسبوع الأول بعد إطلاق الخوار بنسبة 99.9% في العام الأول والثاني على التوالي بينما كانت نسبة الخوار Aphis gossypii

 99.1% على التوالي. كما تم تقييم كلا المحصولين من حيث عدد الثمار/نبات، وزن الثمار/نبات خلال السنة، وأظهرت الدراسة ارتباط معدلات الخوار في تعداد النمل بزيادة إنتاجية المحصول.