

Gearing Up For Grub Control

Dear *Beyond Pesticides*,

My neighbors are putting down the neonicotinoid imidacloprid to control grubs in their grass. I'm concerned about the effects this chemical has on bees, as well as my own health and the health of my neighbors. Are there alternatives I can suggest to my neighbors to replace these toxins? Renee D., North Carolina

Renee,

Thanks for your concern about the effects of neonicotinoids on local pollinator populations and your family's health. Imidacloprid is a common choice for grub control because, like all neonicotinoid insecticides, it is systemic and persistent. Its systemic properties allow it to travel into grass roots, and its persistence means that it will remain in the soil for a long period of time. Given imidacloprid's acute toxicity not only to grubs but also to pollinators like the honey bee, these properties become a costly liability to the surrounding environment. In humans, it is linked to neurotoxicity, reproductive and mutagenic effects. After an application, any weeds that pop up in the lawn will be toxic to bees, and if any amount runs off the lawn it can contaminate other flowering plants, potentially for years to come. Imidacloprid can also leach into groundwater and contaminate local water bodies. A study released by the U.S. Geological Survey this summer found at least one neonicotinoid pesticide to be present in nearly half of U.S. streams. We recognize that grubs, commonly known as white grubs, can damage lawns if found in high enough numbers.

Alternative Management

Luckily, there are viable, effective least-toxic alternatives to the use of imidacloprid that achieve the same long-term control of grubs without the long-term risks.

- 1. Practice Natural Lawn Care:** Emphasis should first be placed on lawn care management techniques, recognizing that adult beetles prefer to lay their eggs in short grass. Cutting your grass tall—minimum of 2 inches high—may discourage egg laying, and reduce future grub populations. Eggs require moist soil conditions in order to hatch and prevent the larvae from drying out. Therefore, deep periodic soaking of the turf is more beneficial than frequent light watering.
- 2. Encourage Natural Parasites and Predators:** Certain species of wasps, such as *Tiphia* spp. and *Scolids* prey specifically on white grubs. Some birds can consume large number of insects in



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Beyond Pesticides welcomes your questions, comments or concerns. Have something you'd like to share or ask us? We'd like to know! If we think something might be particularly useful for others, we will print your comments in this section. Mail will be edited for length and clarity, and we will not publish your contact information. There are many ways you can contact us: Send us an email at info@beyondpesticides.org, give us a call at 202-543-5450, or simply send questions and comments to: 701 E Street SE, Washington, DC 20003.

your yard, including adult beetles and grubs. Attract birds to your property by providing bird feeders, houses and baths.

- 3. Determine the Extent of the Problem:** Pest problems should be addressed based on action levels. While a few grubs per square foot are not considered a problem, generally any more than 10 grubs per square foot will require treatment. Look three inches deep in a one foot square cut out of the lawn.
- 4. Manage Adult Beetles:** While most grub problems are caused by the Japanese beetle, June beetles, chafers, and others also lay their eggs in lawns. If you notice a number of adult beetles on your property, consider efforts to reduce their population. Handpicking beetles, using mechanical traps and planting plants that repel beetles can effectively minimize adult beetle populations.
- 5. Use biological controls:** If treatment of the lawn is necessary, there are several least-toxic methods for controlling grubs. For these methods to be effective, it is important to plan ahead and follow label directions:
 - Nematodes:** These microscopic worms live and breed in the soil and infect and kill feeding grubs. Commercially available nematodes for grub treatment can be obtained at local supply stores, and the strains *Steinernema carpocapsae* and *Heterorhabdis* spp are the most effective against grubs. When applying nematodes to your lawn, it is important to irrigate before and after application, since nematodes require moist soil conditions.
 - Bacillus thuringiensis (Bt):** Bt can also be used to control grubs. Bt is a naturally occurring soil bacterium that, when ingested, acts as a stomach poison that interrupts feeding, and eventually leads to death. Bt is a microbial pesticide and is available at local garden shops. There are several strains of Bt used to control various types of pests, so it is important to use the strains specific to the grub you intend to control.
 - Milky spore:** The milky spore disease is a naturally occurring host specific bacterium (*Bacillus popilliae-Dutky*) that, once

applied to the lawn, releases spores that are eaten by the feeding grubs. The ingested bacterium then begins to cripple and kill the grubs within a period of 7-21 days. The buildup of spores in the grubs causes them to take on a characteristic milky appearance. Once the grubs are dead, new spores are released into the soil, providing years of protection. Milky spore has been effective in the mid-Atlantic region of the U.S., but is generally not as effective in areas below garden zone 5, including New England states and the Midwest, due to low soil temperatures. This treatment is recommended for long-term rather than short-term control. Note: Milky spore targets the Japanese beetle species of grub only.

For more information, read our ManageSafe webpage on grub control (bit.ly/grubcontrol). The factsheet goes into detail on the lifecycle of grubs, as well as plants and traps you can use.

We hope that information is helpful to pass along to your neighbor! Please feel free to call or email Beyond Pesticides at 202-543-5450 or info@beyondpesticides.org for more information.

Bees, Frogs and Butterflies

Dear Beyond Pesticides,

I am alarmed at the lack of bees in my garden and especially in my lavender. Is there a way that gardeners could unite and do a bee and frog count, the way birders do bird counts for the audubon association? What else can we do? Monarchs are also almost

non-existent. I have been spreading the milkweed seeds. So sad. Thanks for listening. Let me know what there is to do. Marcie N.

Marcie,

We share your deep concerns regarding the loss of bees, frogs, and monarch butterflies. It's a great idea to set up a bee and frog count! You could gather friends, neighbors and other gardeners to do this. For a bee count, you can set a timer for two minutes (or any certain period of designated time) and count how many bees you see in that period. A frog count can be tricky, but you may be able to listen for frogs to "see" where their population is the largest. It would be helpful to reach out to your local governmental agency or environmental center to see if they are already doing something like this, or if they would be interested in setting something up. Also, you may want to track losses of honey bees in your state, and publicize that information to support the adoption of organic practices and policies.

There are even more ways that you can help to prevent further declines and protect the bees, frogs and butterflies that are still in your community. As you already know (and are personally experiencing), pesticides can adversely affect the wildlife that make your home their home. You can talk to your neighbors, friends and other gardeners about stopping the use of harmful pesticides on their lawns or in their gardens in order to mitigate the harmful effects that they can have on wildlife. Setting up a count is also a great organizing opportunity to meet other concerned people. By forming a coalition of multiple citizens, you could then bring your concerns to your local government to create meaningful policy changes (see cover story).

From the Web

Beyond Pesticides' Daily News Blog features a post each weekday on the health and environmental hazards of pesticides, pesticide regulation and policy, pesticide alternatives and cutting-edge science, www.beyondpesticides.org/dailynewsblog. Want to get in on the conversation? "Like" us on Facebook, www.facebook.com/beyondpesticides, or send us a "tweet" on Twitter, @bpncamp!

EPA Seeks Public Opinion on Continued Use of Neurotoxic Organophosphate Pesticides

Excerpt from Beyond Pesticides' original blog post (10/9/2015): Last week, the Environmental Protection Agency (EPA) released preliminary human health and ecological risk assessments for seven organophosphate pesticides (OPs) and announced the open public comment period for those chemicals.

Jeanette M. comments:

"I lost my quality of life due to toxic chemicals and I know I am not alone. Knowing what these chemicals can do to people, especially babies and young children, why would you continue to poison our world? These chemicals are in my body where they have no business. Of course, I am only one person that you do not know and corporate worlds are going to do what their money will buy. But, if this happened to you, your loved ones, your grandchildren or anyone close to you, it would make you stop these chemicals from spreading any more."

Leslie I. comments:

"After finding enough evidence to ban chlorpyrifos from use around residential areas, it seems extremely illogical to consider it safe for use on food. Ban chlorpyrifos completely." (See related story in this issue.)