

Incidence of *Megacopta cribraria* (F.) (Hemiptera, Plataspidae) on leguminous plants from Kamrup District, Assam, India

Rubina Azmeera Begum and Anjana Singha Naorem*

Department of Zoology, Cotton University, Panbazar, Guwahati 781001, Assam, India.

Email: anjanasingha@cottonuniversity.ac.in*

ABSTRACT: This is the first documentation of *Megacopta cribraria* (F.), (Hemiptera, Plataspidae) incidence on lablab bean and pigeon pea from Kamrup, Assam. The pest infestation was observed on these two crops and found increasing in the subsequent year. © 2026 Association for Advancement of Entomology

KEY WORDS: Lablab bean, pigeon pea, first report, feeding damage, crop loss

Leguminous plants are a good source of proteins, which help to improve human health (Tharanathan and Mahadevamma, 2003). These plants require less energy-intensive inputs and more importantly they do nitrogen fixing through roots (Lemke *et al.*, 2007). *Lablab purpureus* (L.) and *Cajanas cajan* (L.) Millsp (pigeon pea) are leguminous crop plant with a good source of protein, vitamins and one of the best sources of iron and lysine (Kay 1979; Bradley 1999; Pal *et al.*, 2011; Naeem *et al.*, 2016). Fifty-five insect species have been documented as pests of *L. purpureus*, among them aphids, whiteflies, *Helicoverpa armigera*, *Spilosoma obliqua*, and nearly five heteropteran insect species have been identified as some of the major insect pests (Chandra and Kushwaha, 2013; Jat *et al.*, 2017, Devashree and Patel, 2023). Nearly 150 - 250 species of insect pests infest *C. cajan* (Lateef and Reed, 1990; Srivastava and Joshi 2011), particularly pod borers and pod-sucking bugs (Shanower *et al.*, 1999; Rao and Shanower, 1999;

Bapatla *et al.*, 2020; Seni, 2021; Bandi *et al.*, 2024). *Megacopta cribraria* (F.), (Hemiptera, Plataspidae), is one such important pest on these two legumes and is a serious pest of soybean in other countries like the US, China, and Japan (Tayutivutikul and Kusigemati, 1992; Wang *et al.*, 1996; Eger *et al.*, 2010; Suiter *et al.*, 2010; Zhang *et al.*, 2012). However, from India, it was reported on lablab bean for the first time from Karnataka. Yield loss by this bug was estimated to be 9-44 per cent of lablab bean production in South India (Srinivasaperumal *et al.*, 1992; Thippeswamy and Rajagopal, 1998). Since then, it has been reported from some of the other states of India either associated with lablab plants or pigeonpea (Chandra and Kushwaha 2013; Nair *et al.*, 2017; Seni, 2021). This is the first record of *M. cribraria* incidence and infestation on these two leguminous plants from Kamrup district, Assam.

The occurrence of *M. cribraria* was first observed during insect sample collection on the leguminous

* Author for correspondence



Fig. 1 (a) *C. cajan* plantation, (b) *M. cribraria* infested *C. cajan* leaves, (c) *M. cribraria* mating adults, and (d) Egg batch on *L. purpureus* leaves

plants *C. cajan* in Horticulture Research Station, Azara (26.1055° N; 91.6099° E) and *L. purpureus* in the Department of Zoology, Cotton University, Panbazar (26.1874° N; 91.7467° E) (Kamrup, Assam, India) in November, 2022. The bug's incidence on these two plants was then closely monitored every week until the crop plants' availability. To confirm that the association of *M. cribraria* on these plants was not incidental, a close watch was kept in the subsequent year, 2023-24, from November to April, on the same host plants. The occurrence and incidence of pests on these leguminous plants were recorded weekly. The pest was identified using the suitable taxonomic keys (Schuh and Slater, 1995; Schaefer *et al.*, 2000). Voucher specimens (Registration no. I/HEM/ERS/1787) were deposited at the Zoological Survey of India (ZSI), Shillong. The incidence of the pest was determined using Wheeler's method (1969).

Considerable incidence and infestation of *M. cribraria* was found on both plants, with lablab plants experiencing slightly higher infestation ($70.05 \pm 1.67\%$) than on pigeon pea ($64.58 \pm 2.34\%$) in 2022-23. The following year, *L. purpureus* plants were again infested with the lablab bug ($79.17 \pm 2.57\%$) and in the absence of a pigeon pea plantation at Horticulture Research Station, no incidence could be recorded from that site. Infestation levels of *M. cribraria* on *L. purpureus* increased from 2022-23 to 2023-24, indicating that this bug could be a regular pest on this crop. Estimating the economic threshold level and economic injury level of a pest is of paramount importance to understand the pest's status (Pedigo *et al.*, 1986). The damage by *M. cribraria* on both plants was observed in the form of light-yellow spots and patchy leaves and poorly developed pods in the case of pigeon pea. These observations

corroborate the findings from earlier studies (Thippeswamy and Rajagopal, 1998; Chandra and Kushwaha, 2013; Seni, 2021). All the stages of the bug were observed on the plant and egg batches were also seen on the upper and lower surfaces of the leaves (Fig. 1).

Despite possessing multi-nutritional benefits (Habib *et al.*, 2017, Naeem *et al.*, 2020; Devaraj 2021), lablab bean has not achieved much attention concerning the loss it incurs to the pest infestation, particularly in the northeast region. Published reports on the lablab bean yield loss by this bug are lacking, indicating the lack of attention on such an important legume crop. While often considered a minor pest on pigeon peas (Nair *et al.*, 2017), *M. cribraria* showed significant adaptability to this crop, indicating it to be a suitable host plant for the growth and development, with performance comparable to that of its primary hosts, kudzu and soybean (Medal *et al.*, 2013). This study was a chance observation of a progressive infestation in leguminous crops.

ACKNOWLEDGEMENTS

The authors are thankful to the Horticulture Research Station and Cotton University for giving access to the field and carrying out the survey study.

REFERENCES

- Bandi S.M., Naik S., Singh A.K. and Katiyar P.K. (2024) Yield loss and economic threshold estimate for pod borer (*Helicoverpa armigera*) in late maturing pigeonpea (*Cajanus cajan*). Indian Journal of Agricultural Sciences 94 (10): 1140–1143. doi: 10.56093/ijas.v94i10.144559
- Baptla K.G., Singh S.K., Sengottaiyan V., Singh B. and Singh N.P. (2020) Seasonal patterns of insect pest in major pigeon pea and chick pea growing agro-climatic zones of India and their management inferences. International Journal of Tropical Insect Science 41:1601-1609.
- Bradley M.J. (1999) Legume genetic resources with novel value added industrial and pharmaceutical use. Perspective on New Crops and New Uses, (Ed. J. Janik). ASHS Press, Alexandria. pp196–201.
- Chandra K. and Kushwaha S. (2013) Record of Hemipteran Insect Pest Diversity on *Lablab purpureus* L: An Economically Important Plant from Jabalpur. Madhya Pradesh. Research Journal of Agricultural Sciences 4 (1): 66–69
- Devaraj V.R. (2021) Economic importance of hyacinth bean (*Lablab purpureus* L.): an Indian perspective. Special issue on hyacinth bean: a gem among legumes. Legume Perspective 13: 37–38.
- Devashree V.M. and Patel D.R. (2023) Population Dynamics of Major Insect Pests of Indian Bean. Indian Journal of Entomology 85: 1020–1022. doi: 10.55446/IJE.2021.351
- Eger J.E. Jr, Ames L.M., Suiter D.R., Jenkins T.M., Rider D.A. and Halbert S.E. (2010) Occurrence of the Old-World bug *Megacopta cribraria* (Fabricius) (Heteroptera: Plataspidae) in Georgia: a serious home invader and potential legume pest. Insecta Mundi 121: 1–11.
- Habib H.M., Theuri S.W., Kheadra E.E. and Mohamed F.E. (2017) Functional, bioactive, biochemical, and physicochemical properties of the Dolichos lablab bean. Food and Function 8 (2): 872–80. doi: 10.1039/C6FO01162D
- Jat G.C., Agrawal V.K. and Deshwal H.L. (2017) Bio-efficacy of newer molecules against pod borer complex of Indian bean, *Lablab purpureus* (L.) sweet. International Journal of Agricultural Sciences 13: 300–304.
- Kay D.E. (1979) Food legumes. Tropical Products Institute, London. pp. 233.
- Lateef S.S. and Reed W. (1990) Insect pests of pigeon pea. Insect Pests of Tropical Food Legumes 193–242.
- Lemke R.L., Zhong Z., Campbell C.A. and Zentner R.P. (2007) Can pulse crops play a role in mitigating greenhouse gases from North American agriculture? Agronomy Journal 99 (6): 1719–1725. doi: 10.2134/agronj2006.0327s
- Medal J., Halbert S., Smith T. and Cruz A.S. (2013) Suitability of selected plants to the bean plataspid, *Megacopta cribraria* (Hemiptera: Plataspidae) in no-choice tests. Florida Entomologist 96 (2): 631–633. doi: 10.1653/024.096.0232
- Naeem M., Khan M.M.A. and Uddin M. (2016) Hyacinth bean (*Lablab purpureus* (L.) Sweet): A hidden treasure of useful phytochemicals. Legume Perspectives 13: 29–32.
- Naeem M., Aftab T. and Khan M.M.A. (2020) Hyacinth

- bean (*Lablab purpureus* L.)—an underutilised crop with future potential. *Scientae Horticulturae* 272:109551. doi: 10.1016/j.scienta.2020.109551
- Nair N., Shah S.K., Thangjam B., Debnath M.R., Das P., Dey B., Awasthi D. and Hazari S. (2017) Insect pest complex of Pigeon pea (*Cajanus cajan*) in agro-ecosystem of Tripura, N.E. India. *Journal of Entomology and Zoology Studies* 5(4): 765–771
- Pal D., Mishra P., Sachan N. and Ghosh A.K. (2011) Biological activities and medicinal properties of *Cajanus cajan* (L) Millsp. *Journal of Advanced Pharmaceutical Technology & Research* 2 (4): 207–214. doi: 10.4103/2231-4040.9087.
- Pedigo L.P., Hutchins S.H. and Higley L.G. (1986) Economic Injury Levels in Theory and Practice. *Annual Review of Entomology* 31: 341–368.
- Rao G.V.R. and Shanower T.G. (1999) Identification and management of pigeon pea and chickpea insect pests in Asia. International Crops Research Institute for the Semi-Arid Tropics, Patancheru, A.P., India. Information bulletin no. 57. 96pp.
- Schuh R.T. and Slater J.A. (1995) True bugs of the world. Cornell University Press, Ithaca, 336 pp.
- Schaefer C.W., Panizzi A.R. and David G.J. (2000) Several Small Pentatomoid Families (Cyrtocoridae, Dinidoridae, Eurostylidae, Plataspidae, and Tessaratomidae). In: *Heteroptera of Economic Importance*, (Eds. Schaefer C. W. and Pannizi A. R.) CRC Press, U.S. pp505–512.
- Seni A. (2021) Diversity of hemipteran insect fauna and their relative abundance in pigeonpea, *Cajanus cajan* (L.) Millsp. *Journal of Entomology and Zoology Studies* 9(1): 1072–1079.
- Shanower T.G., Romeis J. and Minja E.M. (1999). Insect pests of pigeonpea and their management. *Annual Review of Entomology* 44(1): 77–96.
- Srinivasaperumal S., Samuthiravelu P. and Muthukrishnan J. (1992) Host plant preference and life table of *Megacopta cribraria* (Fab.) (Hemiptera: Plataspidae). *Proceedings of the Indian National Science Academy: Biological Sciences* 58(6): 333–340.
- Srivastava C.P. and Joshi N. (2011) Insect pest management in pigeon pea in Indian scenario: A critical review. *Indian Journal of Entomology* 73: 63–75.
- Suiter D.R., Eger J.E. Jr, Gardner W.A., Kemeraite R.C., All J.N., Roberts P.M., Greene J. K., Ames L.M., Buntin G.D., Jenkins T.M. and Dounce G.K. (2010) Discovery and distribution of *Megacopta cribraria* (Hemiptera: Heteroptera: Plataspidae) in northeast Georgia. *Journal of Integrated Pest Management* 1(1): F1–F4. doi: 10.1603/IPM10009
- Tayutivutikul J. and Kusigemati K. (1992) Biological studies of insects feeding on the kudzu plant, *Pueraria lobata* (Leguminosae) List of feeding species. *Memoirs of the Faculty of Agriculture, Kagoshima University* 28: 89–124.
- Tharanathan R.N. and Mahadevamma S. (2003) Grain legumes—a boon to human nutrition. *Trends in Food Science & Technology* 14 (12): 507–518. doi: 10.1016/j.tifs.2003.07.002
- Thippeswamy C. and Rajagopal B.K. (1998) Assessment of losses caused by the lablab bug, *Coptosoma cribraria* Fabricius (Heteroptera: Plataspidae) to the field bean, *Lablab purpureus* var. *lignosus* Medikus. *Karnataka Journal of Agricultural Sciences* 11 (4): 941–946.
- Wang Z., Chen G.H., Zi Z.G. and Tong C.W. (1996) Occurrence and control of *Megacopta cribraria* (Fabricius) on soybean. *Plant Protection* 22 (3): 7–9.
- Wheeler B.E.J. (1969) An introduction to plant diseases. John Wiley, London, UK.
- Zhang Y., Hanula J.L. and Horn S. (2012) The biology and preliminary host range of *Megacopta cribraria* (Heteroptera: Plataspidae) and its impact on kudzu growth. *Environmental Entomology* 41 (1): 40–50. doi:10.1603/EN11231