Use of Seed Priming Techniques for Improving Seed Germination in Selected Cucurbits and Oil Seed Crops

R Nisana[1], K Yogarasa[1], M.G.D.L Priyantha[2], A.R.J Athukorala[2], J.W.K Samaranayake[2], T Sivananthawerl[1], C.K Beneragama[1], S.H.N.P De Silva[1], L.M Rankoth[1*]

[1]Department of Crop Science, Faculty of Agriculture, University of Peradeniya, 20400, Sri Lanka
[2]Seed Certification Service, Department of Agriculture, Gannoruwa, 20400.
**lalithrankoth@agri.pdn.ac.lk*

Good quality seed production as planting materials is very important for a better agricultural production. However, part of those seeds gets rejected during the final stage of seed certification due to poor germination. Seed priming is one possible option to improve seed quality to overcome that problem. This study was conducted to identify the effects of Halo-, Hydro- and Osmo-priming methods on germination of accepted and rejected seeds of Bitter gourd, Snake gourd, Groundnut and Sesame. The experiment was conducted at the Seed Certification and Plant Protection Center, Gannoruwa in 2022. Seeds were primed with 2% NaCl (Halo), Distilled water (Hydro) and, 5% Poly-Ethylene Glycol (Osmo) for 16 hours at 25 ˚C and then air-dried back to the initial moisture content. Experiment was a two-factor factorial in a completely randomized design with three replicates having 100 seeds per replicate and the non-primed treatment was used as the control. The germination percentage was calculated and the results revealed that different priming methods had significant effects on seed germination. All three priming methods caused significant ($P<0.05$) increase in seed germination in both rejected bitter gourd ($F=8.06$) and snake gourd ($F=2.43$) seeds. Halo-priming exhibited the greatest improvement in the germination of the rejected bitter gourd seeds. None of the tested priming methods could improve the germination of rejected groundnut seeds ($P>0.05$). Osmo-priming accounted for significantly greater germination in accepted bitter gourd seeds. All three tested priming methods increased germination in accepted groundnut seeds while halo-priming accounted for the highest. None of the tested priming methods had any effect on accepted sesame seeds germination. Therefore, Halo-, Hydro- and Osmo-priming methods are good for improving the germination ability in rejected snake gourd and bitter gourd seeds. Nevertheless, these same three seed priming techniques are not applicable for improving germination in rejected groundnut and sesame seeds.

Keywords: Bitter gourd, Groundnut, Halo priming, Hydro priming, Osmo priming, Seedling vigor.