

## **Bristly Starbur, *Acanthospermum hispidum* DC.<sup>1</sup>**

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### **Classification**

Common Name: Bristly Starbur

Scientific Name: *Acanthospermum hispidum* DC.

Family: Compositae (Asteraceae), Sunflower Family

### **Seedling**

The cotyledons are broadly club shaped and wavy margined (Figure 1). The leaves are oval to triangular, irregularly and coarsely toothed, light green in color and very broad.

### **Mature Plant**

Bristly Starbur is an upright annual with dichotomous (Y-shaped) branching (Figure 2). The Y-shaped form of branching gives the plant one of its common names, Slingshot Weed. The stems are densely covered with hairs. These hairs can be stiff and bristly or soft and flexible. The leaves have no stalk (sessile) and are opposite each other on the stem. They are oval to triangular-ovate in shape with a base that narrows rapidly to the stem. Some leaves



**Figure 1.** Seedling, Bristly Starbur (*Acanthospermum hispidum* DC).

can be up to 11.5 cm long. The margins of the leaves can have irregular teeth or they may be entire and smooth. Like the stems, the leaves are hairy. The hairs are on both the upper and lower surfaces and on the margins. The lower leaf surface is also dotted with glands. The flowers are typical of the Aster or Daisy Family. Each head has 5-9 ray flowers. The petals (corollas) of the ray flowers are pale yellow and are about 1.5 mm long. The disc flowers in the center of the head are sterile. The fruits are flattened

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and triangular in shape. These fruits are covered with stiff, hooked hairs and have either a straight or curved pair of spines at the top. The bristly appearance and grouping of several fruits in each head provides the most frequently used common name, Bristly Starbur. Each fruit, excluding the terminal spines, is 5-6 mm long. The terminal spines are strongly divergent and are about 4 mm long. These terminal spines supply yet an additional common name, Goathead.



**Figure 2.** Mature plant, Bristly Starbur (*Acanthospermum hispidum* DC).

## History

Bristly Starbur appears to have been introduced into Florida in ship ballast at Pensacola in the 1800s. The scientific name of the genus, *Acanthospermum*, is from the Greek words *acantha* (thorn) and *sperma* (seed) and refers to the prickly fruit. *Hispidum* is Latin, and means rough, shaggy, prickly or bristly.

## Habitat

This weed is currently a problem in southern Alabama, southern Georgia, northern Florida, and appears to be spreading southward in Florida. In the rest of the United States it has been reported as far north as New Jersey, again in ballast grounds. It occurs in Central and South America from Honduras and Nicaragua, southward to Argentina. This weed has become naturalized in Africa, the Hawaiian Islands, India, Australia and the West Indies.

## Biology

No use is known for this plant. It is not used for forage and has been found toxic to mice and goats. The hooked hairs of the fruit attach easily to the coats

of animals, and the fruit is widely distributed by this means. In Florida the weed causes problems in corn, peanuts and soybeans by competing for moisture, light and nutrients. Also, the weed can be a physical problem during harvest as it continues to grow until a killing frost. This noxious weed is a prolific seed producer. Plants only 25 cm in height are capable of producing mature seeds. The seeds are produced in abundance until the plants freeze in the fall. In one study, an average yield of over 4500 kg/ha of seeds was obtained. The germination of harvested seeds is around 10 percent but soaking them alone in water or  $\text{KNO}_3$  increases germination to 60 percent and, when coupled with chilling, increases germination to 80 percent. Soaking seeds with scarified seed coats improves germination by 80 to 90 percent. One study showed that scarification by pre-freezing, acid or sandpaper reduced germination by 50 to 80 percent. Another study showed seed viability to be only 36 percent indicating an immature embryo. Thus the dormancy of these seeds seems to be due to the following combination of factors: immature embryo; impermeable seed coat; and substances inhibiting germination. Since seeds fall from the plant very soon after maturing, most of them that remain on the plant at harvest are immature and result in low germination when tested in the laboratory. This may lead to an erroneous conclusion about natural populations. Seeds buried in soil below 7.5 cm have been shown to lose all viability after three years. Plowing of seeds to a greater depth could be a help in reducing occurrence of this pest. Preliminary results suggest that Bristly Starbur is quite competitive. Studies on population thresholds and period of competition are underway in Florida and Alabama.

## Control

### Peanuts

Strongarm (diclosulam) will consistently provide high levels of bristly starbur control when applied preemergence. All other preemergence herbicides, including Valor and Pursuit, will provide less than 70% control of this species. Postemergence applications of Basagran and Storm are also effective, with Basagran alone being the most consistent treatment. Cadre, Classic and Gramoxone do not possess adequate levels of bristly starbur activity. In

areas where this weed is particularly dense, a control program that includes Strongarm and Basagran is the most effective option.

### **Cotton**

Preemergence applications of Cotoran and/or Staple will consistently provide greater than 80% control. All other preemergence herbicides are considered ineffective; Prowl and Treflan has no activity on bristly starbur. Postemergence applications of glyphosate or glyphosate + Staple will commonly result in greater than 90% control. Staple applied alone has been shown to be somewhat inconsistent and control is often less than 80%. Postemergence directed applications of MSMA + Cotoran, Caparol, Diuron, glyphosate, or Valor are equally effective.