

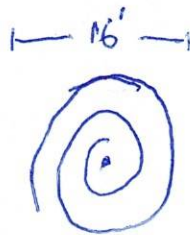
DRIP IRRIGATION CALCULATOR

A good point of reference for how long to run the soaker/drip hose is to think of a nice rain of 1 inch.

How many gallons would you need to put out to simulate a 1 inch rainfall? This is how you figure it.

1 inch of water over 1 square foot will equal to .62 gallon of water. That is our key metric.

Now, how many square feet are we trying to water? It should be the entire root zone of the tree. Here are some examples. If you have a small tree with a "drip line" area (which we can consider the primary root zone) of 16 feet diameter, then the radius is 8 feet. It is important to accurately measure the drip line diameter. The formula for Area as you remember from math is $A = \pi (3.14) \times \text{radius squared}$. $3.14 \times 64 = 200$ square feet. We take the 200 sf $\times .62 \text{ gal} = 125$ gallons will give us the equivalent of a 1" rainfall. If we are using a 50 feet soaker/drip hose that puts out 1 gallon/foot/hour (50 gallons/hour) it will take 2.5 hours of watering (125/50).



An example of a larger tree is drip line of 30 feet diameter, 15 feet radius. Using the formula we get 706 sf $\times .62 = 438$ gallons for 1 inch of water. But with larger area we need longer soaker/drip hose. Let's say we are now using 100 feet of hose putting out 1 gallon/foot/hour or 100 gallons/hour. We would need to run that for about 4 hours and 20 minutes for 1 inch of water. As you can see, larger trees and root zones require an increasing amount of water and time for the same 1 inch.



Watering with 1 inch is a useful example for this exercise and I would consider it the minimum amount for a watering event. You might want to water longer for the equivalent of up to 2 inches. This would mean watering for about 9 hours or overnight. This is a lot of water but is the most efficient way to deliver it and it would provide a good deep soak. Also this kind of deep watering would need to be done rarely, maybe every 2 weeks in summer with high demand and no rainfall. Always match irrigation with demand.