Survival of prolonged flooding stress during seedling stage of rice in *Oryza sativa*, *O. glaberrima* and NERICA.

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**Introduction**

In Africa, the deepwater rice is one of the subsistence crops in the flood prone area. Recently, demand for rice consumption has been increasing in a semi-arid country of Namibia, located in Southern Africa, due to the shift in consumer preference for rice. In the northern region, seasonal wetlands, Oshanas and Zambezi River flood plains can retain sufficient amount of water for a few months after the over flow of rivers due to heavy rainfall in Angola and Zambia. Efficient use of these wetlands could be made for sustainable rice production. However, the water level in flood prone area cannot be controlled, and therefore, prolonged flooding occurs.

The objective of this present study is to evaluate deepwater tolerance of rice cultivars of *O. sativa*, *O. glaberrima* and interspecifics progenies including NERICA by survival rate during seedling stage.

**Materials and methods**

A total of 49 rice cultivars (*O. glaberrima* (8), interspecific progenies (23) and *O. sativa* (18)) were selected by the results of former studies of our research group (Nakumura et al. 2006; Awala et al. 2007, 2009). They were grown in a greenhouse during the 2008 growing season at the University of Shiga prefecture, Japan. The mean temperature inside the greenhouse ranged from 23.5°C to 37.4°C during the experiment. The soil mixed with compound chemical fertilizer was filled in plastic pots, which were set in the containers (1m x 1m x 0.5m depth). Rice seedlings were submerged completely in water (0.5m depth) from 14 to 44 days after sowing (DAS) and they were harvested at 54 DAS. The experiment was comprised of three replicated containers and lay out in pairs, for control and deepwater treatment.

**Results and Discussion**

CK 21 (88.9 %) of *O. sativa* ranked best in survival rate (Fig 1). All the *O. glaberrima* survived. Yélé 1A (66.6 %) was the highest followed by Mala Noir IV and CG14. Except NERICA3, WAB1159-2-12-11-2-1 and WAS161-B-6-B-1, most of NERICA were affected by deepwater. There was a high positive correlation ($r= 0.98**$) between plant height and survival rate (Fig 2).

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**Fig. 1.** Survival rate of 49 rice cultivars, *O. glaberrima*, Interspecifics Progenies including NERICA and *O. sativa*, as affected by 30 days of deepwater treatment.

**Fig. 2.** Relationship between plant height and survival rate of 49 rice cultivars, *O. glaberrima*, Interspecifics Progenies including NERICA and *O. sativa* after 30 days of deepwater treatment. ** Significant at 1 % level.