Progress in Screening the U.S. Cotton Germplasm Collection for Diversity

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Introduction

The diversity of traits in the U.S. Cotton Germplasm Collection (landraces, exotic and wild species) has proven to be a resource for cotton breeders to introduce valuable genes into a breeding program. The Texas A&M AgriLife Research Cotton Improvement Program at Lubbock has been actively screening the cotton collection for potential trait improvements under the categories of abiotic and biotic stress, as well as phenotypic documentation (Table 1). These include: growth studies, documenting contrasting seedling development, determined by evaluating plant biomass; hydroponic screening, to understand the plant's response to saline conditions; and using both free-choice and no-choice screening methods for assessing plant's tolerance to thrips injury.

Objective

Utilization of the greenhouse facility has enabled investigators to evaluate species diversity on a systematic, morphological and physiological basis. In this review, the collection's diversity will be highlighted by the evaluation efforts made from the above categories.

Methods

Acquisition

-25 to 50 seed acquired from USDA Cotton Collection

-Registration of samples, enter passport data into inventory

Regeneration

-Increase seed in greenhouse

-Follow best management procedures to maintain genetic integrity of accessions

Characterization

-Use of descriptors list

-Data collected in order of plant development eg. seedling, vegetative, inflorescence & fruit

Documentation

-Maintaining and importing data & digital images into a gene bank management system

Utilization

-Screening for abiotic and biotic stress

-Developing core collections that can be used for pre-breeding material

Summary

-Over 800 cottons have been documented and/or screened.

-Methodologies have been developed to screen in all areas of interest.

-Useful characteristics have been found in all areas of study and have been incorporated into the breeding program.

-Digital photographs will be included in an online database allowing researchers to see characteristics of interest.

-Work has led to success in the competitive granting arena allowing for research to expand.

Plant Biomass Evaluation

Salt Screening

Thrips Screening

Digital Documentation

Table 1. A reference table of *Gossypium* accessions increased, method evaluated , and documented. (symbol keys BELOW)

TEX 1 to 9	yes	SS	TS		DD	FA
TEX 10	yes	SS	TS	PBE	DD	FA
TEX 11	yes	SS	TS		DD	FA
TEX 12	yes	SS	TS		DD	FA
TEX 14	yes	SS	TS		DD	FA
TEX15	yes	SS	TS	PBE	DD	FA
TEX 16 to 17	yes	SS	TS		DD	FA
TEX 18 to 19	yes	SS	TS	PBE	DD	FA
TEX 20 to 22	yes	SS	TS		DD	FA
TEX 24	yes	SS	TS	PBE	DD	FA
TEX 25	yes	SS	TS		DD	FA
TEX 26	yes		TS		DD	FA
TEX 27 to 31	yes	SS	TS		DD	FA
TEX 33 to 34	yes	SS	TS		DD	FA
TEX 36	yes	SS	TS		DD	FA
TEX 37	yes	SS	TS	PBE	DD	FA
TEX 39	yes	SS	TS	PBE	DD	FA
TEX 40	yes	SS	TS	PBE	DD	FA
TEX 41	yes	SS	TS		DD	FA
TEX 43	yes	SS	TS	PBE	DD	FA
TEX 44 to 45	yes	SS	TS		DD	FA
TEX 46	yes	SS	TS	PBE	DD	FA
TEX 48	yes	SS	TS		DD	FA
TEX 50 to 53	yes		TS		DD	FA
TEX 55 to 58	yes	SS	TS		DD	FA
TEX 59	yes					
TEX 60	yes	SS	TS		DD	FA
TEX 61	yes	SS	TS	PBE	DD	FA
TEX 62	yes	SS		PBE	DD	FA
TEX 63	yes		TS	PBE	DD	FA
TEX 64	yes	SS		PBE	DD	FA
TEX 65	yes	SS	TS	PBE	DD	FA
TEX 66	yes	SS		PBE	DD	FA
TEX 67 to 70	yes	SS	TS	PBE	DD	FA
TEX 71	yes	SS	TS	PBE	DD	
TEX 72 to 73	yes	SS	TS	PBE	DD	FA
TEX 75 to 81	yes	SS	TS	PBE	DD	FA
TEX 82	yes			PBE		
TEX 83 to 91	yes	SS	TS	PBE	DD	FA
TEX 93 to 94	yes		TS	PBE	DD	FA
TEX 95 to 101	yes	SS	TS	PBE	DD	FA
TEX 102	yes	SS	TS		DD	FA
TEX 103	yes		TS		DD	FA
TEX 104	yes	SS	TS	PBE	DD	FA
TEX 105	yes		TS	PBE	DD	FA
TEX 120	yes	SS	TS	PBE		FA
TEX 116 to 119A	yes	SS	TS		DD	FA
TEX 120	yes	SS	TS	PBE		FA
TEX 121 to 126	yes	SS	TS	PBE	DD	FA
TEX 127	yes					
TEX 128 to 137	yes	SS	TS	PBE	DD	FA
TEX 138	yes					
TEX 139 to 153	yes	SS	TS	PBE	DD	FA
TEX 154	yes		TS		DD	FA
TEX 155	yes	SS	TS	PBE	DD	FA
TEX 156	yes	SS	TS	PBE	DD	FA
TEX 157	yes				DD	FA
TEX 158	yes	SS	TS	PBE	DD	FA
TEX 159	yes					
TEX 160	yes	SS	TS	PBE	DD	FA

TEX 161	yes				DD	FA
TEX 162	yes	SS	TS	PBE	DD	FA
TEX 163	yes	SS	TS	PBE		FA
TEX 164	yes	SS	TS	PBE		
TEX 165						
TEX 166	yes					FA
TEX 167					DD	FA
TEX 168 to 169	yes	SS	TS	PBE		FA
TEX 170	yes				DD	FA
TEX 171 to 172	yes	SS	TS	PBE		FA
TEX 173	yes					
TEX 174 to 177	yes				DD	FA
TEX 178 to 179	yes	SS	TS	PBE		FA
TEX 180	yes		TS		DD	FA
TEX 181	yes	SS		PBE	DD	FA
TEX 182 to 183	yes	SS	TS	PBE		
TEX 184	yes	SS	TS	PBE		FA
TEX 185	yes	SS	TS	PBE		
TEX 186	yes					
TEX 187	yes	SS	TS	PBE		FA
TEX 188 to 190	yes					
TEX 191 to 192	yes	SS	TS	PBE		FA
TEX 194	yes	SS	TS	PBE		
TEX 195	yes				DD	FA
TEX 196 to 198	yes	SS	TS	PBE		
TEX 199	yes	SS	TS	PBE		FA
TEX 200 to 204	yes	SS	TS	PBE		
TEX 205	yes	SS		PBE		
TEX 206	yes	SS	TS	PBE		
TEX 207208	to	SS	TS	PBE		FA
TEX 208	yes	SS	TS	PBE		FA
TEX 209	yes	SS	TS	PBE		
TEX 210 to 213	yes	SS	TS	PBE		FA
TEX 214 to 217	yes	SS	TS	PBE		
TEX 218	yes				DD	FA
TEX 219 to 220	yes	SS	TS	PBE		FA
TEX 221 to 222	yes	SS	TS	PBE		
TEX 223	yes	SS	TS	PBE		FA
TEX 224	yes	SS	TS	PBE		
TEX 225 to 226	yes	SS	TS	PBE		FA
TEX 227	yes					
TEX 228 to 230	yes	SS	TS	PBE		
TEX 231	yes				DD	
TEX 232 to 235	yes	SS	TS	PBE		FA
TEX 235A	yes				DD	
TEX 236	yes	SS	TS	PBE		FA
TEX 237	yes	SS	TS	PBE		FA
TEX 238	yes	SS	TS	PBE		FA
TEX 239	yes					
TEX 240	yes	SS	TS			
TEX 241	yes				DD	FA
TEX 242	yes	SS	TS	PBE		
TEX 243	yes	SS	TS	PBE		FA
TX 244 to 245	yes	SS	TS	PBE		
TEX 246	yes	SS	TS	PBE		FA
TEX 247 to 248	yes	SS	TS	PBE		
TEX 249	yes	SS	TS	PBE		FA
TEX 250	yes					
TEX 251	yes				DD	FA
TEX 251A	yes					FA

TEX 252	yes	SS	TS	PBE		FA
TEX 253	yes				DD	FA
TEX 254	yes	SS	TS	PBE		FA
TEX 255	yes					FA
TEX 256	yes	SS	TS	PBE		FA
TEX 257	yes		TS	PBE		FA
TEX 258	yes		TS	PBE		
TEX 259 to 260	yes		TS	PBE		FA
TEX 263	yes		TS	PBE		FA
TEX 264	yes		TS	PBE		FA
TEX 265	yes					
TEX 266	yes		TS	PBE		FA
TEX 267	yes		TS	PBE		
TEX 268	yes		TS	PBE		FA
TEX 271	yes					
TEX 273	yes				DD	FA
TEX 275	yes		TS	PBE		FA
TEX 276	yes				DD	FA
TEX 277 to 280	yes		TS	PBE		FA
TEX 281	yes		TS	PBE		
TEX 282	yes		TS	PBE		FA
TEX 283	yes					
TEX 284 to 285	yes		TS	PBE		FA
TEX 286	yes		TS	PBE		
TEX 289	yes		TS			FA
TEX 290	yes					
TEX # 292	yes		TS	PBE		FA
TEX 293						
TEX 294	yes			PBE	DD	FA
TEX 295	yes		TS	PBE		
TEX 296 to 298	yes		TS	PBE		FA
TEX 301	yes		TS	PBE		
TEX 303	yes		TS			FA
TEX 304 to 306	yes		TS	PBE		FA
TEX 307	yes	SS	TS	PBE		
TEX 308	yes		TS	PBE		FA
TEX 310	yes	SS	TS	PBE		FA
TEX 311	yes		TS	PBE		FA
TEX 312	yes					
TEX 313	yes		TS			FA
TEX 314 to 316	yes		TS	PBE		FA
TEX 318	yes		TS	PBE		
TEX 320	yes		TS	PBE		FA
TEX 321	yes		TS	PBE		
TEX 322	yes					
TEX 323 to 325	yes		TS	PBE		FA
TEX 326	yes		TS			FA
TEX 327 to 330	yes				DD	FA
TEX 331 to 332	yes				DD	
TEX 333	yes					
TEX 334 to 339	yes				DD	FA
TEX 340	yes				DD	
TEX 341	yes		TS	PBE	DD	FA
TEX 342 to 345	yes				DD	FA
TEX 346 to 347	yes		TS		DD	FA
TEX 367	yes				DD	FA
TEX 368	yes		TS		DD	FA
TEX 370 to 371	yes	SS			DD	FA
TEX 371	yes	SS			DD	FA
TEX 372	yes				DD	FA

TEX 373	yes	SS			DD	FA
TEX 375						
TEX 376	yes		TS		DD	FA
TEX 378	yes		TS		DD	FA
TEX 379	yes				DD	FA
TEX 380	yes		TS		DD	FA
TEX 390	yes		TS		DD	FA
TEX 396	yes		TS		DD	FA
TEX 397	yes		TS		DD	FA
TEX 399	yes		TS		DD	FA
TEX 400 to 401	yes		TS		DD	FA
TEX 404	yes		TS		DD	FA
TEX 406	yes				DD	FA
TEX 408 to 409	yes				DD	FA
TEX 458 to 460	yes		TS		DD	FA
TEX 461	yes		TS	PBE	DD	FA
TEX 462 to 467	yes		TS		DD	FA
TEX 469	yes		TS		DD	FA
TEX 473	yes		TS		DD	FA
TEX 475	yes		TS		DD	FA
TEX 477	yes		TS		DD	FA
TEX 478	yes		TS		DD	FA
TEX 479	yes		TS	PBE	DD	FA
TEX 480	yes		TS		DD	FA
TEX 481	yes		TS	PBE	DD	FA
TEX 482	yes		TS		DD	FA
TEX 485	yes		TS	PBE	DD	FA
TEX 487 to 488	yes		TS	PBE	DD	FA
TEX 489 to 490	yes		TS		DD	FA
TEX 491	yes		TS	PBE	DD	FA
TEX 492	yes		TS		DD	FA
TEX 493	yes		TS	PBE	DD	FA
TEX 495	yes		TS	PBE	DD	FA
TEX 495A	yes			PBE	DD	FA
TEX 497	yes		TS	PBE	DD	
TEX 498 to #500	yes		TS	PBE	DD	FA
TEX 502 to 503	yes		TS	PBE	DD	FA
TEX 529	yes			PBE	DD	FA
TEX 570	yes		TS	PBE	DD	FA
TEX 595	yes		TS	PBE	DD	FA
TEX 596	yes		TS	PBE	DD	FA
TEX 597	yes		TS		DD	FA
TEX 600	yes		TS		DD	FA
TEX 601 to 602	yes		TS	PBE	DD	FA
TX 604 to 605	yes		TS	PBE	DD	FA
TEX 606	yes		TS		DD	FA
TEX 607	yes		TS	PBE	DD	FA
TEX 609	yes			PBE	DD	FA
TEX 610	yes		TS		DD	FA
TEX 611 to 612	yes		TS	PBE	DD	FA
TX 615 to 616	yes		TS	PBE	DD	FA
TEX 619 to 620	yes		TS	PBE	DD	FA
TEX 621	yes		TS		DD	FA
TEX 622 to 625	yes		TS	PBE	DD	FA
TEX 627	yes		TS	PBE	DD	FA
TEX 628	yes					
TEX 633 to 638	yes		TS	PBE	DD	FA
TEX 640	yes		TS		DD	FA
TEX 641	yes		TS	PBE	DD	FA
TEX 642	yes		TS		DD	FA

TEX 643 to 646	yes		TS	PBE	DD	FA
TEX 647	yes		TS		DD	FA
TEX 649	yes		TS		DD	FA
TEX 650	yes		TS	PBE	DD	FA
TEX 654	yes		TS	PBE	DD	FA
TEX 655 to 658	yes		TS	PBE	DD	FA
TEX 659 to 660	yes		TS	PBE	DD	FA
TEX 661	yes		TS		DD	FA
TEX 662	yes			PBE	DD	FA
TEX 663 to 664	yes		TS	PBE	DD	FA
TEX 665	yes		TS	PBE	DD	
TEX 668	yes		TS	PBE	DD	
TEX 670	yes		TS	PBE	DD	FA
TEX 672	yes		TS	PBE	DD	
TEX 674	yes		TS		DD	FA
TEX 675	yes		TS	PBE	DD	FA
TEX 676	yes		TS		DD	FA
TEX 677	yes		TS	PBE	DD	
TEX 678	yes		TS	PBE	DD	
TEX 679 to 680	yes		TS	PBE	DD	FA
TEX 681	yes			PBE	DD	FA
TEX 682 to 684	yes		TS	PBE	DD	FA
TEX 685	yes		TS		DD	FA
TEX 686	yes		TS	PBE	DD	
TEX 688	yes					FA
TEX 690 to 691	yes		TS	PBE	DD	FA
TEX 693	yes		TS	PBE	DD	FA
TEX 695	yes		TS		DD	FA
TEX 697 to 698	yes		TS	PBE	DD	FA
TEX 699	yes		TS		DD	FA
TEX 700 to 706	yes		TS	PBE	DD	FA
TEX 707	yes		TS		DD	FA
TEX 708	yes		TS	PBE	DD	FA
TEX 709	yes		TS		DD	FA
TEX 710	yes			PBE	DD	FA
TEX 711	yes		TS		DD	FA
TEX 712	yes				DD	
TEX 713 to 714	714	yes		TS	PBE	DD
TEX 717	yes		TS	PBE	DD	FA
TEX 718	yes		TS		DD	FA
TEX 719	yes					
TEX 720	yes		TS		DD	FA
TEX 724 to 725	yes		TS	PBE	DD	FA
TEX 728	yes		TS	PBE	DD	FA
TEX 730	yes			PBE	DD	FA
TEX 732	yes		TS	PBE	DD	FA
TEX 733	yes		TS		DD	FA
TEX 735	yes		TS		DD	
TEX 737	yes					
TEX 738 to 741	yes		TS	PBE	DD	FA
TEX 742 to 744	yes			PBE	DD	FA
TEX 745 to 746	yes				DD	FA
748	yes				DD	FA
TEX 749-757	yes			PBE	DD	FA
TX 758-762	yes				DD	FA
TEX 763	yes			PBE	DD	FA
TEX 764 to 771	yes				DD	FA
TEX 773	yes				DD	FA
TEX 775 to 776	yes				DD	FA
TEX 778	yes				DD	FA

TEX 1008	yes				DD	FA
TEX 1009	yes	SS			DD	FA
TEX 1010	yes				DD	FA
TEX 1015	yes				DD	FA
TEX 1020	yes				DD	FA
TEX 1021	yes				DD	FA
TEX 1023	yes				DD	
TEX 1025	yes				DD	FA
TEX 1027 to 1030	yes				DD	FA
TEX 1032 to 1033	yes				DD	FA
TEX 1034	yes					
TEX 1036 to 1037	yes				DD	FA
TEX 1039 to 1040	yes				DD	FA
TEX 1042 to 1043	yes				DD	FA
TEX 1045 to 1046	yes				DD	FA
TEX 1050	yes				DD	FA
TEX 1053 to 1058	yes				DD	FA
TEX 1061 to 1069	yes				DD	FA
TEX 1068 to 1069	yes				DD	FA
TEX 1072	yes				DD	FA
TEX 1074 to 1075	yes				DD	FA
TEX 1076	yes				DD	FA
TEX 1078 to 1080	yes				DD	FA
TEX 1086 to 1092	yes				DD	FA
TEX 1094	yes				DD	FA
TEX 1096 to 1097	yes				DD	
TEX 1099	yes				DD	
TEX 1100	yes				DD	
TEX 1100 to 1103	yes				DD	
TEX 1105 to 1120	yes				DD	
TEX 1121	yes			PBE	DD	
TEX 1122 to 1124	yes				DD	
TEX 1125	yes				DD	FA
TEX 1126 to 1130	yes				DD	
TEX 1131	yes			PBE	DD	
TEX 1132	yes				DD	
TEX 1134	yes				DD	
TEX 1136	yes				DD	
TEX 1138	yes		SS		DD	FA
TEX 1139	yes				DD	
TEX 1141 to 1145	yes				DD	
TEX 1147 to 1148	yes		SS		DD	FA
TEX 1149 to 1150	yes				DD	
TEX 1151	yes			PBE	DD	
TEX 1174	yes				DD	
TEX 1180	yes				DD	FA
TEX 1191	yes	SS			DD	FA
TEX 1202	yes	SS			DD	FA
TEX 1204	yes	SS			DD	FA
TEX 1216	yes			PBE		FA
TEX 1237	yes			PBE		FA
TEX 1239	yes	SS				
TEX 1297	yes	SS			DD	FA
TEX 1318	yes				DD	FA
TEX 1372	yes			PBE	DD	FA
TEX 1373	yes				DD	FA
TEX 1374	yes	SS			DD	FA
TEX 1425	yes				DD	FA
TEX 1440	yes				DD	FA
TEX 1465	yes				DD	

TEX 1469	yes				DD	FA
TEX 1679	yes				DD	FA
TEX 1686	yes			PBE	DD	FA
TEX 1723	yes				DD	
TEX 1737	yes			PBE	DD	FA
TEX 1747	yes				DD	FA
TEX 1751	yes			PBE	DD	FA
TEX 1755	yes				DD	
TEX 1771 to 1772	yes					
TEX 1775 to 1777	yes				DD	FA
TEX 1793	yes				DD	
TEX 1796	yes			PBE	DD	FA
TEX 1817	yes				DD	
TEX 1818	yes			PBE	DD	FA
TEX 1819	yes				DD	
TEX 1820	yes	SS		PBE	DD	FA
TEX 1824	yes	SS		PBE	DD	FA
TEX 1836	yes				DD	FA
TEX 1839	yes	SS		PBE	DD	FA
TEX 1841	yes	SS		PBE	DD	FA
TEX 1862	yes	SS		PBE	DD	FA
TEX 1864	yes	SS		PBE	DD	FA
TEX 1867	yes	SS		PBE	DD	FA
TEX 1868	yes				DD	FA
TEX 1906	yes				DD	FA
TEX 1910	yes				DD	
TEX 1918	yes				DD	FA
TEX 1940	yes			PBE	DD	FA
TEX 1941	yes				DD	
TEX 1998	yes			PBE	DD	FA
TEX 2014	yes			PBE	DD	FA
TEX 2028	yes			PBE	DD	FA
TEX 2029	yes				DD	FA
TEX 2032	yes			PBE	DD	FA
TEX 2033	yes			PBE	DD	FA
TEX 2038	yes					FA
TEX 2046	yes			PBE	DD	FA
TEX 2056	yes			PBE	DD	FA
TEX 2076	yes				DD	
TEX 2079	yes				DD	
TEX 2090	yes			PBE	DD	FA
TEX 2091	yes				DD	
TEX 2094	yes				DD	FA
TEX 2095	yes				DD	FA
TEX 2114	yes				DD	FA
TEX 2115	yes	SS		PBE	DD	FA
TEX 2116	yes			PBE	DD	FA
TEX 2141	yes				DD	FA
TEX 2194	yes	SS				
TEX #2198	yes				DD	FA
TEX #2199	yes				DD	FA
TEX 2201	yes				DD	FA
TEX #2203	yes				DD	FA
TEX 2207	yes			PBE	DD	
TEX 2208	yes					
TEX 2209	yes					
TEX 2211	yes				DD	FA
TEX 2212	yes	SS				
TEX 2213	yes	SS		PBE		
TEX 2214	yes	SS		PBE	DD	FA

A1-5		DD	FA
A1-9		DD	
A1-22		DD	FA
A1-23		DD	FA
A1-24		DD	FA
A1-30		DD	
A1-32		DD	FA
A1-36		DD	FA
A1-52		DD	FA
A1-57		DD	FA
A1-61		DD	FA
A1-66		DD	FA
A1-70		DD	FA
A1-71		DD	FA
A1-72		DD	FA
A1-77		DD	FA
A1-78		DD	FA
A1-81			FA
A1-84			FA
A1-88	TS	DD	FA
A1-96		DD	FA
A1-101		DD	FA
A1-113	TS	DD	FA
A1-115		DD	FA
A1-116		DD	FA
A1-125		DD	FA
A1-133		DD	FA
A1-142		DD	FA
A2-8	TS	DD	FA
A2-13	TS	DD	FA
A2-20		DD	
A2-24		DD	
A2-34		DD	
A2-57	TS	DD	FA
A2-67		DD	FA
A2-68		DD	FA
A2-72A		DD	FA
A2-75		DD	
A2-78		DD	FA
A2-80		DD	FA
A2-111		DD	
A2-118		DD	FA
A2-127		DD	FA
A2-132		DD	FA
A2-133		DD	FA
A2-137		DD	FA
A2-154	TS	DD	FA
A2-198		DD	FA
A2-208		DD	FA
A2-210		DD	FA
A2-230		DD	FA
A2-265	TS	DD	FA

(AD)3-16	DD		
(AD)4-7	DD		
(AD)4-8	DD	FA	
(AD)4-9	DD		
(AD)4-10	DD		
(AD)4-15	DD		
(AD)4-16	DD		
(AD)5-3	DD	FA	
(AD)5-7	DD	FA	
(AD)5-13	DD		
(AD)5-14	DD		
(AD)5-19	DD		
(AD)5-42	DD		
(AD)5-43	DD		
(AD)5-49			
(AD)5-50	DD		
(AD)5-51	DD		

B1-1	DD		
B1-3	DD		
C1-1	DD		
C1-2	DD		
C1-3	DD		
C1-5	DD		
C1-6	DD		
C1-7	DD		
C1N-1	DD		
C3-1	DD		
C3-7	DD		
C3-9	DD		
C3-1	DD		
C3-7	DD		
C3-9	DD		
C9-4	DD		

SA33	PBE	DD	FA
SA1194	PBE		
SA1230	PBE	DD	FA
SA1231	PBE	DD	FA
SA1247	PBE	DD	FA
SA1248	PBE	DD	FA
SA1407	PBE	DD	FA
SA1408	PBE	DD	FA
SA1409	PBE	DD	FA
SA1410	PBE	DD	FA
SA1435	PBE	DD	FA
SA1436	PBE	DD	FA
SA1437	PBE	DD	FA
SA1724	PBE	DD	FA
SA1725	PBE	DD	FA
SA1726	PBE	DD	FA
SA1727	PBE	DD	FA
SA3234	PBE	DD	FA

GB409	TS	DD	FA
GB522	TS	DD	FA
GB554		DD	FA
GB663	TS	DD	FA
GB1038		DD	FA

KEY TO *GOSSYPIUM* SPECIES CODES

TEX – *hirsutum* (primarily)	**(AD)3 – *tomentosum***	**B1 – *anomalum***	**(AD)3 – *tomentosum***
A1 – *herbaceum*	**(AD)4 – *mustelinum***	**C1 – *sturtianum***	**(AD)4 – *mustelinum***
A2 – *arboreum*	**(AD)5 – *darwinii***	**C1N1 – *nandewarense***	**(AD)5 – *darwinii***
		GB – *barbadense*	

C3 – *australe*
C9 – *nelsonii*
SA – *hirsutum*

KEY TO SEED UTILIZATION CODES

UTILIZATION	DESCRIPTION	CODE PREFIX	UTILIZATION	DESCRIPTION	CODE PREFIX
Regeneration	**Seed Increase**	**yes**	**Phenotyping**	**Plant Biomass Evaluation**	**PBE**
Abiotic Stress	**Salinity Screening**	**SS**	**Phenotyping**	**Digital Image Documentation**	**DD**
Biotic Stress	**Thrips Screening**	**TS**	**Production**	**Fiber Analysis**	**FA**

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