

1999 WORLD SEED CONFERENCE

Co-Organised by:
ISTA - FIS/ASSINSEL - OECD - UPOV

ISTA
75th ANNIVERSARY

6 - 8 September
Cambridge UK

P2-13

NOTES

THE EFFECTS OF SALINITY ON THE GERMINATION AND EARLY SEEDLING GROWTH OF SOYBEAN

Mohammad Khajeh Hosseini¹, Ian Bingham², and Alison A Powell¹

1. Department of Agriculture, University of Aberdeen, Aberdeen, Scotland, U.K
2. Crops Division, SAC-Aberdeen, Craibstone Estate, Aberdeen, Scotland, U.K

*Main author

Tel +44 (0)1224 274159

Fax +44 (0)1224 273731

Email hamh.eshsa@abdn.ac.uk

The effect of salinity (NaCl) on the germination and seedling growth of soybean (cv. Williams) was studied using a range of NaCl concentrations (0-500 mMolal NaCl). Germination was counted after 8d and seedling growth rate was measured 3-4 days after germination. The concentrations of Na, K and Ca in the embryonic axis in pre and post-germination stages were determined by Flame Photometer and Atomic Absorption Spectrophotometry. Germination and early seedling growth differed in their response to salinity. In all salinities except 500 mMolal NaCl the seeds germinated, but seedlings grew little at concentrations above 160 mMolal. Seedling growth was completely inhibited at a tissue Na concentration of 6 mg g⁻¹ and yet germination was possible at tissue concentrations of 9 mg g⁻¹ where a germination of over 70% was achieved. One possible explanation for the ability to germinate at the higher Na tissue concentration may be the presence of higher concentrations of K and Ca in the tissue in the pre-germination phase and therefore a low Na : K+Ca ratio. The presence of these salts may protect cell membranes against the toxic effects of Na.