USU TURFGRASS IPM Advisory

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Turfgrass Management

Spring has definitely sprung around Utah, although the changeable weather has kept us on our toes. Recent snows and rain in the state have kept soil conditions moist, so irrigation may be postponed in most areas of the state. Now is the time, however, to keep an eye out for common weed and insect pests of the season.

What to Watch For

Now is the time to start monitoring for some insect pests of turf, so we're highlighting a previous article on billbugs (below). These pests of Kentucky bluegrass are currently becoming active around the state. Snow mold damage may also be prevalent in some areas.

Spring Billbug Monitoring in Turf

Billbugs, a complex of weevils in turf, have spent the winter primarily as adults. Insects are poikilotherms (or "cold-blooded"), meaning their body temperature fluctuates with ambient temperatures. Once the weather warms up, insect metabolic and enzymatic activity begins to speed up. As temperatures start to exceed 65°F, adult billbugs become active and make their way to turfgrass areas where they will feed and deposit eggs. Adult activity of billbug may be used to our advantage for monitoring weevils and better predicting when to manage them or if management is even needed.

Although it may be possible to use visual sampling to find adult billbugs on sidewalks as they make their way into turfgrass, it is not all that practical on a larger scale or in recreational areas. Billbug behavior, however, is somewhat unique in that the adults rarely fly and they "play possum" when disturbed. We can use the former behavior for monitoring by utilizing pitfall traps. Pitfall traps can be as simple as digging a hole the size and height of a chosen container so that the container fits snugly and making sure there are no gaps between the soil and the container. Billbugs crawling into an area will drop into the cup without being able to escape. Pitfall traps are a useful monitoring tool but it is important to note that these traps are not an effective control method. In addition, pitfall traps collect ground active organisms (wolf spiders, millipedes, worms, and other insects), so identification at a basic level is needed to distinguish pests from non-pests. In turf, there is an abundant and diverse community of predatory ground beetles and spiders that are beneficial. Checking these traps regularly early in the spring will help to evaluate the start of billbug activity and increasing activity of adults as more are collected from week to week.

Spring Monitoring (cont'd)

Pitfall trapping can be paired with degree day (aka growing degree day) models that predict insect activity based on maximum and minimum temperatures and an insect's developmental temperature threshold. A model for bluegrass billbug was developed in Ohio and has been used elsewhere, but it has not been specifically validated in Utah. If you have not visited the Utah TRAPs website (http:// climate.usurf.usu.edu/traps.php), this is a good way to follow and have calculated degree days.

Deli cups are good examples of pitfall containers. The rim of the container should be even with the soil surface, otherwise insects will bump into the rim and walk away.

On the site, select the closest weather station on the map to your location, then the growing degree day (GDD) model (base 50), and select a March 1 start date. According to the Ohio model, first activity of adults is typically recorded between 280 and 350 degree days, with 30% of first adult activity occurring between 560 and 624 degree days.

Combining these monitoring tools can be useful for making management decisions. Some have used these methods to target active and incoming billbugs with border treatments of pyrethroid or organophosphate products. Preventative products (e.g., Acelepryn, Arena, Merit, and Meridian) are often used for turf insect management and target newly emerging larvae from eggs deposited in turf stems. Pairing these monitoring strategies with preventative applications is important for improving efficacy. Given the drastic differences in temperature and degree day accumulation from year to year for Utah, applications made too early will breakdown and will not be as effective when the majority of billbug larvae are feeding.

Alternatively, preventative applications made at peak adult billbug activity and afterwards may not be as effective since it takes time to move these products into the plant (Acelepryn, in particular, given its low water solubility) so that emerging billbug larvae can ingest the product as they begin feeding. As larvae become larger, they are less susceptible to these applications and how quickly they develop will be, in part, dependent on temperature.

Pitfall Trap Modifications
Add a sleeve insert to the trap for quick monitoring. This works well with deli cups where the rim of one cup is removed and slipped into the soil-bound, rimmed cup.
Poke small holes through the bottom of the container for water drainage.
Add a protective cover that sits above the trap to shelter from water.
Add a wire mesh cover so that small animals don't eat the trapped insects.

- Dr. Ricardo Ramirez
USU Extension Entomologist

Weeds and Weed Control

In the case of grasses, maintaining a healthy, competitive turf is your best offensive play for controlling weeds. In fact, proper cultural practices can reduce weed populations by as much as 70% or more, without the use of herbicides, so these practices should be the focus of any turf weed control program.

The first step to weed management in turf areas is to properly identify the weeds you're trying to control. The common types of weeds in turf are grasses, broadleaf weeds, and sedges. Weeds can be further categorized by their life cycles.

Annual weeds germinate from seed, grow, mature and die in less than 12 months. *Winter annuals* germinate in the fall, overwinter as plants, mature in the spring, flower and set seed, then die during the summer months (ex. annual bluegrass, common chickweed). *Summer annuals* germinate in the spring, grow during the summer months, flower and set seed in late summer and die in the fall. These are the weeds that are of most concern in the spring (ex. crabgrass, prostrate spurge).

Biennials weeds reproduce from seed and complete their life cycle in 2 years. They form rosettes and store food in their roots for one year, flowering the next year (ex. bull thistle).

Perennial weeds live for more than 2 years and may reproduce from either seed or vegetative structures such as roots, rhizomes, stolons, tubers, or bulbs. The ability to reproduce vegetatively is what makes perennial turf weeds more difficult to control. To complicate matters further, some perennials grow actively during cool weather, while others grow more actively during warm weather. *Simple perennials* overwinter by means of some vegetative structure, but reproduce mainly by seed (ex. dandelion). *Creeping perennials* can overwinter and produce new plants from vegetative structures (ex. bentgrass, nutsedge). Most perennials can also reproduce from seed.

Cultural Practices

As mentioned, cultural practices that increase the health and vigor of turf are going to discourage the incursion of weeds. These practices are generally intended to increase shade and crowding at the soil surface, preventing weed seedlings from germinating. Some cultural practices to consider include proper selection and establishment of grass species and varieties, proper fertilization, good mowing practices, and efficient irrigation.

Choosing grasses that are not well adapted to local environmental and use conditions results in a weak, thin stand that leaves openings for weeds to grow. Inadequate fertilization also results in decreased density. Consider soil testing to be certain you are applying the types and rates of fertilizers that you need. Nitrogen is particularly important for improving the color, quality and density of desirable turf species.

Weeds and Weed Control (cont'd)

One of the most common causes of weed invasion is improper mowing. Mowing turfgrasses too short results in weaker turf that invites weed encroachment due to the negative impact on turf roots. Frequent, shallow irrigation also encourages shallow turf rooting, which makes it susceptible to not only weed invasion, but insect and disease attacks as well. Irrigating to soil depths of 4-6" before signs of turf wilting will encourage deeper rooting and will help to prevent weed encroachment.

Chemical Control of Summer Annual Weeds

Summer annual grass weeds such as crabgrass are usually controlled with preemergence herbicides. A chemical barrier is formed in the soil prior to weed seed germination or emergence. The barrier prevents the weed seedlings from emerging and growing normally.

There are several factors to consider when choosing preemergence herbicides, but foremost is the safety of the chemical for the turfgrass species that are being treated. For examples, oxadiazon is generally safe for Kentucky bluegrass, ryegrass, and tall fescue, but it may damage fine fescues. Also keep in mind that new turfgrass seedlings may also be damaged by preemergence herbicides, and seeding during preermergence herbicide activity should be avoided. Siduron and Mesotrione are the only preemergence herbicides that may be safely used near seeding times.

The timing of preemergence herbicide application is critical to achieving good weed control. Generally, the best time to apply these materials is 10-14 days prior to the expected germination period in spring. Crabgrass will begin to germinate when soils are moist and the temperature in the upper inch of soil reaches 55-58° F at daybreak for 4-5 days.

Pre-emergent Herbicides* for Summer Annual Grass Control

Active Ingredient Name	Trade Name
Benefin	Balan DF
Benefin + trifluralin	Team
Bensulide	Bensumec
Dithiopyr	Dimension
Oxadiazon	Ronstar
Pendimethalin	Pendulum, Prowl
Prodiamine	Barricade
Siduron	Tupersan

Depending on the product, time of application and location, reapplication within 60 days may be required for season-long control. Consult product labels to determine if two applications are allowed or needed.

Goosegrass will germinate later than crabgrass, so preemergence applications of herbicides to control goosegrass should take place 3-4 weeks after the date of crabgrass control applications.

In all cases, the effectiveness of preemergence herbicides will depend on uniform application over the turf area at label-recommended rates. These herbicides will also be more effective if they are watered in within 2-3 days of application.

-Adapted from "Weed Management in Turf", Pennsylvania State University, College of Agricultural Sciences, Agricultural Research and Cooperative Extension

Pink Snow Mold (*Microdochium nivale*)

Favorable Conditions: cool (40-60ºF) and moist conditions, neutral to alkaline soils, high N applications in the fall.

Pink snow mold (PSM) can affect all cool-season turfgrasses, but damages bentgrass and annual bluegrass most severely. Snow cover is not necessary for PSM to occur, so it may be seen in the fall, but is more prevalent in the spring. Where recurrence is severe, preventative fungicide applications may be made in the fall. Symptoms include well-defined, circular patch clusters and white-pink mycelium on infected leaf blades. Patches of dead, matted leaf blades may also be visible.

Cultural Practices

Recovery from PSM damage in the spring will be quickened by raking and/or mowing to aerate the matted turf.

Resistant Turfgrass Varieties

Perennial ryegrass: Delray; Chewings fescue: Atlanta, Ruby; Red fescue: Dawson.

*Fungicide Options**

Tetrachloroisophthalonitrile (Daconil®), azoxystrobin (Heritage®), PCNB, or combination products (Instrata®).

Gray Snow Mold (*Typhula incarnata*)

Favorable conditions: cool (50-75ºF) and moist conditions, shade, heavy thatch, high N applications in the fall.

Gray snow mold (GSM) primarily affects tall fescue, bentgrass, and annual bluegrass. Circular patches of matted gray, tan or white grass may range from a few inches to several feet in diameter. Pin head-sized black or rust-colored dots may also be seen on the grass blades near patch edges.

Cultural Practices

Avoid heavy, late season nitrogen applications. Improve air and soil drainage. Remove excess thatch and prevent soil compaction with aeration. Rake and remove tree leaves from lawn before snowfall.

Resistant Turfgrass Varieties

Kentucky bluegrass: Adelphi, Baron, Bonnieblue, Galaxie, Glade, and Monopoly. In general, the fine fescues are more resistant to GSM than Kentucky bluegrass and bentgrass.

*Fungicide Options**

Fungicides are rarely needed to control GSM. However, if the disease has occurred repeatedly in the same areas over a number of years, a fungicide may be warranted. Banner®, Bayleton®, Rubigan®, azoxystrobin (Heritage®), or PCNB.

Recommended Cultural Practices for Spring

Seeding/Over-seeding

Spring provides the opportunity to seed new turfgrass areas or to over-seed areas that may have been damaged over the winter. The cool temperatures will promote germination and growth of cool season turf species such as Kentucky bluegrass, tall and fine fescues, and perennial ryegrass. Be aware, that there will be also be annual weed pressure at this time of year and consider your weed control options. Choose pest resistant or recommended turfgrass cultivars when possible.

Fertilization

Nitrogen is of primary concern in turfgrass fertilization. In the spring, apply 1 pound of slow release nitrogen (N) fertilizer per one thousand square feet of lawn area. This will help the grass to recover from winter damage and any stress that may have occurred. It will also be especially helpful for areas that have suffered damage due to diseases such as pink and gray snow mold. In a slow-release form, N fertilizer will provide a consistent source of nutrients as the growing season begins.

Aeration/Cultivation

Spring is also an ideal time to aerate your lawn if the soil is compacted or there is a significant layer of thatch beneath the grass. If the thatch underneath your lawn is more than 1/2 in. thick, consider core aeration to stimulate the natural decomposition process. Likewise, if you have a very fine-textured soil, compaction may occur, particularly in high traffic areas. Core aeration will help to alleviate compaction and will encourage turfgrass growth and recovery.

Relevant USU Extension Fact Sheets

Basic Turfgrass Care
- Mowing, fertilization, and irrigation

Turfgrass Cultivars for Utah
- Appropriate species and varieties for Utah

Billbugs
- Damage, diagnosis, and control options

Snow Mold on Turfgrasses
- Damage, diagnosis, and control options

*__Precautionary Statement__: All pesticides have benefits and risks, however, following the label instructions will minimize the risk and maximize the benefit. Pay attention to the directions for use and follow precautionary statements. Pesticide labels are considered legal documents containing instructions and limitations. Inconsistent use of the product or disregarding the label is a violation of both federal and state laws. The pesticide applicator is legally responsible for proper use.

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