

ADS Dahlia University – Supporting Your Dahlias

*The following article by Alan Fisher, ADS Committee Chair for Garden Dahlias, 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 we know that 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.

Early Season Hints for New Dahlia Growers

Where to Find Dahlia Tubers and Plants

The best stock of tubers and plants comes from dahlia specialists. Mass merchants or general nursery suppliers tend to carry older varieties, and much of this stock is diseased. The odds of finding the best dahlia varieties (new and winning cultivars) improve with dahlia specialists.

- Many dahlia suppliers are small operations with limited stock and often sell out early. Check out our [advertisers](#) for some suggestions.
- Many local dahlia societies sponsor tuber and/or plant sales. This is a great place to get tubers that grow well in your area. Find society websites by state [here](#). Check [here](#) for sales known to ADS.

Planning Your Dahlia Garden

1. One should test the soil set aside for dahlias at least every three years; more often if convenient. Later I'll go over how to read a soil analysis – what is important and what is less important.

2. Plan what to grow where. Dahlia plants grow tall and bushy. **I recommend tying dahlia plants to sturdy stakes.** Some growers use plastic mesh and have the plants grow through the mesh to hold them in place. Most commercial growers use this sort of system, and you will see it at the NCDS trial garden. Many growers near the Pacific Ocean use this method, especially since earlier shows (during July and August) and cooler weather mean that the dahlias do not grow as tall as they do in other parts of the country.

The mesh system requires that the plants not grow overly tall. Other than specifics to each dahlia cultivar, two factors largely affect the height of the plants. First, the hotter the temperature, the taller the plants tend to grow. Second, the more shade, the taller the plants grow – the plants reach higher to gain more direct sunlight. Third, bushier plants do not grow as tall as plants groomed for fewer laterals. Because I grow more than 200 plants and care for them by myself, I

restrict all my plants to 4 or 5 laterals until September. If I grew my plants bushy, I would need to spend considerably more time tying, grooming, and otherwise caring for the plants. I give up quantity of blooms in favor of larger and better blooms.

If you chose to use stakes, I recommend heavy duty stakes. Here are some options:

- a. Wood stakes from Home Depot or similar. These stakes come in 6 foot lengths and are easy to use – but I found that they rot (in our area) if used for more than a single season.
- b. Rebar – ½ inch diameter, cut to size. Rebar is inexpensive but requires cutting. I also strongly recommend filing the ends to get rid of sharp edges. Many who use rebar paint it.
- c. Plastic coated steel stakes. If you use these (as I do), use only heavy duty stakes. One can find the stakes in 6, 7, and 8 ft. lengths. I have quite a few of each of these lengths. California Plastics has two weights. For 6 ft, for example, they sell 6ST and 6HD. The ST (standard) are NOT strong enough to hold up a dahlia plant. They will bend and break, often late in the season when the plants become heavy. 6HD, 7HD, and 8HD are all heavy duty and will last for several years. There are similar stakes by other companies. All these stakes come from China. Look at Ebay.com, AM Leonard, and similar sites for offerings. If you see two different diameters for the same size, use only the larger diameter. Check whether the companies in question (AM Leonard, Agricultural Solutions, or other) have on line coupons before placing an order.
- d. Bamboo stakes – if your ground is soft enough (because bamboo does not have a sharp end to go through hard soil, bamboo stakes, one inch thick, are inexpensive and last for a few years.
- e. Search on line (Google, etc) for 6 ft. plastic coated steel plant stakes, bamboo stakes, etc. Do the same for 7 and 8 ft if you want taller stakes. Google will bring up suppliers and prices. Cross check for prices on Ebay.com.

3. Spacing for dahlia plants. Ideally space dahlias 33 to 36 inches apart. Alternatively, plan rows 36 to 40 inches apart and have the plants in each row 30 to 36 inches apart. Dahlia plants become bushy, and leaving less room between adjacent plants or rows is asking for a jungle by Labor Day.

Getting Ready to Plant

1. Interpreting soil test results. Labs that perform soil tests normally provide specific analysis (recommended range of results for most tested items). Soils vary widely across the country. In much of the eastern portions of the country, soils tend to be acidic (pH less than 7). In many parts of the west, soils tend to be alkaline (pH greater than 7). The optimal range for pH is between 6.3 and 6.8, a range where most nutrients are available to plants to absorb. For my area (central Maryland), I prefer to start the season with a pH of 6.8, because the chemical process of making nitrogen available to plants makes the soil more acidic over the season. (A chemist can explain how nitrogen has this effect.)

Fertilizer requirements depend heavily on local growing conditions. The hotter the summer, the more one must add water. Those growing in raised beds tend to need more added water than those growing on the ground. Nutrients that are water soluble need replacing more in these conditions than in a garden in a cool climate, especially if the beds are not raised above ground level. The best way to identify nutrient needs during the growing season is to “read the foliage” – look carefully at plants and see what the plants seem to need. When in doubt, see an experienced local grower or ask a Master Gardener to help.

Fertilizer products list three numbers, such as 19-4-8. The first number is nitrogen; the second,

phosphate; the third, potash. For the Harrell's product I use, one might look at the numbers and cry that it is a lawn fertilizer. However, for a time release product that releases nitrogen over six months, one might best consider the nitrogen to be 3 per month – a more normal sounding number. Nitrogen is highly soluble in water, so it leaches out from watering and rain over the course of the growing season. If soil nitrogen is high in October, near the end of the growing season, it will probably have washed away over the winter. For this reason, soil labs do not provide an analysis of the nitrogen level in soils.

Phosphate (second number) is almost entirely non-soluble in water. It sits in the ground until the plants use it. When phosphate is high, as it is in soils where owners have added inexpensive fertilizers for years, the phosphate is likely bound to other elements in the ground and not available to the plants. For this reason, the Harrells adds a small percentage of phosphate. If one wishes to add phosphate beyond the small amount in a good fertilizer, I strongly recommend doing so through a liquid fertilizer sprayed on the foliage. Let the plants absorb the phosphate they need through the leaves, and try to avoid putting more phosphate in the ground.

Potash (potassium) is moderately soluble in water. Potash helps develop strong roots and tubers, and it helps a lot for plants during hot summer weather. The best way to add potash is to use potassium sulphate, 0-0-50, as the hot part of summer is about to start and a couple more times at least three weeks apart. In addition to 50% potash, 0-0-50 is 17% sulphur, and many soils tend to be low in this important nutrient. Over the years, I have found that a treatment of around 5 to 7 pounds of 0-0-50 gives my plants a big boost – it seems to enable the plants to use the nitrogen more effectively. Because I have raised beds and hot summer weather (often with almost no rain for two months), I must water much more than most dahlia growers. The nitrogen, potash, and sulphur leach out more rapidly than average in my garden, so I must replace these nutrients during the season.

For more on minor and micro nutrients, look up articles on soil analysis. There have been some excellent such articles in the Bulletin of the American Dahlia Society over the years. Use the on line Index of past issues to search for a couple of these articles.

2. Look at soil test results and decide on fertilizer. **If the soil lab calls for 5-10-10 or 10-10-10, ignore that recommendation.** These recommendations are for the cheapest commodity fertilizers – products that will cause many problems. NCDS experts recommend and use Harrell's 6 month time release fertilizer. We use 19-4-8, a 6 month time release with 6 micro nutrients. The first number is nitrogen – because the nitrogen releases over the entire 6 month period, it is essentially more like 3 per month (less early and late in the season and more during the summer.) Nitrogen is water soluble, so it leaches out with rain and watering. That is why one needs a time release for nitrogen.

Time release fertilizers, such as Harrells, have the nutrients encapsulated in plastic beads. The plastic beads remain at the end of the season and often are visible the following year. Do not make the mistake of believing that these beads still contain fertilizer. At the end of the growing season, the fertilizer will be gone and what remains will be empty beads that will break or decompose slowly.

The second number is phosphate, which is essentially not soluble in water. Most soils in our area have very high phosphate from years of using poor fertilizer. Most of that phosphate is bound up and not available to the plants. Other than the Harrells, one should try to apply phosphate almost exclusively through foliage feeding, not on the ground.

The third number is potash, which is fairly soluble in water. Potash is especially important in the summer – but best from potassium sulphate (0-0-50) and **never** from muriate of potash (which as a salt and harms the soil). (Miracle-Gro, for example, uses muriate of potash, so I would never use the product.)

Minor and micro nutrients – we can discuss briefly.

3. How to use time release fertilizer. Dahlia feeder roots grow along the soil surface, primarily between mulch and the top of the soil once one adds a mulch. One should therefore apply the Harrells fertilizer only at the soil, NEVER below ground or at the bottom of a hole when placing a tuber in the ground. If your soil is subject to erosion, mulch lightly or rake the fertilizer lightly into the top half inch of the soil. I apply the fertilizer in early May, shortly before placing the plants in the ground. There is no reason to apply the fertilizer before planting, especially since the Harrells fertilizer will not release fertilizer until the soil temperature warms up in early to mid May. (These dates are for the mid-Atlantic area. Dates vary by region of the country.)

Note: fertilizer manufacturers select the rate of fertilizer release based on anticipate soil temperatures during the growing season based on local conditions. For example, Harrells, a company located in Florida and nearly southern states, selects a soil release temperature ten degrees greater than does Scotts, a company based around Columbus, Ohio. For us in Maryland, a time release rated 5 to 6 months for Columbus, OH, will probably last a bit less than 5 months, while a product rated in Florida for 5 to 6 months will certainly last a minimum of 6 months in our area.

Starting Tubers

I almost never plant a tuber directly into the ground. In the ground, squirrels often dig up the tubers, leave them on the ground to dry out in the sun, and then move elsewhere. Also, if a tuber is slow to emerge, is it ok? Some tubers rot in the ground. Others are fine but do not emerge until the soil temperature warms up enough. One can then poke around and risk harming a late starting tuber when looking.

A much superior method is to start tubers in 4 to 5 inch pots and leave them on a table outdoors. (I leave mine on our back deck.) Small pots warm up much faster than soil in the ground, so the plants will get a much faster start in pots. Squirrels do not bother my pots. If a tuber is slow to develop, I can check easily to see what is going on. I start my tubers in late April through May and start moving them into the ground when they are actively growing and the calendar date (and weather forecast) indicate that the danger of frost has passed. In Rockville, the safe date is around May 20. A bit further out, around Gaithersburg, some of our growers have had a late freeze kill their dahlias after May 20. In other areas, the safe planting date can be 10 days earlier. Even so, dahlias will grow faster in pots early in the season than in the ground.

What is a desirable starting mixture for tubers? Coir has taken over from Pro-Mix as the most often recommended potting product in much of our area. Pro-Mix is primarily peat, a product harvested from peat bogs in various northern areas. Because of environmental concerns over using up peat bogs, there was a search for a renewable source. Coir is highly compressed ground up coconut husk. I purchase coir in 11 pound blocks and mix each with approximately 2 cubic feet of horticultural vermiculite. For me, this combination takes around 12 gallons of warm to hot water to fill a large wheel barrel. (The coir will dissolve faster in hot than in cold water.) With this mixture, an 11 pound block of coir plus vermiculite makes sufficient potting mixture to pot up around 100 4 to 5 inch pots.

For each pot, I start with potting mixture, add approximately ½ teaspoon of time release fertilizer, and then push the mixture to the sides and bottom of each pot. I then add more potting mixture – WITHOUT fertilizer – to the middle of the pot. The tuber goes in the middle of the pot, so it does not touch any fertilizer. As the tuber grows, feeder roots reach to the edges for fertilizer. (Too much fertilizer against baby feeder roots can burn them.)

By the time I start my tubers, it is normally mid to late April. I start pot roots and tubers that I

want to use for cuttings first. For tubers that I want to go straight into the ground when ready, I try to start them around three weeks before I want to move them into the ground (May 20 in Rockville, where I live). The optimal time to move a rooted cutting (plant) or a started tuber into the ground is after the danger of frost has passed and when feeder roots start appearing at the bottom of a 4 to 5 inch pot. On average, in my back porch (with tables full of dahlias in small pots), it takes three weeks for started tubers to reach this point.

When is a tuber in a pot ready to put in the ground? Optimal time is when the top is growing, at least a few inches high, and there is evidence of feeder roots coming out of the bottom of a 4 inch pot. (The same guideline goes for a cutting or a plant.) If the young tuber is more than a few inches tall and it is getting pot bound, the best time to move to the ground is past. (Once pot bound, it will be more difficult to separate the tubers in the fall.

Protecting Dahlias in pots and in the ground early in the season.

A significant problem for dahlias (at least in areas with humid summers) is fungus, especially ground fungus. **Beneficial fungus (a living product with a certain life cycle)** treatments in recent years have eliminated the vast bulk of ground fungus problems. The best product is Rootshield Plus, which I purchase as a wettable powder (Rootshield Plus WP). For most crops, the recommended dosage is one tablespoon per 2 gallons of water – **use twice per season, 8 weeks apart**. I fill all my 2 gallon watering cans with water, then add the Rootshield Plus WP, stir well, then treat. In the spring, for dahlias in pots, do a typical watering with the Rootshield shortly before starting to move plants from pots into the ground. In July, for the second treatment, I figure approximately five plants per two gallon watering can. **For maximum shelf life, keep Rootshield in the refrigerator, and do not keep past the expiration date (usually one growing season).**

Slugs can kill young dahlia plants and do significant damage later in the season. Use slug bait in and around the garden before moving plants into the ground, and treat in a band of three feet on all sides of the dahlia plots. (Slugs will come in from lawn and bushes.) Repeat regularly, because it is much easier to keep slugs out than to get rid of them once they get into the garden. **Iron phosphate is an environmentally friendly slug bait**; methaldehyde is a less expensive slug killer in most slug products. While one reads concerns about small animals and methaldehyde, I have never seen any animal show any interest in slug bait, which is all over my garden areas.

Other insects – The severity of insect problems varies widely. Areas with very cold winters and summers with low humidity may have limited insect problems. Regions of our country with hot, humid summers tend to have much greater insect problems. Dahlia growers vary in how much they tolerate insects. The worst insects are those that bring virus from other plants into the dahlia garden, or that spread virus among the dahlias. The three major vectors for spreading virus are the following insects: humans (yes, us), aphids, and thrips.

Humans: to avoid spreading virus, use a solution of one part bleach to ten parts water to sterilize cutting or grooming instruments between plants. Also use this solution to sterilize hands when moving from plant to plant.

Aphids: Aphids and ants live in a symbiotic relationship. If you have aphids, you will see ants. If you see ants, there are aphids around.

Thrips: thrips are very small, and I never see them. Seek help from a local master gardener or experienced dahlia grower.

Some insecticides act like growth and fertility hormones for spider mites. Using these insecticides will cause more problems than they solve. **Avoid any insecticide in the carbamate**

family (Sevin is the most common) or pyrethroid family (Talstar and many others). The **safest environmentally friendly insecticide is Spinosad**, available in many products. I use **Conserve**, which is a concentrated product with Spinosad. Conserve is contact only, so spray front and back of your foliage.

For a long acting systemic insecticide, I use Merit, Benefit, or Marathon – a synthetic nicotine (Imidacloprid) that kills a wide variety of insects. **Most environmentalists and organic growers absolutely do not approve of Imidacloprid. The American Dahlia Society does not approve of this product.** Imidacloprid kills bees, so do not use the last couple of months before expected frost if you plan to collect seed. **There have been some allegations that bees may bring Imidacloprid back to the hives and kill bees there. The evidence on this question is inconclusive, especially since bees seem to stay in place, rather than returning to their hives, after contact with Imidacloprid.** Bees definitely have faced diseases and other challenges in recent years. Not all the causes are known, and these problems have arisen both in areas where Imidacloprid is forbidden and areas where it is used.

Neem oil products, which environmentalists permit, act as growth regulators for insects and mites – preventing them from developing from one stage to the next. I use **Azatrol**, a concentrated product, which works extremely well in combination with either Benefit or Conserve (or both in common). With this combination, I have had very few insect issues and extremely few problems with mites.

Horticultural oil smothers insects, mites, and their eggs. It is safe to use when temperatures are lower than 85 degrees. The oil will kill whatever it hits, but it has no residual effect. Using horticultural oil too often can lead to fungus problems, so it is best not to use it more than three times in a season. The oil will run blooms, so it is not a good choice to use after mid season.

Environmentalists also use horticultural soap and some other methods against insects. Local master gardeners can give recommendations. Some growers use beneficial insects, nematodes, and fungus products – all of which are widely available on the Internet. Beneficial insects, etc., may help and then move to other “restaurants” on neighbors’ properties. In going to environmentally friendly insect control, keep in mind the most important goal. Aphids and thrips can bring in virus and destroy the value of ones dahlias. These are the main targets of any insect control for dahlias.

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!

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