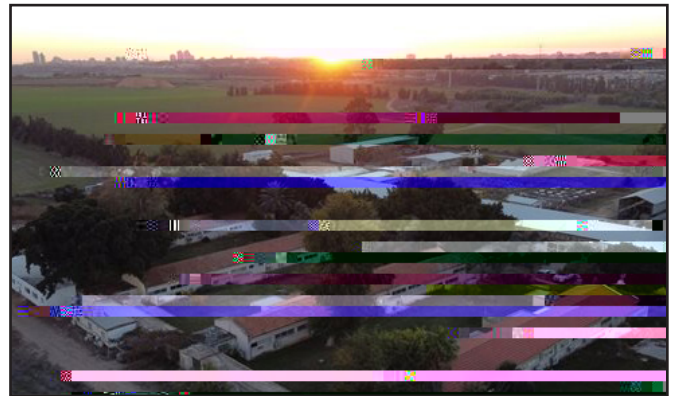




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Tomato is one of the most important vegetable crop in many regions around the world. In an era of global warming, increasing episodes of weather extremes, and population growth, the heat-sensitivity of tomato is still an unsolved problem. Numerous publications demonstrated the consequences of heat stress for tomato fruit set and yield. While optimal day temperature is around 25 C, temperature of 32 C leads to a dramatic decrease in fruit number, fruit weight and seed number per fruit. Although quite some heat-tolerant varieties have been developed, there is a need to increase the level of tolerance and the stability of this trait. This can be achieved by thorough physiological investigation of existing varieties which are known as “heat tolerant” in comparison to non-tolerant varieties. In the small-scale experiment presented here, we have selected four commonly used processing tomato varieties differing in their ability to sustain high temperatures, in terms of fruit set and yield. As a first step, these varieties were grown in three field locations in Israel, and were characterized for various developmental, physiological and molecular traits. Our aim is to gain insight as for the plant characteristics which can be related to its heat tolerance capacity, and to do so



in the commercial tomato, in order to facilitated future breeding. Our preliminary results show the differences between these varieties for heat stress related characteristics. In a future study, the same varieties will be grown under controlled normal and high temperature conditions, to precisely compare their response to this stress.

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1. Characterization of processing tomato varieties differing in fruit set under high temperatures