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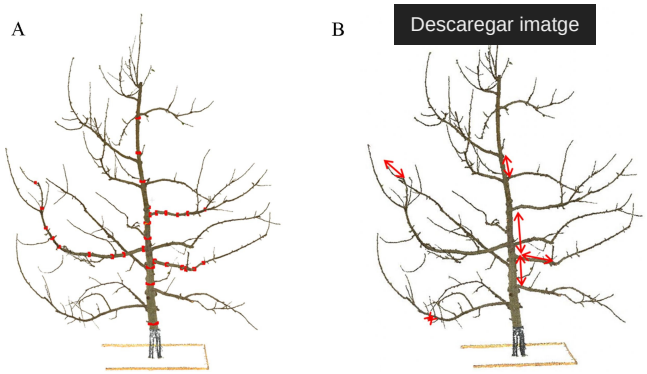
# "A photogrammetry-based methodology to obtain accurate digital ground-truth of leafless fruit trees": New research article of PAgFRUIT project




A new article about photogrammetric techniques applied to map leafless fruit trees has been published by Lavaquiol et al. (2021) [ https://doi.org/10.1016/j.compag.2021.106553 ] In **Computers and Electronics in Agriculture** (Elsevier). In recent decades, a considerable number of sensors have been developed to obtain 3D point clouds that have great potential in optimizing management in agriculture through the application of precision agriculture techniques. In order to use the data provided by these sensors, it is essential to know their measurement error. In this paper, a methodology is presented for obtaining a 3D point cloud of a central axis training system defoliated fruit tree (*Malus domestica* Bork.) obtained from stereophotogrammetry techniques based on structure-from-motion (SfM) and multi-view stereo-photogrammetry (MVS). The point cloud was made from a set of 288 photographs of the scene including the ground truth tree which was used to generate the digital 3D model. The resulting point cloud was validated and proven to faithfully represent reality. The bias of the resulting model is 0.15 mm and 0.05 mm, for diameters and lengths, respectively. In addition, the presented methodology allows small changes in the ground truth actual tree to be detected as a consequence of the wood dehydration process. Having an actual and a digital ground-truth is the basis for validating other sensing systems for 3D vegetation characterization which can be used to obtain data to make more informed management decisions. https://doi.org/10.1016/j.compag.2021.106553 [ https://doi.org/10.1016/j.compag.2021.106553 ]

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