MITE Management in Turfgrass

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EXTENSION

Plant-feeding mites can cause serious damage in turfgrass systems, and drought-stressed turfgrass is particularly prone to mite infestation. Mites are generally active in turfgrasses from spring into fall. They feed on plant sap and, in some cases, also inject toxins into plant tissues or manipulate plant growth, thereby producing characteristic symptoms. Some mites do not directly damage the turfgrass but instead become nuisance pests by moving from the lawn to houses and other buildings.

Worm-like (Eriophyidae) and spider-like (Penthanleidae or Tetranychidae) mites are important types of pests in turfgrass. Eriophyid mites are less than 0.2 millimeters (mm) long, which makes them microscopic. These mites are elongated, or tube-shaped, and target specific turfgrass species, including bermudagrass mite, *Eriophyes cynodoniensis* (Sayed), buffalograss mite, *Eriophyes slykhuisi* (Hall), and zoysiagrass mite, *Eriophyes zoysiae* (Baker, Kono, and O'Neill). Spider-like mites are about 1 mm in length and can be seen by using a hand lens (Figure 1). These mites include banks grass mite, *Oligonychus pratensis* (Banks), two-spotted spider mite, *Tetranychus urticae* (Koch), clover mite, *Bryobia praetiosa* (Koch), and winter grain mite, *Penthaleus major* (Dugés).

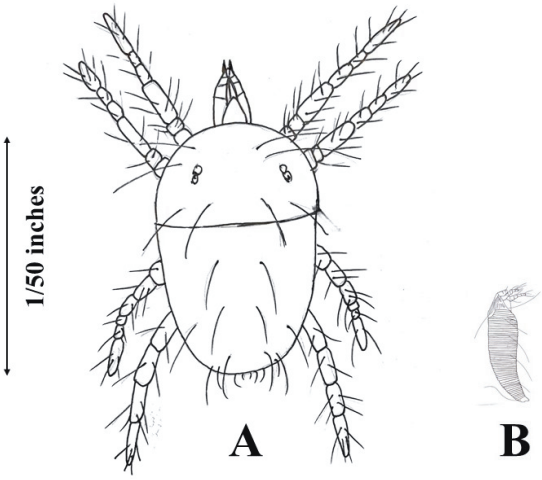

Figure 1. Size comparison of spider mite (A) and eriophyid mite (B).

Bermudagrass mites (Eriophyid)

Biology

The bermudagrass mite is active during spring and summer months in Georgia. It has a worm-like appearance, with mouthparts and two pairs of legs located at the anterior (front) end of the body (Figure 2). They undergo four life stages: egg, two nymphal stages, and adult (Figure 3). Females lay spherical eggs under the leaf sheath, which hatch in two to three days. The lifecycle is completed in seven to 15 days. This short lifecycle results in large mite populations during the summer.

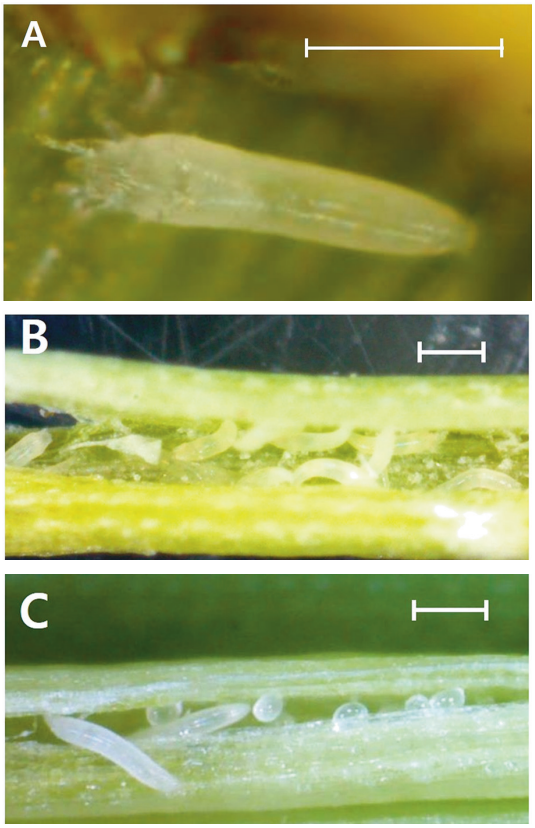

Figure 2. Adult zoysiagrass mite, *Aceria zoysiae* (A), and group of mites inside a rolled leaf (B and C; scale bar = 100 µm).

Photo: Kyeong-Yeoll Lee (Jung et al.*, 2019)*

Figure 3. Lifecycle of eriophyid mite.

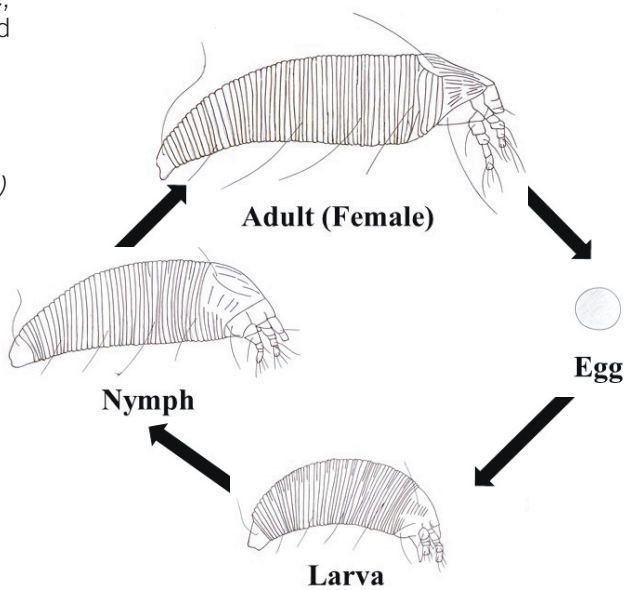

Illustration: Fawad Z.A. Khan

Damage symptoms

The bermudagrass mite damages only bermudagrass (*Cynodon* spp.), consuming the plant juices and injecting plant growth regulators into the plant tissues. Consequently, the internodal stem length shortens, the turfgrass appears stunted, and the leaves become bushy (Figure 4). The damage symptoms of bermudagrass mite feeding are leaf sheath swelling and witch's broom, which is damage characterized by compact, stunted stems. Symptoms of bermudagrass mite feeding start in the mid-spring and can result in brown patches and thinning bermudagrass.

Figure 4. Damage of bermudagrass mite, *Aceria cynodoniensis*.

Photo: Meg Williamson, Clemson University, hgic.clemson.edu/factsheet/bermudagrass-mite

Management

'Celebration' and common bermudagrasses are highly susceptible to bermudagrass mites. In one study, 'Tifsport', 'Cardinal', 'Midlawn', and 'GN-1' resisted mite infestation for up to nine weeks during the growing season. These cultivars may not be commercially available in Georgia. Planting resistant varieties can help to prevent mite infestation. Replanting with some other non-host grass species, such as zoysiagrass, is an alternate cultural management approach.

Symptoms of bermudagrass mite damage is often similar to drought symptoms. For proper identification of bermudagrass mite infestation, contact your local UGA Cooperative Extension agent. Cultural management practices include minimizing turfgrass stress through proper maintenance. Common miticides available to control other mites are not effective against this mite pest.

Figure 5. Attack symptoms of the zoysiagrass mite, including the characteristic "buggy whip" formation on the emerging leaves.

Photo: Kyeong-Yeoll Lee (Jung et al., 2019)

Zoysiagrass and buffalograss mites (Eriophyid)

Zoysiagrass and buffalograss mites are similar to bermudagrass mites. Zoysiagrass mites feed exclusively on *Zoysia* spp. and cause what is referred to as "buggy whip" symptoms (Figure 5) and marginal leaf curling rather than witch's broom symptoms. Buffalograss mite feeding causes symptoms much like bermudagrass mite damage, but these mites attack only buffalograss (*Bouteloua dactyloides*).

Two-spotted spider mites

Biology

The two-spotted spider mite (Figure 9) is similar in appearance to the banks grass mite. It is an important herbivore and a pest of turfgrass and ornamental plants worldwide. This species has five life stages: egg, larva, two nymphal stages (protonymph and deutonymph), and adult (Figure 7). The females are larger than males. The eggs are spherical and are transparent but turn darker before hatching. It takes about 8-17 days to complete the life cycle. During summer, all lifestages may be present at the same time. Two-spotted spider mites are resilient and adaptable compared to other mite species, and they attack more types of plants than any other mite.

Figure 6. Two-spotted spider mite, *Tetranychus urticae*.

Photo: Frank Peairs, Colorado State University

Damage symptoms

The two-spotted spider mite feeds from the lower surface of the leaf. Initially, the infestation affects the leaf blades but later spreads across the plant. Due to multiple generations and quick breeding time, two-spotted spider mites can heavily affect grass quickly. Severe infestations lead to yellowing and death of the grass.

Management

The two-spotted spider mite is naturally managed by several predatory arthropods, including phytoseiid mites. The use of non-selective acaricides is, therefore, not recommended as they can lead to the decline of beneficial mites. Excess fertilizer, especially nitrogen applications, can increase spider mite populations.

Clover mites

Biology

The clover mite (Figure 8) is a pest of various turfgrasses and ornamental plants. A typical spider mite has five life stages: egg, larva, two nymphal stages, and adult (Figure 7). The eggs hatch into red larvae with three pairs of legs, and the nymphal stages have four pairs of legs. The adult stage has prominent, long front legs, about 0.4 mm long, and are reddish-brown with featherlike abdominal plates. Clover mites produce eggs without mating, and the population is composed of only females, which lay up to 70 eggs during its lifetime. Clover mites are sensitive to high and low temperatures, so they aestivate (go dormant) and hibernate in the egg stage during the most extreme summer and winter months. Clover mites are most active during the spring and fall.

Figure 7. Life cycle of a spider mite.

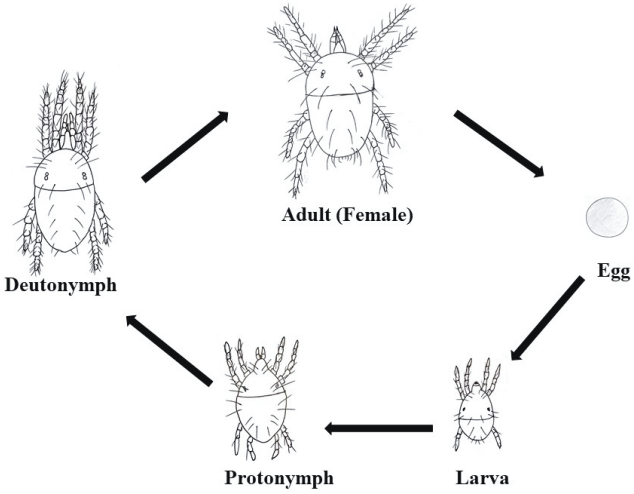

Illustration: Fawad Z.A. Khan

Damage symptoms

The rasping feeding habit of clover mites produces silver streaks on turfgrass leaf blades. Clover mite damage can be identified by discolored grass, with pale leaves, and eventual die-off. These symptoms are most prominent adjacent to buildings and are easily confused with winter injury as turfgrass emerges from dormancy. Clover mites can also become a serious nuisance pest during the fall and spring, as they migrate in large numbers to the sun-facing sides of buildings. They may wander into buildings through open doors, windows, cracks, and crevices. They do not bite humans or pets, but if crushed they leave behind a red stain on contact surfaces.

Figure 8. Clover mite, *Bryobia praetiosa*.

Photo: Whitney Cranshaw, Colorado State University, Bugwood.org

Management

There are no current studies on clover mite resistance of turfgrass species. However, like many mites, infestations are often linked to drought conditions. A good irrigation schedule can lower population levels and make the turfgrass more tolerant to feeding damage. No biological control agents, such as predators or parasitoids, have been reported on this mite. Pesticides do not offer effective control of this pest.

Banks grass mites

Biology

The banks grass mite is an important pest of ornamental grasses, forages, and turf (Figure 9). It has five life stages: egg, larva, two nymphal stages, and adult (Figure 7). The eggs hatch into the larval stage which has three pairs of legs, then they molt into protonymphs with four pairs of legs. Adult females are larger than males. Banks grass mites are mostly green, but during periods of food shortage or unfavorable weather, they may turn bright orange. The mites overwinter as adults. During spring, the females lay eggs on the surface of grass blades or on webs created by the mites. The eggs hatch within three weeks. During warmer weather, the lifecycle may be completed in one week. When ready to disperse, they move to the tip of the grass blade and "balloon" in the wind (Figure 10).

Figure 9. Banks grass mite, *Oligonychus pratensis*.
Photo: Shimat V. Joseph, University of Georgia

Damage symptoms

Damage starts with yellow stippling on the leaf blade. Prolonged feeding causes the leaf blade to wither and die. Feeding damage by banks grass mite is often confused with symptoms of drought on turfgrass.

Management

There are no studies that indicate resistance of any turfgrass species or cultivars against banks grass mite. Mite damage is closely associated with drought, so a proper irrigation schedule can help reduce mite populations and increase turfgrass tolerance to feeding damage. Banks grass mite populations may also be controlled by a predator, the phytoseiid mite, *Galendromus flumenis* (Acari: Phytoseiidae). It is unknown whether this predator is naturally present in Georgia turfgrass.

Figure 10. Banks grass mites dispersing from tip of a blade of grass.
Photo: Whitney Cranshaw, Colorado State University, Bugwood.org

Winter grain mites

Biology

The winter grain mite (Figure 11) is a pest of bluegrass, bentgrass, tall fescue, ryegrass, and other cool-season turfgrasses. The females can live up to 61 days, producing 30 to 65 eggs during a lifetime. The eggs hatch into larvae, which feed on the leaf blades, leaving behind silvery streaks. These mites are more active during late winter and early spring when temperatures are in the cooler range, indicating sensitivity to warmer temperatures.

Figure 11. Winter grain mite, *Penthaleus major*.
Photo: Yurika Alexander, Bugguide.net

Damage symptoms

The activity of winter grain mites causes severe damage to the leaf blade, leaving the tips silver. High feeding pressure can cause scorching and browning of the grass blades.

Management

Winter grain mites rarely cause turfgrass mortality, although the severity of feeding damage is difficult to predict. The primary management tactic is the use of adequate fertilizers when feeding damage is observed (based on soil test recommendations) to allow for quick grass recovery from the damage.

Quick identification of common mites in turfgrass

Mite pest	Appearance	Turfgrass affected	Damage symptoms
Bermudagrass mite	Worm-like	Bermudagrass	Leaf sheath swelling and witch's brooming symptoms in bermudagrass
Zoysiagrass mite	Worm-like	Zoysiagrass	Yellowing coupled with buggy whip symptoms or rolling of the marginal leaf
Buffalograss mite	Worm-like	Buffalograss	Leaf sheath swelling and witch's broom symptoms in buffalograss
Two-spotted spider mite	Spider-like	Most turfgrasses	Webbing, chlorotic stippling, yellowing, and plant death
Clover mite	Spider-like	Most turfgrasses	Silver streak development on the leaf blade, symptoms resembling winter injury
Banks grass mite	Spider-like	Kentucky bluegrass, bermudagrass, St. Augustinegrass	Chlorotic stippling on grass blades, webbing under turf tillers, tip yellowing and dieback (similar to drought)
Winter grain mite	Spider-like	Bluegrass, bentgrass, fescue, ryegrass	Silvery appearance on tips of blades, scorching, brown patch development, symptoms resembling winter injury

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