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Carrot Cultivar Evaluation: Soilless Media vs. Hydroponics

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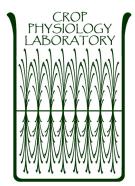
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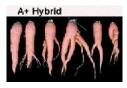
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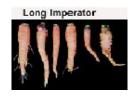


Carrot Cultivar Evaluation: Soilless Media vs. Hydroponics Derek Pinnock and B. Bugbee - 2002

Nine cultivars of carrots were grown in a growth chamber. Each cultivar was grown both in hydroponic and soil-less media root-zone for sixty days. Three 30L tubs were used for each root-zone treatment. Three cultivars were planted in each tub, initially at 180 plants m⁻² then thinned to 90 plants m⁻² on day 45.



















PPF: 850 μmol m-2 s⁻¹

Photoperiod: 16 h

Temperature: 22/20 oC day/night

CO2: 1200 ppm

Root zone 1: Soilless media (peat/perlite)
Root zone 2: Recirculating hydroponics

Days to harvest: 60

CONCLUSIONS:

- 1. Carrots can be grown in flowing hydroponic culture, but the percentage of split and forked roots was higher than in soil-less media.
- 2. The percentage of split and forked roots can be minimized by cultivar selection.
- 3. Carrots can be grown under HPS lamps.
- 4. Root shape was more typical in soil-less media than in hydroponics. Many hydroponic roots had a large top diameters with long thin tails.
- 5. The orange color intensity was better in soil-less media than in hydroponics.
- 6. It is essential to minimize light leakage around the stem base to eliminate chlorophyll formation in the tops of the storage roots in hydroponics.
- 7. Growth of the tops was overly vigorous. Height was 40 to 55 cm, which is taller than field grown carrots. Reducing nitrogen in the root-zone may reduce top growth and increase harvest index.
- 8. The best cultivars were:
 - 1. Scarlett Nantes: Best yield and shape in both types of media. 2. Sweetness & Red Core Chantenay: good yields but atypical root shape.

CULTIVARS USED:

- A+ Hybrid
- Minicor
- Health Master
- Red Core Chantenay
- Scarlett Nantes
- Nantes Coreless
- Oxheart
- Long Imperator
- Sweetness