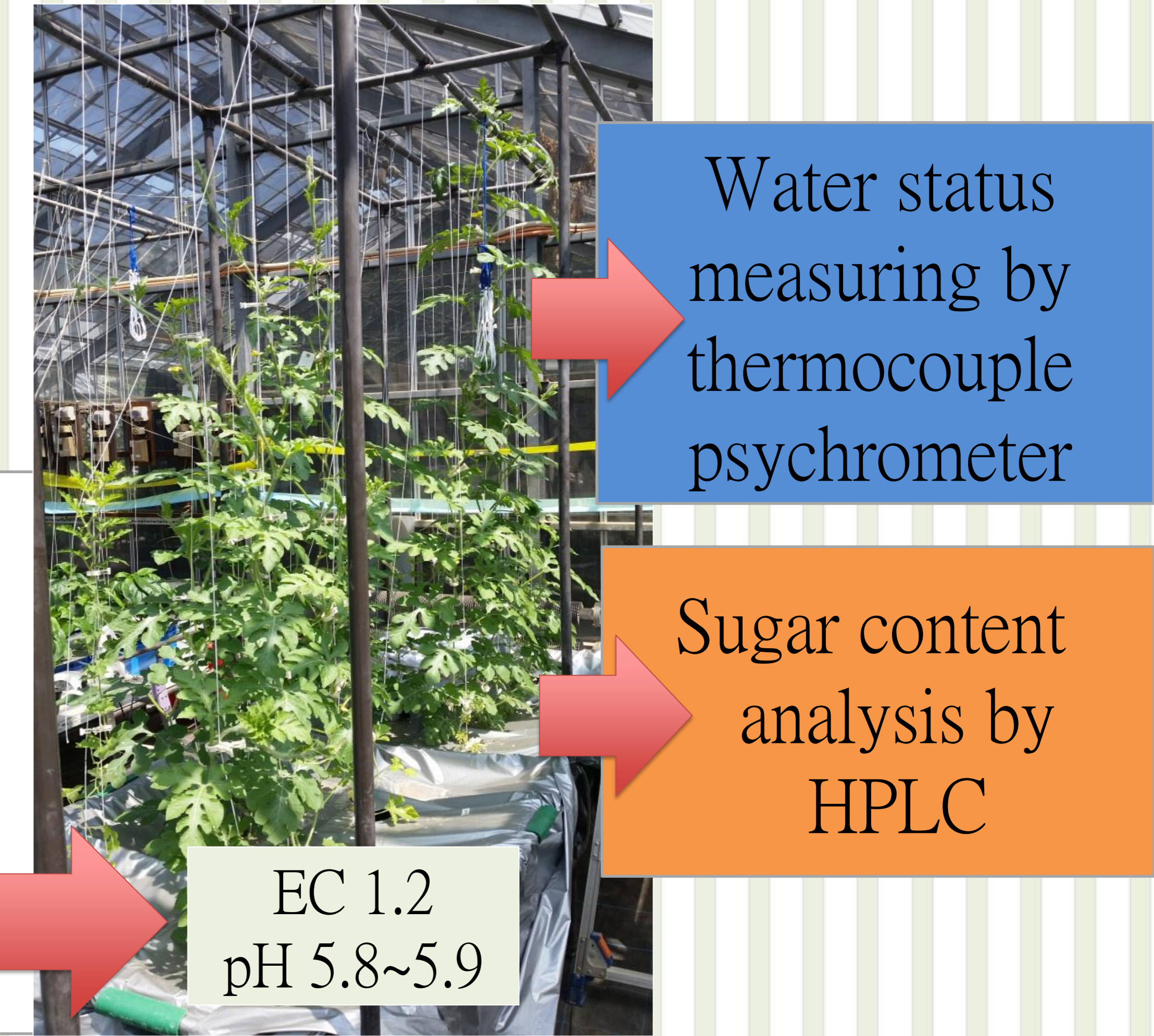


# The Relationship Among Fruit Growth, Sugar Accumulation and Water Status in Seeded Watermelon and Seedless Watermelon Fruits



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Sugar content is important in watermelon fruits. Both sugar concentration and osmotic pressure are higher at the fruit center than near the rind. Also, seeds act as “sinks” in fruit, so we investigated the effect of seed absence in fruit by comparing fruit growth, water status and total sugar concentration of seedless and seeded watermelon fruits.



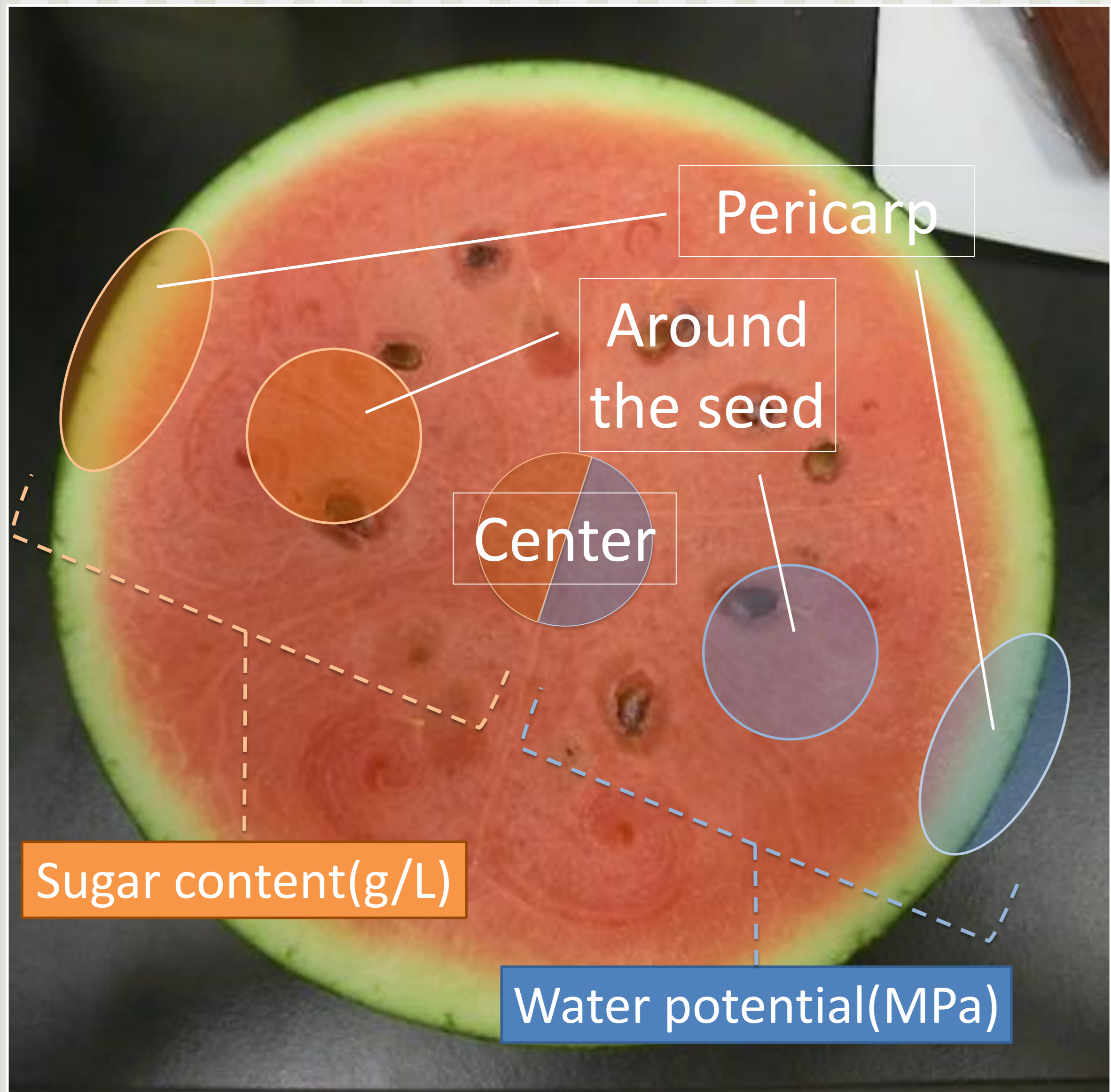
## Materials and Methods

Seeded and seedless varieties of watermelon  
(*Citrullus lanatus* (Thunb.) Matsum. et Nakai)

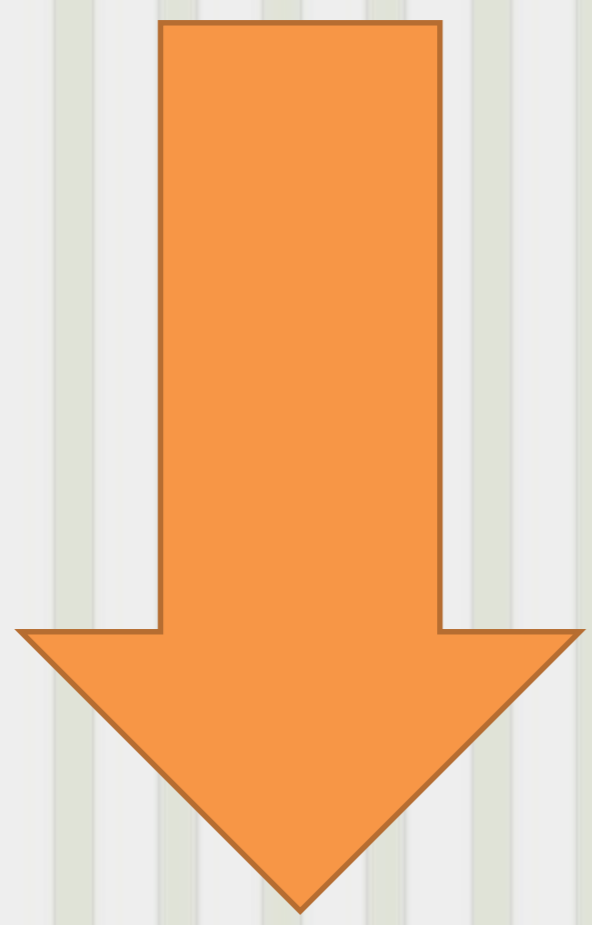
Seeded / ‘Hitorijime-BonBon’

Seedless / ‘Sandia’, ‘SL-S2’ were grown hydroponically and vertically.

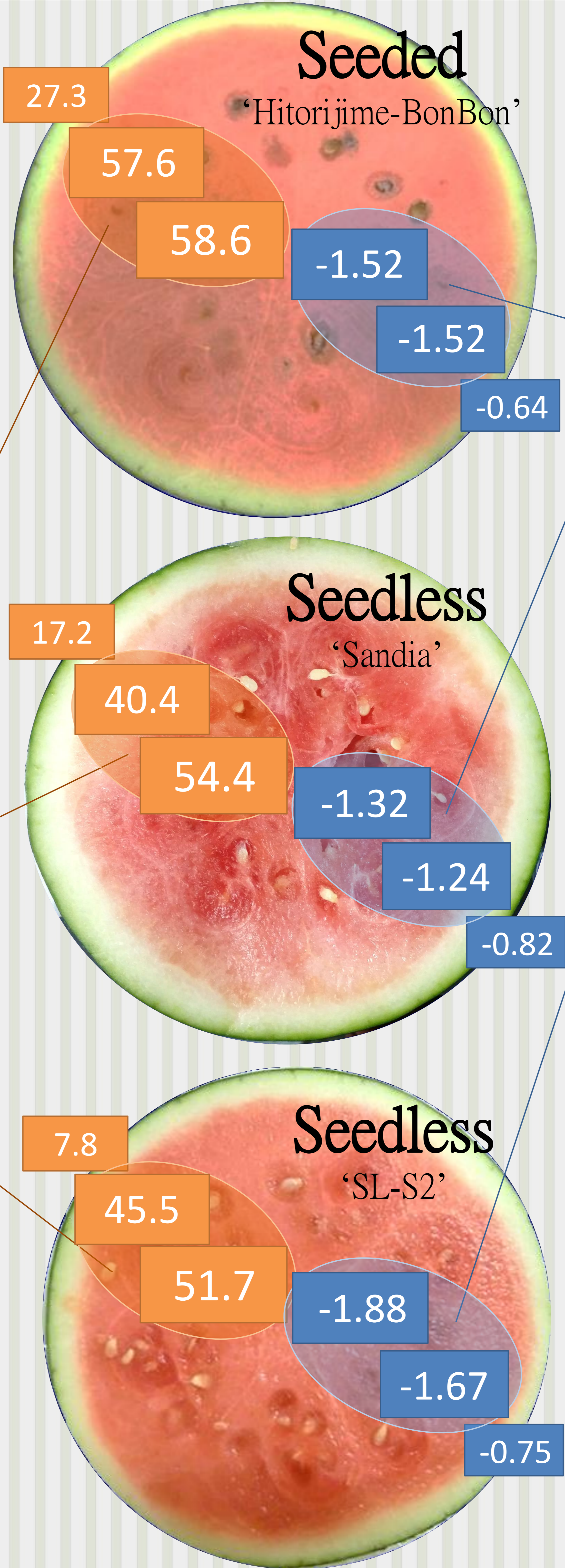
### Sampling locations



Inner sugar concentration much higher than at pericarp.



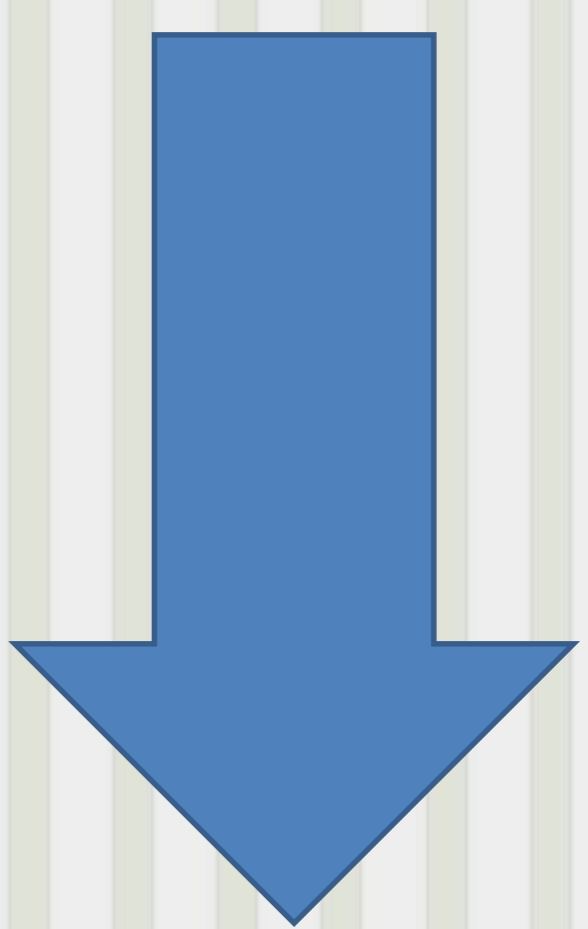
Sugar concentration distribution is similar to water status.



## Results

Results show mature fruit data 40 days after pollination.

Water potential much lower near center than at pericarp, causing imbalance in water potential.



Osmotic pressure and sugar accumulation higher in center of watermelon in both seeded and seedless fruits.

• We also conducted measurements on immature fruits during plant growth. Growth rate for each variety showed similar sigmoid curve (data not shown).  
• Further research is needed to better understand the physiological mechanism.