Commelina benghalensis 简体中文 正體中文

System: Terrestrial

Kingdom	Phylum	Class	Order	Family
Plantae	Magnoliophyta	Liliopsida	Commelinales	Commelinaceae

Common name

Synonym

Commelina pyrrhoblepharis , Hassk. (1867)
Commelina canescens , Vahl
Commelina cucullata , L.
Commelina delicatula , Schltdl.
Commelina kilimandscharica , K. Schum.
Commelina mollis , Jacq.
Commelina nervosa , Burm. f.
Commelina procurrens , Schltdl.
Commelina prostrata , Regel
Commelina turbinata , Vahl

Similar species

, Commelina virginica

Summary

Believed to be native only to tropical Asia and Africa, *Commelina benghalensis* is a widely distributed herbaceous weed that commonly invades agricultural sites and disturbed areas. Though not commonly reported to invade natural areas, this rapidly reproducing plant is considered one of the most troublesome weeds for 25 crops in 29 different countries.

view this species on IUCN Red List

Species Description

Commelina benghalensis can be an annual or perennial herb. Leaves are ovate to lancolate, 2.5-7.5cm long, 1.5-4cm wide, with parallel veination, entire leaf margins, and pubescence on top and bottom. The leaf sheath is covered in red and sometimes white hairs at the apex which is a primary identification factor for this species. Stems can be erect or crawling along the ground rooting at the nodes or climbing if supported, 10-30cm in height, 20-90cm in length, covered in a fine pubescence and dichotomously branched. Flowers are produced in spathes often found in clusters, funnel shaped, fused by two sides, 10-20 mm long, 10-15 mm wide, on peduncles 1-3.5 mm in length. Aerial flowers are staminate, perfect, and chasmogamous with 3 petals 3-4 mm long. The upper two flower petals are blue to lilac in color, with the lower petal lighter in color or white and much less prominent. Seeds are rectangular, 1.6-3 mm in length, 1.3-1.8 mm wide, brown to black in color, and have a netted appearance (Prostko, 2005; Webster *et al*., 2005).

Notes

The incredible growth in the presence of *Commelina benghalensis* in the south-eastern United States since the mid 1990's has been associated with a number of drastic changes in cropping systems. Among these changes are the elimination of use of preemergence herbicides with soil residual activity in cotton crops, the increased use of reduced tillage along with the elimination of cultivation as a method for controlling weeds, reliance on glyphosphate based systems in cotton or glyphosphate resistant cotton, and a large increase in cotton acreage in Georgia (Webster, 2007; Webster, 2006).

Lifecycle Stages
Commelina benghalensis grows as a perennial in tropical climates and as an annual in the temperate United States. This difference in lifecycle can be associated with a difference in ploidy levels, with tropical *C. benghalensis* being hexaploid and temperate being diploid. Tropical hexaploid plants rarely have subterranean flowers. *C. benghalensis* can produce seeds within 40-45 days of emergence and has multiple generations per year. Subterranean flowers develop about 6 weeks after emergence, aerial flowers develop about 8-10 weeks after emergence. Fruits are produced within 3 days after flowering, with viable seeds within 25 days after flowering. There are four categories of seeds, large and small aerial and large and small subterranean. Small aerial seeds account for 73-79% of all seeds found. Small aerial seeds have a stronger dormancy than large. Clipping the seed coat or exposing the seeds to temperatures in excess off 90 degrees Celsius for 2 hours removed dormancy for all seeds. The optimal temperature for germination of aerial seeds is 18-25 degrees Celsius and 21-28 degrees Celsius for subterranean seeds. The optimal depth for emergence is 2 inches, with larger seeds emerging from depths up to 6 inches (Flanders, 2007; Prostko, 2005; Webster *et al*., 2005).

Uses
In Africa and India the leaves and stems of *Commelina benghalensis* are chopped and cooked as vegetables and used as feed for livestock. Different components of *C. benghalensis* are also used as a medicinal for ailments such as sore feet, sore throat, burns, eye irritation, thrush in infants, and stomach irritation. In southern Africa, *C. benghalensis* is used to combat infertility (van der Burg, 2004).

Habitat Description
Commelina benghalensis is often found on disturbed sites, forest edges, road sides, agricultural sites, and home gardens. Vegetation and flower growth are optimal between 30-35 degrees Celsius but can grow between 20-40 degrees Celsius (van der Burg, 2004; Webster *et al*., 2005).

Reproduction
Commelina benghalensis acts as a herbaceous perennial in its native range and as an annual weed in the southeastern United States. Propagation of *C. benghalensis* can be both sexual and vegetative, and can possess both aerial and subterranean flowers. Aerial flowers are chasmogamous and self fertilizing, producing one large seed and 4 small. Subterranean flowers are cleistogamous (self fertilizing and do not open), producing one large seed and two small. *C. benghalensis* has the ability to germinate throughout the growing season. The rate of reproduction of this plant rivals that of any agronomic weed (Prostko, 2005; Webster *et al*., 2005).

Nutrition
In its native range, *Commelina benghalensis* is a rainy season weed which requires moist soil conditions for establishment. Once established it has a high drought tolerance. *C. benghalensis* grows well on all soil types of variable pH and moisture levels (NAPPO, 2003; Webster *et al*., 2005).

General Impacts
Commelina benghalensis is listed as one of the world's worst weeds, affecting 25 crops in 29 countries (Webster *et al*., 2005). It has been reported as affecting the following crops: rice, tea, coffee, soybeans, cotton, maize, sugarcane, cassava, peanuts, pineapples, cowpeas, sorghum, roselles, barley, jute, sisal, beans, sweet potatoes, grapes, cereals, groundnut, chili, lemon, navel orange, tomato, balsam apple, apricot, and peach (NAPPO, 2003).

Management Info
Preventative measures: Preventing dense populations of *Commelina benghalensis* from establishing in agricultural areas helps avoid the accumulation of large seed banks. Cultivation of a cover crop can be used to smother emerging and established populations of *C. benghalensis*, however mechanical or chemical removal may be needed prior to planting the cover crop. Increasing the density of plants in soybeans and doubling rows in corn helps control and shade out *C. benghalensis* (Flanders, 2007; NAPPO, 2003; Prostko, 2005).
Physical: Removal by pulling or use of a tool such as a hoe, or mechanical cultivation have a varying, but usually low, degree of success due to the regenerative properties of *C. benghalensis*. In one study, comparing conventional tillage to strip tillage, conventional tillage was shown to have a much lower density (3 plants/m2 versus 60 plants/m2) of *C. benghalensis* in a weed count performed after peanuts and cotton were planted (Brecke, 2007; NAPPO, 2003).
Chemical: The use of herbicides with residual activity to combat *C. benghalensis* is often most effective because of the weed's ability to germinate through out the growing season. *C. benghalensis* is resistant to glyphosphate in \"Roundup Ready\" cotton . In one study, adding metachlor to the first glyphosphate application increased control to 96% under conventional tillage and 75% under strip tillage with 50% soil disturbance. According to Prostko (2005), \"Dual Magnum\" is the most effective residual herbicide to control *C. benghalensis* in cotton crops. Prostko also suggests \"Dual Magnum\" application in peanuts for successful suppression, especially if at least 0.5 inches of rain or irrigation is received within 7-10 days. Early post-emergence applications of herbicide should be performed before seedlings of *C. benghalensis* reach 3-4 inches (Brecke, 2007; Flanders, 2007).
Integrated management: Pieces of cut stems of *C. benghalensis*, usually cut during physical eradication or cultivation, have the ability to survive a short period of drought stress and resprout. Stem segments must desiccate to a moisture content of 50% for a period of 30 days to reach a 0% regeneration rate, however the size of the stem segment may lengthen the period of viability (Grey, 2007).

Principal source: Webster, T.M. and Burton, M.G. and Culpepper, A.S. and York, A.C. and Prostko, E.P., 2005. Tropical Spiderwort (*Commelina benghalensis*): A Tropical Invader Threatens Agroecosystems of the Southern United States.
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ALIEN RANGE

[1] AUSTRALIA
[1] CHRISTMAS ISLAND
[1] JAPAN
[1] MAURITIUS
[1] NEW CALEDONIA
[1] SAMOA
[1] TAIWAN
[13] UNITED STATES
[1] VIET NAM
[2] BRITISH INDIAN OCEAN TERRITORY
[1] GUAM
[1] MALAYSIA
[1] MEXICO
[5] NORTHERN MARIANA ISLANDS
[1] SOLOMON ISLANDS
[5] TONGA
[1] VANUATU

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