



## Plant Health Care Inc.

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# Technical Bulletin

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### INJECTING TREES USING LESS WATER

Root feeding systems inject solutions of various kinds into the root zone of established trees and shrubs. Examples of injected treatments include, fertilizer, mycorrhizal fungi, and rhizosphere bacteria, among other things. With all these treatments, water is used as the carrier to deliver the active ingredients into the root zone.

In some cases, it may be impractical to use as much water as recommended on the product label. Sometimes you may prefer to use less water. Fortunately, because it is only a carrier, the actual amount of water you use can be changed somewhat, as long as the active ingredients are delivered at the same rate. Of course, there is a limit to how much you can reduce the water.

#### ***How Can I Use Less Water, but Still Deliver the Right Amount of Product?***

It is very easy to change the amount of water that you use for injections. The easiest way is to cut the water in half. If the product label tells you to mix **X** amount of product into 100 gallons, you can use that same amount of product, but reduce the water by half and use only 50 gallons. (Notice that we are reducing only the water, and ***not*** reducing the amount of product.) Now the solution in the tank is diluted only half as much, so it is twice as strong. Since it is twice as strong, you only need to inject half as much. So if you are supposed to inject two quarts of fluid per hole, you need to cut that in half too. Now you will inject only one quart per hole.

The end result is that you are delivering the same amount of product using half as much water. Here is an example:

The label for PHC for Trees tells you to mix one 8-Lb bag into 100-gallons of water and inject 2 quarts per hole. If you start with 100 gallons, and inject 2 quarts (= a half-gallon) per hole, you will run out of fluid after 200 injections, because there are 200 half-gallons in 100 gallons.

Suppose you wanted to use only 50 gallons of water? Mix your 8-Lb bag into only 50 gallons. But this time, inject only one quart per hole. If you start with 50 gallons, and inject one quart per hole, you will run out of fluid after 200 injections, because there are 200 quarts in 50 gallons. That is the same number of injections as you got when you used a 100-gallon dilution. So coverage is the same.

So by doing this, you are cutting the water in half, but you are applying the same amount of product over the same area. All you have to remember is to cut the amount of fluid applied per hole by the same amount: half. This is fair and honest, because the solution made with half the water is twice as strong. So it is correct to deliver half as much fluid per hole.

Of course, you can use other fractions as well, but half is easiest to figure. This works for all kinds of products, including PHC for Trees, BioPak Plus, and PHC Injectable.

#### ***Is There a Limit to How Far I Can Reduce the Water?***

Yes, of course there is a limit. You can't reduce the water too much, because you need at least enough water to dissolve or suspend the product. You can't inject a thick paste into the ground. Also, with fertilizers, if the product is not diluted enough, it could cause a burn. Generally, however,

a reduction by half is safe for most products, including PHC products. (You would want to check with the manufacturer before doing this with pesticides or plant growth regulators, which may have some legal and technical restrictions to consider.)

### ***Summary***

So in summary, you can reduce your water requirements by cutting the water amount in half, but don't cut in half the amount of product you add to the tank. Instead, you have to cut in half the amount of liquid you inject per hole. By doing this, you are delivering the same amount of active ingredients into each hole, and you get the same coverage.

### ***Points to Remember***

- Reduce the amount of water, but don't reduce the amount of product
- Reduce the injection volume per hole by the same amount
- With soluble fertilizers, don't reduce the water too low lest you cause a burn
- Usually, a water reduction by half is probably safe for most fertilizer products
- Check with the manufacturer before doing this with pesticides or plant growth regulators