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## Genetic Variation in Salt Tolerance in Oilseed Rape

YASSER MOURSI, HEIKO C. BECKER

*Georg-August-Universität Göttingen, Dept. of Crop Sciences: Plant Breeding Unit, Germany*

### Abstract

Salinity is one of the harshest environmental stresses that drastically affect crop production in many parts of the world. About 20% of the irrigated land throughout the world is salt affected. The objectives of this project are (i) to test the genetic variation in salt tolerance in a genetically very broad material, (ii) to analyse the variation in salt tolerance in a population of doubled haploid (DH) lines, and (iii) to identify genes for salt tolerance by QTL analyses.

The genetic material investigated consisted of (i) 13 genetically very different genotypes, and (ii) 138 DH lines from a cross between two very different parents. Seeds were germinated in petri dishes without salt stress (control) and under salt stress (5 ml 200 mM NaCl added to each petri dish). Salt tolerance was estimated by two approaches: (i) germination percentage, and (ii) germination pace, which measures how fast the germination process starts.

For both germination percentage and germination pace a large genetic variation was observed. Under stress conditions, the heritability estimates were in similar range (0.75 for germination percentage and 0.86 for germination pace), but germination percentage and germination pace were not closely correlated.

As next step a QTL mapping in this material is under progress. A limitation of the present data is, that only seedlings up to eight days after germination were analysed. Therefore experiments to analyse salt tolerance of young plants (about four weeks after germination) and adult plants are planned. For such experiments a suitable experimental testing system is under development.

In conclusion, these preliminary results show a large genetic variation for salt tolerance in oilseed rape and are the basis of a specific breeding program for salt tolerant oilseed rape for regions where this type of stress frequently occurs.

**Keywords:** Oilseed rape, salt tolerance