Fig. 1. Experimental setup for the field experiments with a) beerkan infiltration runs and b) three-dimensional mini-disk infiltrometer (3D MDI) and for the laboratory experiments with c) one-dimensional mini-disk infiltrometer (1D MDI) and d) constant-head permeameter (CHP)

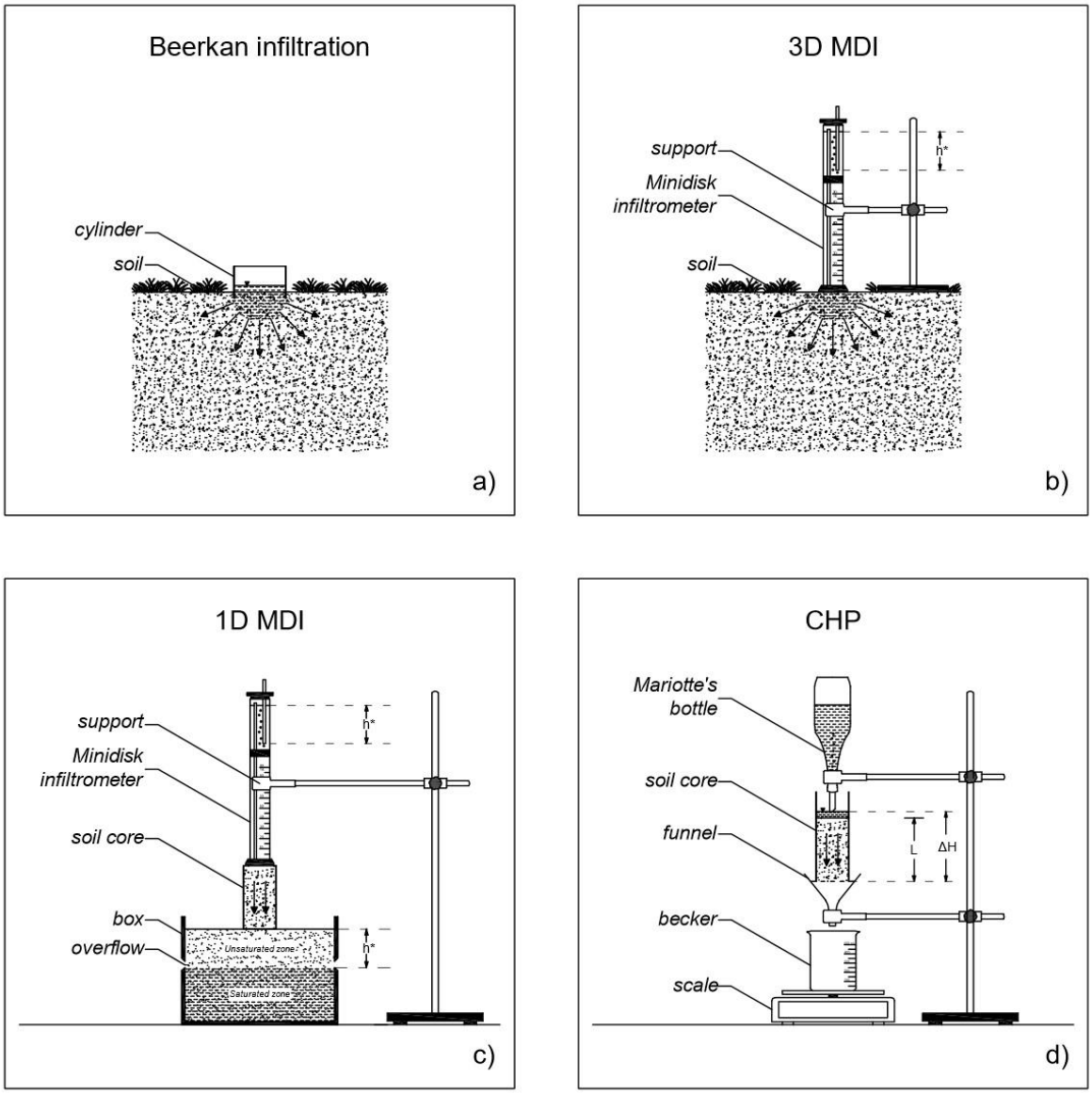

Fig. 2. Volumetric soil water content, θ, vs. pressure head, *h*, values i) obtained after the one-dimensional mini-disk infiltrometer (1D MDI) runs and ii) estimated with the BEST_R algorithm

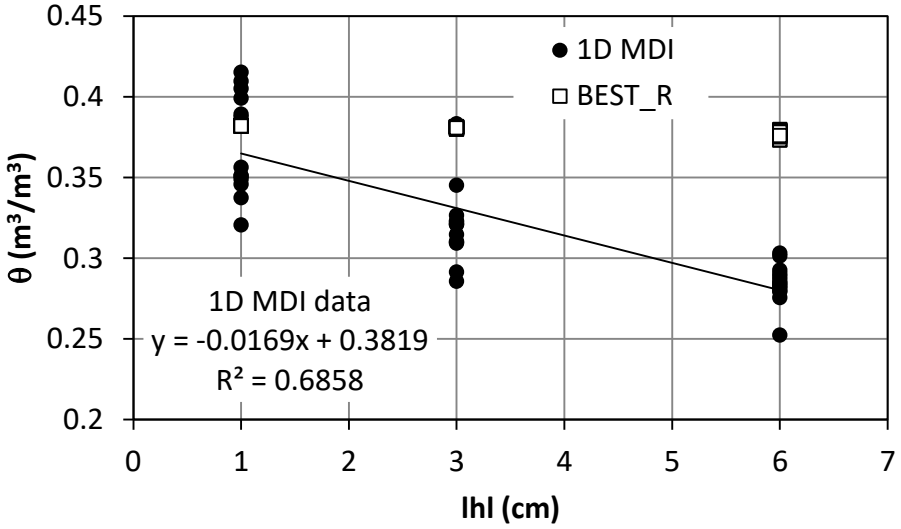

Fig. 3. Cumulative infiltration curves (I vs. t) obtained with the laboratory one-dimensional mini-disk infiltrometer runs (1D MDI) for the three values of the imposed pressure head (h_0 = -1, -3 and -6 cm)

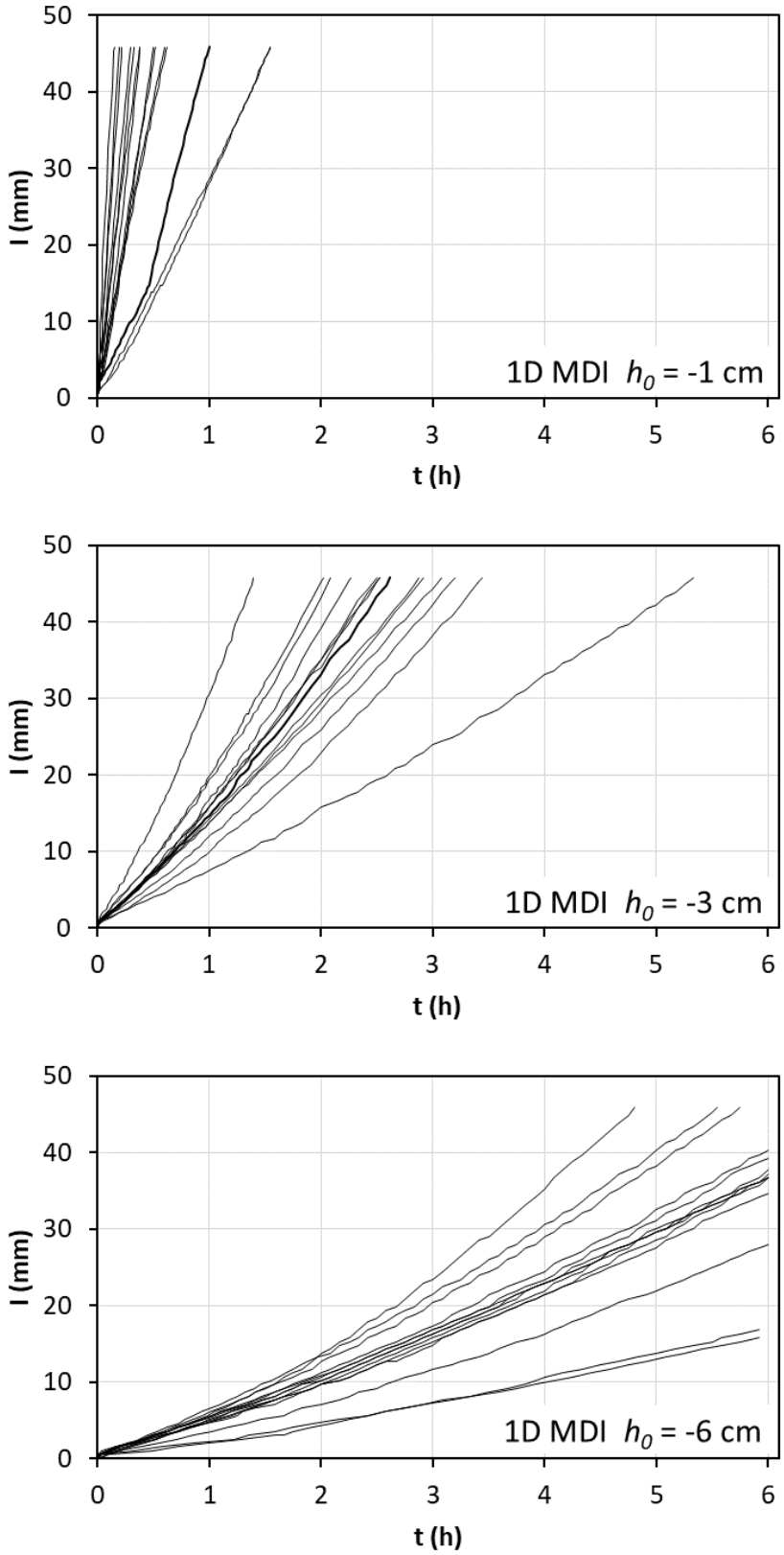

Fig. 4. Comparison between the *sl* and ir_s estimates of the steady-state infiltration rate (*sl* = slope of the linear regression line fitted to all the cumulative infiltration, *I*, vs. time, *t*, data points and forced to pass through the origin of the axes; ir_s = stabilized infiltration rate obtained by linear regression of the last *I* vs. *t* data points) for the 1D MDI runs and the three values of the established pressure head (h_0 = -6, -3 and -1 cm)

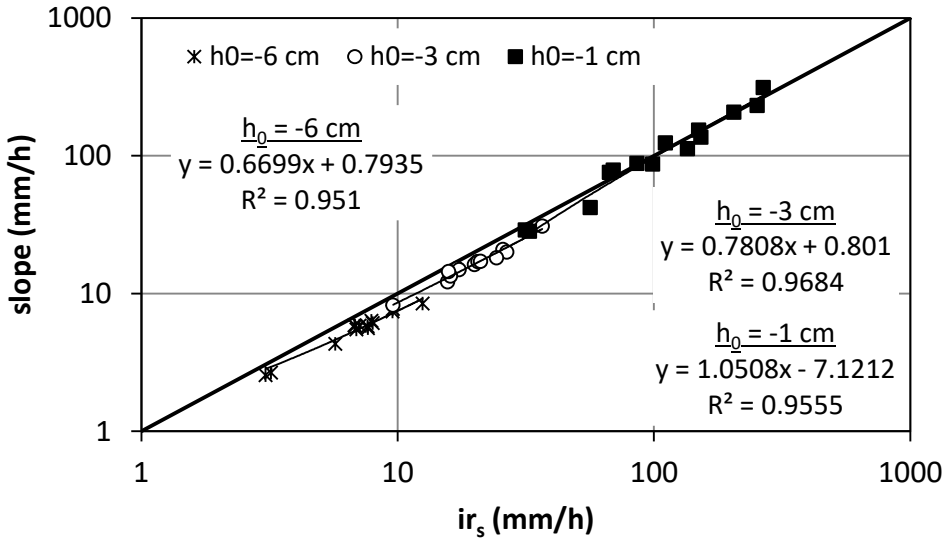

Fig. 5. Cumulative empirical frequency distribution of the saturated, K_s, and near-saturated, $K1$ (corresponding to a pressure head, h = -1 cm), $K3$ (h = -3 cm) and $K6$ (h = -6 cm), soil hydraulic conductivity values obtained with different methods (BEST_R; CHP: constant-head laboratory permeameter; 1D: laboratory mini-disk infiltrometer; 3D: field mini-disk infiltrometer)

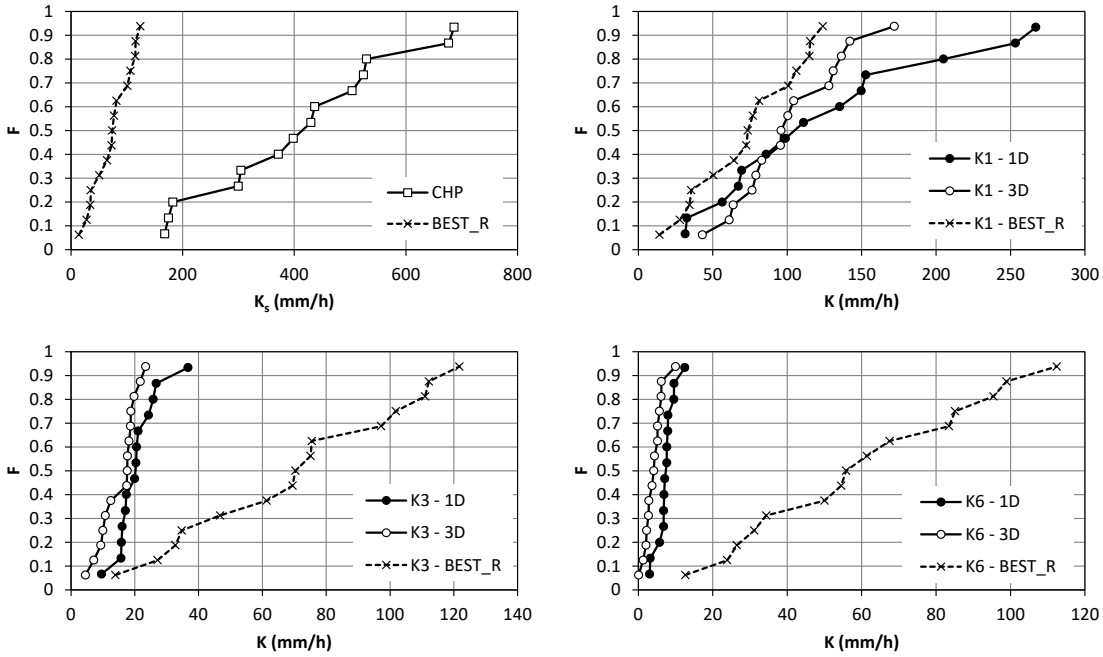

Fig. 6. Soil hydraulic conductivity curves, *K(h)*, estimated by the BEST_R algorithm, saturated soil hydraulic conductivity, K_s, obtained with the constant-head permeameter (CHP) method, and *K* values for the -6, -3 and -1 cm pressure head, *h*, values obtained with the 1D MDI runs

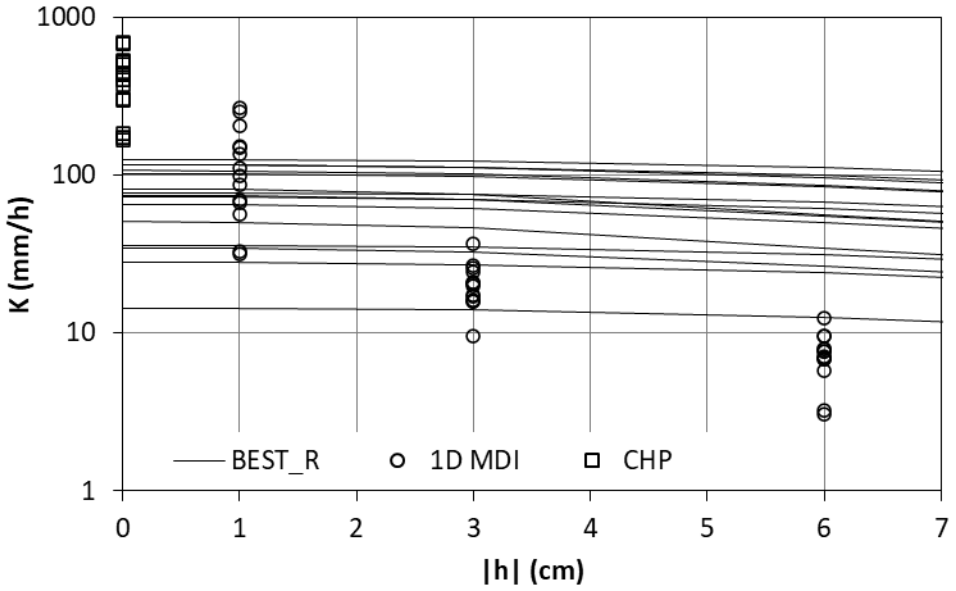

Fig. 7. Relationships between soil hydraulic conductivity, *K*, and volumetric soil water, θ