

3. Infiltration Test

The infiltration test is generally performed after the **first** respiration measurement. The same 6-inch diameter ring left in place from the soil respiration test can be used for the infiltration test. If soil respiration was not determined, follow the instructions in Step 1 of the soil respiration procedure (Chapter 2) for inserting the 6-inch diameter ring.

Materials needed to measure infiltration:

- 6-inch diameter ring (left in soil from respiration test)
- plastic wrap
- 500 mL plastic bottle or graduated cylinder
- distilled water
- stopwatch or timer

Did You Know?

Infiltration rate is a measure of how fast water enters the soil. Water entering too slowly may lead to ponding on level fields or to erosion from surface runoff on sloping fields.

Considerations: If the soil is saturated, infiltration will not occur. Wait for one or two days to allow for some drying. Also, if the respiration test is not performed, make sure the sampling area is free of residue and weeds or that vegetation is trimmed to the soil surface before inserting the ring.

① Firm Soil

With the 6-inch diameter ring in place, use your finger to gently firm the soil surface **only** around the **inside edges** of the ring to prevent extra seepage. Minimize disturbance to the rest of the soil surface inside the ring.

② Line Ring with Plastic Wrap

Line the soil surface inside the ring with a sheet of plastic wrap to completely cover the soil and ring as shown in **Figure 3.1**. This procedure prevents disturbance to the soil surface when adding water.



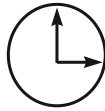
Figure 3.1

③ Add Water

- Fill the plastic bottle or graduated cylinder to the 444 mL mark with distilled water.
- Pour the 444 mL of water (1" of water) into the ring lined with plastic wrap as shown in **Figure 3.1**.

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Remove Wrap and Record Time



- Remove the plastic wrap by gently pulling it out, leaving the water in the ring (**Figure 3.2**). **Note the time.**
- Record the amount of time (in minutes) it takes for the 1" of water to infiltrate the soil. Stop timing when the surface is just glistening.
- If the soil surface is uneven inside the ring, count the time until half of the surface is exposed and just glistening (**Figure 3.3**).
- Enter the amount of time in minutes on the Soil Data worksheet.



Figure 3.2



Figure 3.3

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Repeat Infiltration Test

In the same ring, perform Steps 2, 3, & 4 with a second inch of water. On the Soil Data worksheet, enter the number of minutes elapsed for the second infiltration measurement. If soil moisture is at or near field capacity, the second test is not necessary.

[The moisture content of the soil will affect the rate of infiltration; therefore, two infiltration tests are usually performed (if soil is dry). The first inch of water wets the soil, and the second inch gives a better estimate of the infiltration rate of the soil.]

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Replace Lid

If a second respiration measurement will be performed, set the lid loosely on the ring and leave it covered for preferably 16 to 24 hours (6-hour minimum) before beginning the second test (Chapter 2). (Remove lid and replace it before beginning the second soil respiration measurement).



Reminder: If you still need to perform the second respiration measurement, remember to loosely place the lid back on the ring before leaving the field.