

Abstract

Modern agricultural efforts are now in search of an efficient ecofriendly production technology based on physical treatment of seeds to increase the seedling vigor and crop establishment. Seed treating with electromagnetic fields, one of the safest and most economical methods of planting, to improve growth and seedling establishment in the field. Four replicates were performed in 2012. Experimental factors, including the severity of the electromagnetic field and osmotic potential. In this study the response of wheat seed after seed placement in a constant electromagnetic field exposed to 0, 0.3, 0.6, 0.9, 1.2 and 1.5 T for 2 h to drought stress solution of polyethyleneglycol (PEG) 6000, sodium chloride induced salinity during germination and seedling were studied. Interactions between electromagnetic field and osmotic potential on the germination percentage, mean germination time, germination uniformity, vigor, and seed weight has been transferred to reserves (WMSR), percentage depletion of seed reserves (SRDP), performance use of seed reservoirs (SRUE), root weight, shoot weight, shoot length, root length, shoot weight and root weight effect (at 1% level of probability). With drought and salinity levels from 0 to -1.5 MPa and uniform germination percentage and mean germination time increased vigor, the weight is transferred to reserves, depletion of seed reserves the performance of the seed, root weight ratio shoot, root length and shoot and root and shoot weight fell to its lowest level in the electromagnetic field -1.5 MPa osmotic potential was 0 T. But the treatments with different levels of electro-magnetic field and osmotic potential range of 0, -0.4, -0.8, -1.5 and -2 MPa above mentioned characters were dropped, but they are much lower than those treated that had been pretreated with an electro-magnetic field. The electromagnetic field intensity of the electromagnetic field is also often the highest average yield of 9/0 Tesla and osmotic potential range of of 0, -0.4, -0.8, -1.5 and -2 MPa.



University of Zabol
Graduate School
Faculty of Agriculture

**The Thesis Submitted for the degree of Master of M. Sc
In Agroecology**

Title

**Effects of seed pretreatment by magnetic
fields on tolerance of seed germination and
seed reserve utilization to drought and
salinit in wheat**

Supervisor

Dr. M. R. Asghari poor

Advisors

Dr. A. Ghanbari

By

Farshad Golshani

2013