Salinity Solutions

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Salinity is an emerging threat to sustainable agriculture. This investigation examined the impacts salinity levels have on the growth rates and biomass of potato cultivators, specifically if some cultivators are more salt tolerant than others. Furthermore, it attempted to answer the question: can salt affected soil be remediated quickly enough to enable tuber planting in soils previously too saline for growing food crops such as potatoes? Potato cultivators commonly grown in Tasmania were compared in six salinity parameters of increasing value and a control was utilised. The results revealed that Red Delight cultivators were more salt tolerant than other cultivators. These results could have practical applications for farmers on a larger scale, where salinity is an issue and selection of suitable cultivators could improve crop yield. A second experimental phase was conducted focusing on remediation of salinity-damaged soils using calcium chloride as a remediating agent. The results of this remediation phase indicated that the addition of calcium chloride to saline-affected soil improved the growth rate and biomass of cultivators. The practical application of these results may have benefits locally, nationally and globally in the areas of sustainable agriculture, improved food resourcing and soil rehabilitation. Evidence from electrochemical modelling of the impacts of calcium chloride alongside sodium chloride in the soil matrix showed that desired functioning of the calcium chloride in remediation could be evidenced by the use of low-voltage probes. Further research is advised in this area of soil electrochemistry, as benefits may exist that fall beyond the scope of this investigation.

Awards Won: