Priming Techniques for Seed Quality Enhancement of Selected Oil Seed Crops

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Seed production as planting materials is very important. However, part of those produced seeds get rejected during seed certification due to poor germination. One possible way of improving the germination is seed priming. This study was conducted to quantitatively describe the effects of different priming methods (Halo, Hydro and Osmo) on germination in accepted and rejected seed lots of groundnut (*Arachis hypogaea* L. var. *Thissa*) and sesame (*Sesamum indicum* L. var. *Uma*). This experiment was conducted at the Seed Certification and Plant Protection Center, Gannoruwa during Sept.–Dec., 2022. Seeds were primed with 2% NaCl (Halo), Distilled water (Hydro) and, 5% Poly Ethylene Glycol (Osmo) for 16 hours at 25°C. Experiment was arranged as a two-factor factorial in a completely randomized design with three replicates and the non-primed treatment was used as the control. Chlorophyll fluorescence measurements were taken in 10-day old seedlings under each treatment and were expressed as OJIP curves. Results revealed that different priming methods had significant effects on germination percentage, moisture percentage, seedling vigor, the electrical conductivity, and seed micro floral (*Aspergillus flavus*, *Aspergillus niger*, Penicillium, Rhizopus, Bacteria, and Saprophytes) counts. Halo priming increased the germination percentages, shoot length and seedling vigor, the electrical conductivity, and moisture percentage of groundnut and sesame seeds. However, none of the tested priming methods were strong enough to improve the quality of rejected groundnut seeds. Hydro and Halo priming were good for improving the seed quality in rejected sesame seeds. All three priming methods were good for increasing the seedling quality of accepted sesame seeds and they did not affect the seed germination percentage positively or negatively. Thus, seed priming is beneficial for the farmer as it increases the germination ability of seeds.

Keywords: Chlorophyll fluorescence, Oil seed crops, Seed priming techniques, Seedling vigor

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