

## **The Effect of Seed Priming to Improve Germination Parameters and Early Growth of Chickpea (*Cicer arietnum* L)**

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### **Abstract**

Chickpea is one of the new crops being grown in Zimbabwe for its plethora of benefits in crop production and human diet. However, like most grain legumes preliminary research has shown that chickpea seed has a problem of poor germination hindering the realization of the crops full potential yield. Seed priming has a potential to improve germination of chickpea. Therefore, a laboratory experiment was carried out to determine the effects of seed priming on seed germination. The experiment was laid out as a  $4 \times 5$  factorial in completely randomised design (CRD) with 20 treatments replicated three times. The treatments investigated were five seed priming methods viz hydro-priming, halo-priming (KNO<sub>3</sub>), prechill, preheat, and no priming (control); and four chickpea varieties that were ICCV00305, ICCV03404, ICCV97105, and ICCV92944. Hydro-priming involves soaking seed for 24 hours and leaving it to dry in the laboratory for 24 hours at room temperature before it is planted. Halo-priming was done by soaking the seed in a solution with 2.4 g of potassium nitrate and 1.2 ml of distilled water. Prechill treatment involves subjecting seed at a temperature of 10°C for 7 days before planted. Preheating was done by subjecting the seed in an oven at 35° C for 30 minutes. The parameters measured were germination percent, speed of germination, radicle and plumule length, and seedling vigor index. The results showed that preheating and halo-priming chickpea seed significantly ( $p < 0.05$ ) improved germination percentage, increased radicle and plumule length, and seedling vigor index. Hydro-priming and no priming reduced germination percentage, decreased radicle and plumule length with poor seedling vigor. Results also indicated that variety ICCV92318 recorded the highest germination percentage, radicle and plumule length, and seedling vigor index, while variety ICCV97114 recorded the least figures on all tested parameters of chickpea. It can be concluded that preheating seed and halo-priming seed improved germination and seedling vigor in chickpea.