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Evaluation of Re-germination and Seedling Vigor of Rice (*Oryza sativa* L.) After Different Period of Water Stress on Germinated Seeds

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Abstract

Rice (*Oryza sativa* L.) is one of the most important cereal crops in the world. For enhancing productivity, quality seeds play a major role and seed hardening is used as cost effective and easy method to enhance seedling vigor in rice. Seed and seedling vigor lead to perfect field establishment and better crop performance under adverse conditions. Present study was conducted to examine re-germination and seedling vigor of rice subjected to different period of water stress on germinated seeds. Three rice varieties namely AT 353, AT354, and AT362 were used. Re-germination ability was examined up to 20 days water stress period and 91% germination was observed even after 20 day water stress. Rice as a determinant crop, long period of water stresses to germinated seeds reduce the length of vegitative period and subsequently it should have an effect on final yield. Therefore, seedling vigor was examined in seed samples undergone up to 10 day water stress period. Seven and 20 days after re-germination, root and shoot lengths were recorded to calculate vigor index of seedlings. Significant increment of vigour indexes were observed in seedlings originated from treated seeds. Seven days after re-germination highest root length (3.56cm) and vigor index (7.43) were observed in seedlings which were originated from seeds with four days water stress period. However, in 20 day old seedlings, highest root length (10.94cm) and seedling vigor (24.89) were recorded after eight day water stress period. These results revealed that seedling vigor of rice can enhance by giving water stress on germinated seeds without an effect on re- germination ability.

Keywords: *Oryza sativa L., Re-germination, Seed hardening, Seedling vigor, Water stress*

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