Suitable Dormancy Breaking Method for Selected Rice Varieties

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Abstract

Fast and successful dormancy breaking methods are essential to reduce the time period that spend for testing in the seed testing laboratories. Study was undertaken to find suitable dormancy breaking treatment for newly developed rice varieties such as At 353, At 362, and Bg 352. Series of nitric acid 0.1% to 1% was used as treatments against distilled water as control treatment. Germination was counted after imbibing the seed for 12h and 24h. Germination percentages of seeds at different moisture contents were also studied. The efficiency of currently applied method recommended by International Seed Testing Authority (ISTA) (0.1% HNO_3 for 24h with less than 85% germination) was tested by treating non-germinated seeds with tripheniltetrazolium chloride (TTC). Variety At 353 showed the highest germination in both imbibing durations (78.4%± 2.0) with 1% HNO_3 followed by 0.9% HNO_3 (55.7% ± 3.5). Variety At 362 at 1% HNO_3 treatment for 24h imbibition showed the highest germination (82.5%) and 12h imbibition showed 79.8% but 0.9% and 0.8% were not significantly different. Variety Bg 352 had the highest germination as 84% and 81.75%, which imbibed in 1% HNO_3 for 24h and 12h respectively. Control treatments in both imbibed periods in three varieties were given the lowest germination (24.25%± 5.5). All three varieties showed highest germination at the range of 12-14.5% moisture content and drastically reduced after 10%. Presence of viable seeds after treating with ISTA recommended method were 3%, 2.25% and 1.25% for varieties At 353, At 362 and Bg 352 respectively indicating ISTA method did not avoid dormancy completely. Therefore, pre drying for 12-14.5% of moisture coupled with imbibition of 1% HNO_3 for 12h will be suitable for break the rice seed dormancy efficiently.

Keywords: seed germination, ISTA method, rice seed dormancy