

Salt Concentrations in Hydroponic Tomato Cultivation, More or Less ?

One of the most produced vegetables in hydroponic growing, both hobby and commercial, is the tomato. Because of this, and the very important place tomatoes have in world economy, many research efforts have been done towards the production of better quality crops. In hydroponics, much of this effort has been devoted towards the investigation of the optimum concentration levels of hydroponic tomato nutrient solutions. In particular, several researchers have studied how salt concentrations are associated with flavor in tomato crops. Several peer reviewed studies have focused on this problem and many have drawn contradictory conclusions. Some studies suggest that higher EC levels are better for tomatoes while others sustain that it makes no difference in taste or nutrient composition but it decreases fruit size due to the higher osmotic pressure of the nutrient solution. For example, a recent 2007 study, found out that tomatoes grown with an electrical conductivity of 2.3 and 4.5 dS/m had significantly different nutrient compositions and tastes with the tomatoes grown at 4.5 dS/m being far more tasteful and nutrient rich.

The difference seen amongst the studies is mainly because of the inherent composition of the nutrient solutions. Because different ions have different conductivities, some studies may show different results because of important changes in their nutrient compositions. Hence, even though conductivities are exactly the same, available ions to the plant are completely different. It can be seen that solutions that have higher potassium to nitrogen ratios and higher electrical conductivities prove to improve flavor consistently in hydroponic tomato crops.