

Potassium nitrate and calcium nitrate ameliorated the negative effects of salinity of strawberry

A pot experiment was carried out with two strawberry (

Fragaria

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Dutch) cultivars, Oso Grande and Camarosa in sand culture to investigate the effects of supplementary calcium nitrate and potassium nitrate to plants grown at high NaCl (35 mM) in complete nutrient solution supplied via the roots. Composition of nutrient solution was (mmol/L): 19,3 N, 1 P, 6 K, 5 Ca, 2 S, 2 Mg and ($\mu\text{mol/L}$) 52 Na, 50 Fe, 46 B, 9,1 Mn, 0,8 Zn, 0,3 Cu and 0,1 Mo. Treatments consisted of: nutrient solution alone (C), C + 5 mM $\text{Ca}(\text{NO}_3)_2$ + 5 mM KNO_3 (C+CaN+PN), nutrient solution + 35 mM NaCl (C+S), C+S+ 5 mM $\text{Ca}(\text{NO}_3)_2$ (C+S+CaN), C+S+ 5 mM KNO_3 (C+S+PN), and C+S + 5 mM $\text{Ca}(\text{NO}_3)_2$ + 5 mM KNO_3 (C+S+CaN+PN). The volume of nutrient solution supplied to the plants ranged from 50 mL to 250 mL per pot depending on the amount of solar radiation, temperature and plant size.

The plants grown at high NaCl had less dry matter, fruit yield, and chlorophyll content than those grown in normal nutrient solution for both cultivars. Both supplementary $\text{Ca}(\text{NO}_3)_2$ and KNO_3 partly mitigated the detrimental effect of salinity on fruit yield but were most effective when used together (Figure 1). Fruit weight, fruit number and total soluble solids decreased with high salinity. Supplementary $\text{Ca}(\text{NO}_3)_2$ and KNO_3 were both very effective in restoring those parameters but best results were observed when supplied together. Also membrane permeability increased with high NaCl and was statistically significantly reduced by supplementary $\text{Ca}(\text{NO}_3)_2$ and KNO_3

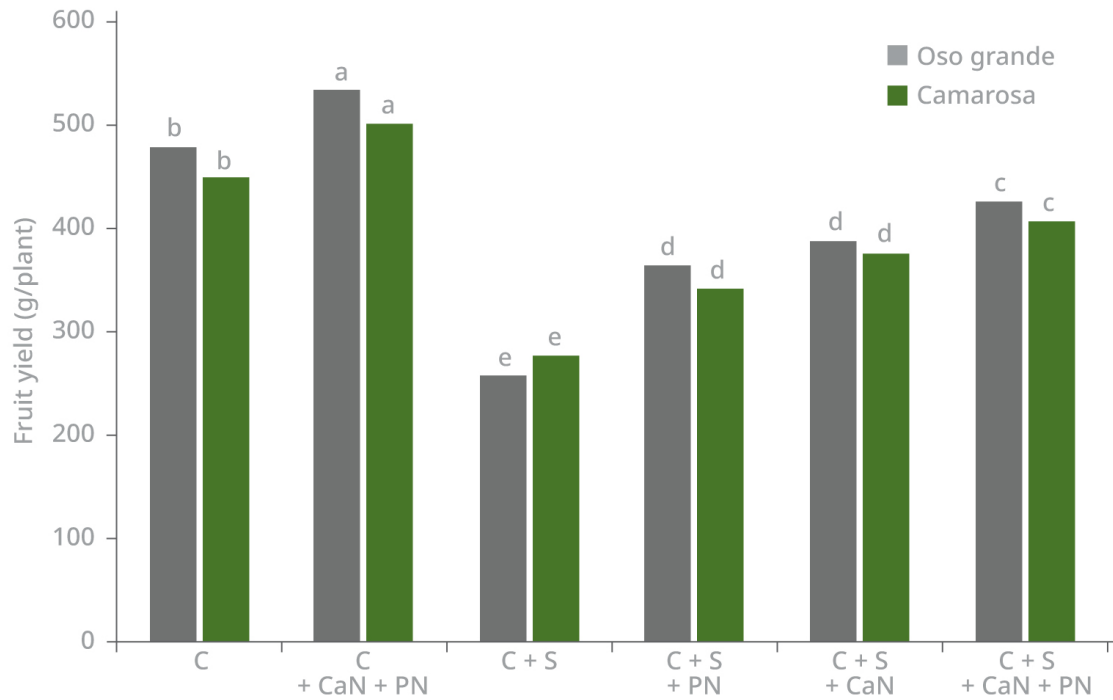


Figure 1. The effect of treatments on the fruit yield (g/plant) of two strawberry cultivars. Note: C, plants receiving normal nutrient solution; S, 35 mM sodium chloride; CaN; 5 mM $\text{Ca}(\text{NO}_3)_2$; PN, 5 mM KNO_3 .