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## Salt Tolerance of Paddy Rice (*Oryza sativa*) Varieties from Myanmar

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### Abstract

One of the main rice production constraints in Myanmar, where rice (*Oryza sativa* L.) is the main staple food and cultivated in the coastal and delta area, is the intrusion of sea water, which penetrates in rivers, so that the salinity of irrigation water raises more and more. Apart of appropriate cultivation methods, one possibility to minimize salinity problems is the choice of salt tolerant rice varieties. The objective of this study was to find out the salt tolerance of the six most cultivated paddy rice varieties in Myanmar.

Twenty seeds of each of the rice varieties Shwewatun, Manawthukha, Hmawbi (2), Inmayebaw, Yezin (3) and Shwethweyin were placed in filter paper lined petri dishes. The 4<sup>th</sup> and 6<sup>th</sup> are local, the others are high yielding varieties. NaCl treatments of 0, 1.227, 2.629 and 5.550 g l<sup>-1</sup> were dissolved in distilled water corresponding to 0 (control), 2, 4 and 8 dSm<sup>-1</sup>. The petri dishes were arranged in a complete randomized block design in a climatic chamber at 25 °C with 12 h daylight. The number of germinated seeds was counted after 5 days. A seed was considered to have germinated when both plumule and radicle had emerged 0.5 cm. Seedling shoot dry weight and root dry weight were taken after 10 days. Total germination was expressed as a percentage of that in the control treatment for each variety.

Germination, shoot dry weight and root dry weight were significantly influenced by salt levels, varieties and the interaction of both. All three criteria were reduced by increasing salt levels. The average salinity threshold was 3.5 dSm<sup>-1</sup>, but differed for the varieties and for the three tested criteria. Root dry weight was more influenced than germination, and germination more than shoot dry weight. The most tolerant variety was the local variety Shwethweyin, while the most sensitive was the high yielding variety Hmawbi (2), the other four varieties showed medium salt tolerance. The ranking list from salt tolerant to salt sensitive was: Shwethweyin — Shwewatun — Yezin (3) — Inmayebaw — Manawthukha — Hmawbi (2).

**Keywords:** Rice, salt tolerance