NUTRIENT FILM CULTURE

RON RICHARDS

Department of Agriculture, Tasmania

The nutrient film culture (N.F.T.) method of growing plants was devised by Dr. A.J. Cooper of the Glasshouse Crops Research Institute, Littlehampton, England. Basically it consists of growing the plants with their roots contained in a narrow channel and moistened with a warm flowing nutrient solution only a few millimetres in depth. Deeper solutions are being used in some situations with reasonable success but are not truly N.F.T. and will not be considered in this paper.

All the essential chemical elements needed for plant growth are contained in the flowing film of nutrients. Following uptake of nutrients, the acidity varies, and adjustments are made with phosphoric or nitric acids. The depletion of nutrients may be measured electrically and adjustments made using specifically formulated "top-up" solutions.

In Tasmania six commercial enterprises are currently using N.F.T. to produce crops of tomatoes, and experiments are in progress with cucumbers, carnations and chrysanthemums. Although package equipment is available from commercial firms, most growers have decided to develop their own systems of channels and ancillary equipment. All are growing on polythene film, folded into triangular shape and either resting on sloping soil or supported above the ground on wooden or steel structures.

Why should growers be interested in growing plants by this different technique? Elimination of costly and tedious soil sterilization and the promise of improved yields motivate most. To date, most growers are well pleased with the results, even though most admit some mistakes in operation and acknowledge that improvements in technique are needed. Most intend enlarging the installation next year.

What are the possibilities of this technique for the nurseryman? One suggestion has been for slow-growing plants. Growth obtained in one year of N.F.T. has been equal to that obtained in three years by conventional methods, mostly as a result of the warmer solution and optimum nutrient concentration.

The plants would need to be potted on and allowed to develop soil roots before sale. The possibility exists for the development of special rooting solutions for cuttings. The solutions could initially be enriched with callus-inducing growth substances. These cuttings could be supported in special re-

moveable racks facilitating inspecting at different stages of growth with minimal shock to the plants.

Whether N.F.T. continues to expand will depend on its competitiveness with conventional methods of cultivation. It is significant that this is the only form of hydroponic growing that has made significant progress in established growing areas.

REFERENCES

Cooper, A. "Commercial Applications of N.F.T." Grower Books, 49 Doughty St., London.

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pH AND SALINITY DEMONSTRATION AND INTERPRETATION

ROB VAN DER STAAY

P.O. Box 181
Moonah, Tasmania 7009

pH MEASUREMENTS

There are many forms of pH meters available today. These range from pH soil testing kits for less than $10 in garden shops to very expensive and elaborate units found in research laboratories costing in excess of $600. Meters available for soil testing can be reasonably priced at about $200 and give very reliable and accurate results. The only reliable measurement of pH is via what is called a glass bulb pH electrode. When purchasing such a pH unit or electrode, get what is called a combination electrode, as it has its reference and pH electrode built in one; pH electrodes require what they call a reference electrode, but purchase of a combination electrode will not necessarily mean a purchase of another electrode.

Measuring pH is relatively simple in soil. A simple procedure is to take a sample of soil in a clean cup or beaker and add sufficient water to make up a paste rather like a sloppy mud-pie mix. Mix well and allow to stand for approximately 15 to 20 minutes. Mix again and simply insert the electrode into the mixture. Read the pH on the scale of the meter. After reading, wash the electrode down with clean water; store in clean water when not in use. The pH meter must be calibrated before use and this can only be done by immersing the electrode in a standard pH solution. Adjust the pH on the scale to the known value of the standard and you have just calibrated your instrument.

Temperature is important when measuring pH because it