The interaction between salinity stress and seed vigour on the germination of soybean seeds

HOSSEINI, MOHAMMAD KHAJEH[1]; ALISON A POWELL [1], IAN J BINGHAM [2]

[1] Department of Agriculture, University of Aberdeen, Aberdeen, AB24 5UA, U.K
[2] SAC, Department of Agronomy, Craibstone Estate, Aberdeen, AB21 9YA, U.K

The effect of salinity on the germination of six soybean cultivars (Williams, Hobbit, Century84, Sahar, Simess, CX232) was studied by placing seeds between paper towels moistened with a range of solutions of NaCl and PEG the same water potentials. After 8d in NaCl or PEG the ungerminated seeds were transferred to deionised water fo The influence of seed quality on the response of soybean to stress was also examined using seeds having high germ tion but a range of seed vigour, produced by rapid ageing at 15% MC and 45°C for up to 9h. Cultivars differed in response to salinity. Failure of seeds to recover from high salinity revealed the toxicity of NaCl. In contrast, the incr in germination during recovery period suggested that PEG was not toxic. At the same external water potential, the N in saline conditions was lower and final germination was higher than that in PEG. Measurements of the rate of, and t water uptake by individual seeds revealed more rapid imbibition in NaCl solutions than in PEG at the same w potential. In saline conditions aged, low vigour seeds had lower germination than unaged seeds, but there wa significant interaction between salinity and seed ageing. However, unaged high vigour seeds showed a greater incr in germination after transfer to 0 MPa than that of the aged, low vigour, seeds.