



**COST Action FA1306:**  
The quest for tolerant varieties –  
Phenotyping at plant and cellular level



# **COST WG1 / EPPN2020 workshop 29<sup>th</sup> - 30<sup>th</sup> of September 2017**

## **Novi Sad**

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**ISBN 978-86-80417-77-6**

## Publisher:

Institute of Field and Vegetable Crops, Novi Sad, Serbia

## Raman microscopy/spectroscopy: non-destructive tool for the characterization of tomato fruit quality

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Raman microscopy/spectroscopy is a method for non-destructive qualitative and quantitative sample analysis and have recently been used for analysing of compounds in plant materials. The aim of presenting study was to investigate potential of Raman spectroscopy in the tomato fruit quality characterization, with special attention to carotenoids and vitamin C analysis.

An experiment was conducted in plant growth chamber in controlled conditions at the Faculty of Agriculture, University of Belgrade. Fruits of wild-type tomato Ailsa Craig and its mutant *flacca* were harvested in red-ripe stage and sliced with microtome blades. Slices were analysed by Raman spectroscopy (Raman Horiba XploRA), with a laser excitation lines 532 and 785 nm and 1-5 s integration time. The filter was set to 100 % and we used 100 x LWD.

The results indicated that Raman spectroscopy has the great potential for fast, non-destructive analysis of fruit quality, especially of carotenoid content. Analysis of carotenoids resulted in several strong peaks which could be also used for screening different tomato genotypes both in optimal and stress conditions. Thus, Raman spectroscopy could be a useful tool for fruit phenotyping.