Golfdom 'S PRACTICAL RESEARCH DIGEST FOR TURF MANAGERS

TURFGRASS TRENDS

DESERT IPM

Simple IPM Techniques Can Mitigate Grub Damage in the Desert

By Kai Umeda

The arid desert Southwest has a harsh climate with high summer temperatures and little rainfall. Interlaced among the saguaros and mesquites are lush golf courses and many professional and recreational turfgrass facilities. These green islands can host a wide range of arthropods and micro-organisms because irrigation and nutrients are applied. Fortunately, desert turfgrasses are invaded less frequently by many pests or diseases. Unlike other parts of the country that are inundated by multiple pests and diseases, only a handful of insect pests might cause economic injury, damage or losses to well-maintained turfgrasses in the desert.

Grubs, sod webworm, cutworms and rove beetles are typical pests or nuisances in desert turfgrasses. Currently, very limited information is available about insect pests in desert turfgrasses with respect to taxonomy, generations/season, timing of emergence/occurrence, economic thresholds and control strategies.

Insect problems in desert turfgrasses

Some incidents in the summer of 2003 in central Arizona indicated the presence of different levels of an insect pest in turfgrasses. In June, a few greens on a particular golf course were infested with small black beetles that interfered with golfers' putting. Then in August, a second course suffered severe turf damage that was caused by large, white grubs. Additionally, superintendents commonly observed birds feeding and pecking on greens and some courses adjacent to the desert were invaded by javelinas that tore up greens and fairways seeking grubs.

These examples would commonly lead superintendents to make a decision to spray an insecticide for grub control.

Fundamental information that is essential for optimizing the timing of application of any insecticide was needed. In order to gain better understanding of the biology of the beetles and grubs, a network of blacklight traps was strategically installed around the Phoenix area at six golf courses. The goal was to identify the insects that were caught in the blacklight traps, quantify the abundance of pest insects in the traps and determine when the flights occurred. Ultimately, superintendents would have the ability to recognize specific beetles and have the knowledge of when they occurred on their golf courses, thus enabling them to make better pest management decisions.

Trapping technique shows a pattern

The blacklight traps were set up during late April and were monitored weekly through

Continued on page 56

IN THIS ISSUE

Over There
European Turfgrass Society convenes its first conference in Pisa, Italy.....58

Mad Tiller Disease
Are etiolated tillers a visual nuisance or something else?.....60

Continued from page 53

the summer until fall overseeding. Few moths of sod webworms, armyworms and cutworms were caught during the summer.

The most abundant species in the traps were the masked chafer beetles, *Cyclocephala* spp. Additionally, black turfgrass *Ataenius* adults and *Aphodius* spp. beetles (a non pest) that look very similar to each other were also trapped.

Capturing the adult stage of the masked chafers provided information about when to anticipate egg hatch and development of instars of grubs. The timing of peak flight activity was observed for the masked chafer beetles at each location. When adults are prevalent and flying, they mate and then lay eggs. The eggs hatch about three weeks to four weeks after the occurrence of a peak flight. In the Phoenix area, as many as three peaks were observed beginning with the first in early June, then in mid-July, and again in mid-September.

Improved timing of treatment

Based on the trap counts, some of the sites that had a history of grub damage in turfgrass initiated insecticide treatment about three to four weeks after the occurrence of the peak flight in June. This greatly improved the timing of application of soil-applied insecticides to target the hatching of eggs and the emergence of smaller, susceptible grubs.

The commonly used soil-applied insecticides include imidacloprid, thiamethoxam and clothianidin. Previously, soil-applied insecticides might have been sprayed in April or May, thus missing the timing for susceptible grubs.

The optimized timing also ensured soil residual efficacy of the insecticides for a longer period of time into the summer. A single insecticide application, in most situations, provided season-long grub control instead of multiple ineffective applications of costly insecticides. Frequently, ineffective applications targeted less-susceptible large-sized grubs too early or too late in the season.

Peer-to-peer outreach education

The University of Arizona Cooperative Extension conducted workshops along with agriculture chemical industry technical representatives. The workshops showed superintendents and professional turf managers how to identify key insect pests — such as white grubs — promoted the technique of trapping and monitoring for key pests, and provided education about insecticide chemistries for turf white grub management.

In 2005, the insect trapping network expanded to nine early-adopter golf course superintendents, most of them members of the Cactus and Pine GCSA. These superintendents conducted the trapping and monitoring and reported weekly data to build our database and to share with neighboring golf course superintendents. The data was posted on our Web site at turf.arizona.edu.

At subsequent workshops in the spring of 2006, the early adopters conveyed their experiences of improved grub management strategies to their peers. Sharing personal experiences with peers was a means for recruiting additional participants to adopt trapping and monitoring of key pests. At least 18 golf courses adopted trapping and monitoring techniques during that summer.

Grub research continues

The knowledge of the timing of masked chafer beetle flights by using the trapping techniques improved the decision-making process for superintendents to manage grubs. However, there are still gaps in our understanding of the white grubs in desert turf.

Three peak flights of beetles occur, so the question arises whether they are due to one species or a complex of grub species. It has yet to be determined exactly how many beetles or grubs result in damage to desert turfgrasses. But as more superintendents and professional turf managers adopt the IPM techniques like trapping and monitoring, then scientists can further glean pest biology and their behaviors in desert turfgrasses so they can be managed more effectively.

Kai Umeda is an area extension agent in turfgrass science for the University of Arizona's Maricopa County Cooperative Extension in Phoenix. He earned his master's degree in plant and soil sciences from Southern Illinois University after doing an undergraduate degree in pest management at the University of California - Berkeley. He can be reached at kumeda@cals.arizona.edu.