



Anar butterfly, *Deudorix isocrates* (Fab.) found feeding on kusum fruits

B. Thirupam Reddy¹*, N. N. Rajgopal² and T. Selvakumar³

¹Basic Seed Multiplication and Training Centre, Central Silk Board, Bastar, Chhattisgarh, India.

²ICAR-National Bureau of Agricultural Insect Resources, Bengaluru, Karnataka, India.

³Basic Tasar Silkworm Seed Organisation, Central Silk Board, Bilaspur, India

*Correspondence author: btreddy.csb@nic.in

The Kusum tree (*Schleichera oleosa*) is a highly valued species, offering a wide range of benefits that span economic and agricultural contributions, medicinal applications, and environmental sustainability. Its cultivation supports the production of lac (Non-Timber Forest Products) a valuable resin used in varnishes, adhesives, and other products secreted by the species of *Kerria*. The lac produced from the kusum tree is commonly called *kusmi* lac with two crop cycles Jethwi and Aghani, and is a significant source of income for rural communities in India.

Apart from lac cultivation kusum tree provides fruits that are edible and consumed locally, low tannin levels in leaves and fruit residues make it a good animal fodder, oil extracted from Kusum seeds can be converted into biodiesel, fuel-wood, timber, and medicinal benefits with anticancer, antioxidant, antimicrobial properties and is used in traditional medicine to treat ailments such as skin diseases, digestive issues, and fever for both humans and livestock, it also provides habitat and food for various wildlife species, contributing to biodiversity conservation. Its multifaceted uses make it integral to rural livelihoods and ecological balance (Sarkar et al., 2022). The *kusum* trees generally flower during the onset of the dry season (January-February) and fruiting takes place during March-April and fruits ripen during the month of July-August. The seeds are the major

source of propagation and are viable mostly if sown freshly after collection (Saha et al., 2010).

The butterfly species *Deudorix isocrates* (Fab.), commonly referred to as the pomegranate/anar butterfly or common guava blue, is a significant pest of fruit-bearing trees, causing substantial damage to its host plants. (Anonymous 2024; Gundappa et al., 2017; Singh and Kaur 2016; Homkar 2009; Tiwari et al., 2008; Haseeb and Sharma 2007; Rao 1992). The primary damage is caused by the larvae by boring into the fruits, which leads to secondary infections and causes deformed fruits, fruit decay, premature fruit drop and ultimately feeding on seeds will also cause reduction in its viability, sometimes it may cause of germination failure which has negative impact on future plant propagation efforts.

Anar butterfly has wide range of larval host plants such as, *Tamarindus indica* (Fabaceae). *Strychnos nux-vomica* (Loganiaceae). *Punica*, *Punica granatum* (Lythraceae). *Psidium guajava* (Myrtaceae). *Eriobotrya japonica*, *Malus pumila*, *Prunus dulcis*, *Prunus persica*, *Pyrus communis* (Rosaceae). *Catunaregam nutans*, *Catunaregam spinosa*, *Gardenia gummifera*, *Gardenia latifolia*, *Randia*, *Tamilnadia uliginosa* (Rubiaceae). *Citrus*, *Citrus x aurantium*, *Citrus sinensis*, *Limonia acidissima*, *Limonia elephantum*, *Naringi crenulata* (Rutaceae) (Bell 1920; Wynter-Blyth 1957; Robinson et al., 2010; Nitin et al., 2018).

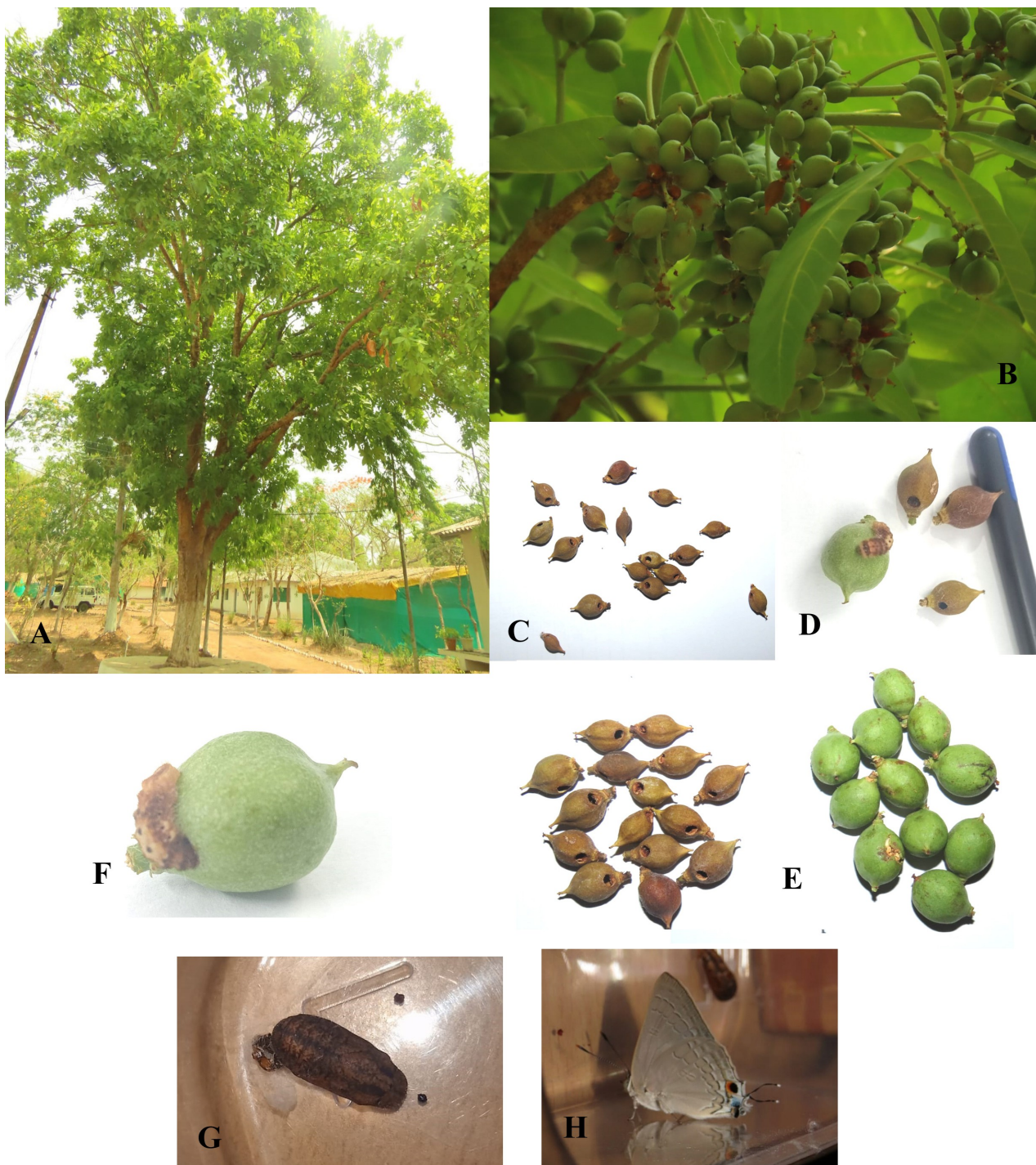


Fig. 1: A. *Kusum* tree. B. Fruit bunches with infested fruits; C. Damaged fruits with characteristic circular bore holes; D. Larvae feeding on healthy fruit; E. Comparison of healthy and damaged fruits; F. Larva feeding on internal contents; G. Pupa; H. Freshly emerged adult.

In the month of April, 2024 during field observations at the Basic Seed Multiplication and Training Centre, Central Silk Board, Bastar, Chhattisgarh. We observed *anar* Butterfly larvae (*Deudorix isocrates*) feeding on immature *kusum* fruits. Some fruits exhibited signs of damage, with larvae feeding on them, circular bore holes, premature drying and dropping of the fruits. The

damage was characterized by complete feeding of the internal contents or seed/ kernel by the larvae, leaving behind circular exit holes on the outer rind of the fruit (Fig. 1). Each fruit was affected by a single larva. When the larva fully penetrates the fruit, it seals the entry hole with its anal end. The field laboratory photographs of the different life stages and damaging symptoms were captured.

The larvae were collected and reared in plastic jars and upon adult emergence the species was identified based on photographs. Here in the present study, we observed the feeding of anar butterfly larvae on fruits of the kusum for the first time. Damage leads to premature drying and dropping of the fruits and loss of viability which may lead to difficulty in propagation of kusum.

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References

- Anonymous. 2024. *Virachola isocrates* (Fabricius, 1793) - Common Guava Blue. In Kunte, K., S. Sondhi, and P. Roy (Chief Editors). Butterflies of India, 4.12. Published by the Indian Foundation for Butterflies. URL: <https://www.ifoundbutterflies.org/virachola-isocrates>. Accessed 08 July 2024.
- Bell T R. 1920. The common butterflies of the plains of India (including those met with the hill stations of the Bombay Presidency). Journal of the Bombay Natural History Society 27: 26-32.
- Gundappa B M, Veena G L, Rajan S. 2017. Relative susceptibility of guava genotypes against fruit borer, *Deudorix isocrates* F. (Lepidoptera: Lycaenidae). Pest Management in Horticultural Ecosystems. 23 (1), 86-88
- Haseeb M, Sharma S. 2007. Studies on incidence and crop losses by fruit borer *Deudorix isocrates* (Lep: Lycaenidae) on guava. Acta Horticulturae. 489-492.
- Homkar U. 2009. *Virachola isocrates*: a new fruit pest reported on Garari *Cleistanthus collinus* (Roxb.) Benth. ex Hook. f. in Madhya Pradesh. Indian Journal of Forestry. 32 (1): 123-126.
- Nitin R, Balakrishnan V C, Churi P V, Kalesh S, Prakash S, Kunte K. 2018. Larval host plants of the butterflies of the Western Ghats, India. Journal of Threatened Taxa. 10(4): 11495-11550.
- Rao A S. 1992. Preliminary studies on the seasonal occurrence of insect pests on soap-nut (*Sapindus* sp.). Indian Forester. 118 (6): 432-437.
- Robinson G S, Ackery P R, Kitching I J, Beccaloni G W, Hernández L M. 2010. HOSTS - A Database of the World's Lepidopteran Hostplants. Natural History Museum, London. <http://www.nhm.ac.uk/hosts>. Electronic version accessed on 08 July 2024.
- Saha D, Ramani R, Baboo B. 2010. Kusum Multipurpose Tree Yet Not Popular. Science Reporter, 20-22
- Sarkar P K, Sinha A, Das B, Dhakar M K, Shinde R, Chakrabarti A, Yadav V K, Bhatt B P. 2022. Kusum (*Schleichera oleosa* (Lour.) Oken): A potential multipurpose tree species, its future perspective and the way forward. Acta Ecologica Sinica. 42(6): 565-71.
- Singh S, Kaur G. 2016. Biodiversity of borer insect-pests infesting citrus in Punjab. Journal of Crop and Weed. 12 (2): 106-109.
- Tiwari A K, Mishra P, Tiwari S C. 2008. Field screening of some cultivars of aonla (*Emblica officinalis* Gaert.) against *Deudorix isocrates* (Fabr.). New Agriculturist. 19 (1/2): 101-103.
- Wynter-Blyth M A. 1957. Butterflies of the Indian region. Oxford- Bombay Natural History Society, Bombay, 1-523.