



Hoverson Germplasm deer pea vetch (*Vicia ludoviciana* Nutt. [Fabaceae]). Photo by Forrest Smith

NOTICE OF RELEASE OF

# HOVERSON GERMPLASM DEER PEA VETCH

SELECTED CLASS OF  
NATURAL GERMPLASM

Anthony D Falk, Forrest S Smith,  
William R Ocumpaugh, Keith A Pawelek,  
John Lloyd-Reilley, and Shelly D Maher

## ABSTRACT

A selected germplasm of deer pea vetch (*Vicia ludoviciana* Nutt. [Fabaceae]) collected from south Texas was released in 2012 for use as a cool-season, native legume cover crop in range and reclamation seedings and for wildlife habitat improvement. Hoverson Germplasm was collected by Dr Richard Hoverson in 1998 in LaSalle County, Texas. Selection and release were justified by excellent seed production potential of the plant, and the ability of the species to establish, compete, and volunteer in extensive testing in rangeland and reclamation seedings in the evaluation region. Seed stock for the release was increased from the original collection to preserve the genetic integrity of the population, and no genetic manipulation has been carried out on the collection. Hoverson Germplasm represents the first cool-season, native legume seed source release for south Texas and fills the need for certified commercial seed of a cool-season native plant seed source for range, reclamation, and wildlife habitat seedings.

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## KEY WORDS

*Vicia ludoviciana*, deer pea vetch, Texas, CKWRI, Plant Materials Program, Fabaceae

## NOMENCLATURE

USDA NRCS (2014)

## COLLABORATORS

South Texas Natives, Caesar Kleberg Wildlife Research Institute at 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, Beeville, Texas; Rancho Blanco, Laredo, Texas; and Rio Farms Inc, Monte Alto, Texas.



**Species** | *Vicia ludoviciana* Nutt.  
**Common name** | deer pea vetch  
**Accession number** | 9109630

Hoverson Germplasm deer pea vetch is a native, cool-season, annual legume intended for use in rangeland, reclamation, and wildlife habitat restoration plantings. Photo by Forrest Smith

**H**overson Germplasm deer pea vetch (*Vicia ludoviciana* Nutt. [Fabaceae]) was released by Texas AgriLife Research Station Beeville, the South Texas Natives Project of the Caesar Kleberg Wildlife Research Institute at Texas A&M University-Kingsville, and the USDA Natural Resources Conservation Service E “Kika” de la Garza Plant Materials Center in Kingsville, Texas (Figure 1). This plant is eligible for seed certification under the Texas Department of Agriculture (TDA) and Texas Administrative Code guidelines (TAC 2007).

### JUSTIFICATION

This germplasm was tested and released to provide a cool-season, native legume seed source for use in range and reclamation seedings in south Texas. The name Hoverson Germplasm was chosen because the original seed collection was collected by Dr Richard Hoverson, a significant contributor to the South Texas Natives program. Hoverson Germplasm is the first selected release of deer pea vetch, a widespread native legume in Texas.

### COLLECTION SITE INFORMATION

Hoverson Germplasm was collected in 1998 from native plants growing on Sacahuista clay on the Eddie Knight property, in LaSalle County, Texas.

### DESCRIPTION

Hoverson Germplasm deer pea vetch is a glabrous or pubescent winter annual legume. Stems are decumbent or climbing 20 to 100 cm (7.8 to 39.0 in) in length. Leaves are 3 to 9 cm (1.2 to 3.5 in) long, with the rachis terminating in a usually forked tendrils. Plants have 6 to 12 linear-oblong or elliptic to broadly elliptic leaflets, 6 to 25 mm (0.25 to 2.0 in) long, rounded or

emarginated at the apex. Plant stipules are semisagittate, usually more or less unequal, and peduncles are shorter than to exceeding the leaves, 2 to 4 cm (0.8 to 1.6 in) long. Flowers are solitary or 2 to 12 in a lax or dense raceme; corollas are lavender blue, 5 to 8 mm (0.2 to 0.3 in) long, the folded banner 1.5 to 4 mm (0.05 to 0.16 in) high; calyx somewhat pilose, the tube 1 to 2 mm (0.04 to 0.78 in) long with the teeth unequal: the lower teeth subulate and equaling the tube, the upper teeth shorter and broader. Seedpods are flat, glabrous, oblong, and oblique at both ends, 2 to 3 cm (0.78 to 1.17 in) long, and 4 to 8 seeded. Seed is spherical in shape, very hard, and light brown in color with dark brown markings (Figure 2). Seed is 1.8 to 2.1 mm (0.07 to 0.08 in) in length and 1.7 to 2 mm (0.07 to 0.08 in) wide, often dehiscent at maturity (Correll and Johnston 1970).

### METHOD OF SELECTION

#### Initial Evaluation

Evaluation plantings were first done at the Texas A&M AgriLife Research Station at Beeville in winter of 1998–99. At that time, 3 collections of deer pea vetch were transplanted in replicated plots at Beeville from greenhouse-grown seedlings. The other 2 collections were from a single natural stand in Pasture 3 on the Beeville Station. The Beeville collection resulted in both a green-seeded and a black-seeded type seed. For this evaluation, the 2 seed types were separated and grown as 2 separate plots. This initial evaluation did not include any detailed note taking but was done to coarsely evaluate the potential of this plant for use in pasture and range plantings. The Beeville collection did not breed true for seed color, and after a couple years of evaluation we decided that the Hoverson collection was the superior line and that the collection had potential for range and pasture seedings. All future work was done with the Hoverson collection only.

In the winter of 2001–02, a seed increase of Hoverson Germplasm was direct seeded at Beeville, and then in 2002–03,



Figure 1. Representative plants of Hoverson Germplasm deer pea vetch (*Vicia ludoviciana* Nutt. [Fabaceae]). Photo by Forrest Smith

a 0.81-ha (2-ac) plot was direct seeded for precommercial seed increase at Rancho Blanco near Laredo, Texas. This seeding was irrigated, sprayed for weed control, and harvested with a Horwood-Bagshaw vacuum harvester. Although excellent seed production was achieved in this increase, work with the germplasm was discontinued because of lack of commercial interest in the plant at the time.

### Advanced Evaluation

In response to renewed interest in native legume seed sources and desire for a cool-season native cover species for range and reclamation seedings, personnel from South Texas Natives made evaluation plantings of Hoverson Germplasm at Kingsville and Uvalde, Texas, in 2007. Our objective was to assess emergence, seed yields, and adaptability of Hoverson Germplasm and to determine if the selection could be economically grown and harvested in a commercial seed setting. Trial plots were seeded at a rate of 9 kg/ha pure live seed (PLS) (8 lb/ac PLS) following scarification and inoculation of seed.

Plots at Kingsville were fully irrigated and showed outstanding performance (Figure 3). Seedling emergence and plant vigor were excellent. Hoverson Germplasm was highly competitive with common cool-season weeds and was an excellent seed producer. Three 1-m (3.3-ft) subplots were clipped at maturity to estimate seed yields. Estimates indicated Hoverson Germplasm produced more than 795 bulk kg/ha (700 lb/ac) in this seeding, and later seed quality analyses showed 89% PLS.

The initial planting at Uvalde was irrigated after planting only. Although relatively dry conditions persisted during the

Figure 2. Seed of Hoverson Germplasm deer pea vetch with a US dime as reference. Photo by Anthony Falk





Figure 3. Trial plot of Hoverson Germplasm deer pea vetch, 2007, in Kingsville, Texas. Photo by Forrest Smith

evaluation, Hoverson Germplasm emerged, established, and produced seed during the evaluation. Good competitive ability with common cool-season annual weeds was also observed in this planting. Some volunteer emergence was noted in the Kingsville plot by October 2008, and plants continue to volunteer to present, indicating good persistence of the plant after initial establishment.

Forage production samples were collected from volunteer plants in Kingsville during April 2009. Hoverson Germplasm yielded 777 kg/ha (685 lb/ac) dry matter with 24% crude protein. Forage quality was also evaluated near San Angelo, Texas, in a trial planting in 2003–04 where it was seeded at a rate of 28.4 kg/ha PLS (25 lb/ac PLS). In 2003, Hoverson Germplasm produced 420 kg/ha dry matter and 425 kg/ha dry matter (371 lb and 375 lb/ac) in 2004.

### Seeding Trials

Field plantings of Hoverson Germplasm deer pea vetch have documented good performance of this release in range and reclamation seedings. Hoverson Germplasm deer pea vetch has shown excellent emergence and continued persistence on a variety of soil types across south Texas. In all plantings, Hoverson Germplasm made up less than 15% of the seed mixture planted. All plantings were evaluated by counting the number

of plants present in a 1-m<sup>2</sup> (10.2-ft<sup>2</sup>) frame biannually after planting. Hoverson Germplasm has proved to be an excellent native alternative to fill the need for a cool-season legume with high active seed germination that competes well in established grass stands and persists for several years after planting.

Inoculant for Hoverson Germplasm deer pea vetch was obtained by collecting root nodules from native populations of deer pea vetch in the same area of the original collection. Nodules were sent to Dr Tom Wacek of Plant Probiotics (Indianapolis, Indiana) for isolation and increase. Test plantings of the isolate were made, and plants expressed excellent nodulation, vigor, and performance with the use of this inoculum at 2 separate locations. Without this inoculum source, the plant has performed poorly in some locations. The recommended seeding rate for solid stands is 6 to 11.2 kg/ha (5–10 lb/ac) PLS.

### ECOLOGICAL CONSIDERATIONS

An Environmental Evaluation of Plant Materials Releases was completed using guidelines established by USDA NRCS and the best available information for this species. Results of this evaluation determined that Hoverson Germplasm deer pea vetch was suitable for release based on the criterion contained in this document. This conclusion is mainly attributable to the

fact that deer pea vetch is a naturally occurring species in Texas, and planting it would not constitute an introduction of an exotic species into local ecosystems. Any negative impacts on other native plant species would likely be minimal to non-existent. Also, release of this species will make available a native winter annual legume species for rangeland plantings, will provide a good seed source to upland avian wildlife species that can be used as a cool-season cover crop, and will help maintain and contribute habitat that harbors beneficial insects and butterflies.

### ANTICIPATED CONSERVATION USE

Hoverson Germplasm deer pea vetch will provide a native cool-season legume for rangeland and reclamation plantings in south Texas. Seeds of *Vicia ludoviciana* are consumed by bobwhite quail (Larson and others 2010), and leaves and seeds are also consumed by white-tailed deer, Rio Grande turkeys, and cattle (Everitt and others 1999).

### ANTICIPATED AREA OF ADAPTATION

Deer pea vetch is found throughout the state of Texas; however, successful use and persistence of Hoverson Germplasm has been extensively documented only in south Texas. This selection of the plant has performed best on medium to coarse soils in this region. The ecoregions of known adaptation include the Rio Grande Plains (MLRA 83), Gulf Prairies and Marshes (MLRA 150), and Edwards Plateau (MLRA 81) of Texas.

### AVAILABILITY OF PLANT MATERIALS

Foundation Seed will be produced and maintained by South Texas Natives. Certified seed must be grown within the state of Texas from seed obtained from the breeder. Limited quantities of seed for research or evaluation purposes will be available on request from South Texas Natives (stn@tamuk.edu). Recipients of seed are asked to make appropriate recognition of the source of germplasm if it is used in the development of a new cultivar, germplasm, parental line, or genetic stock.

### ACKNOWLEDGMENTS

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### AUTHOR INFORMATION

**Anthony D Falk**  
Research and Evaluation Coordinator

**Forrest S Smith**  
Dan L Duncan Endowed Director  
[forrest.smith@tamuk.edu](mailto:forrest.smith@tamuk.edu)

**Keith A Pawelek**  
Assistant Director

South Texas Natives, Caesar Kleberg Wildlife  
Research Institute  
Texas A&M University  
MSC 218, 700 University Blvd  
Kingsville, TX 78363

**William R Ocumpaugh**  
Research Associate (retired)  
South Texas Natives, Caesar Kleberg Wildlife  
Research Institute  
21643 Tyee Road  
Oakland, OR 97462

**John Lloyd-Reilley**  
Manager

**Shelly D Maher**  
Soil Conservationist

USDA Natural Resources Conservation Service  
E "Kika" de la Garza Plant Materials Center  
3409 North FM 1355  
Kingsville, TX 78363