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FURTHER EXPERIENCES WITH RECYCLED ZEOLITE AS A SUBSTRATE FOR THE SWEET PEPPER CROP

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Abstract:
Financial and environmental pressures on the Jersey farming industry are increasing with the need to produce greater yields of better quality produce. The problems of waste disposal have led to demands for the greater use of recyclable products, including alternative hydroponic substrates that are being examined for their suitability to local crops and conditions. One such substrate is clinoptilolite zeolite - a crystalline, hydrated alumino silicate able to lose and gain water and to exchange constituent cations, especially large cations such a s NH_4^+ and K^+.

Preliminary studies examined recycled zeolite for carnation crops but work is now concentrating on the sweet pepper crop. Initially, the crop was fed with a full nutrient regime throughout the growing season and drainwater recirculated back to the plants. At the end of each season the clinoptilolite was steam-sterilised, placed into new bags and used as the substrate for the following crop. After two cycles the same clinoptilolite was also compared to other substrates and the feed regime was modified so that fresh nutrient was applied at each irrigation. Measurement of growth, fruit yield and quality revealed no decrease in performance with recycling. Leaf tissue analyses showed a significant drop in nitrate-nitrogen content over the first three years of the trial, while analyses of the drainwater revealed decreasing levels of nitrate-nitrogen and increasing levels of sodium over the same period.

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