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## Research Article

### RECORD OF SOME HEMIPTERAN PESTS OF CUCURBITS FROM JAMMU REGION OF JAMMU AND KASHMIR STATE

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#### ABSTRACT

Cucurbits are vegetable crops belonging to Family Cucurbitaceae, forming the largest group of summer vegetables grown throughout the world and India shares about 5.6% of the total cucurbits production. Gourd (*Luffa cylindrical*), Bottle gourd (*Lagenaria siceraria*), Cucumber (*Cucumis sativus*), Red pumpkin (*Cucurbita maxima*), Melon (*Cucumis melo*) and Bitter gourd (*Momordica charantia*) are common species known in cultivation. Cucurbits infested with a variety of insect pests right from the primordial stages of the crop to harvest of the products. During the study period, a total of 5 insect pests, belonging to order Hemiptera were collected.

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#### INTRODUCTION

The Cucurbitaceae family generally known as gourd family, consists of a wide range of vegetables either used for salad purpose (cucumber) or for cooking (all gourds), pickling (West Indian gherkin) or as dessert fruit (muskmelon, water melon) or candied or preserved (ash gourd).

In Jammu & Kashmir, the three regions of the state viz. Jammu, Kashmir and Ladakh have different climatic conditions from each other. On the basis of annual rainfall and variation in temperature, there are three distinct climatic seasons, viz. summer season (March-June), rainy season (June-October) and winter season (November- February). Most of the cucurbits are grown mainly during summer and rainy seasons, but a few like bottle gourds, are harvested almost round the year, except for the coldest period from mid-December to mid-February. Cucumber and bitter gourd are the popular crops of the Cucurbitaceae family grown in low and mid-hills of Jammu & Kashmir. Cucurbits are infested by a number of insect pests right from the primordial stages of the crop to the harvesting stage. Hemipteran (bugs) insects are also found infesting on the cucurbits, though serving as minor pests. Being sap suckers, they obtain their food by piercing plant with mandibular and maxillary stylets thereby, extracting plant fluids. Both adults and nymphs cause damage. Adults cause maximum damage,

attacking all parts of plant including stem, petioles, foliage, flowers and fruits.

#### MATERIALS AND METHODS

The field studies for recording the pest diversity on cucurbits were conducted in Jammu region and distribution of insect pests and their mode of damage were recorded. The traditional methods of hand picking and hand nets were used to collect insects along with their immature stages, from study area. Collected insects were killed using ethyl acetate and later on pinned, stretched and finally oven dried for about half an hour at 35°C- 40°C to avoid fungal infection. General morphological descriptions of all the stages of insect pest were made and feeding behaviour of larval stages was made both in the field as well as in the laboratory.

#### OBSERVATION AND DISCUSSION

During the period of observation, a total of 08 insect pests belonging to different families were recorded by the investigator from the Jammu region of J& K state. These insects were found to be sap suckers. A general description of each insect species along with their damage pattern is discussed below:

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**Cletus bipunctatus (Fig. 1)**

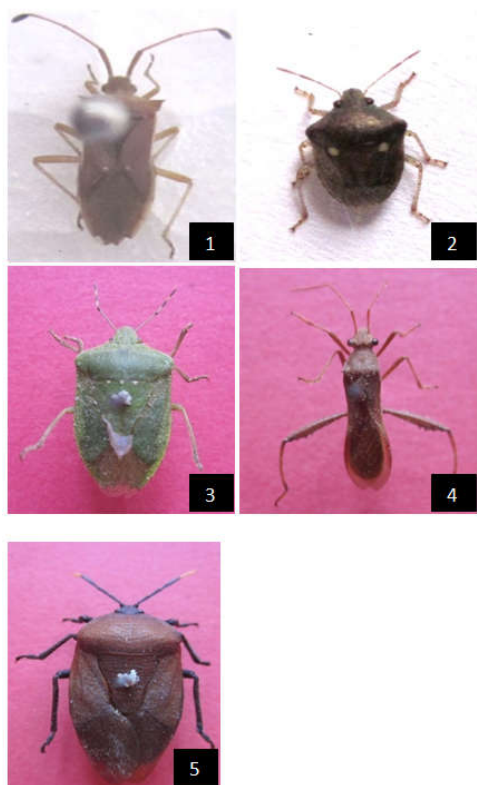


Fig 1. *Cletus bipunctatus*; 2. *Eysarcoris ventralis*; 3. *Nezara viridula*; 4. *Riptortus linearis*; 5. *Coridius*

**Taxonomic Status:** Hemiptera: Coreidae

**Distribution:** Sri Lanka; Myanmar; India: Maharashtra, Karnataka, West Bengal and Himachal Pradesh and Jammu & Kashmir.

**Host range:** Legume hosts include soy beans, mung beans, and dolichos. Other hosts include cashews, cucurbits and sorghum.

**In the area under investigation:** The present author has recorded *Cletus bipunctatus* as a pest of cucurbits from the Jammu district.

**Table 1** Table showing Hemipteran insect pests recorded in the study area

S.No.	SCIENTIFIC NAME	ORDER	FAMILY	PEST STATUS
1.	<i>Cletus bipunctatus</i>		Coreidae	Minor and Frequent
2.	<i>Eysarcoris ventralis</i>		Pentatomidae	Minor and frequent
3.	<i>Nezara viridula</i>	HEMIPTERA	Pentatomidae	Minor and frequent
4.	<i>Riptortus linearis</i>		Alydidae	Minor and occasional
5.	<i>Coridius</i>		Dinidoridae	Minor

**Diagnostic features**

**Adult:** Head subquadrate, declivent, almost as long as wide, clypeus longer than paraclypei, clypeus and paraclypei fused, a longitudinal slit on middle of head. Antennal segment I stout, II and III slender, cylindrical, segment IV clavate; anterior half of segment IV dark brown, posterior half light brown; eyes blackish yellow; hemelytral membrane brassy and reaching

last abdominal segment connexival segments brownish yellow. Pronotum gradually declivent, length distinctly shorter than width, anterior angles subacute, anterior margin substraight, lateral margins curved and serrate, posterolateral margins sinuate, posterior margin concave, humeral angles with small sized spine; scutellum triangular. Legs slender, pubescent, femora clavate.

**Pest Status:** It is a minor yet frequent pest found feeding on twigs of cucurbits.

**Damage:** A minor damage is caused by the feeding of the pest on the twigs and leaves of the cucurbit crop. Adults were observed sucking sap from leaves.

**Eysarcoris ventralis Westwood, 1837(Fig. 2)**

**Common Name:** It is commonly known as Cereal Bug, White Spotted Stink Bug, Rice stink bug, Til pod bug

**Taxonomic Status:** Hemiptera: Pentatomidae

**Distribution:** It is widely distributed throughout Pakistan, India, Japan, Bangladesh, Britain, Hawaii, Okinawa, Ryukyu Islands (c.f. Internet). In India it has been reported from many parts, Cuttack, Bankura (Bishanpur), Maldah (Pizabari), Medinipur (Digha), Puruliya (c.f. Internet). Sikkim, Naga Hills, Mumbai, West Bengal (Distant, 1902)<sup>1</sup>. From the state of J&K, it has been already reported from district Rajouri of Jammu Division (Sudan, 2008)<sup>2</sup>, Mendhar (District Poonch), Solki (District Rajouri), Dhanwa (District Reasi), Akhnoor (District Jammu) and Vijaypur (District Samba) (Sudan, 2013)<sup>3</sup>.

**In the area under investigation:** The present author recorded this pest feeding on various cucurbit crops (Cucurbitaceae), from District Jammu.

**Host plants:** *Eysarcoris ventralis* has been recorded as a polyphagous pest of a variety of host plants including *Sesamum indicum* (Til), *Oryza sativa* (Rice), *Chrysanthemum*, some leguminous plants and some plants of family Lamiaceae (c.f. Internet). This pest was reported for the first time from *Justicia adhatoda*, *Mentha* sps., *Ocimum sanctum* and *Solanum nigrum* from District Rajouri, Jammu division, by Madhu Sudan (Sudan, 2008)<sup>2</sup>. It was also recorded as a pest feeding on the *Calotropis procera* in various districts of Jammu region (Sudan, 2013)<sup>3</sup>; *Litchi chinensis* (Gupta, 2014)<sup>4</sup>.

**Diagnostic features:** Body measures about 5-7 mm in length, ovoid, shield-shaped, punctuated, white edged; dorsal surface dark chocolate brown; pronotum and scutellum closely punctuated. Head small, triangular, closely punctuated, pointed apically with posterolateral margins slightly elevated upward. Compound eyes are bulged, large, placed laterally, between the posterolateral margins of the head and anterolateral margins of pronotum; ocelli present, oval; antennae hairy, 5-segmented, longer than head, ventrally located; beak 4-segmented, pale yellowish brown, ends at hind coxae, at rest lying between bucculae; pronotum large, broader than head covering three fourth of abdomen, punctuate, slightly narrow posteriorly forming U-shaped, do not extend to the end of the abdomen; anterolateral angles entire with two small but prominent white circular spots (flakes) on the rare; abdomen entirely dark brown, lateral sides slightly visible dorsally, connexivum white banded; punctuated elytron of forewings. Legs simple,

creamish yellow with dark brown spots all over, hind legs long; femora shorter than tibia; tarsi 3-segmented; claws thin, apically pointed, arolia present at the base of each claw.

**Pest Status:** Minor and frequent.

**Damage:** Bugs cause significant damage by sucking the plant sap. Damaged leaves become pale yellow, dry, shriveled and fall pre-maturely.

### ***Nezara viridula* Linnaeus, 1758 (Fig. 3)**

**Taxonomic Status:** Hemiptera: Pentatomiaie

**Common name:** It is known by various common names Southern Green Stink Bug or Green bug of India

**Distribution:** *Nezara viridula* is cosmopolitan and presently distributed throughout North America (Hoffmann *et al.*, 1991)<sup>5</sup>, South America, New Zealand (Waterhouse and Norris, 1987)<sup>6</sup>, the tropical and sub tropical regions of Asia, America, Africa, Europe (Sudan, 2008)<sup>2</sup>. In India, has been recorded from Himachal Pradesh, Madhya Pradesh, Maharashtra, Assam, and West Bengal. In Jammu, Udhampur, Samba and Kathua districts of Jammu and Kashmir State.

**In the area under investigation:** Present author has reported *Nezara viridula* as a pest of cucurbits from Marh block, Jammu district.

**Host Plants:** *Nezara viridula* has a vast host range encompassing over 30 families of dicotyledons and a number of monocots (Hoffmann, 1935)<sup>7</sup>. It is highly polyphagous bug, showing strong preference for certain legumes (Corpuz, 1969)<sup>8</sup>. Host crops of economic importance include Beans, Cabbage, Citrus, Cotton, Macadamia nuts, Rice, Sugarcane, soyabean (Panizzi *et al.*, 2000)<sup>9</sup> and Wheat (Sudan, 2008)<sup>2</sup> and mango.

**Diagnostic features:** Adult bug is about 12-18 mm long, entirely green body with piercing and sucking mouth parts, protruding out in form of a long beak like structure called the rostrum; eyes black. Head and anterior portion of pronotum with yellow marks but scutellum devoid of prominent spots. Antennae 5- segmented; apical 3 segments light brown. Ventral scent (stink) gland pore located on the sternum between 2<sup>nd</sup> and 3<sup>rd</sup> leg; pore short and broad. Abdomen completely covered by the wings; abdomen with small black dots along sides.

**Pest Status:** Minor and frequent.

**Damage:** Both nymphs and adults cause damage to the plant. Being sap suckers, they obtain their food by piercing plant with mandibular and maxillary stylets thereby extracting plant fluids. Adults cause maximum damage, attacking all parts of plant including stem, petioles, foliage, flowers and fruits.

### ***Riptortus linearis* Fabricius, 1775(Fig. 4)**

**Taxonomic Status:** Hemiptera: Alydidae

**Distribution:** Ceylon, Burma (Distant, 1902)<sup>1</sup>, Japan (Higuchi and Nakamori, 1999)<sup>10</sup>, Indonesia (Berg *et al.*, 2000)<sup>11</sup>, Nigeria (Soyelu *et al.*, 2007)<sup>12</sup>. In India, Darjeeling, Bangalore (Distant, 1902)<sup>1</sup>, Assam (Hussain and Saharia, 1994)<sup>13</sup>, Himachal Pradesh, Madhya Pradesh (Nair, 1975)<sup>14</sup>, Uttar Pradesh, Maharashtra (Ghuguskar, 2001)<sup>15</sup>, J&K (Sharma, 2009)<sup>16</sup>.

**In the area under study:** Pest under study has been reported from Karloop area of Jammu district, on cucurbits.

**Host Plants:** Sorghum, maize, millet, sweet potato, pulses (Nair, 1975)<sup>14</sup>. *Litchi chinensis* (Gupta, 2014)<sup>4</sup>.

**Diagnostic Features:** It's a brown, medium sized, 14-16 mm long insect; head is opisthognathus, brown; compound eyes large, bulged out, laterally placed; ocelli two, round, prominent, placed close to each other in the circular raised area on the head; antennae 4-segmented, brown, longer than head, basal segment broad and long, scape is visible dorsally, 4<sup>th</sup> antennal segment is curved and longer than the 3<sup>rd</sup> segment; beak 4-segmented and reaches second coxae, base of rostrum is straight and in repose held close to ventral surface of head; membrane of hemelytron with numerous veins; legs unequal hind femora large; pro and middle femora cylindrical, non-serrated; hind femora expanded and half of its covered with a single row of spines towards the distal end.

**Pest Status:** Minor and occasional pest.

**Damage:** It causes damage by sucking the sap of the leaves and twigs of cucurbits.

### ***Coridius* sp. (Fig. 5)**

**Taxonomic Status:** Hemiptera: Dinidoridae

**Distribution:** Turkey (Tarla *et al.*, 2013)<sup>17</sup>; J&K (Gupta, 2000)<sup>18</sup>; Orient region (Distant, 1902)<sup>1</sup>.

**In the area under study:** The pest has been observed from the Nai Basti area of Jammu District, on cucurbits.

**Host Plants:** It is a polyphagous pest been reported from various cucurbits like *Luffa*, *Cucumis*, pumpkin, gourds, *Lagenaria* (Tarla *et al.*, 2013)<sup>17</sup>, brinjal, lablab, *Calotropis procera*, *Litchi chinensis* (Gupta, 2014)<sup>4</sup>.

**Diagnostic Features:** Adult coffee brown in colour; body 20-21 mm in length, broad, oval; head small, triangular, with one median longitudinal lobe and well developed lateral lobes; antennae 5-segmented, well developed; prominent compound eyes on the lateral sides of the head; two ocelli present; rostrum short in length; prothorax large, triangular; wings well developed, slightly extended beyond the tip of abdomen; shield broad; hemelytra with clavus, corium and membrane; legs with hair and few spines; claws well developed.

**Pest Status:** Minor.

**Damage:** These sap sucking bugs feed extensively on the sap of leaves of the host plant resulting in the withering of leaves. The bugs were also found feeding on the young, tender fruits thus reducing their liquid content, ultimately resulting into shriveling of the fruit.

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