USDA
United States Department of Agriculture

Natural Resources Conservation Service Plant Guide

TALL BLAZING STAR

Liatris aspera Michx.

Plant Symbol = LIAS

Common Names: rough blazing star, blazing star, gayfeather, button snakeroot, and button blazing star

Scientific Names: *Liatris aspera* Michx. var. *aspera, Liatris aspera* Michx. var. *intermedia* (Lunell) Gaiser, *and Liatris aspera* Michx. var. *salutans* (Lunell) Shinners (PLANTS Database 2018)

Fig.1. Liatris aspera plant and blooms. Photo: Larry Allain, U.S. Geological Survey

Description

General: Tall blazing star, a member of the Asteraceae family, is a native warm season herbaceous perennial which grows 2' to 5' tall (0.6 to 1.5 meters). The plant's central stem arises from a fleshy underground corm. The slightly zig-zag stem is covered in short, stiff grayish pubescence. Lance shaped basal leaves approximately 12 inches long (30.5 cm) and 1 inch wide (2.5 cm) at the base, become narrower and shorter as they alternate up the stem. Rounded purplish inflorescence about 1inch to 1.5 inches (2.5 to 3.8 cm) long crowd along the unbranched central stem (Fig. 1). This inflorescence made of many composite flowers resemble rounded buttons, which is one of the plant's distinguishing characteristics. Tall blazing star blooms from August to October (later than most other *Liatris* spp.) with individual plants blooming for about three weeks. The seeds or achenes of *Liatris* spp. have tufts of hair (Fig. 2) allowing them to be wind distributed (Missouri Botanical Garden, 2018; Lady Bird Johnson Wildflower Center, 2018; and Illinois Wildflowers, 2018). Tall blazing star plants are long lived. Kerster (1968) found plants that were 20 to 30 years old in an undisturbed prairie site.

Distribution: The *Liatris* genus contains approximately 43 species found east of the Rocky Mountains and northern Mexico (Diggs et al.,1999). Tall blazing star is found from Texas to North Dakota east to New York State and south to Florida (Lady Bird Johnson Wildflower Center, 2018). For current distribution, please consult the Plant Profile page for this species on the USDA PLANTS Web site.

Habitat: Tall blazing star is found in dry plains, prairie, open woods, and forest openings (Lady Bird Johnson Wildflower Center, 2018). This plant is a mid to late succession species in tallgrass prairie and open woods (Tyrl et al., 2008). Tall blazing star is drought tolerant and grows in loam, clay, or less fertile sandy or rocky acidic soils (Lady Bird Johnson Wildflower Center, 2018; Illinois Wildflowers, 2018).

Fig. 2. *Liatris* seeds or achenes.

Adaptation

Tall blazing star prefers full sun and is found on mesic to dry sites. In an Illinois study, Hadley and Levin (1967) observed this plant on upland sites with low soil moisture, low organic matter, and good soil drainage. When flowering, the plant may fall over if grown on a very fertile soil with good moisture (Illinois Wildflowers, 2018).

Uses
Livestock: Livestock graze the young foliage (Haddock, 2007).
Wildlife: The foliage and stems are eaten by rabbits and deer. Rodents dig up the corms and eat them (Illinois Wildflowers, 2018).

Pollinators: Liatris is a beneficial species for pollinators. Tall blazing star is a late season nectar source for butterflies such as Monarchs (*Danaus plexippus*), Tiger Swallowtails (*Papilio* spp.), Clouded Sulphur (*Colias philodice*), Gray Hairstreak (*Strymon melinus*), Painted Lady (*Vanessa cardui*), and Red Admiral (*Vanessa atalanta*) (Lady Bird Johnson Wildflower Center, 2018). Caterpillars of the Glorious Flower Moth (*Schinia florida*) feed on the flowers and seed capsules. The plants also attract hummingbirds along with native bees and bumblebees (Illinois Wildflowers, 2018).

Special Uses: Tall blazing star has a variety of uses. It is recommended for restoration of mesic sites in the tallgrass prairie region (Packard and Mutel 2005). It is a suitable species for native landscaping and gardening. Compatible plants for tall blazing star include big bluestem (*Andropogon gerardii*), butterfly weed (*Asclepias tuberosa*), heath aster (*Aster ericoides*), purple prairie clover (*Dalea purpurea*), goldenrod (*Solidago* spp.), and prairie smoke (*Geum triflorum*) (New Moon Nurseries 2018). Tall blazing star provides a unique spike form in floral arrangements. It is grown as a cut flower crop for greenhouse and field production (Stevens et al., 1993).

Ethnobotany
Some Great Plains Native American tribes boiled the leaves and roots of *Liatris* to treat intestinal ailments (Haddock, 2018). The Lakota used the pulverized roots to improve appetite and the roots were consumed during famines (Black Elk and Flying By, 1998).

Status
Threatened or Endangered: No. (US Fish and Wildlife Service 2018)

Wetland Indicator: Upland (Packard and Mutel 2005)

Weedy or Invasive: Please consult with your local NRCS Field Office, Cooperative Extension Service office, state department of natural resource, or state agriculture department regarding its status and use.

Please consult the PLANTS Web site (http://plants.usda.gov/) and your state's Department of Natural Resources for this plant's current status (e.g., threatened or endangered species, state noxious status, and wetland indicator values).

Planting Guidelines
Begin field preparation in advance of planting to establish a weed free seedbed with tillage and (or) herbicide application. Prior to planting, the seedbed must be firmed and accumulated soil moisture for improved establishment success. Plant *Liatris* seed in the early spring (USDA NRCS, 2014). When planting seed mixes for drilling or broadcasting, adjust the seeding rates according to the percent of tall blazing star in the mixture.

A seed drill is the preferred method for planting. Drilling seed provides good seed placement and seed-to-soil contact. Plant seed ¼ inch deep into a prepared, firm, weed free, seedbed. Use a seeding rate of 1 to 2 pure live seed (PLS) lb/acre (6 to 12 PLS per ft^2, respectively) for *Liatris* spp. (USDA NRCS, 2014). Avoid planting into a fluffy or loose seedbed because soil can sluff off into tracks left by the planter press wheels and bury the seed to deeply after the first rain event resulting in stand failure.

For broadcast planting, use a seeding rate of 2 PLS lb/acre. Mix the seed with a carrier agent such as cat litter or sand to help prevent planting too high of a rate and improve seed distribution. If possible, seed should be incorporated with a drag or cultipacker after broadcast planting. Timing broadcast plantings to rain events will help incorporate seed into the soil and improve establishment.

Management
Tall blazing star responds favorably to prescribed burning and increases in number with frequent fire. Lovell et al. (1982) observed increased number of flowers following a late spring burn versus control plants. Tall blazing star increases with heavy grazing and may form small colonies (Tyrl et al., 2008).

Pests and Potential Problems
Aphids, thrips, and whiteflies are minor *Liatris* pests. Common diseases include powdery mildew, rust, leafspots, and wilts. These diseases can be controlled by cultural management and chemical applications (Stevens et al.,1993). Wildlife pests include voles that consume or hoard corms. Rabbits and deer will eat young shoots (Houseal, 2007).

Environmental Concerns
Tall blazing star is considered a desirable plant within its range of occurrence and has no known negative effects on the environment.

Control
Tall blazing star may be controlled by mechanical means such as mowing or applying a broad-spectrum herbicide. Please contact your local agricultural extension specialist or county weed specialist to learn what works best in your area and how to use it safely. Always read label and safety instructions for each control method.

Seeds and Plant Production
Use a soil test and amend fertility (N, P, and K) per soil test recommendations after the first growing season. Lower fertility levels will minimize competition from warm season weeds during establishment. Soil pH should be between 5.5 to 7.5 (Shirley, 1994). *Liatris* species are known to hybridize among each other, therefore isolation distances should be maintained to minimize hybrid seed production (Hadley and Levin 1967; Houseal, 2007). For example, Wisconsin isolation distances for native forbs is 440 yds. (0.25 mile) (Wisconsin Crop Improvement Association, 2016). Please contact your state's crop improvement association for required isolation distances for seed production in your area.

Transplanting seedlings in the spring is the recommended method for establishing tall blazing star seed production fields (Houseal, 2007). Transplanting reduces the time needed to achieve a solid stand, allows for use of pre-emergent herbicides and reduces the amount of weed competition typically seen in fields planted from seed. Allow enough space between rows for cultivation, herbicide application, and harvesting equipment.

Fig. 3. *Liatris* seedlings ready for transplanting

To start seedlings, stratify (cool-moist) seed for 8-12 weeks at 40˚F. Sow the stratified seed ¼ inch deep into transplanting containers two months before the last frost freeze date and grow in the greenhouse (Houseal, 2007). Nuzzo (1978) reported a time of 5.5 months to grow out seedling transplants under greenhouse conditions. Seedlings will be ready for transplanting when they become root bound with vigorous root growth and small corm (Fig. 3). Place plants in a shade house for approximately two weeks to harden off before transplanting. Transplant the seedlings at 8 inch intervals into rows in a firm, weed free seedbed (Houseal, 2007).

Another method of propagation is dividing corms of older tall blazing star plants in the fall after stem die-back (Fig. 4). Divide the corms so each one has a growth point. Treat the corms with fungicide and store in slightly moist sphagnum peat moss at 28-30˚F for 10 weeks of cold storage before replanting the following spring. Do not allow the corms to thaw and refreeze or dry out during cold storage. After freezing, the corms can be stored up to 2 weeks at 40-45˚F before replanting. Plant corms 1" deep into a firm, weed free seedbed using a planting rate of no more than 4 corms per square foot. Water corms as needed for the first three weeks after planting to provide a moderately moist soil and promote sprouting. Afterwards, allow the soil to dry between waterings as a constantly saturated soil will promote root rot development (Stevens et al., 1993).

Fig. 4. Liatris corm about 5 years of age.

Manage seed production fields by mowing/cultivating between rows or hoeing and hand roguing. Use caution when cultivating, *Liatris* plants are sensitive to soil disturbance during bolting and flowering. Apply post emergent grass herbicides if needed (Houseal, 2007).

Seed maturity dates vary from late September to October. The recommended harvest method is combining at maturity, but before the plumes are dry and fluffy because seed is susceptible to shattering (Houseal, 2007). Use low volume air settings to minimize seed loss. After harvest, dry and scalp the seed to remove stems and other materials. Then debeard or brush the seed to remove the tufts of short hair or pappus before cleaning. Use a seed

cleaner with air adjustments and separation screens to remove chaff and unfilled seed. Seed yields range from 50 to 150 bulk lb/acre. Productive stand life is from 3 to 5 years. The first year is usually vegetative growth with the highest seed yields in the second and third years. To enhance seed longevity, store in a controlled environment of 50˚F and 30% relative humidity (Houseal, 2007).

Cultivars, Improved, and Selected Materials (and area of origin)

Tall blazing star seed and potted plants are available from commercial sources. The University of Northern Iowa Tallgrass Prairie Center has released three source identified materials; Northern Iowa Natural Selections (released in 2003), Central Iowa Natural Selections (released 2003), and Southern Iowa Natural Selections (released 2005) (Tallgrass Prairie Center 2010). These germplasms were collected from and developed for their respective areas of Iowa. For current availability of these germplasm releases, contact the Tallgrass Prairie Center.

Improved materials should be selected based on the local climate, resistance to local pests, and intended use. Consult with your local land grant university, local extension or local USDA NRCS office for recommendations on adapted materials for use in your area or when considering using native harvested seed for planting.

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