KENTUCKY RESEARCH REVEALS GREENBUG TURFGRASS PREFERENCES

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The greenbug, *Schizaphis graminum* (Rondani), has become an important problem of the turf industry within the last 10 years (1). Although this aphid is well studied as a pest of sorghum and small grains, little is known about its biology or habits on turfgrass. Many important questions concerning the aphid's overwintering site, its feeding preferences, and its reasons for attacking only certain lawns remain unanswered.

Damage

Greenbug feeding injury on turfgrass foliage shows up as yellow or rust-colored spots with necrotic centers, caused by toxic secretions injected into the plant tissue and from withdrawal of chlorophyll at the feeding sites. Translocation of the aphid's salivary toxins within the plant may also weaken the root system. Heavily infested turf may harbor 5,000 or more aphids per square foot, and will develop a characteristic rust color and finally turn brown (2). Greenbug damage nearly always begins around the base of trees, but often spreads into sunny areas as well. Our observations indicate that injury on home lawns is most severe in areas that are under moisture stress, while low-lying areas are less likely to be affected.

Research

In research at the University of Kentucky, we studied the feeding preferences, survival, and reproductive rate of greenbugs on nine common cool and warm season turfgrasses. We also tested the aphid's ability to survive on nine frequently encountered lawn and roadside weed species. Results showed that 'Kenblue,' 'Vantage,' and 'Adelphi,' the three Kentucky bluegrass cultivars tested, were all highly suitable hosts for the greenbug. Since these cultivars differ widely with respect to both their genetic and morphological characteristics, it is doubtful that existing Kentucky bluegrass cultivars with appreciable levels of resistance will be found. Although previous reports of greenbug activities on turf suggest that the aphid will feed and reproduce only on Kentucky bluegrass, we found that both 'Ky 31' tall fescue and 'Jamestown' chewings fescue will support rapid aphid buildups in the greenhouse. Aphids did not survive or reproduce on ryegrass, bentgrass, zoysiagrass, or bermudagrass.

The following weed species were screened as potential alternative hosts for the greenbug:

Common dandelion	*Taraxacum officinale* (Weber)
Broadleaf plantain	*Plantago major* L.
Buckthorn plantain	*P. lanceolata* L.
Ground ivy	*Galeochoma hederacea* L.
Pigweed	*Amaranthus* sp.
Wild strawberry	*Duchesnea indica* (Andr.) Focke
Large crabgrass	*Digitaria sanguinalis* L.
Violet	*Viola* sp.
Yellow wood sorrel	*Oxalis stricta* L.

In our studies, greenbugs failed to survive or reproduce on any of the nine grassy or broad-leaved weeds tested, suggesting that these plants do not serve as reservoirs from which greenbugs could reinfest a lawn.

Future Research

The recent alarming increase in greenbug outbreaks on home lawns suggests that this insect may have developed a new association with turfgrasses. Although it is possible that a new greenbug biotype or strain has evolved which prefers turfgrass over other hosts, there is evidence that certain high maintenance practices, such as overuse of insecticides and fertilizers, may be changing the physiology of the turfgrass habitat so as to make it more suitable for the greenbug. Observations during the 1979-1980 seasons indicate that greenbug outbreaks nearly always occur on well maintained, intensively managed lawns. It is apparent that additional research pertaining to the effects of lawn chemicals and high maintenance programs on greenbug popula-

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Although greenbug injury generally appears first in shaded areas under trees, heavy infestations may severely damage an entire lawn.

Patches of healthy grass in greenbug infested bluegrass lawns indicate the potential for resistant turfgrass species.

Greenburg *from page 55*

tions will provide important information for the turf industry. Discovery of the greenbug's overwintering site may reveal a weak link in the aphid's life cycle that is vulnerable to control. The possibility that greenbug damage can be minimized by cultural practices such as timely irrigation, seeding with resistant lawngrasses, or use of a bagging mower should also be investigated.

Literature Cited

(1) Niemczyk, H. 1980. New evidence indicates greenbug overwinters in north. Weeds, Trees and Turf 19(6):64.
(2) Street, J. R., R. Randell, and G. Clayton. 1978. Greenbug damage found on Kentucky bluegrass. Weeds, Trees and Turf 17(10):26.

Weed Control *from page 21*

bined to provide a broader spectrum of control plus this combination has the advantage of using dicamba at a lower rate than when it is used alone. This combination should be applied at the rate of 1.0 pound ai/A, 2,4-D + 0.5 pound ai/A MCPP + 0.10 pound ai/A dicamba. Fall and spring are the best times for control with early fall being preferred especially when turf stands are contaminated with later germinating summer annuals (particularly spurges and *Oxalis).*

Some broadleaf weeds require more specific treatment. Creeping speedwell *(Veronica filliformis)* can be controlled with DCPA 75 W applied in May at 12 pounds ai/A. The granular formulation is not effective. Control using the 75 W often takes as long as three to four weeks to occur. Once the chemical begins to work, the level of control should be nearly 100 percent. DCPA 75 W is not currently recommended for control of any other speedwells.

Oxalis and wild violet are also difficult to control since silvex cannot be used. The combination of 2,4-D and 2,4-DP at 1.0 pound of ai/A from each has provided good control of *Oxalis.* Wild violet control from this combination is not as good as for *Oxalis.* Spring application is the best time of the year for wild violet control.

Regardless of the broadleaf weed control approach being used, treatments should be made only when soil moisture is adequate to support vigorous weed growth. Avoid spray drift onto sensitive plants, clean equipment properly after application, and dispose of empty pesticide containers in an approved manner. **WTT**