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Evaluation of Seed Dormancy and Germination in Hawthorn (*Crataegus atrosanguinea*)

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Hawthorn is one of the crucial tolerant seedling rootstocks to iron deficiency chlorosis for quince and pear trees in calcareous soils. In this investigation, owing to double seed dormancy, low percentage of seed germination and producing seedling rootstocks, two factorial experiments in a completely randomized design with three replications were conducted to overcome seed dormancy in hawthorn. In the first experiment, the effect of seed scarification with concentrated sulfuric acid (98%) in three times period including 0, 1.5 and 3 hours and four warm-cold temperature treatments on *C. atrosanguinea* was investigated. In the second one, the germination of seed embryos of *C. atrosanguinea* were evaluated under different concentrations of potassium nitrate (0, 5000 and 10000 mg l^{-1}) and gibberellic acid (0, 100 and 200 mg l^{-1}) *in vitro*. The results of first experiment showed that the scarification time and temperature treatments, had significant effects in increasing germination percentage (GP), mean daily germination (MDG), length of hypocotyl and epicotyl, germination index (GI) and Seed viability index (SVI), and reduced the germination rate (T50) and mean germination time (MGT) compared to control. The results of the second experiment indicated that the aapplications of 100 mg l^{-1}gibberellic acid, and 5000 mg l^{-1} of potassium nitrate significantly increased GP, MDG, GI, SVI and decreased T50 compared to the control.

Keywords: Crataegus, Dormancy, Germination, Scarification, Temperature treatment.

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