

EFFECT OF SALINITY ON SEED GERMINATION OF FIVE LOW COUNTRY VEGETABLES

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By 2050, 50% of the world's arable lands are estimated to be affected by salinity leading to a risk in food production. Poor seed germination due to salinity is a major problem in the olericulture sector of low country dry zone in Sri Lanka. This preliminary study was aimed to evaluate the effect of salinity on seed germination of five locally bred vegetable crops commonly cultivated in low country dry zone of Sri Lanka: *Abelmoschus esculentus* (Okra, variety Beeralu, Malvaceae), *Cucurbita maxima* (Pumpkin, variety ANK, Cucurbitaceae), *Zea mays* (Sweet corn, Thai compositae hybrid, Poaceae), *Vigna unguiculata* (Yard long bean, variety Gannoruwa hybrid Mae, Fabaceae) and *Solanum melongena* (Eggplant, variety Vihara hybrid, Solanaceae). Ten seeds per petri dish (double layer tissue bedded) with three replicates per salinity level were germinated for five levels of salinity (electric conductivities 0.0 dS/m, 2.5 dS/m, 5.0 dS/m, 7.5 dS/m and 10 ds/m.). The imbibition rate, final germination percentage (FGP), mean daily germination (MDG) and residual seed viability (RSV) were determined and data obtained were analyzed using Minitab software 16.1 (2017). The MDG of sweet corn reduced to 51% at EC 10.0 dS/m compared to the control, possibly due to a temporary osmotic effect, since it showed 100% FGP at EC 10.0 dS/m. Although, the RSV of pumpkin and eggplant were 100% and 93% respectively at EC 10.0 dS/m the FGP reduced significantly, to 68% and 52% respectively compared to the controls at EC-10.0 dS/m. Yard long bean and okra begin to lose seed viability above EC-5.0 dS/m and EC-7.5 dS/m respectively probably due to ion toxicity. Thus, sweet corn is suitable for cultivation in strongly saline regions (EC 8-16 dS/m) and suitability for very strong saline regions (EC >16 dS/m) need to be tested. The other four varieties are suitable for moderately saline regions (EC 4-8 dS/m). However, further studies on growth and developmental factors of the plants at particular salinity levels are necessary as these factors too are affected by salinity.

Keywords: Salinity, seed germination, low country vegetables, osmotic effect, ion toxicity

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