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CATION AVAILABILITY IN BUFFERED COCO PITH AND THE EFFECT ON GROWTH OF TOMATO (*SOLANUM LYCOPERSICUM*) PLANT

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Plant growth retardations are often reported when coir based soilless growth media is used in protected agriculture. This has been related to high Na and K concentrations in the coir pith and different buffering techniques have been proposed to rectify this problem. This study determines the cation availability in coir pith buffered with three chemicals and the growth and nutrient status of the tomato plant (*Solanum lycopersicum*) grown in these media. In a leaching column experiment, 0% and 100% of the Albert solution recommended for tomato in protected agriculture was applied into coir buffered with either water, $Ca(NO_3)_2$, or $MgSO_4$. Cation concentrations were determined in leachates collected at six times in 42 days. In a greenhouse pot experiment, 0%, 50%, 100%, and 120% of the recommended level of the Albert solution were applied into tomato plants replanted in the three buffered coir medium. Growth and leaf nutrient concentrations of the tomato plants were measured after 42 days. Available Na and K concentrations were the lowest in coir pith buffered with $Ca(NO_3)_2$ (71 and 91mg/L, respectively) compared to those in coir pith buffered with $MgSO_4$ (187 and 304 mg/L respectively) or water (138 and 287 mg/L, respectively). This was about 49 to 63% reduction for Na and about 70% reduction for K. When the Albert solution was added, Na availability became high, as high concentration of Ca and Mg in it get strongly adsorbed to exchangeable sites and replace Na^+. Dry matter accumulation in plants grown in both $Ca(NO_3)_2$ and $MgSO_4$ buffered coir was not increased when the Albert solution was increased beyond 50% of the recommended level. But in plants grown in water buffered coir, application of 100% of Albert solution was required to record the highest growth. Multiple regression analysis revealed that the change in phosphorous (78%) and calcium (10%) status of the plant could be the possible reasons for the observed variations in plant growth. The most effective buffer to reduce Na and K in coir was $Ca(NO_3)_2$ and coir could be used as a growth media efficiently by employing appropriate nutrient management strategies when they were buffered with different chemicals.

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