



St. Augustine Orchid Society

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## Applying Fertilizers and Chemicals to Your Orchids

by Sue Bottom, sbottom15@hotmail.com

There are many ways to apply drenches and sprays of various chemicals to your orchids. Drenches are usually applied to the root zone for uptake through the root system and transmission through the xylem upward through the plant. Fertilizers are most commonly applied in drench applications, but drenches also work for many of the fungicides that fight stem, bulb and root rots as well as the water molds. Spray applications are typically used to combat pests and disease on the aerial parts of the orchid plants as well as for foliar feeding. Many of the pesticides used in spray application are contact killers so good coverage on the plant surfaces is essential, others are systemic to a greater or lesser degree so they can move within the plant to provide some protection from the inside out. Once you know whether you should be applying a given chemical as a spray or a drench, you next have to figure out how best to apply that chemical.

**Drenches.** Drenches are applied to the plant by saturating the potting media with the chemical for uptake by the roots. The most simple example of a drench application is when you add water soluble fertilizer to your irrigation water. You simply mix up your fertilizer at whatever concentration you choose and pour it through the pot. Drench applications of fungicides are used to prevent bulb, stem and root rots caused by *Rhizoctonia*, *Fusarium* and *Sclerotium* as well as the water molds caused by *Pythium* and *Phytophthora*. Some of the systemic pesticides and insect growth regulators are also very effective when applied as a drench.

**Gallon Jug.** If you only need to mix up one to several gallons of fertilizer or chemicals to drench your orchids, it is simple to just use a gallon jug. You'll fill the jug up halfway or so with water, add the fertilizer or chemical then fill the jug the rest of the way with water and maybe a little dishwashing soap or spreader sticker and then pour the solution through your orchid pots. You'll make as many gallons as you need, simple!



1. An educator is a simple and cost effective way of applying chemical and fertilizer drenches, just double check the system to be sure it is mixing at the intended rate.

**Siphon.** For most hobbyists with the need to mix up more than 4 gallons of a drench solution, a siphonex may be the answer. A siphonex is a venturi device normally installed on the hose bib with the flexible suction hose dropped in a concentrated solution that is drawn into the hose by differential pressure. The [Hozon](#) operates at a 16:1 ratio and the [Dramm siphonject](#) has a 20:1 ratio, both cost less than \$30. If you want to apply 16 gallons of fertilizer using a Hozon siphon, you would multiply your application rate by 16 to obtain the quantity of fertilizer to add to each gallon of water. So, if you were applying fertilizer at the rate of  $\frac{1}{4}$  tsp/gal, you would create a concentrated solution by adding 4 tsp ( $\frac{1}{4}$  times 16) of

fertilizer into a one gallon jug, fill the jug with water and drop the flexible suction hose in the gallon jug and start fertilizing. If you use the siphonex for fertilizing and you have a lot of orchids to fertilize, you can mix up your concentrate solution in a 5 gallon bucket. You would add enough of the fertilizer or chemical to make up to 80 gallons (16 times 5) and then fill the bucket with water to the desired level.



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The trick with using a siphon is to minimize pressure drop in your system. This means use a large diameter hose, keep the hose shorter than 50 ft (35 ft is even better) and use a low pressure water breaker such as the Dramm 170. If you want to test how well your system works, get a measuring cup and gallon jug. If you have the 16:1 Hozon siphon, you would fill your measuring cup with 8 oz of water and drop the suction hose in it. Then start filling an empty gallon jug that holds 128 oz. By the time the 8 oz of water is gone from the measuring cup, your gallon jug should be full of water and you know that the 16:1 ratio is working (128 divided by 8 is 16). If the venturi stops working properly, sometimes an overnight soak in vinegar will remove deposits that plug the system and it will begin to siphon properly once again. The siphonex can also be used to apply drenches of fungicides and pesticides. Even with viscous chemicals, the suction tank does not seem to have such a concentrated solution that it plugs the siphonex.



2. A Dosatron proportioner is a very precise way of delivering fertilizers although it may seem expensive if you just have a few plants.

liquids and wettable powders, it may be so concentrated that it plugs the system. The Dosatron is best for materials that are completely soluble in water.

*Dosatron.* Dosatron offers proportioners in a wide variety of sizes in which the device injects water from a concentrated solution tank into the irrigation system. They even offer a system with a tank mounted on a portable rack. If you want an accurate water injection system without worrying about back pressure, Dosatron may be the answer for you although it is pricey at costs beginning at over \$200. If you set up your Dosatron at a 100:1 ratio, you can mix up the amount of fertilizer needed to make 500 gallons of fertilizer in a 5 gallon bucket, and then just water and fertilize your orchids until the bucket is empty. Depending on the season, the concentrated solution in my growing area must be refreshed every few days to once a week, and as long as I hear the Dosatron clicking, I know it is working. Sophisticated growers may have several Dosatron injectors inline injecting different chemicals and/or fertilizers at different rates. Drench applications of fungicides and pesticides can also be made with the Dosatron, but your stock tank will contain a very concentrated solution, and for some of the emulsified

**Sprays.** Sprays are applied to the aerial parts of the plant, the leaves and pseudobulbs or canes. If using a contact chemical, the spray must come into physical contact with the invader so it is important to cover both sides of the leaves, the leaf axils and the pseudobulbs to the point of liquid dripping from the plant. Systemic chemicals can be absorbed into the plant, some are just absorbed and moved trans-laminarily through the leaf while others can actually be transported through the phloem system so they move throughout the plant. Obtaining complete coverage with systemic products is less



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important than it is with contact chemicals. In some situations you will be spraying only the flowers, such as when you battle botrytis or thrips, so you want equipment that will deliver a fine mist to cover buds and open flowers.



3. The old style Ortho sprayers worked well, then it was redesigned and isn't too useful. Find an old style sprayer with a simple spray nozzle.

the rate of  $\frac{1}{2}$  tsp/gal to provide around 100 ppm N. You will add 2 tsp fertilizer to the reservoir ( $\frac{1}{2}$  times 4), fill the reservoir with water to the 32 oz mark and set the dial to 8 oz/gal (32 divided by 4). Spraying beach or pool algacide under-benches to disinfect and periodically applying slug, snail and roach control chemicals can help control those creepy crawlers in your growing area.

*Hose End Sprayer.* Hose end sprayers make it easy to spray fertilizer onto vanda roots and mounted orchids as well as to broadcast spray chemicals onto leaves and under benches. Ortho has redesigned their hose end sprayer and added gizmos that reduce pressure and spray distance resulting in a poor spray pattern, at least with my watering set up. Try to find an old fashioned hose end sprayer, particularly to spray chemicals on and under benches. To spray fertilizer onto mounts and vandas, simply decide the volume of fertilizer solution you need and divide this number into 32, this will define what the upper spray dial should be set to. Say you want to spray 4 gallons of fertilizer and you apply fertilizer at



4. Pump up or battery powered sprayers are a simple way of spraying the aerial portion of plants, here flower buds are being 'poofed' for thrip control.

infestation, a twice a week poofing program in which every bud and open flower is sprayed, front and back, for 4 or 5 weeks may help you get the thrips under control. You may tire of having to stop to pump up the sprayer and decide a battery operated system is more to your liking. These are more versatile and it is easier to get a better spray pattern given the higher pressure. For many situations in which you want to get good leaf coverage with pesticides and fungicides., a battery operated spray system may be the better choice.

*Mechanical Sprayers.* There are many different types of sprayers available in a wide range of sizes for spraying contact chemicals onto aerial parts of plant. The main variables are the mechanical force used to deliver the chemicals, usually either pump up sprayers that are pressurized by your pumping air into the tank, or battery operated. Some are small enough to be hand carried, some are back pack sprayers, others are mounted on wheels and still others are fixed tanks fit with long hoses. The cheapest sprayers are the small pump up sprayers that are fine for small collections or for "poofing" flowers and buds to protect against thrips and *Botrytis*. If you ever find yourself in the unenviable position of having a thrip



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*Spray Gun.* I asked George “The Toolman” Hausermann of EFG Orchids how he prevented Botrytis from occurring in his growing area, he smiled and showed me the spray gun he had hanging on a hook. It is typically used for spraying paints and lacquers, having about a quart reservoir and is powered by an air compressor with a spray pattern that can be varied from a long jet to a fine mist. This system is ideal for foliar feeding with soluble trace elements like S.T.E.M. or MegaThrive or poofing flowers for thrips and Botrytis. Of course, you are at a high risk of inhaling the fine mist so respiratory protection is non-discretionary. You must wear an organic vapor respirator, no ifs, ands or buts.

4. The greenhouse, shade structure and hoop houses can all be fogged with 1 gallon of chemical using the spray gun powered by an air compressor. The inhalation and dermal absorption hazards are high when applying chemicals this way so wearing protective equipment is a must.

*Foggers.* Commercial growers might also use atomizing foggers in their growing areas. These are often stationary devices set to operate in a closed in growing area which is not reentered until deemed safe. This type of system is probably beyond the scope of most hobbyists.

Be sure to read, understand and follow all label instructions. These chemicals are poisonous to humans as well as to whatever pest or disease you are trying to combat. Make sure you apply the chemicals correctly, at the proper application rate and with adequate protection to your body. Gloves are important, particularly when mixing and spraying chemicals, as are long sleeved pants and shirts and eye protection. If there is any chance that you will become wet with spray, wear a liquid-proof, chemical-resistant coverall or suit with a hood to prevent skin contact and dermal absorption of chemicals. Inhalation of chemicals is a primary mode of entry to your body during spraying, and fine mists are particularly hazardous because they can travel deep into the lungs. Organic vapor respirators should be worn when using atomizing mists of biofungicides, insecticides and fungicides as well as any chemical or fertilizer containing trace elements. Follow the label instructions so you'll be around next year when your orchids come into bloom.