Greenhouse Management

Grower 101:
Choosing and Using Fertilizer Injectors

How to accurately select and use the right fertilizer injector for your specific needs.

By Lela Kelly

Watering and fertilizing are two tasks that take the most amount of time in your greenhouse, and fertilizing is also one of the most important. You want to get the job done quickly and accurately, meaning you want an injector that is easy to install and maintain. Maybe you want one that is portable. Dependability and long life are key factors to the decision making process. The injector should be highly accurate and perform for years to come. Spend some time asking questions up front to help you decide on the best injector for your situation and application. Asking other growers what they use and why they like their injectors can be a great help in your search for the right fertilizer injector. But, before you do all that, here are a few factors to think about.

Choosing the Correct Size

Know your flow rate. One of the most important decisions you can make is to choose the right size injector for your flow rate. Flow rate is measured in gallons per minute (GPM), which is the rate water flows through water lines. Flow rate can be determined by pipe size and water pressure, which is measured in PSI (pounds of pressure per square inch). This would only help estimate the flow rate.

Many times I ask growers how they are planning to fertilize their plant material. Will they be using one hose at a time? Will they be using drip tubes, low flow pressure compensated tubes or overhead spray nozzles? This will get you much closer to finding the flow rate you need.

For example, if you plan to hand water with one hose at a time, with a 5/8-inch hose and a water breaker, you could safely use a small 11-GPM fertilizer injector. That injector would allow you the flexibility to use very low flow as well as up to 11 GPM.

Another example is if you have a 1-inch line feeding 100 drip tubes. Each tube can put out 0.2 GPM of water. When you multiply those numbers, you get 20 GPM for your flow rate. The injector you choose would need to handle at least 20 GPM in flow, so the 11-GPM injector would be too small.

The setting on your fertilizer injector. Often, the question comes up about parts per million (ppm). Fertilizer manufacturers put directions on the back of the fertilizer bags, which tell you how to make up the ppm you need for the crop you are growing. They list different ratios, like 1:100, and give you amounts to mix with water to dissolve their fertilizer.

The ratio 1:100 means 1 gal. of concentrated fertilizer will be automatically injected into 99 gal. of water to make up a total of 100 gal. of water and fertilizer combined. It would be the same as starting with 99 gal. of water in a tank and adding 1 gal. of concentrated fertilizer solution to make up 100 gal. Your fertilizer injector does that automatically for you.

If you are a new grower, 1:100 is an easy place to start when injecting fertilizer. As you become more familiar with the ratios, you may want to use other ratios for fertilizing.

All of these fertilizer questions can be answered free by the fertilizer manufacturer. They have qualified professionals to help growers decide which fertilizer to use, how often to use it and how much to use.

Choosing a Stock Tank

All fertilizer injectors draw from a concentrate tank. That tank can be as simple as a 5-gal. bucket or garbage can. If you make up 5 gal. of concentrated fertilizer at a 1:100 ratio, you would inject 0.05 gal. of concentrate fertilizer with each gallon of water. The stock tank would hold 100 gal. of concentrated fertilizer.

Fertilizer injectors should be easily incorporated into existing equipment and systems, with a variety of mounting options.
you will be able to make up 500 gal. of end solution.

What size tank to use depends on how much fertilizing you want to do. It may be helpful to use an opaque tank with a lid so that you can see the level of concentrated fertilizer every time you pass the tank. The lid is helpful in keeping debris out of the concentrate.

**FILTRATION**

Filtering impurities such as sand and grit from your water supply will not only protect your injector, it will keep all other nozzles and watering heads free of debris.

When choosing a good filter, be sure the inside screen is a durable material, such as stainless steel. I have seen many filters in the field that have screens with holes in them or screens that have been removed. In some cases, a disc filter may be a better choice. Also, a clean out valve can really save time. Ask your irrigation supplier or distributor what they recommend.

**WATER HAMMER**

When water is moving in one direction and suddenly hits a closed valve; that water’s energy will travel back through the water line at four times the pressure. This surge of pressure causes water hammer. It can be extremely damaging to your fertilizer injector as well as other equipment in your greenhouse. In order to help avoid this problem, you will need to install a check valve (one-way valve) or water hammer arrestor after your fertilizer injector. This will prevent that surge of pressure from damaging your injector.

**MAINTENANCE**

Most injector systems need some type of maintenance, which allows them to run properly and accurately. Be sure to ask about what your injector needs to keep it running at peak performance and how often it should be done.

**WHAT ELSE CAN I INJECT WITH MY FERTILIZER INJECTOR?**

Most fertilizer injectors can accurately inject pesticides such as fungicides and insecticides. It is also a very effective way to apply disinfectants and algaecides. Be sure to check with the injector manufacturer to ensure these substances can be injected without causing harm or damage to the unit.

Lea Kelly is vice president of Dosatron International Inc., Clearwater, Fla. She can be reached by phone at (800) 523-8499 or E-mail at lea.kelly@dosatronusa.com.