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International Journal on Biological Sciences

International Journal on Biological Sciences
ISSN No.: 0976-4518 • Vol. 17 (Iss. 1) **January-June 2026, Pp. 50-53**
https://doi.org/10.53390/IJBS.2026.17109

THE STUDY OF EFFECT OF *DACUS CILIATUS* ON CROP OF *CUCUMIS SATIVUS* IN HAZARIBAG DISTRICT, JHARKHAND

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Review Paper

Received: 22.03.2026 **Revised:** 18.04.2026 **Accepted:** 30.04.2026

ABSTRACT

Dacus ciliatus is a major pest affecting Cucumis sativus production, causing significant vegetable damage and yield loss. This study assessed infestation levels across different blocks in Hazaribag district from June to October. Mean vegetable damage ranges from 06.28% to 56.82%. with an overall average of 29.16%.Peak infestation occurred in September, indicating the need for targeted pest management strategies during this period.

No. of Pages: 4 **References: 20**

Keywords: *D. ciliatus, Cucumis sativus.*

INTRODUCTION

Cucumber (*Cucumis sativus*) is an important vegetable crop susceptible to *Dacus ciliatus* infestation. Yield losses due to this pest vary across regions and seasons. This study evaluates the extent of damage caused by *D.ciliatus* in Hazaribag, providing insights for effective pest control measures.

MATERIALS AND METHODS:

Field trials were conducted at four Blocks of Hazaribag district, Jharkhand, India. The visited farm was having the mixed vegetable crops consisting of *cucumis sativus* and *Solanum lycopersicum*. The selected site consist only cucumber plants. Area of each vegetable crop field visited was more than 8 acres in each block. *Dacus* species were collected from selected vegetable hosts using insect net, yellow sticky trap and TRI-TRAP devices.

A standard insect net was used to collect *Dacus* pests in field during dark time in absence of sunlight in morning of day and evening time of day. Sweep netting was conducted in areas with host plants at a consistent pace and duration. Pests were collected from net and identified to species level. Yellow sticky traps were used to capture *Dacus* adults. Yellow sticky traps were placed near host plants at a height of approximately 1-2 meters above ground level. Pests were collected regularly from the yellow sticky traps and identified to species level. Yellow sticky traps were replaced regularly to maintain their adhesive properties and effectiveness. Tri-traps baited with eugenol were used to capture *Dacus* adults. Eugenol was used as a lure in the Tri-traps to attract *Dacus* adults. Tri-traps were placed near host plants at a height of approximately 1-2 meters above ground level. Pests were collected regularly from the Tri-traps and identified to species

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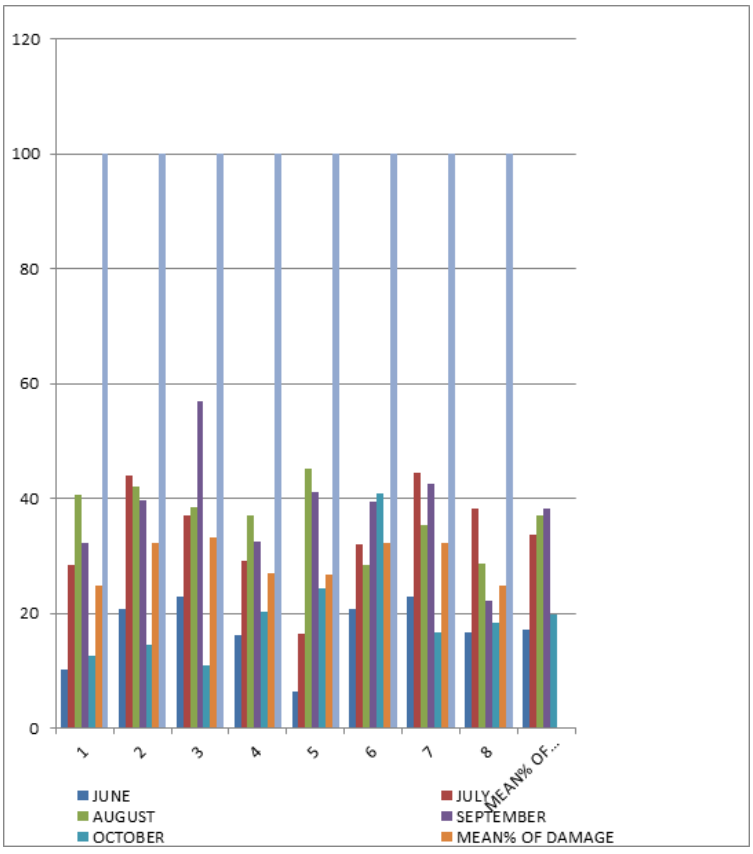
level. Assessment of damaged fruits based on the presence of feeding punctures was made by selecting 100 ripe vegetables at random before as well as at the end of the field trial.

Observation:

Dacus ciliatus infestation observed in *cucumis sativus* from June to October. Peak infestation in September 38.33 % , Lowest damage in October 10.99 % . Overall mean vegetable damage 29.16%.

No. of Sites	June	July	August	September	October	Mean % Damage	Total no. of Vegetables Examined
1	10.26	28.44	40.62	32.31	12.52	124.15 (X=24.83)	100
2	20.66	43.95	42.04	39.69	14.62	160.96 (X=32.192)	100
3	22.86	37.02	38.46	56.82	10.99	166.15 (X=33.23)	100
4	16.28	29.08	37.02	32.48	20.22	135.08 (X=27.01)	100
5	06.28	16.38	45.22	41.04	24.28	133.20 (X=26.64)	100
6	20.66	32.06	28.42	39.52	40.88	161.54 (X=32.30)	100
7	22.89	44.47	35.26	42.63	16.62	161.87 (X=32.37)	100
8	16.58	38.16	28.62	22.12	18.42	123.90 (X=24.78)	100
Total	136.47	269.56	295.66	306.61	158.55		
Mean %	X=17.06	X=33.69	X=36.95	X=38.33	X=19.81		
Damage	(24.4)	(35.48)	(37.42)	(38.25)	(26.43)		



% of infestation figures in parenthesis are angular transformation .

Result:
Infestation peaked in September 38.33% likely due to favorable climatic conditions. Locality specific management strategies are needed to mitigate yield loss.

Conclusion:
D. ciliatus causes substantial *Cucumis sativus* yield loss (mean 29.16%).Targeted pest control during July-September is recommended to reduce damage.

References

1. **A Vashudha , Md. Abbas and M. L. Agarwal** (2019*).* An overview of Indian Dacine Fruit Flies (Diptera : Terhritidae : Dcinae : Dacni). *International Journal of Bio-resource and Stress Management 2019*,10(5),491-506.

2. **A Vashudha and ML Agarwal** (2019.Management of Dacine fruit flies (Tephritidae: Dacinae: Dacini) in horticulture ecosystems: A review. *Journal of Entomology and Zoology Studies 2019*,7(3), 33-42.

3. **A.G. Ibrahim, G. Singh and H.S. King** (1979).Trapping of the Fruit Fly Dacus spp. (Diptera: Tephritidae) with methyl eugenol in Orchards. *Pertanika*, 2(1), 58-61.

4. **Abraham Verghese, H.S.Madhura, P.D.Kamala Jayanthi & John M. Stonehouse** (2002).Fruit flies of economic significance in India with special reference to Bactrocera dorsalis (Hendel).*In: Barnes, B.N. (Ed.), Proceedings 6th International Fruit Fly Symposium, 6-10 May 2002, Stellenbosch, South Africa, ARC Irene: Isteg Scientific Publ., S. Africa*,317–324.

5. **Adhikari, D., D.B. Tiwari, and S.L. Joshi.** 2018.Population dynamics of fruit flies in sweet orange (*Citrus sinensis* L.) orchards in Sindhuli, Nepal. *J. Agric. Environ.19:916. Acharya, U.K., and D. Adhikari. 2019. Chinese citrus fly (Bactrocerami nax) management in mid hills of Nepal. J. Agric*

6. **Doorenweerd C, Leblanc L, Norrbom AL, San Jose M and Rubinoff D** (2018). A global checklist of the 932 fruit flyspecies in the tribe Dacini (Diptera, Tephritidae). *ZooKeys*. 2018,730,17-54.

7. **Foote, R.H., Blanc, F.L., Norrbom, A.L.,** 1993.Handbook of the Fruit Flies (Diptera: Tephritidae) of America and North of Mexico. *Comstock Publishing Associates, Ithaca*, 571.

8. **H.R. Ranganath and K. Veenakumari** (1999). Notes on the Dacine fruit flies (Diptera : Tephritidae) of Andaman and Nicobar Islands II. *The Raffles Bulletin of Zoology* 1999 ,47(1),221-224.

9. **Jaipal S. Chaudhary, Naiyar Naaz, Chandra S. Prabhakar, Bikas Das** (2014). Field Guide for Identification of fruit flies species of Genus Bactrocera prevalent in and around mango orchards. *Technical booklets No.: R-43/Ranchi-16.*

10. **K.J. David & S. Ramani** (2011). An illustrated key to fruit flies (Diptera : Tephritidae) from Peninsular India and the Andaman and Nicobar Islands. *Zootaxa* ,3021,1–31.

11. **Luc Leblanc, Md Aftab Hossain, Shakil Ahmed Khan, Michael San Jose** (2014) .Additions to the Fruit Fly Fauna (Diptera : Tephritidae : Dacinae) of Bangladesh , with a key to the species. *Proceedings of the Hawaiian Entomological Society* (2014) 46, 31–40.

12. **Navendu Nair, T Bhattacharjee, B Thangjam, U Giri and MR Debnath** (2017).Species Diversity of Dacine Fruit Flies (Diptera : Tephritidae : Dacinae : Dacini) in Tripura, N.E. India). *Journal of Entomology and Zoology Studies 2018*, 6(1), 297-302.

13. **Norrbom, A.L., Carroll, L.E., Freidberg, A.,** 1999. Status of Knowledge. In: Thompson F.C. (Ed.), *Fruit Fly Expert Identification System and Systematic Information Database. Myia,* 9, 9–48.

14. **Prokopy RJ** (1977). Stimuli influencing trophic relations in Tephritidae. *In: Labeyrie, V. (Ed.), Comporement des Insects et Millieu Trophique. Coll. Int. CNRS*, 265, 305–336.

15. **Ravichandra N.G.** (2014).Horticulture and its role in the national economies. In: Horticultural Nematology. *Springer*, New Delhi, 2014.

16. **S. Ramani, K.J. David, C.A. Viraktamath and A.R.V. Kumar.** 2008. Identity and Distribution of Bactrocera Caryeae (Kapoor) (Insecta: Diptera: Tephritidae)- A species under the Bactrocera dorsalis complex in India. *Biosystematica*, 2008, 2(1), 49-57.

17. **S. Tara and Madhvi Gupta** (2016*).*Bionomics of Bactrocera Dorsalis (Diptera: Tephritidae) – An important pest of Mango (Mangifera Indica) in Jammu. *Munis Entomology & Zoology*,11 (1),176-180.

18. **Schutze, M.K., Virgilio, M., Norrbom, A., Clarke, A.R.,** 2017.Tephritid integrative taxonomy: Where we are now, with a focus on the resolution of three tropical fruit fly species complexes. *Annual Review of Entomology*, 62, 147-164.

19. **Vargas, R.I., Leblanc, L., Pinero, J.C., Leblanc, L.,** 2015.An overview of pest species of Bactrocera fruit flies (*Diptera: Tephritidae*) and the integration of biopesticides with other biological approaches for their management with a focus on the Pacific region. *Insects*, 6, 297–318.

20. **White IM and Elson-Harris MM** (1992).Fruit Flies of Economic Significance: Their Identification and Bionomics. *CABI International*: *Wallingford, UK*, 1992.