



Root Concerns

notes from the underground

An E-mail Gardening Newsletter from Cornell Cooperative Extension
of Rensselaer, Albany, Schenectady

PLANTS CLEVERLY ENDURE THE BIG CHILL

David Chinery

As a warm-blooded creature, all I can conclude is that winter is about basic survival. Howling wind, falling snow and plunging mercury has my old house's furnace working double-time. I'm huddled under an afghan, counting on my laptop computer to keep me warm. Perhaps it would be easier to go dormant like the plants outside, which are just as alive as me yet somehow better equipped to beat the chill.

So how can species such as oaks and maples, composed largely of water, survive double digit negative numbers while water itself freezes at a rather balmy 32 F?

For such woody plants, building up cold tolerance is a process. Stage one hardiness is triggered by the shortening daylight and cooler temperatures of autumn, which stop growth, encourage the shedding of leaves, and trigger other chemical reactions which are not completely understood. Just this decrease in light and temperature helps, allowing a stem to remain alive down to about 0 F, but no more.

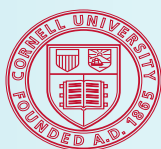
Next comes something called "deep supercooling." This ability to suppress the freezing of sap within plant cells is also somewhat of a mystery, but it allows many species to survive down to -40 F. Part of the secret here are recently discovered "anti-freeze" proteins, which inhibit the growth and recrystallization of ice within the living part of the cells. Certain animals can produce anti-freeze proteins, too, which led some scientists to insert an arctic flounder anti-freeze gene into sweet corn back in the '90's, hoping to make a hardier crop. While such tinkering with Mother Nature gives some people the chills, growing corn in Alaska would be super-cool.

The toughest of the tough – plants like paper birch, willow and red-twig dogwood – have another trick up their trunks to survive even colder conditions: dehydration. As temperatures plunge, water



Photos by Yvonne Keefe

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Photo: Yvonne Keefe

moves from inside the living cells into the dead cell walls, causing two good things to happen. First, water freezing in the cell walls causes no harm to the plant, since the cell walls are dead. Second, the sugars and other compounds inside the cell become concentrated, lowering the freezing point. This parallels the practice of putting anti-freeze solution in car radiators, so your Dodge Aspen is more similar to a quaking aspen than you might otherwise think.

Evergreen rhododendrons have a few tricks of their own, too. They look pitiful when their leaves droop and curl on a frigid day, but it's just a defense mechanism. Rhodos lose water through stomates, tiny openings on the undersides of their leaves, and the drooping shelters stomates from the wind. The trouble really starts when the soil freezes, cutting off the water supply from the roots, and causing browning of the foliage, a.k.a. winter injury, to occur. But amazingly, some cultivars have even this figured out. *Rhododendron carolinianum* 'P.J.M.,' one of the hardiest available, can lose up to 70% of its leaf moisture and be just fine, while the more tender *Rhododendron catawbiense* 'Grandiflorum' is injured when only 50% dehydrated.

Still shivering? Pass the arctic flounder, please.

Gardeners Resolutions

Chris Logue

Yesterday morning, dawned as a warm, windy rainy day with heavy gusts out of the south. I know the winds were from the south because I had to retrieve my snow shovels from the north side of the yard, where the heavy winds transported them. Until yesterday, my garden, located in eastern Rensselaer County at an elevation just shy of one thousand feet, had been covered in snow. Out of sight, out of mind for the winter.

This morning, when I went out to go to work, my garden plot, indeed the whole yard, was no longer covered in snow. No longer out of sight, out of mind. The view of the garden, with no cover crop sown, and a shriveled butternut squash and stalk of Brussels Sprouts still visible, was a not so gentle reminder of the things I failed to do at the end of last year's rather disappointing gardening season. I'm sure that the cover crop did not get sown and the debris was not cleaned up because of the heartache associated with fighting late blight (which did kill my tomatoes and potatoes but did not destroy my potato harvest) and my "favorite" weed hairy galinsoga. However, the rather messy view of my garden this morning does give me hope that 2010 will be a better year and that I will once again give the vegetable garden a try. It also gave me the inspiration for an article when one was due and for that I am very thankful.

That being said I resolve to:

- Give plants adequate space
- Mulch to keep down the weeds
- Not allow the galinsoga to go to seed
- Plant more broccoli, cauliflower and Brussels Sprouts
- Preserve more of my harvest
- Encourage my kids to garden and eat more vegetables
- Weed a bit of my garden every day
- Not get discouraged when the garden does not perform how I think it should
- Not plant too much
- If I do plant too much share the produce with others
- Try again in 2011





Let Me Plant a Seed

Sue Pezzolla

A recent article in *The New York Times* titled "Packets Full of Miracles" (1/21/10) polled gardeners as to their favorite seed choices. It is a fun read for a gardener certainly but it also caught my attention from a different perspective: *The New York Times* was publishing an article on starting plants from seeds and so this must be main stream. Until a few years ago, most gardeners preferred to buy transplants for their gardens. Seeds were used for those things a gardener wanted to grow that were not available as transplants such as carrots, corn or beans. That is definitely not the case today! Gardeners have become much more interested in starting their plants from seed either indoors or by direct sowing when the weather allows. Economics is one reason for the shift as *The Times* article suggests, a packet of 20 seeds is often only a few dollars whereas the same amount of transplants might be twenty dollars.

But I suspect there are other reasons for the change. There is definitely more interest in vegetable gardening, and gardeners that I talk with are more concerned about where their food has come from and what has been applied to it. They want fresh and to grow your own is as fresh as you can get. There also seems to be a renewed interest in nature (alleluia!) as well as the interconnectedness of all the eco-systems. I also notice that many gardeners are interested in growing more unusual vegetables and flowers and those often have to be grown from seed. And then there is the hunt for the seed and the journey may be a big part of the fun!

While planting time is months away, now is the time to plan your garden and gather the seeds.

Don't wait too long as mail order sources will sell out quickly. Garden centers are beginning to set up seed racks and while there is a lot of choice to be found there, mail order and the internet hold more options if you are after diversity.

The following is a list of some of the more unusual seed sources:

- Baker Creek Heirloom Seeds (rareseeds.com)
- Fedco (fedcoseeds.com)
- High Mowing Organic Seeds (highmowingseeds.com)
- Seeds from Italy (growitalian.com)
- Seeds of Change (seedsofchange.com)
- Territorial Seed Company (territorialseed.com)
- Bountiful Gardens (bountifulgardens.org)
- Native Seeds/Search (nativeseeds.org)
- Nichols Garden Nursery (nicholsgardennursery.com)
- Johnny's Selected Seed (johnnyseeds.com)



CHIVES
CONTAINS 100 SEEDS

- Renee's Garden (reeneesgarden.com)
- Seed Savers Exchange (seedsavers.org)
- Botanical Interests (botanicalinterests.com)
- Hudson Valley Seed Library (seedlibrary.com)
- Totally Tomatoes (totallytomato.com)



CAN YOU DIG THE DAHLIA? *Dennis Did*

David Chinery

Where have all the dahlias gone? Hard to believe, but they were once second only to the rose in America. My hunch is that two requirements of a dahlia's life – the need for staking the vigorous shoots and the mandated digging for winter storage – make them seem too inconvenient and old-fashioned for our post-modern, low-maintenance gardening world. Yet, the flowers they offer are simply stunning and unlike anything else you can grow.

My first exposure to the concept of dahlias was via TV. As a child I learned that Dennis The Menace tampered with Mr. Wilson's dahlias, and the degree of rage shown by the poor old man must have meant that, jeeppers, the flowers were really swell. Later I saw dahlias in my grandfather's garden, standing

at least six feet tall amongst the tomatoes. My appreciation didn't blossom until I attended the Iowa State Fair, where the horticulture building sheltered hundreds of cut dahlias in clear glass bottles, in every color of the rainbow, in garish combination colors, with scrolled, pointed, and curved petals, some flowers larger than a man's head. The Miracle-Gro induced, hyper-hybridized psychedelic display seemed shocking in such an otherwise conservative state.

The American Dahlia Society, ambassador for the breed, is helping to keep these colorful beauties alive. They recognize five flower size ranges, from M (miniature), up to 4 inches in diameter, to AA (giant), over 10 inches across. There are fifteen colors and mixes, including light blend, bronze, dark blend, variegated and bicolor. The flowers come in an assortment of shapes I can't describe, but are given names like miniature ball, incurved cactus, and waterlily. The result of all this genetic variation is that dahlias are classified into about 570 individual classes, and there are over 40,000 named varieties. Select your favorite characteristics on their website, (www.dahlia.org) and up pops a flower photo. I searched for a giant orange informal decorative, and discovered many, including the blazing 'Sam Huston.' Local societies host competitive dahlia shows, present classes to those who may be catching the fever, maintain trial gardens and sell tubers. Developing and keeping track of all this might take a Pentagon-sized facility, but I imagine the American dahlia people are working out of much smaller digs, surrounded by bushels of tubers.

So, if you like bejeweled sweatshirts, muscle cars with flames on the sides or anything rococo (even secretly), you will like dahlias. No doubt they are work. To start, you'll have to buy tubers, probably via a catalog. They

require full sun, ample water, good soil and fertilizer. Many are large plants, and unless you stake them, they'll lean, fall, and become a mess. Dahliaphiles who exhibit blooms disbud to make bigger flowers, sweat over soil fertility and even protect show-bound blossoms with umbrellas and screens. You can skip that, but you must dig the tubers in the autumn, store them in a consistently cold, but not freezing, place, and re-plant them in the spring. Is it worth the effort? Dennis and Mr. Wilson thought so.



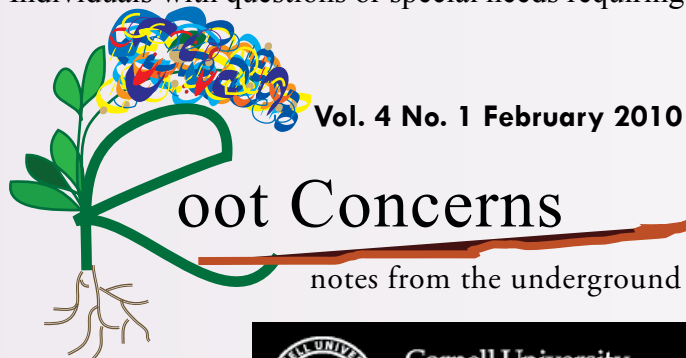
photo:from Swan Dahlia

GARDENING THROUGH THE SEASONS *Classes for Gardeners*

February 23 held at the CCE office in Troy 7:00 – 8:30 pm

“Flowers From The Underground: Bulbs, Tubers And Corms”- There are many wonderful plants from bulbs beyond tulips and daffodils! Linda Ford, Master Gardener, will discuss the wide variety of tender and hardy bulbs, tubers, corms and other root-like structures available, and how to buy, plant, grow and store them. Pre-registration is required. Each class is \$6.00 per person. Class size is limited. Registration at the door will only be accepted if space is available. Class may be cancelled due to insufficient registration. Classes may also be cancelled for inclement weather.

Individuals with questions or special needs requiring accommodation should contact CCE at (518) 272-4210



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