

When Considering Flavor of Your Basil What is the Best Substrate to Grow Your Plants In?

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Introduction

The use of hydroponics and soilless media often leads to debates in food crop production, particularly when considering the impact on the food that ends up on your plate. It is a common perception that growing crops in soil or soilless media is considered superior to using hydroponics when flavor is taken into account. Also, the color of light can influence the flavor of crops.

Objective: To investigate the effects of substrate and color of light on plant growth and the flavor of basil

Materials and Methods

Plant materials:

- Green basil (*Ocimum basilicum*) 'Genovese'
- Purple basil (*Ocimum basilicum*) 'Red Rubin'

Treatments (B: blue, R: red, DWC: deep water culture)

Treatment	Light color	Substrate
1	B:R	DWC hydroponics
2	B:R:W	DWC hydroponics
3	B:R:W	Soilless media

Growing environments:

- Indoor vertical farm
- Air temperature: 22 °C
- Photosynthetic photon flux density: 210 $\mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$
- Plant nutrients:
 - 100 ppm N for young stage
 - 200 ppm N for finishing stage

Results

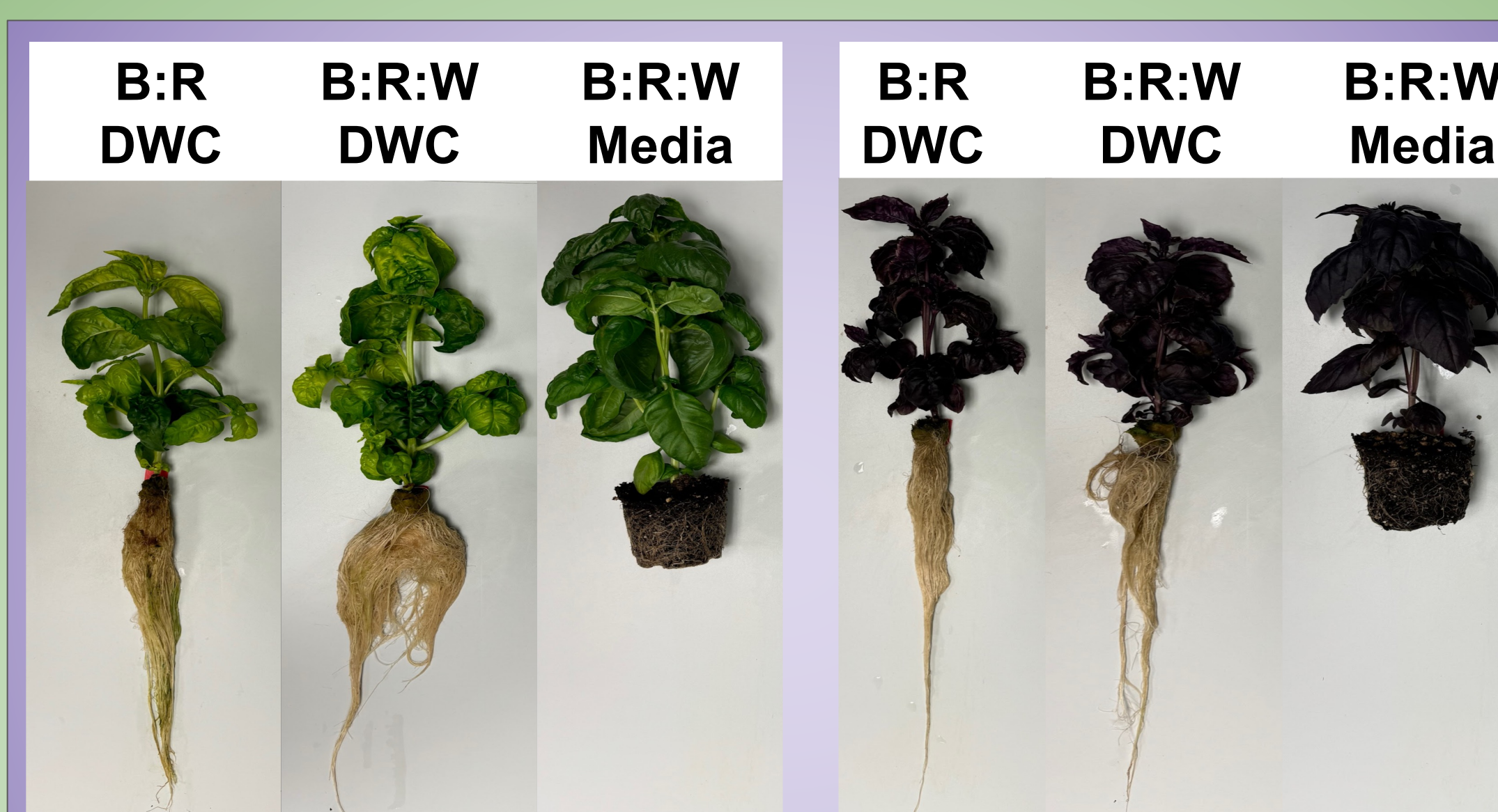


Fig 1. Green basil (left) and purple basil (right) grown for 5 weeks under light and substrate treatments. See Table 1 for information on the treatments.

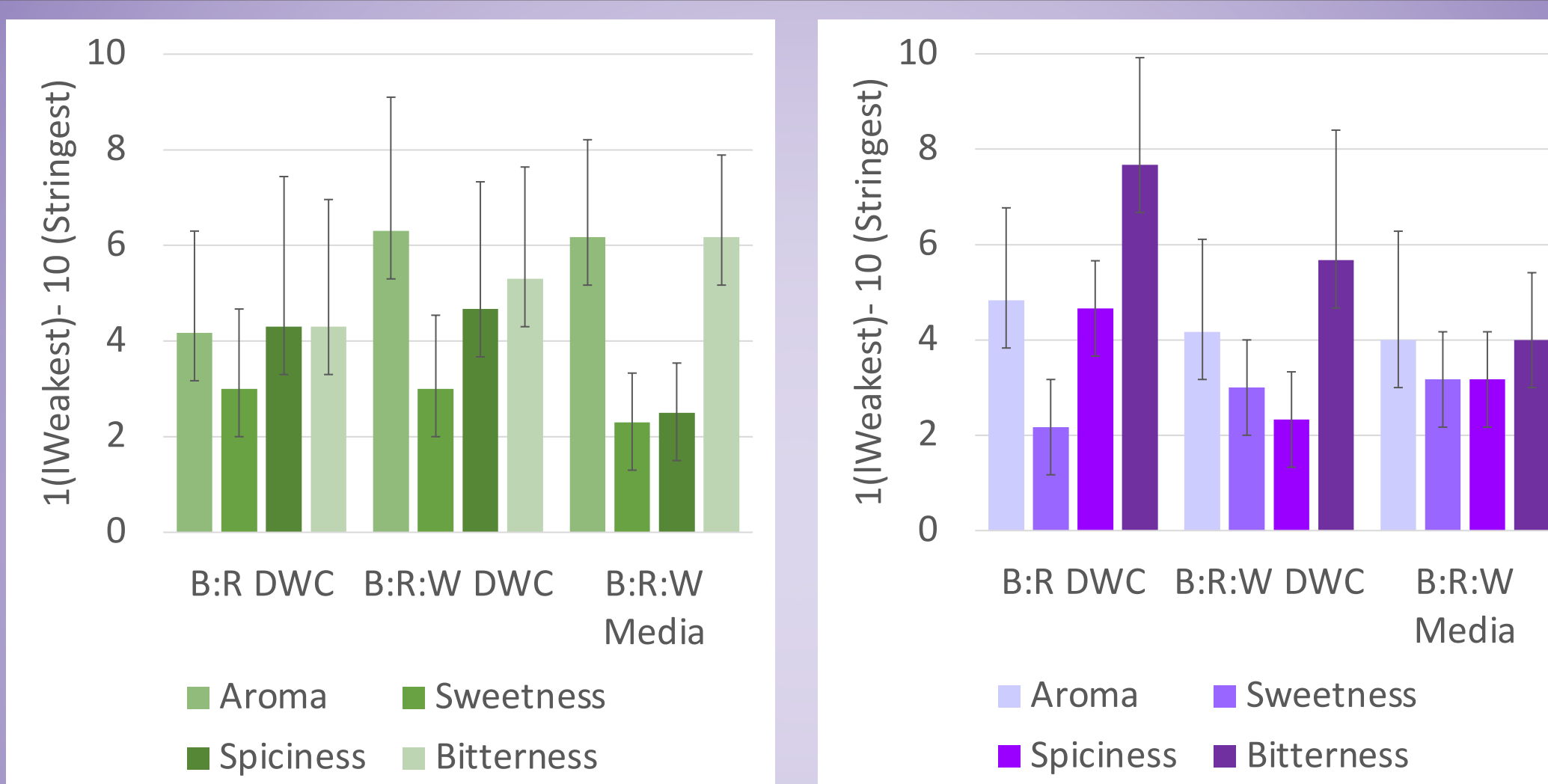


Fig 2. Flavor profile of green basil (left) and purple basil (right) grown for 5 weeks under light and substrate treatments. See Table 1 for information on the treatments.

Results

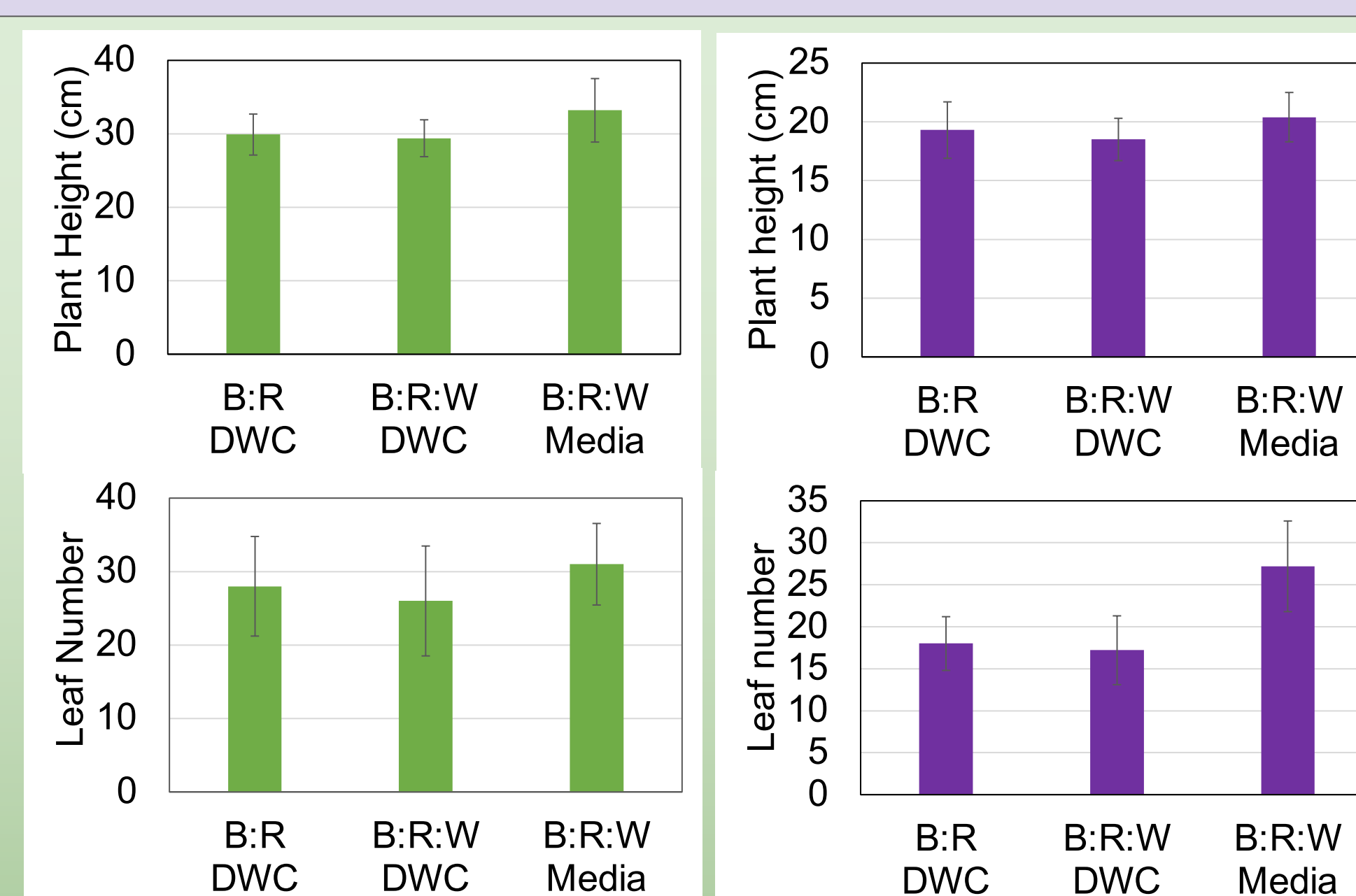


Fig. 3: Plant height and leaf number of green basil (left) and purple basil (right) grown for 6 weeks under light and substrate treatments. See Table 1 for information on the treatments.

Conclusions

There were little to no effects of substrate types and light color on plant growth and flavor profile in green and purple basil.

Acknowledgement

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