

Internship opportunity on the physiology and genetics of heat tolerance in tomato.

Background:

With a changing climate the average temperature and the frequency and duration of heatwaves is increasing in many crop production areas over the world. This is already leading to crop loss and reduced yield stability in tomato production regions and has increased the interest in cultivars tolerant for long-term mild heat (LTMH). Breeding for heat tolerance is however a difficult process and requires knowledge on both the mechanism behind the damaging effect of heat and knowledge on genetic factors involved in heat tolerance. In the 'Heatyield' project we work together with two breeding companies (ENZA Zaden and Nunhems BV) and Wageningen Research to try to identify genetic regions (Quantative Trait Loci) involved in tomato heat tolerance with a specific focus on pollen development. Subsequently we attempt to identify genes underlying these QTLs and the related mechanisms to better understand heat stress and tolerance in tomato.

Projects

Projects within the Heatyield project include both work in the greenhouse as molecular work in the lab or working with R for QTL analysis / spatial analysis or QTL x Environment interactions. There will be ample opportunity to learn this during the internship. The following subprojects are possible:

- The identification of QTLs and QTLxEnvironment interactions for pollen thermotolerance in both climate chamber and field conditions.
- The characterization of qPV11, the first QTL for pollen thermotolerance.
- Work on the relation between pollen release and temperature and relative humidity.
- Work on the role of heat in changes in carbohydrate levels during pollen development and their effect on pollen viability.
- Work on the measurement and regulation of flower temperature as a possible adaptation to heat stress.
- Other original experiments within the scope of pollen development and stress tolerance for high temperatures and relative humidity.

As an intern we would like to offer you space within one of our various sub-project.

Contact information

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