

Performance Evaluation of Upland Rice Study For Yield and Related Traits in South West Ethiopia

Altaye Tiruneh*

Southern Agricultural Research Institute, Bonga Agricultural Research, Ethiopia

This study aimed at assessing genetic variability and to evaluate the performance of 13 improved upland rice varieties for yield and its components based on morphological traits. The field experiment was conducted using randomized block design at Guraferda and Gimbo districts in 2019 main cropping season. The analysis of variance (ANOVA) over the two locations revealed significant differences ($p \leq 0.05$) among varieties for days to 50% heading, days to 85% maturity, panicle length, thousand grain weight and grain yield. Similarly, the ANOVA for variety by location interactions depicted significant differences among the tested varieties for days to 50% heading, days to 85% maturity and thousand grain weights. Rice is one of the most important cereal crops globally with annual production of 498.4 million metric tons on milled basis (USDA, 2019). In Africa, about 20 million people of the continent cultivate and consume rice. Its consumption is replacing teff, maize, cassava and other crops, but the continent has not met this shift of the crop, and hence, Africa imports large amount of rice. High heritability was obtained from days to heading (88.5%), panicle length (85.0%) and grain yield (85.2%), which indicates these traits can be easily improved through selection. High to medium broad sense heritability and genetic advance as percentage of the mean for days to heading, thousand grain weight and grain yield indicates good opportunity for improvement through selection using their phenotypic performance. This is mainly due to the high role of additive gene action for the expression of such traits. This study

confirmed the presence of variability among varieties for most of the studied traits, which will create an opportunity for breeders to improve rice yield and other attributes. The results from pooled analysis of variance showed that there is a significant difference among varieties for all of the studied traits except plant height. This study confirmed varieties Chewaka, Hiddassie and Fogera-1 performed better among others where they were evaluated. The present study results indicated that there is adequate genetic variability exist in the varieties studied. Therefore, the low average yield of rice in Ethiopia will be increased through exploiting heterosis at F1 generation from the used materials. In SNNPR region upland rice is mainly produced in Benchi-sheko zone at Guraferda district and kaffa zone at Gimbo district. In the Guraferda district 17 kebeles produce rice as a major crop and more than 5500 hectares of lands are annually covered by the crop. However, in both of the districts rice productivity is very low mainly due to lack of improved varieties, weeds and other production challenges. Thereby, the productivity of the crops declined to 28.8 qha-1 in 2014 from 32 qha-1 in 2012 at Guraferda. In the nation, from different regional and national research centers greater than 15 improved upland rice varieties were registered and released for production. In fact, out of the 15 released upland rice varieties some of them gave greater than 50 qha-1 in research field. Therefore, this study was initiated so as to evaluate released upland rice varieties for yield and related traits for the study area.

***Corresponding author:** Altaye Tiruneh, Southern Agricultural Research Institute, Bonga Agricultural Research, Ethiopia, Tel: +251913818474; Email: altayetiru2014@gmail.com

Received December 11, 2020; **Accepted** December 25, 2020; **Published** December 27, 2020

Citation: Tiruneh A (2020) Performance Evaluation of Upland Rice Study For Yield and Related Traits in South West Ethiopia. J Rice Res 8: 228.

Copyright: © 2020 Tiruneh A. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.