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Carrot Cultivar Evaluation: Soilless Media vs. Hydroponics

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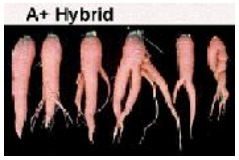
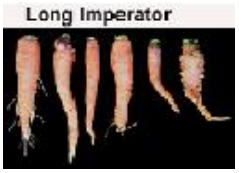
Nine cultivars of carrots were grown in a growth chamber. Each cultivar was grown both in hydroponic and soil-less media root-zone for sixty days. Three 30L tubs were used for each root-zone treatment. Three cultivars were planted in each tub, initially at 180 plants m^{-2} then thinned to 90 plants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