

Global Agronomy Research Journal

Product Flees (DIPTERA: TEPHRITIDAE: DACINAE: DACINI) Variety Variety Fashionable NEPAL: Every Examination

KC Dahal ^{1*}, GB KC ², ASR Bajracharya ³

Nepal Agriculture Research Council, Khumaltar, Lalitpur, Nepal

* Corresponding Author: **KC Dahal**

Article Info

ISSN (online): 3049-0588

Volume: 01

Issue: 05

September-October 2024

Received: 15-08-2024

Accepted: 05-09-2024

Page No: 01-03

Abstract

The family Dacini, inside the substitute-offspring Dacinae of the Tephritidae classification, contains bigger crop flees inside the type Zeugodacus, Bactrocera, and Dacus. The Bactrocera spp., that were earlier sorted into substitute- type Zeugodacus and Bactrocera, have existed doctored as separate type in current age. These dacine flees are widely spread in crops and herbs. The first dacine bug, that is D. (Callantra) nepalensis stated in 1964 from Nepal is still a holotype. Completely, 27 class have existed stated in Nepal from three type–Dacus (6), Zeugodacus (8), and Bactrocera (13), of that 10 variety are convinced suggestion-lure, 7 variety to methyl eugenol, 2 class to zingerone, 1 variety to lati-lure and 5 class to in addition to individual lure, while lure for 2 class are mysterious. Between bureaucracy, 7 variety are oligophagous infections, 6 variety are polyphagous blights, and the scourge rank of 14 variety is obscure. Bug plague and damage have happened written indifferent crops in the way that; 5 class on cucurbits, 2 class on various products, 4 variety on various products and produce, 1 variety on citrus crops, and 1 class on solanaceous legumes. Three variety; Z. cucurbitae, Z. tau, and B. minax, have happened written from diseased crop sophistications of cucurbits and sweet coral excessively. Still, scourge rank, chosen hosts, and any branch of natural science of many variety wait still expected surveyed and stated from Nepal. Further studies are inevitable directing on bug class of business-related significance having to do with host weakness for cultivating appropriate administration method. Works are wanted to recognize the bug variety that levy real damage to the hosts.

Keywords: Cucurbits, loss, allocation, flees, listening

Introduction

Crop flees (Diptera: Tephritidae) are economically main general except in extreme desert and opposed regions. Korneyev (1999) top-secret that the Tephritidae kin into six substitute-classifications (Blepharoneurinae, Dacinae, Phytalmiinae, Tachiniscinae, Tephritinae and Trypetinae) includes of over 469 type, 62 substitute-type and over 4700 acknowledged variety general (Han and others., 2017; ITIS, 2023). Of bureaucracy, almost 325 class of crop flees are popular to happen in Aboriginal american substitute-chaste in four substitute-kins; that is to say Dacinae, Phytaminae, Tephritinae and Trypetinae (Nair and others., 2018). The family Dacini is ultimate class rich clades (stated 932 class general) inside the classification Tephritidae (Dooreenweerd and others., 2018). In addition 92 dacine bug class have stated from India (Vasudha and others., 2019) while 26 are stated from Nepal (Leblanc and others., 2019).

Of the acknowledged dacine product flees, about 10% are bugs of commercially cultured crops and herbs, accompanying cucurbits being their big hosts. Dacine product flees are polyphagous in type, presenting extreme duplication potential, roomy of or in the atmosphere fortitude, and a extreme distribution competency. Cucurbits show number of crops inside the classification Cucurbitaceae (100 type and ~1000 class), 50 variety are being cultured for miscellaneous purposes general (Chomicki and others., 2020) ^[8]. Dacine bug causes gigantic destruction to two together result and work of new cucurbits. Nevertheless, the predilection for the host is main, and the damage range concede possibility change accompanying variety and host (Prabhakar and others., 2007). In Nepal, Bactrocera, Zeugodacus and Dacus are most prevalent type of dacine bug moving two together salads and crops. Between ruling class, Z. cucurbitae (Coquillett) and Z. tau (Hiker) are main bugs in cucurbits (Nair and others., 2017; Sawai and others., 2019). In consideration of yield-misfortune on account of crop flees in cucurbits

semantic foundation for the ethnic connections and decided that the friendships between substitute-classifications and families destitute still happened convincingly delimited.

Dacine product flees are phenotypically very comparable, making bureaucracy individual of ultimate troublesome groups of Tephritidae to label at class level. Bactrocera was deliberate a substitute-type of Dacus just before Took (1989) raised two together taxa to the rank of type, established outstanding traits in intestinal tergites. Zeugodacus was too saw as a substitute-type of Dacus but was later thought-out as a substitute-type under Bactrocera (Took 1989). Silver (2006) demanded that the substitute-type Zeugodacus maybe relative group to Dacus. Krosch and others. (2012) supported powerful ethnic evidences advocating the friendship betwixt the Zeugodacus group of substitute-type and the type Dacus. Took and Romig (2013) deliberate Ichneumonopsis expected a appendage of Dacini, while Freidberg and others. (2017) contained this type in the family Gastrozonini.

Demonstrative attributes (like patterns in party color) used to identify variety have happened confused by intraspecific difference, superior to a long annals of doubtful categorization. Nevertheless, ethnic studies at the microscopic level have supported valuable acumens, developing in a accepted accord that study of animal-located classifications need rewriting. The adulthood of class owned by Bactrocera and Dacus have happened detached into various substitute-type. Accompanying over 930 named variety inside the type Bactrocera containing Zeugodacus and Dacus inside the family Dacini (Table 1). Established the current ethnic studies and raised use of microscopic dossier, the big type Bactrocera splitted into Zeugodacus and Bactrocera (Krosch and others., 2012; Virgilio and others., 2015). Virgilio and others. (2015) arranged few Bactrocera variety into a new common rank Zeugodacus Hendel copy. nov. Seeing the progress in class labeling, four type, namely. Dacus Fabricius, Bactrocera Macquart, Zeugodacus Hendel and Monacrostichus Bezzi are immediately acknowledged inside the family Dacini (Dooreenweerd and others., 2018).

Table 1: Number of described dacine fruit fly species per region (Dooreenweerd *et al.*, 2018)

Category	Worldwide	Africa	Asia-pacific
<i>Bactrocera</i>	461	13	451
<i>Dacus</i>	273	193	81
<i>Zeugodacus</i>	196	1	195
<i>Monacrostichus</i>	2	0	2
Dacini	932	207	730

B. Allocation of the family Dacini product flees

The dacine product flees are generally condensed in two domains of the realm; Afrotropical domain and Southeast The orient to Northeastern Australia (Table 2). The Pertaining to the orient-Peaceful Dacini; Bactrocera and Zeugodacus class are predominately in the direction of Southeast The orient and Papua New Guinea (Took and Romig, 2013). Dacus variety, in another way, are widespread during the whole of the Afrotropical domain. Papua New Guinea has defeater in competition difference of dacine bug class, accompanying 188 class characterized, 18 of that are of business-related significance and over 50 variety looking forward writing (Allwood and others., 2001). Likewise, Solomon Enclave has as well 48 detailed class of family Dacini, containing not completely four economically main variety (Hollingsworth and others., 2003). Vasudha and

others. (2019) stated 92 dacine bug variety in India, 28 of that are native. This involves 51 class of type Bactrocera, 10 class of Dacus and 31 class of Zeugodacus. Class in the way that Zeugodacus caudatus, Z. tau, Z. diversus, Z. scutellaris and Dacus longicornis are widespread in Southeast The orient. Five variety that is to say: D. ciliates, B. oleae, B. dorsalis, B. latifrons and Z. cucurbitae are about two together Land of the Sahara and The orient-peaceful domains (Table 2; Figure 1). In Nepal, from the total stated dacine bug variety, only four are in the direction of Land of the Sahara domain, accompanying the plurality owned by the type Bactrocera (52%) trailed by Zeugodacus (30%) (Figure 1).

C. Bug class of the family Dacini in Nepal

The first news concerning Tephritidae product flees (Dacinae: Dacini) in Nepal was stated in 1964 established the 20 samples composed from easterly few Nepal all along 1961-62 (Strong, 1964). This study stated four substitute-offspring (Dacinae, Aciurinae, Trypetinae and Tephritinae), six families, nine type and eleven class, containing family Dacini. The first bug class, that is Dacus (Callantra) nepalensis (Tough, 1964) stated from Nepal inside the family Dacini is still holotype (NHM, 2023). Kapoor and others. (1979) stated two variety, D. (Zeugodacus) caudatus Fabricius and D. (Zeugodacus) scutellaris Bezzi of product flees inside the family Dacini from samples calm in the Kathmandu gorge. Afterward, many studies have debated bug class, even though taxonomic studies on class difference and labeling have happened created by assorted investigators. Leblanc and others. (2019) attended a inclusive study on dacine bug variety labeling, newsgathering 26 class accompanying new country records of 11 class containing B. tuberculata. Still, Tiwari (2016) had stated the B. having tuberculosis in the former study. A sequential order of studies over opportunity concerning dacine product flees, administered either from maintained samples, products or field level listening/administration studies, is bestowed in Table 2.

Conclusion

The first bug class stated from Nepal, Dacus (Callantra) nepalensis (Hardy, 1964), is still holotype continued in the British Museum. Over period, a historical study of crop flees in Nepal has told 27 variety owned by three type Bactrocera, Zeugodacus and Dacus inside the family Dacini stated through calm examples, listening accompanying various lures, and notes of overrun crop sophistication. Among these, two approximately accompanying bug variety, Z. (B.) cucurbitae (Coq.) and Z. (B.) tau (Walker) are widely stated in cucurbits across Nepal, covering from the orient to west and from the terai to intervening-hilltop domain while B. minax has existed stated from citrus products only. Much of the information concerning these bug class from overrun crop educations remnants restricted in Nepal. Therefore, skilled is a urgent need for studies directed on migratory classification, terrestrial disposal and host distinguishing bug class to evolve better administration practices of crop flees. Further studies endure ought towards class that expose real damages to the host, in consideration of expand administration design of dacine product flees. Economically main hosts, specifically paper money, vegetable, sponge fruit, sharp fruit and citrus crops need distinguished concern for the direct administration of dacine bug variety.

References

- Acharya U, Adhikari D. Pertaining to the oriental citrus fruit fly (*Bactrocera minax*) management in intervening hilltops of Nepal. *Chronicle of Farming and Environment*. 2019;20:47-56.
- Adhikari D, Joshi S. Incidence and field identities of fruit flies in sweet orange (*Citrus sinensis*) plantations in Sindhuli, Nepal. *Chronicle of Earth and Environmental Science*. 2018;30:47-54.
- Adhikari D, Joshi S, Thapa R, Du J, Sharma D, GC Y. Status and management of fruit fly in Nepal. Paper presented at: National Plant Protection Conference; c2019 Mar 03; Lazimpat, Kathmandu, Nepal.
- Adhikari D, Thapa R, Joshi S, Du J, Tiwari S. Biology and management of the oriental citrus fruit fly, *Bactrocera minax* (Enderlein) (Diptera: Tephritidae). *Journal of Agriculture and Forestry Science*. 2022;5:1-13.
- Allwood A, Chinajariyawong A, Kritsaneepaiboon S, Tooke R, Hamacek E, Hancock D, *et al*. Host plant records for fruit flies (Diptera: Tephritidae) in Southeast Asia. *Raffles Bulletin of Zoology*. 1999;7:1-92.
- Allwood A, Leblanc L, Vueti ET, Namuaga R. Fruit fly control strategies for Pacific Island countries and territories. *Pest Advisory Leaflet*. 2001;40:1-12.
- Bhandari K, Ansari A, Joshi S, Subedi H, Thakur M. Fruit fly (Diptera: Tephritidae) diversity in citrus crops in eastern hills of Nepal. In: *Proceedings of the 9th National Horticulture Workshop*; c2017 May 31-Jun 01; Kathmandu, Nepal. p. 50-61.
- Chomicki G, Schaefer H, Renner SS. Origin and domestication of Cucurbitaceae crops: insights from phylogenies, genomics, and archaeology. *New Phytologist*. 2020;226:1240-1255. doi:10.1111/nph.16015.
- Culliney T, Liquido N, McQuate G, Hanlin M, Tateno A, Foote K, *et al*. A review of recorded host plants of the peach fruit fly, *Bactrocera zonata* (Saunders) (Diptera: Tephritidae). *USDA Compendium of Fruit Fly Host Plants*. c2017;1.3.
- David K, Ramani S. An illustrated key to fruit flies (Diptera: Tephritidae) of Peninsular India and the Andaman and Nicobar Islands. *Zootaxa*. 2011;3021:1-31. doi:10.11646/zootaxa.3231.1.4.
- David K, Ramani S. New species, redescrptions, and generic redefinitions of Dacini (Diptera: Tephritidae: Dacinae) from India based on morphological characters. *Zootaxa*. 2019;4551:101-146. doi:10.11646/zootaxa.4551.2.1.
- Devi YK, Thakur P, Ibrahim MM. Harmful insect species in banknotes and their management. *Journal of Indian Agriculture*. 2018;5(2):196-200.
- Dhillon M, Singh R, Naresh J, Sharma HC. The melon fly, *Bactrocera cucurbitae*: A review of its biology and management. *Journal of Insect Science*. 2005;5(1):1-16. doi:10.1093/jis/5.1.40.
- Doorenweerd C, Leblanc L, Norrbom AL, Jose MS, Rubinoff D. A global checklist of 932 species of fruit flies in tribe Dacini (Diptera: Tephritidae). *ZooKeys*. 2018;730:19-56. doi:10.3897/zookeys.730.21786.
- Drew RAI. The tropical fruit flies (Diptera: Tephritidae: Dacinae) of the Australasian and Oceanian regions. *Memoirs of the Queensland Museum*. 1989;26:1-521.
- Drew RAI, Hancock DL. Evolution of the tribe Dacini based on morphology, distribution, and host data. In: Aluja M, Norrbom AL, editors. *Fruit Flies (Tephritidae): Phylogeny and Evolution of Behavior*. CRC Press; c1999. p. 509-522. doi:10.1201/9781420074468.ch19.
- Drew RAI, Romig MC. Tropical fruit flies of Southeast Asia: Indomalaya to northwestern Australasia. CABI; c2013. 647 p.
- Drew RAI, Hancock DL, Silver I. Changes in tropical fruit flies (Diptera: Tephritidae: Dacinae) of the southwestern and northern regions of Southeast Asia. *Invertebrate Systematics*. 1998;12:567-654. doi:10.1071/IT96004.
- Freidberg A, Kovac D, Shiao SF. A revision of *Ichneumonopsis* Hardy, 1973 (Diptera: Tephritidae: Dacinae: Gastrozonini), oriental bamboo-shoot fruit flies. *European Journal of Taxonomy*. 2017;317:1-23. doi:10.5852/ejt.2017.317.
- Gautam R, Gurung T, Ghimire S, Jaiswal J, Pandey R. Implementation and impact of integrated management of melon fly (*Bactrocera cucurbitae*) at the farm level in Western hills of Nepal. Conference Paper, Kaski, Nepal. LARC 98. c1998;8.
- Gautam R, Singh S, Kumar R. Management of major fruit flies with emphasis on their identification - Technical Manual. Westville Publishing House, India; 2015. 72 p.
- GC YD. Evaluation of bitter gourd varieties against cucurbit fruit fly in Chitwan district. *Journal of Institute of Agriculture and Animal Science*. 2001;21-22:251-252.
- Han H, Choi D, Ro K. Systematics of the oriental *Bactrocera* (Diptera: Tephritidae: Dacinae) with a review of their biology. *Journal of Asia-Pacific Entomology*. 2017;20:1321-1332. doi:10.1016/j.aspen.2017.09.011.