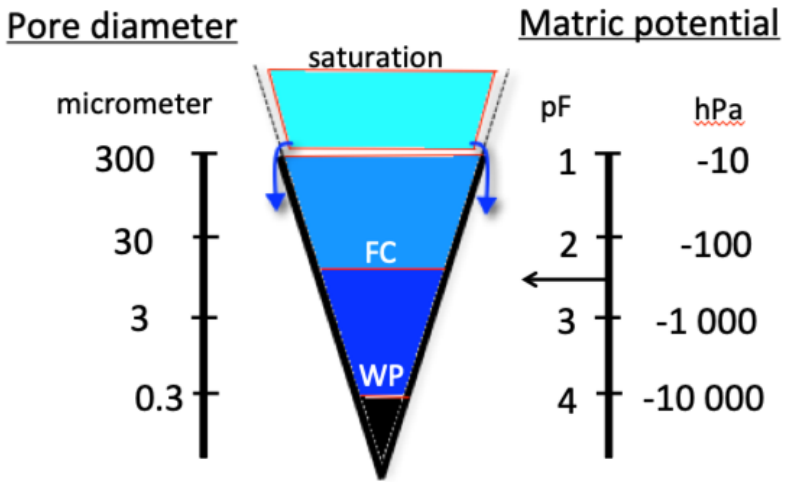

Figure S1. Schematic presentation of the relation between pore size and the soil water matric potential expressed in hPa and in pF.
During rainfall events or irrigation, the soil can be saturated (all pores filled with water) but when the rain or the irrigation stops, the water located in pores with equivalent diameter >300 m (-10 hPa or pF=1) flows downward under the effect of gravity. In pores with a diameter <300 microns, the water is retained by capillary forces. FC indicates the field capacity (-330 hPa or pF=2.5) and WP the permanent wilting point (-16 000 hPa or pF=4.2).

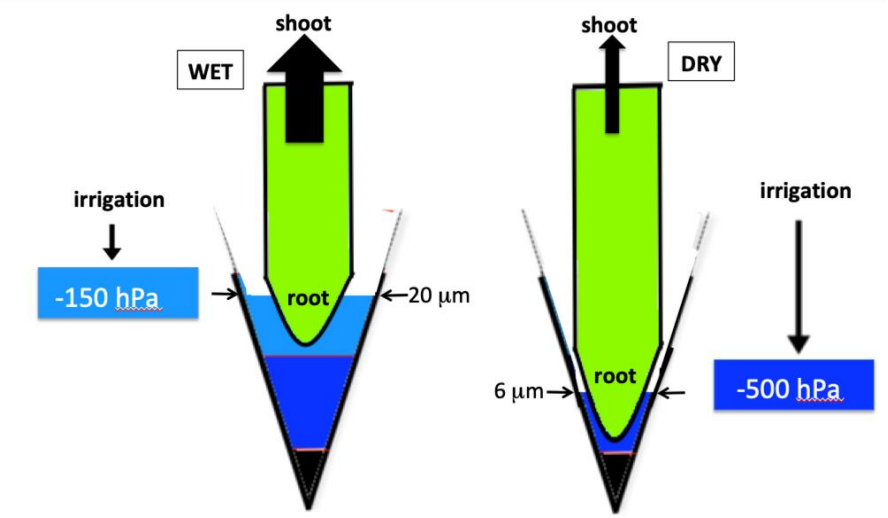

Figure S2: Schematic presentation of the water location in relation to pore equivalent diameter and the expected flux of water between root and shoot in the wet (left) and dry (right) treatments.

When the tensiometers installed in the columns indicated a matric potential below the threshold values of -150 hPa and – 500 hPa for the wet (left) and dry (right) treatments respectively, the columns were irrigated with the amount of water necessary to bring the matric potential close to the threshold values. The soil water was weakly retained in the soil pores of the wet treatment and therefore the water flow from root to shoot was large and fast and was expected to fulfil the plants' need, meaning that water stress was negligible; in the dry treatment, the soil water was retained more strongly by capillary forces so the water flow from root to shoot was expected to be too small to fulfil the plants need, creating a slight but significant water stress.

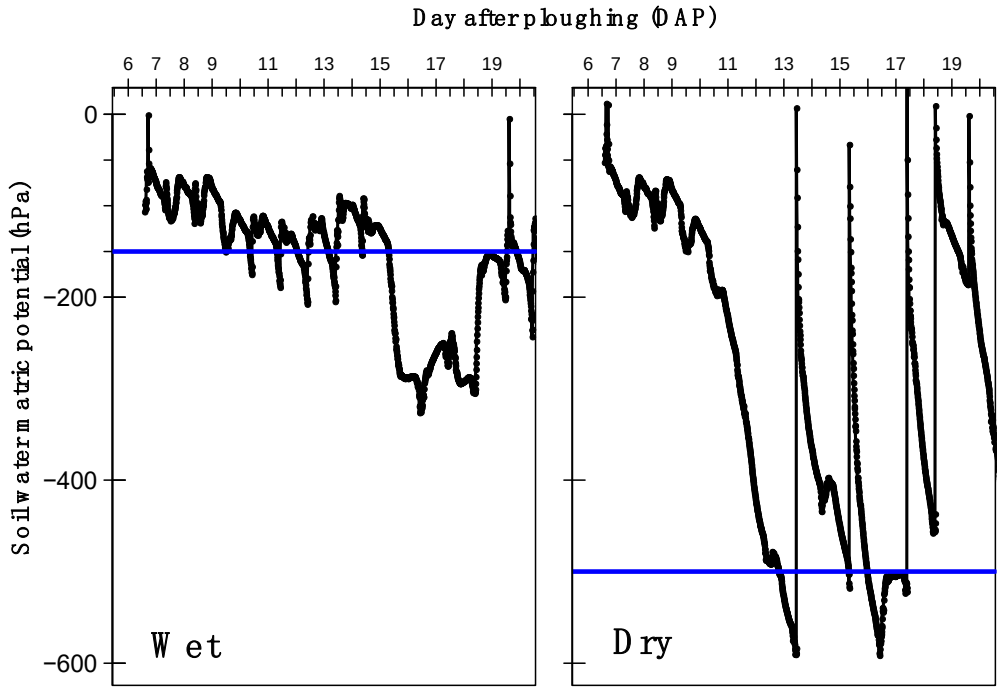

Figure S3. Examples of matric potential recordings in a wet and in a dry column, from 5 to 20 DAP.

Data were collected every 10 minutes and the records were checked every morning and evening for all columns. When the matric potential was lower than the threshold values represented by the blue horizontal line (-150 hPa and -500 hPa for wet and dry treatments respectively), the column was irrigated with enough water to maintain the matric potential above the threshold value but without filling the larger pores. Temporary matric potential increases are observed during and shortly after irrigation. These correspond to the drainage by gravity though the largest pores until a new equilibrium is reached. There were occasional deviations from the threshold value, but these were limited in time and in intensity and were unlikely to affect the result of this experiment.

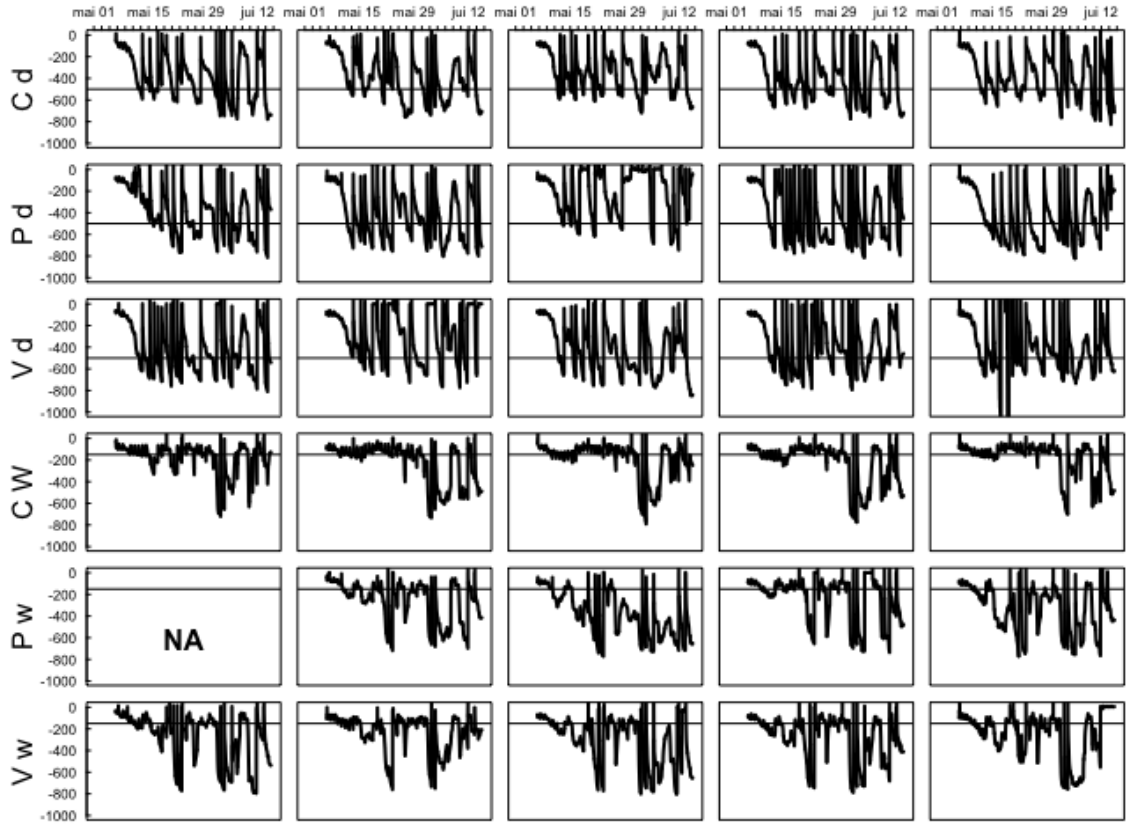

Figure S4. Matric potential (hPa) recorded during all the experiment for in the 30 columns, dry (d) treatment (3 upper rows), and wet (w) treatments (3 bottom rows).

C for unamended control columns, P for compost added columns and V for vermicompost added columns.

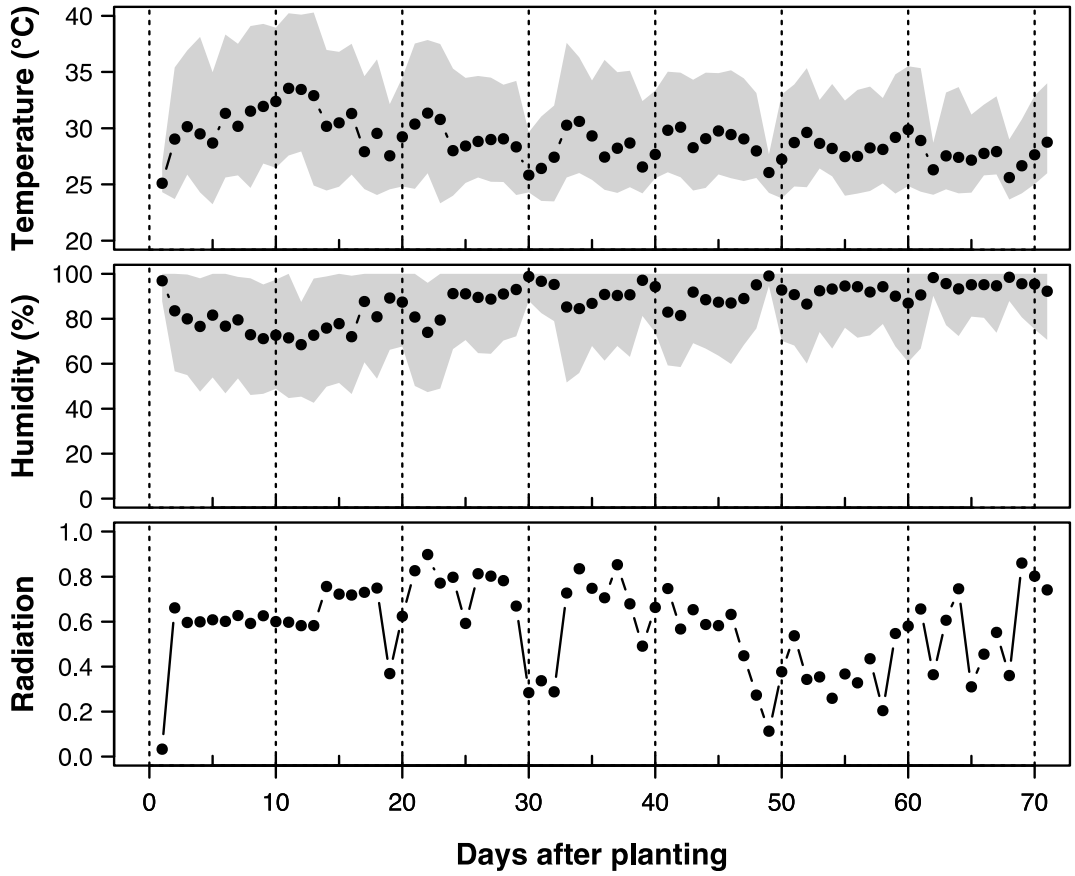

Figure S5. Recording of the meteorological characteristics during the 70 days of the experiment.

For the air temperature (top) and the relative air humidity (middle), the symbols represent the daily mean value, the limit of the grey area represent the daily maximum and minimum values. The maximum daily radiation is presented at the bottom.