NOTICE OF RELEASE OF
DIVOT TALLOW WEED BLEND
SELECTED CLASS OF NATURAL GERMPLASMS

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ABSTRACT

A blend of 2 selected germplasms of tallow weed or plantain (Plantago spp. [Plantaginaceae]) has been released for wildlife habitat restoration, rangeland seed mixes, and wildlife food plot plantings in south Texas. Divot Tallow Weed Blend comprises the releases STN-561 Germplasm Hookers plantain (Plantago hookeriana Fisch. & C.A. Mey.) and STN-496 Germplasm red-seed plantain (Plantago rhodosperma Decne.). Tallow weeds are cool-season, annual native plants that provide winter forage to wildlife and livestock and produce seed eaten by game birds and other wildlife. These releases are being marketed as a blend to facilitate commercial production and ease of use for consumers. Selection of STN-496 and STN-561 Germplasms was based on seedling vigor, superior seed production in comparison with other collections from the target ecoregion, and growth characteristics facilitating commercial seed production and harvest. Commercial seed producers are required to grow the releases that make up Divot Tallow Blend separately and to blend seed in equal quantities following harvest. The releases can also be marketed independently as source-identified seed.


KEY WORDS
Plantago rhodosperma, Plantago hookeriana, redseed plantain, Hookers plantain, Texas, Plantaginaceae

NOMENCLATURE
Plants: Hatch and others (2001)
Animals: ITIS (2009)

COLLABORATORS
South Texas Natives, Caesar Kleberg Wildlife Research Institute, Texas A&M University, Kingsville, Texas; USDA Natural Resources Conservation Service E “Kika” de la Garza Plant Materials Center, Kingsville, Texas; Texas AgriLife Research, Beeville and Uvalde, Texas; Rio Farms Inc, Monte Alto, Texas; and Rancho Blanco, Laredo, Texas.
**Divot Tallow Weed Blend** is a blend of selected germplasms of Hookers plantain (*Plantago hookeriana* Fisch. & C.A. Mey.) and redseed plantain (*Plantago rhodosperma* Decne.) (Plantaginaceae). Seed sold as Divot Tallow Weed Blend must contain equal portions of the release STN-496 Germplasm redseed plantain and STN-561 Germplasm Hookers plantain. The blend is eligible for certification as a Texas Selected Native Plant Germplasm. Both germplasms were originally evaluated under the USDA Natural Resources Conservation Service (NRCS) accession numbers 9088561 and 9090496. Divot was chosen for the blend name because one of the germplasms originated from a Divot clay loam soil type. Tallow weed is used for the name because it is a regionally recognized plant name familiar to consumers and should aid marketing efforts.

**Collection Site Information**

STN-496 Germplasm redseed plantain was collected from a native population growing in Bexar County, Texas, on an Ekrant cobbly clay soil type. STN-561 Germplasm Hookers plantain was collected from a native population growing in Medina County, Texas. Collectors noted this collection growing on a sandy loam soil; however, GPS coordinates and USDA NRCS soil data suggest the site is a Divot clay loam soil type (USDA NRCS 2009).

**Description**

Redseed and Hookers plantains are cool-season, annual plants. Size and foliage characteristics vary depending on moisture availability, but mature plants of both species are commonly 15 to 30 cm (6 to 12 in) tall. Plantains emerge from seed in mid to late fall in south Texas.

**Justification**

This release provides 2 native forb species for restoration and conservation plantings. These plants produce forage for wildlife and livestock, and seed is consumed by wildlife. This release is recommended for use in upland rangeland plantings, as a wildlife food plot component, and as a temporary cool-season native cover crop on reclamation sites.
Redseed plantain forms a prostrate winter rosette at ground level at emergence. Redseed plantain is found on rocky soils in brushlands and on slopes, and occasionally on sandy soils and gravel bars of washes and streams (Correll and Johnston 1996). It is common on clay or heavier sands in prairies and openings in the Rio Grande Plains and Coastal Prairies of south Texas (Everitt and others 1999). Hookers plantain forms a grasslike winter rosette after emergence. It is found on sandy, gravelly, or rocky soils in open woods, dunes, savannas, and clay flats (Correll and Johnston 1996). It is frequent on sandy soils in prairies, openings, and waste places in the Rio Grande Plains and Coastal Prairies of south Texas (Everitt and others 1999). Significant foliage and seed stalk growth typically initiate in mid-February in south Texas for both species, with variable maturity and seed ripening between March and June depending on moisture availability. The pollination biology of these species is unknown; however, evaluations show a strong likelihood for apomictic breeding, as no off types or change in plant characteristics have been noted in multiple species and accession plots in 3 generations of observation. Plants within accessions are extremely uniform. Seed increases of each accession were begun with seed from the original collections to ensure genetic integrity of the release. Commercial producers are required to grow each germplasm separately and to blend seed following harvest. STN-561 and STN-496 germplasms typically ripen at different intervals, preventing seed production of the blend in a single field.

METHOD OF SELECTION

Plantains were selected for evaluation and possible use in restoration in south Texas because of their region-wide distribution, importance to wildlife, and ease of commercial production and establishment. Plantains have the potential to provide cool-season forage and may be useful in food plot plantings for wildlife. Personnel from South Texas Natives obtained 27 collections of plantain from south Texas during 2001–2004. Collections included 3 Plantago species: *P. aristata* Michx., *P. rhodosperma*, and *P. hookeriana*. Each species is commonly restricted to specific soils, with *P. rhodosperma* found on clay and fine-textured soils, *P. hookeriana* found on sandy loam and loam soils, and *P. aristata* found on sand or coarse-textured soils. Consultation with commercial producers yielded concerns in marketability of a number of separate releases of this genus. Therefore the decision was made to evaluate all species concurrently and attempt to select accessions representative of each species for a multiple species blend, beneficial to seed producers and consumers in south Texas.
Initial evaluations consisted of laboratory germination tests to assess seed quality of the original collections and populations of each species. These tests suggested broad variability in seed fill and seed dormancy. Subsequently, accessions were planted for field evaluation (split plot design with 2 replications of 10 plants per accession). From this initial evaluation, we selected 7 accessions for advanced evaluation and initial seed increase. Selections were made using observations on plant vigor, seed production, and vegetative characteristics facilitative of commercial production.

Advanced evaluations consisted of isolated seed production rows, of which subplots were sampled to estimate seed production. Two *P. rhodosperma* accessions and single accessions of *P. aristata* and *P. hookeriana* were identified as superior seed producers in this trial. Increase of these 4 accessions the subsequent year on 0.1 ha (0.25 ac) increase fields resulted in final selection between the *P. rhodosperma* accessions, principally because of STN-496 Germplasm’s high seed yield. The *P. aristata* accession was dropped from consideration because of the species’ designation as a prohibited weed seed in Texas seedlots, despite excellent performance.

Seeding trials and experimental plantings have shown good emergence in rangeland plantings of the Divot Blend. In a series of plantings at 8 locations throughout south Texas, initial data indicate that emergence is strongly correlated to soil type, with STN-496 Germplasm emerging on fine-textured soils and STN-561 Germplasm emerging on coarse-textured soils. The recommended seeding rate for pure stands is 11 kg pure live seed (PLS) per ha (10 lb PLS per ac).

**ECOLOGICAL CONSIDERATION**

Redseed and Hookers plantains are naturally occurring species in Texas and planting would not constitute an introduction of an exotic species into local ecosystems. These plants provide forage and seed that are consumed by many wildlife species. This release also makes available 2 native forb species for restoration and conservation plantings and provides a native plant option for wildlife food plots.

**ANTICIPATED CONSERVATION USE**

Divot Tallow Weed Blend will provide a cool-season, native, annual forb for restoration and wildlife habitat plantings in south Texas. This release may have potential for use in efforts to diversify areas dominated by exotic grasses and to provide food sources to livestock and wildlife such as whitetailed deer (*Odocoileus virginianus*) and game birds such as Bobwhite Quail (*Colinus virginianus*), Mourning Dove (*Zenaida macroura*), and Rio Grande Division of the South Texas Plantain Network (STPNT) and the Texas Native Plant Network (TNPN).
Wild Turkey (*Meleagris gallopavo intermedia*). The blend may also be useful as a native annual plant for use as a cool-season cover crop on erodible soils and reclamation sites.

**ANTICIPATED AREA OF ADAPTATION**

Divot Tallow Weed Blend should be adapted to a variety of sites throughout south Texas. This blend has shown good adaptation for use in major land resources area (MLRA) 83A-E and 150. Because selections constituting the blend originate within 80 km (50 mi) from the southern extent of the Edwards Plateau, good performance is likely in MLRA 81A-D. Current testing has not completely substantiated the northern or western limits of adaptability of these germplasms.

**AVAILABILITY OF PLANT MATERIALS**

Foundation Seed is produced by South Texas Natives in conjunction with the Texas Foundation Seed Service. Certified seed must be grown from seed obtained from South Texas.
Natives. Limited quantities of seed can be obtained for research or evaluation purposes by contacting South Texas Natives (stn@tamuk.edu).

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REFERENCES


