EFFECT OF STORAGE CONDITIONS ON SEED DORMANCY AND VIGOR OF NEWLY DEVELOPED RICE VARIETIES

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by

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ABSTRACT

Inappropriate storage conditions and seed dormancy affect the seed quality resulting poor germination and loss of vigor. A study was conducted to identify the effect of storage conditions on seed vigor and dormancy of newly developed rice varieties. The experiment was laid down in a split plot design with four replicates. Harvested seeds of 24 varieties were dried and stored at two storage conditions *viz.* cold storage (18-20 $^{\circ}$C) and ambient (30-32 $^{\circ}$C) separately. The duration for dormancy of each variety was considered as the period from harvest till germination reached up to 85% and determined using the germination test at one week interval. Seed vigor was investigated by electrical conductivity test and cold test. There was an interaction between storage condition and variety ($P \leq 0.05$) for dormancy period. There was a significant effect of storage condition for seed vigor and dormancy. No significant differences ($P \geq 0.05$) in vigor index between two storage conditions were observed. Varietal variation was observed from dormancy, conductivity and vigor index. Bw12-574, Rathusuduru and Ld11-7-3-1 showed longer dormancy periods under cold (90-100 days) and ambient (48-83 days) storage. At13-3048, At373, Bg15-520 and Ld12-6-22-1 showed shorter dormancy periods under cold and ambient storage (32-62 and 20-27days respectively). Bw272-6b, Rathusuduru and Ld12-6-22-1 showed less vigor due to high conductivity values (0.08-0.24 dS m^{-1}) and Bw272-6b, Rathusuduru and Bw14-509 showed less vigor due to lower vigor indexes (18.5-22.2). At13-1543, At13-3791, WAS4-2-3 were considered as high vigor varieties due to lower conductivity value (0.05-0.12 dS m^{-1}) and higher vigor indexes (27.2-25.5). Since cold storage increases dormancy period it can be recommended for rice seeds with shorter dormancy period to store them longer without breaking the dormancy. Results of this study revealed the importance of manipulating storage conditions to enhance seed vigor and lengthen the dormancy.

Keywords: Dormancy, Rice, Storage, Variety, Vigor