

**EFFECT OF PRIMING AGENTS ON OKRA SEED
GERMINATION AND PLANT GROWTH UNDER SALT STRESS**

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ABSTRACT

Okra (*Abelmoschus esculentus*) is a valuable vegetable crop grown in tropical and subtropical regions worldwide. It is a versatile crop due to the numerous applications of its fresh leaves, buds, blooms, pods, stems, and seeds. Hence, this experiment was carried out to study the effect of priming agents on okra seed germination and plant growth under salt stress. A laboratory experiment was designed to identify a suitable concentration of priming agents with fifteen treatments each with three replicates, including a control (T0) priming with water, and four treatments (25%, 50%, 75%, 100%) of carrot root extract, neem leaf extract, garlic clove extract, two treatments (3%, 5%) of MgSO₄. Thereafter, using the identified appropriate concentration, a pot experiment was carried out with five treatments each with five replicates, including a control (T0*) primed with water and 50% (T2*) carrot root extract, 100% (T8*) neem leaf extract, 25% (T9*) garlic clove extract, 3% (T13*) MgSO₄, and sodium chloride (100mM) was used to create salinity for each treatment. In the laboratory experiment okra seed primed with 100% neem leaf extract, 25% garlic clove extract, 50% carrot root extract, and 3% MgSO₄ improved germination parameters; The radicle length showed significant differences ($p < 0.05$) throughout the period, the germination percentage showed significant improvement in the later stage, but the plumule length did not show significant differences however, it increased with time. In the pot experiment, the result indicated that okra seeds primed with 3% MgSO₄ (T13*) exhibited superior growth parameters compared to other treatments. Even though plants in T13* showed significant increases in plant height, number of leaves, number of branches, stem girth, and relative water content, its expense may limit its use by local farmers. After 3% MgSO₄ (T13*), 50% carrot root extract (T2*) also showed the best performance, offers a more budget friendly solution. Because of its lower cost and organic nature, it is a suitable and recommended alternative for local farmers. Based on the results, it is recommended that 50% carrot root extract be used to prime okra seeds for 24 hours to grow the okra plant in salt affected areas.

Keywords: Okra, Plant Growth, Priming Agents, Salt Stress, Seed Germination

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