



Extension

UNIVERSITY OF WISCONSIN-MADISON

Provided to you by:

## White Grub Control in Turfgrass

PJ Liesch and Vijai Pandian, UW-Madison Extension

Several species of white grubs are considered turfgrass pests in the Midwest. These grubs are the larval stages of scarab beetles such as Japanese beetles (see University of Wisconsin Garden Facts XHT1062, *Japanese Beetle*), May/June beetles (see University of Wisconsin Garden Facts XHT1240, *May/June Beetles*), European chafer (see University of Wisconsin-Madison Extension bulletin A4141, *European Chafer*), and northern masked chafer (see University of Wisconsin-Madison Extension bulletin A4130, *Northern Masked Chafer*). White grubs have pale, C-shaped bodies,



Turf damage caused by animals digging for white grubs.

orange heads and three pairs of legs. They can vary in size from less than ¼ inch long to over one inch long depending on the species and their stage of development. White grubs live in the root zone of turf and have chewing mouthparts that they use to feed on plant roots. Most turfgrass areas in Wisconsin have white grubs but typically in low numbers that cause minimal damage. When grubs are abundant however, they can cause significant damage leading to irregular brownish patches of turf. Additional damage can occur when animals (e.g., skunks, raccoons, crows, etc.) dig into the turf to feed on the grubs.

Control of white grubs can involve use of non-chemical, chemical and biological methods or a combination of methods.

**Non-Chemical Control:** Water and fertilize turfgrass areas optimally to help them tolerate white grub feeding. In addition, be sure to mow at the correct height and at the correct frequency to encourage deep root growth. Finally, be sure to properly reseed damaged areas as needed. See

University of Wisconsin-Madison Extension bulletins A3950 (*Watering Your Lawn*), A2303 (*Lawn Fertilization*), A3435 (*Lawn Maintenance*) and A3434 (*Lawn Establishment & Renovation*) for details on these aspects of turfgrass maintenance.

**Chemical Control:** Consider using insecticides in turfgrass settings where there are existing or anticipated high grub populations, and in settings (e.g., golf courses, sports fields, etc.) where tolerance for grub damage is low. There are two approaches to chemical control: preventative control and curative control. Preventative insecticides provide long-lasting protection. They are most effective against small grubs but in many cases work poorly against large grubs. Preventative insecticides must be applied prior to any egg-laying to achieve maximum effectiveness. Curative insecticides only work for a short period of time and are used when grubs are present and actively damaging turfgrass. See the tables below for available products and their timings of application.

Both granular and liquid formulations of white grub chemical insecticides are available. For all products, you must apply approximately ½ inch of water at the time of application to wash the insecticide into the turf root zone where grubs are actively feeding. Applying water maximizes the effectiveness of the insecticide. If you do not water, the insecticide may provide little or no control.

Note that neonicotinoid insecticides used for grub control can pose risks to bees and other pollinators. See University of Wisconsin-Madison Extension bulletin A4128 (*Conservation of Native and Domestic Pollinators in Managed Turfgrass Landscapes*) for guidance on protecting pollinators in turfgrass areas.



## Extension

UNIVERSITY OF WISCONSIN-MADISON

**Biological Control:** Biological insecticides available for grub control include *Bacillus thuringiensis galleriae* (grubGONE! G), *Metarhizium anisopliae* (Met 52), *Paenibacillus popilliae* (Milky Spore) and *Heterorhabditis bacteriophora* (Nemaseek). Consult product labels for application instructions and timing. These products often provide limited and highly variable control compared to chemical insecticides. In particular, *Paenibacillus popilliae* has not been found to be effective for white grub control in recent university research.

<b>Insecticides for Control of White Grubs in Turfgrass</b>			
<b>Active Ingredient</b>	<b>Trade Name Examples</b>	<b>Insecticide Class</b>	<b>Approach</b>
Carbaryl	Sevin and others	Carbamate	Curative
Chlorantraniliprole	Acelepryn, Scotts GrubEx	Diamide	Preventative
Cyantraniliprole	Ference	Diamide	Preventative
Clothianidin	Arena and others	Neonicotinoid	Preventative + Curative
Dinotefuran	Zylam	Neonicotinoid	Preventative
Imidacloprid	Merit and others	Neonicotinoid	Preventative
Thiamethoxam	Meridian and others	Neonicotinoid	Preventative + Curative
Trichlorfon	Dylox	Organophosphate	Curative

Proper timing is important to maximize the effectiveness of grub control products. Treatment timing can vary by white grub species. Contact your local Extension office to help determine exactly which grub species is/are present in your turfgrass area.

<b>Insecticide Application Timing by White Grub Species</b>		
<b>Species</b>	<b>Preventative Approach</b>	<b>Curative Approach*</b>
Japanese beetle	June – July	August – October
May/June beetle	May – Early June	July – September
European Chafer	May – Late July	August – October
Northern Masked Chafer	May – Late July	August – October

\*Curative treatments are most effective against smaller grubs towards the beginning of the treatment window

**For more information on white grub control:** See University of Wisconsin Garden Facts XHT1062 and XHT1240 (available at <https://pddc.wisc.edu/>), University of Wisconsin-Madison Extension bulletins A3275, A3714, A4128, A4130, A4141, A3950, A2303, A3435 and A3434 (available at <https://learningstore.extension.wisc.edu/>), the Turf Management Mobile website (<https://turfpests.wisc.edu/>), or contact your county Extension agent.

© 2020 by the Board of Regents of the University of Wisconsin System doing business as the division of Cooperative Extension of the University of Wisconsin Extension.

An EEO/Affirmative Action employer, University of Wisconsin Extension provides equal opportunities in employment and programming, including Title IX and ADA requirements. This document can be provided in an alternative format by calling Brian Hudelson at (608) 262-2863 (711 for Wisconsin Relay).

References to pesticide products in this publication are for your convenience and are not an endorsement or criticism of one product over similar products. You are responsible for using pesticides according to the manufacturer's current label directions. Follow directions exactly to protect the environment and people from pesticide exposure. Failure to do so violates the law.

Thanks to Colleen Callahan, Carol Shirk and Doug Soldat for reviewing this document.

A complete inventory of University of Wisconsin Garden Facts is available at the University of Wisconsin-Madison Division of Extension Plant Disease Diagnostics Clinic website: <https://pddc.wisc.edu>.