

## Salinity effects on the activities of ROS scavenging enzymes in leaves of two Sweet potato clones

Shimul Mondal<sup>1</sup>, Susanne Burgert<sup>1</sup>, Julia Hartmann<sup>1</sup>, Ebna Habib Md Shofiur Rahman<sup>2</sup> and Folkard Asch<sup>1</sup>

<sup>1</sup>University of Hohenheim, Institute of Agricultural Sciences in the Tropics (Hans-Ruthenberg-Institute), Garbnstr.13, 70599 Stuttgart, Germany

<sup>2</sup>International Potato Center, 04, Banani, Dhaka, Bangladesh

### Introduction

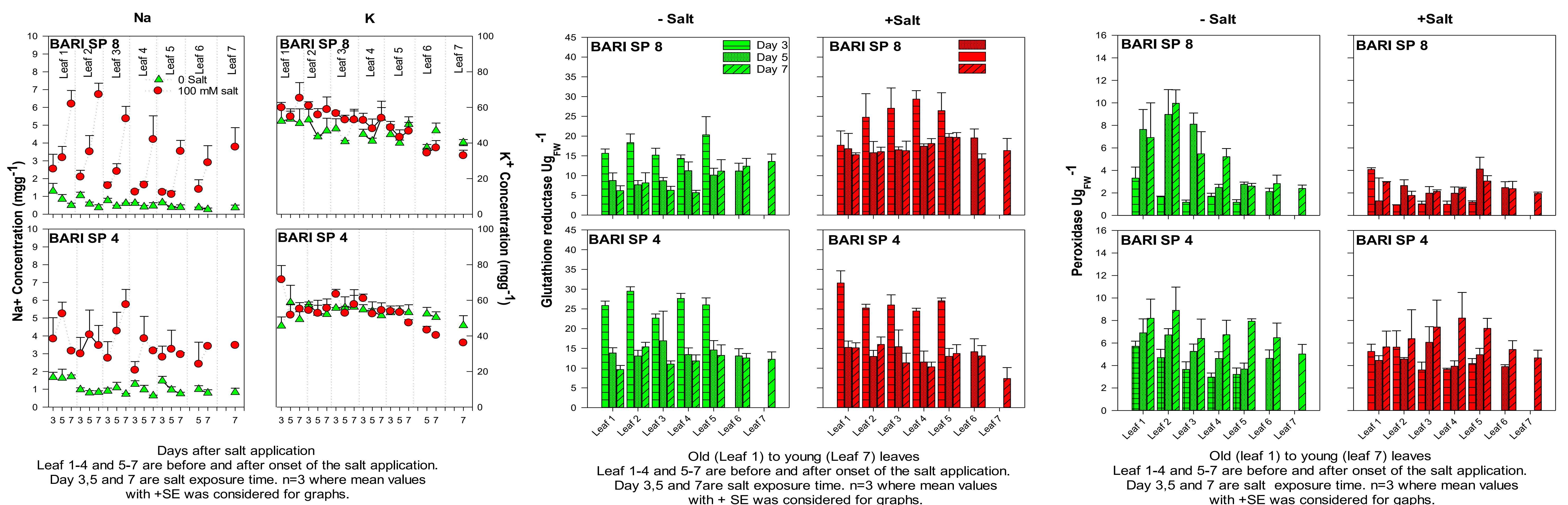
In coastal production systems sweet potato cultivation is threatened by salinity. Salinity may induce reactive oxygen species (ROS) in plant cells via high concentrations of NaCl. Antioxidant enzymes such as Glutathione Reductase (GR), Catalase, Superoxide Dismutase, Peroxidase (POX) or Ascorbate Peroxidase detoxify ROS in plant tissues. Increased enzymatic activity under salt stress may be a genotypic tolerance trait. We investigated leaf level antioxidant activity in two contrasting sweet potato varieties subjected to salt or fresh water conditions.



### Conclusions

- Under salt stress, leaf Na concentrations strongly increased but K concentrations remained at control levels.
- Enzyme activity levels are not related to leaf Na concentrations.
- Salinity does not seem to induce ROS at leaf level in sweet potato.
- Genotypic tolerance strategies need to be studied in more detail.

### Results and Discussion



- Salinity increased Na concentrations in leaves, particularly in BARI SP8.
- Na increased more strongly in older leaves.
- Leaf K concentrations were little affected by salinity.
- Leaf Na concentrations maybe linked to transpiration.
- BARI SP 4 probably controls transpiration to protect younger leaves.

- Salinity increased GR activity in BARI SP 8 but not in BARI SP 4.
- High GR activity was found in older active leaves.
- Leaf level GR activity is not linked to salt stress in either variety.
- BARI SP 4 shows no salinity effect on GR activity.

- Salinity decreased POX activity in BARI SP 8.
- In BARI SP 4 POX activity was not affected by salinity.
- Leaf level POX activity is not linked to salt stress in either variety.
- Varieties differ in POX activity under salt stress.

### Notes on Materials and Methods



Hydroponic set up in the green house of the Hans-Ruthenberg-Institute for the Tropical Agricultural sciences, University of Hohenheim, Germany. Two contrasting varieties, BARI SP 4 and BARI SP 8 were studied. Salt stress (0mM and 100mM) was initiated at 7 days after planting. All leaves on the vine were sampled in two day intervals from 3 days after the onset treatments. Enzymes activities were measured according to Foyer and Halliwell, 1976 (GR) and Chance and Maehly, 1955 (POX). Leaf K and Na concentration were determined by flame photometer.

