Fruit Quality and High EC values in Tomatoes

You may remember an article I wrote last year about the effect of salt concentration in tomatoes and how several different studies have been done about this matter. On that article I talked about a paper released in 2007 showing that tomatoes raised at an electrical conductivity value of 4.5 dS/m had the best tasting and fruit quality. However, this study was not conclusive in the sense that quality parameters used on the plants where not extensive and adequately analyzed. On today's post I want to talk to you about a previous study done in 2006 which does include fruit quality parameters and a clear explanation about which conductivity levels give you the best tomatoes and why this is the case.

The relantionship between high conductivity and high fruit quality clearly depends on how you evaluate fruit quality. In general, the nutritional quality of a fruit is measured by the concentration of important nutrients within it. In the case of tomatoes, important nutrients such as lycopene, vitamin C, carotenoids and phenolics determine most of the tomato's nutritional value. However, fruit quality – from a market perspective – relates to size, shape, uniformity and firmness and market duration.

On a study published on the Journal of Agricultural and Food Chemistry in 2006, Woitke *et al* discussed the effect of electrical conductivity on the yield and quality of tomato crops. Their conclusions after analyzing the concentration of several nutrients at different salinity levels was clear : tomato crops which are raised at higher EC levels have lower overall yield but the concentration of nutrients (vitamin C, lycopene and beta-carotene) was increased by as much as 38% on high conductivity treatments (again at about 4-4.5 dS/m). They also found a nutrient-quality increase as the antioxidative capacity of the phenols and carotenoids increased on the

plants with high nutrient treatments.

Another very important fact is that not only nutritional value was increased but total dissolved solids and organic acids – which contribute significantly to the fruit's flavor – also increased significantly. Overall the study concludes that all quality related parameters increased with the increase in salinity pointing out clearly that raising tomatoes at high salinity levels is an excellent way to increase fruit quality. The reduction of yield can be compensated for by the higher inner quality of the fruit allowing it to compete more effectively with other higher-yielding yet lower quality productions within the market.

So next time you want to increase the taste and nutritional qualities of your tomatoes just raise your EC levels so that your fruits accumulate the higher levels of nutrients and flavor producing substances that reside within every small tomato. Certainly your tomatos will be the envy of all other growers with their higher nutrient and flavor levels and increased antioxidative capacity.