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Oral Communication Abstract – 5.06

EXPOLITING SALT STRESS TOLERANCE IN SOLANUM PENNELLI INTROGRESSION LINES

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EXPOLITING SALT STRESS TOLERANCE IN Solanum pennelli INTROGRESSION LINES

Global warming is shifting the ratio of freshwater to saltwater. Soil salinity is a major environmental constraint to plant growth and it is a serious problem in agricultural systems that rely heavily on water source conditions used for irrigation. Flowers, 2004; Foolad, 2004). Plants damaged by high salinity may suffer reduced shoot and root growth, yield losses and eventual death (Xiong, 2002).

Cultivations require varieties with high resilience to drought and salt stresses and economically sustainable agronomical performances. Root development will playing a key role in improving adaptability of processing tomato hybrids to face extreme climatic conditions.

This study is focused on identification of loci involved in root development in salt stress condition through the investigation of a tomato introgression line population. The population was composed by 37 accessions obtained from TGRC database which resulted from crossing of Solanum pennelli (LA0716) and Solanum lycopersicum (M82) (Eshed, 1995).

Accessions were growth in tubes with MS culture media (Karim, 2007) containing different concentrations of NaCl (Mercado, 2000), in a growing chamber with controlled condition. Data related to root development (fresh weight) were scored 30 days after sowing.

Increasing concentrations of NaCl showed a general reduction in germination rate and root development. Accession LA4068 (IL7-4-1) has shown comparable value of root development, suggesting an effect of chromosome 7 short-arm on salt stress tolerance. Comparison with data obtained on accession containing introgression close or overlapped to IL7-4-1 allowed to identify the 7C locus as involved in root development in salt stress condition.

Results were confirmed in previous publications (Bolger, 2014; Frary, 2010) which indicates the same introgression line as potential source of tolerance to osmotic stresses.

Molecular markers were designed on the introgression of IL7-4-1 comparing Solanum pennelli with

Solanum lycopersicum genome sequence. Molecular markers were used for marker assisted selection with HRM technology to transfer the IL7-4-1 locus in a different genetic background and to verify the phenotypical effect on F1 hybrids and in F2 segregant populations.