

Summary

Environmental factors affect germination variability of seeds in the field, affecting a species's population dynamics. In this study, we evaluated the effects of environment on germination percentage and the germination speed index (GSI) of *Leucaena leucocephala* seeds. Environmental factors studied were continuous temperature (at 20, 25, 30, 35, and

40 °C); alternate temperatures (20-40, 20-35, 25-40, and 25-35 °C); time of light duration (0, 6, 12, 18, and 24 h); saline stress (0, 25, 75, 150, and 300 mM); and osmotic stress (0, 0.3, 0.6, 0.9, and 1.2 MPa). Germination was evaluated over periods of 15 days, with daily counts and elimination of germinated seeds. Maximum seed germination (percentage and GSI) was obtained under a continuous temperature of 35 °C and alternate temperatures of 20-40, 20-35, 25-40, and 25-35 °C. Light duration did not affect seed germination, with seeds germinating in either the presence or absence of light. The saline and osmotic stresses negatively affected seed germination. Meanwhile, under the same stress conditions of osmosis at 1.2 MPa and salinity at 300 mM, seeds could germinate, showing that *L. leucocephala* can produce new plants in pastures under these conditions. The GSI was more effective measuring the effects of temperature and saline and osmotic stresses than was percentage of germination.