

Effect of Salt Stress on the Germination of Vegetable Cowpea

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Seed germination has been recognized as the most critical stage in seedling establishment, which is ultimately determining the success of the crop production. Salinity is one of the soil factors which is highly correlated with the degree of crop establishment in leguminous crops. Therefore, it is very important to study on leguminous crops as they supply protein rich food for human consumption as well as enrich soil with nitrogen through nitrogen fixation that enable continuous crop production. With this background, present study was conducted to evaluate the effect of salinity stress on the germination percentage of vegetable cowpea separated under laboratory conditions. This experiment was laid out in a Complete Randomized Design (CRD) with four treatments and four replicates. The treatment groups were non-saline (T1), 0.5% saline (T2), 1% saline (T3) and 1.5% saline (T4). Data were analyzed using Statistical Analytical System (SAS) and means were separated by Duncan Multiple Range Test (DMRT). Seeds of the vegetable cowpea variety "Sene" were chosen and filter papers were soaked in a 5ml solution of the respective salt concentration and placed at the bottom of tightly-fitted petri dish (87x15 mm) along with the 10 seeds. Finally, the Petri dishes were kept in the incubator at 25± 1 OC, 12 hours of day length for five days. Results of the laboratory experiment showed that the germination percentage was significantly affected by salinity level, especially by the higher salt concentration. Among the all treatments, the highest seed germination percentage (95%) was found in the T2 (0.5% NaCl) and the lowest seed germination percentage (62.5%) recorded in T4 (1.5% saline) while comparing with the control one. Same trend was observed for shoot length (1.72 cm), root length (3.92 cm) and fresh weight of seedling (0.51 g/plant) in the treatment which was treated with the 0.5% NaCl. However, except root length other parameters were no significant in T2 compared to the control one.

Keywords: Cowpea, Salinity, Seed germination, Seedling weight, Shoots and root length