

Screening quinoa varieties for salinity and water limited conditions in the Mekong River Delta

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Introduction

Climate change is causing rising sea levels, increased soil salinity and fresh water scarcity which seriously threaten the Vietnamese Mekong River Delta's (MRD) agricultural production and national food security.

Farmers seek crop options that can tolerate the new conditions experienced in the MRD

Quinoa (*Chenopodium quinoa* Willd.) has been found to have high saline tolerance and a low water requirement so it has potential to be a suitable dry season crop for farmers in the MRD.

Aim: To determine suitable quinoa varieties that can tolerate the salinity and water limited conditions found in the MRD in order to meet the requirements of farming systems affected by climate change.



Pot trial methodology

Two treatments:

Salinity treatments included 4 salt concentrations (0‰, 2‰, 4‰ and 6‰ NaCl) applied from beginning of the 3rd week. *Irrigation* treatments were maintained at two different soil moistures (-22kPa and -50 kPa) using Chameleon water sensors

Five varieties:

2-Want, Sluga, Titicaca, 42-Test and Atlas

Measuring: root and shoot biomass, yield and water use

Results

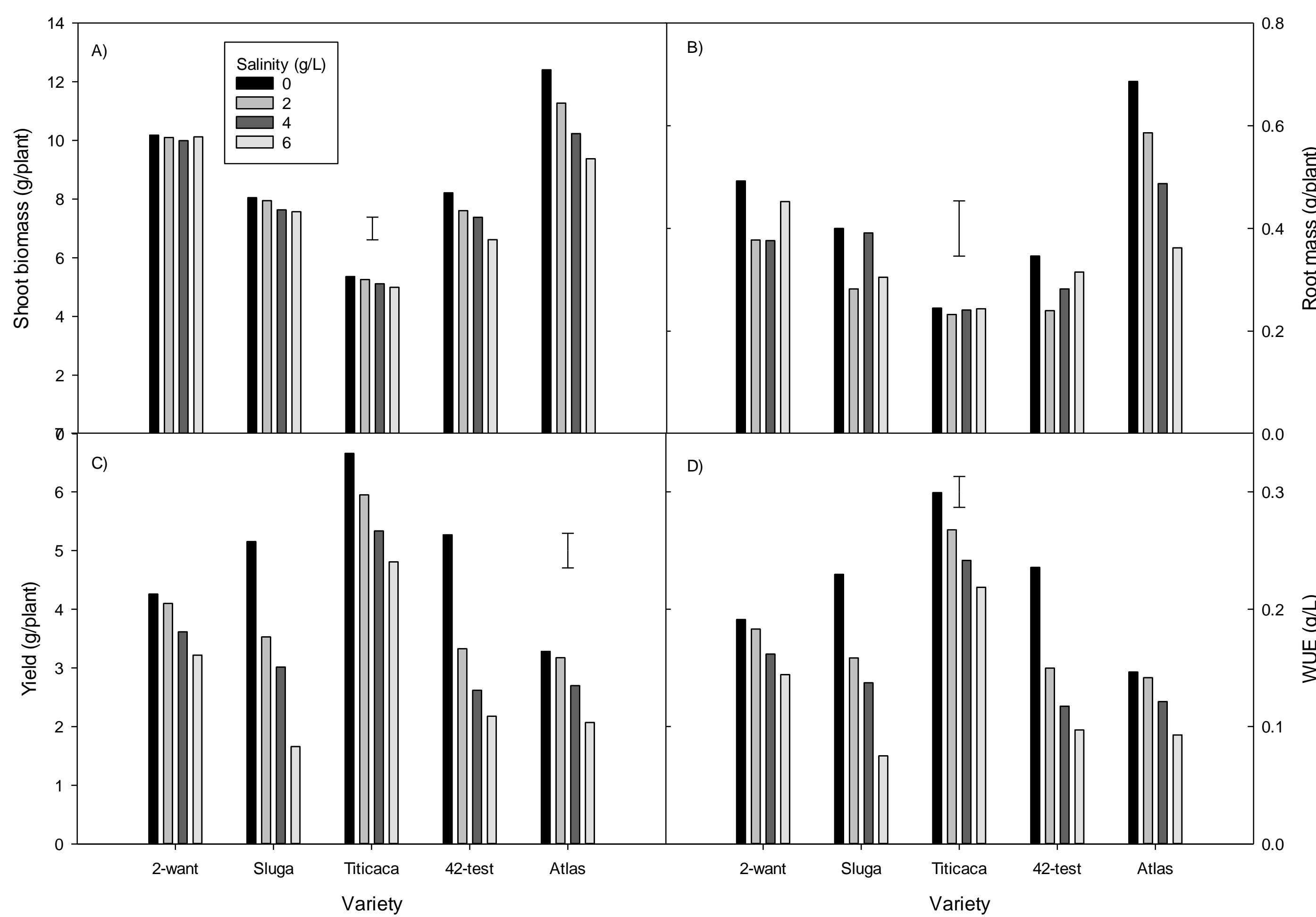


Figure 1. Effect of salinity (0,2,4,6 g/L) on quinoa varieties plant performance

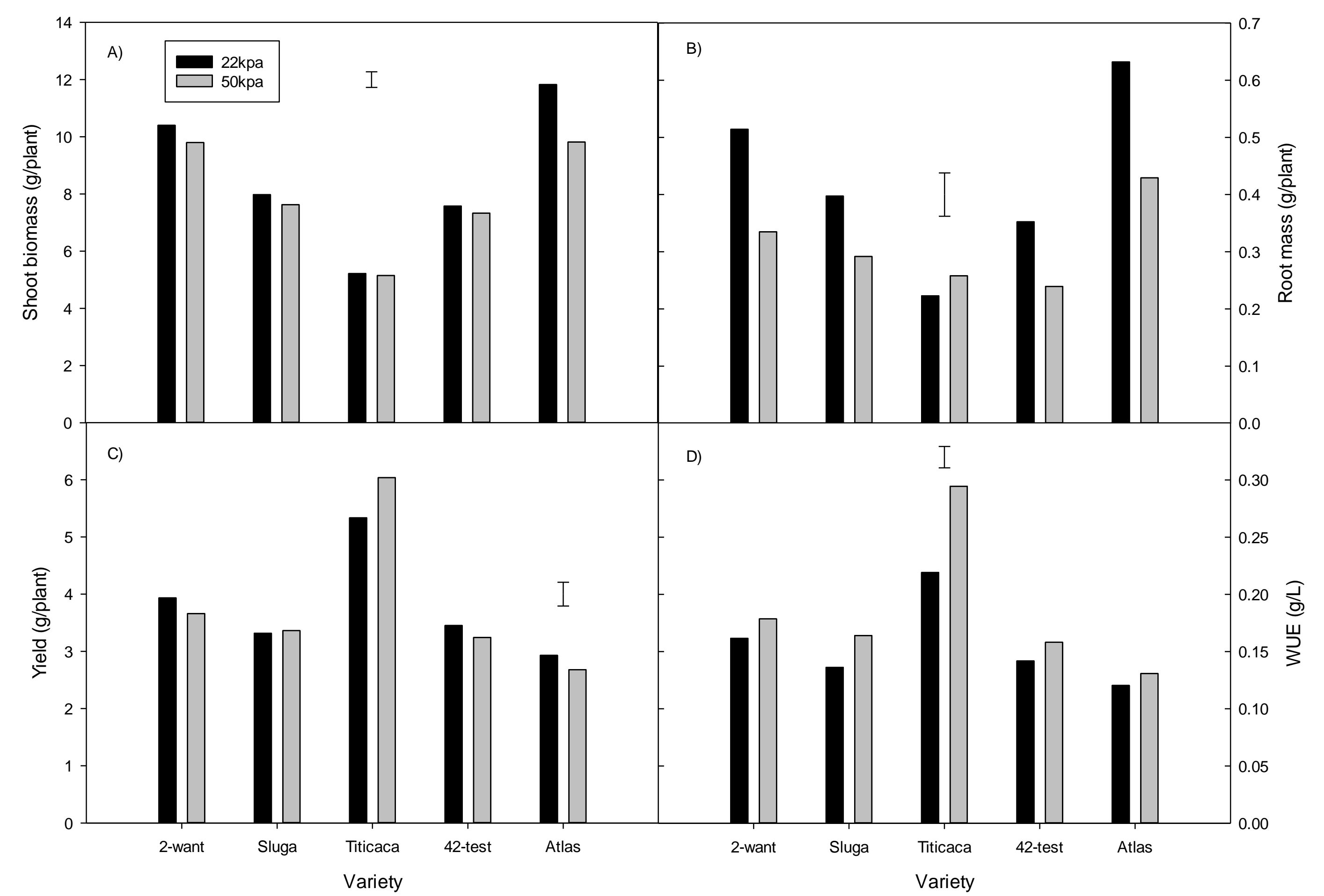


Figure 2. Effect of irrigation (-22 or -50 kPa) on quinoa varieties plant performance

Conclusion

- Quinoa is a promising crop option for the MRD.
- Titicaca displayed the greatest saline tolerance through increased yield despite being exposed to 6 g/L salt concentration and -50 kPa soil moisture irrigation conditions.



The quinoa bloomed 10 weeks after sowing



Challenge:

Most plants were falled before harvested