# SHEET– Sunburn and HEat prediction in canopies for Evolving a warning Tech solution



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#### Problem statement

Excess solar radiation and elevated temperatures in fruit orchards and vineyards result in several physiological disorders, compromising fruit quality, storability, and enhancing food waste.

### Main objectives

(i) Method development for analyzing the spatial distribution of fruit temperature within canopies (TRL 5);

Exploring also potential of low-cost sensors for the purpose (TRL 7).

(ii) Characterize the fruit damage due to heat stress in apple, grape, and sweet cherry (TRL 5).

Gaining time series of fruit temperature data during the season and over diel course in field experiments. (TRL 5)

(iii) Develop a field uniform risk model for heat damage that can inform the farmer based on satellite weather data (TRL 5).

Discussing with farmers to provide the model in a mobile App prototype with open code (TRL 7).

## Methodology and Results









#### Outcome

Method development for analysing the 3D distribution of fruit temperature by means of industrial terrestrial LiDAR and thermal imaging sensors. The method provides a tool for further ecophysiological studies related to global warming, and applied questions on tree architecture assessment, irrigation management, crop heat damage.

Field uniform risk model for heat damage was implemented by providing a mobile App prototype enabling (i) to run artificial neural network models for risk alerting and (ii) the upload of data by the user to advance the model.

Future use of developments – please get in contact with us

- Apply the methodology in ecophysiological studies
- Improve thermodynamic model to contribute to optimized fruit production measures
- Release adjusted version of the mobile App by commercial partner

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