

Application of static magnetic field for alleviation of adverse effects of salt stress on germination and early growth characteristics in maize and soybean

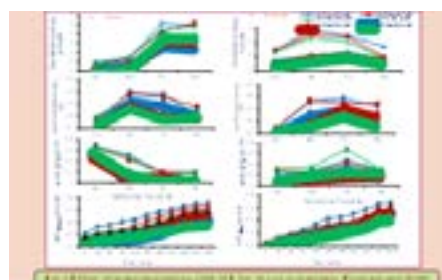
Sunita Kataria² and K N Guruprasad¹

¹Shri Vaishnav Vidyapeeth Vishwavidyalaya, India

²DAVV, Indore, India

Maize and Soybean seeds were pre-treated with static magnetic field (SMF) of 200 mT for 1 h to evaluate the effect of static magnetic field for alleviation of adverse effects of salt stress on germination and early growth characteristics. The adverse effect of NaCl induced salt stress was found on percentage germination and germination related parameters. Enhanced percentage germination and early seedling growth parameters (root and shoot length, and vigour indices) under different salinity levels (0 to 100 mM NaCl) indicated that magneto priming was more effective in alleviating salinity stress at early seedling stage of both maize and soybean as compared to untreated seeds. α - amylase and protease activities were also higher in SMF treated seeds under both non-saline and saline conditions. This could have resulted in faster hydration of enzymes in SMF treated seeds leading to higher rate of germination. Increased levels of superoxide radical and hydrogen peroxide was found in germinating magnetoprimered seeds of maize and soybean, under both the growing conditions.

Enhancement in seed germination and seedling vigour under both the growing conditions by SMF treatment may be due to the combined effect of enhanced α - amylase and protease activities and enhanced levels of free radicals in the seeds. Consequently, SMF pre-treatment effectively mitigated adverse effects of NaCl on both maize and soybean.



Biography

Sunita Kataria has completed her Ph.D. in 1999 from School of Life Sciences, Devi Ahilya University and Postdoctoral studies from School of Life Sciences, Devi Ahilya University. She has 15 years of research experience and worked as CSIR Research associate, CSIR Pool Scientists and DST-Women Scientists in School of Life Sciences, DAVV, Indore. She has published more than 40 papers in reputed journals and 03 book chapters.

sunita_kataria@yahoo.com

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