

## Benghal dayflower (*Commelina benghalensis* L.), Identification and Control<sup>1</sup>

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### Introduction

Benghal dayflower, (also known as tropical spiderwort) is an annual/perennial weed that has become increasingly common in agronomic production systems. Benghal dayflower was first observed in the early 1990's by both university researchers and crop producers, but was only found in limited areas. Since this time it has continued to spread until it is now frequently observed throughout the panhandle and central Florida. Benghal dayflower is currently listed by the USDA as appearing in 12 Florida counties; however, this number is likely to be far greater.

Benghal dayflower is an aggressive weed that produces aerial (above ground) and subterranean (below ground) flowers. This results in viable seed being produced both above and below ground. Benghal dayflower also possesses the ability to root at the nodes and can be propagated from cut stems. Therefore, light cultivation can often break plant parts and increase the area of infestation.

Although benghal dayflower is difficult to control, early identification and proactive management can greatly reduce its impact on crop yields.

### Identification

Benghal dayflower has often been confused with spreading dayflower (*Comellina diffusa*) and asiatic dayflower (*C. communis*). However, there are three characteristics that separate benghal dayflower from the other dayflowers:

1. *Presence of leaf hairs*--Dayflower species possess a thick, waxy, leaf that lacks hairs (glabrous). Benghal dayflower, on the other hand, will often produce hairs on the young leaves and petioles.
2. *Flower color*--The flower color of many dayflower species is blue, while benghal dayflower is more purple/lavender.
3. *Root structure*--Unlike all other dayflower species, benghal dayflower produces underground flowers. These flowers are easily

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seen by examining the roots. These flowers will appear as “swollen nodes”.



**Figure 1.** Common or Asiatic Dayflower: *Commelina communis*. Credits: Virginia Tech Weed Identification Guide



**Figure 2.** Tropical spiderwort (*Commelina benghalensis*, L.). Note leaf hairs, purple/lavender flower. Credits: Stanley Culpepper, University of Georgia



**Figure 3.** Tropical spiderwort roots showing swollen nodes. Credits: Stanley Culpepper, University of Georgia

## Control

It has been questioned why benghal dayflower has suddenly emerged as a problem weed. Although the exact answer to this question is currently unknown, some of our current crop production practices seem to be well suited for benghal dayflower growth. It has been observed that minimum-tillage production systems encourage greater germination and growth of this weed. Extreme tolerance to glyphosate has also been documented. Therefore, strip-till production and use of glyphosate will lead to an ideal environment for benghal dayflower to grow after glyphosate eliminates competition from other weeds. Another observation is that benghal dayflower germinates later in the summer, but grows poorly in low light environments. Knowing this, using earlier planting dates to form a dense crop canopy prior to germination can suppress benghal dayflower growth and establishment.

Although tillage, rapidly growing crop varieties, and earlier planting dates improve benghal dayflower control, the use of herbicides is still required. Below are the most current and effective herbicide management options that have been developed for control in cotton and peanuts.

## Cotton

One difficulty in controlling tropical spiderwort is tolerance to applications of Roundup (or other glyphosate-containing products). Although Roundup can control benghal dayflower when applied to 1-2” weeds, the lack of soil residual activity will often result in approximately 50% control by late season. Therefore, other herbicides must be included to improve control and provide soil residual activity. The addition of Staple or Dual Magnum has been shown to improve benghal dayflower control over glyphosate alone when applied early postemergence. However, adding 1.33 pt/A of Dual Magnum to glyphosate is currently the best control option. Glyphosate + Dual will often provide near 80% control. However, Dual will only control plants that have not yet emerged, so applications must be made early in the growing season to be effective. It must also be noted that Dual Magnum will commonly

cause leaf burn when applied to small cotton, but recovery will often occur within 7 days of application. Additionally, Dual Magnum CANNOT be applied prior to cotton emergence or severe cotton injury will result.

Post-directed applications may also be necessary if large populations of benghal dayflower exist. The key to controlling emerged plants is early applications to small weeds. Mid-season applications of Roundup + Valor or MSMA + Valor will provide the most effective control, but cotton must be 16" in height before using Valor. Delaying applications until later in the season (treating larger plants), the effectiveness of the herbicide application will be reduced.

Dual Magnum will be the foundation of benghal dayflower control programs. However, Dual Magnum applied early postemergence will generally not be sufficient for season-long control. Therefore, 1 to 2 post-directed applications targeting small plants will generally be most effective to control escaped plants.

### **Peanuts**

Controlling benghal dayflower in peanuts will require multi-step management practices that includes both cultural and herbicidal means. Implementing twin-row planting is one cultural practice that has been shown to improve benghal dayflower control by 8% when averaged over several herbicide combinations. This is due to more rapid cover of the soil surface with twin rows than peanuts planted in single rows. The coverage will shade the soil surface and interfere with weed seed germination and emergence.

A successful herbicide program, as in cotton, will likely require an early-season application of Dual Magnum. Preemergence applications of Dual Magnum are not as effective. However, data collected in Florida and Georgia have shown that Gramoxone Inteon (8 oz/A) + Dual Magnum (1.33 pt/A) will provide approximately 90% control when applied at-cracking. Gramoxone Inteon + Dual Magnum may be applied up to 28 days after cracking, but early applications (7 to 14 days after cracking) will generally provide better weed control and reduce

peanut injury. Strongarm herbicide has also proven to be effective at controlling, or suppressing, benghal dayflower growth. A 24C label is available for this use in Florida and Georgia only.

Benghal dayflower control from mid- or late-season herbicide applications have proved to be inconsistent and are directly related weed size at time of treatment. Cadre or Classic + 2,4-DB can provide some control if applied when benghal dayflower is small. However, these herbicides should be used as part of a control program that contains Gramoxone + Dual Magnum.

### **Conclusion**

Benghal dayflower is a highly competitive and difficult-to-control weed that is relatively new to crop producers in Florida. However, effective control can often be attained if early scouting, cultural, and herbicidal management schemes are implemented. In extreme conditions deep tillage may be helpful, but this should be used only if herbicidal and cultural management programs have proved ineffective.

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