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Evaluation of the USDA Shafter Cotton (*Gossypium* spp.) Collection for Agronomic and Fiber Traits

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Many of the recent additions to the US Cotton Germplasm collection are uncharacterized for common germplasm descriptors. The objective of this study was to evaluate a subset of cotton germplasm for their potential to contribute to future plant improvement efforts. One hundred fifty four cotton germplasm accessions from the former USDA cotton breeding program at Shafter, California were evaluated in the field (LSU AgCenter Northeast Research Station, Saint Joseph, LA) in 2003 along with three modern commercial check varieties (Delta and Pine Land 'DeltaPearl', 'Fibermax 958', and 'Phytogen 355') using an unreplicated modified augmented statistical design-2. The following descriptors were considered: leaf and calyx pubescence; flower maturity; leaf, pollen and petal color; petal spot; glanding; presence of extra floral nectarines; and bract shape. Fiber properties as determined by High Volume Instrumentation: length, strength, micronaire, uniformity, and elongation; and cotton fiber yield were also recorded. Eleven germplasm accessions produced yields within 10% of the check average. The top three highest yielding germplasm accessions, SA 1961, SA 1962 and SA 1960 produced 1833, 1656, and 1613 kg h⁻¹, respectively. Many of the accessions had a long fiber with three accessions, SA 2093, SA 1983, and SA 2091, having fiber lengths greater than 31.8 mm. Much of the germplasm (82%) was characterized as having very strong fiber. Over half of the germplasm evaluated (55%) had micronaire between 3.8 and 4.6. In summary, these recent additions to the US Cotton Germplasm Collection provide a valuable genetic resource for improving yield, fiber quality and other agronomic traits of modern cotton varieties.