



The Virtual Gardener—Creating an Electronic Garden Journal

On March 13 I presented a workshop on Gardening With Technology at the High Desert Gardening & Landscaping Conference in Sierra Vista, AZ. One of the topics I discussed at the workshop was creating an electronic garden journal.

Good gardeners have always kept track of what they have done in the garden so they can repeat their successes and avoid repeating their failures. The very best gardeners go a step further and write things down instead of trusting their memories. Forgetting or misremembering is easy to do with gardening activities that occur on annual cycles.

So what might a gardener want to keep track of?

Whether we're talking about edibles or ornamentals, the most fundamental facts to remember are what we planted, when we planted it, where we planted it, and what results we got. Regardless of the results—good or bad—we might also want to remember how we took care of the plants. How were they

watered? Fertilized? Treated for disease or pests? How much sunlight did they get? What was the soil type? Drainage? How about the weather during the growing season?

It might even help us predict events in the future if we kept track of the development of our plants. When did seedlings, first leaves, blossoms, or fruits appear? What was the yield? When did the plants die or go dormant?

The traditional solution to recording garden notes is a paper journal. Paper journals come in all shapes and sizes. They can be fancy, bound books you purchase at a stationery store or simple loose-leaf notebooks like you used in school. Some people even record their notes on 3 X 5 cards.

All records kept on paper suffer from the same shortcomings. Paper is easily torn or smudged, and little pieces of paper are notoriously easy to misplace. Once notes have been written with

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either pen or pencil they are difficult to neatly change. And if a large volume of notes has been created, it's difficult to find things again. Enter technology.

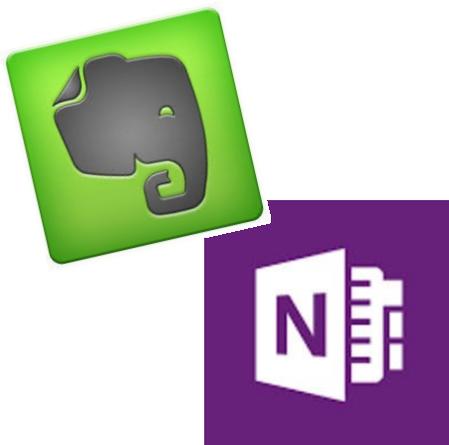
A class of software originally designed for students to take notes solves many of the problems described above and introduces many new possibilities. These software applications allow almost any type of data—text, drawings, still imagery, video, or audio—to be easily captured, organized, and stored in a way that makes it easy to search them.

Two premier note-taking applications are Microsoft OneNote and Evernote. Until a few days ago OneNote was only available by purchase from Microsoft, but that has changed. Now both OneNote and Evernote are available for free for all flavors of computers—PCs, Macs, tablets, and smart phones.

Both programs are set up to mimic paper notebooks. Notes can contain any type of data that can be captured and can be grouped into “sections” and “notebooks.” Notes can be hyperlinked to other notes or external files and can be tagged with keywords to facilitate searching. Both Evernote and OneNote have optical character recognition features that allow text in images to be transformed into editable format and speech-to-text features that can transform spoken words into editable text.

Notes can be created in many ways—keyboarding, drawing, pasting, e-mailing, web-clipping, “printing,” recording, scanning, and photographing. Both applications allow direct control of attached or built-in microphones and web cams.

Once data has been put into the programs, it can quickly be organized and searched in many



different ways. Notes can be filtered by notebook, section, or keywords, and both programs index every word in every note, so a specific piece of information can be quickly located.

Evernote stores all notes on servers in the Cloud and automatically synchs all devices sharing the same account whenever they are connected to the Internet. If you have Evernote installed on a tablet or smart phone, they can display all the information in Evernote on your desktop computer. Conversely, you can create a note on the mobile device and it will be synched to your home computer. OneNote, on the other hand, allows notes to be stored locally or optionally in the Cloud. To save storage space on my mobile devices, I keep a minimum amount of information on Evernote and transfer most notes to OneNote for archiving on my home computer which has much larger storage capacity.

Because it is so easy to collect and organize large quantities of information in these programs, you can easily expand your traditional garden journal into a far more valuable tool containing annotated pictures, copies of receipts, warranties, operator manuals for garden equipment, instructions, Material Safety Data Sheets, and plant references among many other things. You are only limited by your imagination.

If you would like to learn more about these programs and see how other people have made use of them, stop by the website I put together for my Conference workshop at:

<https://sites.google.com/site/gardeningwithtechnology/>.

Until next time, happy surfing!

Gary Gruenhagen, Master Gardener
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Cuttings 'N' Clippings

✿ CCMGA will hold its next meeting on **Thursday, April 3**, in the Public Meeting Room in Groth Hall at UASV, from **5:00—7:00 p.m.** The speaker will be Kate Tiron with Borderlands Restorations. The public is invited to the lecture which will be from 5:00 to 6:00 p.m.

✿ **Saturday, April 5, Water**

Expo and the WaterCycle Ride
LOCATION: The Mall at Sierra Vista, Hwy 92, Sierra Vista, AZ
THE WATERCYCLE RIDE: Kick off at the Expo, April 5, 9 a.m. to noon. Ride the easy 5-mile loop with your family and test your water cycle knowledge! Quiz stops will be set up along the route for you to see how well you know your watershed. Come to the Mall to sign in for prizes! There will also be a “Leaky House” and a bike rodeo!

WATER EXPO: Inside the Mall from 10 a.m. to 2 p.m. Lots of great exhibits showing off the latest and greatest, and tried and true water conservation products and services. Come listen to presentations!

For information call (520) 458-8278, Ext 2141, or contact Joyce at:

jwilliam@ag.arizona.edu

You can visit Water Wise at:

waterwise.arizona.edu

There Are Seven Billion of Us

Yep; 7 billion human beings live on this planet. Even more stunning, an estimated 9 billion-plus will live here 35 years from now. Every one of them will need food, shelter, and energy and they will expect to be able to pursue a comfortable life. The existence of so many of us means that everything we do has a significant impact on our earth. In particular, agriculture has a very big impact.

Back in the early 1900s, an acre of corn yielded about 20 bushels per acre. The introduction of hybrid corn boosted this to roughly 70 bushels per acre by the 1960s. Nowadays, yields in excess of 160 bushels an acre are common. The interesting thing about this increase, though, is that it's mostly the result of being able to plant corn closer together than before. It has not come from increasing the number of ears per plant, which is typically one ear, occasionally two. Instead, corn breeding improvements allowed denser plantings. Largely due to synthetic fertilizers and pesticides, these denser plantings were successful. Similar yield enhancements have been achieved in other important food crops like wheat and rice. This achievement has become known as the "Green Revolution" and was led by, among others, the late Dr. Norman Borlaug*. Remarkably, to a good first approximation, the total amount of land being used to raise food has not significantly increased in the last half century, despite a doubling of world population during that time.

Unfortunately, like anything in this world, there have been negative consequences. Most of us are familiar with these downsides: fertilizer run-off, nitrification of

river and sea water, soil erosion, and pesticide residues, among many others. Nonetheless, without the Green Revolution, we would have instead needed to increase the amount of land under cultivation.

Now, maybe that doesn't seem like a big deal, so let me put it another way. Were it not for the Green Revolution, Dr. Borlaug estimated that an additional 20 million square miles would have been required to produce the same amount of food. For comparison, the land area of the state of California is 156,000 square miles. Obviously, we're not just talking a few acres here and there. But, we are already farming pretty much every usable piece of land we can in North America, Europe, and Asia, so where would the land necessary to feed another two billion come from? It turns out that Brazil and Africa have a lot of land that could be converted to agriculture. Those in favor of mowing down the rainforests, raise your hands.

For me, the realization that it's either more land (lots more land!) or better techniques hit like a ton of bricks. It has also struck me that agriculture, even "organic" agriculture, is a destructive act. It takes from Mother Nature whatever she used the land for—birds, bees, bears, bison—and converts it to food production for us. A nicely kept field may look pretty and the pastoral image of Farmer John tending his fields may strike us as one of man and nature in blissful harmony, but it ain't so. An acre of corn or rutabagas or peaches is an acre that lions and tigers and bears or pine trees and prairie grasses have lost. And, without

continuing improvements in agriculture, they'll lose more as our population increases.

So, it seems obvious that improving agricultural technology is vitally important to us and to the environment. Those of us who read this newsletter are part of a group that, as a whole, is more involved with and concerned about agriculture than the population at large. What I observe, though, is that many of us have become a bit too "pure". We're opposed to synthetic fertilizers and pesticides. We're opposed to genetic modifications. We're opposed to the use of biosolids. We're often opposed to anything that isn't strictly "organic". It's time to take a more realistic and objective look. We are lucky to live in a place where food is plentiful and where we can indulge our particular opinions with regard to what we eat and how it was grown. Much of the world's population isn't that lucky.

I am not suggesting that our backyard gardens can't be organic or that we need to blindly accept the harm that comes with the use of pesticides and fertilizers. I am suggesting that it's time to look at agriculture, technology, and the issues facing us with new eyes and an open mind.

Bill Schulze, Master Gardener
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(*Note: Read about Dr. Norman Borlaug [here](#) in an August 2007 article in the Master Gardener Newsletter.)

April Reminders

- ◆ *Stake new trees*
- ◆ *Fertilize*
- ◆ *Prepare for pests*

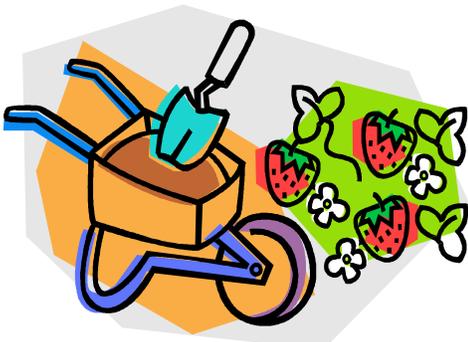
Ask a Master Gardener

Cochise County Master Gardeners are available to answer your gardening questions either by telephone call to the Cooperative Extension Office or on-line on our web site at:

<http://ag.arizona.edu/cochise/mg/question.htm>

Gardening with vegetables can be fun and provide delicious and highly nutritious fresh food. Watching and working with plants can add a new dimension of enjoyment to life and bring an awareness of the wonderful world of nature in the backyard. Ten carefully taken steps will produce many enjoyable moments and an abundant harvest of fresh vegetables during much of the year.

The Cooperative Extension bulletin *Ten Steps to a Successful Vegetable Garden* may be found on our web site or [here](#).



Who “Dung” It?

Mystery Visitor! For the past week we’ve observed several new scat piles in our garden every morning. (See photo on Page 6 of newsletter.) They are dark brown in color, roughly formed, and filled with seeds and pieces of mesquite pods. There are no identifiable footprints in the surrounding area. We would really like to know who is wandering around our fenced, urban yard in Sierra Vista sometime overnight. If you have any ideas, please email me!

Gary Gruenhagen, Master Gardener
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Integrated Pest Management: your garden, your summer squash, and your health

The principals of Integrated Pest Management (IPM) were conceived in agriculture some 40 years ago and are of great value to the modern home gardener. The tenets of IPM, an eco-economic program, begin with thresholds of pest tolerance, monitoring and identifying the pest or problem, preventing the problem by disruption of its culture, and when necessary, control of the pest with sensitivity to consequences. The premise of monitoring plant health, identifying plant problems, and understanding the consequence of action taken to alleviate problems makes us better gardeners.

I have arrived at a solution to eliminate the pest problem of powdery mildew fungi on my summer squash that has worked well for the past two growing seasons. This preventive solution holds true only for cucurbits with a short maturity date, such as yellow squash at 45 days to fruit.

Seed provenance and selection for genetic resistance is an important consideration but not a guaranty that infection will not occur. Healthy soil provides essential nutrients for your plants to express their inherent ability to ward off powdery mildew. Allowance for good ventilation around your plants and revision of irrigation techniques need to be realized, as too much water in the soil provides a humid environment under the leafy structure of the plant. Crop rotation to another vegetable family is advisable at each new planting. All of these horticultural disciplines have been applied and allowed for good production of one of my favorite foods; nonetheless, midsummer rain and increase in ambient hu-

midity benefit the environment for powdery mildew occurrence and spread.

In mind of these considerations I still experience fungal problems with summer squash when our summer rains come about. Powdery mildew enjoys a humid environment, spreads by airborne spores, and can easily decimate the plant’s beauty and production, as well as predisposing the plant to other harmful agents when in decline.

What I have reckoned is that planting before and after the rainy season all but eliminates the occurrence of powdery mildew on my summer squash. Most summer squash—zucchini, yellow, gray, and others require only 35—60 days to reach maturity. So I plant from seed early, approximately mid-April, when soil temperature is 60° on average and I enhance warmth and frost protection with row covers. At the first sign of spore development I have reaped, enjoyed, and stored plenty of produce.

As soon as the fungi begins to spread I pull the entire plant from the soil, trash any infected material, then minimize the plant, and get it into the hottest compost spot immediately. If I do not have a compost to put it in, I use an alternative procedure. I place the entire plant in a sealed black plastic bag to restrict spore spread and then I place the bag in the sun to heat the plant to temperatures that will destroy the fungi.

This is hard to do. Take a living, producing plant from the garden and destroy it. I assure myself that it is best; it is economical, ecological, and beneficial to the health and beauty of my gar-

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At a Glance Box

It's a Bloomin' Cochise County Native Plant of the Month

Desert Globemallows

Cochise County native plants: *Sphaeralcea ambigua*, *S. angustifolia*, *S. fendleri*, *S. hastata*, *S. laxa*, *S. parvifolia*.

Plant type: Herbaceous flowering plants, sizes vary up to 3 feet tall and wide.

Native habitat: Poor dry soils, rocky slopes, washes.

Culture: Tolerant of many soil types, full sun, minimal if any supplemental irrigation.

Bloom: Orange to rose colored flowers bloom off and on spring- fall.

Landscape use: Perfect flowering plant for soils where nothing seems to grow! Butterfly nectar plant.

Specimens: In the Cochise County Herbarium on UA Sierra Vista campus.

www.cochisecountyherbarium.org

For an in-depth article, see below.

Cado Daily

Water Resources Coordinator, Water Wise Program

University of Arizona Cochise County Cooperative Extension



Desert Globemallows

I love the globemallows. If you have a spot in your yard that has hard, compacted soil or soil with few redeeming qualities, plant a globemallow. This super tough plant will not only grow, but will spread. Not only will you have a lovely plant, but also its tough roots will help to open up the soil for other plants.

It is great to see local native plants popular enough to be sold as standard landscape plants. The globemallows are one of these groups of plants. They are so successful that growers now provide plants with a variety of flower colors ranging from oranges, pinks, reds and shades in-between.

The globemallows are in the Malvaceae family whose most common members are the well-known hibiscus plants. Some may know the “cheeseweed” which is a common prostrate weed in the Malvaceae family whose seeds look like miniature wheels of cheese, and the beautiful wild cotton, *Gossypium thurberi* with its large white flowers.

Butterflies are attracted to the 1-inch wide flowers of the globemallow that bloom from the bottom up, off the sides of an herbaceous stalk. Flowers in the Malvaceae family usually have five delicate cupped petals that are perfect landing pads for butterflies.

To use globemallows in the landscape, choose a spot where they can spread. They can be evergreen, but look a little scraggly in the winter so tuck them among anchor plants like agaves and cacti. They will also look stunning as part of a wildflower mix. Trim them up occasionally to revitalize them or give them a severe cutting to stimulate a flush of new growth.

Cado Daily, M.A.

Water Resources Coordinator

Cochise County Master
Gardener Newsletter Editor
Carolyn Gruenhagen

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Who “Dung” It?



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den. I'm learning that avoidance of stress on my garden is less stress on me. Not making use of fungicides, sulfur, or boron applications saves me time and money and satisfies my goal of producing food that is healthy and uncontaminated by pesticide.

Come September I plant squash again, using acclimated seedlings of desired variety, making sure not to over irrigate, as most plants in the garden are fully mature and require more water than do the new plants. A couple months later I can again reap, enjoy, and store high quality summer squash right up to first frost.

Seed collection procedures from your second planting fruits, trusting they are of good health and free of disease, is well prescribed in *The New Seed Starters Handbook* by N. Bubel (1988). Squash is often unin-

tionally cross pollinated so selection of the fruit saved for its seed is important. It should represent what you wish to grow next year, taken from the plant at full or just past full maturity. Proper seed treatment and storage will avail a nice supply of seed for you and to share with others.

My interest in home food production techniques continues to evolve and I find that Integrated Pest Management is the friendliest tool in the shed. Also, there is plenty of room for it as I no longer maintain piles of rank smelling pesticides and fertilizers that were once what I was feeding myself. Incorporating IPM as the first thought of my gardening, now provides me the comfort in doing things my way, in a sensible way, and is also best for my overall garden's pro-

duction, health, and beauty.

As for the powdery mildew, *Podspheara xanthii*, on my summer squash, only time will tell if I have restricted its appearance in my garden to an acceptable threshold. I fully anticipate two bountiful harvests as I will plant my squash around the most desirable environment for occurrence and spread of these fungi, and will monitor and record findings. I feel confident that I have resolved a garden pest problem within the prevention discipline of Integrated Pest Management, thus further control is not anticipated.

DeForest “De” Lewis
 Master Gardener and winner of a 2014 High Desert Gardening & Landscaping Conference scholarship.

