



Deutscher Tropentag, October 11-13, 2005, Hohenheim

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

## Genetic Diversity of Hexaploid Omani Wheat Landraces Detected by Microsatellite Markers

SULAIMAN ALKHANJARI<sup>1,4</sup>, MARION S. RÖDER<sup>2</sup>, A. AL-MASKRI<sup>1</sup>, KARL HAMMER<sup>3</sup>, ANDREAS  
BUERKERT<sup>4</sup>

<sup>1</sup>*Sultan Qaboos University, College of Agriculture and Marine Sciences, Oman*

<sup>2</sup>*Institute of Plant Genetic and Crop Plant Research (IPK), Germany*

<sup>3</sup>*University of Kassel, Agro-Biodiversity, Germany*

<sup>4</sup>*University of Kassel, Organic Crop Production and Agroecosystems Research in the Tropics and Subtropics, Germany*

### Abstract

For millennia wheat (*Triticum* sp.) has been growing in traditional aflaj-irrigation systems of remote mountain oases in northern Oman. However, little is known about the diversity of the ancient landraces used. Given initial reports about the occurrence of novel germplasm in such material, the objective of this study was to evaluate the genetic diversity of wheat landraces in relation to their geographic origin using microsatellites. The collection covered most of Northern Oman where wheat landraces are growing. Total genomic DNA was extracted from six pooled plants. A total of 161 wheat accessions were assayed using 35 microsatellite loci. A total of 305 polymorphic bands were recorded for the 35 microsatellites. The Polymorphic Information Content (PIC) across the 35 microsatellite loci ranged from 0.02 to 0.89, with an average of 0.50. A mean heterozygosity value of 0.09 was determined for the 35 microsatellites with the highest level recorded for material from the Batinah region. Specific alleles averaged 1.85 with the highest value being from the Dakhilia region. Average allele numbers were different for each region. The results indicated a significant correlation between genetic diversity and numbers of alleles across all regions. The correlation coefficient between these two variables over the 35 microsatellite loci was 0.657, whereby correlation coefficients of 0.718, 0.706, 0.657 and 0.651, respectively, were found for the Batinah, Dahirah, Dakhilia and Sharquia material. Genetic distances indicated that all landraces were closely related. The cluster analysis discriminated most of the landraces accessions, however, failed to group the landraces site-specifically. The present study demonstrated the presence of high diversity in Omani landraces and also indicated the effectiveness of microsatellites to describe it.

**Keywords:** Mountain oases, *Triticum* spp.