High on the Desert Cochise County Master Gardener Newsletter

Vol. 23, No. 5 May 2012

The University of Arizona and U.S. Department of Agriculture Cooperating

The Virtual Gardener—Seed Lending Libraries

Last month I discussed heritage plants and why it's important to preserve them. In that **article** I mentioned several ways you can help keep heirloom plant varieties from going extinct, such as buying heirloom seeds, saving seeds from your garden each year, and sharing your saved seeds with others. This month I want to talk about a very clever idea that has taken root (pun intended) in many different communities—seed lending libraries.

The concept apparently originated in May 2000 in Berkeley, California when a young activist, Sascha DuBrul, started the Bay Area Seed Interchange Library (BASIL). The project began in an unlikely way. A Community-Supported Agriculture (CSA) garden on the campus of the University of California at Berkeley was being cleared to conduct trials of genetically modified corn. A sizeable collection of seeds were left over from the CSA garden and Sascha and a friend came up with the idea of using them to create a seed library. BASIL was born.

The concept would be simple. Heirloom seeds were to be collected, cataloged and packaged, and the packages of seeds would be made available to gardeners to take home and plant. The only string attached to the free seeds was that the gardener was to save some seeds from the plants she/he grew and return them to the library.

Three years later, while Sascha was working on a farm near the small town of Gardiner, New York, he befriended the local librarian and told him about BASIL. The librarian immediately made the connection between lending seeds and lending books, and the idea of lending seeds from a public library was born. Since that time the idea has spread far and wide across the country and has even taken root in Pima County.

In October of 2011 the Pima County Public Library system put out a **call** requesting gardeners to donate seeds to help them establish seed lending libraries. Today the system is up and running in Pima County. Library patrons can check out seed packets in the same way they can check out

Inside this issue:

In a Desert Garden	2
Cuttings 'N' Clippings	2
A Fungus and a Freeze	3
History of Gardening	4
N—P—K?	5
May Reminders	5
CCMGA Donates $s	6
Photo Contest	6

ARIZONA COOPERATIVE EXTENSION

Cochise County Cooperative Extension

www.ag.arizona.edu/cochise/mg/

1140 N. Colombo, Sierra Vista, AZ 85635
(520) 458-8278, Ext. 2141

450 S. Haskell, Willcox, AZ 85643
(520) 384-3594

(Continued from Page 1)

packets in the same way they can check out books. Each packet contains enough seeds to grow two or three plants and the borrower is requested to return a portion of the seeds produced from those plants. The system operates on an honor basis. There are no due-dates or overdue fines.

The Pima County Library has enlisted the support of the Pima County Cooperative Extension Master Gardeners, Native Seeds/SEARCH, and the Community Food Bank to help with the project. In addition to offering the seeds, the library has also posted on its website a seed-saving **primer** that explains the lending program, the importance of seed-saving, and how to save seeds.

Perhaps it's time to consider establishing a seed lending library in the Cochise County Libraries, maybe spear-headed by the Cochise County Cooperative Extension Master Gardeners and using some of the same resources as Pima County. A **description** of how to get started setting up a seed lending library has been published by the Richmond, California library.

Until next time, happy surfing.

Gary A. Gruenhagen, Master Gardener
virtual gardener@cox.net

Cochise County Master Gardener
Newsletter Editor
Carolyn Gruenhagen

In a Desert Garden

Penstemon parryi – Parry's penstemon

There are around 250 species of *Penstemon* in this country, most native to the western U.S., and almost as many hybrids are grown for garden settings. All varieties need good drainage and are usually short-lived, three to five years only, but they self-seed freely. All have tubular flowers, loved by hummingbirds in colors usually red to pink and salmon. There are also varieties in white, bluish purple, and rarely in yellow. In a regular garden setting it is easier to grow hybrids along with common garden flowers. The wild varieties are better grown in a dry desert garden fed only by rain.

My front yard is such a rainscape and this year my Parry's penstemons are just magnificent. Of course they grow where the seeds fall, and the seeds have fallen along my driveway which is now framed by these beautiful flowers in various heights. Some are almost 5 feet tall and now, as they are in full bloom, are just breathtaking. My front yard just looks so happy as the show is going on all over, only to be interrupted by the yellow of the chocolate flowers (*Berlandieri lyrata*), angelita daisies (*Tetraneuris scaposa*), and the white of the tufted evening primroses.

Recently, as I got into my car, I noticed a hummingbird gorging itself on the sweet nectar of the flowers. I rolled down my window and watched him for a while. Unfortunately, the flower show lasts only a few weeks. Thanks to the weird weather pattern this year, the

(Continued on page 5)

Cuttings 'N' Clippings

❄ The **May 3, 2012** CMGA meeting will be held in the UAS Public Meeting Room at 5:00 p.m. The presentation will be by Mr. Robert Dubrul, Plant Health Safeguarding Specialist, USDA, Animal and Plant Health Inspection Service, Plant Protection and Quarantine Office speaking on how officials at the border screen for plant or animal organisms that might harm us, our food chain, our crops, or our livestock.

❄ Upcoming events are:
Dad's Farm Festival—**May 6** (Whetstone)
Sierra Vista Area Garden Club Spring Plant Sale—**May 12** (SV Farmers Market)
Monastery Spring Festival of the Arts—**May 12 & 13** (St. David)

❄ The **Saturday, May 5** Water Wise presentation from 9 to 10:30 a.m. will be *Build Your Own Rainwater System.* Get ready for the monsoon rain and learn how to build a simple rainwater harvesting system for landscapes and vegetable gardens. The free presentation will be held in the Public Meeting Room at UAS. For a list of 2012 Water Wise presentations go to:
http://cals.arizona.edu/cochise/waterwise/events.html

❄ Desert Hort is **May 18**. Information at:
http://www.ag.arizona.edu/deserthort

A Fungus, a Freeze, and a Fowl Idea

The Fungus: In early April, I started almost 200 plants from seed, mainly tomatoes and peppers. I used a store-bought potting mix and some old plastic six packs from previously purchased plants. After about five days, most of the seeds had sprouted. After another day or two, most of the seedlings had toppled over, vaguely resembling a miniature reenactment of the Mount St. Helens volcanic devastation.

I was, of course, the victim of damping-off (sounds like something that shouldn't be allowed in public, doesn't it?). Damping-off is a fungal disease caused by a number of different fungi that attacks and destroys seedlings. These fungi are present in all soils and can also be seed borne. Damp, dark conditions and still air promote the growth of the responsible organisms. Those conditions sound a lot like a typical indoor germination situation, right?

The commonly recommended way to prevent damping off is to use "sterile" potting soil, which I did. I believe my mistake was to reuse the old six packs without sterilizing them, too. On the other hand, some growers, among them Eliot Coleman, author of *The New Organic Grower* (and other books), claim that damping off is a cultural problem that can be prevented using proper germination techniques (see page 141 of *The New Organic Grower*, available at the Sierra Vista Public Library). My take is that it's easier and more reliable to use sterile soil and clean containers. So, forever more my containers will be sterilized by soaking them in a solution of 10% household bleach and 90% water.

There's a lot of information on damping-off on the Internet. Here is one site I found informative: **http://tomclothier.hort.net/page13.html.**

The Freeze: Do cloches work (common brand names of cloches include Wall-O-Water and Kozy Koat)? You betcha they work! I had six tomato plants in the ground and inside cloches when we got hit by a 25°F morning on March 20th. The water in the cloches was almost frozen solid, there was just a little pocket of still liquid water in the center of each cloche water column. The outdoor temperature was at or below freezing for about ten hours, easily cold enough to destroy tomatoes. Nonetheless, my tomatoes were not visibly harmed and, thanks to the cloches, I should be enjoying the first ripe-off-the-vine taste of summer in the next week or two. Gosh, those first tomatoes seem to stay green forever, don't they?

The reason that cloches are so effective lies in the thermal properties of water. Without getting too technical, it takes a lot of energy transferred as heat to freeze 32°F water into ice. A BTU is, roughly, the amount of energy that it takes to raise or lower one pound of water by 1°F. Lose one BTU from one pound of water (in the form of heat loss to the surrounding environment) and the temperature of the water drops by 1°F. But, once the temperature of the water hits 32°F, it takes the loss of an amazing 144 BTUs to freeze the water solid and allow the water (now ice) temperature to drop any further. So, while the water is freezing, a lot of energy as heat is being given off, thus keeping the interior of the cloche above the kill temperature. Almost magic, eh?

Note, though, this magic only works so long. If the temperature stays low enough for long enough, the water in the cloche will freeze, the temperature inside the cloche will drop below freezing, and the plant will die. In other words, cloches won't allow you to grow tomatoes outdoors through a Minnesota winter.

The Fowl Idea: I just have to pass this little gem of a tale on. It's a great example of original thinking by a chile fanatic. The story comes from the book *The Complete Chile Pepper Book* by DeWitt and Bosland. Discussing the difficulty of germinating some pepper varieties like chiltepins, the authors note that these peppers are called bird peppers because they are often spread by birds. Birds eat them, then eventually deposit the undigested, but scarified, seeds elsewhere, complete with a dollop of natural fertilizer. DeWitt and Bosland then tell of an acquaintance of theirs, who living in a seaside community, hit upon the idea of collecting sea gull droppings and mixing them with the seeds for a three day external "digestion" before planting. The man claimed an astounding 95% germination rate following his novel digestive process. Now that's a crappy idea!

Bill Schulze, Master Gardener
billwithccmga@gmail.com

History of Gardening: Hellenistic Agriculture

The Greek economy was founded on agriculture. The majority of the Greek population invested much of their time in this activity. The Hellenistic kings, in particular, paid great attention to agricultural practices because their economy thrived on taxing land, collecting rent for lands borrowed, and from the produce grown on this land.

The Ptolemies, who were the final dynasty of the Egyptians, were rooted in a Greek progenitor and gained control over Egypt. Although settled on the Mediterranean they dictated what Egyptian farmers could grow and what animals they could raise. It is believed that the Ptolemies made the greatest improvements in Greek agriculture. They saw a need for unceasing irrigation so they planned ways to successfully irrigate crops through the use of canals and irrigation ditches. The Ptolemies also experimented heavily with seeds to improve them in yield and hardiness. They even authored books about how to run farms more efficiently and successfully by discussing these seed experiments, types of soil, when to plant and reap, and even how to care for farm animals used in the agricultural process.

The earliest crops in Greek history were primarily grain-based with wheat, emmer, and barley being the main staples of

their diet. Barley was number one because it was easiest to grow and most productive. Greek soil and climate was well suited for the production of olives (*Olea europaea*), also. Olive trees produced the olive oil Greeks needed for medicines, food, soaps, and trade. Oil production was a lengthy proposition. It took over twenty years for the trees to produce fruit and then they only produced the fruit every other year. This caused the Greeks to study crop rotation and grow groups of olive trees that could be harvested in alternating years. Olives were harvested from autumn to early winter and left to ferment in baskets for weeks before being pressed. The oil was then stored in terra cotta urns.

Greeks also grew grapes (genus *Vitis*). Grape leaves were used for food and grapes were fermented and processed into wine. Other crops grown were vegetables such as garlic (*Allium sativum*), chick peas (*Cicer arietinum*), and cabbage (*Brassica oleracea*). Cabbage is from the wild mustard plant and is known for its medicinal uses by the Greeks. It was developed by selectively breeding it to affect the length of the internodes, initially suppressing them to retard bolting. Greeks also grew herb gardens. Popular herbs of the time were sage (*Salvia officinalis*), oregano (*Origanum vulgare*), and thyme (*Thymus mongolicus*). Fruit orchards produced almonds (*Prunus dulcis*), figs (*Ficus carica*), and pears (genus *Pyrus*).

Springtime was when Greek farmers plowed their land and left it fallow for a time to bring fertility back to it. Plows were made of wood and heavy mallets and hoes were used to loosen and break up soil. In summer, wheat and grain were harvested with sickles and the grains were threshed by animals trampling on it. The grain was then stored or turned into bread.

As you can see in the four centuries of the Greek culture few new agricultural methods were invented. The water wheel was invented during the Hellenistic period but was man or animal powered. It was only after the rise of the Romans when agricultural hydraulic power became prominent.

Next month: Roman Agriculture.

Stephanie Blanchette
Associate Master Gardener

Without FRIENDS life would be like a garden without flowers!

(In a Desert Garden Continued from page 2)
show started early in March and is still going on. One of my plants started to bloom in November and has bloomed all winter long. It is still blooming—very unusual.

Unfortunately, as soon as it gets really hot the show will be over and the plants will set seeds. Dead-heading will not make them flower again. I let the seeds ripen, then I cut the stems and set them upside down into a big paper bag. Eventually the seed capsules burst and release the seeds into the bag. This way I have seeds to share and some to dispense into areas that do not have any penstemons. After the show is over, penstemons are not very showy plants, and it is good to have other plants growing to take over.

Desert penstemon like *P. parryi* and *P. eatonii* are best grown in sandy and rocky soils that are not or only lightly enriched. Only the *P. eatonii* (firecracker penstemons) are repeat bloomers. They start blooming in the spring and repeat in the fall. In rich or clay soils, plants tend to flop over and vanish quickly with irrigation. In my heavy clay soil I have problems in a heavy monsoon. But, as the plants easily grow from seeds, especially in gravel mulch, there is always a new season with new plants and splendor just around the corner.

Angel Rutherford. Master Gardener

N—P—K ?

By law three numbers are required on a fertilizer bag. These are the percentage by weight of nitrogen (N), phosphorus (P), and potassium (K) or N – P – K in that order. Therefore, a bag of ammonium phosphate is marked 16-20-0 or 16% N, 20% P, and 0% K. The N is actual total N no matter what the form. P is really the percentage of $P_2 0_5$ and K is really the percentage of $K_2 0$. To get the actual amount of P you must multiply the number on the bag by 0.43 and by 0.83 to get the actual amount of K. These percentages are derived by taking the atomic weight of the element in question and dividing by the atomic weight of the molecule that the element is in. There have been efforts to revise the current labeling of fertilizers so that only the percentage of P and K appear, but these efforts thus far have ended in failure.

Our soils need N for normal plant growth. This is because it leaches from the root zone. Plants absorb most of their N in the form of ammonium (NH_4^+) and nitrate (NO_3^-) These are both inorganic molecules. Generally plants use nitrate form over the ammonium form. Ammonium is converted to N in the soil by aerobic bacteria and some fungi, therefore cool, wet soils have less active bacteria and will yield less nitrate nitrogen. Nitrate forms of nitrogen are taken up by plants directly and are better used in cool, moist soils.

Many nitrogen based fertilizers are made by a process which uses atmospheric nitrogen. The

(Continued on page 6)

Penstemon parryi

Photo by Angel Rutherford

May Reminders

- ***Deep water***
- ***Plant warm season crops***
- ***Check tree ties***
- ***Control pests***
- ***Control weeds***

CCMGA Donates $s

The Executive Board of the Cochise County Master Gardeners Association (CCMGA) presented a check for $1,000 to the Sierra Vista Community Gardens on April 9. Pictured L to R are: Cliff Blackburn, CCMGA Pres. Steve Fletcher, Frank Ugolini, SV Community Gardens Pres. Rebecca Hillebrand, Dory Bushong, Donna Boe, Sec. Bill Schulze, and Treas. Donna Blackburn. Seated are VP Terrie Gent (front) and Vicky Schulze.

Photo by Bob Gent

(Continued from page 5)

air we breathe is about 78% nitrogen and natural gas or methane under high pressure and heat. Organic forms of nitrogen must be mineralized, that is converted into inorganic nitrogen by soil microorganisms for plant use. Also, the carbonaceous material of the organic matter is broken down into humus by soil organisms and use N as an energy source. Organic sources of nitrogen include blood meal which is usually around 15% nitrogen. Our desert soils are also low in native phosphorus and it should be added at planting time. Phosphorus binds with the soil and does not leach or cannot be "melted" into the soil with water like nitrogen. There are several forms of phosphorus, many being produced by treating phosphate rock with an acid like phosphoric acid. This yields triple super phosphate of 0 – 45 – 0 on the fertilizer bag and can be neutralized with ammonia to make ammonium phosphate and liquid fertilizers. Organic forms of phosphorus are available with bone meal, 0 – 12 – 0 being the most common. Potassium is not usually needed in our desert soils.

There are many fertilizers on the market which have other nutrients for plant growth. Higher priced fertilizers have some of these nutrients added and increase the cost. Organic based fertilizers like manures and composts have lower plant nutrient levels but add organic matter to our soils and are more beneficial in this regard than chemically based fertilizers. However, the cost and high amounts needed of organic fertilizers for normal plant growth make them more expensive to use than bagged chemical fertilizers.

***(Note:** Reprinted from the May 1996 Cochise County Master Gardener Newsletter written by Robert E. Call, Horticulture Agent.* For more information on fertilizers see University of Arizona Cooperative Extension publication *Fertilizing in Home Gardens in Arizona*: **http://ag.arizona.edu/pubs/garden/az1020.pdf)**

Facebook Photo Contest

Show off your photos of cool and interesting bugs! Post your photos to our Cooperative Extension **Facebook page.** Contest ends May 20. Top 3 entries will receive an autographed copy of *50 Common Insects of the Southwest* by our very own Carl "Bugman" Olson. Complete details can be found on the **Facebook Contest flyer**. If you have any questions, contact **Sheila Merrigan**.