## DIGITIZATION OF THE US NATIONAL COTTON GERMPLASM COLLECTION

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## <u>Abstract</u>

The US National Cotton Germplasm Collection (NCGC) contains the world's largest publicly available cotton germplasm collection. Characterization of the NCGC is essential to make it useful for the cotton community. A set of morphological and agronomic descriptors were standardized for scoring on the bulk of the NCGC. These descriptors are largely based on ones typically used for cotton cultivars and the rating system expanded according to the variation seen in Gossypium hirsulum landraces and other cotton producing species such as G. barbadense, G. arboreum and G. herbaceum. These four species are often planted together and uniform scoring across them will make the NCGC more meaningful to users. Documentation of the rating system is accomplished with simultaneous collection of standardized, high resolution digital images of excised expanded leaf, flower, closed but not cleft bolls, stem tips, and open bolls. Slight variation in size, color, texture, etc. will be better captured with standardized digital images and create virtual voucher specimens of each planting of an accession. Seed increase plots in a Cotton Winter Nursery and more field plots in College Station, Texas, are used to score descriptors and collect images. Collection of the full range of descriptors and images has been accomplished for the obsolete cultivar sub-collection, and Asiatic diploid cotton collection, but is still in progress for photoperiodic accessions of G. hirsutum, G. barbadense, and species Gossypium because of the difficulty in synchronizing diverse germplasm that vary so widely in maturation and seasonal flowering. A key to the descriptors and rating system, along with sample images is presented here. The progress to date and challenges to full completion of the NCGC is discussed. Collaboration in the cotton community is essential to collect data in a short time at a distant CWN, process it with advanced graphic software, and present it online.