MINUTES

42nd RICE CROP GERMLASM COMMITTEE MEETING

Monday, February 20, 2023

Hot Springs Convention Center, Hot Springs, Arkansas

The 42nd Rice Crop Germplasm Committee (CGC) meeting was held on Mon., February 20, 2023, in Hot Springs, Arkansas. Members in attendance were Georgia Eizenga (Chair), Brijesh Angira, Teresa DeLeon, Omar Samonte, Qiming Shao, Shane Zhou, Bishwo Adhikari, Trevis Huggins, Yulin Jia and Jack Okamuro. Members Harold Bockelman and Peter Bretting attended virtually. Members Nick Bateman, Ed Redoña, Xueyan Sha and Gary Kinard were unable to attend. Stan De Guzman attended to represent Xueyan Sha. Guests in attendance were NanYen Chou, Adam Famoso, Dustin Harrell, Aaron Jackson, Melissa Jia, Frank Maulana, Anna McClung, Kent McKenzie, Shannon Pinson, Nirmal Sharma and Gretchen Zaunbrecher.

The minutes of 41st Rice CGC, held virtually on Feb. 24, 2021 due to covid 19 travel restrictions, and subsequent addendum items were presented. Brijesh moved to approve the minutes and addendum items. The move was seconded by Omar and approved by committee members in attendance.

The report provided by **Gary Kinard**, USDA/ARS National Germplasm Resources Lab, was reviewed by Georgia since Gary could not attend. Personnel changes included Karen Williams, Botanist, retiring and the Plant Pathologist vacancy being advertised, and hopefully filled summer 2023. Plant Exploration and Exchange Program guidelines for 2024 were sent to CGC chairs and are due July 3l, 2023. Several proposals approved in previous years were postponed because of the pandemic. Some of these have been rescheduled for 2023. GRIN Taxonomy, available through GRIN-Global, now represents about 16,300 taxa and includes a broad range of economically important plants, as well as thorough coverage of wild relatives of all major and minor crops. Distribution of germplasm from the NPGS to foreign scientists and international genebanks through collaboration with USDA-APHIS remains challenging, due to limited APHIS inspection personnel and global shipping issues. The GRIN-Global plant database currently includes 605,446 active accessions representing 2,565 plant genera.

**Harold Bockelman**, Curator of the National Small Grains Collection (NSGC), reported there are currently 150,019 accessions in the NSGC which represents the global diversity of wheat (*Triticum*), barley (*Hordeum*), oat (*Avena*), rice (*Oryza*), rye (*Secale*), triticale (*X Triticosecale*), and various wild relatives. As a point of history, the NSGC was established in 1948 and officially moved from Beltsville, MD to Aberdeen, ID in 1988 which took about four weeks to move about 120,000 accessions, including 15,000-16,000 *Oryza* accessions. Currently, there are 19,130 *Oryza* accessions with 18 new *O. sativa* accessions added since Feb. 2021. Since Jan. 1, 2021, 2,130 *Oryza* accessions have been distributed across 182 separate requests with about 1/3 distributed internationally and 2/3 to domestic customers. Kent McKenzie commented that accessions covered by a PVP certificate can be distributed once the PVP expires.

**Bishwo Adhikari**, USDA/APHIS Plant Germplasm Quarantine Program (PGQP), Team Lead for the *Poaceae* Quarantine Program joined in June 2021. In 2021, 37 accessions were processed through the quarantine grow-out and twelve accessions in 2022. All but one accession was imported by Trevis as detailed in his report. Due to the high sensitivity of the High-Throughput Sequencing (HTS) technology recently implemented at PGQP, several viruses have been detected to date, including endornaviruses in rice, but these are not known to be pathogenic, nor have pathogenic symptoms been observed. Endornaviruses in rice are double-stranded RNA viruses that are transmitted through seeds with no transmission to adjacent plants reported. The HTS results indicated these viruses genetically cluster by the country the rice seed was imported from and have only been found in *japonica* cultivars. Currently, PGQP is working with the APHIS policy group to summarize their findings and based on these findings it appears there is no need for regulation.

**Trevis Huggins**, USDA/ARS Dale Bumpers National Rice Research Center (DBNRRC), reported the Genetic Stocks-*Oryza* (GSOR) collection currently holds 38,371 accessions. Recently, a weedy red rice population, and five of the six Chromosome Segment Substitution Line (CSSL) populations with three different wild *Oryza* spp. donors in either the Cybonnet or IR64 (*O. sativa*) background were made available for distribution. The sixth CSSL population and the *Tropical Japonica* Core collection will be available soon. From Jan. 2020 to Feb. 2023, 35,670 accessions were distributed in 288 orders. Recently, 36 *O. australiensis* accessions were imported from the International Rice Research Institute (IRRI), brought through PGQP quarantine, and are now growing at the DBNRRC. A total of 18 NERICA (New Rice for Africa) accessions were imported from AfricaRice of which 12 are currently growing at the DBNRRC and six remain in quarantine due to endornaviruses. The program continues to rejuvenate and characterize about 1,000 accessions from the GRIN rice collection each year. Accessions are validated as true-to-type using GRIN-Global, the IRRI database and notes from Ted Johnson who evaluated the rice collection in the 1980s. If needed, seed in long term storage at Ft. Collins, is requested to verify the current seed matches the original imported sample. This is the fourth year that seed being rejuvenated is also characterized with 11 fingerprint and 18 trait specific markers (McClung et al., 2020). The marker data will soon be included in GRIN-Global and will serve as another basis for true to type identify as well as provide important information for end users based on the marker determination for linked traits that would otherwise not be phenotyped. Accessions that are “Redundant by Name (RBN)” continue to be evaluated to identify those accessions that can be archived and not be included in the active collection. The evaluation of the accessions that are repeated in duplicate were completed in 2021, triplicate names in 2022, and those with 4 or 5 redundant names are planned for 2023. For accessions with the same genotype and phenotype, one accession is selected for distribution and the others are archived. Lorie Bernhardt, technician in the GSOR lab retired in December 2021 and Jonathan Moser is now in that position.

Trevis proposed adding “Leaf Blade Color” as a descriptor with six categories as done at IRRI. Brijesh motioned to approve adding this descriptor, it was seconded by Q. Shao and supported by all committee members. Secondly, Trevis proposed using three panicle type categories (compact, intermediate, open) rather than nine categories to improve data consistency. Currently, with nine categories, the category often varies depending on the rater, as well as when the rating is done. (Harold mentioned this same issue was reported by those classifying wheat spike architecture.) According to records from Ted Johnson (1980s), there were only three categories which later was expanded to nine. After a lengthy discussion of the pros and cons of three versus nine panicle type categories, which involve both members and guests, many of whom collect panicle type as part of their breeding programs, Teresa moved to decrease the number of categories to three so the data would be more consistent. This motion was seconded by Stan and supported by the committee members. Of note, the current data with nine categories will remain part of the GRIN-Global database.

**Peter Bretting** USDA/ARS Office of National Programs, reported on the status of the National Plant Germplasm System (NPGS) which highlighted NPGS locations, total no. of accessions (605,000+ in 2022) with 233,00 accessions distributed in 2022. Even with various funding increases, the overall funding has stayed nearly level when adjusted for inflation. Most recently, pecan, coffee and pulse crops received funding increases. The top priorities for NPGS are maintenance, regeneration, documentation, acquisition (especially crop wild relatives), and distribution. Procedures for managing gene edited products are under development. New informational and educational resources include the development of a 3 credit course on Plant Genetic Resources (PGR) being offered through Colorado State Univ. and there are numerous PGR educational and training materials freely available through GRIN-University at <https://grin-u.org/>, as well as “Infographic posters available in six languages at <http://genebanktraining.colostate.edu/trainingmaterials.html>. (Check these out, they are excellent!)

Minor edits were suggested to the “Rice Crop Vulnerability” slide. These edits were made by Georgia and the revised slide sent to Peter, Jack, Harold and Gary.

Votes regarding **committee membership changes** included:

1) A motion by Q. Shao to have Nick Bateman and Brijesh Angira serve another six-year term, ending in 2029, which was seconded by Bishwo and supported by the committee membership.

2) A motion by Georgia that Stan De Guzman complete X. Sha’s term ending in 2027, as recommended by Sha. This was seconded by Brijesh and supported by the committee membership.

3) A motion by Teresa for Gretchen Zaunbrecher (Director Genetics Lab, CCRRF) as a committee member replacing Paul Sanchez. This was seconded by Shane and supported by the committee membership.

4) A motion by Q. Shao that Georgia continue another 2-year term as committee chair. This was seconded by Shane and supported by the committee membership.

Teresa made a motion to adjourn the 42nd Rice Crop Germplasm Committee meeting. This motion was supported by Trevis and supported by the committee membership.

Appendix I. CGC members with year term ends in parentheses (Feb. 21, 2023).

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| Dr. Georgia Eizenga, Chair (2025)USDA-ARS Dale Bumpers National Rice Research Center2890 Hwy 130 EStuttgart, AR 72160Georgia.Eizenga@usda.gov | Dr. Brijesh Angira (2029)H. Rouse Caffey Rice Research StationLouisiana State University1373 Caffey RoadRayne, LA 70578BAngira@agcenter.lsu.edu |
| Dr. Nick Bateman (2029)Rice Research and Extension CenterUniversity of Arkansas2900 Hwy 130 EStuttgart, AR 72160nbateman@uada.edu | Dr. Christian (Stan) De Guzman (2027)Rice Research and Extension CenterUniversity of Arkansas2900 Hwy 130 EStuttgart, AR 72160deguzma@uark.edu |
| Dr. Teresa De Leon (2027)California Cooperative Rice Research FoundationP.O. Box 306955 Butte City Highway (Hwy 162)Biggs, CA 95917-0306Tdeleon@crrf.org | Dr. Edilberto (Ed) Redoña (2025)Delta Branch Experiment StationMississippi State University82 Stoneville Rd.P.O. Box 197Stoneville, MS 38776ed.redona@msstate.edu |
| Dr. Stanley (Omar) Samonte (2025)Texas A&M AgriLife Research Center 1509 Aggie DriveBeaumont, TX 77713stanley.samonte@ag.tamu.edu | Dr. Qiming Shao (2025)Nutrien Ag Solutions676 County Rd 324 El Campo, TX 77437qiming.shao@nutrien.com |
| Dr. Gretchen Zaunbrecher (2029)California Cooperative Rice Research FoundationP.O. Box 306955 Butte City Highway (Hwy 162)Biggs, CA 95917-0306gzaunbrecher@crrf.org | Dr. Xin-Gen (Shane) Zhou (2025)Texas A&M AgriLife Research Center1509 Aggie DriveBeaumont, TX 77713xzhou@aesrg.tamu.edu |
| Dr. Bishwo Adhikari, Ex-officioLead Plant Pathologist & Program Manager,Poaceae Quarantine ProgramUSDA-APHISPlant Germplasm Quarantine ProgramBldg. 580, BARC-EastBeltsville, MD 20705bishwo.n.adhikari@usda.gov |  Dr. Harold Bockelman, Ex-officioUSDA-ARSNational Small Grains Collection1691 S 2700 WAberdeen, ID 83210Harold.Bockelman@usda.gov |
| Dr. Peter K. Bretting, Ex-officio USDA-ARS, NPS Nat. Prog. Leader, Plant Germplasm and Genomes5601 Sunnyside AvenueBeltsville, MD 20705-5139Peter.Bretting@usda.gov | Dr. Trevis D. Huggins, Ex-officio USDA-ARS Dale Bumpers National Rice Research Center2890 Hwy 130 EStuttgart, AR 72160Trevis.Huggins@usda.gov |
| Dr. Yulin Jia, Ex-officioUSDA-ARS Dale Bumpers National Rice Research Center2890 Hwy 130 EStuttgart, AR 72160yulin.jia@usda.gov | Dr. Gary Kinard, Ex-officioResearch LeaderUSDA-ARSNational Germplasm Resources LaboratoryBeltsville, MD 20705Gary.Kinard@usda.gov |
| Dr. Jack Okamuro, Ex-officio USDA-ARS, NPS National Program Leader, Plant Biology 5601 Sunnyside AvenueBeltsville, MD 20705-5139Jack.Okamura@usda.gov |  |