

A Single Application to Control Black Cutworm?

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Seen any cutworms lately? If you've spent any length of time on the bentgrass putting greens on your course in the early morning, you've likely encountered the black cutworm (*Agrotis ipsilon*), a common turfgrass caterpillar. Despite the amazing diversity of insects (~1,000,000 species have been recorded world-wide), the physical appearance of the black cutworm is nothing to write home about. The caterpillars are a dull olive-gray color with a few black spots along the topside of the body. Mature caterpillars can reach up to 2" long. The identifying characteristic of BCW larvae is the skin texture, which resembles a bumpy pebble road when viewed through a 10x hand lens. The green color and "pebbly" skin distinguish BCW from other common caterpillars of putting greens, such as the sod webworms (pale body color with many circular black spots).

So what's the big deal about BCW? Black cutworm caterpillars are nocturnal feeders and scurry off to their underground lairs in the morning like vampires avoiding the sun. Occasionally, you can find the caterpillars still wandering around on putting greens on overcast mornings. You may have also seen their tracks meandering across a dew-covered green. When they feed on putting greens, BCW larvae leave unsightly brownish pockmarks, which can resemble ball marks. Closer examination of these pockmarks can reveal the opening to cutworm's underground burrow. Because these insects hide in their burrows during the day, the easiest way to sample for cutworm larvae is to use a disclosing solution of soapy water, which irritates the caterpillars and forces them to the surface.

Black cutworm can be quite common in Wisconsin from May through September. A large population of BCW on a putting green can detract from aesthetics and gameplay due to the irregular appearance and texture. Luckily, there are a number of different products available to control BCW on golf courses. Commonly used insecticides include the synthetic pyrethroids (bifenthrin, cyfluthrin, deltamethrin, etc.), carbamates (carbaryl), organophosphates (trichlorfon), and oxadiazines (indoxacarb). However, a limitation of these products is that repeated applications may be required during the course of the summer to control BCW. A common neonicotinoid product for season-long grub control, imidacloprid (i.e., Merit), will only provide "suppression" of cutworm larvae.



Typical damage from black cutworms on a putting green. The larvae feed around the hole leaving brown spots in the turf.



ABOVE: Black Cutworm larvae can be seen crossing the green surface in the early morning or a soap flush can be used to bring them out of the soil/turf canopy.

BELOW: Black Cutworm adult moth.



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Could there be a single-application solution? The answer to this question is YES, based on some recent research from our lab. We investigated this topic in 2009 and 2011 at Bergamont Golf Course (Oregon, WI) using controlled infestations of 2nd/3rd instar black cutworm larvae. In both years, the anthranilic diamide, chlorantraniliprole (Acelepryn, DuPont®), provided the most consistent control of BCW larvae. A single (June) application of chlorantraniliprole still provided ~80% control of larvae after 70 days in each year. We also evaluated two neonicotinoid insecticides (thiamethoxam and clothianidin), which provided variable control of BCW. In 2009, thiamethoxam (Meridian, Synegnta™) provided excellent control, and performed just as well as chlorantraniliprole through nearly 90 days. In 2011, things started well, with chlorantraniliprole, thiamethoxam, and clothianidin all providing excellent (>90%) control of BCW a week and a half after application. However, unlike chlorantraniliprole, which provided consistent control in 2011, thiamethoxam and clothianidin provided more variable control throughout the summer, and at times provided <50% control.

Why these differences in control?

Our data showed that thiamethoxam worked well in 2009, but had variable control in 2011 (clothianidin was not evaluated in the first year of the study). It's possible that Mother Nature had a hand in things. The summer of 2009 ended up being the 7th coolest summer ever recorded in Wisconsin, and the coldest in Madison's history. In July of that year, Madison had an average temperature of 65.7°F, a maximum temperature of 82°F, and only 7 days with temperatures that reached 80°F. Overall, the summer of 2009 was consistently cool. In contrast, the summer of 2011 was one of the hottest recorded in the Midwest. In July of 2011, Madison experienced 23 days with temperatures of 85°F or greater, 8 days of 90°F or greater, and a maximum temperature of 97°F. It's possible that the hot conditions in 2011 affected pesticide degradation, which led to more variable control.

While the verdict isn't entirely in yet on thiamethoxam and clothianidin, it looks like a single application of chlorantraniliprole may be a viable option to manage black cutworm on your bentgrass putting greens.



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