

UNITED STATES DEPARTMENT OF AGRICULTURE
NATURAL RESOURCES CONSERVATION SERVICE

EAST TEXAS PLANT MATERIALS CENTER
NACOGDOCHES, TEXAS

NOTICE OF RELEASE OF
PINEYWOODS GERMPLASM THICKSPIKE GAYFEATHER SELECTED CLASS OF NATURAL GERMPLASM

The Natural Resources Conservation Service (NRCS), U.S. Department of Agriculture announces the release of a selected class thickspike gayfeather (*Liatris pycnostachya* (Michx.) for conservation use in the western coastal plain of Texas and Louisiana.

This release will be referred to as Pineywoods Germplasm thickspike gayfeather. It is a selected plant material class of certified seed (natural track) and was tested under NRCS accession number 9067351.

This alternate release procedure is justified because commercially available thickspike gayfeather seed sources are from areas greater than 200 miles from the western coastal plains of Texas. The environmental conditions and soils of this eco-region are significantly different than those of the Midwest and Great Plains regions of the United States where most commercial seed sources of thickspike gayfeather originate. Texas NRCS and US Forest Service requested the development of a thickspike gayfeather adapted to the western coastal plain for resource conservation and environmental programs.

Collection Site Information: The original seed source of Pineywoods Germplasm was collected by NRCS personnel Mike Stellbauer (retired) and Trey Bethke on 15 November 2004 in Montgomery County, Texas (Fig.1). The native stand of thickspike gayfeather was growing on a Wicksburg loamy fine sand in Major Land Resource Area 133B in USDA Plant Hardiness Zone 8b (USDA NRCS, 2006; USDA OSU, 2012). GPS Coordinates of the collection site are: north latitude - 30° 53' 6" and west longitude - 95° 7' 4".

DESCRIPTION: Thickspike gayfeather is a native, long lived perennial forb which reproduces primarily by seed, but also via shoots from underground corms. Several stiff hirsute stems 60 to 120 cm (23 to 47 in) tall arise from an underground corm. The alternately arranged leaves are 10 to 30 cm (4 to 12 in) long and 4 to 10 mm (0.15 to 0.4 in) wide reduced above, pubescent, and punctate. The cylindrical, spikelike inflorescence is 15 to 30 cm (6 to 12 in) long and about 2 cm (0.8 in) wide. The purple flowers are 10 to 11 mm (0.4 in) long and encased in involucre green or purplish bracts. The achenes are 4 to 6 mm (0.15 to 0.23 in) long, ribbed, pappus with barbellate bristles (Grelen and Hughes, 1984). Pineywoods Germplasm averages 178,000 seeds per pound. A specimen collected from the initial evaluation row was identified as *Liatris pycnostachya* Michx. by Dr. Stephen Hatch at the S.M. Tracy Herbarium, Texas A&M University, College Station, Texas.



Figure 1. Location of #9067351 from Montgomery County, Texas.

Conservation Use: Pinewoods Germplasm is recommended for use in the Western Coastal Plain for USDA NRCS Conservation Practices such as field border (386), upland wildlife habitat management (645), conservation cover (327), and restoration and management of declining habitat (645). Grelen and Duvall (1966) mentioned that gayfeather is found in the long-leaf pine bluestem range making it a suitable species for use in longleaf pine understory restoration plantings. Gayfeather provides pollinator habitat for honeybees (*Apis* sp.), bumblebees (*Bombus pennsylvanicus*), and Monarch (*Danaus plexippus*) and Swallowtail (*Papilionidae* sp.) butterflies (Schaal, 1978; Illinois Wildflowers, 2017).

Method of Breeding and Selection: The original assembly of thickspike gayfeather consisted of 33 seed collections from native stands throughout the Western Coastal Plain of eastern Texas. Seed from each accession was planted into lightweight Z24 Zipset plant bands (Stuewe and Sons, Tangent, OR). Seed collections were monitored for germination and seedling vigor under greenhouse conditions. Accessions with poor seedling vigor or insufficient germination were removed from the evaluation. The remaining twenty-six accessions were transplanted into non-replicated rod rows on an Attoyac fine sandy loam soil at the USDA-NRCS East Texas Plant Materials Center (ETPMC) and evaluated for disease resistance, lodging, bloom dates, seed production, mature plant height, and seed maturity date in 2006-2007. Accession #9067351 was selected from the initial evaluation due to superior seedling vigor rating, best scores for plant vigor, seed production, and above average score for lodging.

A breeder seed production plot (0.014 ac) of #9067351, using transplants grown from the original seed collection and vegetative material from initial evaluation plants, was established at the ETPMC in 2008. Breeder seed was harvested from 2009-2013. The five-year average yield from the plot was 2.7 lbs. of cleaned seed or about 190 lb/acre per year. A generation 1 foundation seed production field (0.4 ac) was then established at the ETPMC in 2013 using transplants grown from breeder seed. This field generated up to 159 pounds of cleaned seed per acre and showed no signs of disease or insect problems from 2013- 2019.

Ecological Considerations and Evaluation: An Environmental Evaluation of Plant Material Releases (USDA-NRCS 2010) was completed using guidelines established by the NRCS (USDA NRCS, 2010) and best available information for this species. Results from this evaluation determined that Pinewoods Germplasm was suitable for release based on the criterion contained in this document. Thickspike gayfeather is a naturally occurring species in North America and the release of Pinewoods Germplasm for public use would not constitute the introduction of a foreign species to local ecosystems. Pinewoods Germplasm was selected from a native stand of thickspike gayfeather and has had no genetic modification. It is believed any negative impact to other native species would be minimal to non-existent.

Area of Adaptation: Pinewoods Germplasm is adapted to the area of original seed collection in eastern Texas within MLRA 133B and USDA Hardiness Zone 8b. Further testing is needed to confirm a potentially wider adaptation range.

Availability of Plant Materials: Generation (G) 0 seed, equivalent to Breeder seed, is distributed to commercial growers. Growers may use Generation 1 and Generation 2 seed for commercial increase. Increase of Pinewoods Germplasm beyond G2 seed is prohibited. G1 (equivalent to Foundation) and G2 (equivalent to Certified) seed fields have a seven-year production limitation.

USDA NRCS East Texas Plant Materials Center, Nacogdoches, Texas maintains Breeder seed (G0) of Pinewoods Germplasm thickspike gayfeather.

REFERENCES

Grelen, H. and R. Hughes. 1984. Common herbaceous plants of southern forest range. US Forest Service Res. Paper SO-210. Southern Forest Experiment Station. New Orleans, LA.

Grelen, H. and V. Duvall. 1966. Common plants of longleaf pine-bluestem range. US Forest Service Res. Paper SO-23. Southern Forest Experiment Station. New Orleans, LA.

Illinois wildflowers. 2017. Prairie Blazingstar (*Liatris pycnostachya*). Accessed online at:
http://www.illinoiswildflowers.info/prairie/plantx/pr_blazingstarx.htm

Schaal, B. 1978. Density dependent foraging on *Liatris pycnostachya*. Evolution 32(2): pp.452-454.

USDA Plant Hardiness Zone Map, 2012. Agricultural Research Service, U.S. Department of Agriculture. Accessed from <http://planthardiness.ars.usda.gov>.

USDA-Natural Resources Conservation Service. 2010. National Plant Materials Manual, Title 190 (Washington, D.C., U.S. Government Printing Office, July 2010).


USDA-NRCS. 2006. Land Resource Regions and Major Land Resource Areas of the United States, the Caribbean, and the Pacific Basin. Agriculture Handbook 296, U.S. Gov. Print. Office, Washington, D.C.

Prepared by:

Melinda Brakie, Soil Conservationist, and Alan Shadow, PMC Manager
 USDA-Natural Resources Conservation Service
 East Texas Plant Materials Center
 6598 FM 2782
 Nacogdoches, Texas 75964

Signatures for the release of:**Pineywoods Germplasm thickspike gayfeather****CLINTON EVANS**


State Conservationist
United States Department of Agriculture
Natural Resources Conservation Service
Temple, Texas

 Digitally signed by CLINTON EVANS
Date: 2020.09.24 16:25:26 -06'00'

Date

BETSY DIERBERGER

Director, Ecological Sciences Division
United States Department of Agriculture
Natural Resources Conservation Service
Washington, D.C.

 Digitally signed by BETSY DIERBERGER
Date: 2020.09.28 16:49:17 -04'00'

Date