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**COCCINELLID AND SYRPHID PREDATORS OF *RHOPALOSIPHUM* SPP.  
(HEMIPTERA: APHIDIDAE) RECORDED ON DIFFERENT FOOD PLANTS  
FROM NORTHEAST BIHAR**

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**ABSTRACT:** Aphids ( Hemiptera: Aphididae) are small, soft bodied and polymorphic sap sucking insects. During the extensive survey of different localities of 10 districts of northeast Bihar in different seasons, 41 species of aphids were recorded on more than 122 plant species. Among these, only 04 species of *Rhopalosiphum* spp. viz., *Rhopalosiphum maidis* (Fitch), *Rhopalosiphum nymphaeae* (Linnaeus), *Rhopalosiphum padi* (Linnaeus), *Rhopalosiphum rufiabdominalis* (Sasaki) were recorded in the target area. The maximum number of plants were infested by *R. maidis*. Four species of coccinellids (*Cheilomenes sexmaculata* (Fabricius), *Coccinella septempunctata* Linnaeus, *Micraspis discolor* (Fabricius), *Scymnus pyrocheilus* Mulsant and three species of syrphid predators (*Dideopsis aegrota* (Fabricius), *Episyrphus balteatus* (De Geer), *Ischiodon scutellaris* (Fabricius) were recorded on *Rhopalosiphum* spp. Only three species of predators, *C. sexmaculata*, *C. septempunctata* and *E. balteatus* were found abundantly in the target area and may be utilised in the biological control programme after further study.

**KEYWORDS :** *Rhopaloiphum* spp. Coccinellid, Syrphid.

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**INTRODUCTION**

Aphids (Hemiptera: Aphididae) are small, soft bodied and polymorphic sap sucking insects and major pest of agricultural and horticultural plants in India. They cause severe damage to crops by retarding their growth, impaired development of healthy seeds and transmitting several viral diseases. The survey and identification of aphids along with their food plants and natural enemies in different seasons are considered as first and most important step in biological control programme. Not only this, it also furnished certain information as degree of infestations,

seasonal distributions of predators of particular insects pests through which one can assess about the minor and major insect pests in the target areas and the rate of attack of the specific natural enemies. *Rhopalosiphum* Koch is a common genus and distributed through the oriental region<sup>1,14,17</sup>. More than hundred plants species have been reported as host of *Rhopalosiphum* spp. by several workers in India<sup>2,3,5,16</sup> Majority of Coccinellid beetles are predaceous and play an important role in checking the population of many harmful insects such as aphids, coccids, scale insect, plant mites, thrips,

leaf hoppers and other soft bodied insects<sup>13</sup>. The larvae of syrphid rank as the major natural enemies and play an important role in suppression of aphids population<sup>11</sup>.

Northeast Bihar has rich agriculture lands where farmers face a lot of problems due to heavy infestation of crops by aphids. Therefore, different localities of districts of North east Bihar, viz. Araria, Begusarai, Bhagalpur, Katihar, Kishanganj, Khagaria, Madhepura, Munger, Purnea and Saharsa were extensively and intensively surveyed in different seasons to obtain the records of aphids and their food plants, habitats and Coccinellid as well as syrphid predators to provide raw materials (bio-agents) to evaluate their biotic potential against the pests in future studies. Keeping in view the economic importance, we report here with few species of *Rhopalosiphum* and their association with food plants and predators. Earlier, some work on the aphids and their natural enemies have been done by several workers in the target area<sup>2,3,5,6,7,12</sup>

#### **MATERIALS AND METHODS**

Aphids and aphidophagous coccinellids and syrphids were collected from different agricultural, horticultural as well as weed plants from different localities of the target area. Collected aphids were preserved in 70% ethyl alcohol and

glycerine (5:1) for taxonomical study. The systematical studies of aphids were carried out by observing various taxonomical characters<sup>8,15</sup>. Collected coccinellid and syrphid larvae were kept in glass jar (25x10 cm) with particular fresh aphids and reared in the laboratory till the emergence of adults. Taxonomical study of coccinellids and syrphids was done by observing various taxonomical characters as mentioned by several taxonomist<sup>9,10</sup>. Few specimens were sent to Zoological Survey of India, Kolkata for identification and confirmation.

#### **RESULTS AND DISCUSSION**

During the extensive survey of different localities of 10 districts of Northeast Bihar in different seasons, 41 species of aphids on more than 122 plant species, 6 species of coccinellids and 7 species of syrphids were recorded in the target area on these aphids. Earlier, preliminary work has been done in few localities of this target area on aphids and their natural enemies<sup>2,4,5,6,7</sup>. In India, only six species of *Rhopalosiphum* have been so far reported<sup>1,17</sup>. In the present study, 04 species of *Rhopalosiphum* viz., *Rhopalosiphum maidis* (Fitch), *Rhopalosiphum nymphaeae* (Linnaeus), *Rhopalosiphum padi* (Linnaeus), *Rhopalosiphum rufiabdominalis* (Sasaki) were recorded in the target area. Among these, *R. maidis* was found abundantly in most of the localities with moderate to

high intensity of infestation (Table-1). *sexmaculata* (Fabricius), *Coccinella*  
 Four species of coccinellids (*Cheilomenes septempunctata* Linnaeus, *Micraspis*

**TABLE-1: Association of few species of aphids with their food plants and natural enemies**  
**Intensity of infestation / predation ( + = Low, ++ = Moderate, +++ = High, ++++ = Very high)**

Aphids /Plants/ Intensity of infestation	Family	Coccinellids/ Intensity of predation	Syrphids/ Intensity of predation	Month of collection
<b>1. <i>Rhopalosiphum maidis</i></b>				
1. <i>Beta vulgaris</i> ++	Brassicaceae	-----	<i>D. aegrota</i> ++	Mar.
2. <i>Hibiscus rosasinensis</i> +	Solanaceae	-----	-----	Feb.
3. <i>Hordeum vulgare</i> +++	Poaceae	-----	-----	Feb.
4. <i>Lycopersicon esculentum</i> +	Solanaceae	-----	-----	Mar. & Apr.
5. <i>Pennisetum glaucum</i> +++	Poaceae	-----	-----	Nov. & Dec.
6. <i>Phragmites karka</i> ++	Poaceae	-----	-----	Jan. & Feb.
7. <i>Sorghum bicolor</i> +++	Poaceae	-----	-----	Nov. & Dec.
8. <i>Triticum aestivum</i> +++	Poaceae	-----	-----	Jan. to Mar.
9. <i>Zea mays</i> +, +, +, +++	Poaceae	<i>C. sexmaculata</i> +++ <i>C. septempunctata</i> ++ <i>M. discolor</i> ++ <i>S. pyrocheilus</i> ++	<i>E. balteatus</i> + + + <i>I. scutellaris</i> ++	Aug. to Apr.
<b>2. <i>Rhopalosiphum nymphaeae</i></b>				
1. <i>Cestrum nocturnum</i> +	Solanaceae	-----	-----	Dec.
2. <i>Chrysanthemum indicum</i> +	Asteraceae	-----	-----	Nov. & Dec.
3. <i>Rumex</i> sp.+	Poligonaceae	-----	-----	Dec.
4. <i>Solanum tuberosum</i> ++	Solanaceae	-----	<i>P. serratus</i> +	Nov. & Dec.
<b>3. <i>Rhopalosiphum padi</i></b>				
1. <i>Argemone Mexicana</i> ++	Papaveraceae	-----	-----	Mar.
2. <i>Cestrum nocturnum</i> +	Solanaceae	-----	-----	Dec.
3. <i>Pennisetum typhoides</i> ++	Poaceae	<i>S. pyrocheilus</i> ++	-----	Nov. & Dec.
4. <i>Triticum aestivum</i> +	Poaceae	-----	<i>E. balteatus</i> + + +	Jan. & Feb.
<b>4. <i>Rhopalosiphum rufiabdominalis</i></b>				
1. <i>Brassica oleracea</i> var. <i>botrytis</i> ++	Brassicaceae	-----	-----	Nov. & Dec.
2. <i>Colocasia</i> sp.++	Araceae	-----	-----	Nov.
3. <i>Cyperus rotendus</i> ++	Poaceae	-----	-----	Dec.
4. <i>Lycopersicon esculentum</i> ++, +++	Solanaceae	-----	-----	Nov. & Dec.
5. <i>Solanum tuberosum</i> ++	Solanaceae	-----	-----	Nov. & Dec.

*discolor* (Fabricius), *Scymnus pyrocheilus* Mulsant) and three species of syrphid predators (*Dideopsis aegrota* (Fabricius), *Episyrphus balteatus* (De Geer), *Ischiodon scutellaris* (Fabricius) were recorded on *Rhopalosiphum* spp. (Table-1). Only three species of predators viz., *C. sexmaculata*, *C. septempunctata* and *E. balteatus* were found abundantly in the target area and may be utilised in the biological control programme after further study.

### 1. RHOPALOSIPHUM MAIDIS

It is commonly known as maize aphid and generally found in almost all localities of the target area.

**Host plants:** *R. maidis* is a major polyphagous pest in this target area. It was recorded on 9 food plants of three families (Table-1). The highly infested host plants were *P. glaucum*, *S. bicolor*, *T. aestivum* and *Zea mays*. Moderate to low intensity of infestation was observed on other food plants.

**Seasonal abundance:** It was generally observed during month of August to April in most of the localities.

#### Predators:

- a. **Coccinellids:** Four species viz., *C. sexmaculata*, *C. septempunctata*, *M. discolor* and *S. pyrocheilus* were recorded on this aphid with moderate to high rate of predation (Table -1).

- b. **Syrphids:** *D. aegrota*, *E. balteatus* and *I. scutellaris* were recorded in the target area on this aphid with moderate to high rate of predation (Table -1).

### 2. RHOPALOSIPHUM NYMPHAEAE

Apterae are oval and reddish brown to dark-olive in colour. Alatae are light black or dark-brown in colour.

**Host plants:** *R. nymphaeae* is not a common aphid in this target area. The extensive survey revealed that *R. nymphaeae* is a oligophagous aphid. It was recorded on four food plants of three families (Table-1). The moderate intensity of infestation was observed only on *S. tuberosum*.

**Seasonal abundance:** *R. nymphaeae* was observed during November and December (Table-1).

**Predators:** No predator was recorded on this aphid.

### 3. RHOPALOSIPHUM PADI

It is generally found in almost all localities of the target area.

**Host plants:** *R. padi* is a polyphagous aphid. It had not too wide range. It was recorded on four food plants of three families (Table-1). Moderate to little intensity of infestation was observed on these food plants.

**Seasonal abundance:** It was recorded during month of November to March in few localities of target area (Table-1).

**Predators :**

- a. **Coccinellids:** Only *S. pyrocheilus* was recorded on this aphid with moderate rate of predation ( Table -1).
- b. **Syrphids :** *E. balteatus* was recorded in the target area on this aphid (Table -1).

**4.RHOPALOSIPHUM  
RUFIBDOMINALIS**

It is commonly called as rice aphid. Apterae dark-green or olive in colour. It is a common aphid, generally found in almost all localities of the target area.

**Host plants:** It was recorded on 5 food plants. The highly infested food plant was *L. esculentum* and on others food plants, moderate to little infestation was observed (Table-1).

**Seasonal abundance:** The seasonal study reveals that it is generally found during month of November to December. However its peak population was observed in December.

**Predators:** No predator was recorded on this aphid.

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