ADS Dahlia University – Fertilizing, Bug and Disease Control

The following article by Alan Fisher is provided for your consideration. It is an excerpt from an article in the the Dahliagram, a publication of the National Capital Dahlia Society. The ADS does not endorse particular products. Some of our growers are strictly organic and would not use some of the products mentioned in this article – though as you will see in the article, Alan is organic conscious.

Dahlia growing is very location dependent. Many states have county extension offices, operated by a state university, that offer gardening information and advice that is suitable to your local area. What works in one area may not work in others. A really good way to learn what works in your area is to join a local society.

Alan grows dahlias in Maryland with a hot, humid summer climate. Please enjoy the article in the spirit that it is offered…just a talk with an experienced, knowledgeable dahlia friend on the east coast.

As July opens, my first year seedlings and a few named varieties are starting to give first blooms. Unfortunately, as the weather goes into the hot, humid, dry phase typical of high summer, it is difficult to keep the dahlias healthy. I have lost at least a dozen – perhaps close to two dozen – plants recently. In hot, humid weather with strong sunlight, some plants are collapsing. From long experience, I have found that plants that fail to set out feeder roots (or enough feeder roots) fail at this point in the season. Moreover, it is difficult to put in replacements and have them take when the temperature is in the 90s, the UVA index is 10, and we do not have any breaks in the relentless heat and humidity. My first year seedlings look very strong – but then dahlias generally have more vigor as new hybrids than after being around for some years.

Meanwhile, expect most plants grown in direct sun to wilt and show rubbery stems during the heat of the day. As long as the plants bounce back and look healthy late in the afternoon (once shaded) and early in the morning, the plants are reacting normally and should come through to bloom beautifully by late summer. I generally run the sprinkler for around five to ten minutes in the middle of the day – until the plants start blooming. Once I have blooms to protect, I prefer to water by hand between plants rather than ruining blooms through overhead watering.

The more water the plants receive, the more nitrogen they need. I give my plants an extra dose of Harrells 39-0-0, which is 39 percent nitrogen with a two month release during the summer. For a second treatment, a light sprinkling of Milorganite helps. An outstanding way to boost the dahlia plants in the heat is to give them foliage feeding of Spray-N-Grow with Bill's Perfect Fertilizer and Coco Wet spreader/sticker, available from www.spray-n-growgardening.com. Follow directions. Spray late in the day and do not get the foliage wet or add any other products for at least two days. Apply weekly.

Additional Mid Summer Dahlia Care

Epsom salt, magnesium sulphate, is a useful tonic that enables plants to use nitrogen more effectively. Add up to one tablespoon per gallon either as a drench or in spray. Use regularly in a low dose rather than occasionally at a higher dose to avoid jumps in the health of the dahlias. A jump in health (such as from Epsom salt at a high dose) will cause multiple centers (distorted or oblong centers on many blooms). Cleary 3336, a broad spectrum fungicide, helps with many fungus problems. Use half a teaspoon per gallon as a foliage spray or one teaspoon per gallon as a soil drench. Cleary 3336 is now available in granular form, and it is a lot easier to use that way for the entire garden.

Meanwhile, watch for spider mites. By mid-June in our area [Maryland], one should spray regularly for spider mites. Once the hot, humid weather starts, the mites appear as if by magic. Spider mites will spread from infected to healthy plants, and they can kill a healthy plant in a matter of days. (The life cycle of spider mites is three days, and each mite lays approximately 200 eggs.)

A well respected grower recommended to me a few years ago to avoid Talstar and replace it with Conserve, because Talstar attracts spider mites while Conserve does not. (All insecticides in the carbamates and pyrethrum classes make spider mites explode in population.) Azatrol, a growth regulator, prevents insects and mites from developing from one life stage to the next. Regular use of Azatrol helps considerably fighting both insects and mites. Both Conserve and Azatrol are environmentally friendly and approved for organic growing. Meanwhile, slugs are always around and more difficult to eradicate than to keep out, so keep up with slug bait all season!

The most common spider mites are two-spotted red spider mites, which attack the oldest foliage, moving up from the ground. In addition to any chemical controls, strip off old foliage from the bottom working up to help keep spider mites and insects under control. Effective control of spider mites is critical, because mites can kill a healthy dahlia plant quickly and spread to other plants before evidence of attack appears on any foliage. A minimum step is to strip off old foliage regularly. After topping the dahlias, once replacement laterals grow beyond foliage from a previous lateral, strip off the old leaves and throw them in a plastic trash bag. If there are any signs of red spider mites, strip off all leaves with signs plus the next set of leaves going up and spray thoroughly. Since mites stay and feed from the backs of the leaves, thorough coverage of both sides of the leaves is critical to controlling mites. Horticultural oil, another organically approved product, which smothers all stages of spider mites (and insects), is an effective step to kill existing mites, but it has no residual and must be re-applied after four to seven days. One may apply horticultural oil safely only when temperatures are less than 85 degrees.

When spider mite damage to a plant is extensive, the only effective cure is to remove the plant, put it in a plastic trash bag, seal the bag, and throw it out. A plant badly invested with spider mites will spread the mites to other plants and is beyond salvation in terms of ever producing decent blooms. Stripping old leaves, throwing away badly affected plants, and using horticultural oil are all consistent with organic gardening. Azatrol (growth regulator based on Neem oil) is much more acceptable than other types of chemicals to proponents of organic gardening. Benefit or Merit (synthetic nicotine sold under both names) is not an approved organic chemical, and its use is controversial. Conserve (Spinosad) is a chemical for chewing insects that organic gardeners consider acceptable, and using Spinosad does not attract spider mites.

Cyclamen and broad mites attack the newest rather than the oldest foliage. Avid, which has come down considerably in price and is also available as a generic now, is systemic on new foliage but not old foliage. Because Avid is systemic on new foliage, and mites stay on the backs of the leaves, Avid is highly effective on cyclamen and broad mites but far less effective on two-spotted red spider mites. Pylon, which is very expensive and has a shelf life of 36 months once opened, is the most effective miticide for red spider mites. Mixing any miticide with Azatrol makes the miticide far more effective, because Azatrol prevents insects and mites from progressing from one life stage to the next. Because mites have four life stages, the miticide kills most of the mites, and the Azatrol prevents others from progressing to the next life stage.

Any mites that survive a miticide normally produce next generations that are resistant to the chemical the parent survived. The effective life cycle of a miticide tends to be short. To preserve the effectiveness of miticides, the recommendation is to rotate three different chemical classes before repeating any miticide. (Horticultural oils and insect growth regulators such as Azatrol are not miticides in the same sense. Oils smother mites and insects. Growth regulators prevent the mites and insects from progressing from one

to the next life stage. Neither kills the mite or insect directly, so neither is it subject to resistance.)

Mites have four life stages – eggs, larvae, intermediate, and adult. Miticides vary in which stages they control. Many experts recommend combining miticides that kill various stages to control all life stages. Azatrol helps by preventing mites from progressing from the stage when hit to the next developmental stage. Horticultural oil smothers mites at all stages, but the oil ruins any blooms it hits, and it has no residual.

By limiting my insecticides to Conserve, Benefit, and Azatrol, and rotating miticides (Avid, Pylon, and Azatrol are my primary weapons), I have had virtually no problems with spider mites in recent years. Note: I have added a few other miticides to use a minimum of three difference chemical classes in rotation. Because I do not have good knowledge of the effectiveness of the other chemical classes, I have not included them in this report.

Fungus Problems

Fungus may be as much of a problem as insects or spider mites. Ground fungus is always around, and I get calls each season for help with fungus. If you notice healthy plants suddenly looking wilted and collapsing in a day or two, the most likely cause is ground fungus. With ground fungus, the main stem often turns black as the plant dies. Another symptom is that the main stem breaks off at ground level when one pulls out the plant. Rootshield and some similar beneficial fungus products have eliminated most of the ground fungus problem for those of us who use it. Here is what the product brochure says about Rootshield:

> Based on the highly-effective hybrid fungus Trichoderma harzianum, strain T-22, RootShield protects roots from many pathogens including Pythium, Rhizoctionia, Fusarium, Thielaviopsis and Cylindrocladium. Within 24 hours RootShield blocks and actively attacks pathogens by "eating" them: ensuring uninterrupted plant growth. Drenching RootShield WP wettable powder into the soil protects roots for up to 12 weeks and costs less than 1¢ per 6-in pot.

I strongly recommend that everyone in our area use RootShield on all dahlia plants at least twice a season. Keep Rootshield in the refrigerator and replace each season, because the shelf life refrigerated is only 6 months. By the time any dahlia plants start looking wilted and collapsing in a day or two, it is too late for RootShield to save the plant. However, Subdue, a chemical fungicide for ground fungus, if applied immediately, will often save the plant.

Another fungus disease, Botrytis, usually appears shortly after the hot, humid weather starts, especially on bushy plants. Botrytis appears as a blackening on the edges of new foliage. Use a teaspoon of Cleary 3336 per gallon of water as a soil drench around plants with these signs. One treatment often cures the problem. Watch to see that new foliage comes out looking normal after treatment. Cleary 3336 has been available for many years and is considered one of the safest chemicals.

Summer fertilizer

Dahlias grow fastest during hot weather -- as long as they receive sufficient water and nitrogen. A key factor in using fertilizer is to avoid applying excessive fertilizers that could cause damage to ground water, and especially to rivers. Commodity fertilizers such as 10-10-10 or 5-10-5 tend to release nutrients rapidly and require multiple treatments to keep the plants green. The multiple treatments encourage runoff into ground water. The various Harrells products that National Capital Dahlia Society (NCDS) orders are coated to release nutrients slowly over the growing season. The slow, continuous release reduces the necessity for multiple applications and enables gardeners to use much less fertilizer. For

example, Harrell's 38-0-0 (the blue fertilizer) is pure nitrogen in a slow release form that provides extra nitrogen for three months from one application. By the time the Harrells 38-0-0 stops releasing nitrogen, we are into autumn, when we no longer want nitrogen (because nitrogen late in the season harms the keeping quality of tubers). Other good sources of nitrogen to help the plants through the summer are urea and Milorganite (composted sewage).

Foliage feeding focuses nutrients directly on the plants, which absorb the fertilizer through the leaves rather than from the ground. Fish and seaweed based fertilizers applied as foliage feeders generally have organic approval, and the plants generally look much healthier after each application. The downside of foliage feeding is that the effect of any spray tends to last only for approximately a week, so one generally requires frequent applications. Foliage feeding, especially when combined with a spreader sticker, tends to minimize runoff into ground water.

For an uncoated nitrogen such as urea or Milorganite, consider using one pound of nitrogen per 1000 sq. ft. and treat every 3 weeks or so (as needed) through the first week of September. For a coated, time release source such as Harrell's 38-0-0, I recommend a single early summer application of 2 pounds per 1000 sq. ft. To calculate the amount of nitrogen, look at the first number of the analysis. NCDS sells the Harrell's 38-0-0 in 5 pound bags. Five pounds contains 5 x .38 = 1.9 pounds of nitrogen. Thus a 5 pound bag of the 38-0-0 would give 1.9 pounds of nitrogen -- a good amount to provide a nitrogen boost for 1000 sq. ft. of dahlias for the summer.

Sulphur is one of the minor nutrients for dahlias. Sulphur helps plants use nitrogen more efficiently, so adding sulphur gives the plants a burst of growth. During hot weather, plants often need sulphur to thrive. One of the best sources of sulphur is potassium sulphate, 0-0-50, which is 17 percent sulphur. I recommend using 2 to 4 pounds of 0-0-50 per 1000 sq. ft. every few weeks until late August to keep dahlia plants thriving. (Do NOT use Muriate of Potash, 0-0-60 or 0-0-66, because it does not contain sulphur and can burn the plants.) An alternative source of sulphur is Epsom Salt, magnesium sulphate. One may use up to a tablespoon of Epsom Salt per gallon of water per established dahlia plant (less for smaller plants) to give the plants a burst. Plants treated with Epsom Salt will show a burst in growth and greening – but if the plants are setting buds, expect distorted blooms (especially multiple centers, which appear as elongated centers). One may also use up to a tablespoon of Epsom Salt per gallon when spraying to give additional sulphur through foliage feeding. Do not use Epsom Salt at more than one third strength (a teaspoon per gallon) as a soil drench once the plants start blooming.

Our courses are written by dahlia enthusiasts, not necessarily scientists or horticulturalists. These enthusiasts are pleased to share their experience and best practices with you. Please keep in mind that there are a variety of opinions in the dahlia community and that different solutions and procedures work in different circumstances and locales. We urge you to participate in a local society where you will meet great growers with knowledge of growing dahlias in your area…and you'll have fun!