

## Measuring Soil Hydraulic Conductivity with a Mini Disk Infiltrometer

A number of methods are available for measuring soil hydraulic conductivity with a disk infiltrometer. We suggest using the method proposed by Zhang (1997). The method requires measuring Cumulative infiltration vs. time and fitting the results to compute the hydraulic conductivity of the soil. The minidisk infiltrometer infiltrates water at a suction of 2.0cm and has a radius of 1.59cm.

Hydraulic conductivity can be measured as follows: Fill the infiltrometer by immersing it in a bucket of water with the stopper removed, and replacing the stopper while the infiltrometer is under water. Remove the infiltrometer from the bucket, keeping the stopper end up so water will not leak out, and use a ring stand and clamp to suspend the infiltrometer vertically over a smooth, level spot on the soil surface. Record the starting water volume. At time zero, slide the infiltrometer down to make solid contact with the soil surface. Record volume at regular time intervals as the water infiltrates.

The volume is converted to depth of water infiltrated by subtracting the starting volume reading and dividing by the area of the disk on the infiltrometer, 7.92cm<sup>2</sup>.

### References:

Carsel, R. F. and R. S. Parrish. 1988. "Developing joint probability distributions of soil water retention characteristics." *Water Resour. Res.* 24:755-769.

Zhang, R. 1997. "Determination of soil sorptivity and hydraulic conductivity from the disk infiltrometer." *Soil Sci Soc. Am. J* 61:1024-1030