

## Urban Horticulture Note No. 1

### Durham's Weather

Gardeners who are new to Durham County - or Durham County residents who are new to gardening - will discover two main challenges: our heavy clay soil and our variable weather. The Durham County Master Gardener Volunteers can provide lots of information on these and many other gardening challenges. We invite you to call the Durham County Extension Center to learn more about horticulture and home gardening in Durham. Master Gardener Volunteers are in the office daily, and our phone number is **560-0528**. We welcome your calls.

### "If you don't like the weather, wait till tomorrow"

Abrupt temperature changes are the norm in Durham. Our weather swings from one extreme to the next; we can experience two seasons in a single day. These abrupt changes are stressful for plants.

Average monthly rainfall means little in summer and fall. Sometimes we get our entire month's rainfall in one or two hard downpours which wash right over our baked clay soil without wetting our plants' roots. The hurricane season, from June to November, usually brings us a few substantial rains, if not an outright storm.

Tree ring studies have concluded that 10- to 30-year periods of alternating drought and high rainfall have been the pattern for the past 1600 years. The last 30-year period was a wet one; we now seem headed into a dry period.

Average temperature means little at any time of year. We have spells of unusually warm temperatures followed by spells of unusually cool temperatures. We can go from balmy to frigid in one swift 60° plunge.

### We are in USDA Hardiness Zone 7 - BUT!

According to the USDA Plant-Hardiness Zone Map, Durham County spans Zone 7.

Northern Durham: Zone 7a = average annual minimum temperature 5°F to 0°F.

Southern Durham: Zone 7b = average annual minimum temperature 10°F to 5°F.

USDA Hardiness Zones are drawn solely on winter annual minimum temperatures. Seattle, Tucson, and Atlanta are all in the same hardiness zone (8) but their rainfall and summer growing conditions are very different.

Other factors - Winter hardiness is only one measure of a plant's suitability for a given area. Heat and drought tolerance, humidity tolerance, resistance to diseases, reliable dormancy, light requirements and soil preference can also be important. Take these other factors into account when hearing that a plant is "hardy to Zone 7."

Microclimate's - Within any hardiness zone there will be areas slightly warmer and slightly cooler than the temperature range indicates because of elevation, urbanization,

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wind patterns, and other factors. Examples of microclimates in your yard are: a spot protected from winds and/or sun by a structure, an elevated area exposed to winds, or a low-lying place where cooler air settles.

### **Adapted Plants**

Plant selection can be a challenge. Our climate is too hot for a lot of plants and too cold for a lot of others, and our abrupt temperature changes make it hard on the rest. Our hot, humid summer nights are the reason a lot of cold-hardy plants don't thrive here. And though our winters are mild, occasional arctic blasts nip our more tender plants.

Yet despite the extremes, there are many plants that do grow well in Durham County. When selecting plants for the landscape, be sure they are adapted to our humid climate and clay soils. Native plants are very worthy candidates. Many Asian plants also do well since their home climate is similar to ours.

Also make sure the plants you choose are adapted for the particular place you want to plant them. A plant that naturally grows in woodland swamps probably won't do well in a sunny, dry bed. Likewise, a plant native to North Carolina's mountains won't necessarily flourish near North Carolina's coast.

The Durham County Extension Center has specific information on many kinds of ornamentals, trees, and shrubs that are adapted for our area.

### **FALL IN DURHAM**

Fall is planting time in the South. Autumn rains and cooler temperatures refresh both plants and gardeners. It's a great time to plant or divide perennials, particularly those summer-bloomers. Shrubs and trees also do well when planted in fall or in winter. Our soil temperatures are warm enough for root growth almost year-round, so fall planting gives plants a head start on next summer.

Cool-season grasses (which include tall fescue and Kentucky bluegrass) do best when seeded in early September. Cool-season lawns seeded during our wet springs don't last through the summer, because their roots don't have a chance to grow deep into the soil before hot weather comes.

Established cool-season lawns protect themselves from the worst of the summer heat by going dormant; often they don't need mowing till fall. They'll do their best growing in fall, so give them two fall feedings.

Did we mention pansies? Pansies! And many other cool-weather-loving flowers) planted in the fall will bloom throughout the winter, and will keep going until the weather gets hot again. Seeing pansies return to glory after a frigid night is one of the joys of Southern gardening?

### **WINTER IN DURHAM**

**Winter damage can be divided into 3 categories: freezing, desiccation, and breakage.**

1. Freezing: Tender new growth is often damaged by early frosts in fall (when growth has not yet hardened off) or by late frosts in spring. In midwinter, when daytime sun warms up plants after an overnight freeze, bark may split on trunks and branches. Young trees are particularly susceptible; wrap trunks with cloth or paper to reduce the chance of bark splitting.

2. Desiccation from winds: Dry winter winds carry water away from leaves, causing them to wilt and turn brown, a condition called "winter burn." If the ground is frozen, plants cannot take up more water from the soil to make up for that lost from their leaves.

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leaves. In dry winter weather, water deeply on warm days. Keeping plants well watered in winter increases their tolerance of our variable winter weather.

3. **Breakage:** Limb damage is usually caused by a combination of ice, snow, or wind, or by improper removal of ice and snow. Frozen, laden limbs are very brittle and snap easily if bent the wrong way. Remove snow by gently sweeping branches upward to lift off snow without further stressing the limbs. Often, drooping branches will recover after the ice and snow melts.

Frost damage will be less if there is some wind or cloud cover, also, since cold air settles, there's usually more damage in low-lying areas.

Usually no freezing damage occurs until the air temperature is 30°F.

Plants on the east or south side of a building or brick wall are most likely to be damaged in winter. These areas warm up quickly after a frosty night, and typically warm up faster in spring. The plants don't know whether to be dormant or not. New growth can be nipped, bark can split, and the plants can lose water rapidly when subjected to winter winds.

It often takes several weeks, sometimes months, after the cold weather to see the damage. Azaleas may not show damage until the first hot spell. Pruning tends to decrease hardiness temporarily, so delay pruning out damaged limbs until late in the winter, unless the damage is catastrophic. Plants often come back from the roots even if much of the top growth is destroyed.

### **Protecting Plants**

The purpose of covering a plant is to trap the radiant heat that is in the soil. Therefore covers will be more effective if they go all the way to the ground. Covers should not touch plants; use stakes to hold covers off plants as much as possible. Burlap, bed sheets, blankets, and agri-fabric are best materials to use. Plastic buckets work too. **DO NOT USE** plastic sheets or metal buckets.

A layer of mulch around the crown, or a covering of conifer branches, helps protect roots of tender plants. For special plants, make a wire cage around the plant and fill it with leaves.

After a frosty night, watch the weather in the morning. You want to protect plants from wind and sun, but leaving covers on when temperatures are rising quickly can harm the plants. A plastic sheet can quickly steam the plants.

Be realistic: sometimes you simply cannot protect all plants. Usually the foliage gets hurt but the plants survive.

### **Ice-Melting Substances**

Salt and rock salt are not recommended; runoff can damage plants. The same is true for calcium chloride. Do not use calcium nitrate, urea, or other nitrogen fertilizers to melt ice, as runoff from these materials will contaminate streams and groundwater.

Sand, kitty litter, or ashes are a better choice for providing traction on ice. These materials are less harmful to plants and do not stay in soil for any length of time.

### **Cold Weather Effects on Insect Populations**

Gardeners look out on their frozen winter gardens and console themselves with the idea that at least the cold will decrease the insect populations next year. It isn't necessarily so! **The picture is complicated;**

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some insects may freeze but others may flourish as a result of a cold winter. Certain caterpillars over winter well below ground level, whereas their predators over winter above ground. If predators are killed, caterpillars will be more abundant the following year. Japanese beetle grubs over winter below the frost line and neither suffers nor prospers as a consequence of freezing weather. A significant decrease in the number of blue-winged wasps would result in an increase of the green June beetle population. Don't count your bugs before they hatch.

### **Spring in Durham**

February is the time to prepare the lawn and garden for new spring growth. Cut back roses and other shrubs that bloom on new growth. Cut back liriope and ornamental grasses as well, so that fresh new foliage can take center stage. Apply fertilizer to flower beds and cool-season (fescue) lawns.

Warm-season turf grasses (which include Zoysia, Bermuda and centipede) are best planted in spring. Established warm-season grasses, which have been dormant during the winter, will green up again in late spring.

Spring-planted shrubs and ornamentals will need care and attention throughout the summer. Be sure to keep them watered regularly throughout the growing season. Better still, wait until fall to plant.

Warm, wet spring weather fosters outbreaks of fungal diseases, such as cedar-apple rust, black spot, and spot anthracnose on dogwood. Entomosporium leaf spot of photinia also prefers cool, moist conditions.

### **Spring Cold Snaps**

Frequently we have a frosty blast just when we think winter is over.

Daffodils may fall over at ground level in a hard freeze. If a cold night threatens them, cut some flowers to enjoy indoors! The bulbs will survive the cold; they're very hardy.

Blossoms on fruit trees are also vulnerable to late frosts. Most fruit crops have a chilling requirement, meaning a specified number of hours below 45°F, which varies with the species and variety. After the chilling requirement has been met, buds will swell as soon as there is warmth. Inevitably, in Durham, warm spells are followed by a freeze!

Apples need around 1200 hours below 45°F. Some varieties of peaches need only 700 hours; so they are more likely than apples to be damaged by a late freeze. Blueberries need around 600 hours.

The extent of damage depends on the stage of bud formation when the cold hits. Freezing is not entirely bad as most fruits profit from some thinning. Some fruit trees have latent buds, which swell and blossom if other buds have been frozen.

## **SUMMER IN DURHAM**

During extreme heat, Southerners know, you take it easy, don't overfeed yourself, and drink lots of water. Treat plants the same way.

For each 10°F increase in temperature, the speed of plants' metabolic processes doubles. This rule explains in part why some cool-weather plants do not thrive in Durham. Our days are hot but more importantly, so are our nights. Cool nights allow plants to build up a supply of energy for growth. Hot days and hot nights are the plant equivalent of working a 24-hour day, with no rest period. Neither plants nor people do well in

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these conditions. Cool weather plants have a shorter life span in Durham. They may also have increased susceptibility to diseases in our humidity, and root rot problems from our often-wet soils.

Going upward in elevation is climatically equivalent to going farther north. Some environments on North Carolina's Mt. Mitchell are comparable to those of New Hampshire. Rhododendrons and other mountain natives are rarely as spectacular in the Piedmont as they are in their cool mountain homes.

Tropical natives, on the other hand, enjoy the constant heat and humidity, and can provide refreshing, reliable summer color when used as annuals. Many can be over wintered as houseplants.

In a sunny location, the temperature on the soil surface can be higher than the air temperature. Hot soil dries out rapidly, causing plants to wilt and suffer. A layer of mulch 3" deep helps keep roots cool and moist.

If you have plants in containers on a porch or patio, keep them well watered during the heat of summer. They may need water daily, or even more than once a day.

**Watering in summer: Take it slow.**

Drought stress occurs when water lost through the plant's leaves exceeds the amount available to the plant in soil, or the amount the plant is able to take up via normal physiological processes. Those soft, warm summer breezes take water away from the plants as well.

Summer rains tend to be hard downpours that run off without soaking into the baked soil. Clay soils absorb water at about ¼" per hour. Even after a 3" rainfall, the roots of your plants may still be in need of water. Soaker hoses are a great help in watering during the summer. If you use a sprinkler for lawn areas, cycle it on and off so that water has a chance to soak in and reach the roots: water for 15 minutes, turnoff to let water soak in, water again for 15 minutes, turn off, etc.

Most plants need 1' to 1¼" of water per week.

**Fertilizing in summer: Don't.**

Never fertilize in the heat of summer unless you have adequate water and are diligent about using it. Fertilizers can make things worse by desiccating plants. They are salts and act like salt: they draw water away from plants' roots. Nitrogen applications can induce growth, which outstrips the roots' capacity to support the foliage. Few plants do much growing in extreme heat; forcing them to grow increases stress.

**FALL IN DURHAM**

Fall rolls around again with delightful temperatures and lower humidity. Time to get out and relax in the garden again! Plant those winter annuals, tuck a few daffodil bulbs in the ground, and enjoy the flush of green growth from refreshed perennials. Spring will be here before you know it. Summer may even be back tomorrow.

**Weather Statistics for Durham County**

(Data from the last 50 years)

Last freeze in spring:	April 13 - May 10	Average: April 28
First freeze in fall:	October 11 - November 6	Average: October 15

Growing season: Longest, about 193 days  
Shortest, about 173 days

Average sunny days per year: 230.

Our frost line is 8" deep, but soil generally stays about 50`E, which means roots grow nearly year-round.

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Our prevailing winds are from the southeast at an average speed of 7.7 mph.

### **FOR MORE INFORMATION**

Master Gardener Volunteers at the Durham County Extension Center can provide advice and helpful publications on many gardening and landscape topics.

The following are a few of the publications available from your Durham County Extension Center:

Urban Horticulture Note 1: Durham's Weather

Urban Horticulture Note 2: Durham's Soil

Urban Horticulture Note 3: Amending Clay Soils

Urban Horticulture Note 4: Improving Soil Fertility

Urban Horticulture Note 5: Submitting Samples for Soil Testing

Urban Horticulture Note 6: Understanding the Soil Test Report

Urban Horticulture Note 7: Planting Trees & Shrubs

Publication AG-69: Carolina Lawns

Publication AG-467: Composting: Managing Yard Wastes

Publication AG-71: Pruning Trees and Shrubs

Publication WQWM-151: Home Lawn Care and Water Quality

Leaflet No. 551: Bedding Plants: Soil Preparation & Fertilization

Leaflet No. 604: Protecting Plants from Cold Damage

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