

## P241

### Effect of seed priming on germination and sprouting vigor of colored rice

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#### Abstract

The study was conducted to select optimal materials for promoting germination rate, high sprouting vigor by priming treatment using PEG 6000 (water potential -0.5 to 2.0 Mpa) and *Azolla* extracts (0.1, 1.0, and 10.0%) extracted by ethanol, distilled, and/or hot water in colored rice cultivars. Each rice seed (three black rice cultivars and two red rice cultivars) was soaked 24 and 48 hr including untreated control. In black rice, Joseongheugchal rice cultivar, azolla ethanol extract (0.1%) induced highest germination rate, germination speed was taken to 5 days in distilled water and to 3days in Azolla extracts extracted hot water. Otherwise, degree of bacterial inhibition (number of colony,  $10^3$  cfu) in dry seed, water soaking for 24hr, soaking with fungicide for 24hr and 48hr, soaking with fungicide and aeration for 24hr and 48 hr was 22, 500, 95, and 0.46, respectively. In order to minimize fungal inhibition, a method can be chosen to combination of soaking fungicide and aeration for 48 hr. In seed priming treatments using growth pouch, seed soaking with fungicide did not affect change of germination percentage and germination speed, it delayed only 2 or 4day in the Joseongheugchal rice cultivar. It differs from rice cultivars and priming materials, Azolla extract(0.1 to 1%) promotes seed germination percentage in the Ilpum, Hongjinju, and Joseonghuegchal, in addition, germination in Jeogjinju cultivar was only promoted by PEG solution(10 to 20%), otherwise, it showed much lower or inhibited on the germination in Heugjinju and Sinmyungheugchal rice cultivars. In a paddy field trial, seedling establishment rate by applying PEG6000 and azolla extract did not show significantly statistical difference. When it compared with untreated control, seedling establishment rate was increased over 50% in priming treatments. Interestingly, seedling establishment rate under azolla extract (0.1%) extracted with ethanol was promoted over 2.5 times compared to the control in a black rice, Joseongheugchal and red rice, Jeogjinju.

Keywords: germination, azolla extract, PEG6000, colored rice.

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