

Incidence of the jewel beetle, *Sphenoptera indica* (Laporte and Gory) (Buprestidae: Coleoptera) on pigeonpea in Anantapur region of Andhra Pradesh, India.

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ABSTRACT

A field experiment was laid out at Agricultural Research Station, Ananthapuramu, Andhra Pradesh during *kharif*, 2018 to assess the level of incidence of jewel beetle, *Sphenoptera indica* on Pigeonpea. The peak incidence of *S.indica* on pigeon pea was noticed during October month with a damage range of 6.83 to 22.53 per cent in different experimental plots.

Keywords: Correlation, Incidence level, Jewel beetle, Pigeonpea, *Sphenoptera indica* and Weather influence.

Pigeon pea (*Cajanus cajan* (L.) Millspaugh) is an important grain legume crop of tropical and subtropical countries in Asia, Africa and Latin America. Pigeonpea is considered as the poor people's meat in the developing countries. Several species of insects appeared as pests in different stages of the crop growth belonging to five orders viz., Coleoptera, Diptera, Hemiptera, Lepidoptera and Thysanoptera (3). Among them pod borers, *Maruca vitrata*, *Helicoverpa armigera*, *Melanagromyza obtuse*, pod bugs *Anaplocnemis phasina*, *Clavgralla gibbosa*, are considered as major pest in Andhra Pradesh. The other insects such as cowbugs, thrips blue butterflies and green pod borer are minor pests. The incidence of jewel beetle in the rainfed crops have been observing in during dryspells at Anantapur district. Even though the incidence of jewel beetle observed in pigeonpea occasionally, considerable mortality is observing which leads to significant reduction in seed yield.

Jewel beetle, *Sphenoptera indica* (Gory) (Buprestidae: Coleoptera) is an important pest on groundnut and other legumes in South India during rainy and post rainy season and attacks the stem, vegetative parts and reproductive structures of pigeon pea eleven species of *S.indica* is widely distributed in Asia and Africa infesting several legumes including

pigeon pea. Normally the insect infests pigeon pea at a later stage of the crop growth (2) due to the increase of temperature and drought condition effects incidence of beetles (4). The studies pertaining to pigeonpea varietal screening is nowhere available for the jewel beetle incidence. The present studies were conducted to evaluate various pigeon pea varieties for their reaction to jewel beetle during 2018.

Materials and methods

The crop was sown on 03.08.2018 at Agricultural Research Station, Ananthapur. Sixteen pigeonpea entries were sown in a plot size of 6.0×5.0m² with spacing of 0.90×20 cm in three replications in a randomized block design following integrated crop management practices recommended by ANGRAU. A total of 150 plants were sown for each entry in a replication. The test entries were BRG -2, LRG – 52, LRG -208, LRG -211, LRG -224, LRG -229, LRG -231, LRG -267, LRG -274 LRG -275, TRG – 108, TRG -111 , TRG – 113 and Maruthi. The PRG-176 and LRG-52 used as check. Crop was supervised for pest and disease attack at regular intervals from germination. The incidence of jewel beetle was recorded regularly from 31st standard week (30th July – 5th August) to 44th standard week (29th October – 4th November).

Damaged plants with the symptoms such as drooping and drying were counted each time along with number of plants. The damaged plants were dissected to observe the internal damage as well as grub population of jewel beetle. The data was computed and converted to per cent mortality and analyzed using One-way Analysis of Variance (ANOVA) in SPSS.20 for drawing the conclusions.

Results and discussion

Data from Table.1 indicated that, there was only one rainy day during August 2018 at ARS, Anantapur which favoured the build-up of jewel beetles in the pigeon pea crop. The grub burrows into the stem close to the soil surface and feeds on internal content leading to hollowed stems. Later the grub tunneled into the root portion and continued the feeding, eventually resulting in the plant mortality. The larvae are slow movers, and can easily be identified by their globular head and elongated, dorsoventrally flattened body. They grow to a length of 2.5 cm. Infested fields show dead and dying plants, which

when pulled up and examined. The grub/pupa were noticed in the hollowed stem.

The plant population was ranged from 72.7 to 146.7 No. in different entries, the variation in the plant population was due to the insufficient moisture availability during germination and growth. Due to the prevailed dryspell, the incidence of *S. indica* (Buprestidae: Coleoptera) was noticed in the Multi Location Trial of Pigeonpea (MLTRG) experimental field and the damage was ranged from 6.83 to 22.83%. Among the LRG entries, LRG-229 recorded the lowest incidence (6.83 %) of jewel beetle followed by LRG-267(7.30%), LRG-52 (7.93%), LRG - 211(10.90%), LRG-275(11.00%), LRG-274(13.53%), LRG-224(14.13%), LRG-208(14.30%) and LRG-231(22.23%), respectively.

Among TRG entries, the per cent damage was *viz.*, TRG-113(13.83%), TRG-111(19.10%), TRG-108(14.63%). Maruthi (18.30%) and BRG - (14.93%) of damage. The check entries recorded PRG-176 (13.30%) and LRG-52(16.93%) per cent damage of jewel beetle and were statistically similar. (Table.2).

Table :1. Weather data of Kharif, 2018 at Agricultural Research Station, Ananthapur

Standard week	Max temp (°C)	Min temp (°C)	Morning RH (%)	Evening RH (%)	Rainfall (mm)	Rainy days	SunShine (hrs)	Wind speed (kmph)
31(30 th July- 5 th Aug)	34.8	24.7	76.7	39	0.6	0	4.9	19.6
32(6-12, Aug)	33.51	24.14	76.71	50.71	1.61	0	3.4	20.36
33 (13-19, Aug)	30.94	23.94	83	58.43	3.64	1	2.2	19.33
34 (20-26, Aug)	33.2	24.31	75.43	45	0	0	5.73	20.04
35 (27-2, Sept)	34.14	24.14	78	40	0.66	0	6.14	16.74
36 (3-9, Sept)	34.57	23.86	77.29	40.43	0	0	7.49	15.16
37 (10-16, Sept)	34.69	24.83	78.57	42.71	23	2	7.83	7.09
38 (17-23,Sept)	31.4	25.14	85	55.43	143.8	2	4.77	9.51
39 (24-30, Sept)	33.49	26.2	84.29	53	11.2	1	8.46	5.53
40 (1-7, Oct)	33.71	25.34	84.71	46.43	0.14	0	9.3	7.09
41 (8-14, Oct)	35.19	23.51	78.71	33.86	0	0	8.64	5.77
42 (15-21, Oct)	33.19	22.46	84.71	47.43	0.14	0	7.43	5.46
43 (22-28, Oct)	34.17	19.69	82.71	35	0	0	9.73	5.91
44 (29 Oct- 4 Nov)	33.14	20.6	76	42.5	0	0	8.56	6.3

Table: 2: Incidence of jewel beetle during *Kharif*, 2018 at Agricultural Research Station, Anantapur

S. No	Entry	Total number of plants	Number of plants affected	% Damage
1	LRG -208	88.7	14	14.3
2	TRG – 113	86	11.7	13.83
3	LRG -224	87.7	11	14.13
4	LRG -229	80.33	5.7	6.83
5	Maruthi	72.7	13	18.3
6	TRG -111	92	19	19.1
7	BRG -2	97.33	16	14.93
8	LRG -211	115.33	11	10.9
9	LRG -275	100	10.7	11
10	TRG - 108	118.33	16.33	14.63
11	LRG - 52	105.7	8	7.93
12	LRG -231	116	26	22.23
13	LRG -274	103.7	12.33	13.53
14	LRG -267	146.7	10.7	7.3
15	PRG-176(Check)	73.7	10	13.3
16	LRG – 52(Check)	132.7	23	16.93
	CD			NS
	SE(m)			3.06
	SE(d)			4.33
	C.V.			38.72

In the present studies, the incidence of jewel beetle, *S. indica* was observed during *kharif*, 2018, the data on weather conditions at ARS, Anantapur witnessed the season long dryspell which favoured the incidence of jewel beetle in pigeonpea. Jewel beetles are heat-loving species that prefer the stem portion of the plants, when plants weekend severely by drought used to attack. Due to this, the pigeonpea crop was attacked by the jewel beetle, the adult laid eggs on stem portions, developed grubs tunneled into stem and caused the damage. The studies were in accordance with previous findings of Lakra *et al.*, (1980) who studied the incidence of jewel beetle, *S. lafertei* on peaches and reported that 45.37% peach trees were damaged. Also studied the generations and reported one generation in winter and 2-3 generations in summer. Further, Chaudhary *et al.* (1996) reported that, the jewel beetles were active during warmer part of the year and in Punjab it was observed from March to October on peaches.

The present studies indicated that, the incidence of jewel beetle was in the range of 6.83 to 22.83% in different entries of pigeonpea. Among the 16 entries screened, LRG-229 recorded the lowest incidence (6.83 %) of jewel beetle followed by LRG-267(7.30%), LRG-52 (7.93%). Whereas the TRG entries recorded more than 10 % incidence levels. It is observed that none of entries recorded nil incidence.

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