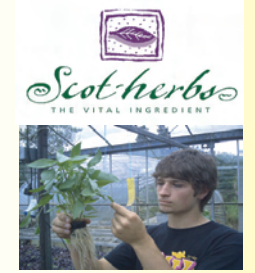


The development of hydroponic and aeroponic culture systems for the high-throughput production of basil

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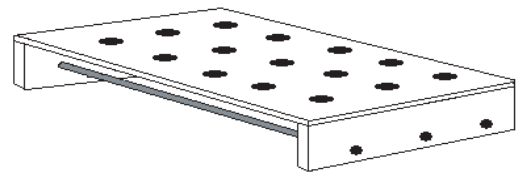


Introduction

- 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)

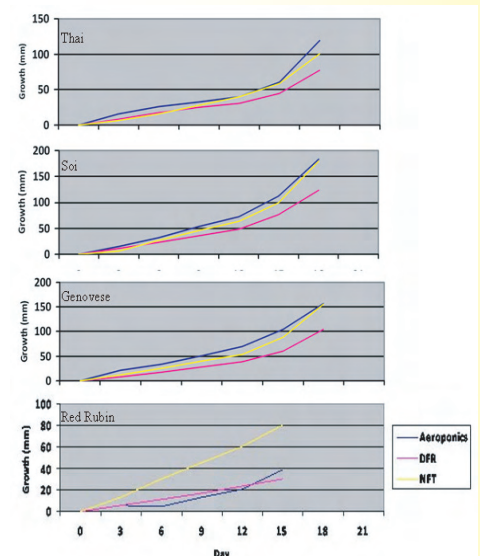
NFT - plant pots sits in a shallow flow of re-cycled nutrients

- 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



- The randomised trials were kept in the same glasshouse
- Identical nutrients conditions and pH were maintained for each system
- Plant height was monitored and recorded every three days