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## **EFFECT OF WATER STRESS AND CONTAMINATED WATER ON SEED GERMINATION TRAITS AND EARLY GROWTH IN MAIZE (*Zea mays*)**

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### **Abstract**

Irrigation is an increasingly important practice for sustainable agriculture. Water reuse as refined or non-refined wastewater can help agroecosystem productivity. Contaminated water may influence seed germination. Two experiments as laboratory and pot were carried out to assess impact of different levels of laundry detergent and water stress on seed germination and early growth in maize. At the laboratory experiment, seeds were treated with solutions of 0, -0.01, -0.09, -0.6 MPa polyethylene glycol 6000 and iso-osmotic concentration of laundry detergent. The pot experiment included different doses of laundry detergent (20, 2, 0.2 and 0 grams per litre) and two irrigation intervals (1 and 2-day irrigation interval). Results showed that -0.6 MPa osmotic potential reduced maize seed germination percentage, caulicle length, radicle length, seedling weight and seed vigor. 20 and 2 grams per litre of laundry detergent reduced plant height, leaf number per plant, leaf area, stem weight and leaf weight. 20 grams per litre of detergent increased specific leaf weight and reduced total biomass. The results show that irrigating maize by contaminated water with laundry detergent at high dose is not recommended.

*Keywords:* biomass, growth parameters, laundry detergent, maize, seed vigor

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