

# **Effect of Different Levels of GA, KNO<sub>3</sub> and H<sub>2</sub>O<sub>2</sub> on Breaking of Dormancy and Germination of Hazelnut Seeds**

Roya Reza zadeh\*, Dr. Maarefat Mostafavi Rad,

Hazelnut (*Corylus avellana* L.) is one of the major world nut crops, whose production and consumption are increasing. This plant usually is propagated, like most cultivars, can be done sexually (seed). The hazelnut seeds are germinated under natural conditions because of hard shells and internal depression at a prolonged time, and its germination is small, irregular and non-uniform. The aim of this study was to solve these problems and improve germination indices in the seed registration laboratory of Agricultural Research Center and Natural Resources of Guilan Province. The experiment was arranged as factorial based on a completely randomized design with three replications. The experimental factors included: gibberellic acid (GA) (0 (GA0), 75 (GA75) and 150 (GA150) mg/L), (KNO<sub>3</sub>) (0 (K0), 1 (K1) and 2 (K2) percent); hydrogen peroxide (H) (0 (H0), 0.5 (H0.5) and 1 (H1) percent). The results showed that the effect of triple interaction of GA<sub>3</sub> × KNO<sub>3</sub> × H on all measured traits was significant. Attention was drawn to the fact that in the measured traits, the max mean germination indices were observed when GA<sub>3</sub> was used at 150 (GA150) mg/L but the max mean germination indices were observed at different levels of KNO<sub>3</sub> and hydrogen peroxide. The mean comparison showed that the highest mean of germination in GA150 K0 H1 treatment, germination percentage in GA150 K1 H1 treatment, the highest germination speed in GA150 K2 H0 treatment, and the highest shoot length in GA150 K0 H0.5 treatment were obtained. Considering the results obtained for increasing the germination of hazelnut seed, 150 mg/L gibberellic acid is recommended. In the case of KNO<sub>3</sub> and hydrogen peroxide, if the goal is to increase germination percentage, KNO<sub>3</sub> 1% hydrogen peroxide 1% levels, and if the goal of germination speed it is recommended that KNO<sub>3</sub> 2% non-use of hydrogen peroxide is recommended.

**Keywords :** Breakdown of seeds, Germination, Gibberellic acid, Hazelnut, Hydrogen

**peroxide, KNO3.**

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