Combat climate change with biodiversity

high throughput phenotyping of the banana diversity for suitability in current and future agro-ecozones

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Introduction

- Banana is an important staple crop in East-Africa
- Climate change challenges low banana input systems
- Genetic diversity provides a valuable opportunity to mitigate climate change

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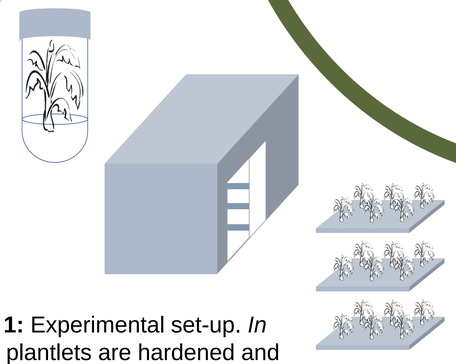

Fig. 1: Experimental set-up. *In vitro* plantlets are hardened and screened in the three-layer BananaTainer at different temperature regimes for 4 to 6 weeks.

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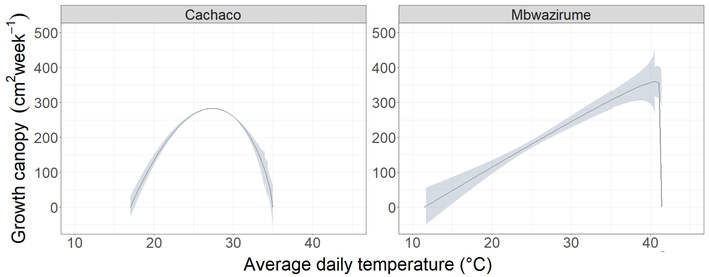

Fig. 3: Canopy growth models for Cachaco (ABB, Bluggoe) and Mbwazirume (AAA, Mutika/Lujugira). While Cachaco grows faster than Mbwazirume between 19.2 and 30.5 °C, Mbwazirume can grow below 17 °C.

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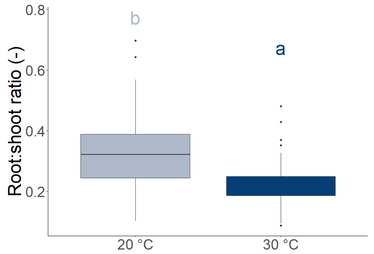

Fig. 2: Relative tissue growth in function of average ambient temperature. Increased average daily temperature affects growth in a tissue specific way.

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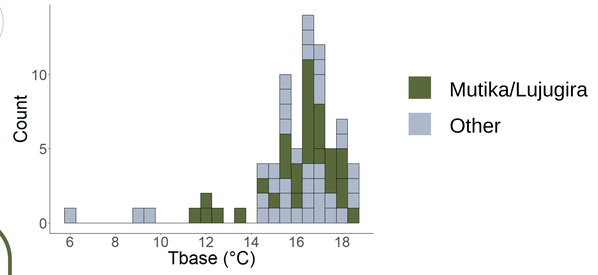

Fig. 4: Histogram of modeled base temperature for 73 genotypes. Considerable within- and between-subgroup diversity exist in base temperature.

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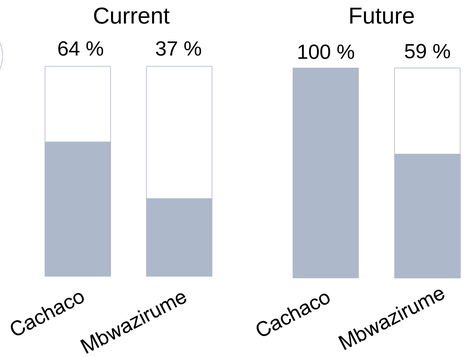

Fig. 5: Growth potential in current and future climate of Kampala (Uganda). Increased temperature will boost growth potential, but questions rise about the combination of increased water deficit and decreased root:shoot ratios.

Conclusion

- Considerable within- and between subgroup diversity in temperature response
- Cultivation of **the right genotype in the right environment** will help alleviate yield gaps in current and future agro-ecozones

! Decreased root:shoot vs. increased water deficit

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Poster based on Gambart et al. (in review). Exploring *Musa* spp. diversity: high throughput phenotyping and growth modelling in function of temperature