

Anon. 1978. Problem ions removed by reverse osmosis. The Grower (Supplement) 89 (22):9-11.

For glasshouse crops, rainwater is best source of irrigation water, but is easily contaminated. According to Dutch authorities, rainwater most readily becomes contaminated with deposits from the heating system. Using water from a water ditch is an alternative, but there is an acute problem of pollution from humic acid, clay particles, bacteria, virus and high sodium chloride levels.

Much interest in Holland is being shown in the new technology of reverse osmosis, whereby ions from a weak solution are forced across a membrane in the wrong direction by using pressure. Three types of membranes are being looked at: cellulose, acetate, cellulose tri-acetate and polyamide. According to the Dutch expert, 120 reverse osmosis plants are being used on Dutch nurseries, with some models portable. After treatment, water should not contain more than 50 ppm chlorides (less than 2 meq/l). A lower content could be achieved, but would be uneconomic. Ions of copper, magnesium, iron, manganese, zinc, etc. can also be removed.

Sodium and chloride ions are two of the most undesirable constituents of a water supply. Deionization is a more traditional way of removing ions, cylinder deionizers are now available which give high volumes without need for in-place regeneration. Deionization is more economical than distillation. On a large scale, deionization produces large amounts of CO_2 , which might be collectable for injection into greenhouses. Reverse osmosis, however, has higher capacity than deionization.

Reverse osmosis is a very new development. Undissolved materials are completely removed, but only between 85 to 95% of the dissolved inorganic salts are removed. Only about 50% of the original water volume is recovered, but "contaminated" water can be returned to natural water courses. You have added nothing to the original supply. Running costs are basically unaffected by the level of solids to be removed. Where original water quality varies, quality in reverse osmosis will also vary.