

Pinkscale blazing star

Liatris elegans (Walter) Michx.

Plant Symbol = LIEL

Common Names: pinkscale gayfeather, white bract blazing star, handsome blazing star, elegant blazing star, white featherflower, colic root

Scientific Names: (Synonym)[*Lacinaria elegans* (Walt.) Kuntze] (Miller and Miller, 1999).

Description

General: Pinkscale blazing star, a member of the Asteraceae family, is a native, warm season perennial forb growing 2 to 3 feet tall (30-100 cm). The plant's central pubescent stem arises from a fleshy underground corm. Alternating basal leaves are up to 5 inches (12 cm) long and 0.27 inch wide (7 mm). The cylindrical inflorescence is 4 to 16 inches (10 cm to 40 cm) long and composed of many small tubular flowers varying from white to purple (Fig. 1). A distinguishing characteristic is upper leaves point downward at ~45° angle and decrease in length to half an inch near the top of the stem (Fig. 2). Pinkscale blazing star blooms from August to November. The seeds or achenes are 0.15 to 0.23 inch long (4 to 6 mm) and topped by tufts of hair or pappus 0.35 to 0.43 inch long (9 to 11 mm) allowing them to be wind distributed (Grelen and Duvall, 1966; Allain and Reid, 2018).

Distribution: The *Liatris* genus contains approximately 43 species found east of the Rocky Mountains and northern Mexico (Diggs et al., 1999). *Liatris elegans* extends from Texas and Oklahoma east to South Carolina and Florida (Grelen and Hughes, 1984). Three botanical varieties are also found in the southeastern United States. *Liatris elegans* var. *kralli* occurs in Mississippi east to Florida (Flora of North America, 2018). *Liatris elegans* var. *bridgesii* is found in post oak savanna of central and East Texas. *Liatris elegans* var. *carrizana* is adapted to drier climates and grows on deep sandy soils south of the Colorado River in Texas (Mayfield, 2001). For current distribution, please consult the Plant Profile page for this species on the PLANTS Web site.

Habitat: Pinkscale blazing star is found in pine hardwood forests, dry oak woods, along roadsides, sandhills, and dunes of the longleaf pine (*Pinus palustris*) ecosystem in the southeastern US (Aschenbach et al., 2009; Keener et al., 2018; Flora of North America, 2018). Associated plants include little bluestem (*Schizachyrium scoparium*), pineywoods dropseed (*Sporobolus junceus*), splitbeard bluestem



Figure 1. *Liatris elegans* in bloom. Photo: Larry Allain, U.S. Geological Survey.



Figure 2. The slender leaves of *Liatris elegans* point downward and is a distinguishing characteristic of this plant. Photo: Larry Allain, U.S. Geological Survey.

(*Andropogon ternarius*), tephrosias (*Tephrosia* sp.), slender lespedeza (*Lespedeza virginica*), fragrant goldenrod (*Solidago odora*), and American beautyberry (*Callicarpa americana*) (Texas Parks and Wildlife, 2018).

Adaptation

Pinkscale blazing star prefers well drained, coarse textured sandy soils but will grow on clay loams or sandy clays (Texas Parks and Wildlife, 2018; USDA NRCS, 2017). It occupies xeric sandhill sites located on deep, layered sands in longleaf pine forests of northern Florida and on sandylands in post oak savanna of east Texas (Platt et al., 1988; MacRoberts et al., 2002).

Uses

Pinkscale blazing star is not a valuable livestock forage: cattle occasionally graze pinkscale blazing star in the spring but leave it as plants mature (Grelen and Hughes, 1984). This forb is valuable to wildlife and pollinators. Deer eat the foliage in spring and summer (Grelen and Duvall, 1966). Pinkscale blazing star attracts native bees (Ladybird Johnson Wildflower Center, 2018). The Glorious Flower Moth (*Schinia gloriosa*) and Bleeding Flower Moth (*Schinia sanguinea*) feed only on *Liatris* plants (Xerxes Society, 2018). Pinkscale blazing star is a valued nectar source for Monarch butterflies (*Danaus plexippus*) during their fall migration through the Quachita mountains in Arkansas (Rudolph et al., 2006).

Ethnobotany

Native American tribes used boiled gayfeather root poultices to reduce swelling and root infusions to treat stomachaches and itch (Moerman, 2015).

Status

Threatened or Endangered: Pinkscale blazing star is not threatened or endangered (US Fish and Wildlife Service, 2018).

Wetland Indicator: Pinkscale blazing star is an upland species and not a wetland indicator plant (US Army Corps of Engineers, 2018).

Weedy or Invasive:

Please consult with your local NRCS Field Office, Cooperative Extension Service office, state 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 conservation planting site preparations the year before seeding. Prepare the planting area using tillage and/or herbicide applications to control and eliminate weedy vegetation. Mowing and multiple herbicide applications may be required for effective control of heavy weedy vegetation and perennial species. Plant *Liatris* from December to May (USDA NRCS, 2018). Monotypic broadcast seeding rate is 4.6 PLS lb/acre which is based on 20 PLS seed/ft² and 189,000 debearded seed/lb (USDA NRCS Jimmy Carter Plant Materials Center, 2010; Pfaff et al., 2002). When drilling or broadcasting a seed mix, adjust the monotypic seeding rate of pinkscale blazing star according to the percent in the mixture.

Plant pinkscale blazing star at ¼ to ½ inch depth for drilling or broadcast seeding (Pfaff et al., 2002). A seed drill is the preferred implement for planting because drilling provides good seed placement and seed-to-soil contact. When ordering seed from a commercial source, specify if seed needs to be debearded (hair tufts removed) before delivery (Fig. 3). Debearded seed should flow easily through a planter and not require additional agitation. However, bearded seed (hair tufts intact) is best planted using a seed drill equipped with a fluffy seed box and picker wheels to reduce seed bridging. Plant into a firm seedbed and avoid seeding into a fluffy or loose seedbed because soil can fall back into press wheel tracks and bury the seed too deep after the first rain event.



Figure 3. Photo of bearded and debearded *Liatris* seeds. Bearded seeds have intact hair tufts while debearding seed removes hair tufts.

Broadcast seeding is an alternative planting method when site conditions are not conducive for drill seeding. Disk the planting area and then cultipack to firm the seedbed. Broadcast seed using a carrier agent such as cat litter or sand to help prevent planting too high of a rate and for improving seed distribution. After broadcasting, use a cultipacker or roller to enhance seed-to-soil contact. Time plantings to rain events to help incorporate seed into the soil and improve establishment.

Management

Liatris is tolerant of prescribed burning (Lovell et al., 1982). Selective herbicides can be used when managing pinkscale blazing star. Please consult your local agricultural extension specialist and always read and follow label and safety instructions for each management method. Mow old seed stalks in late winter when plants are dormant (Pfaff et al., 2002).

Pests and Potential Problems

Liatris is subject to several diseases including leaf spots (*Phyllosticta liatridis* and *Septoria liatridis*), rusts (*Coleosporium laciniariae* and *Puccinia liatridis*), powdery mildew (*Erysiphe cichoracearum*), white mold (*Sclerotinia sclerotiorum*), and Verticillium wilt (*Verticillium albo-atrum*) (Mahr, 2010).

Environmental Concerns

Pinkscale blazing star is a desirable plant within its native range and has no known negative effects on the environment.

Control

Pinkscale blazing star is 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. Control measures appear in this document only to provide specific information.

Seeds and Plant Production

Commercial seed production fields can be established by transplants, corm division or direct seeding. Prepare a firm, weed free seedbed using herbicides and/or tillage for transplanting or seeding. Transplanting seedlings in spring is the preferred method of establishing seed production fields. Transplanting reduces 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. Start *Liatris* seedlings by treating seeds using cool moist stratification at 40° F for 8-12 weeks. Sow seeds ¼ inch deep into transplanting containers about two months before the last frost freeze date and grow in the greenhouse (Houseal, 2007). Seedlings are ready for transplanting when they develop a pea sized corm, vigorous root system and firm root ball. Place seedlings in a shade house for approximately two to three weeks to harden off before transplanting. Transplant seedlings at eight-inch intervals in rows after frost danger is past (Houseal, 2007).

Establish small scale seed production fields by digging and dividing corms of older plants in fall or early spring (Fig. 4). Include at least one growing point per corm division. Treat fall collected corms with fungicide, dry, and store in slightly moist sphagnum peat moss at 28° to 30° F for 10 weeks of cold storage. Do not allow corms to thaw and refreeze or dry out during storage. Corms can keep up to two weeks at 40° to 45° F before replanting in spring (Houseal, 2007). Spring collected corms can be replanted immediately after division. Place corms 1 inch deep within the row.

For direct seeding, place seeds ¼ to ½ inch deep using a seeding rate of 30 PLS/linear foot. Pinkscale blazing star averages 103,000 seed/lb (bearded) and 189,000 seed/lb (debearded) (Pfaff et al., 2002). Space rows 24 to 48 inches apart allowing for weed control and seed harvesting equipment. Pinkscale blazing star emerges under dry conditions better than most other native species. Supply some moisture to seedlings to encourage plant development. Limit irrigation after establishment as pinkscale blazing star prefers dry soils and will not persist in moist conditions (Pfaff et al., 2002).



Figure 4. *Liatris* plant showing stems, corms, and fibrous roots.

Liatris species are known to hybridize among each other so maintain isolation distances to minimize crossing (Hadley and Levin, 1967; Houseal 2007). For example, Wisconsin isolation distance is a quarter mile for native forbs (Wisconsin Crop Improvement Association, 2016). Do not fertilize seed production fields the first year as lower fertility levels reduce warm season weed competition. *Liatris* have moderate fertilizer requirements. One recommendation is 1.2 lb of 10-10-10/100 ft² which equates to 52 lb/acre of N, P, and K (Evans, 1993). Manage seed production fields by cultivating between rows,

hoeing, or hand roguing. Mow *Liatris elegans* to a height of 10 to 16 inches during the growing season to promote multiple stems (Pfaff et al, 2002). *Liatris* plants are sensitive to soil disturbance during bolting and flowering (Houseal, 2007).

Harvest seed in fall at hard dough stage when it is easily hand stripped from the stalk. Seeds mature indeterminately and ripen on the inflorescence from the top down. Because seed mature unevenly, a seed stripper or flail vac harvester is recommended for multiple harvests. Use slower brush speeds of 400-600 rpm to minimize plant damage (Pfaff et al., 2002). Scalp harvested material to remove stems and inert material, dry, then debeard or brush the seed to remove tufts of hair before cleaning (Figure 3). Use a seed cleaner with air adjustments and separation screens to remove chaff and unfilled seed. Seed yields range from 20 to 300 lb. pure seed per acre (Pfaff et al., 2002). Store harvested *Liatris* seed in a controlled environment of 50^oF and 30% relative humidity to improve seed longevity (Houseal, 2007). Expected stand life is 3 to 6 years (Pfaff et al., 2002).

For production and propagation of pinkscale blazing star plants follow the same procedures as outlined above in growing transplant seedlings in a greenhouse and dividing older corms.

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

Pinkscale blazing star seed and potted plants are available from commercial sources. Select seed and plant materials based on 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 cultivars for use in your area.

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