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## Poster: Salinity

Abs # 194: The influence of experimental substrate on early seedling growth under stress conditions.

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In experiments investigating the effect of stresses such as salinity on germination and early seedling growth, it is usually assumed that substrates used in the experiment, such as paper towels, play a neutral role in the experiments. Our concern is that the paper towels may, however, influence the results. The effect of salinity on the early seedling growth of soybean (cv. Williams) was therefore studied using a range of NaCl concentrations (0-161 mM NaCl) using two different methods, paper towels and a hydroponic system. The concentrations of Na<sup>+</sup>, K<sup>+</sup> and Ca<sup>2+</sup> in the seedling and in the solution extracted from paper towels were determined by Flame Photometry and Atomic Absorption Spectrophotometry. The seedlings grew satisfactorily in paper towel at an external NaCl concentration of 161mM NaCl, when a Na<sup>+</sup> concentration 2.3mg g<sup>-1</sup> FW was recorded in the roots. However, in the hydroponic system, seedlings failed to grow even at an external NaCl concentration as low as 12 mM, when the Na<sup>+</sup> concentration in the root was 1.6mg g<sup>-1</sup> FW. Analysis of the solutions soaking the paper towels revealed that 4.25mM Ca<sup>2+</sup> was available to the seeds in the paper towel system in saline conditions. The presence of Ca<sup>2+</sup> may have reduced Na<sup>+</sup> uptake by the seed/seedlings or provided a protective effect against the toxic effects of Na<sup>+</sup>. This hypothesis was supported by enhanced growth in the hydroponic system at 30mM NaCl following addition of Ca<sup>2+</sup> at the same concentration as extracted from the paper towel solution. This suggests that paper towels may influence the response of seedlings to NaCl due to the release of other ions from the paper towels into the solution soaking the towels.

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