

Breeders Workgroup

Status of the NPGS Warm-season Grass Collection

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Overview

The National Plant Germplasm System (NPGS) has over 440,000 accessions of plant material that is maintained by locations throughout the U.S. and its territories (USDA, 2005). Grass germplasm is maintained as two separate collections - the warm-season grass collection located at the Plant Genetic Resources Conservation Unit (PGRCU) in Griffin, GA and the cool-season grass collection located at the Western Regional Plant Introduction Station in Pullman, WA. The warm-season grass collection at PGRCU has 6,670 accessions representing 98 genera and 464 species which have been collected from different countries throughout the world. The majority of the material is maintained as seed and stored in low temperature, controlled humidity freezers; while 432 accessions are maintained vegetatively under greenhouse conditions. The germplasm is tested for germination and periodically regenerated to maintain adequate seed quantities and to ensure viability of the seed during which time the material is also evaluated for basic descriptor data. A listing of all the material maintained by PGRCU as well as the entire NPGS system can be viewed at <http://www.ars-grin.gov>.

The warm-season grass germplasm consists mainly of material suitable for forage, turf and a few ornamental grasses. The collection includes both introduced and native material. The larger collections (>100 accessions per species) are listed in the table below.

Genus	Species	Common Name	Total Accessions
Bothriochloa	bladhii	caucasian bluestem	131
Bothriochloa	ischaemum	yellow bluestem	241
Cenchrus	ciliaris	buffelgrass	825
Chloris	gayana	Rhodes grass	134
Cynodon	dactylon var. dactylon	bermudagrass	430
Digitaria	eriantha	digitgrass	390
Digitaria	milanjiana	digitgrass	135
Eleusine	coracana	finger millet	751
Panicum	coloratum	Klein grass	180
Panicum	maximum	guineagrass	284
Paspalum	dilatatum	dallisgrass	272
Paspalum	notatum	bahiagrass	167
Paspalum	plicatum	brown-seed paspalum	123
Paspalum	scrobiculatum	kodo millet	337

Status of Grass Material of Special Interest to the South

Bahiagrass

The bahiagrass, *Paspalum notatum*, collection includes 179 accessions of which 167 are available for distribution and 12 are currently unavailable. Most of the accessions were collected in Brazil (60), Argentina (33), Uruguay (28) and Paraguay (16). Problems have been reported in the past indicating that many accessions may have extremely low germination levels and contain empty seed. To remedy this situation, the collection is currently being regenerated in Byron, GA. Germination of the entire collection was attempted last year with 78% of the accessions producing plants that were transplanted to the field. Work is being done to germinate the remaining accessions using alternative techniques. Collection of basic descriptor data and harvesting of seed is planned for this year.

Bermudagrass

There are 10 species of *Cynodon* represented in the warm-season grass collection including *C. aethiopicus*; *C. barberi*; *C. dactylon* vars. *afghanicus*, *aridus*, *coursii*, and *dactylon*; *C. hybrid*; *C. incompletus* vars. *hirsutus* and *incompletus*; *C. nlemfuensis* vars. *nlemfuensis* and *robustus*; *C. plectostachyus*; *C. radiatus*; *C. transvaalensis*; and *Cynodon X magennisii* with the majority being *C. dactylon* (72%). At one time, there were 851 accessions of *Cynodon* in the collection, but this number is now down to 430 accessions - 254 of which are currently available for distribution and 176 that are unavailable for distribution but still present in the collection. The remaining of the 851 accessions are historical records only. The majority of the available accessions are maintained vegetatively - 218 accessions (89%). Curatorial goals for the bermudagrass include collection of basic descriptor data for the material that will be available on the GRIN website, molecular analysis of the collection, establishing a back up of the vegetative material using tissue culture, regeneration of unavailable material, and acquisition of "lost" accessions.

Dallisgrass

The dallisgrass, *Paspalum dilatatum*, collection contains 272 total accessions - 241 available and 31 unavailable. Most of the material in this collection comes from Brazil (100), Uruguay (66) and Argentina (32). No immediate plans have been made for this collection, but it will most likely be regenerated within the next 3-4 years.

Digitgrass

The digitgrass, *Digitaria eriantha*, collection contains 390 total accessions - 318 available and 72 unavailable. The majority (92%) of the accessions were collected in

South Africa. The collection is mainly stored as seed, but 10 accessions are currently being maintained in the greenhouse.

Limpogress

The limpogress, *Hemarthria altissima*, collection has 44 total accessions - 42 available and two unavailable. All accessions are maintained vegetatively. The majority of the accessions were collected in South Africa (37). The cultivars 'Greenalta', 'Bigalta', and 'Redalta' are in the collection and available for distribution.

Native Grasses

The species maintained include *Andropogon gerardii*, *A. hallii*, *Bouteloua gracilis*, *B. eriopoda*, *B. curtipendula*, *Schizachyrium scoparium*, *Panicum virgatum* and *Sorghastrum nutans*. The collection of side oats grama, *Bouteloua curtipendula*, is the largest with 77 accessions followed by switchgrass, *Panicum virgatum*, with 40 accessions and little bluestem, *Schizachyrium scoparium*, with 30 accessions. A project is currently underway with Drs. John Englert and Shawn Belt from the USDA/NRCS National Plant Materials Center in Beltsville, MD aimed at increasing the number of native grass accessions in the collection through donation of material from the various Plant Material Centers located throughout the U.S.

References

USDA, ARS, National Genetic Resources Program. *Germplasm Resources Information Network - (GRIN)*. [Online Database] National Germplasm Resources Laboratory, Beltsville, Maryland. Available: <http://www.ars-grin.gov>. April 11, 2005.