

Temperature Effects on the Phenology of Upland Rice Grown Along an Altitude Gradient in Madagascar



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Introduction

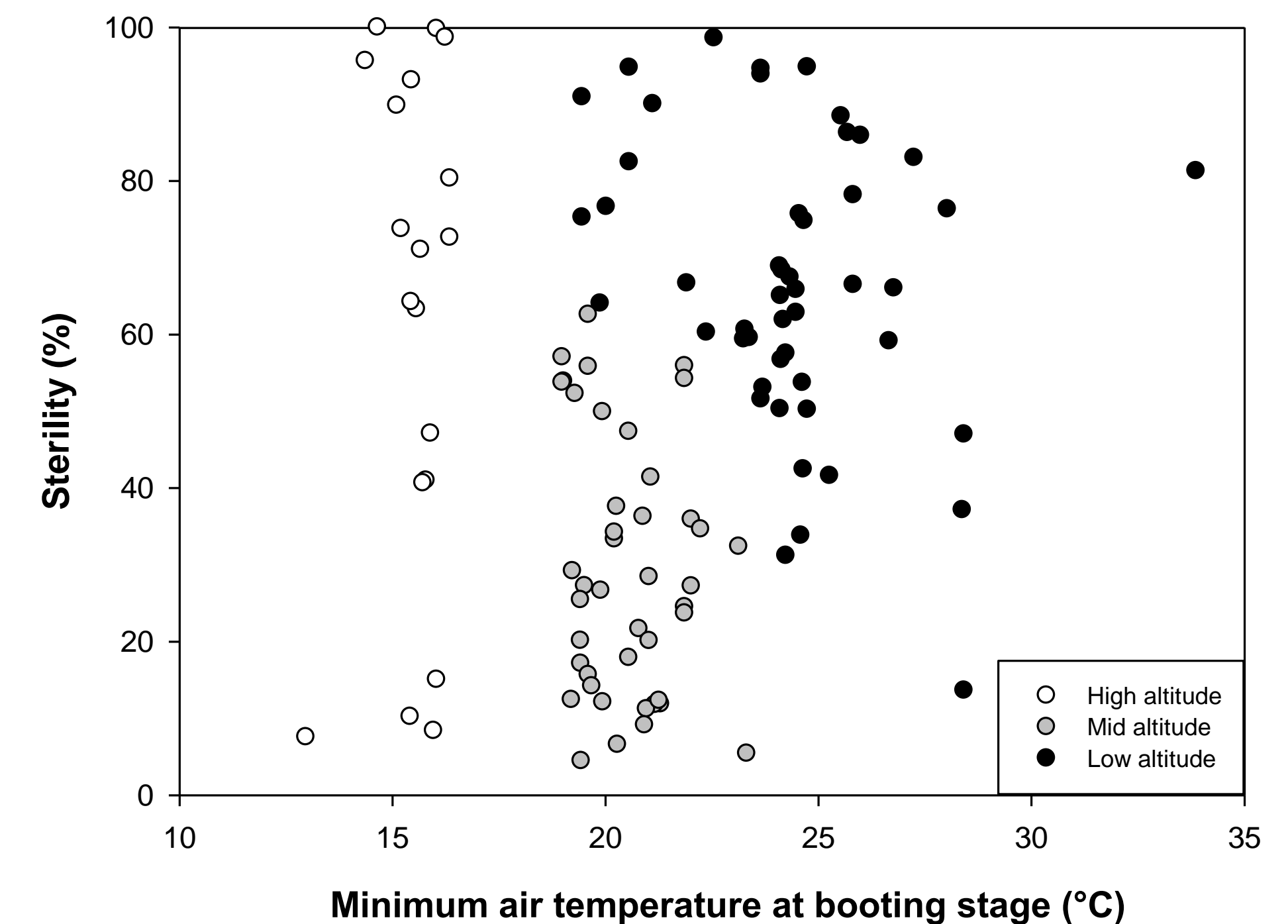
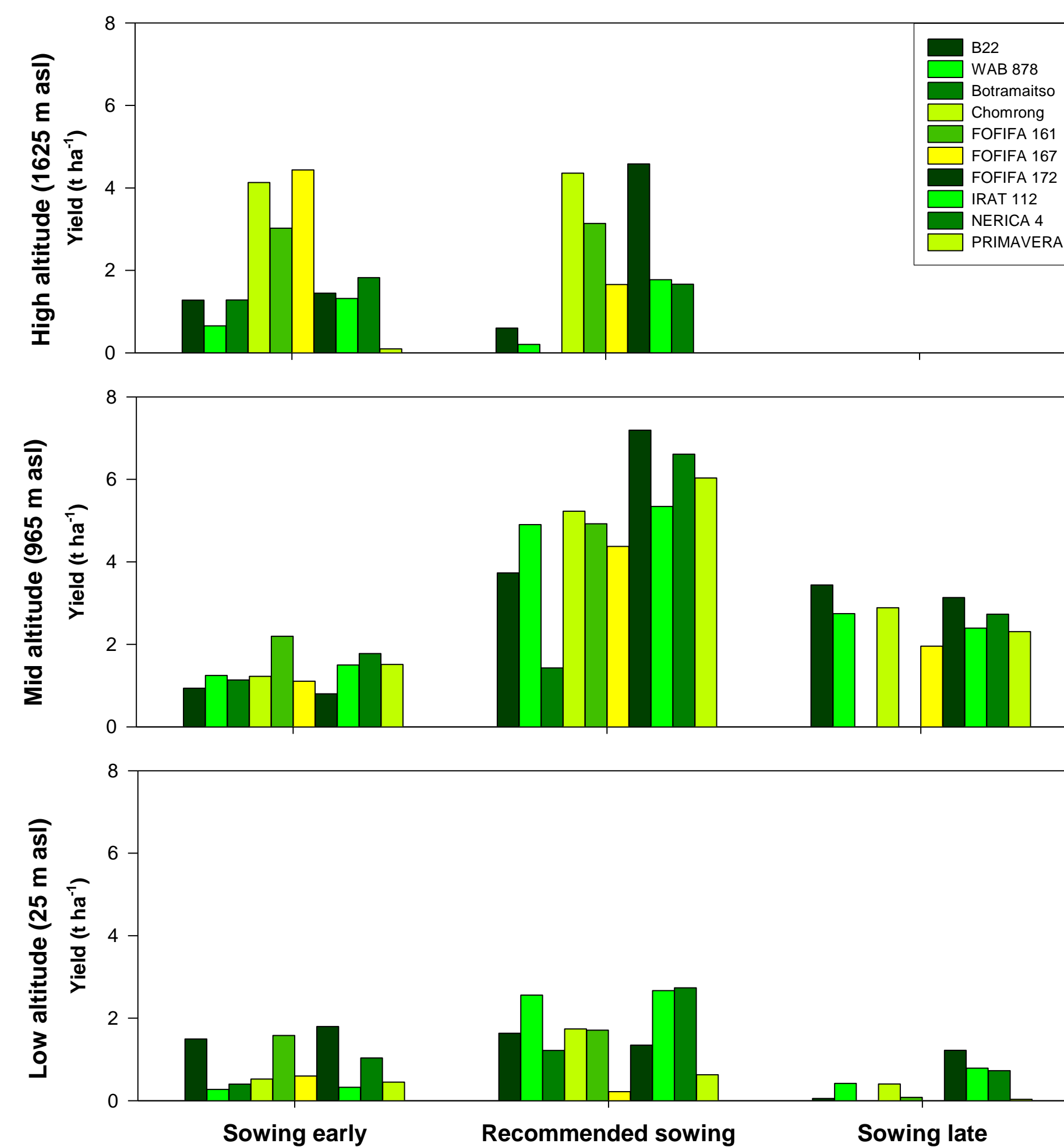
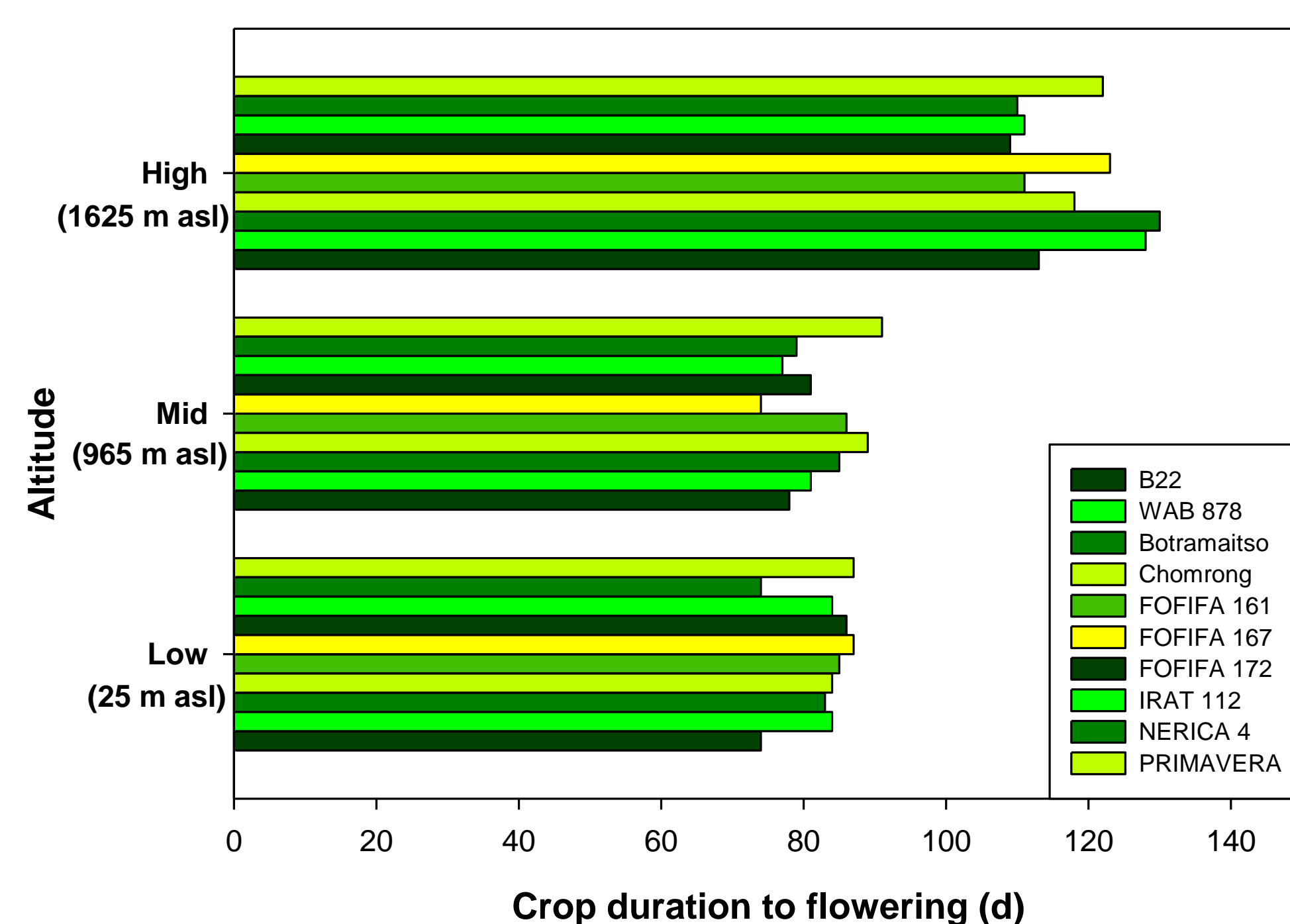
High altitude rice cultivation is constraint by a short vegetation period due to low temperatures and thus by the time the crop needs to complete its cycle. Climate change is assumed to result in a rise in mean temperatures of 2–5 degrees depending on the simulation scenario. Thus, rice cropping in higher altitudes may become more favorable as long as precipitation is not a limiting factor. In order to match rainy season with crop duration in higher altitudes rice genotypes are needed that possess an early vigor, a short duration and a certain degree of drought resistance.



Conclusions

- ✓ High altitude conditions increase crop duration.
- ✓ Highest yield were obtained with the recommended sowing date in mid altitudes.
- ✓ Sterility is not influenced by minimum air temperature at booting.
- ✓ Cold tolerant varieties have less sterility under high altitude conditions.

Results and Discussion



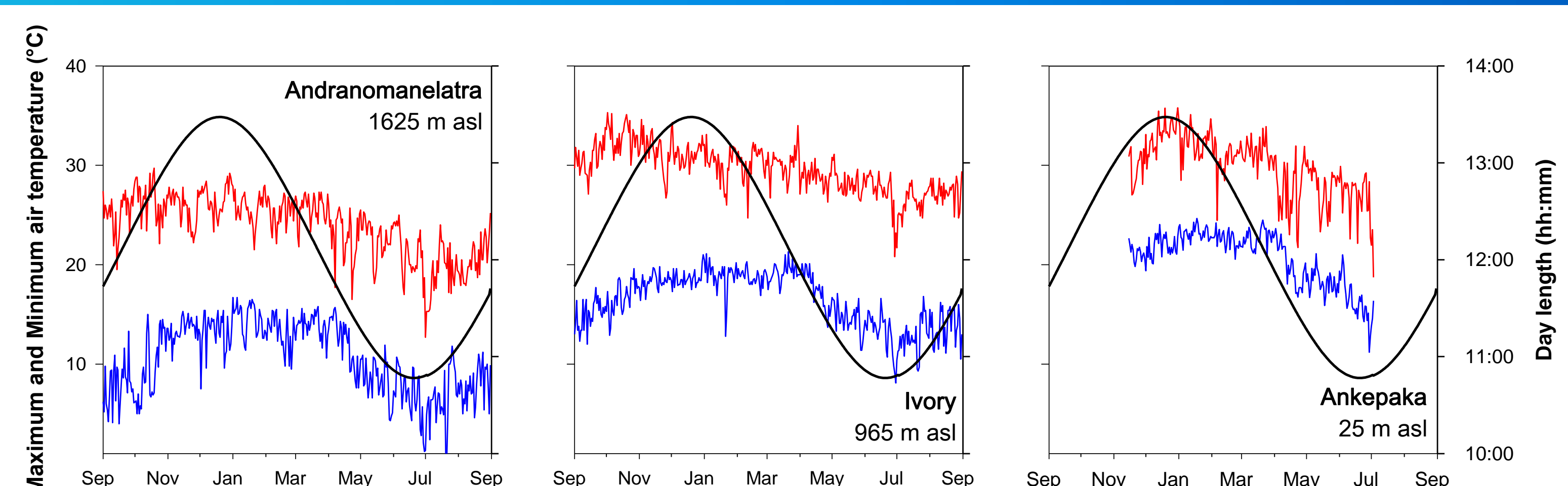
- ❖ Crop duration increases with altitude.
- ❖ The effect is less pronounced in mid altitudes.

- ❖ All varieties yielded best in mid altitudes when sown at the recommended date.

- ❖ Sterility is independent of temperature in low altitude.
- ❖ Sterility is lower in mid altitude conditions.

Materials and Methods

- 10 varieties of upland rice were planted at 5 monthly staggering sowing dates in three locations.
- Plot size was 1 X 1 m with 20 X 20 cm spacing between plants.
- Daily values for minimum and maximum temperature were recorded.
- Different physiological and phenological stages were observed during crop cycle.
- Biomass, yield, and yield components were determined at maturity.



Acknowledgements

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