



St. Augustine Orchid Society

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## Ferns, Weeds and Orchids Do Not Mix

by Sue Bottom, sbottom15@hotmail.com

If you spend a lot of time working in the garden, you don't need anybody to tell you what a weed is, you know they easily outcompete all those plants you so carefully planted. Most orchids tend to be slow growing so weeds can quickly gain a foothold in your orchid's pot. They compete with your orchids for water and nutrients, their roots invade the root zone and reduce drainage and aeration, they are hosts for pests and diseases and let's face it, they're ugly. Ever see a dedicated gardener walk by a weed without pulling it? That is easier said than done with some of the weeds that invade our orchid pots.



1. Creeping woodsorrel (*Oxalis corniculata*) is weed enemy number 1 in my growing area. Its roots penetrate deep into the potting mix and the seeds spread readily.



2. Artillery fern (*Pilea microphylla*) is not in the fern family. It seems every time you touch it, seeds are explosively spread throughout the growing area.



3. Various varieties of rhizomatous ferns grow throughout the potting mix smothering the orchid roots and spread rapidly to other pots through their airborne spores.

Oxalis and artillery fern are difficult to control in part because the seed pods can be ejected on touch and ferns have spores that easily become airborne spreading from pot to pot. If you are diligent and pull weeds while they are still young, you may be able to keep the population under control. A long tweezers or hemostat can help you grasp a weed growing in small crevices and hopefully allow you to remove it, roots and all. But if the root has had the opportunity to burrow into pot, you are just removing the top growth and the weed will return twice as strong. You also have the potential for damaging orchid roots as you dig around searching for weeds. One very effective way of getting rid of weeds is repotting the orchid, being careful to search for and remove all the invader's roots. But if you are trying to grow specimen plants, you typically want to delay disturbing the roots for as long as possible, so what are the other options?

**Broadcast Spraying.** There are a variety of studies that suggest that certain herbicides can be sprayed on orchids to eliminate weeds without hurting the orchids, although there is no herbicide labeled for use on orchids. One study states Karmex (containing 80% of the active ingredient diuron) can be sprayed on cymbidiums at the rate of 1 tbsp/gal (4 cc/l) (Bing, 1959), one suggests Simazine (containing 80% active ingredient) can be sprayed on a variety of thick leaved orchids at the rate of 2.5 tbsp/gal (10 cc/l) (Murashige, Sheehan and. Kamemoto) and another suggests that Turflon (containing 60.5% of the active ingredient triclopy) can be sprayed on cymbidiums at the rate of 0.34 wt oz/gal (2.1 g/l) without causing phytotoxicity (Colvin & Rice, 1987). I normally believe in better living through chemicals, but simply cannot bring myself to broadcast spray herbicides on my orchids.



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**Weed Painting.** The Australian Orchid Nursery talks of using Roundup to control the Australian gesneriad Saintpaulia weed (*Pseuderanthemum variable*) that is not easily controlled by other herbicides. Their website suggests you water plants well before the application, make a mixture containing 50% Roundup and 50% water and then paint the weed leaves with a child's paintbrush. Of course, they caution you to take care not to overpaint the roots and to also delay watering for as long as possible so as not to wash the herbicide into the roots before it has done its damage to the weeds.

I decided to do a trial run using the paint brush approach with the granular herbicide Diuron (80% active ingredient) that is also sold as Karmex, Parrot, Di-on and a few other trade names. Even with trying different strength solutions from a paste to a flowable liquid and using 6 different brushes, from a small painter's brush, sponge brush and finally a kid's paintbrush, the painted application could not be confined to just the weed leaves. No matter how small the paintbrush or how carefully you try to apply the herbicide, some drips off onto the orchid roots or the weeds are growing in crevices so you end up painting the orchid along with the weed. It is time consuming, sloppy, and the weed surface seems to repel the herbicide. The paste and the solution were also probably more concentrated than desirable so this experiment was curtailed and labeled a failure.



4. The tried and true way of eliminating weeds is to repot the orchid being careful to remove all the invading roots along with old media.



5. Painting the weed surface with a small paint brush was tedious and sloppy and the weed surface seemed to repel the herbicide.

**Selective Spraying.** Perhaps there is a middle ground between broadcast spraying your orchids and painting your orchids with herbicide. How about a spray bottle filled with a somewhat dilute herbicide solution selectively sprayed only on the weeds rather than spraying the entire plant? Using about one third the dosage recommended by Bing for cymbidiums, a spray bottle was filled with water to which Diuron was added at a rate of 0.25 tsp/qt (1.3 cc/l) along with a little dish soap as a surfactant. Time to do battle with the weeds.



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6. The ferns, Mexican petunias and artillery fern were sprayed with a Diuron solution. Start with a dilute application and test several plants to see what happens several weeks after spraying before making further decisions.



7. Two weeks later the weeds are gone and the fern is on its last legs, no damage to the Dendrobium. Don't spray more frequently than monthly.

Spraying the weeds growing in the pots of thick leaved orchids like cattleyas, dendrobiums and cymbidiums worked like a charm. With a simple twist of the nozzle, you can adjust the spray pattern from a thin jet for weeds lurking between pseudobulbs to a fine mist for weeds growing in a patch in the pot. This is an easy and quick way to apply herbicides selectively to the weeds. It might take 2 or 3 weeks for the weeds to die off so don't be in too great a hurry to repeat the application. Depending on the weed pressure, you might only have to spray weeds in the pot a couple times during the growing season. With more sensitive genera including thin leaved orchids such as the oncidiums alliance, perhaps a more dilute solution should be used. In fact, before trying this in your growing area and under your conditions, pick out a plant or two of each genus you grow to be your guinea pigs and see how they fare before applying to the rest of your orchids. Caveat emptor!

**Under Bench Treatments.** The reason Diuron was available in the potting shed arsenal is that I have long used it for weed control under benches, under vandas and in pathways. You can pull on the nitrile gloves and then broadcast spread it. It is simple, quick and effective to use. Weeds are gone in about three weeks and it seems to have residual effects for some period of time, because retreatment is only required two or three times a year.





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8. Weeds grow under the vandas in their winter growing area where it's hard to treat under their long roots. In fact, there are many under bench treatments you might consider. Your goal is to make the under-bench areas the most inhospitable environment imaginable for bacterial and fungal disease organisms as well as insects and chewing critters. First make sure the area is clean of spent flowers, fallen leaves and other orchid debris. Step two is making sure there are no weeds growing that can harbor diseases and pests. The final step is to periodically nuke the area under the benches to eliminate unseen but potential threats'

*Disinfection* – Regular disinfection of bench and under-bench areas is a good practice. You can spray bleach using an Ortho-type hose end sprayer. Set the top dial to the highest setting, typically 8 fl oz/gal (63 cc/l) and fill with undiluted bleach. This will spray a 6% bleach solution (8 divided into 128 is 0.06 or 6%), a little more than half the typical 10% rate often cited for disinfection but plenty for killing bacteria on growing area surfaces.

. You can also spray quaternary ammonium compounds, the active ingredient in pool algacide, Consan, Physan, SA-20, etc. to help control algae and fungi under the benches and the exterior of orchid pots. Follow label instructions, the application rate for disinfecting pots, benches and under-benches is much greater than that which is safe to apply to the plants directly.

*Slug and Snail Control* – Many different slug and snail baits can be spread under and around benches, like those containing iron phosphate or metaldehyde, which is toxic if consumed by your pets so choose your chemicals cognizant of their inherent risks. You might also consider spraying a strong copper solution under your benches periodically to repel slugs and snails that dislike copper, and of course copper also is effective against bacterial and fungal organisms.

*Roach Control* – Different boric acid formulations are often recommended as baits for cockroach control. There are granular ortho-boric acid products such as Niban and Mother Earth Granular Scatter Bait that control roaches, crickets and other creepy crawlers. Roach bait is spread under the benches in the fall when the outside roaches are looking for a warm place, and again if buds or flowers mysteriously disappear overnight.

*Pupating Thrips* – If thrips are a problem in your growing area, you should know that they may pupate in the soil under the greenhouse bench. Some growers apply a heavy layer of lime under benches to help control thrips as well as algae, weeds and fungus gnats. You may also consider drenching the soil under the bench with a pesticide or insect growth regulator that is effective on the larval stages of thrips.

Eliminating weeds from your growing area is very important, but you don't want the weeds to come under control to the detriment of your orchids. As with any new suggestions, experiment carefully on a small scale starting with less valuable orchids to make sure that you will not fall victim to any unintended consequences before you implement them throughout your growing area. If you conclude that a recommended growing trick or remedy might work for you under your growing conditions, you may then be able expand



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the scope of your experiment and ultimately you may decide it is safe and valuable so you can make it part of your normal growing routine.

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9. I used to think that having ferns root in my orchid pots was cool, like this dendrobium in a 6 inch pot. The ferns look so pretty growing there when the plant is not in flower. Then I noticed that the orchid did not look nearly as happy as the fern.



10. I tried pulling out the fern to no avail, so I knocked the dendrobium out of the pot to investigate. There were only a mass of fibrous fern roots, nary a living orchid root. Time to get the ferns under control.



11. After removing two thirds of the mass from the bottom of the pot, there were still plenty of viable ferns, with healthy leaves, rhizomes and roots. This called for the heavy artillery; an old steak knife to excise the fern tissue.



12. Starting at the bottom of the pot, the fibrous roots and rhizomes were removed in search of orchid roots. The fern mass was thriving but without the free exchange of air, the orchid roots could not breathe.



13. You can see a chunk of the healthy fern rhizome and roots removed from the pot along with the dead orchid roots. The fern tissue basically suffocated the



14. This is all that is left of the Dendrobium. There are only live orchid roots in the top inch (2.5 cm) of potting media, the rest were smothered by the fern.



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dendrobium roots. All living fern tissue has to be removed so it won't come back to life when the orchid is repotted.

Luckily dendrobiums are resilient orchids. With a little time, it will recover and probably be back in bloom this fall.

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