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Salinity Effects on Germination of Malaysian Rice Varieties and Weedy Rice Biotypes

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Abstract : Germination and seedling growth of plant species are reduced in saline due to an external osmotic potential. An experiment was conducted at the laboratory, Faculty of Sustainable Agriculture, Universiti Malaysia Sabah, to compare the salt effect on seed germination and growth of weedy rice and cultivated rice. Seeds (10 in each) were placed in petri dishes. Five salinity levels 0 (distilled water), 4, 8, 12 and 16 dSm-1 (NaCl) were applied. The number of germinated seeds was recorded daily. The final germination percentage, germination index (GI), seedling vigour index (SVI) mean germination time (MGT), shoot and root dry weight were estimated. At highest salinity (16 dSm-1) germination percentage was higher (100%) in weedy rice awn and weedy rice compact. Lowest germination percentage was in MR219 and TQR-8 (50-60%). Mean germination time (MGT) was found higher in all weedy rice biotypes compared to cultivated rice. At highest salinity (16dSm-1) weedy rice open produced the highest MGT (9.92) followed by weedy rice compact (9.73) while lowest MGT was in MR219 (9.48). At highest salinity (16dSm-1) germination index was higher in weedy rice awn (11.71) and compact type (9.62). Lowest germination index was in MR219 (5.90) and TQR-8 (8.94). At the highest salinity (16 dSm−1), seedling vigor index was highest in weedy rice awn (6.06) followed by weedy rice compact (5.26); while lowest was in MR219 (2.11) followed by MR269 (3.82).On the basis of Germination index, seedling vigor index and growth related results it could be concluded that weedy rice awn, compact and open biotypes were more salt tolerant compared to other cultivated rice MR219, MR269, and TQR-8.

Keywords : germination,salinity,rice and weedy rice, sustainable agriculture
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