

Salt tolerance within genetic tester stock collections of the Gatersleben Genebank

Annette Weidner¹, Said A. W. Dadshani², Hakizimana Sylvestre¹, Gerhard H. Buck-Sorlin³, Marion S. Röder¹ & Andreas Börner¹

¹ Institute of Plant Genetics and Crop Plant Research (IPK), Corrensstrasse 3, 06466 Gatersleben, Germany
(E-mail: weidner@ipk-gatersleben.de)

² University of Bonn, Institute of Plant Nutrition, Karlrobert-Kreiten-Str., 53115 Bonn, Germany

³ Brandenburgisch-Technische Universität (BTU), P.O. Box 101344, 03013 Cottbus, Germany

Abstract

Bread wheat *Triticum aestivum* L. possesses a genetic variation for the ability to survive and reproduce under salt stress conditions. Obviously genetic factors of the D Genome are responsible for a higher salt tolerance. A set of *T. aestivum* L. - *Aegilops tauschii* Coss. introgression lines, former developed at the IPK Gatersleben, were tested to find introgressed segments in respect of tolerance against salt stress. Germination tests were carried out on filter paper in plastic boxes by using three different sodium solutions (1%, 1.5% and 2%) and aqua dest. as control. After ten days in a climatic chamber with a light and dark photoperiod of 12 hours and a constant temperature of 20°C, the lines were scored according the scheme of Mano et al. (1996). Positive and negative factors against salt stress were detected on chromosome 3D, 4D and 7D.

However, survival in a saline environment requires multiple adaptations of the plant and salt stress tolerance is a character with quantitative inheritance. Molecular marker could facilitate the breeding for quantitative traits. Therefore, the ‘Oregon Wolfe Barley’ mapping population well saturated with different DNA marker has been used to find marker connected with salt tolerance at the germination stage. The tests were arranged in the same manner described above. The concentrations of the sodium solutions were 1.5%, 2% and 2.5%, because barley is more tolerant than wheat. QTLs were detected on chromosomes 5H and 7H.

Reference

Mano Y., H. Nakazumi & K. Takeda, 1996. Varietal variation in and effects of some major genes on salt tolerance at the germination stage in barley. *Breeding Sci.* 46: 227-233.