



# High on the Desert Cochise County Master Gardener Newsletter

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

## The Virtual Gardener—The Color Green

The other day on the evening news I saw the award of a Congressional Gold Medal to a man who has had a greater positive impact on Planet Earth than almost anyone else in modern times. In addition to this award, he has also earned a Nobel Peace Prize (1970) and the Presidential Medal of Freedom (1977). The only other persons to receive all three of these prestigious awards have been Martin Luther King Jr., Nelson Mandela, Mother Teresa, and Elie Wiesel. Arguably this man has had a greater impact on more human beings than these other four put together, yet I doubt many of you will recognize his name. He is Norman Borlaug.

Now that you know his name, can you list the accomplishments that earned him these awards?

Norman Borlaug, now 93 and still a professor of soil and crop sciences at Texas A&M University, is the “Father of the Green Revolution.”

I knew of the Green Revolution, of course, but until recently the name “Borlaug” meant nothing to me. I first heard about Borlaug and his accomplishments from Rob Call, our County Extension Agent, during a conversation about Mexican agriculture. Rob pointed out that the Green Revolution started near Ciudad Obregon in the state of Sonora, a city that lies a little over 500 miles south of the border near the Sea of Cortez.

The “Green Revolution,” a term coined in 1968 by William Gaud, Director of the U.S. Agency for International Development (USAID), describes the quantum leap in world-wide agricultural production that started during the 1950s and continues today. Major improvement in food production was due to the development of high-yield grain varieties and the introduction of scientific farming techniques into third-world countries, including the use of pesticides, synthetic fertilizers and large-scale irrigation.

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The revolution began in Mexico in 1944 with a joint effort by the Mexican government and the Rockefeller Foundation to develop high-yielding varieties of wheat and improve agricultural practices in the country. Norman Borlaug was one of the lead scientists on the project. By 1956 the rust-resistant, high-yield wheat varieties developed by Borlaug doubled the production of wheat in Mexico and allowed the country to become self-sufficient in wheat production for the first time. More than 20 countries sent agronomists to Mexico to study Borlaug's techniques

The key to success was Borlaug's breeding program to develop high-yielding strains of wheat. He had three objectives: to improve disease resistance, to improve climate hardiness, and to improve seed production. Borlaug soon developed rust-resistant strains that were adaptable to a wide variety of climates but finding a variety that produced higher seed yields eluded him for 10 years. In 1961 he found a short-stalked variety of wheat with heavy seed yields that was native to Japan. This variety when crossed with the disease-resistant and climate-hardy varieties already developed in Mexico turned the trick. Using the new wheat varieties and improved farming techniques Mexico's grain harvest in 1963 jumped to six times the size of the harvest in 1944.

In 1963 India was desperate to provide enough food for its rapidly expanding population.

The disastrous Bengal Famine of 1943 which killed three million people was still fresh in the minds of many people, and there was fear of a repeat if food production couldn't be dramatically improved. The Indian government asked for Borlaug's help and he responded. The introduction of Borlaug's improved wheat varieties and changes in agricultural practices, allowed Indian wheat production to quadruple in seven years, eliminating the spectre of mass starvation. Borlaug's Nobel prize was awarded for his accomplishments in India.

Despite its impressive results, the Green Revolution is not without its critics. Some ecologists have criticized it for requiring too many energy inputs, polluting the environment with hazardous chemicals, creating vulnerable monocultures, and depleting groundwater supplies. These are perhaps legitimate concerns that need to be addressed, but it is hard to sell those arguments to perhaps as many as a billion people alive on this planet today who would have either starved to death or not been born at all had Norman Borlaug not fathered the Green Revolution.

If you would like to learn more about the Green Revolution, check out the following Web sites:

[http://en.wikipedia.org/wiki/Green\\_Revolution](http://en.wikipedia.org/wiki/Green_Revolution)

[http://en.wikipedia.org/wiki/Norman\\_Borlaug](http://en.wikipedia.org/wiki/Norman_Borlaug)

Until next time...Happy Surfing.

Gary A. Gruenhagen, Master Gardener  
[gruenha@theriver.com](mailto:gruenha@theriver.com).



# SIGNS

as seen in some  
Sierra Vista gardens...



## In Love With Veronica

One cannot help but falling in love with Veronica. I never could resist flowers that bloom in blue and purple. Sooner or later I had to discover Veronica during my strolls through the local nurseries. Veronica is also known as Speedwell and beware, not all plants of this variety are drought tolerant.

This is a big plant family with many different kinds of blue, purple, pink, and white flowers. Veronicas are handsome perennial plants. They may be less than an inch tall to 2 feet in height. Most Veronicas need ample water but like to have good drainage. Some are drought tolerant and some are invasive and even considered weedy. The smaller varieties, the prostrate kinds, and the groundcovers seem to be more drought tolerant. Some varieties tend to get mildew if over-watered. They are mostly those from areas with dry summers. In cooler climates Veronicas need full sun. Here in the desert a little afternoon shade is welcomed.

Plants usually form a dense rosette of leaves from which the flower stem arises. Ground cover Veronica can be used between stepping stones or as a substitute for a lawn in an area with low foot traffic. These plants are fairly drought tolerant. Most Veronica species are evergreen. Here is a list of the more drought tolerant plants:

- ◆ *Veronica* hybrid 'Blue Reflection,' forms a gray-green mat to 3 inches high and 2 feet wide, blue flower stalks appear in mid spring.

- ◆ *V. 'Goodness'* grows to 1 foot tall and wide, blooms over a long period, from spring to frost if deadheaded; that means if spent flowers are removed.



*V. 'Sunny Border Blue'*

- ◆ *V. 'Sunny Border Blue'* forms compact clump, 1—2 feet tall and 1 foot wide, with spires of dark purple flowers in early summer.
- ◆ *V. pectinata*, a Mediterranean native forms a prostrate mat to 3 inches high, spreads by creeping stems that root at joints.
- ◆ *V. rupestris* forms a 1—2 feet wide mat. 'Heavenly Blue,' my favorite is prostrate.
- ◆ *V. 'Silver Speedwell'* forms 1—2 feet mat of silver foliage and deep blue flowers during summer.

Angel Rutherford, Master Gardener

*Robert E. Call*

Robert E. Call  
Extension Agent, Horticulture

Carolyn Gruenhagen  
Editor

## Cuttings 'N' Clippings

✧ The next CCMGA meeting is 5:00 p.m. Thursday, August 2, 2007, Room 508 at the University of Arizona South campus.

✧ The August Water Wise Workshop will be presented by Cheri Melton, Cochise County Master Gardener and owner of Plant Hoe Garden Factory. Cheri's workshop, *The Tale of Three Landscapes*, will feature three unique landscapes, each with its own watering techniques, design, and plant choices. The lecture is free and presented at the U of A South campus, 1140 N. Colombo in Sierra Vista on August 11 from 9:00 a.m. to Noon.

✧ On Saturday, September 1, there will be a wildflower walk led by Cochise County Herbarium botanists. Meet at the Cochise County Herbarium at 8 a.m. and bring water and a snack. A small donation is requested and will be used to support the herbarium. For more information, call Joyce at 458-8278 Ext. 2141 or Cecile Lumer at 432-4294.

✧ A 6-week course entitled *Learn to Identify Plants* will be taught by Cecile Lumer, Ph.D. The class will meet Friday mornings, 10:00 a.m.—Noon on August 24 to September 28 at Cochise College. There is a fee which will go to support the Cochise County Herbarium. Enrollment is limited to 20 people and a deposit will reserve a place in the class. For more information call Cecile Lumer at 432-4294, (email: [cecile-lumer@cableone.net](mailto:cecile-lumer@cableone.net)) or Joyce at 458-8278 Ext.2141.

## Cruising with Flowers

In mid-April, my husband and I took a Caribbean Cruise to celebrate our 40<sup>th</sup> wedding anniversary.

Since I was taking the Master Gardener course, I wanted to focus on the tropical plants and flowers. You can imagine my surprise when I recognized many of the plants as relatives of plants which we also have in our desert environment that grow in Barbados.

Our rainfall is sparse, at about thirteen inches a year, but the islands we visited had rainfall averaging from fifty to eighty inches a year. Our area has hardy, desert adapted plants and succulents, with few large trees. In the rainforest area the ground was covered with plants and many large trees created oases of shade. On all of the islands I saw succulents, cactus, agaves, and some yuccas. Tropical fruit trees and bushes abounded including mango, breadfruit, papaya, banana, coconut, avocado, golden and sugar apples, and many others.

They export many of their flowers for arrangements, and have consistently won prizes at flower shows in England. Among their exports are the *Heliconia* (false bird of paradise or lobster claw), hanging *Heliconia*, (crab claw), *Anthurium* (spathe flower or flamingo flower), *Gardenia*, flamboyant *Hibiscus* and *Alpinia purpurata* (ginger lilies). The ginger lily must be handled very carefully, because if the bloom is touched the whole flower goes bad. Lobster claws hold water and

are frequented by hummingbirds. We can grow some varieties of the above named plants in the warmer, protected areas of Cochise County although many fare better in pots, which can be brought inside in the winter. They grow two kinds of begonia, the *Begonia nitida* (white cane stem) and the *Begonia grandis* (pink hardy begonia). Begonias are best grown indoors here, where their higher humidity requirements can be met. The Barbados gooseberry (*Pereskia aculeate*, Mill.) is actually a climbing leafy cactus. Its branches may grow up to 33 feet long and can cover a large tree. It does not grow here as it requires rich humus soil, frequent watering, feeding and protection from frost.

The grapefruit is considered one of the “Seven Wonders of Barbados.” It is a hybrid of the pomelo and the sweet orange. It was first documented in 1750 by Rev. Griffith Hughes.



Lobster claw

The *Chrysanthemum frutescans* or Marguerite daisy is also grown here, but flourishes in a no-frost environment. They also grow roses, as you might guess from their English heritage.

To be continued . . .

Jacqueline Jones  
Associate Master Gardener



## Did you know?

The 50 million lawns in the United States consume 270 billion gallons of water each week—enough to give everyone in the world a shower four days in a row. Each year, those lawns are slathered with 67 million pounds of pesticides and mowed by machines that use 580 million gallons of gasoline.

*Discover Magazine*  
July 2003, pg. 26

## August Reminders

- ◆ Keep pulling weeds
- ◆ Fertilize
- ◆ Prolong annuals
- ◆ Plan your spring wildflower garden
- ◆ Watch for nutrient deficiencies, sunburn, saltburn, over-watering, and insects
- ◆ Plant cool-season flowers and veggies

## The Agent's Observations

**Q** We have several mulberry trees that have died or are dying. The leaf margins turn purple mixed in with the normal green color. Branches lose leaves and eventually die. After a few years the trees die. What is causing the trees to fail?

**A** I have received multiple inquiries this summer concerning this problem with mulberry trees (*Morus* spp.). These trees are experiencing mulberry tree decline or fatigue. Mulberry trees seem to tire out in the desert Southwest because of stress caused by high temperatures, wind and low humidity. They are better suited to the Midwest and Eastern USA. Symptoms consist primarily of small leaves, leaf discoloration and yellowing, and dieback of the upper twigs and branches. This abiotic disease usually appears in trees that are 15 to 20 years of age. The overall tree decline is slow, but death may occur 2 or 3 years after the initial symptoms. The causes of this disease have many possible factors involved in most tree decline diseases. One of the major factors however is insufficient watering, particularly with trees that are in lawn situations.

**Control:** The mulberry tree needs infrequent, deep irrigations (once or twice a month, three to four feet deep), particularly during the summer months. Tree wells or doughnuts should extend to the drip

line of the tree and beyond. Drip tubing or soaker hoses should also extend beyond the tree drip line.

**Q** We lost an apple tree this year and a peach tree last year. There were some funny looking growths that look like little shelves on the trunk of the trees that died. What killed our trees and how can it be controlled?

**A** After examining a sample of the “funny looking growths,” it was determined to be *Ganoderma* fungus and has a common name of “shelf fungus.” A basidiomycete, or “club” fungi, *Ganoderma lucidum*, causes rot in native and landscape trees such as olive, African sumac, mulberry, hackberry and oak. Another *Ganoderma* species causes rot in mesquite and acacia. Others infect fruit trees. Soil and air borne spores infect roots and wounded trunks and/or branches of susceptible hosts. As the fungus grows systemically in host tissue, it causes wood and root rot. Infected trees may decline rapidly and die. The entire crown may be affected causing leaf emergence failure. *Ganoderma* spreads from plant to



plant by root contact and spores can also be blown into open wounds. The creamy colored mycelium of the fungus can be seen if the bark is pulled away from the root and/or wood. During summer rains shelf-like reproductive structures form on the bases and trunks of infected trees. They may be white to reddish-orange fleshy growths occur on the bark and become hardened when they mature. Brownish-red spore deposits may also be visible. These reproductive structures produce spores that are easily carried in the wind and can infect susceptible trees.

**Control:** There is no control for *Ganoderma* rot once the plant is infected. The best way to prevent infection is to prevent wounding. Cutting roots during construction, landscape maintenance, or other wounding actions should be avoided whenever possible.

**Sources:** *Diseases of Urban Plants*-Adapted by Mary Olsen, Extension Plant Pathologist. (Original publication by Richard Hine, Plant Pathologist (retired).)

<http://cals.arizona.edu/pubs/diseases/az1124/#grr>  
*Plant Pathology*, 3<sup>rd</sup> Edition. 1988. George N. Agrios. Academic Press, Inc., New York. pp. 500-506.

Robert E. Call  
Extension Agent, Horticulture

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## Xeriscape Tour

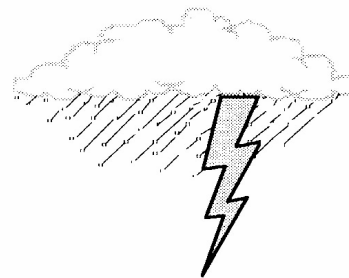
The fall Xeriscape (Low Water Landscape) Tour will be held Sunday, September 2 from 1:00—4:00 p.m. The free self-guided tour is sponsored by Water Wise and the Cochise County Master Gardeners. Low water use landscapes, called Xeriscapes (pronounced Zir-ih-scapes) can be colorful, evergreen, soft, easy care and wildlife friendly. Come see beautiful and creative Xeriscapes on this tour. When you visit these yards you will be astonished at how much choice you have in creating your very own water wise yard. Docents will be at each yard to answer questions and plant lists will be available. Maps will be available at the Cooperative Extension Office. Call Joyce at 458-8278, Ext. 2141 or e-mail her at [jwilliam@ag.arizona.edu](mailto:jwilliam@ag.arizona.edu)



Wettle sez...

BE *Water Wise!*

**Catch rain, dear!  
Water harvesting  
is a great way to  
save water for  
plants.**



The U of A *Water Wise* Program  
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