

Smutgrass Control in Perennial Grass Pastures¹

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Introduction

Smutgrass (Figure 1)—an invasive bunch grass, native to tropical Asia—is a serious weed of improved perennial grass pastures, roadsides, natural areas, and waste areas in Florida. Results of a survey conducted by the South Florida Beef Forage Program in 2003 indicated that smutgrass ranks as the second-most problematic weed species in Florida pastures, behind tropical soda apple (which is the most problematic weed). However, because practices to control tropical soda apple have been widely adopted in Florida since that survey was conducted, it is likely that smutgrass has by now become the most problematic weed species in Florida pastures.

Two smutgrass species are found in Florida—small smutgrass (*Sporobolus indicus*; Figure 2) and giant smutgrass, which is also known as West Indian dropseed (*Sporobolus indicus* var. *pyramidalis*; Figure 3). Small smutgrass was once the predominant smutgrass species throughout Florida. By the 1990s, however, giant smutgrass had become the most common smutgrass species throughout central and south Florida. Giant smutgrass continues to move northward in Florida.



Figure 1. Smutgrass infestations are common in bahiagrass pastures throughout Florida.

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Mature smutgrass plants are unpalatable to livestock, but some grazing of mature smutgrass does occur. New regrowth of smutgrass, similar in quality to that of bahiagrass, is grazed for two to three weeks after burning or mowing. However, it is difficult to graze cattle on smutgrass due to the need to rotate cattle among smutgrass-infested paddocks so that growth of the smutgrass does not reach a stage where cattle will not graze the plants.

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Figure 2. Small smutgrass, once the most troublesome smutgrass species in Florida, is still found throughout the state.
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Figure 3. Giant smutgrass first became a problem in south Florida and is spreading north through the state. In central and south Florida, giant smutgrass is more problematic than small smutgrass.
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Biology

Both smutgrass species—small and giant—are perennial bunch grasses. Average bunch size of small smutgrass is approximately 8–10 inches in diameter while giant smutgrass diameter is approximately 12–18 inches.

Small smutgrass has a compact seedhead (Figure 4) with the panicle branches touching the panicle. The small smutgrass seedhead is almost always infected with a black fungus. Small smutgrass plants produce approximately 1,400 seeds per seedhead and 45,000 seeds per plant.



Figure 4. Small smutgrass seedheads are appressed near the raceme, giving the seedhead a cylindrical appearance.
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In contrast, giant smutgrass has an open seedhead with panicle branches directed somewhat upward (Figure 5). The seedhead of giant smutgrass is usually not infected with the black fungus, but giant smutgrass plants are sometimes infected with this fungus. Little information exists concerning seed production of giant smutgrass, but some indications suggest this plant may be a more prolific seed producer than small smutgrass.

Seed production of both species occurs throughout the growing season, and new seedheads are produced shortly after mowing or burning. The seeds, which are red to orange in color, remain attached to seedheads for some time after maturing and are spread by adhering to livestock and machinery or by movement via water and wind.

Natural seed germination has been shown to average less than 9%, and seed are thought to remain viable in the soil for at least two years.



Figure 5. Giant smutgrass seedheads are open and generally not infested with the black smut fungus that typically infests small smutgrass, but sometimes smut fungus is also found on giant smutgrass.

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Control

Cultural practices to control smutgrass species have not been successful to date. Mowing decreases the diameter of the clumps, but often results in increased density. Burning is thought to increase the germination of seeds in the soil seed bank. However, both burning and mowing allow for approximately two to three weeks of grazing. Smutgrass forage quality during this two- to three-week window is often equal to or slightly greater than bahiagrass.

Chemical control of smutgrass includes applying hexazinone at 1.0 lb/acre (Velpar at 2 qt/acre; Velossa at 1.67 qt/acre) to small and giant smutgrass. A surfactant may be added to Velpar (Velossa contains a surfactant), but recent research has indicated that a surfactant is not necessary since the herbicide works primarily by root uptake. Mowing smutgrass prior to hexazinone application does not increase control. Hexazinone should be applied from June through September, when rainfall is typically sufficient to move the herbicide into the root zone for uptake. There is little foliar activity from hexazinone on smutgrass. If rainfall does not occur within a two-week period after application, the herbicide treatment will likely fail. There are no grazing

restrictions for hexazinone if the application rate is below 1.13 lb /acre. However, there is a 38-day haying restriction.

Hexazinone is a highly effective herbicide but is also expensive. Experiments were recently conducted to determine when hexazinone should be applied to maximize smutgrass control, especially in light of the best timing for application to realize return on the herbicide investment. An economic analysis indicated that hexazinone should not be applied until smutgrass density is approximately 50 percent of the area of a pasture. Applications of this herbicide prior to this level of infestation will not result in enough additional bahiagrass biomass (i.e., ability to increase stocking rate) to justify the cost of application. However, in terms of preventing smutgrass infestation, it may be economically justifiable to spray highly infested areas of a pasture, even before 50% of the entire pasture is infested.

Oak trees are extremely sensitive to hexazinone, and care should be taken to stay at least 100 ft away from oak trees. If smutgrass is present under or near oak trees, spot applications of 3% glyphosate are effective.

Forage Grass Tolerance

Bahiagrass will turn slightly yellow about 15–20 days after spraying with hexazinone at the recommended rates. However, bahiagrass will recover and turn dark green within about 40 days. This green color will be darker than the non-treated pastures. Bermudagrass will turn yellow with some necrosis for approximately 30 days before new green growth occurs.

Recommendations

General

- Do not apply hexazinone within 100 feet of oak trees, because application within this range may cause death of the tree.
- Read the Velpar or Velossa label for complete instructions on reapplication interval, safety, grazing, and haying restrictions.
- Cattle may graze treated pastures if applications are less than 4.5 pt/acre Velpar and 3.75 pt/acre Velossa.
- To realize economic gains from hexazinone application, smutgrass infestation should be approximately 50 percent of pasture.
- If the initial smutgrass density covers more than 80 percent of the pasture area (if 8 out of 10 regular steps touch the base of smutgrass plants), complete renovation of the pasture should be considered.

Bahiagrass/Bermudagrass Pastures

- Graze pasture in the spring until the beginning of the rainy season.
- Apply 2.0 qt/acre Velpar (1.67 qt/acre Velossa) during the summer rainy season but not later than the end of September. Apply when plants are actively growing and rainfall is dependable and consistent.
- Fertilization after hexazinone application will increase forage production and allow bahiagrass to quickly fill the open areas created by dying smutgrass.

Floralta Limpograss

- Hexazinone is not currently labeled for smutgrass control in limpograss.

Stargrass

- Hexazinone is not currently labeled for smutgrass control in stargrass.

Mulato

- Hexazinone is not currently labeled for smutgrass control in Mulato as it will be severely injured—DO NOT USE.

Pasture Renovation

In highly infested bahiagrass pastures where smutgrass groundcover exceeds 70%–80%, pasture renovation should be considered. Spray the entire pasture with 4 qt/acre glyphosate and begin tillage practices no earlier than three weeks after application. Repeated tillage will destroy newly emerged smutgrass and will aid in depleting the soil seedbank. The final seedbed should be a smooth, flat surface devoid of vegetation. For additional information on bahiagrass varieties and seeding rates, see EDIS publications AG342/SS-AGR-332, *Bahiagrass (Paspalum notatum): Overview and Management* (<http://edis.ifas.ufl.edu/ag342>) and AG107/SS-AGR-161, *Forage Planting and Establishment Methods* (<http://edis.ifas.ufl.edu/ag107>).

Even with repeated tillage following glyphosate application, smutgrass will likely emerge with bahiagrass, and smutgrass seedheads will be present by the following summer growing season. One year after seeding and during the rainy season, apply 0.5 lb/acre hexazinone (Velpar at 32 oz/acre or Velossa at 27 oz/acre). Recent research has suggested that hexazinone application one year after seeding resulted in >90% control of smutgrass for two years after application. However, the newly renovated pasture should be scouted the following year, and a second application of hexazinone may be warranted if smutgrass densities remain high.