

Changes in Some Morphological Characters of Dill Under Cadmium Stress

Authors : A. M. Daneshian Moghaddam, A. H. Hosseinzadeh, A. Bandehagh

Abstract : To investigate the effect of cadmium heavy metal stress on five ecotype of dill, this experiment was conducted in the greenhouse of Tabriz University and Shabestar Islamic Azad University's laboratories with tree replications. After growing the plants, cadmium treatments (concentration 0,300, 600 μmol) were applied. The essential oil of the samples was measured by hydro distillation and using a Clevenger apparatus. Variables used in this study include: wet and dry roots and aerial part of plant, plant height, stem diameter, and root length. The results showed that different concentrations of heavy metal has statistical difference ($p < 0.01$) on the fresh weight, dry weight, plant height and root length but hadn't significant difference on essential oil percentage and root length. Dill ecotypes have statistical significant difference on essential oil percent, fresh plant weight, plant height, root length, except plant dry weight. The interactions between Cd concentration and dill ecotypes have not significant effect on all traits, except root length. Maximum fresh weight (4.98 gr) and minimum amount (3.13 gr) were obtained in control trait and 600 ppm of cd concentration, respectively. Highest amount of fresh weight (4.78 gr) was obtained in Birjand ecotype. Maximum plant dry weight (1.2 gr) was obtained at control. The highest plant height (32.54 cm) was obtained in control and with applies cadmium concentrations from zero to 300 and 600 ppm was found significantly reduced in plant height.

Keywords : pollution, essential oil, ecotype, dill, heavy metals, cadmium

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