

# Effects of potassium source on sweetpotato irrigated with saline water

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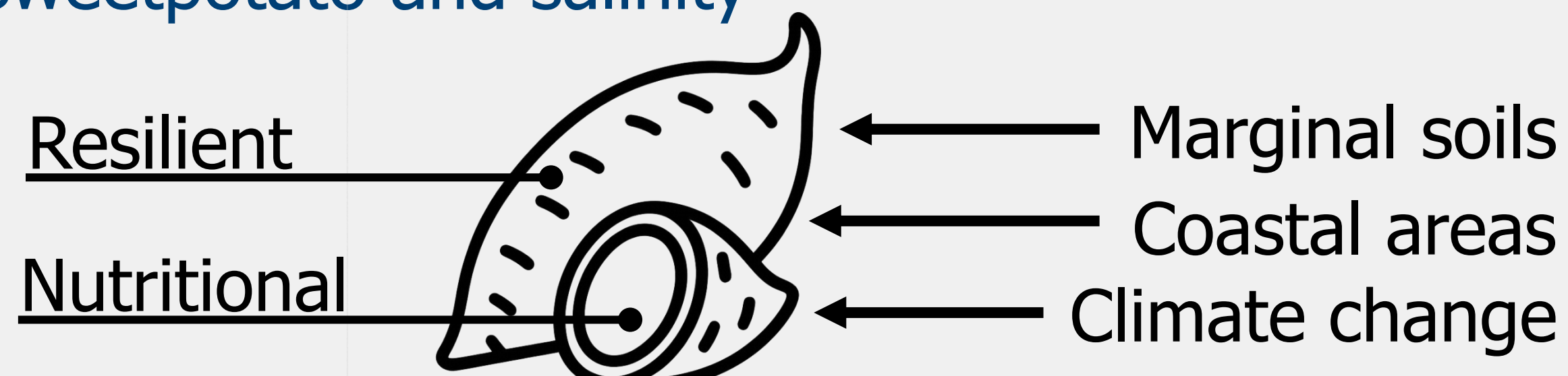
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## Introduction

### Sweetpotato and salinity



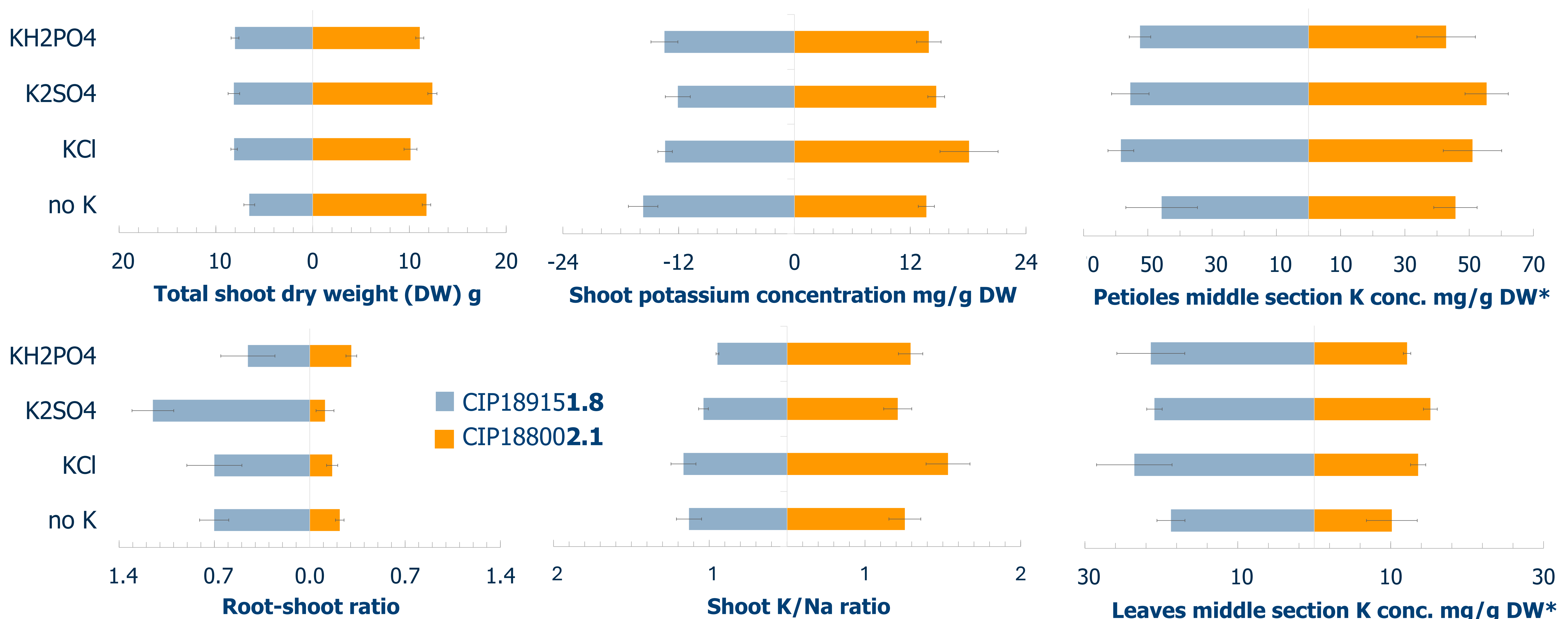
- Maintaining high shoot potassium concentration is beneficial for salinity tolerance.
- Adding potassium (K) in different chemical forms (sources) might mitigate salt stress.
- Effects of potassium sources on sweetpotato grown under salinity not yet described.



## Conclusions

- Potassium sources had different effects on the two sweetpotato varieties grown under salinity.
- $K_2SO_4$  and  $KH_2PO_4$  were most beneficial for CIP1.8 and CIP2.1 respectively in terms of biomass and root-shoot ratio increase.
- All K sources increased K concentrations in middle section\* leaves and leaf petioles of both varieties, suggesting enhanced phloem loading and sugar translocation.
- Choosing the matching K source per genotype can enhance biomass and its distribution.

## Results and Discussion



→ DW increase with all three potassium sources in CIP1.8, increase only with  $K_2SO_4$  in CIP2.1.

→ Increase in root-shoot ratio with  $K_2SO_4$  and  $KH_2PO_4$  in CIP1.8 and in CIP2.1, respectively.

### Biomass

→ Decrease of K concentration with all K sources in CIP1.8, increase under all in CIP2.1.

→ Increase of K/Na ratio with KCl in CIP 1.8, with KCl and  $KH_2PO_4$  in CIP 2.1.

→ Strongest increase with KCl in CIP1.8.

### Shoot K & Na concentration

→ Increase in petiole K concentration under all sources in both varieties, except with  $KH_2PO_4$  in CIP2.1.

→ Increase in leaf K concentration with all three sources in both varieties.

→ Strongest increase with  $K_2SO_4$  in CIP2.1.

### Plant part K concentration

## Materials and Methods

**Experimental set-up:** Split-Plot designed greenhouse pot trial run in 2025 at the University of Hohenheim.

**Treatments:** Irrigation (Freshwater, Saltwater - 150 mM), Variety (CIP189151.8, CIP188002.1), Potassium (no K, KCl,  $K_2SO_4$ ,  $KH_2PO_4$  - 60kg/ha K); Salinity and potassium treatment onset 31 days after planting; n=4.

**Sampling:** Shoot, fibrous and storage roots harvested destructively at 58 days after transplanting;

\*middle section is the part of the vine that was established between 28 and 44 days after transplanting.

**Laboratory analyses:** Dry weight after 48 hours at 70°C; Shoot biomass: concentration of sodium and potassium by hot water pressure extraction via autoclave and flame photometer measurement according to Asch *et al.* 2022.

