



# Growing Bamboo Fast and Strong

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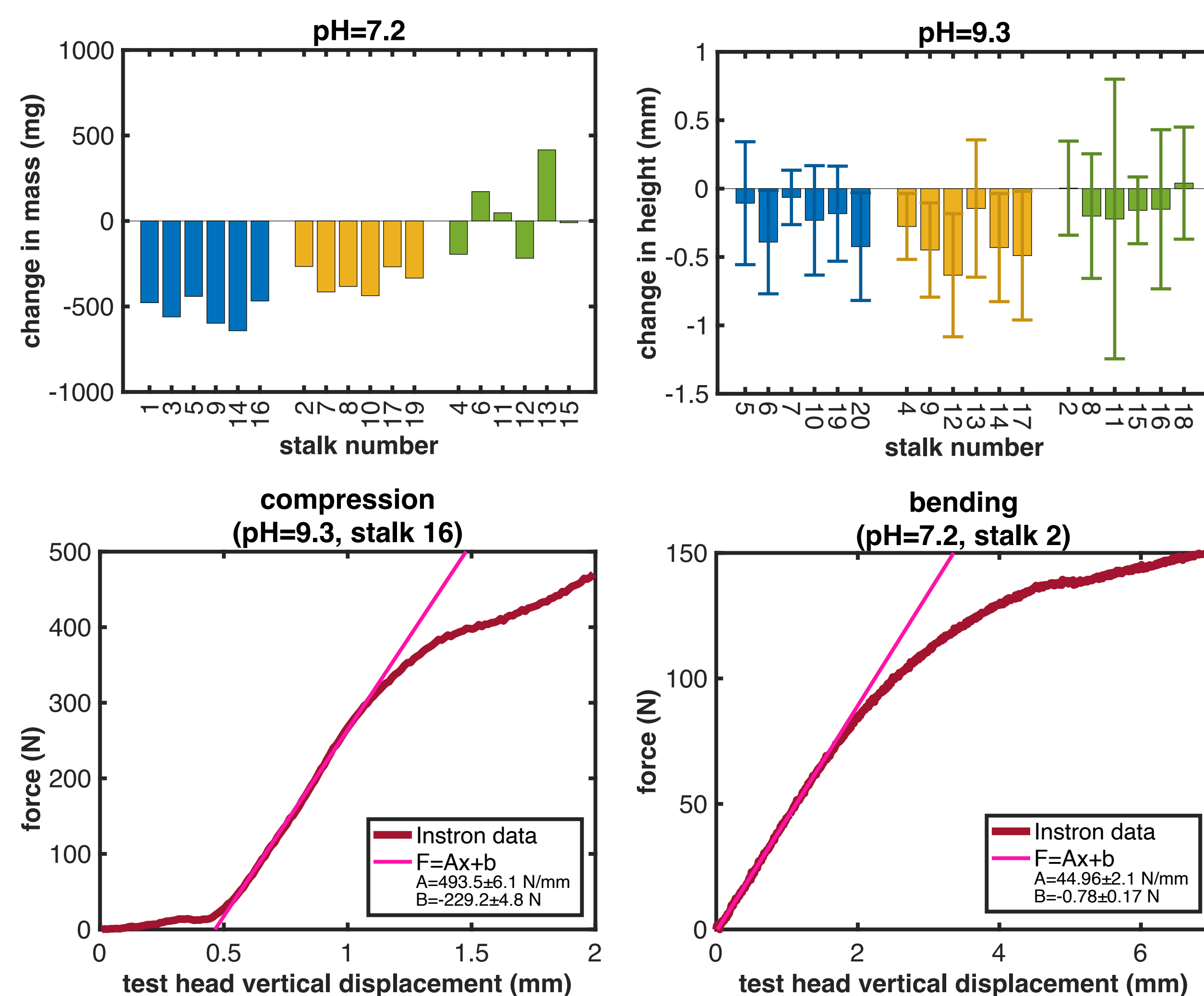
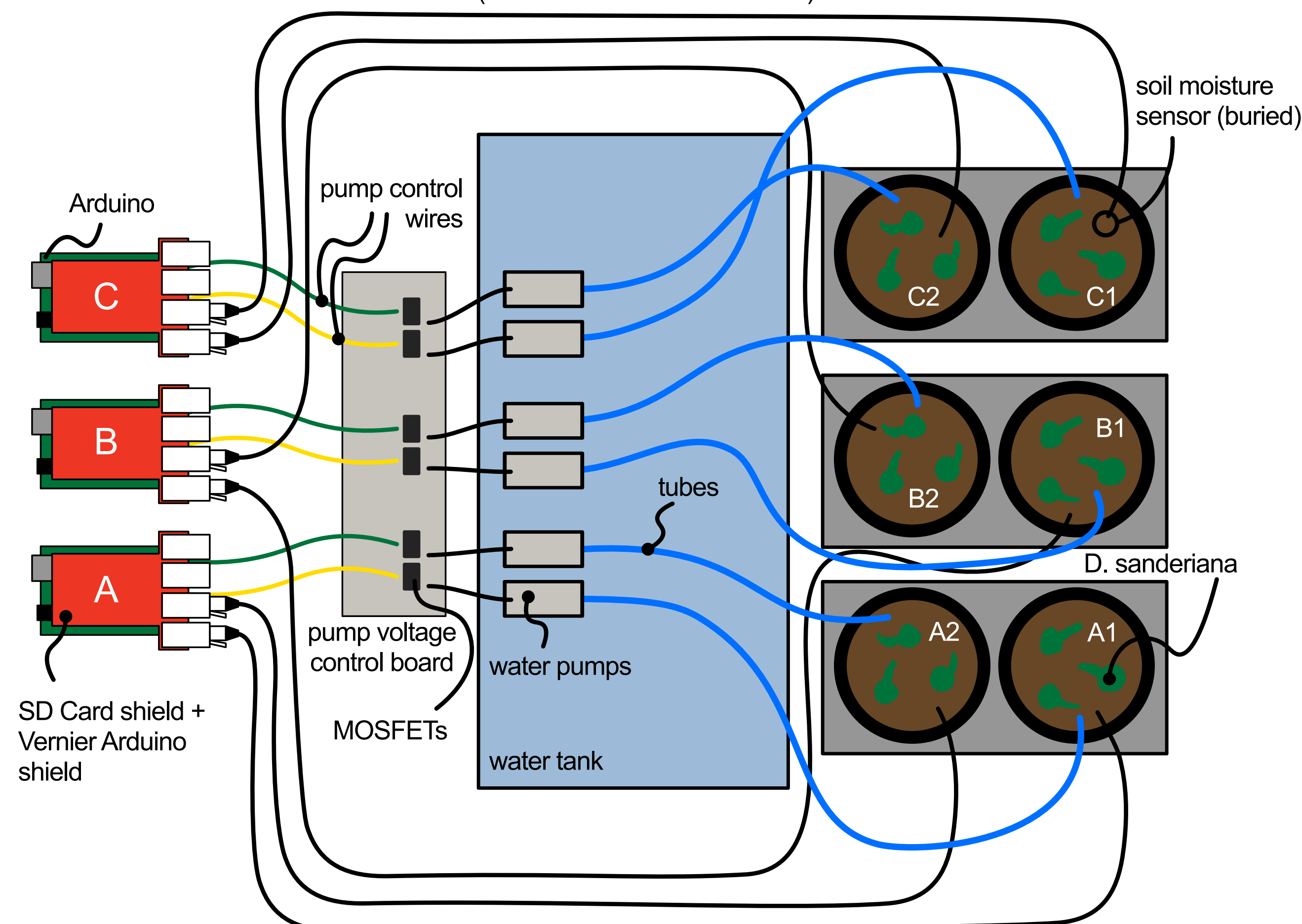
2.671 Measurement and Instrumentation

## Abstract

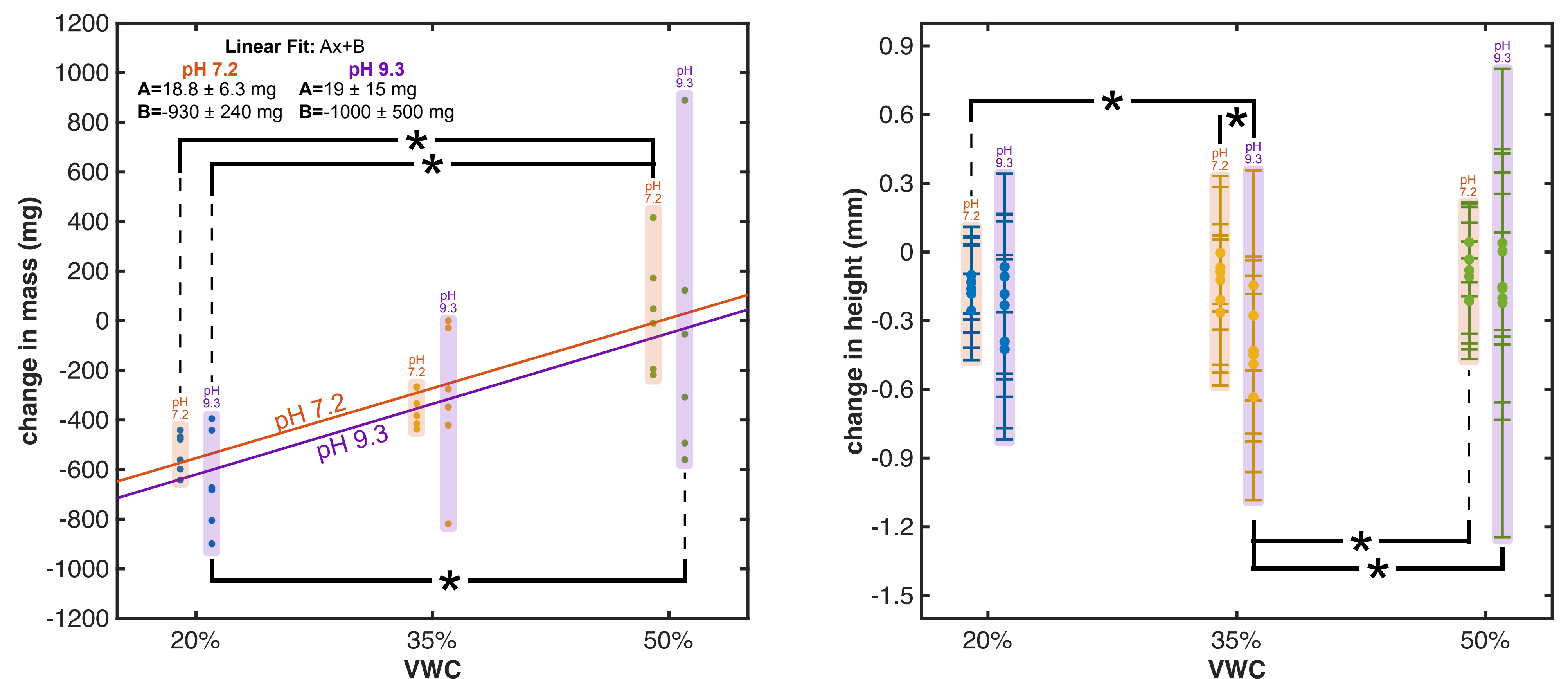
Bamboo is a fast-growing, hardy alternative to traditional sources of lumber, making its cultivation especially important for nations with rapidly developing infrastructure. The best soil water concentration and pH for growing *D. sanderiana*, a woody plant similar to bamboo, was determined by growing three groups of 6 stalks, each at specified soil moisture levels with water of controlled pH. The stalks were given several days to grow, after which change in height and mass and effective Young's modulus under compression and three-point bending were measured. ANOVA tests yielded statistically significant better growth for the neutral pH and 50% water concentration and no differences in strength between any groups at a 95% confidence level, and there was a statistically significant positive linear correlation between change in mass and water concentration, with slope of about 19mg.

## Methods

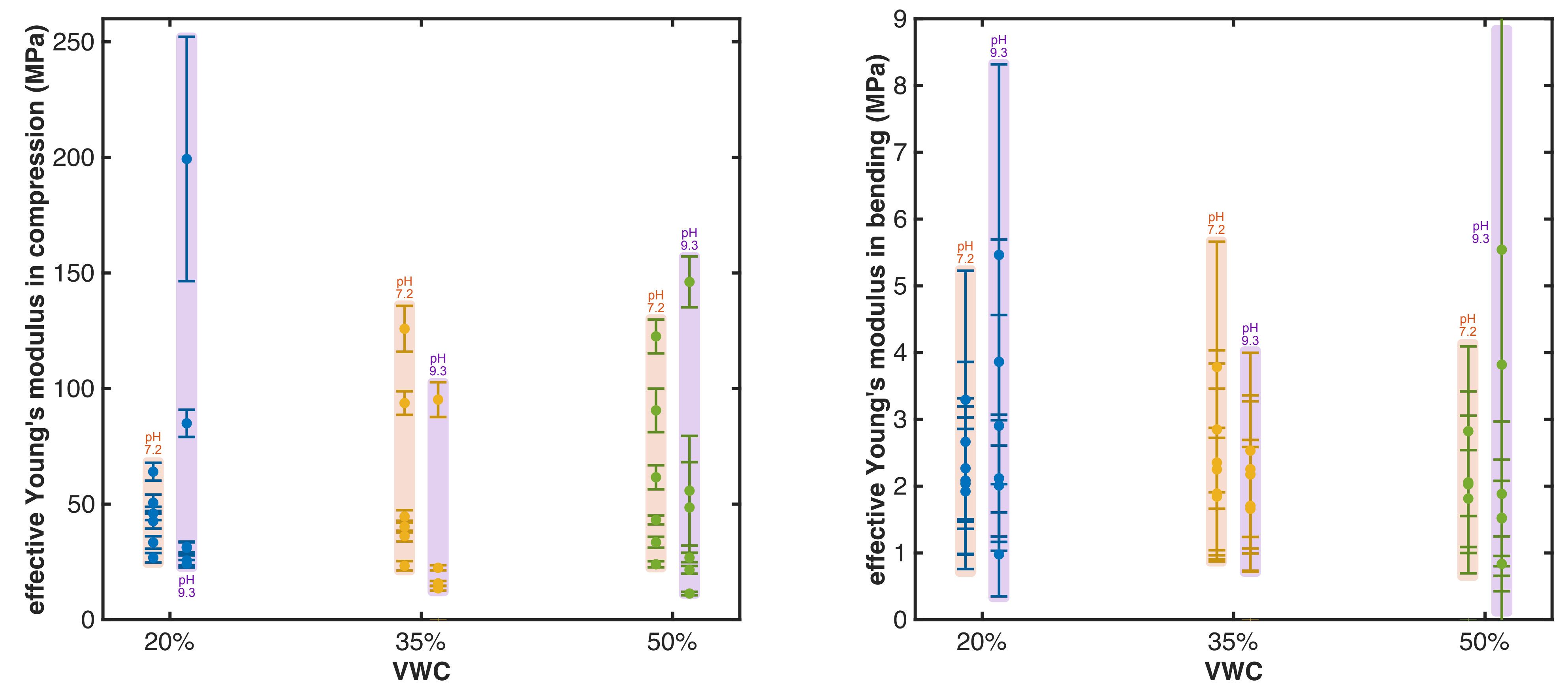
(wires to soil moisture sensors)



## Growth



## Strength



## ANOVA

Statistically significant differences between groups, as determined by ANOVA tests performed with 95% confidence, are denoted above with —\*—. No differences were found for strength.

## Conclusions

- There is a positive correlation between water concentration and growth.
- The neutral pH yielded better growth.
- Water concentration and pH have no significant effect on bending or compressive strength.
- Thus, the best growing conditions are neutral pH with 50% volumetric water concentration.

## Acknowledgements

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## References

[1] "Free photo: Lucky bamboo plant in pot," Freepik, 06-Jul-2017. [Online]. Available: [https://www.freepik.com/free-photo/lucky-bamboo-plant-pot\\_1186804.htm](https://www.freepik.com/free-photo/lucky-bamboo-plant-pot_1186804.htm). [Accessed: 01-Nov-2021].