SYNTHESIS OF CALCIUM OXIDE NANOPARTICLES FROM WASTE EGGSHELLS FOR SEED PRIMING

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Environmental pollution and scarcity of natural sources are two major problems that society faces at the present. Eggshells are a waste that is discarded without any value which contributes to the environmental pollution. In this study, a method is introduced to add value to the eggshells and used it for seed priming. Seed priming is a technique that introduced as a solution for the decrease in plant growth and crop yield due to the environmental pollution. Calcium oxide nanoparticles were synthesized from waste eggshells through a combined process of ball milling and calcination. The eggshells and the calcined eggshell powder were characterized by Scanning Electron Microscopy (SEM), Thermogravimetric Analysis (TGA), Fourier-Transform Infrared Spectroscopy (FTIR), and X-Ray Diffraction (XRD) CaO was synthesized at different temperatures and different time periods from eggshells.

Green gram seeds were chosen for the study on seed priming as quick results can be obtained. The green gram seeds were treated with CaO suspension. The effect of CaO nanoparticles on seed priming and germination were also investigated.

Keywords: Eggshells, nano CaO, Seed priming, germination