

Oxford is celebrat
Learn more about how OUP

OXFORD
ACADEMIC



JOURNAL OF ECONOMIC ENTOMOLOGY



Hazards of Insecticides to the Bumble Bees *Bombus impatiens* (Hymenoptera: Apidae) Foraging on Flowering White Clover in Turf

Jerome A. Gels, David W. Held, Daniel A. Potter ✉

Journal of Economic Entomology, Volume 95, Issue 4, 1 August 2002, Pages 722–728,
<https://doi.org/10.1603/0022-0493-95.4.722>

Published: 01 August 2002

Abstract

Insecticides used on turf are sometimes applied to areas with flowering weeds that attract honey bees and native pollinators. We tested residual effects of such treatments on colony vitality and behavior of the bumble bees *Bombus impatiens* Cresson foraging on turf containing white clover, *Trifolium repens* L. Imidacloprid, a systemic chloronicotinyl used for preventive control of root-feeding grubs, was applied as granules, followed by irrigation, or sprayed as a wettable powder, with or without irrigation. Hives were confined on the plots in large field cages after residues had dried and colony vitality (i.e., numbers of brood, workers, and honey pots, and weights of queens, workers, and whole colonies with hives) was evaluated after 28–30 d. Workers' foraging activity and defensive response to an aggressive stimulus also were evaluated. In

Article Navigation

plots after residues had dried, with effects on colony vitality evaluated after 14 d. Finally, foraging activity of wild bumble bees was monitored on open plots to determine if insecticide-treated areas were avoided. Imidacloprid granules, and imidacloprid sprays applied with posttreatment irrigation, had no effect on colony vitality or workers' behavior, suggesting that such treatments pose little systemic or residual hazard to bumble bees. In contrast, exposure to dry nonirrigated residues of all of the aforementioned insecticides had severe impact on colony vitality. Foraging workers did not avoid insecticide-treated areas. Means by which turf managers can reduce hazards of insecticide applications to pollinators are discussed.

Keywords: *Bombus impatiens*, bumble bee, turfgrass, ecotoxicology, imidacloprid, cyfluthrin

Issue Section: ECOTOXICOLOGY

© 2002 The Entomological Society of America

You do not currently have access to this article.

Sign in

Don't already have an Oxford Academic account? [Register](#)

Oxford Academic account

Email address / Username 

Entomological Society of America members



[Sign in via society site](#)

Article Navigation

Sign In

[Forgot password?](#)
[Don't have an account?](#)

Sign in via your Institution

[Sign in](#)

Purchase

[Subscription prices and ordering](#)

Short-term Access

To purchase short term access, please sign in to your Oxford Academic account above.

Don't already have an Oxford Academic account? [Register](#)

Hazards of Insecticides to the Bumble Bees *Bombus impatiens* (Hymenoptera: Apidae)
Foraging on Flowering White Clover in Turf - 24 Hours access

EUR €35.00

GBP £27.00

USD \$44.00

Rental



This article is also available for rental through DeepDyve.



Article Navigation



[View Metrics](#)

Email alerts

[New issue alert](#)

[Advance article alerts](#)

[Article activity alert](#)

[Receive exclusive offers and updates
from Oxford Academic](#)

Citing articles via

[Web of Science \(52\)](#)

[Google Scholar](#)

[CrossRef](#)

Latest | **Most Read** | **Most Cited**

Efficacy and Phytotoxicity of Phosphine as
Fumigants for *Frankliniella occidentalis*
(Thysanoptera: Thripidae) on Asparagus

Effectiveness of Boric Acid by Ingestion, But Not
by Contact, Against the Common Bed Bug
(Hemiptera: Cimicidae)

Article Navigation

Impact of Single Gene and Pyramided Aphid-Resistant Soybean on Movement and Spatial Pattern of Soybean Aphid (Hemiptera: Aphididae)

Effects of Pollen Feeding on Quality of Royal Jelly

Call for Papers: Emerging Techno
Prevention and Control of Invasiv

Annals of the ESA in partnership with National Invasive Spec
Proposals/Abstracts Due: Sept. 15

[About Journal of Economic Entomology](#)

[Editorial Board](#)

[Policies](#)

[Author Guidelines](#)

[Contact Us](#)

[Purchase](#)

[Recommend to your Library](#)

[Advertising and Corporate Services](#)

[Entomology Today](#)

[Facebook](#)

[Twitter](#)

[YouTube](#)

JOURNAL OF ECONOMIC ENTOMOLOGY

Online ISSN 1938-291X

Print ISSN 0022-0493

Copyright © 2018 Entomological Society of America

[About Us](#)

[Contact Us](#)

Connect

[Join Our Mailing List](#)

Careers

OUPblog

Help

Twitter

Access & Purchase

Facebook

Rights & Permissions

YouTube

Open Access

Tumblr

Librarians

Oxford Dictionaries

Societies

Oxford Index

Sponsors & Advertisers

Epigeum

Press & Media

OUP Worldwide

Agents

University of Oxford

Oxford University Press is a department of the University of Oxford. It furthers the University's objective of excellence in research, scholarship, and education by publishing worldwide

OXFORD
UNIVERSITY PRESS

Copyright © 2018 Oxford University Press

[Cookie Policy](#)

[Privacy Policy](#)

[Legal Notice](#)

[Site Map](#)

[Accessibility](#)

[Get Adobe Reader](#)