

PROJECT TITLE

The effect of arbuscular mycorrhizal fungi on tomato root system architecture

CONSORTIUM

P 1	Matteo Chialva		
P 2	Mara Novero		
P 3	Paola Bonfante		
P 4	Luisa Lanfranco		

SUMMARY OF THE REPORT

Advanced imaging techniques, such as X-ray 3D imaging, are revolutionizing the study of plant anatomy complexity, root morphology and root-soil interactions (Mairhofer et al., 2017; Helliwell et al., 2017). In particular, the study of root anatomy is crucial to understand plant adaptation to soil conditions such as water and nutrients availability (Fusconi et al., 2014). Among several factors which influence root system architecture (RSA), arbuscular mycorrhizal fungi (AMF), a group of soil fungi which forms a mutualistic symbiosis with most of land plants, have a crucial role (Genre et al., 2020). The role of AMF on root morphogenesis has been deeply studied by means of classical imaging techniques which have described an extensive reprogramming of root architecture. In MYCRA-RSA we aimed to describe in detail modifications in RSA by combining X-ray microCT imaging techniques at the Hounsfield Facility (University of Nottingham) and the model plant tomato, as it is one of the major crops in the Mediterranean area and a good model to study plant-AMF interactions. In parallel, the wild-relative species *Solanum pennellii*, an important source of genetic variability for cultivated tomato was analyzed. Data allow us to better understand RSA modulation under AMF colonization paving the way for further studies which will include a panel of plant genotypes, different AMF species and different water regimes. Experiments were jointly developed within the TOMRES H2020 European project.