

Sugar Beet (*Beta vulgaris* L.) Seed Pre-treatment with Water and HCl to Improve Germination

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Abstract

This study was conducted to evaluate effects of pre-sowing seed treatment with soaking by distilled water and in two concentrates of hydrochloric Acid (0.03N HCl and 0.3N HCl) at three different time (2, 4 and 6 hours) by factorial arrangement based on completely randomized design with three replications in University of Mohaghegh Ardabili (agronomy laboratory). For each treatment, 25 uniform seeds were washed by distilled water, diluted hydrochloric acid and concentrated hydrochloric acid at 2, 4 and 6 hours. Samples were sterilized by diluted sodium hypochlorite (2%) for 5 min. the treated and untreated seeds (control) were potted on sterilized wathman paper in Petri-dishes. At the end of experiment adjectives such as percentage of germination, rate of germination, time of germination and T_{10} were evaluated. The results indicated that percent of germination, mean time of germination, rate of germination, and T_{10} , affected significantly in all treatments in comparison with untreated seeds as well as both type and time of treatment. Results showed that both type and time of treatment were improved rate of germination. Soaking six hours with diluted acid (0.03N) or with water, improved significantly the mean time of germination, rate of germination and T_{10} in comparison with untreated seeds. Result showed that seed treatment with water or 0.03N hydrochloric acid for 6 hours improve seed germination. Ultimately, the highest and lowest level of germination rate obtained with soaking seeds in diluted acid (0.03N) and concentrated acid (0.3N) respectively. Therefore seed treatment with water can be low cost, more effective and can be suggested.

Key words: sugar beet, germination, HCl, water, pre-treatment

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