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Induction of cold tolerance in Rice (*Oryza sativa* L.) during seedling stage

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Rice (*Oryza sativa* L.) is very sensitive to prolonged exposure of lower temperatures particularly during *rabi* season. A lower temperature below 12°C cause chilling injury and leads to seedling mortality. The objective of the current investigation is to study the effect of single super phosphate (SSP) and ZnSO₄ at different dosages for induction of cold tolerance in rice seedlings. Three concentrations each of SSP and ZnSO₄ (5,10 and 15 per cent of SSP and 2,4 and 8 percent of ZnSO₄) and a combination treatment of 5% SSP and 2% ZnSO₄ were utilized in the study. 100 seeds of rice cultivar MTU-1010 for each replication in each treatment was allowed to soak for 24 hours and later washed and incubated for a period of 24 hours. Later, the soaked seed in each treatment was sown in rolled paper towels and transferred to BOD incubator regulated to a temperature of 10°C for 14 hours and 25°C for 10 hours for a period of 2 weeks as described by Cruz and Milach, 2004 with slight modifications. The experiment was conducted in CRD with three replications. The data on various seedling quality parameters showed that soaking in 2% ZnSO₄ recorded a germination per cent of 98.6 and found to be significantly superior to untreated control (76.3%). Similarly, the same treatment recorded significantly superior performance for speed of germination (26.0), seedling dry weight (0.170g/10 seedlings), seedling vigour index based on dry weight of seedlings (15.5) and seedling vigour index based on seedling length (1517) also. However, untreated control recorded the speed of germination as 15.34, seedling dry weight (0.121g/10 seedlings), seedling vigour index based on dry weight of seedlings (12.54) and seedling vigour index based on seedling length (936.5). From the current study, it is evident that, soaking of rice seed in 2% ZnSO₄ solution for a period of 24 hours was found to induce tolerance to cold temperatures at seedling stage.

Biography

M. Sudharani is presently working as Scientist (Pl. Br.), Seed Research and Technology Center, ANGR Agricultural University, Hyderabad. She joined as Scientist (Pl. Br.) at ARS, Machilipatnam during 1999 and involved in developing rice varieties with salt tolerance. Later, she involved in development of gall midge tolerant varieties (2 Nos) at RARS, Warangal. Presently, her work is involved in Seed Research of different crops particularly in the area of safer storage of seed, development of seed testing strategies in various crops and DUS testing of maize, green gram and black gram varieties for protecting them under PPV & FR Act. Also actively involved in guiding P.G. students and so far she had guided two students. And she has 15 research publication and 15 popular articles at her credits as on date.

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