INTRODUCTION

Soil arthropods are a vital link in the food chain as decomposer and without these organisms nature would have no way of recycling organic material on its own (Trombetti and Williams, 1999). They perform a number of key functions essential to plants, such as decomposition, nutrient cycling, disease regulation, agrochemical degradation, and the development and maintenance of physio-chemical properties of soil. Soil fauna (micro fauna, meso fauna and macro fauna) interactions play a critical role in a variety of biological functions both in the rhizosphere and near decomposing residues (Coleman and Crossley, 1995; Gupta and Yeates, 1997). On the other hand, springtails are the prey of many arthropods, particularly ants, beetles and predaceous mites and thereby form a fundamental element of trophic interactions (Palacios – Vargos, 2004).

A significant proportion of the world’s biodiversity is recorded in agro ecosystems (Pimentel et al., 1992). Soil arthropods are ubiquitous in natural and agricultural habitats. They are useful indicators of overall species richness and health of terrestrial communities. (Noss, 1990). There is no information on soil arthropods diversity and general ecology of Bt - cotton fields. The present work was undertaken to study the diversity and abundance of soil arthropods fauna in Bt-cotton fields of Warangal District, A.P.

MATERIALS AND METHODS

The survey of the study area was undertaken in Bt-cotton fields of Warangal (17º.51’ NL and 79º.22’EL at 380m MSL) during June 2006 to December 2008. The climate of this area is distinct in winter, summer and monsoon, maximum and minimum temperature recorded in winter and summer was 35°C and 10°C and 47°C and 15°C, respectively and average relative humidity (RH) was 55.8%.

Soil surface arthropods were collected monthly by pitfall traps (Coddington and Levi 1991). The collected arthropods were preserved in 80 percent ethyl alcohol with a few drops of glycerin and identified under stereoscopic binocular microscope with help of keys. The arthropods belonging to different taxa were enumerated and their mean number per-trap was calculated.

RESULTS AND DISCUSSION

A total of 40 species belonging to four insect orders, Collombola, Orthoptera, Hymenoptera, Coleoptera were collected by pitfall traps in Bt cotton fields. (Table 1).

KEY WORDS

Bt- cotton
Soil arthropods
Biodiversity

ABSTRACT

A survey of soil arthropods was undertaken in Bt- cotton (Bacillus thuringiensis) fields of Warangal, A.P., from June 2006 to December 2008. Besides, Araneida (spiders) and Acari (mites) four insect orders Collombola, Orthoptera, Hymenoptera, Coleoptera were collected by pitfall traps.

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Arachnida showed representation by two families. *Cosmolaelaps chevrolati* and *Oryzacophilus acuaninatus*. In Erotylidae family, *Scarites bengalenis* had five species: *P. BRAHMAM* during 2006 - 2008.

Table 2: Percentage of different soil fauna in Bt - Cotton field during 2006 - 2008

<table>
<thead>
<tr>
<th>Soil fauna</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>CollembolaAla</td>
<td>68.15</td>
<td>41.75</td>
<td>43.34</td>
</tr>
<tr>
<td>Hymenoptera</td>
<td>16.28</td>
<td>30.43</td>
<td>15.95</td>
</tr>
<tr>
<td>Coleoptera</td>
<td>4.32</td>
<td>7.80</td>
<td>10.37</td>
</tr>
<tr>
<td>Orthoptera</td>
<td>4.09</td>
<td>7.22</td>
<td>9.97</td>
</tr>
<tr>
<td>Acari</td>
<td>2.52</td>
<td>1.40</td>
<td>5.80</td>
</tr>
<tr>
<td>Araneida</td>
<td>4.50</td>
<td>3.64</td>
<td>13.92</td>
</tr>
<tr>
<td>Chilopoda</td>
<td>0.06</td>
<td>5.62</td>
<td>0.33</td>
</tr>
</tbody>
</table>

had five species they are *coleolissus*, *scaritesendus* *oliver*, *scaritesbengalenis*, *amblystomus mangnus bates*, *oryzacophilus acuaninatus*. In Erotylidae family *Lasiodactyes chevrolati* was recorded. *Acari* was represented by *Cosmolaelaps sp.* and *Stigmases sp.* *Eremurus avenifera Arachnida* showed representation by two families. *Gonaphosidae and Lycosidae*. *Gonaphosidae* had two species *Thanatus sp.*, *Storena sp. and Lycosidae* four specoe-Hongma carolinensis, *Rabidosa punctulata, Schizocosa saltatix, Pholcus phalangioides*.

The percentage of different soil fauna in Bt – cotton field is presented in Table 2. *Collembola* was recorded in highest percentage (68.15%) followed by *Hymenoptera* (16.28%) *Araneida* (4.50%), *Orthoptera* (4.09%), *Acari* (2.52%) and other arthropods like *Chilopoda* (0.06%).

In 2007 *Collembola* occupied highest percentage (41.75%) followed by *Hymenoptera* (30.43%), *Orthoptera* (7.22%), *Coleoptera* (7.80%), *Chilopoda* (5.62%), *Acari* (1.40%). In 2008, *Collembola* shared 34.34% followed by *Hymenoptera* 15.95, *Araneida* 13.92%, *Coleoptera* 10.37%, *Orthoptera* 9.97%, *Acari*.

**DISCUSSION**

The results presented in Table 2 revealed that among the insects *Collembolans* were abundant followed by *Hymenoptera*, while members of *Collembola, Orthoptera, Araneida and Acari* were least in number. Similar observation was made by Williams (1999). *Ospina et al.,* (2003) have also reported that *Collembola* were the dominant insect group in comparison to other soil fauna in Bt – cotton fields. The preliminary results presented here suggest that use of transgenic cotton may not have any adverse effects on soil arthropod abundance and diversity especially on *Collembola*.

**REFERENCES**


