

BUGG'N

Sure-fire ways to stomp out nematodes, mole crickets and other subsurface critters attacking your course's turf. By David McPherson



Get the “BugDoc” – David Shetlar – talking about billbugs and you’re apt to learn more in 15 minutes of conversation regarding these nasty critters that feed on turf than this scribe ever imagined he would know.

The professor of urban landscape entomology at Ohio State University knows his bugs; he offers a wealth of information on billbugs for skeptical superintendents who may not realize the fortitude and determination of these subsurface turf critters.

“The key to battling billbugs is to first understand their biology,” Shetlar says. “The cool season ones can not overwinter except in the adult stage, so every year they start over again. In the spring, the successfully overwintered adults become active and the females chew a bit on the grass blades and stems to lay eggs. Then, usually about the time the seed head stems start to form, she will pick those stems. It’s well known that the female billbug picks the stem that has the largest diameter.

“She then chews a little hole in the stem and sticks what look like little jelly beans – little white eggs – into

Billbugs feed primarily on fairways and roughs, but are commonly missed in collars of greens and bunker surrounds.

OUT



Mole crickets and white grubs attack quality turf, but go after wet conditions, which are best for egg-laying and survival.

that hole; one week to 10 days later that egg hatches out billbug larvae, which burrows up and down the stem until it reaches the crown. The crown is big enough to hold it until it grows bigger and then it drops out and feeds on nearby crowns.”

Shetlar says here's where the real problems start for superintendents trying to battle these pests. The billbugs reach the crown usually in the first or second weekend in June — right at the same time when normally a Kentucky bluegrass plant or perennial ryegrass plant have made new tillers and superintendents have cut off the head of the seed stem. Here's where the professor proceeds to give me a little turf “sex ed.”

“I irritate the agronomists a lot with this,”

he says. “Because the grass plant says ‘I’m going to have sex,’ you cut the seed heads off, so the plant says, ‘I guess you don’t want me to reproduce sexually, so I’ll reproduce asexually,’ which stimulates more tillering. I call them mother plants and daughter plants. By early- to mid June, the daughter plants are just establishing roots, so they can stand on their own. This billbug then comes in and kills the crown. And, if the daughter plant of the new tillers have not established well enough, you can get Kentucky bluegrass that is three inches in diameter that collapses and dies from all the bugs.”

Billbugs primarily feed on the fairways and the rough. But, Shetlar says one place most people completely miss is the collars

of greens — especially sand-based greens where a superintendent is not watching his irrigation close enough or there are water restrictions.

“All of a sudden the collars of the greens collapse because the superintendent did not realize that these billbug larvae had been chomping away at the turf,” he says.

That said, Shetlar says the bulk of billbug damage on golf courses is on another lesser known location — bunker surrounds.

“Many of the bunker surrounds, especially in the north, don’t get irrigation,” he explains. “I’ve had more and more superintendents that are absolutely amazed when I tell them they had billbugs around their bunkers. First, I ask them whether they



Having a detailed list of the species found on your course makes it easier to use the correct controls.

ever get grubs in those areas and they say no because that area is too dry. So, I reply, 'just humor me and apply your grub insecticide in late May or June when you normally do and put it on those bunker slopes and I'll talk to you later in the season.' When I talk to them in August and ask how their bunker slopes came out they all say their bunker slopes are the greenest and thickest they've ever had."

Rick Brandenburg, distinguished professor and co-director of the Center for Turfgrass Environmental Research and Education in the department of entomology at North Carolina State University, says white grubs and mole crickets attack finely manicured turf, but what they really thrive on are wet conditions.

"They enjoy high quality turf to feed on, but irrigation is also a key," he says. "Good soil moisture is critical to laying eggs and egg survival, as well as to the survival of the newly hatched insect, so irrigation on golf courses makes a great environment for these pests to enjoy."

Superintendents can't stop watering their

course, so one wonders what some of the ways are that they can help prevent these insects from causing damage to the turf, even before it happens?

Just like his fellow academic Shetlar, Brandenburg says the key is to have a good database of the species you have as well as knowing their lifecycle.

"These pests are under the ground being very subtle when they first hatch and that's the best time to control them, but this can vary a lot with the species and location," he explains. "There can be significant variation from one species to the other due to location. You must have localized information to use products effectively and get the maximum results and the lowest rates."

Recent research that Brandenburg and his colleagues have done on today's new products has shown that they are a little more sensitive to proper timing relative to the insect pests' life stage.

"That said, monitoring pests, especially the adults prior to egg laying, allows a superintendent to get great results," he adds. "Rainfall patterns can also influence timing. Drier weather usually delays egg laying and egg hatch, while wet weather may speed things along."

In the end, it's all about having a localized database for your pest species and knowing what is taking place under the soil. "Monitoring rainfall and temperature and egg hatch allow the superintendent to stay a step ahead of the pest and allows them to be as cost effective as possible."

Darin Bevard, senior agronomist for the USGA, mid-Atlantic region, says they don't really have a big problem with nematodes in their region. "They seem to cause problems when the grass is cut low or double cut," he explains. "This is not to say that there are not instances where nematodes are not a primary cause of decline. However, it is less common here compared to the southeast and Florida."

Bevard says with the long residual control products available now, white grub control is also less and less of an issue. One insect the agronomist says the golf industry needs to keep an eye out for is the annual bluegrass weevil.

"These little critters have been a problem for a long time, and, as their name suggests, *Poa annua* is their favored host," Bevard explains. "However, we have seen clear cases in recent years where they have used creeping bentgrass as a host and caused significant damage when *Poa annua* is not available.

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— Rick Brandenburg

When the damage has occurred on bentgrass, the first generation has pretty much avoided detection.

"When the potential damage period of the first generation occurs, the creeping bentgrass is healthy enough (late May into mid-June) to mask any damage that occurs, but populations increase dramatically between the first and second generations," he adds. "The damage period for the second generation is during the July/August heat depending on the location; the grass is already under stress and so the weevils cause significant damage."

The good news is that when it comes to the annual bluegrass weevil, there has been some research conducted recently by Pat Vittum of the University of Massachusetts and Dan

Peck of Cornell University on trapping methods to determine insect numbers and also to help determine spring migration timing — both of which help to target insecticide applications and timing.

Often, if these methods are used, targeted insecticide ap-

plications on the periphery of fairways and collars can be made which will prevent insect damage as well as minimize the amount of pest control product a superintendent needs to apply. **GCI**

David McPherson is a Toronto-based freelance writer and a frequent GCI contributor.

For more info...

Visit <http://bugs.osu.edu/~bugdoc/> to read more of Shetlar's latest research on billbugs and other turf diseases.