Abstract - SY01

N-METABOLISM RELATED GENES EXPRESSION ANALYSIS TO ASSESS TOMATO ABILITY TO COPE LOW N-SUPPLY

ACI M.M., LUPINI A., MAUCERI A., ABENAVOLI M.R., SUNSERI F.

Dipartimento Agraria, Università degli Studi Mediterranea di Reggio Calabria

The improvement of Nitrogen Use Efficiency (NUE) in high N demanding crops such as tomato (Solanum lycopersicum L.) has become one of the key approaches for a sustainable agriculture. To enhance NUE, deep insights on both physiological and molecular mechanisms developed by several genotypes to cope low-N are required for an effective use of genetic and genomic approaches. In the present study, two contrasting NUE tomato genotypes named Regina Ostuni (RO) and UC82, with high and low NUE, respectively, were tested for differential expression patterns of some N-use related genes (nitrate transport, assimilation, remobilization and storage/sequestration) in response to high and low N-supply. Our results revealed no significant differences in nitrate and nitrite reductase expression levels (SINR and SINIR, respectively) between high and low NO3- supply in the shoot of RO, while they appeared significantly de-induced in UC82; SINR expression was significantly higher in the RO shoot compared to UC82 at low Nsupply. In addition, the potential involvement of NO3- long-distance (SINRT1.5 and SINRT1.8, in the root) and efflux (SINRT2.7, in the shoot) transporter genes in RO compared to UC82 was also highlighted. Moreover, the expression of chloride channel protein (SICLCa), mediating NO3storage/sequestration in cell tonoplasts, revealed a higher NO3- sequestration in roots of both genotypes, although appeared significantly higher in UC82 root and shoot. Taken together, our results suggested that high-NUE in tomato is mainly determined by plant ability to modulate longdistance N transport, assimilation and sequestration genes (SINRT1.5, SINRT2.7, SINR and SICLCa). Finally, transcriptomic analyses (RNAseq) are being performed to highlight further molecular mechanisms related to N-use efficiency in tomato.