

Figure 1. Guinea grass grows close to a citrus tree.

# **Controlling difficult** weeds in citrus groves

By Ramdas Kanissery, Camille McAvoy and Mongi Zekri

ome weeds are more difficult to manage in the production system than others due to their ability to grow in an available niche. If given a chance to establish, Guinea grass and goatweed can be the two most difficult weeds to manage. This is not just because they both are prolific seed producers, but

also due to their inherent biological ability to survive grove conditions.

#### **GUINEA GRASS**

Guinea grass (*Megathyrsus maximus*) was originally introduced as a forage crop from Africa in the 16<sup>th</sup> century. It is listed as a Category II on the Florida Exotic Pest Plant Council's list of invasive species in 2017. A Category II invasive species is defined as an "invasive exotic" that has yet to demonstrate damage to the ecosystem but has been found to be increasing abundantly in population.

In a citrus grove, Guinea grass can establish under the tree canopy next to the trunk (Figure 1). The location under the canopy and adjacent to the tree trunk can make it a difficult area to reach for adequate herbicide spray coverage. For any weed species, this is the optimal location as water and fertilizer are in abundant supply.

If given a chance to establish, Guinea grass and goatweed can be the two most difficult weeds to manage.

Guinea grass is a perennial that can grow up to 15 feet. It is characterized by the presence of strong underground roots, also known as rhizomes. Stems are often with dense patches of hair at the junction with leaf blades and may root at the nodes. Leaves, about 35 inches long and 1.5 inches wide, are hairy on the upper surface with rough margins.

The typical identifying feature of Guinea grass is its multi-branched flower head that is approximately 30 inches tall and 8 inches wide with green to purplish colored tiny flowers, also known as spikelets. The lowest branches on the seed head are always whorled. The flower head develops into a seed head with dull, white seeds.

The characteristics that make Guinea grass difficult to manage include the ability to tolerate a wide range of environmental stresses: drought, salinity, shading by other plant species, temperature fluctuations and a wide range in soil pH (3.8 to 8.4).

The extensive root system of Guinea grass can access water more than 3 feet deep. One of the peculiar features of this weed that is most recognizable is the ability to grow tall and produce biomass rapidly. It is not unusual to encounter Guinea grass overgrowing and shading out young trees in the grove.

#### GOATWEED

Goatweed (*Scoparia dulcis*), also known as sweet broom or licorice weed, is a native broadleaf perennial weed. It is found throughout the Southeast, ranging from Texas to South Carolina and down into Florida. Goatweed grows profusely in sandy soils, cultivated and non-cultivated, where moisture is abundant. This weed can be found in swales in South Florida groves or close to irrigation emitters at the dripline areas (Figure 2).

Mature plants reach heights of up to 2.5 feet. Leaves are 1.5 inches long by 1-inch wide, light green in color and serrated. Stems become woody with age, and mature leaves are linear with or without serrations. White flowers, about 0.2 inches long, are found in the leaf axils. Goatweed seed is very small and appears almost like dust to



Figure 2. Goatweed infests a citrus dripline area.



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the naked eye. Seeds are enclosed in greenish-yellow or brown seed capsules or pods (Figure 3). A single plant can produce several thousand seeds. This weed species is capable of blooming year-round in Florida.



Figure 3. Seed capsules in goatweed contain numerous tiny seeds.

The characteristics that make goatweed difficult to manage include prolific seed production and the ability of the seed to move with the wind, on equipment and on wildlife. This ability to produce and move easily allows for many seeds to be deposited into the soil "seed bank."

#### **MANAGEMENT METHODS**

Guinea grass and goatweed are relatively tolerant to many herbicides used in citrus groves. Moreover, they are very difficult to control with post-emergent herbicides if they reach a mature growth stage. Management efforts should focus on prevention and sanitation. Controlling these weeds at a very young stage before seed sets will reduce their future emergence in the grove. Guinea grass and goatweed can be controlled using post-emergent herbicides for burndown of growing plants and pre-emergent herbicides to prevent the emergence of new seedlings.

**Post-emergent herbicide options** for Guinea grass management include systemic herbicides (e.g., glyphosate) or selective grass killers such as fluazifop-p-butyl (Fusilade) or sethoxydim (Poast Plus). Attaining adequate spray coverage and adding a surfactant (e.g., crop oil concentrate, nonionic surfactant, etc.) and selecting an appropriate spray volume (20 to 40 gallons per acre) are crucial for the effective post-emergent control of Guinea grass.

Finally, plants that survive may be treated with spot spraying (1 percent volume per volume solution) of selective herbicides before flowering and setting seeds. Repeated applications, at approximately one-month intervals, will be required for heavy infestations.

Managing goatweed often requires higher application rates of postemergent herbicides. For example, more than 3 pounds per acre (not to exceed the label rate) acid equivalent of glyphosate is needed to control this weed effectively. Applying products (e.g., Landmaster or Treevix) containing a selective herbicide active ingredient for controlling broadleaf weeds also helps with goatweed management.

The post-emergent sprays must be

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applied when goatweed is in its early growth stage. The herbicide will be relatively ineffective once the stem has become mature and woody. For effective post-emergent spray programs, the addition of an appropriate surfactant and thorough spray coverage are required.

**Pre-emergent herbicides** flumoxazin (Chateau, 6 to 8 ounces per acre), when applied as a tank mix combination with indaziflam (Alion, 3 to 5 ouces per acre) or bromacil/ diuron (Krovar, 2 to 4 pounds per acre), were found to effectively suppress emergence of Guinea grass and goatweed in citrus grove experiments at the Southwest Florida Research and Education Center in Immokalee. In addition, when applying pre-emergent herbicides, complete uniform coverage of the soil surface is important for effective suppression of weed emergence.

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### For more

Additional information on the recommended rates of herbicides labeled for use in citrus can be found in the chapter on weeds in the **Florida Citrus Production Guide** (https://crec.ifas.ufl.edu/program-areas/ florida-citrus-production-guide).

Also, refer to **Maximizing Weed Control in Florida Citrus** (https:// edis.ifas.ufl.edu/hs237), a University of Florida Institute of Food and Agricultural Sciences Electronic Data Information Source publication, for more information.

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