1. Establishment of the Genetic Stocks—*Oryza* Collection (GSOR) in the United States

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The Genetic Stocks—Oryza Collection (GSOR) was established in 2003 at the Dale Bumpers National Rice Research Center (DB NRRC) in Stuttgart, Arkansas, USA. The mission of the GSOR is to acquire, store, and distribute rice genetic seed stocks to enhance rice research. Although model genetic stocks collections exist in tomatoes, maize, barley, and wheat in the USA, such a collection was lacking for rice. Establishment of the GSOR fills that void, one that has been recognized for a number of years. The first rice genetic stocks contributed to the collection were GSOR 1, 2, and 3, which were two dominant and one recessive genetic male steriles developed at the DB NRRC (Zhu and Rutger, 1999). Sixteen more previously developed entries from California and Arkansas, including induced mutants for early flowering, semidwarfism, and elongated uppermost internode, were included in the initial contributions to the GSOR (Rutger et al. 1979, 2004, Rutger and Carnahan 1981, McKenzie and Rutger 1986, Rutger 2005).

Currently the GSOR has 902 entries, including: a lesion mimic mutant, GSOR 20 (Jia 2005), a japonica/indica mapping population with 355 lines (Rutger and Tai 2005), a second mapping population with 325 doubled haploid lines (Chu et al. 2006), and the former “Jodon collection” (Jodon 1977). A set of 191 Hokkaido University mutants, donated by Japan’s Dr. Toshiro Kinoshita, via Dr. Susan McCouch, Cornell University (T. Kinoshita, personal communication, November 22, 2005), has been entered and is part of the 902 total. Four indica genetic stocks, apoptosis, chives, extreme dwarf, and gold leaf, designated as GSOR entries 21, 22, 23, and 24, respectively were added in 2006 (Rutger and Bernhardt 2006), and more DB NRRC-developed genetic stocks are in the pipeline.

Near-asymptotic growth is expected in the next five years with the addition of items such as the USDA-ARS Core Collection of 1800 lines (Yan et al., 2005), molecular stocks including deletion mutants, TILLING stocks, and insertion mutagenesis lines contributed from various laboratories in the US. At this time, no transgenic materials have been deposited in the collection. Because of strict USA quarantine import procedures, it is anticipated that limited stocks will be acquired from overseas. The GSOR will honor foreign requests for stocks as long as appropriate importation procedures are followed.

items, instructions on how to donate material, and instructions on ‘how to grow rice in a greenhouse’ have been provided in downloadable, user-friendly pdf format.

The first GSOR seed stock distribution was made March 30, 2004; the most recent was in August, 2006. Of the 26 distributions made to date, 10 were of one or the other mapping populations which involved 325 to 355 samples per request. Customers receiving seed from the GSOR have been researchers from the United States (18) and India (1).

In January 2005, the GSOR became a national distribution site of Nipponbare (GSOR 70) seed. Although not considered a genetic stock, the Stuttgart grown Nipponbare is descended, via Cornell University, from the single plant selection identified by Dr. T. Sasaki of Japan for the International Rice Gene Sequencing Project. For molecular studies, it is deemed critical that Nipponbare seed must be descended from the Sasaki selection. The material is freely available upon request through the GSOR website. Following the initial January 2005 announcement, 24 samples of Nipponbare were distributed that year, compared to 7 distributions in 2004. There have been 19 distributions of Nipponbare already in 2006.

A ten-person Liaison Committee, composed of rice scientists, plant germplasm curators, and a representative of the Arkansas Department of Agriculture, was established to provide oversight to GSOR operations. The Committee provides advice on genetic stock donation procedures, including phytosanitary concerns, and on how long stocks are retained. The GSOR will not regenerate contributed materials; distribution will be only as long as original seed stocks last or as they are replenished by the original contributor. Thus materials will not necessarily be maintained in perpetuity as in germplasm banks. Periodic review will be conducted to de-accession stocks, especially if there are no requests for a number of years.

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References


