

Hydrotime analysis of *Amaranthus* spp. seed germination under salinity condition

ABSTRACT

Amaranth (*Amaranthus* spp.) have gained interest as crop family to be grown under diverse soil conditions such as drought and heat stress. However, the presence of salinity affects crop's germination process due to reduction in water availability for seeds to germinate. In this study, germination behaviour of *Amaranthus hybridus* L., *Amaranthus viridis* L., *Amaranthus tricolor* L. and *Amaranthus giganteus* L. under salinity condition were analysed through hydrotime model analysis. Five water potentials in NaCl solution to induce salinity condition (0, -0.3, -0.6, -0.9, and -1.2 MPa) were used in the germination tests. Differences in salinity tolerance were determined in the different species during germination. *A. giganteus* recorded a lower θ_H (40.30) and more negative $\Psi_b(50)$ (-1.55) as well as higher germination rate as compared to the other species. The hydrotime modelling approach applied in this study for the analysis of amaranth species which might help to identify crop salt tolerance at seed germination stage.

Keyword: *Amaranthus*; Germination stage; Salinity tolerance; Hydrotime analysis; Probit regression