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How does your garden grow? With lots of new varieties, thanks to technology and globalization

By Jo Seltzer, special to the Beacon
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For gardeners, a trip to the local garden center in the spring is as tempting as a visit to the candy store. How do you choose between your old favorites and all the gorgeous new varieties? And aren't there lots more new plants every year than you found 20 years ago?

Yes, there are indeed many more choices today. This explosion is due to the impact of both technology and globalization on the gardening industry.

Developing, growing and marketing new varieties for gardens are big business. According to Bruce Butterfield of the National Gardening Association, about one in three American households (36 million) garden. These households spend \$2.3 billion on flowers and their care. In addition, parks, municipalities and businesses now maintain floral displays. This country is in a veritable blooming boom.

Of course plant suppliers are anxious to market the next big thing. According to St. Louisan Bill Ruppert of National Nursery Products, you may be tempted next year by a black petunia. And here in the Midwest, garden centers will be featuring the annual Angelonia, a snapdragon-like flower that loves heat.

In the 1990s, the original purple wave petunia was the next big thing. This All-America selection comes from Japan. Two Japanese brewing companies were involved in its development. A Suntory scientist discovered a sprawling petunia in its native Brazil. Although Suntory is primarily known as a maker of Scotch whiskey and other beverages, it has a garden plant division as part of its philosophy of "supplying products to enrich our customers' daily lives."

Seeds from the original plant were sent to a professor in Tokyo, and eventually one of his students took the seeds to Suntory's rival Kirin. Kirin also has a floral division, and its breeders developed the parents that are crossed to make the hybrid seeds in packets today. Today the American company Ball Horticultural produces and markets the original wave petunia and its many descendants with Kirin as a breeding partner.

The Wave Purple petunia was revolutionary. Besides its unique color, it grew like no other petunia on the market. It could cascade for hanging baskets, or it could spread like a ground cover. Wherever a stem touched soil, it would send down roots.

The rooting propensity was a boon to independent garden centers because the original wave petunia didn't do well when grown in the inexpensive six-packs that were the mainstay of the big-box stores. By the time a six-pack of wave petunias was ready to come out of the greenhouse and into the consumers' gardens, the roots were too entangled to separate. So wave petunias were best grown in four-inch pots that the smaller independent operations preferred. Today, some descendants of the original wave petunia even grow well in six-packs.

The wave petunia was developed the old-fashioned way, by breeding for seeds. This multi-year process means that each parent line is inbred for at least 10 generations, so that all its progeny are genetically homogeneous. One parent may be bred for color, the other for spreading habit. During the inbreeding process, any progeny plants that differ from the parents are discarded. Finally, a male parent line is crossed with the female parent line. At the time of flowering, all the pollen-producing anthers are cut off of the female, and she is fertilized with pollen from the male. The resulting seeds, called F1 hybrids, will grow into essentially identical plants.

Don't try to save seeds from your F1 hybrid plants, though. They will follow the laws of genetics and produce progeny with lots of variation. Think of it as somewhat like eye color in people. Two brown-eyed parents can have a child with blue eyes if each parent has a recessive blue-eyed gene.

The wave petunia story is representative of how many things were done in plant breeding until about 25 years ago. The explosion of new plants for gardeners today, though, is due to a layer of technology that preserves newness without extensive inbreeding. This technology is cloning. Plants can be cloned through division, through cuttings, through grafting and, in most new offerings, through tissue culture.

Take Brunnera macrophylla, a green-leaved perennial that blooms with forget-me-not-like flowers in the spring. The Missouri Botanical Gardens has proclaimed it a Plant of Merit. It is propagated by division. Growers subdivide the plant into smaller pieces.

At some point, a Brunnera macrophylla had a mutation that caused it to have some attractive silvery spots on its leaves. This plant, called Brunnera macrophylla 'Langtrees' was divided and divided. When Walters Gardens crossed Langtrees with the parent plant, seeds were produced and planted. Because division had preserved all the genetic diversity in the parents, one or more of the seedlings had leaves that were more silver than green. The 'Jack Frost' seedling was grown and observed for hardiness and other qualities. When it continued to show good traits, it was cloned in tissue culture. In tissue culture, many identical plants are produced in a controlled environment and tested to be free of common plant viruses. The Walters Gardens catalog shows that all 'Jack Frosts' come from tissue culture.

One big trend in home and display gardening is using native American plants. The story of Heuchera (coral bells or alumroot) shows how a Plain Jane but hardy native perennial has been bred into many Fancy Nancy showoffs -- again through breeding combined with tissue culture.

Twenty years ago, a few varieties of Heuchera were available; they had plain green sycamore-like leaves with inconspicuous sprays of coral flowers. Heuchera grew well in partial shade and didn't demand a lot of water. But a purple leaved Heuchera from England captivated Dan Heims, president of Terra Nova Nurseries in Oregon, and he began to breed the plant for showy leaves. He has developed at least 40 new varieties of this species with leaves of every color, from lime green through peach to Chocolate Ruffles, another Plant of Merit. These hybrids break up the "tyranny of green" in perennial gardens when blooms may be scarce.

One parent of Chocolate Ruffles was a plant that one of Heims' friends in Oregon had collected in the wild. Indeed, every single ruffled Heuchera hybrid has had this single plant -- propagated by tissue culture from the beginning -- as a parent. Every yellow-leaved Heuchera has some "Amber Waves" in it. Every successful cross is grown for two years in the Terra Nova nursery, then tissue cultured. The clones are sent for trials all over the country to find where and how they grow.

The trial sites, explains Allan Armitage of the University of Georgia, look at new plant strains that are candidates to be introduced commercially. The trial garden at the Kemper Center, at the Missouri Botanical Garden, tests plants that are already on the market.

Most of the plant propagation, either by tissue culture or by cuttings, takes place overseas because these processes are quite labor intensive. Heims of Terra Nova works with labs in Indonesia, New Zealand, Holland, Poland, South America, and soon Moscow. Armitage explains that for the many annuals and perennials that are propagated through cuttings, the foreign growers must make many stock plants that can be used to take one-inch cuttings. Hundreds to thousands of these cuttings are sent back to rooting stations in this country, and eventually get to your local garden center.

It wasn't so long ago that parks were mostly trees and grass, that most home landscaping was lawn and evergreen trees, and that cityscapes were devoid of colorful planters and median strips. Today, from early spring to fall, our eyes can feast upon growing (and glowing) color. And, if we look closely at the planters and gardens, much of what we enjoy may have made born of American parentage in a far-away land and returned home for our enjoyment.

Jo Seltzer is a freelance writer with more than 30 years on the research faculty at the Washington University School of Medicine and seven years teaching tech writing at WU's engineering school. To reach her, contact Beacon health editor Sally J. Altman.



PHOTO COURTESY OF BALL HORTICULTURAL
Angelonia Serena purple

GARDENER BILL RUPPERT

For Bill Ruppert, gardening is both a vocation and an avocation -- in short, a passion. Professionally, he represents companies that sell plants wholesale to nurseries and landscapers. He is also part owner of a greenhouse in Illinois that raises many annual plants in an environmentally friendly greenhouse.



But it is his volunteer gardening activities that go on and on. He is happy to report, as a board member of Gateway Greening, that St. Louis now has 150 urban gardens. For Gateway Greening, he has designed the planting in Kiener Plaza, Market Street and Tucker Blvd. His home in Kirkwood won America in Bloom's first prize in the community involvement category in 2007, and he designed the containers in front of Kirkwood's City Hall. He helps choose the Plants of Merit at the Missouri Botanical Garden. He works with Grow Native and ShowMe Rain Gardens, and is on the MoBot Horticultural Advisory committee.

His biggest project at present is the America in Bloom symposium in St. Louis this fall. You can bet those downtown plantings will be spectacular for the event. And at that time, Webster Groves will find out if it has won the national community involvement competition, and University City will be gathering pointers for its entry next year.

About that greenhouse that he and his partners built near a landfill owned by Waste Management. Waste Management sells the methane generated in the landfill to Ameren, which turns it into electricity. His greenhouse uses the hot water from the turbines to heat their floors -- lowering their heating costs more than 90 percent. Now that's green.



PHOTOS COURTESY OF WALTERS GARDENS INC.
From left to right: Brunnera macrophylla, Brunnera macrophylla 'Langtrees', Brunnera macrophylla 'Jack Frost'.

LITTLE ANNIE

Not all new flowers are developed by professionals. Eric Stahlheber, owner of Southernwood Gardens in Jonesboro Ill., decided to take a flyer at developing a coneflower of a different color.

He ended up with a coneflower (Echinacea) colored the usual pink. But Little Annie is a dwarf (about 12 inches in contrast to the usual 40) and is covered with about three times the usual number of blossoms.



To get Little Annie, he crossed a shorter variety, Little Kim, with plants having orange, yellow, red or other colors. Of the thousands of seeds, about 400 germinated, and he planted the 50 healthiest looking. One was stunted with tiny leaves, but seemed healthy. He nurtured it, divided it and interested the wholesale grower Walters in it.

It took Walters two years to establish a successful tissue culture, but Little Annie is now on the market. Sugar Creek Nursery in Kirkwood is the exclusive retail outlet for most of the first 1,200 plants. By next spring, Walters hopes to have 50,000 on the national market. And Stahlheber will reap a royalty from each plant sold.



PHOTO COURTESY OF TERRA NOVA NURSERIES
Heuchera "Chocolate Ruffles" (left) and Heuchera "Amber Waves"

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EDITORS' PICKS

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- **U.S. scores poorly in health care performance despite much higher spending:** A survey of patients and doctors in the U.S., Australia, Canada, Germany, the Netherlands, New Zealand, and the United Kingdom, found the U.S. at or near the bottom in all health system measures. | Commonwealth Fund
- **Hospital reporting on surgical infections doesn't reflect patient outcomes:** Protocols to avoid infections should be evaluated as a whole. | Wall Street Journal

STANDING FOR STAN - AGAIN



Cardinals fans are pushing for one more honor for their beloved No. 6 -- a Presidential Medal of Freedom -- in recognition of his deeds, both on the ball field and throughout the St. Louis community. Here is a look back at Musial's life and career in photos, all from the St. Louis Globe-Democrat archives of the St. Louis Mercantile Library at the University of Missouri-St. Louis.

To see a larger version and read the story, click [here](#).

TOPICS

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VOICES

No walrus were harmed in writing this column

Posted 5:00 am Thu., 06.24.10
Beacon Columnists

The first ever "Mike Royko Integrity in Politics Award" has been given by M.W. Guzy to U.S. Rep. Joe Barton, R-Texas. As Royko once said, an honest politician is one who stays bought.

The myth of command and control

Posted 2:59 pm Wed., 06.23.10
In the News

Large organizations, such as BP and the federal government, seldom, if ever, have the capacity to ensure that policies articulated at the top result in clear implementation on the ground. **Lana Stein** says calls for presidential command and control of the oil spill are naive.

Illinois needs help beyond government

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Beacon Columnists

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BEACON ROUNDTABLE

Roundtable for June 24 - Special session, Westlake landfill, social media

Posted 3:36 pm Thu., 06.24.10

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TWO CHICKS TALKING ABOUT THE BIRDS

Cardinals charity run to honor Stan the Man

Posted 12:18 pm Mon., 06.28.10

If it's a run to honor Musial it must be 6K, not 5. And it starts at 8:06, Aug. 29 at a certain statue outside the stadium.

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