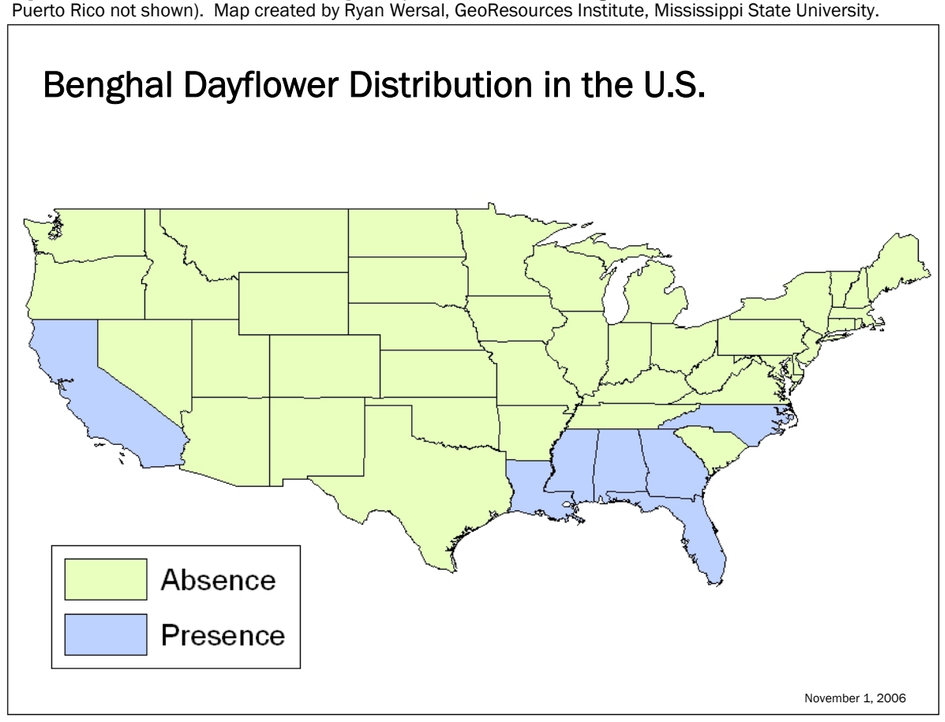
HOW YOU CAN HELP

Currently, an effort is being made by Mississippi State University and the USGS to determine the distribution of Benghal dayflower in the Mid-South. This information, which is being maintained in an online database by Mississippi State University (www.gri.msstate.edu), is important to track and monitor distribution and develop appropriate strategies for management. Please send reports of suspected Benghal dayflower populations to: **Victor Maddox**, GeoResources Institute, Box 9555, Mississippi State, MS 39762-9652, or submit information via the online form at www.gri.msstate.edu. Questions can be submitted at the online website or to **Victor Maddox** at Ph.: 662-325-2123, E-mail: vmaddox@PSS.MsState.Edu; or to **John Madsen** at Ph. 662-325-2428, E-mail: jmadsen@gri.msstate.edu.

There are other ways to help with this effort, as well:

- Do not move soil or plants from infested areas.
- Report suspected plants to the appropriate landowner and/or authority.

Fig. 6. Current known distribution of Benghal dayflower (*Commelina benghalensis* L.) in the United States (Hawaii and Puerto Rico not shown). Map created by Ryan Wersal, GeoResources Institute, Mississippi State University.



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INVASIVE SPECIES FACT SHEET

Benghal dayflower [*Commelina benghalensis* (L.) Small]

Description, Distribution, and Management

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INTRODUCTION

Benghal dayflower (*Commelina benghalensis* L.) [Syn. *Commelina benghalensis* L. var. *benghalensis* C.B. Clarke], also known as tropical spiderwort, is a herbaceous perennial first observed in Florida in 1928, then in Georgia in 1967. This Federal noxious weed is native to Africa and tropical Asia and, since its introduction, has become a serious pest in Florida and Georgia. Recently, it was reported in California, Louisiana and North Carolina. In August 2006, it was found in Jackson County, Mississippi. This invasive plant can tolerate a wide range of environmental conditions and can establish dense, monospecific stands, particularly in Roundup Ready® cropping systems.

TAXONOMY, INDENTIFICATION AND BIOLOGY

Benghal dayflower is in the Commelinaceae Family. There are around 170 species of *Commelina* L. worldwide, most native to Africa. Nine species exist in the United States, with the highest number of species in Florida. *Commelina benghalensis* var. *benghalensis* is widespread worldwide including the United States while *C. benghalensis* var. *hirsuta* is widespread only in Africa. *Commelina benghalensis* var. *benghalensis* is discussed in this factsheet.

Other species that occur in the mid-south include Asiatic dayflower (*C. communis* L.), Carolina dayflower (*Commelina caroliniana* Walt.), common dayflower (*C. diffusa* Burm. f. var. *diffusa*), Virginia dayflower (*C. virginica* L.), and whitemouth dayflower (*C. erecta* L.). All have flowers with two to three bright blue petals (Figure 1). However, only Benghal dayflower has subterranean flowers (Figure 2). Both Benghal dayflower and Virginia dayflower may produce underground stems and red hairs, but blue petals and proportionally longer leaves on Virginia dayflower help differentiate it from Benghal dayflower which has broader leaves and purple-blue petals. Additionally, Benghal dayflower has short hairs (pubescence) on the upper leaf surface, unlike Virginia dayflower which is typically scabrous.

(Continued on page 2)

Fig. 1. Ohio spiderwort (*Tradescantia ohiensis* Raf.), a true spiderwort (top center) compared to two flowers of Asiatic dayflower (*Commelina communis* L.), a true dayflower (bottom right and left). Notice the blue color and variable shape of the petals and the narrow leaf of the Asiatic dayflower. Photo by Victor Maddox, GeoResources Institute, Mississippi State University.

Fig. 2. Underground stolons and subterranean flowers (cleistogamous) of Benghal dayflower (*Commelina benghalensis* L.). Photo by Byron Rhodes, The University of Georgia, www.forestryimages.org.

Benghal dayflower [*Commelina benghalensis* (L.) Small]

(Continued from page 1)

Benghal dayflower is an annual or perennial herb with simple, alternate leaves (Figure 3), approximately 2 inches long (~ 5 cm) and nearly as wide (~ 3 cm). Leaves and above-ground stems have short hairs (pubescent) and longer red hairs on the leaf sheath and petiole margins (Figure 4). Stems often root at the nodes and purple-blue aerial flowers (chasmogamous) (Figure 5) may be produced in the leaf axils. Underground stolons can produce subterranean flowers (cleistogamous) (Figure 2). Both types of flowers can produce seed, although seeds are dimorphic. Aerial seeds are small (~2 mm) with five seeds per capsule, while subterranean seeds are large (~3 mm) with three seeds per capsule. Both have a rough surface. Plants, flowers, seeds, and chromosome number can be variable.

Plants reproduce both sexually and asexually. A single plant can produce 1600 seeds. Fresh, aerial seed are dormant because of an impermeable seed coat. Dormancy can be broke by scarification. The smaller aerial seed tend to germinate at shallower soil depths (< 5 cm) compared to larger subterranean seed (< 14 cm). Seasonal germination can occur over an extended period of time.

Stem cuttings on the soil surface can regenerate easily, although cuttings buried deeper than about one inch (2 cm) fail to regenerate. Broken stems may persist on the soil surface for several weeks or months in low moisture conditions and easily form leaves after moisture becomes available.

Fig. 4 Red hairs on leaf sheath and petiole of Benghal dayflower (*Commelina benghalensis* L.). Note shorter hairs (pubescence), as well. Photo by Herb Pilcher, USDA, Agricultural Research Service, www.forestryimages.org.

Fig. 3. Leaves of Benghal dayflower (*Commelina benghalensis* L.) showing leaf shape and arrangement. Photo by Stanley Culpepper, The University of Georgia, www.forestryimages.org.

Fig. 5. Purple-blue aerial flowers (chasmogamous) of Benghal dayflower (*Commelina benghalensis* L.). Photo by Herb Pilcher, USDA, Agricultural Research Service, www.forestryimages.org.

CONTROL AND REGULATION

Benghal dayflower is a Federal noxious weed, which means it is a violation of Federal law to transport this plant across a state line. In the southeastern United States, it is listed as a noxious weed in Alabama, Florida, North Carolina, and most recently, Mississippi.

Hand removal may be possible for very small infestations. Seedlings in moist soil can often be pulled up carefully to ensure complete removal. Early detection and eradication is important, since larger infestations may require broadcast herbicide applications.

Control of Benghal dayflower (*Commelina benghalensis* L.) populations can be achieved by moldboard plowing plant material more than 1 inch below the soil surface. Several herbicides, such as MSMA, Roundup (glyphosate), and 2,4-D provide effective postemergence control when applied to small, actively growing plants. Since Benghal dayflower has shown tolerance to Roundup, caution should be taken regarding application rates and plant maturity. Because of the high germination rates of seed and the length of germination periods, the key to season-long control of Benghal dayflower is to include a herbicide that provides residual preemergence control. Dual Magnum (s-metolachlor) and other chloroacetamide herbicides, such as Lasso (alachlor) and Outlook (dimethanamid) are effective, although Dual Magnum provides the longest residual control. Herbicides frequently used for noncropland weed control are currently being evaluated for control of Benghal dayflower. Check with your local county extension office for additional information.

DISTRIBUTION AND ECOLOGY

Benghal dayflower is native to Africa and Tropical Asia, but has become a weed worldwide in the tropics and subtropics. In the United States, it has been reported in California, Florida, Georgia, Louisiana, Mississippi, and North Carolina (Figure 6). It occurs in both wet and dry lands, but grows best in moist, highly-fertile soils. Because it has exhibited tolerance to Roundup®, is has become particularly troublesome in Roundup Ready® cropping systems in the United States. It is troublesome in cotton, soybeans, peanuts, and, to a lesser extent, corn. However, it can also be a weed in natural areas, roadsides, waste places, along dikes, irrigation ditch banks, field borders, wet pasturelands and gardens. It has also been found in nursery containers, another possible means of movement.