The development of hydroponic and aeroponic culture systems for the high-throughout production of basil

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Introduction

- New hydroponics methods were established to assess which would best accommodate basil

- Four types of basil were tested: 1, Genovese; 2, Soi; 3, Thai ; 4, Red

- On three hydro-based systems: 1, Dynamic Root Floating (DRF); 2, Nutrient Film Technique (NFT); 3, Aeroponics

- Method choice was aimed to: maximise oxygen to roots whilst minimising floor space, labour inputs and consumable costs

DRF - Plants placed in holes in polystyrene sheets floated on a pool of nutrient solution

- A novel polystyrene “raft” were designed to hold seedling plugs (opposite)

- A nutrient pond was specially made too

- The trays were a perfect fit with the walls of the pool

- We found excellent thermal stability = better plant growth

Aeroponics - suspends the plant roots in air, and sprays them with nutrient solution

- A 16 plant aeroponics unit was used (figure opposite)

NFT - plant pots sits in a shallow flow of re-cycled nutrients

- Different rooting media were assessed (see pictures below)

- 50/50 compost/perlite mix and vermiculite (below)

Results & Summary (see graphs opposite)

- Aeroponics produced fastest growth rates

- An optimal hybrid DRF/aeroponics system needs developed

- The Soi performed well in all three systems