

Abstract Submitted  
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**Experimental observations of root growth in a controlled photoelastic granular material** SERGE MORA, JONATHAN BARES, LMGC Montpellier, JEAN-YVES DELENNE, INRA-UMR-IATE Montpellier, THIERRY FOURCAUD, CIRAD-UMR-AMAP Montpellier — The mechanism of root growth in soil is a key issue to understand both how to improve plant development and how to stabilize grounds. However, no experimental studies have been carried out to directly observe root development and surrounding stress while imposing specific grain configurations or mechanical loading. We present a novel set-up which permits to observe the development of chickpea root networks in a 2D granular material made of bidisperse photoelastic discs while imposing the position of the grains, the intergranular spacing and the nature of the system confinement: (i) open cell, (ii) confined cell (iii) sheared cell. In the experimental apparatus several root development cells are treated in parallel to increase the statistical meaning of the observations. Evolution of the root network is followed as well as position and pressure inside each disc by mean of a camera and classical photoelastic techniques. Preliminary results will be presented.

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