



Deutscher Tropentag, October 11-13, 2005, Hohenheim

“The Global Food & Product Chain—  
Dynamics, Innovations, Conflicts, Strategies”

## Ion Distribution and Partitioning of Date Palm (*Phoenix dactylifera* L.) under Salinity Conditions

IBRAHIM ALABDULHADI<sup>1</sup>, HASSAN ALI-DINAR<sup>2</sup>, GEORG EBERT<sup>3</sup>

<sup>1</sup>National Date Palm Research Centre, Saudi Arabia

<sup>2</sup>Food and Agriculture Organisation (FAO), Projects and Planning, Saudi Arabia

<sup>3</sup>K+S Kali GmbH, Germany

### Abstract

In Saudi Arabia the cultivated area is continuously declining due to many environmental hazards, particularly salinity. The estimated data show an approximately 12000 hectares of cultivated land left in Al-Hassa region. Salinity has been recognised as a major agriculture problem in arid and semi-arid regions. Almost 1/3 of the world wide irrigated land is subject to salinity hazards. About three-quarters of the irrigated land is presently in the developing countries. Salt salinity affects plant physiology through changes of water and ionic status in the cell due to excessive accumulation of Na and Cl and reduces the uptake of other minerals. The increasing water demand and the shortage of good quality resources in arid and semi-arid areas justify the present interest in the reuse of drainage water and treated waste water. Many crops respond differently to salinity. Date palm is the major crop in the kingdom of Saudi Arabia, and it is known to be among the most tolerant crops to salinity. Information on the reduction of date palm development due to salt effects are meagre. This study was conducted at the Kingdom of Saudi Arabia to determine the ionic response of date palm to saline conditions. NaCl as the dominant “soil and water” salt in the Kingdom of Saudi Arabia was used as a source of salinity at different levels, namely: 0, 50, 100, 200 and 400 mM. Three-year-old offshoot of three major commercial date palm cultivars (Khalas, Majdool and Barhee) were used.

Ionic distribution and interaction in the different plant parts was determined, the mechanism of salt tolerance in date palm cultivars through ionic distribution was postulated

**Keywords:** Date palm, salinity, ion distribution, Saudi Arabia