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Hydroponic vs. Soilless Media: Interaction with Plant Density

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Hydroponic vs. Soilless Media:

Interaction with Plant Density

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Introduction:

Water stress can cause early heading in some plant species. 'Super Dwarf' rice was grown in hydroponic culture and soilless media to determine if a slight water stress, caused by the soilless media, would cause earlier heading.

Materials and Methods:

'Super Dwarf' rice was grown at two plant densities, 50 and 200 plants per m^2 , in two growth chambers. Each chamber had four 30 L tubs, two of the tubs were recirculating hydroponic culture, the other two tubs were soilless media made of a 1:1 peat-perlite mix. The soilless media treatments were watered daily by drip irrigation system.

Temperature: 32/26 d/n pre-heading
28/22 d/n post-heading
CO₂: 1200 ppm
Root-zone: recirculating hydroponics or soilless media

Days to Heading: hydroponic - day 51
soilless media - day 54

Days to Harvest: day 88

Conclusions:

1. Yield & Harvest Index (HI) were good in all plots.
2. As with previous studies with other crops, HI decreased with increasing density.
3. Earlier heading in hydroponics did not improve HI.

PPF: 900 $F\ mol\ m^{-2}\ s^{-1}$

Photoperiod: 12 hrs

