To Harvest the Rain
(if we had some)

Whenever rainfall is in short supply, we become more aware of the costs of water, the depths of wells, and the limits of ponds. Then there arises an interest often expressed as “rain barrel.” Catch-22 is that when you need a barrel full of water is usually not a good time to try to fill a barrel. And when it starts to rain again, then we have short memories.

This issue comes around periodically, however. While we are now dealing with “severe drought” conditions, those conditions have been exacerbated by the demands of a concurrent heat wave. You know it might have been hot when people point to temperatures in the mid-90s as a break in the heat. The temperature expedites evaporation of water from soil, ponds, and lakes as well as transpiration of water by plants.

In many cases the leaves of plants are transpiring water more rapidly than roots can replace it. That causes leaves to exhibit symptoms of drought – wilting, leaf curl, and loss of color. Sometimes plants are able to replenish leaves with water during the evening when temperatures moderate slightly.

But property owners eventually face some tough choices. Under guidelines for “severe drought” (and “extreme” in the southwestern part of the county) they must ask themselves what are non-essential uses of water. Is your vegetable garden essential? Is your lawn essential? Is that oak tree that shades your home essential? All have value. But essential is a subject for philosophical discussion. Some would say all of the above are essential. Others would respond, as existentialists, that the only essential is death.

One of the challenges of life, both as individuals and as members of civilized communities, is managing water resources. That’s why we have wells, municipal water districts, and reservoirs. Another, perhaps primitive, method is the cistern or rain barrel. Essentially, a cistern is a water storage container connected to a collection/storage system. These systems are in routine use in many areas where groundwater is limited or where terrain may raise the cost of moving water great distances.

How safe is rainwater and how can it be used?
Water seldom exists in a pure state and almost always comes with contaminants. Atmospheric contaminants may consist primarily of dust but other considerations

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include fungi, bacteria, insect parts, and even radioactive materials. Rainwater is generally of good quality but there is no guarantee. It may be sufficiently acid to be corrosive. And that brings us to a bigger weakness in the safety of rainwater use: our catchment, conduction, and storage facilities.

How clean is your roof? Are there bird droppings? Do bats fly overhead? Do birds ever nest in the gutters? Have you ever cleaned out a stopped up gutter and noticed the odiferous fragrance. We may get thirsty enough to drink that water. But let’s begin by assuming we are not going to use our water collection strategies for human consumption. If you are considering using rainwater for consumption, then you will certainly want to investigate not only filters but also sterility techniques that are beyond the scope of Green Thumb Prints. But even if you only plan to use the water to irrigate or wash cars, there will be some filtration issues. Particles washed from a roof can clog sprinklers and scratch car finishes. So we will need some filtering. But let’s not get ahead of ourselves.

How much water can you catch?

A rule of thumb is that a roof of 1,000 square feet will collect approximately 600 gallons of water in a one-inch rainfall. That’s about 10 or 12 barrels. In the course of a year in our neighborhood, you might catch more than 25,000 gallons. How much of that do you want to store at any one time? The answer to that question varies with how much water you use, how quickly you can replace it, and how long you might go without rain? There’s a lot we don’t know.

You are probably in the best position to estimate how much water you might use. If you develop a rain catchment system and begin using it for irrigation before you need it, then you can see how far it goes. You can compare your needs with your supply. You can modify as you see fit. You will learn how well it works, if you need greater capacity, and if you need a pump for water distribution. A large storage tank can be an unnecessary expense if it stores more than you need. If you find you have insufficient storage it is possible to increase it by adding more storage and linking them together.

Designing a system

While we tend to think in terms of a rain barrel or cistern, that is only the storage device. There are other issues to consider including catchment, conveyance, screening, storage, and distribution.

The catchment is usually a roof. Depending on elevation and layout, you may also be able to collect water that runs from patios or decks. Rooftops may include the home as well as outbuildings. Rooftops are excellent for catching non-potable water but roofing containing asbestos, asphalt, or lead flashing should not be used for drinking water.

Conveyance includes the gutters, downspouts, and any other piping used to move water from the roof to storage. Gutters are usually made of metal for strength although plastic gutters may be suitable for small collection areas. Copper gutters have been implicated in plant damage from copper toxicity. Gutters should be supported every three feet with a downspout every 50 feet. If there are trees nearby, the gutters should be screened with hardware cloth or similar material. Likewise the inlet to downspouts should be screened to prevent blockage with sticks and debris. Avoid sharp turns in downspouts or consider including cleanouts.

Screening is an important technique to keep debris out of the storage tank. In addition to rainfall, roofs catch dust, bird droppings, dead insects, leaves, branches, and a wide range of other material. A variety of screening devices can be used. A fairly common design runs the water through a screen then to a small sediment tank. The sediment tank allows solid material to settle to the bottom. When water reaches an overflow outlet near the top, it then flows into the main storage tank. A trickle valve near the bottom keeps the sediment tank emptied. This sediment tank and screen need to be cleaned periodically. The diagram below is from Rainwater Harvesting Systems for Montana, http://www.montana.edu/wwwpb/pubs/ml9707.html

If you use just an open barrel with a screen, it should also be screened to exclude mosquitoes. If you are planning to use the water for agricultural production, it is always advisable to have the water analyzed for pH, nutrients, carbonates, and other contaminants that could affect plant growth.

The storage tank may be wood, metal, plastic, concrete, concrete block, or other material and it may be stored above or below ground. The material chosen may depend on availability and cost, but consideration should also be given to the end use of the water. Some sources suggest that barrels should be only food grade quality and that you should know the history, i.e. did someone use that barrel to mix herbicide? Some contaminants may be detrimental to plants and are not easily

![Diagram of a rainwater harvesting system](Image)
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removed.

If water is to be stored through the winter, then consideration must be given for freezing. A plastic barrel may freeze and burst. If that is the chosen container, emptying it (install a drain line) may be the best option for winter. Large containers may be buried if the tank material is designed for underground use. Large tanks may also need a manhole, vent, and cleanout sump. An overflow pipe is essential. Once that open barrel next to your house fills up and overflows, you don’t want the overflow running under the house. Plan for where the overflow will go.

Distribution raises the question of how you move water, which is actually rather heavy. But people do dip buckets into cisterns and haul water by hand. If you have a slope with your storage above your gardens, you can take advantage of gravity. Gravity pressure may not be sufficient to run sprinklers. So you’ll have to use trickle techniques or add a pump. But a 1/3 to 1/2 horsepower pump combined with a pressure tank gives you lots of options.

Because rainwater is often acidic, it can also be corrosive. That’s another reason not to introduce it into household plumbing where it can dissolve lead or copper fittings. Besides health issues, the household piping could be damaged.

Outdoor water lines that are not buried should have drains at a low point to prevent freeze injury. Actually, to prevent freeze injury, some intelligent being has to remember to open the drains.

We’ve come a long way from the barrel beneath the downspout, and what started out as a cheap way to save water looks a bit more complicated. You can make this as simple as that barrel with a dip bucket or as complicated as an underground cistern with pump capable of storing thousands of gallons of water.

The question you must answer is one of appropriate technology. Do you need thousands of gallons of storage capacity? Do you need it underground? Do you need a pump?

Above ground you can cover it with your artwork. You can paint it to blend in. You can hide it behind a fence or shrub. You can use it to reduce your dependence on commercial sources or to stretch your well supply. You can hold it in reserve for emergencies.

There are a lot of contingencies, and I never intended to write a book on the subject. But I have compiled a lot of references. There are pictures of how to put a hose bibb in a plastic barrel. How to link several barrels together. How to disinfect a cistern. How to build in diverters. I’ve put a lot of this together with a web page of links on rainwater, cisterns, and rain barrels. Do your homework. Then get started.

http://www.ces.ncsu.edu/chatham/ag/rainwater.html

Plant Hardiness and Mapping Out a Strategy
Tony Avent, www.plantdelights.com


In 1960, the US Department of Agriculture got into the act, publishing its first map, based on the data from 450 weather stations around the country. Unfortunately, they used different criteria from the Arnold Arboretum for establishing their zones, resulting in two conflicting maps.

The Arnold Arboretum map remained the standard over the 1960 USDA map until 1990, when the US Department of Agriculture, in cooperation with the US National Arboretum, updated the USDA hardiness map, using data from between 4,800 to 14,500 weather stations. Various publications by Dr. Marc Cathey, who oversaw the map project, have given a wide variety of radically varying weather station numbers. I expect the low end would be more accurate. Although Cathey also claims to have used a 15-year dataset, the 1990 map actually used a 13-year dataset from 1974-1986 (US) and 1971-1984 (Mexico). This revision shifted most areas into zones that were one half to one zone cooler than the previous Arnold Arboretum map.

What the Maps Don’t Tell Us
With hardiness zone maps, gardeners could now trace zone lines around the country to find out which plants they could possibly grow in their own region. Let’s see here...Raleigh, North Carolina, is in the same zone as Reno, Nevada, Dallas, Texas, and most of Vancouver Island in Canada...could this be right? In fact, the answer is a resounding “No.” You are beginning to see a few of the problems with the USDA winter hardiness map.

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Each of the current USDA 20 climatic zones (Zone 1, 2-10a,b, Zone 11) is based on the average minimum winter temperatures. In Zone 7b, which includes Raleigh, our average winter minimum temperatures should be from 5-10 degrees F. Keep in mind that there is often a major difference between what will grow in the "a" and "b" regions of each zone.

What the winter hardiness map doesn't tell us is how many times the temperatures dropped that low, and how long these low temperatures lasted. There are a number of plants that can survive 5 degrees F for a couple of hours, but could not survive these temperatures for a longer period, or more than once during a winter. Cold temperatures for one night is not the same as cold temperatures for a period of weeks, even though the same low temperature is reached in both cases. In many cases, a low temperature of 0 degrees F, may cause cellular damage that will start to heal if the temperature rises rapidly. If the temperatures remain low for several days, cell damage may continue and result in the death of the plant.

It is truly difficult trying to assign a hardness zone to all plants, especially when using the minimal 10 USDA Zones. This is why we find it critical to differentiate between the "a" and "b" zones whenever possible...we would prefer a "c" and "d" also. A drawback to growing new and different plants is that there is no information on their hardiness.

Another factor not taken into account by maps is winter acclimation. A plant growing in our gardens in midsummer can be killed easily by temperatures in the 20 degree F range. The same plant, if properly acclimated, can withstand temperatures of -20 degrees F. We see the exact same thing in some late spring frosts. After a certain number of hours at a specified temperature, each type of plant will switch from a dormant winter mode to a growing spring mode. It is at this point that winter hardiness is lost. If a late frost occurs while the plant is still in its dormant mode, there is little, if any, damage. If the late frost occurs after the plants have switched to active growing mode, even a mature tree may be killed.

If we have an abnormally warm fall, many plants that rely on cool temperatures to trigger dormancy can be killed when the temperatures drop suddenly. Several years ago, we went from 70 degrees F to 4 degrees F in the same day, suffering losses on many "hardy" woody plants that simply had not prepared well for winter. In Raleigh, we have found many "tropical" plants to be hardy that are not hardy further south in Florida. Unlike climates further south, we have a cool period in fall that allows the plants to shut down and prepare for winter.

Another phenomenon, seen in England and in the cool areas of the West Coast of the US, is the difference in winter hardiness due to a lack of summer heat. In many plants native to warmer climates, summer heat causes increased sugar production, which allows the plants to survive more stress in the winter. In areas without summer heat, a particular plant may be hardy to only 20 degrees F, while in an area with hot summers, the same plant may easily be hardy to 0 degrees F.

Another factor in hardiness is precipitation. I trade plants with friends in New Mexico, who are in the same hardness zone as we are in North Carolina. In New Mexico, the plants receive less than ten inches of rain per year, while we can receive more than five times that amount. We have discovered that there are a number of plants that can survive our cold temperatures, but cannot tolerate winter moisture. A good example is many of the barrel type cacti that are naturally found in very cold mountainous regions, but regions that receive no winter rainfall.

The opposite effect is equally dramatic. Snow that blankets many areas in "snow belts" helps to insulate many "non hardy" plants. Gardeners whose gardens are covered in snow most of the winter are often able to grow plants, especially perennials, nearly two zones outside their normal range, due to the insulating effect of the snow. On woody plants, a snow layer will often protect the roots and lower branches of a plant while the top growth is still killed back to the snow line.

Ice is an entirely different matter. Ice doesn't have the insulating effect like snow, since there are no buffering air spaces. A plant under an ice layer will actually "supercool" and become colder than the ambient outdoor temperature. Many growers use ice to protect crops during freezes, but this only works at a very narrow range of temperatures (not below 24F), and only if water is constantly applied (and at the proper rate). As the water freezes, it releases heat. As soon as the water application ceases, the protection disappears also.

How about provenance? Provenance, in lay terms, means where did the parents come from? Just like children, offspring bear some resemblance to the parents. Plants are similar, in that seed taken from a tree in Minnesota will be more cold hardy than seed taken from the same type of tree in Florida. Conversely, the plants from the Minnesota seed source might never break dormancy in Florida due to the lack of winter cold. Plants, however, that migrated from a cold region to a warm region during glaciation or other such event may not necessarily lose winter hardiness until many millenia later. This is why many plants from regions such as the Florida Panhandle (Zone 8b) are hardy to Zone 5.

The issue of provenance is important in perennials, but not nearly so as it is in woody plants. Since perennials usually die to the ground in winter,
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there are no above ground parts to sustain winter damage. Many reference books may indicate that red maples are hardy from Zone 2-9. Granted, there may be red maples growing in both areas, but to interchange seed from each area would likely prove disastrous. This problem is particularly dramatic in woody plants that are grown from seed. It is also usually the most important at the extremes of the zone for each plant. In the case that we mentioned, the gardeners in Zones 2,3 and 8,9 would need to be the most cautious of the provenance.

Cultivars, or vegetatively propagated identical plants (clones), keep the same hardiness regardless of where they are produced commercially. In other words, *Hemerocallis 'Stella D'Oro'* has the same hardness whether it is produced in Florida or Chicago. The hardiness of a plant is based on the origin of the original genes, not where we, as humans, move the plants.

Also related to hardiness is the issue of fertilizers. Research has indicated that a fall application of a high potassium fertilizer (assuming the plants or soils are deficient) aids in winter survivability of many plants. Conversely, an early fall application of nitrogen can make plants which are not induced into dormancy by day length, continue to grow, causing them to be more susceptible to winter damage.

We have all heard about not pruning some shrubs in late summer and fall. This is because some plants respond to pruning by producing new growth, which is quite tender and is easily killed since it has not become acclimated to the cold temperatures.

If you enjoy growing plants in zones that are too cold, try to create microclimates. Microclimates are areas of your garden that are particularly protected, such as near a brick wall, near heat vents from the house, near a body of water, between two structures, in courtyards, or other such areas. Good plant nuts can usually squeeze out an extra zone in either direction...that should build some egos! If you enjoy experimenting with marginal plants, I urge you to invest in battery-operated digital min/max thermometers. These can be placed around your garden and will record and save minimum temperature readings. You can determine which areas stay warmer in the winter and use this information to site marginal plants.

As mentioned, the siting of marginal plants is critical. Marginal evergreens should be located on the north side of a structure or in some shade in the wintertime. With the ground frozen, the evergreen foliage is desiccated since water given off to the sun and wind cannot be replenished. With deciduous marginal plants, a location in a sunny spot will allow the ground to warm, often making the difference in survivability.

Not to be overlooked are rodents that are active in the winter. Many reports of plants that didn’t survive the winter temperatures are actually plants that have become dinner to hungry rodents. Be aware particularly of voles, tiny rodents that tunnel around your plants (especially the expensive ones) and snack during the fall, winter, and spring. A dead plant with a quarter-sized tunnel nearby is a sure sign of voles. Check with your local Cooperative Extension service on eradication methods available in your area.

**Heat Hardiness Maps**

One of the most frustrating problems for gardeners in the south is summer hardiness. Reference books and most plant catalogs have completely neglected the effects of heat on plants. Many plants from the north are not able to withstand our hot summers. In 1997, the American Horticulture Society published a "heat map", and while a good idea, the map as published serves no practical purpose for gardeners. The Heat-Zone Map confuses gardeners with two sets of numbers...i.e., Zones 5-9 and 9-5. One set of numbers is for cold and one for warmth. There is no reason that one complete map could not serve both needs.

A good example of a heat hardiness discrepancy is lady's mantle (*Alchemilla vulgaris*), a perennial featured in English gardening books. Due to our summer climate in Raleigh, NC, it is virtually impossible to grow this plant in the south. Another example is the beautiful mountain ash (*Sorbus sp.*) with the bright red berries in the fall. Try as we might, the mountain ash will not tolerate our summers.

But wait, gardeners in Zone 7 on the West Coast can grow these plants successfully...what gives? The Heat-Zone Map simply shows the number of days above 86 degrees F for each region of the country. Heat hardiness is more an issue of night temperatures, humidity, and precipitation during the hot season, not simply the number of days above 86 degrees. As we mentioned, another wrench enters the picture when we talk about night temperatures as compared with day temperatures. In many cases, the culprit is not only the high day temperatures that cause plants problems, but also the high night temperatures. During the day, plants store up energy produced through photosynthesis. If the nights are cool, the energy goes into growth of the plant. If the nights are too warm, the energy is burned up by the plant. Many plants, due to their metabolism derived in a cool night climate, are not hardy in other areas, simply because of their warm night temperatures.

There is still another factor in heat hardiness that we have overlooked...one of dormancy. A hosta, for example, will not grow well in parts of Florida, (parts of Zone 9, and 10). The problem here is that temperatures do not drop low enough in the wintertime for the plant to go completely dormant. Many plants, both perennial and woody must have a specific dormant period in order
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to start growth again in the spring. A hosta must be exposed to at least one month of temperatures below 40 degrees F. If this temperature requirement is not met, the plant will begin to decline in the spring, or in the case of some trees, will never resprout in the spring until the dormancy requirement has been satisfied.

Good Maps Gone Bad
After the 1997 Heat Hardiness Map fiasco, the American Horticulture Society made an even bigger horticultural faux pas when, in 2003, they published a draft revision of the 1990 Hardiness Zone map. It’s called a “draft” version because interested parties notified the USDA about the impending screw-up just prior to publication, and the project was halted immediately. The 2003 draft map, using data from 4,700 weather stations, was compiled using the premise that the climate had warmed so dramatically that only the last 15 years (1987-2001) of climatic data was needed. This recent data shifted Chicago, IL, into Zone 6, making for a true horticultural disaster when a real winter such as 2002/2003 occurred. The 2003 map also eliminated the “a” and “b” designations which would put two completely different climates, such as Wilmington, NC, and Wilmington, DE, into the same zone. This change was being made to make the map more “readable”. The 2003 map also added more tropical zones, 12-15. The 2003 map certainly tops the all-time horticultural “what were they thinking?” list. In 2006, the Arbor Day Foundation released a map similar to the 2003 AHS map, which made the same unfortunate errors in judgment by including only 10 zones and using a 15-year dataset.

New Maps on the Way
On August 18, 2004, a group of stakeholders met at USDA-ARS offices in Beltsville, Maryland to discuss the 1990 USDA Plant Hardiness Zone Map revision. The August 18 meeting included representatives from USDA-ARS, the American Horticulture Society, the American Association of Botanical Gardens and Arboreta (now American Public Gardens Association), university researchers, and representatives of the nursery industry. There have been several meetings since, as work on the new map progresses.

The map revision project will consist of two phases. In Phase I, the map will be reconstructed using the most recent 30 years (up from 15 years) of average annual extreme minimum temperatures. The map will also retain the “a and b” designations for zones 2-10, but not for zone 11 and zone 1. For the first time, the map will include a better breakdown of coastal/lake effects and elevation differences. The map will be made available on-line where it can be searched both by city and zip code. It is our hope that the map will be finished by the end of 2007. Phase II of the future project will hopefully involve overlay maps for other factors such as duration of cold, summer heat factors, and perhaps even airflow patterns.

Summary
What I hope you will realize is that growing plants can be very complex. The hardiness zone maps are a great guide, but are only a guide and only when the zones assigned to plants by nurseries are accurate. Don’t be frustrated when a new plant dies, and certainly don’t give up trying to grow that particular plant. After you kill it three times, use the compost you’ve created to help grow another plant.

Cultural Control to Prevent Tree Pests

I frequently receive calls from residents who have placed some economic, social, or emotional value on a tree that is no longer measuring up to expectations. Often by the time a tree is showing evidence of decline, it has been declining for several years. In these cases it may be difficult or even impossible to reverse the continued decline.

The obvious evidence of a problem may show up in the form of an insect attacking a weakened tree. As an entomologist recently suggested, “healthy trees are often capable of combating mild insect attacks. In fact, many of the telephone calls we receive are about insects that normally attack only dead and dying trees and are not the cause of the tree’s problem.” In cases like this, the insect is often a predictable stage in the decline of a tree.

What can you do for a tree to keep it healthy? Here is a short list:

Start with healthy trees. If you are starting with a palate that includes a few trees where you are planning to add a building, hire an arborist. Most of us are woefully unqualified to evaluate tree health. We assume that if it has any leaves, it “has a chance.” If giving it a chance is your objective, go with it. If a shade tree or a pleasing ornamental is your objective, get professional advice before any clearing of the property begins. If the tree is large enough to be perceived as important, many lots are not large enough to protect that tree and also accommodate a house. We must be realistic. In many cases the act of placing a home near an established tree creates a de facto hazard.

If you are purchasing trees, inspect the root ball. It should be covered with white roots to the bottom of the container. The height should be proportional to the size of the container and (Continued on page 7)
Cultural Control to Prevent Tree Pests

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caliper. American Standard for Nursery Stock specifies what proportions are appropriate. This document is available via the Internet. (Be aware that it is a pdf file exceeding 100 pages and may be a slow download.)

Select a species appropriate for the site. Consider the amount of sunlight available. Some trees do best in the shade of the understory; others need full sun. Most will benefit from good drainage. If you can’t provide good drainage, select a tree that will tolerate poor conditions.

Prepare the site prior to planting. No plant is native to or adapted to a construction site. Roots will grow better if the soil is loosen and can provide water, oxygen, and other nutrients. Take a soil sample and adjust pH before planting. Some nutrients need to be dug into the soil to be effective, preferably before roots get in the way.

Fertilize only after establishing a need. Young trees may need small amounts of fertilizer to get established. Once established, most trees do not need a regular fertility program. Nitrogen fertilizers especially are known to promote rapid growth. Rapid growth in trees leads to weak structure and perhaps a hazard tree in years to come. Excess nitrogen may also encourage insects.

Minimize lawn in the root zone. If you look at trees in their natural settings, you’ll find very little grass there. Likewise you find few trees on the plains and prairies. The Great Designer did not put trees and grasses in the same places. Humans do that to their chagrin. Grasses do best in full sun (like the prairies), not in the shade of trees. Some grasses release chemicals (allelopathogens) that antagonize the growth of other species, such as trees. Grasses and trees compete for the same limited resources mainly water. Regular lawn fertility in the tree’s root zone is often more than the tree needs. Use mulch under the tree and avoid grass at least as far out as the drip line of the tree.

Avoid parking or driving vehicles beneath trees. In fact minimize all activities in the soil beneath trees. Even foot traffic leads to soil compaction and reduced root growth. No jungle gyms, no footpaths. Allow the tree its space. Don’t park there to change the oil even in summer.

Prune out damaged limbs. If you’re not up to climbing (and many of us aren’t after reaching a certain age), then hire an arborist. Tree injuries can sometimes be detected by insects within hours.

Keep the mower and weed trimmer away. No one can routinely get that piece of equipment close enough to get all the weeds/grass trimmed without eventually damaging the bark of the tree. The bark protects one of the tree’s most sensitive areas. Tree wounds do not heal. If the tree is healthy, it may be able to seal off a wound before insects or diseases get by. But the wound is a permanent injury that can be a weakness in years to come.

Do not consider a high value tree as a structural support for signs, hammocks, tree houses, or other human needs. Attaching things to trees creates wounds. Wounds provide points of entry for problems. Do not penetrate the bark.

Learn the art of compromise. You can break any of the rules above and most of us do. Some of the rules become unrealistic in light of certain situations. But understand that each violation costs the tree something.

Most of us eventually figure out that if we keep charging things to our credit cards, we eventually have to pay. If you don’t pay on a regular basis, the costs escalate via both addition and multiplication. A similar thing happens with trees. Then one day we look up and wonder how we let our debts get so far out of hand. It’s probably easier to get out of serious credit card debt than to salvage a tree that has been in decline so long that we are finally taking notice.

The tree is a living organism and it needs certain things to survive. It may be a very large organism and need a very large space to survive. A lot of that space is in the top foot of soil. If you love a tree, give it all the root space it needs.

“Routine” Fall Activities

There are a number of things we would normally be doing this time of year. This year all decisions must be tempered by the availability of water. September is optimal time for renovating fescue lawns in our area – if water is available. October is typically given to planting cool season annuals – if water is available. November is the earliest we want to plant bulbs – if the soil is not too hard and dry to dig. So the following comments are reminders, but must all be taken with a grain of salt – or a drop of wisdom. Fortunately, fall is a time when we need to cut back on water. Plants should begin to go dormant now, and most got an early start. Reduced water use is a part of that strategy.

Fescue is a cool season grass that will grow well from about September

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“Routine” Fall Activities

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through May. It may survive the summer and usually needs to be renovated to look its best. Incidentally, I’ve noticed some fescue along the highway shoulders that looks greener than some lawns. I wonder if paying too much attention to lawns is counterproductive.

Renovation for fescue typically includes a core aeration and a light reseeding followed by fertilizing. A core aerator removes a plug of soil about the size of your finger and deposits the soil on the surface. As these plugs are broken up over time, soil gradually works its way back into the hole but it is much looser, better aerated, and offers better infiltration for water. Aeration is typically more successful if the soil is moist – after a rainfall or irrigation. Aerators may respond to dry soil as if it were concrete.

Reseeding is usually done to fill in thin areas in the lawn. About 1 – 2 pounds of seed is sufficient for 1,000 square feet in most cases. Six pounds is the suggested rate for seeding bare soil. Don’t overdo it; excess seed just leads to more plants competing for the same limited resources leading to weaker plants. The individual has to evaluate the lawn quality and decide how much seed will be optimal. Seed will not germinate until it absorbs water. Once it absorbs water, it needs a continual supply in order to grow roots to forage for itself. If you can’t provide water, there’s not much point in seeding.

About a pound of nitrogen is sufficient for 1,000 square feet of fescue lawn. That’s 10 pounds of 10-10-10, 12 pounds of 8-8-8, 20 pounds of 5-10-10, or 10 pounds of 10-20-20; each of those amounts will apply about a pound of nitrogen. Whether you need to apply any other nutrient and how much varies with your own soil. See soil testing below.

**Pansies, violas, snapdragons,** and other cool season plants can be planted when the temperature moderates by late September or October. If these plants are established before cold weather sets in, they usually survive as much cold as they will get in our area. They may lie down and wilt and quit blooming during what passes for severe cold here. But when it warms up a week later – or even later the same day – they rebound quite readily. These plants can provide color all winter long. Violas are typically best viewed up close. They make great plants for window boxes or pots on the deck. Pansies can be used the same way or to fill a bed in a high visibility spot for a great color impact. If you plant them about 6-8 inches apart, they make a dense planting with a bold color statement and provide less room for weeds to get a foothold. Snapdragons provide a good background height to enhance interest in the planting.

**Dig and divide perennials** that bloomed in the spring and early summer. You can dig and divide most perennials now, but this is the optimal time for early bloomers. Recovery is quicker if they are well watered before you plant. Water them in well when replanting. And remember that once the roots have been disturbed, you may need to pay a little more attention to their water needs for a couple of weeks. If you can’t water, you may need to delay this activity. Look around your gardens for bare spots that need a bit of color. Now is a good time to find just the thing to fill in those spots. You can plant new perennials from now right up to winter.

**Watch for cool season weeds** such as henbit, chickweed, and hairy bittercress. You can use pre-emergent herbicides to prevent some of these from getting established. Just remember those same herbicides will prevent other seedlings from getting established too. You can’t use them when re-seeding fescue. Once they are up, selective herbicides can be applied to the foliage in most situations. If herbicides are not in your repertoire, continue with hand weeding or whatever strategy you use. Be careful not to damage the roots of trees and shrubs with the hoe and the trunks and stems with trimmers.

**Continue harvesting annual or biennial herbs** (such as basil, chamomile, summer savory, and parsley) up until frost. Stop cutting perennial herbs (such as rosemary, thyme, fennel, and oregano). Allow them time to store energy in the roots for next year’s growth. Herbs seeds should be harvested as they change color but quickly before they shatter and fall to the ground. Seed bearing stems can be cut and placed in paper bags to dry. All herbs should be stored in the dark and in airtight containers.

**Clean up the summer garden.** Plant debris often includes fungi, bacteria, and insect eggs. While they may not have been severe enough to cause problems this year, allowing them to build up and survive the winter sets you up for problems next year. A better strategy is to remove old stuff and plant a cover crop in areas not committed to the fall garden. Annual rye, crimson clover, hairy vetch, wheat, or barley can be planted now. They will help reduce erosion, recycle residual fertilizers, and improve soil structure while adding organic matter.

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“Routine” Fall Activities

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Fall is also a good time to prepare the soil for the winter or spring garden. When the time is right for planting, you know how frustrating it can be if the soil is too wet to work. If your beds or rows are prepared this fall, then it can be much easier to get into the garden when the time is ripe.

Even though bulbs will be available in garden centers, don’t plant them before Thanksgiving. Bulbs planted early may start to grow before cold weather and stored energy will be lost. Buy now and keep them in cold storage (away from the apples, pears, peaches, plums, melons, tomatoes, avocados, and bananas; these fruits produce ethylene gas that can damage the bulbs). Wait at least until we have some sustained cold weather. Then plant them at least as deep as recommended for the bulb size. Most bulbs should be planted at least 5 – 8 inches deep. Perhaps planting bulbs is a good activity while you have family help during the Thanksgiving holiday weekend.

Plant trees and shrubs including fruit trees. Woody plants grow roots in cool soils. The more roots you can grow before next summer, the better plants will be able to forage for water and oxygen to meet the demands of heat. From October through December will be the best time for planting trees and shrubs. That includes fruit trees. Some of the small berries (grapes, blackberries, and blueberries) should wait for spring. But trees should be planted before Christmas.

Be prepared to harvest squashes, gourds, and pumpkins before frost. As the vines dry up, the fruit color darkens and the skin hardens. Check the skin with a fingernail; watch the ground spot to avoid rotting. In most cases it is desirable to leave a bit of stem attached. For long-term storage, gourds should be carefully washed to remove soil and any rot pathogens. Then store in a cool place out of sunlight with good air movement. All of these products should be stored cool, dry, and dark with adequate ventilation. It is best if they do not touch.

Mulch can help to moderate soil temperatures as well as reduce moisture loss. Mulch won’t provide moisture for the soil. But it does help reduce freezing injury to shallow roots. It allows the soil to cool gradually in the fall, moderates extremes of cold, allows warming gradually in spring, and moderates extremes of heat. It also reduces moisture loss to evaporation. Late fall is a good time to make sure plants are mulched. For the tenderest of plants, heap mulch up around the crown of the plant before the first hard freeze.

Soil testing can be done at any time of year. Estimated processing time for samples received this week (1st week in September) is one week. The time delay for processing samples tends to get a little longer throughout the fall. Then after Christmas the time delay stretches out to several weeks. Vegetable gardeners who didn’t plan ahead tend to be the most frustrated when they don’t have their reports back as soon as they hoped. So fall is a good time to get your samples in so that you don’t have to deal with delays in February or March. It will be a lot easier to take samples if we ever get any rain.

Visit the garden competition at the NC State Fair, October 12-21. Every year gardeners compete for prizes in various theme gardens. Check them out for ideas on both design and plant selection. And although appearance and ornamentation are important parts of these gardens, several will be limited to edible plants only. Something for everyone. While you’re there, don’t miss the greenhouse displays and flower judging.
Fall Classes Offered

Extension Agent Al Cooke will be offering a series of classes for home gardeners in October. Classes will be held in the Auditorium of the County Agriculture Building in Pittsboro and will begin at 6:00 p.m. and end no later than 8:30. Gardeners are encouraged to bring supper to class. Soft drinks will be provided but no food or snacks.

There is no charge for these classes but you are encouraged to pre-register. In order to assure any handout materials please call 919.542.8202 to pre-register at least one week before the scheduled class.

The following classes are being offered:

- October 9  – Gardens and Drought
- October 16 – Landscaping with Native Plants
- October 23 – Perennials for All Seasons
- October 30 – Plant Propagation

Beginners are welcome but should be aware that some basic knowledge of gardening is assumed for this group of classes. More basic concepts of gardening under local conditions will be offered in the winter. Those who have attended previous classes will be interested to know that the sessions on native plants and on perennials will include plants not covered in previous classes.