



Beyond Borders: Evaluating and Registering Chinese Green Super Rice in Nigeria — A Case of Agro-ecological Transplantation

**Bolaji Zuluqurineen Salihu^{1*}, Abolore Adija Ajadi², Ibrahim Gaba Mohammed¹,
Tokunbo Sunkanmi Gbadeyan¹, Obasola Babatunde Olaniyan³**

¹National Cereals Research Institute, Research Operations Department, P.M.B. 8, Bida, Nigeria

²National Cereals Research Institute, Research Support Services Department, P.M.B. 8, Bida, Nigeria

³National Cereals Research Institute, Research Outreach Department, P.M.B. 8, Bida, Nigeria

Abstract

Rice remains central crop to food security and sustainable livelihood in Nigeria and other sub-Saharan Africa nations. However, the rice productivity in this region is constrained by many factors including climate related stresses, declining soil fertility, and other persistent stresses. These challenges necessitate continuous varietal replacement which is far from the reach of African researchers due to limited access to required resources; thus, the rice seed system in Africa is largely sustained through varietal introduction. In this study, seven improved Green Super Rice (GSR) lines and three local checks were evaluated for drought and salinity tolerance, yield performance and stability, ratoon-ability, and local consumers' preference in Nigeria. The drought-stress experiments at two locations, revealed that five out of the seven GSR lines significantly out yielded the checks under water stress. The GSR lines showed better tolerance to salinity, and also recorded superior ratoon-ability than the local checks. The GSR lines showed good grain physical quality, and comparable reactions to pest and diseases as recorded for the local checks. At the multi-locations yield trials, only one GSR line (DS20) recorded statistically higher grain yield than the best check (FARO 68). The stability assessments revealed that the GSR lines were more responsive to better environments but less stable compared to the checks. The performance of the GSR line DS20 at the farmers' field revealed high farmers' preference for its high yielding, and good grain physical appearance, but the line was underscored for poor swelling and cooking qualities. These findings showed that the Chinese GSR lines possess good resilience to drought and salinity than the Nigerian varieties; however, due to the cooking preference, the adoptions by the smallholder farmers may be low. This cooking preference peculiarity could be considered as an important GSR breeding objective for the Africa.

Keywords: Green Super Rice, Agro-ecological transplantation, Drought and salinity tolerance, Yield performance and Stability, Nigerians rice quality preference.

