



High on the Desert Cochise County Master Gardener Newsletter

Vol. 20, No. 10 OCTOBER 2009

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

The Virtual Gardener—Got Weeds? Make Compost!

Monsoon 2009 (such as it was) is over. My weed crop was smaller than usual, but I've still got weeds to clean up. As always, disposing of the debris is a problem. What to do? I could just throw it in the trash. Although that solves my immediate problem, it adds more stuff to the landfills, and that we don't need. I could burn them (after getting a burn permit, of course). That also gets rid of them, but leaves me with an ash disposal problem and pollutes the atmosphere—again, not an environmentally responsible solution. So what else can I do? How about composting them?

Composting is a win-win solution. It not only gets rid of a mess but turns the mess into a useful product.

What is compost anyway? Compost, according to one definition on the Web, is completely decayed organic matter used for conditioning soil. It's dark, odorless, and rich in nutrients, containing not only the basic six macronutrients that all plants require but lots of micronutrients as well. It's created when microorganisms—bacteria, fungi, and actinomycetes—together with small invertebrates—insects, sow bugs,

earth worms, *etc.*—feed on dead organic matter, breaking it down into simpler compounds. Composting is a natural process that nature does all the time without any help from us. As one bumper sticker says, "Composting Happens."

Here is the basic formula for compost: **Green stuff + Brown stuff + Air + Water + Time = Compost**

"Green stuff" is plant material that hasn't totally dried out yet. We call it "green stuff" because it is often green in color, but it really doesn't have to be green. Any kind of vegetable matter that hasn't totally dehydrated and turned brown will do. "Brown stuff" is...well, stuff that's brown. It's the stuff produced when green stuff dries out, although strictly speaking it could be some other color than brown. The green stuff contributes nitrogen to the mix and brown stuff contributes carbon, both of which are required. Ideally the ratio should be about 1 part green stuff to 3 parts brown stuff.

Air contributes oxygen to the composting process. If we don't have oxygen, we get a different set of

(Continued on page 2)

Inside this issue:

Cuttings 'N' Clippings	2
Lessons From Garden	3
Do Your Homework	4
October Reminders	4
Agent's Observations	5
Borlaug Dies at 95	5

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)

microorganisms doing the decomposition—anaerobic bacteria. The big problem with these guys is that they produce ugly smells, so you want to avoid them. The best way to do that is to make sure that your compost materials get lots of air by making the piles loose and stirring them up from time to time. Compost piles can be unconfined or confined within a container. If confined, the container should allow for good air circulation.

All life requires water and the microorganisms and invertebrates that make compost are no exception. In fact, the microorganisms are particularly vulnerable to dehydration since they don't have a skin to keep moisture from evaporating. This means you need to keep your compost pile moist so these organisms can work. Most instructions recommend keeping the pile about as moist as a wrung-out sponge. In our climate you may want to cover the pile with a tarp to keep it from drying out too fast. But on the flip side, you don't want the pile to be too wet either. Too much water will cause anaerobic conditions that will create an ugly smelling pile.

As the decomposers work, they produce heat in the compost pile. The amount of time it takes to produce compost depends on the temperature of the pile. The optimum temperature range is 140-160°F, which not only provides a perfect environment for the decomposers to work but also kills most weed seeds and pathogens. At this temperature range, it generally takes about four to five months to produce compost from scratch, but the

time can be cut by a half to a quarter by using finely chopped or shredded materials, carefully controlling moisture, and turning the pile frequently.

This is a perfect time to begin composting weeds. You need both the green plant material and the brown plant material to get your composting underway, and at this time of year some weeds are still green and growing while others are drying out and turning brown. But it won't be long before green, growing weeds will be hard to find, so you need to act quickly.

If you would like to find out more about composting and get some great ideas for making your own compost, check out these Web pages: The Arizona Master Gardener Manual

<http://cals.arizona.edu/pubs/garden/mg/soils/improving.html>

gives detailed instructions for constructing a compost pile and provides a useful table of the nitrogen-carbon ratios of many compostable materials.

This how-to site

<http://compostinstructions.com/>

is heavily illustrated, written at a non-technical level, and discusses every aspect of composting. In addition it offers a frequently asked questions forum where you can submit a question on composting.

This Cornell University Web site

http://compost.css.cornell.edu/Composting_Homepage.html

offers all the technical information on composting that you could ever want, including discussions of the chemistry, physics, and biology of composting as well as spreadsheets to calculate nitrogen-carbon ratios for mixtures of raw materials.

Until next time, happy surfing.

Gary A. Gruenhagen, Master Gardener
virtualgardener@cox.net

Cuttings 'N' Clippings

* The next CCMGA meeting is 5:00 p.m. Thursday, **October 1** at the University of Arizona South Campus Public Meeting Room.

* **October 3**, 9-11:30 a.m. *Planting Trees and Shrubs* is the next FREE Water Wise presentation held in the Public Meeting Room at the University of Arizona South Campus. A plant is an investment in time and money. To make sure you are giving your new plant a good start, come and learn from an expert on how to correctly plant and care for your new yard addition. It isn't hard, but it is more than just digging a hole! Presenter will be DeForest Lewis, International Society of Arboriculture Certified Arborist and Cochise County Master Gardener.



Robert E. Call

Robert E. Call
Area Horticulture Agent

Carolyn Gruenhagen
Editor

Lessons From the Garden

The summer growing season is almost over and I learned some things that are worth sharing.

The first lesson is this: don't plant stuff so close together! I wanted to plant a lot of tomato varieties to see which ones did well in this climate, which ones were tastiest, most productive, and so on. I ended up planting 52 plants (it's OK to laugh) at a spacing of just three feet apart, both within the row as well as between rows. It looked nice when the plants were small, but just try and pick tomatoes in the middle row when the plants are fully grown. There were lots of tomatoes I just couldn't reach and many more tomatoes weren't even visible at all from outside the "jungle." Fortunately, we had a good harvest anyway and had plenty of tomatoes to eat fresh, preserve, and share with friends and neighbors. Next year, though, I'm going with five foot spacing between tomato rows and four feet within each row, and (maybe) fewer plants.

On a positive note, I used concrete reinforcing mesh to make tomato cages. This stuff is made of 1/8-inch thick steel wire woven into six inch squares. It comes in five-foot widths and is readily available from hardware stores. Cut into six or seven foot lengths (a bolt cutter works well) and roll into 2 or 2½ foot diameter cylinders and, voila, the perfect tomato cage, far better and much sturdier than those flimsy conical cages from the store. Just don't forget to anchor your cages to the ground with stakes to withstand our "breezes."

Another lesson: Go into your garden every single day and LOOK CLOSELY! When I first

planted, I was watering by hand. Since I was there often and going slowly, I saw problems developing and caught them early. Soon, however, it was taking two or three hours to water everything, and I wasn't even finished planting yet. To remedy this situation I put in a cheap drip system using black poly tubing and a combination of soaker hose sections and button emitters. It worked well—that's the positive lesson. I turned on the drip system and enjoyed a more leisurely morning while the plants were being watered slowly and deeply.

When I finally did get out to inspect things more closely, I discovered that my tomatillo plants were leafless. They were literally just



Acalymma vittatum (Fabricius)

barren stems. Striped cucumber beetles, *Acalymma vittatum* (Fabricius) and another small black and red beetle called *Lema trabeata* (no common name as far as I can tell) were enjoying a tomatillo leaf feast. I finally got the beetles under control using insecticidal soap on a daily basis and, believe it or not, the plants recovered completely and produced plenty of tomatillos. Being of thick skull, I promptly repeated my mistake and didn't check our melon and squash patch for several days. Next thing I know, half of the plants are covered with powdery mildew. Ahhh

well, experience is that marvelous thing that allows you to recognize your mistakes when you make them again. A violent hail storm a few weeks ago didn't help much either. The leaves are now not only silvery white with the mildew, but they're shot full of big holes from the hail. The patch looks pretty sad. Still, we've gotten a few melons and squash and I've convinced myself that this experience will educate me as to which squash and melon varieties are *maybe* resistant to powdery mildew.

I also made an interesting observation. Plants *want* to live. I was amazed that the tomatillos survived the beetle attack. The plants were pretty much devoid of leaves, but now they're thriving and producing. The powdery mildew infestation resisted a sulfur spray that I used to try and eliminate it, but a number of the melon and squash plants struggled through to produce fruit anyway. Two tomato plants that appeared to die back to the ground early in the season actually came back from the roots and yielded some nice tomatoes. I'm sure you've seen similar back-from-the-dead events in your garden.

Believe me, I learned plenty more this summer, but the bottom line is this: Give your plants adequate space, proper soil, and appropriate light. Water them deeply and infrequently, check often for problems, and control those problems. Do these things, and your plants will reward you with plentiful food, flowers, shade, or whatever it is you planted them for. Oh, and get ready for next year's lessons.

Bill Schulze
Master Gardener Associate

Always Do Your Homework First!

If you are anything like us, there is always a project going on in our landscape. One particular project, irrigation installation, was more than we wanted to tackle ourselves so we hired someone else to do the job. Here is our sad story:

We looked up a contractor in the yellow pages and called to make an appointment for the owner of the company to come out and give us an estimate. The first appointment was cancelled by the company, which should have been a clue of future things to come.

Mistake #1. We selected an unlicensed contractor who made only one call.

Finally, after a couple weeks we had our estimate in hand and decided to go ahead with the project. The day before the project was to be started, the owner brought out a contract to be signed and collected half the amount with the other half due upon completion. I was told that I would get a copy of the contract in the mail. Over two months later I still hadn't received my copy of the contract.

Mistake #2. We paid the contractor before receiving a copy of the contract.

When the workers showed up they brought an 8-10 year old boy who was on spring break. We soon realized someone had to keep an eye on this child who wanted to

Anita Gollwitzer, a Cochise County Master Gardener for seven years, lost her battle with cancer on September 18. We extend our deepest sympathy to her husband and family. She will be missed by all of us!

get into everything. As I left for my Master Gardener class I told my husband to keep an eye out on what was going on so that we would understand more about the installation process. Unfortunately my husband had to spend more time babysitting than observing.

Mistake #3. We did not supervise the work.

A job that was supposed to take a day and a half ran into three days and we soon found out the system was unusable except for the lawn sprinklers. We called the company and left messages with the secretary concerning our problem, but the owner was too busy to return our calls. Then we decided we had better read up on irrigation installation to determine the cause of our problem.

Mistake #4. We blindly trusted the contractor to do the job correctly.

After reading the Master Gardener Manual we learned the main problem with the lines going to the tree wells and garden was the absence of pressure regulators. When we called the company about this, we were told no pressure regulators were installed because we hadn't asked for them. I again reminded them that I hadn't received a copy of the contract and the owner said she would be by sometime before the end of the week. Two months later we still had not seen or heard from her.

Since that time we have dug up and added pressure regulators and soaker hoses around the tree wells and to the garden and added a line going to a tree in the middle of the back yard that the installers apparently didn't think needed to be in-

cluded in the system.

Now sadder but wiser from our experience, here's a summary of what we learned:

- ◆ Use licensed contractors.
- ◆ Check references.
- ◆ Get more than one estimate.
- ◆ Don't pay anything before receiving a copy of the contract.
- ◆ Find out what is involved in the project before hiring a contractor.

We have drawn an "as-built" diagram of the entire system so if future work or repairs are needed we can easily find the water lines. We are still having problems with the irrigation timer box and are not sure if the box is wired properly so will have to get someone out to check the wiring.

Remember, a little homework can make a happy gardener instead of a frustrated one, so always do your homework first.

Carla Dailey, Master Gardener



October Reminders

- ◆ Be ready for the first frost
- ◆ Thin the seedlings
- ◆ Overseed lawns
- ◆ Plant spring bulbs
- ◆ Plant cool season veggies
- ◆ Divide perennials
- ◆ Don't let weeds go to seed

The Agent's Observations

Q We have a pomegranate bush and the fruit is splitting. What causes this? How can it be avoided?

A When some fruit like peaches, nectarines, melons, grapes, and pomegranates, among others, are near maturity splitting may occur. Cabbages may also split. This is caused by the rapid uptake of water such as after irrigation and then a rain event occurs. The large amount of water taken in by the plant will be moved to the nearly mature fruit causing splitting or cracking. A genetic component may also lead to fruit splitting. For instance some tomato varieties are more prone to splitting/cracking than others. Produce that has cracked is normally fine to eat.

Control: When fruit is nearly ripe avoid excessive irrigations. Drip irrigation and mulching will help maintain suitable soil water moisture and help avoid splitting. Some producers will hold back water when fruit nears maturity to concentrate the sugars. Over watering nearly mature fruit may dilute sugar concentration.

Q What are good vegetables to be planting in the fall?

Q



A Cool season vegetable crops suitable for fall planting are those that do not produce fruits. An exception is peas, which do best when planted in the fall or early spring. So, lettuce, spinach, radishes, green onions, broccoli, cabbage, coriander or cilantro, greens, like turnips & collards, and peas all grow well during cool weather. A tip for germinating peas is to soak the seed in water over night. Doing this will cause the peas to jump out of the soil rather than rot in cool ground.

*Robert E. Call
Area Horticulture Agent*

Father of the Green Revolution, Dead at 95

Norman Borlaug, the Father of the Green Revolution, passed away on 19 September of cancer. He was 95. As I wrote in 2007, Borlaug had a greater positive impact on Planet Earth than almost anyone else in modern times. Here is a summary of that article.

The Green Revolution started near Ciudad Obregon in the state of Sonora, Mexico, 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.

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. Borlaug was one of

(Continued on page 6)

Issued in furtherance of Cooperative Extension work, acts of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture, James A. Christenson, Director, Cooperative Extension, College of Agriculture and Life Sciences, The University of Arizona and Arizona Counties cooperating. The University of Arizona is an equal opportunity, affirmative action institution. The University does not discriminate on the basis of race, color, religion, sex, national origin, age, disability, veteran status, or sexual orientation in its programs and activities. The information given herein is supplied with the understanding that no discrimination is intended and no endorsement by Cooperative Extension is implied. Any products, services, or organizations that are mentioned, shown, or indirectly implied in this publication do not imply endorsement by the University of Arizona.

High on the Desert

February 25 & 26, 2010

458-8278, Ext 2141

for more information

(Continued from page 5)

the lead scientists on the project. By 1956 the rust-resistant, high-yield wheat varieties he developed 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 his 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 pro-

duction to quadruple in seven years, eliminating the specter 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.

*Gary A. Gruenhagen, Master Gardener
virtualgardener@cox.net*