

Doveweed (*Murdannia nudiflora*) Control in Warm-Season Turfgrass Species¹

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Target Audience

The present document describes key factors and practices that UF/IFAS Extension specialists, turfgrass professionals, landscape managers, and homeowners should consider when dealing with doveweed (*Murdannia nudiflora* [L.] Brenan) problems in the following warm-season turfgrass species:

- Common bermudagrass (*Cynodon dactylon* [L.] Pers.)
- Hybrid bermudagrass (*C. dactylon* × *C. transvaalensis* Burt-Davy)
- Centipedegrass (*Eremochloa ophiuroides* [Munro] Hack.)
- St. Augustinegrass (*Stenotaphrum secundatum* [Walter] Kuntze)
- Zoysiagrass (*Zoysia* spp.)

Introduction

Doveweed is an aggressive, naturalized summer annual weed species. It rapidly invades warm-season turfgrass species, especially in residential lawns, and few herbicides can effectively control it (Figure 1). Because of these challenges, a well-designed management strategy is necessary for doveweed control.

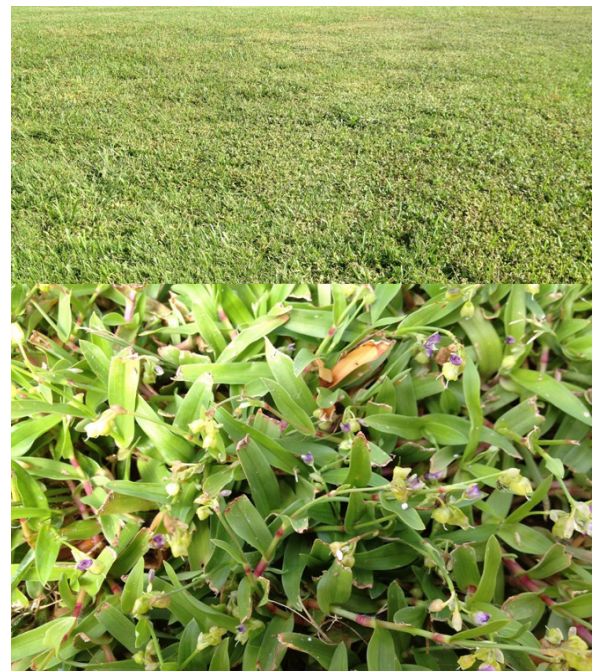


Figure 1. Doveweed patch in a St. Augustinegrass lawn (upper panel) and close-up of doveweed plants growing within the turf (lower panel).

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Identification

Identifying doveweed can be difficult because this weed looks like grass and has a leaf width similar to St. Augustinegrass and centipedegrass. Unless one takes a closer look, doveweed can go unnoticed when growing among these turfgrass species (Figure 1). Doveweed leaves

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are lanceolated; thick with a shiny, rubbery texture; and attached to creeping stems (stolons) that can produce roots from their nodes (Figure 2). This characteristic allows doveweed to be vegetatively propagated (i.e., spread without seeds); thus, mowers can spread pieces of stolons and disperse this weed even before its seed is produced.



Figure 2. Individual doveweed plant showing flowers, fruits, and stolons with root in nodes.

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Doveweed flowers have three clearly visible purple (sometimes blue) petals, and the fruit is a spherical capsule that usually has three seeds. The seeds can be dispersed by mowers and by moving water.

Growth Requirements

Doveweed seeds start germinating late in the spring, when soil temperatures reach 65°F–70°F. Therefore, seedling emergence will occur when the effect of preemergence (PRE) herbicides applied earlier in the spring (e.g., February or March) for crabgrass and goosegrass may be fading out, thus increasing the chances for escapes (i.e., weed emergence after herbicide treatment).

Doveweed prefers wet areas, so drainage issues or overwatering will favor the establishment and growth of this weed. These conditions also limit turf growth, creating the perfect conditions for the displacement of the turf by this weed. Reducing wet conditions and avoiding overwatering are two effective ways to manage doveweed. After doveweed plants are established, they will grow vigorously during summer because they are well adapted to warm environments. Their growth will start to slow when temperatures fall below 70°F, and this is usually the time when seeds are produced.

Control

The best control against doveweed is a strong PRE herbicide program. Several PRE herbicides provide the highest levels of control if applied at the right time. For St. Augustinegrass and centipedegrass particularly, more PRE than postemergence (POST) herbicides can be used safely without causing turf injury.

To design an herbicide program, one must consider multiple factors and determine which herbicides will complement each other. All these details cannot be covered in this document. However, the following examples can be key components of a strong herbicide program against doveweed.

ATRAZINE/SIMAZINE

Atrazine is an herbicide that provides good levels of PRE and POST control because it is absorbed both by emerging seedlings and the roots of established doveweed plants. However, atrazine is most effective when applied right before doveweed begins to emerge (late spring). Atrazine should not be used on bermudagrass because it will significantly harm the grass.

Simazine is an herbicide that acts similarly to atrazine and can be safely used on bermudagrass. When compared to atrazine and other herbicides, simazine has the advantage of being absorbed by both roots and leaves of established plants, so it eliminates weed leaves quickly. For either of these herbicides, a maximum rate of 1 lb of active ingredient (ai) per acre (ac) and no more than 2 lb ai per year are recommended. Otherwise, the turfgrass will be injured and its growth and aesthetics reduced. Also, these herbicides can move easily through the soil, so using higher rates will increase the risk of herbicide movement to ground water.

DIMETHENAMID-P

Dimethenamid-P (Tower) is a PRE herbicide that helps prevent doveweed establishment. It is important to make sure that the turf is well established and growing actively before using this herbicide. Typically, two sequential applications at a medium rate rather than one application at a high rate produces better weed control, because the second application controls those plants that were not killed by the first application. Thus, two applications of 0.98 lb ai/ac at a 5- to 6-week interval are recommended.

S-METOLACHLOR

S-metolachlor (Pennant Magnum) is a PRE herbicide that will control doveweed. To avoid damaging turfgrass, do not apply more than two applications of 2.5 lb ai/ac

of S-metolachlor per year. For St. Augustinegrass, this herbicide is only registered for use in sod farms.

2,4-D AND DICAMBA

Products containing 2,4-dichlorophenoxyacetic acid (2,4-D) and dicamba provide fair POST control of doveweed. However, repeated applications or applications in combination with other herbicides are required for adequate control. There are commercial products with formulations that combine 2,4-D and dicamba with herbicides such as mecoprop-p and carfentrazone (Quicksilver). These types of three- or four-way combinations can provide enhanced doveweed control. St. Augustinegrass is partially susceptible to these herbicides, especially 2,4-D and dicamba, and some commercial products even recommend on their labels not to use these herbicides on the 'Floritam' cultivar due to its high risk of injury. For this reason, avoid applications when the turf is stressed (e.g., high temperatures, drought). Turf may show some yellowing after herbicide treatment, but it should fully recover after 2 to 3 weeks. Do not use more than 0.5 lb acid equivalent (ae) of 2,4-D or 0.11 lb ae/ac of dicamba per application.

THIENCARBAZONE AND IODOSULFURON

Herbicides with thiencazone and iodosulfuron (e.g., Celsius, Tribute Total) can also provide good POST control of doveweed at rates of 0.43 and 0.01 oz ai/ac, respectively. These are systemic herbicides that move within the doveweed plant and reach growing points at the stolons and roots. Although the action of these herbicides is slow and symptoms of injury may take 2 to 3 weeks to appear, these herbicides combined with 2,4-D or dicamba can help prevent regrowth and recovery of doveweed plants.

METSULFURON-METHYL

Metsulfuron-methyl (e.g., Manor) combined with dicamba can provide effective POST doveweed control (Figure 3). This combination of herbicides is safe for bermudagrass and zoysiagrass. However, metsulfuron-methyl and dicamba can stunt and discolor St. Augustinegrass and centipedegrass for two to three weeks, so use them on these species with caution.

GLYPHOSATE

If the doveweed is limited to a small area but has fully displaced the turf, a directed application of glyphosate (RoundUp) at 1 lb ae/ac followed by re-sodding the area is more effective. Except in the case of bermudagrass, applying atrazine to the established sod is recommended to control new emerging doveweed plants.

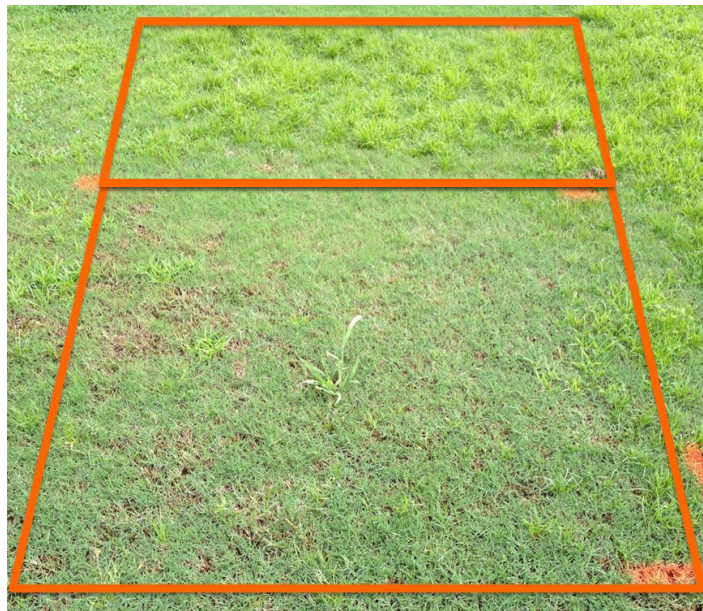


Figure 3. Doveweed populations in bermudagrass after treatment with (bottom) and without (top) metsulfuron-methyl (0.3 oz ai/ac) in combination with dicamba (2 oz ae/ac) plus non-ionic surfactant (0.25% v/v) four weeks after treatment.

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Cultural Practices

Light to moderate nitrogen fertilization with or immediately following the herbicide application will help the turf recover from the effect of the herbicide, grow faster, and shade the surviving weeds, which usually yields better and faster control.

Mowing is another important factor in managing doveweed. Mowing turf too short and too frequently will favor doveweed because its leaves will begin to grow horizontally to avoid the mower blades. These low-growing leaves will shade turf leaves and make it harder for the turf to regrow. Eventually, doveweed plants will outcompete and displace the turf. For centipedegrass, leave 1.5 to 2.5 inches of turf; for zoysiagrass, leave between 1 to 2.5 inches; and for St. Augustinegrass, remove no more than a third of the leaf blade and leave at least 3.5 to 4 inches ('Floritam,' 'Raleigh,' and 'Palmetto') or 2.0 to 2.5 inches ('Captiva,' 'Delmar,' 'Seville,' and 'Sapphire'). In this way, the turfgrass will maintain healthy growth and will have a better chance of out-competing doveweed for light. (For more information on St. Augustinegrass management, refer to <http://edis.ifas.ufl.edu/lh010>; on centipedegrass, <http://edis.ifas.ufl.edu/lh009>; and on zoysiagrass, <http://edis.ifas.ufl.edu/lh011>.)

The mowing height recommendation for bermudagrass varies depending on the cultivar and situation (e.g., golf course, sod farm, athletic field, or recreational area). However, in moderate management situations, bermudagrass

should be mowed at 0.75 to 1.5 inches. (For more details on bermudagrass management, refer to <http://edis.ifas.ufl.edu/lh007>.)

It is difficult to completely eliminate a doveweed problem in a single year, especially when the populations of this weed are high. Doveweed seeds can survive in the soil for several years, so doveweed management should be planned for two or three years. For these reasons, a set of sequential, complementary actions, including turf management practices and herbicide applications, are the best strategy. It is important to combine sequences of PRE and POST herbicide applications such that the herbicide is active when the doveweed is most susceptible (early growth stages); following applications will kill the surviving plants. Finally, once herbicides have taken effect, a healthy, aggressive turfgrass is the best defense against doveweed.