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TASTE AND APP: INNOVATIVE APPROACHES AND INSTRUMENTS FOR TOMATO BREEDING

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Tomato (*Solanum lycopersicum* L.) is an important crop worldwide and the most important vegetable in Europe. During the last decade of selection breeders successfully focused on traits as plant yield, long-shelf-life and disease resistances. Nonetheless final consumers are frequently not satisfied regarding the fruit quality and taste. Furthermore, from the breeders' point of view, the lack of phenotyping platforms and clear key traits that can efficiently identify individuals exhibiting rare, optimal genotypes from large populations is currently on of the major bottlenecks. To face this constraint, we promoted two different projects: I) APPreciation of simplification project with the aim to accelerate the development of new improved varieties thanks to the use of FieldBook App and II) Taste it ISI with the objective to create a tool for the detection of the flavor components in tomato directly into the field/greenhouse. In this study, 19 ISI Sementi commercial varieties including 5 testers were phenotypically characterized with all the DUS test traits in order to assess the genetic stability of the hybrids. Then, organoleptic properties of each varieties were determined by a sensory analysis (panel test): from mature fruits, 19 flavor traits (including L-glutammic acids that is demonstrated to be the main responsible of the peculiar umami taste in tomato) were estimated and used to build specific calibrations with a micro-NIR spectrometer. These calibrations and the complete phenotypic characterization done are now successful instruments that are helping the breeders for making the right decision regarding the advancement of tasty tomato breeding lines or varieties.