

# REPORT TO THE SORGHUM and MILLET CROP GERMPLASM COMMITTEE

April 2024

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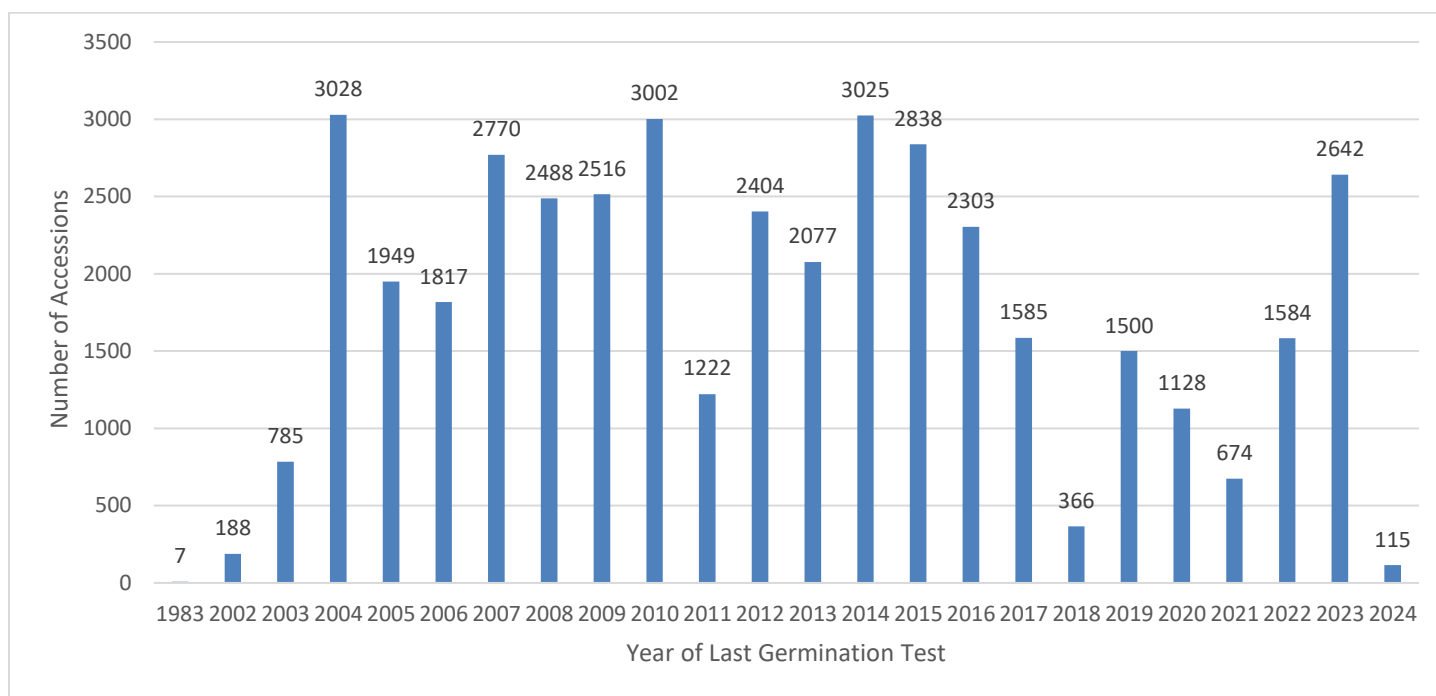
## STATUS OF THE COLLECTION

There are 17 taxa included in the S9 millet collection with 2,439 total accessions (Table 1). These include pearl millet, finger millet, and kodo millet. The sorghum collection continues to be the largest crop collection maintained at the Griffin, GA location with 48,213 accessions. Currently, 96% of the sorghum accessions and 92% of the S9 millet accessions are available for distribution. Ninety-three percent of the sorghum germplasm and 98% of the S9 millet germplasm is backed up at the National Laboratory for Genetic Resources Preservation (NLGRP) in Fort Collins, CO. For *Sorghum bicolor* accessions that have a least one germination test, 42% of those have had a germination test conducted in the past ten years and 97% within the past 20 years (Figure 1).

**Table 1.** Status of the USDA Sorghum and S9 Millet Germplasm Collection as of March 19, 2024.

|                                         | <u>Sorghum</u> | <u>Sorghum wild species</u> | <u>S9 Millets</u> |
|-----------------------------------------|----------------|-----------------------------|-------------------|
| <b>Total Number of Taxa</b>             | 4              | 20                          | 17                |
| <b>Total Number of Accessions</b>       | 48213          | 313                         | 2505              |
| <b>Number of Available Accessions</b>   | 46463          | 253                         | 2314              |
| <b>Number of Unavailable Accessions</b> | 1750           | 60                          | 191               |
| <b>Number of Accessions Backed Up</b>   | 45035          | 310                         | 2445              |
| <b>Svalbard Back Up</b>                 | 9724           | 47                          | 1000              |
| <b>Number of Accessions at -18C</b>     | 44742          | 312                         | 2505              |
| <b>Number of Viability Tests</b>        | 44167          | 286                         | 2439              |

**Figure 1.** Status of germination testing on sorghum accessions. Sorghum genetic stocks and wild sorghum accessions are not included.



## DISTRIBUTIONS

For the 2023 calendar year, 16,399 accessions of sorghum germplasm, including genetic stocks, were distributed. A total of 4007 accessions of S9 millets were distributed (Table 2). Most accessions were domestic distributions with 74% for sorghum, 81% for S9 millets, and 57% for sorghum genetic stocks.

**Table 2.** Distributions of sorghum and S9 millet germplasm during the 2023 calendar year.

| Cooperator Affiliation                   | Number of Accessions Sorghum | Number of Accessions S9 Millets | Number of Accessions Sorghum Genetic Stocks |
|------------------------------------------|------------------------------|---------------------------------|---------------------------------------------|
| Foreign commercial company               | 592                          | 0                               | 24                                          |
| Foreign genebank                         | 0                            | 0                               | 0                                           |
| Foreign individual no affiliation        | 0                            | 0                               | 0                                           |
| Foreign non-commercial organization      | 2299                         | 769                             | 2177                                        |
| U.S. state agencies and all universities | 4737                         | 2928                            | 2038                                        |
| Agricultural Research Service            | 583                          | 2                               | 214                                         |
| U.S. commercial company                  | 1040                         | 15                              | 271                                         |
| U.S. individual no affiliation           | 304                          | 1                               | 20                                          |
| U.S. non-profit organizations            | 1696                         | 292                             | 403                                         |
| U.S. federal agency (not AID or ARS)     | 1                            | 0                               | 0                                           |
| <b>Total Distributions</b>               | <b>11252</b>                 | <b>4007</b>                     | <b>5147</b>                                 |

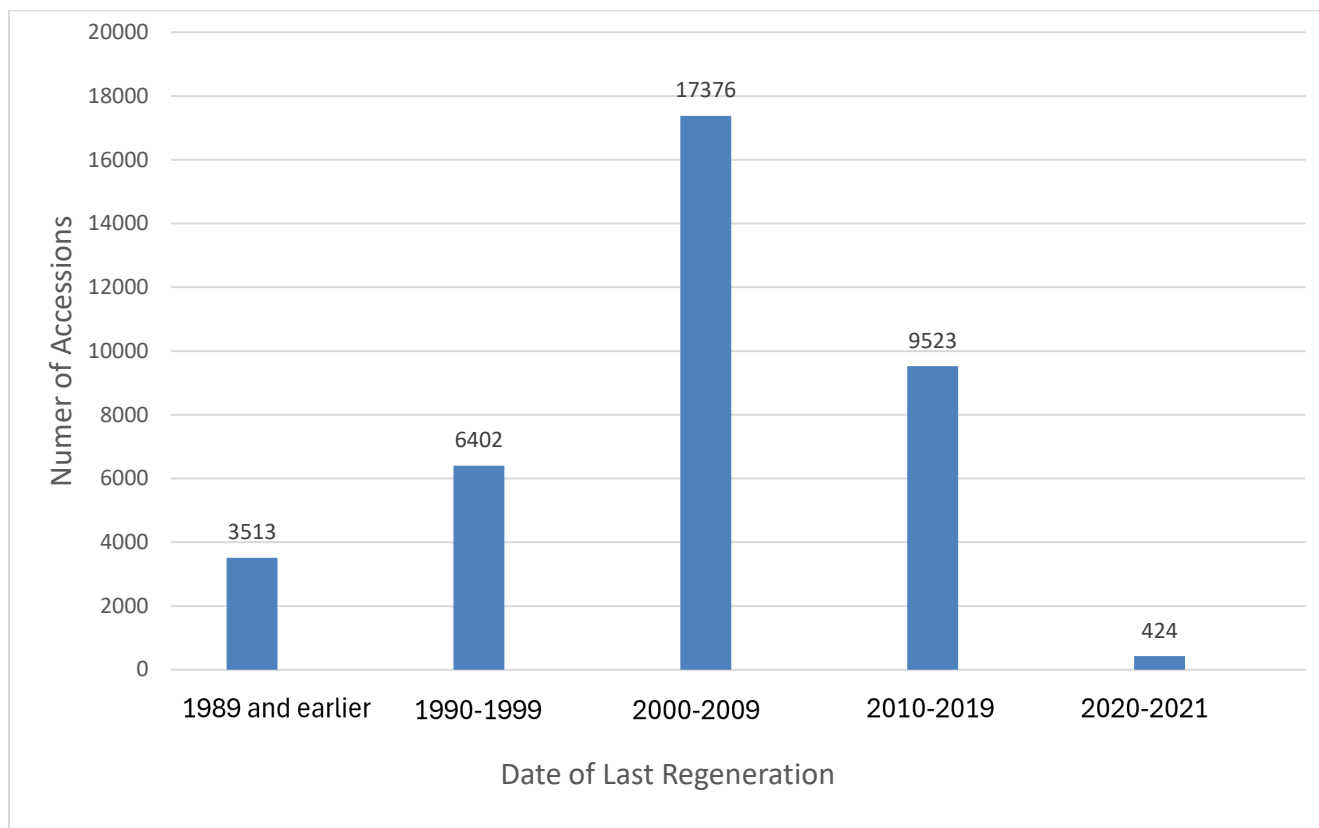
## ACQUISITIONS

PGRCU seed storage personnel completed the processing of ~5,000 accessions of sorghum that had originally been preserved at Fort Collins, CO only without a distribution sample in the active collection in Griffin, GA. This material is now available for distribution. Dr. Zhanguo Xin, USDA-ARS Plant Stress & Germplasm Development Unit, Cropping Systems Research Laboratory in Lubbock, Texas donated 252 accessions of the ARS EMS population to the collection. The populations are defined by the descriptor “subset of a population” and can therefore be found using the descriptor search feature on GRIN-Global (<https://npgsweb.ars-grin.gov/gringlobal/descriptors>). Accessions of these populations are maintained at 4°C only and do not have an additional sample at -18°C. Seed will be distributed until the sample is exhausted and not regenerated.

## REGENERATION AND MAINTENANCE

Regenerations of sorghum and pearl millet continue to be performed in Puerto Rico in collaboration with the USDA, ARS, Tropical Agriculture Research Station. Regenerated seeds are sent back to Griffin, GA for processing into the collection. Each regeneration sample has a germination test prior to storage. All newly regenerated accessions are split into two inventories - a 500 seed sample for long term -18°C storage and the remaining seed at 4°C for distributions. If the current backup inventory at Fort Collins, CO has low germination or seed quantity, a new backup inventory is sent from the newly regenerated seed. A greenhouse regeneration for wild sorghum accessions was conducted last year in Griffin, GA. Goals of this regeneration are to increase seed supply, verify taxa, and collect and upload basic descriptor data and images on GRIN-Global. Using last harvest date as a measure to determine year of last regeneration, 90% or 33,725 accessions with a harvest date in GRIN have been regenerated within the last 35 years and 27% or 9,947 accessions in the past 14 years (Figure 2). This does not include recent regenerations performed in 2022 and 2023.

**Figure 2.** For *Sorghum bicolor* accessions that have a harvest date listed in GRIN (37,238), the number of accessions harvested within a particular time frame are shown.



### PERSONNEL

Our seed germination technician, Phiffie Vankus, retired in December 2023. It is through her efforts that there is such a large portion of the sorghum collection that has been germination tested. Due to budget limitations, the vacant germination technician position is not expected to be filled but will most likely be abolished. Seasonal labor used to clean and process newly regenerated sorghum accessions into the collection was eliminated in FY24 and FY25 due to budget limitations. The federal supply budget is severely restricted and may affect future seed cleaning, processing, and distribution activities at the location.

### ACKNOWLEDGEMENTS

Thanks to Nick Stigura (USDA-ARS, IT Specialist) for providing the data for this report and to Tiffany Fields (USDA-ARS, Seed Storage Manager) for oversight of the sorghum seed cleaning, processing, and distribution activities at the Griffin, GA location. Thanks also to the PGRCU seed storage team (Jill Cunningham, Sylvia Jones, Cassa Munroe, and Phiffie Vankus) for their assistance in sorghum distributions, germinations, and -seed processing.