Do Plants Have Behaviors?
Adapted from an article in Science News June 20, 2009

We think of animals and humans as having behaviors—like how your cat rubs his face up against things or how raccoons wash their food but have you thought of plants having behaviors? It certainly never crossed my mind before. Maybe plants do scream when you prune them .......... or maybe not, but something may be going on and one scientist calls it behavior.

Behaviors are usually attached to animals on the assumption that they move, they perform behaviors and people don’t think about plants moving. Plants do move though. Perhaps they don’t go loping across the prairies but in time lapse films plants move. They even have a name for the wide circular sweeps found in growing plants—nutation. Plants like Venus fly traps and bladderworts actively move to catch insects that land on them. The mulberry tree shoots its pollen out at Mach .05. Yes, that is what I said—MACH .05! It is thought to be the fastest biological movement known. (Mach is the ratio of the speed of an object to the speed of sound in the surrounding medium. For example, an aircraft moving twice as fast as the speed of sound is said to be traveling at Mach 2.)

The definition of behavior is being refined. The current thoughts are that behavior is “what a plant or animal does, in the course of an individual’s lifetime, in response to some event or change in its environment.” Scientist also say a behavior should start relatively fast and should be reversible.

One of the analogies that scientist use is about hunting. While that wolf may be prowling about looking for food, plant roots are also on the move looking for food. They have the ability to find good areas and avoid the poor areas and even change the conditions they are growing in. Fava beans, if grown in a phosphorus-poor soil, will acidify the soil around the roots and drop the pH within about six hours to make phosphorus more available. They don’t do that in areas where phosphorus is available.

Spotted knapweed, a nasty invasive weed across much of the West has roots that exude catechin. Catechin makes phosphorus more available in certain soils. It also may be one of the reasons that it out-competes the native species because they can’t cope with the changes happening in the soil. Then there is lupine
and blanket flower in the presence of knapweed; those plants exudes oxalate, at four times their normal levels, which seems to protect the plants from catechin.

As a caterpillar begins chewing on a leaf, the plant starts to exude volatile chemicals. Many of us have heard about these chemical defenses but did you know the defense against caterpillars is different than the one that happens when someone simply prunes a leaf? The caterpillar chemicals attract insects that feed on caterpillars. Neighboring plants can recognize these chemicals and start producing them even though they aren’t being attacked. There is even a “memory” involved. Since leaves are not attached directly to one another, the volatile chemicals need to drift from the site of the initial attack. At the first attack the response may be slow but those leaves that are attacked later will actually have a faster response time than the first. Forewarned is forearmed.

Sagebrush may even know itself as compared to other sagebrush. It seems to recognize its chemicals vs. the chemicals from another sagebrush.

And before you dismiss this as nonsense, plants have some of the same neurotransmitters as animals do. Things like acetylcholine, serotonin, GABA and glutamate occur in plants also.

Can we train plants like dogs (or maybe they will be more like cats)? Seems unlikely although the thought of drug-sniffing hydrangeas is amusing. Blooms turn pink for cocaine and blue if you’ve brought in an illegal cheese from Spain. Wish I were a better cartoonist. Food for thought, vegetarians: maybe when you pick your broccoli, it screams!

(The tongue in cheek tone is mine, but this is serious research. Check out Science News. Any quotes and all the information came from them.)

Cleaning up Our Act

Each day we are confronted with how to get rid of stuff. Some of the stuff is easy, others not so. It would be wonderful if we could replace some of the dangerous things we use for something less dangerous. There is a great handout available for telling you what kinds of things can be recycled or a substitute found. For example instead of paying for caustic drain cleaners, try boiling water and using a plunger. Safer for you, safer for the environment. The brochure lists 20 products that we use in everyday life. Some have no alternative but you can find out where to recycle them. They have a VERY limited supply in the Prescott office so call 1-800-Clean up to get one for your home!

April Gardening

PRESCOTT, PRESCOTT VALLEY & CHINO VALLEY
* Fertilize roses as leaves emerge
* Fertilizer cool-season grasses & perennials
* Replenish mulch
* Remove weeds
* Watch for insects like aphids & white flies
* Deep water trees & shrubs as needed
* Continue to protect tender plants from frost as necessary

SEDONA, COTTONWOOD & VERDE VALLEY
* See above AND:
* Adjust irrigation for warmer temperatures & plant growth
* Prune to remove winter damage
* Fertilize deciduous fruit trees when they leaf out
(for more information see Extension bulletins #27 & 74)
April is supposed to be National Gardening Month, so get up off the couch and go garden. According to an article I ran across, these are the 10 easiest vegetables to grow—onions, radishes, tomatoes, zucchini, beets, carrots, spinach, peas, peppers and lettuce. I’m glad they didn’t include beans. That would have been really embarrassing since I can’t seem to grow them. Out of the ten, I would consider lettuce, radishes, carrots and beets absolute no-brainers. I’m not including zucchini just because I’m peeved that my zucchini did so poorly last year. Tomatoes, peppers, spinach, onions hit the 2nd easiest place and peas rank last. Peas are the toughest in our climate because I’ve decided that your timing has to be impeccable. Plant at the wrong time and the seeds will rot, plant too late and the early hot weather will shrivel them in a heartbeat. Spinach can be a bit temperamental with the heat too but it’s a bit more forgiving than peas.

Do I ever have all these things growing—well no, I’m not a radish fan or the biggest lover of beets. I would like to have twenty or more varieties of lettuce growing because it’s so beautiful but I garden for one and that’s way too much. Some years my peppers do well, others not so well and the one variety that I loved isn’t readily available now. People have told me they had trouble with carrots but to me all you need to do is toss the seed out, water and then come back and thin and you are on your way to a real taste treat. I know people don’t like to thin but that’s part of gardening, so too bad.

Onions can be a bit annoying in Arizona as well, although they grow terrifically; the key is to make sure you get the right type of onion for our area.

I’m throwing in another and I’ve talked about them before but I think sweet potatoes are no-brainers too. With so little time and effort they can yield great rewards. They can go in soon. They hate the cold so just make sure your soil is warm enough.

Now that we’ve covered the easiest—yes, I found a list of the most difficult. They are cauliflower, celery, sweet corn, eggplant, head lettuce (vs. leaf lettuce), carrots (I love that it was on the easiest list too!), muskmelons, onions (another hard/easy one to grow), sweet potatoes and artichokes.

Well, that list is definitely designed for northern gardens. Sweet potatoes, artichokes, carrots and eggplant are real easy here. Celery—don’t even try, sweet corn is easy as long as you have the right variety and lots of space. The others are mostly pest-ridden. I’ve successfully grown cauliflower but it is like a pest magnet. It was covered with aphids. I washed it, rinsed it, and washed it again time after time and I’m sure I still ate mostly insect protein. Head lettuce is a bit more finicky than leaf. It needs careful water control and the right temperatures to head up. But southern California and southern Arizona provide nearly all the winter lettuce for the United States, so it can’t be that difficult. Melons are also easy to grow but they are prone to pests and every creature that lives wants to eat them. The creatures are also much better at figuring out when to eat them. I can assure you they will feast the evening or morning before you plan to pick. I’ve had lots of experience.

So it’s National Gardening Month and whether you plan to plant the hardest or easiest to grow, maybe you should celebrate. Plant a row for the hungry or even a neighbor who might be having a hard time now. Help beautify your city. Maintain a landscape at the library, hospital, nursing home or whatever. Pick up trash; volunteer to help in a school garden. Share flowers with a shut-in you know or just surprise those less fortunate than you. Help a friend start a garden. Help someone you don’t know start a garden. Volunteer! Have fun; host a garden poetry or story-telling time.

Happy National Gardening Month
Every year people look at their yards and contemplate the landscaping. Ideas fly through the head. Fanciful visions dance across the eyes. Graceful trees rustling in the wind, pockets of interesting foliage and a riot of color are what we imagine. The problem is that landscapes are rarely that, for a number of reasons. Here are a few of the problems in planning and planting.

1. Lines Don’t Matter. In fact in landscaping unless you are creating a windbreak or planting along a fence the yard is going to look a lot better if you avoid a grid-like back yard. Be fanciful, use curves and sway with the wind. That is unless you are including a football field in the back yard. Linear is ok for that but for everything else, no lines.

2. Family First. Speaking of football fields it’s important to take into consideration how the family uses the yard. Lots of kids running about or pets digging can wreck, in very short order, any landscaping. You shouldn’t be planning a formal landscape with tender and fragile plants if you have 10-year-olds playing hide and seek outside or a pair of terriers that dream of digging for rabbits.

3. Size Matters! That lovely little cedar is perfect, artfully framing the door. For the desert dweller mesquite trees are a great choice. How about evening primrose, it’s just gorgeous in the corner of the flowerbed. Fast forward 5 years later when you need a machete to get in the door, the bill to pull out the mesquite and repair the septic tank is several thousand dollars and those perky primroses are now EVERYWHERE! When you plan your landscape remember plants grow and spread. Always know the plant’s growth habits, how big it will get or whether it’s a spreader. It’s a lot less expensive that way. While I lived in Yuma I happened to see where someone had planted a ficus tree a few feet away from the house. It’s a shame because it was a beautiful tree, but the roots were breaking up the foundation. Pre-planning pays rewards!

4. The Budget Matters! Want an instant landscape—well, it’s going to cost you a pretty penny. Along with your research on what plants you want, find out what they cost. While it is wonderful to plan having 20 shrubs along the fence, can you afford them? Does it mean you will have to plant twigs and wait till they grow up or can you afford to buy larger ones? If you are using a professional to plan the landscape, remember plants are expensive. Be willing to compromise, wait to save more money or get a second job. It’s really easy to underestimate.

5. Do you have a sleek, linear ultra-modern house? What happens when you put an English cottage garden in? It might create a really jarring visual. The landscape should enhance the house. Now you might not care, but taking in the style of the house improves property values and will make both the yard and house look better. This is all very personal but if you are planning on selling the house it might make a difference.

6. Water Matters! Plan the irrigation system in conjunction with the landscape. It’s easier than putting something in later. Please, please, please keep Number 4 in mind. Plants grow and change over time. Make sure your irrigation system will meet future needs.

7. Take the contours of your lot into consideration. If the ground is flat, you might want to add some berms to provide a bit of elevation and interest in the yard. If it’s hilly, you will have to plan how the water flows. If you have a basin, water is also an issue. Does water stand in the bottom creating a wet spot? Don’t assume that the cactus will grow at the bottom of the hill because you didn’t pay any attention and didn’t know that the rain collects there creating a little marsh.
8. Maintenance. Groannn!!! It matters too. Mulberries are beautiful shade trees, but do you want to rake the leaves every year? (Although on this issue you are either crazy to be raking leaves-just leave them-or use them in a compost pile.) But other maintenance issues have to be addressed. Pruning, dead heading, dividing, etc., etc., etc. All have to be done. If you are not big on maintenance, don’t design a garden that requires it. Maybe a rock garden is better for you.

9. Plant correctly. What do I mean? Make sure the full-sun plants get full sun and the shade lovers go in the shade. Don’t mix plants that are desert lovers next to marsh plants unless you have made water arrangements that can cope with the issue. Don’t plant too deep or too shallow. They need to be placed “just right.” It might sound simple, but the difference of a few inches can kill a tree or shrub. Know what you are doing.

10. Don’t be a lollipop pruner!!!!!!! I’m not sure I can put enough exclamation points after this one. I grit my teeth and tears come to my eyes every time I see a plant massacred by bad pruning. Do not torture unsuspecting plants! If you have planned and planted correctly, you will not have to take the hedge trimmers to whack back a cypress covering the sidewalk or knocking you in the head. Unless you are a topiary specialist, whacked and lollipopped plants look awful!!!!!

11. Other thoughts—don’t plant tulips where you have javelina. Don’t plant cactus, agaves, etc. where the kids play. Don’t plant ivy anywhere, it’s invasive and will remove gutters, roofs and even grow through the sides of houses. If you don’t like to prune, don’t plant blackberries, raspberries or roses.

12. Think, think, think, plan and plan more before you plant.

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This is an olive tree, a very sad olive tree. (photo from www.azplantlady.com)

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**Monsoon Madness**

The sale is on Saturday, July 10th at the Prescott Extension Office. The committee for this year’s sale are:

- Chair – Ken Earls
- Co-chair – Bob Burke
- Logistics – Steve McIntyre
- PR/Signs – Angie Mazella
- Merchandising – Cathy Michener & Kay Gaffney
- Cashiers – Mary Barnes & Sherry Howard
- Pricing – Robin Weesner
- Entertainment – Bob Burke
- Volunteer Scheduling – Missy Sandeen
- Master Gardener Information Table - Open

**Volunteers:** In April we will ask for volunteers for July 8, 9, and 10. We would like to start receiving items and pricing on Thursday this year (July 8th). Some committees also need people prior to “sale weekend.” When the sign-up info goes out it will include dates, shifts, and areas where help is needed.

**General Merchandise:** Please start collecting items and start planting, potting, etc.

- Plants: if you start seeds for the sale focus on perennials and herbs. Landscape and houseplants are welcome. It will be a little late for vegetable plants and annuals.

- We need yard and garden items, any kind of tool, pots, etc. If the item is high end (e.g. tiller) it is helpful if you provide the original price. Power tools, fountains, etc. should have all parts bound together and labeled as “working” – be sure to test them at home first. Remove gas before donating. Think about it from the buyers perspective – if there are some obvious questions they will ask, it is helpful if you attach some written words with those answers.

- If you can collect and/or store items for the sale in your geographic area, please contact Cathy Michener, caasam@cableone.net

- Send a list of items you plan to donate to Cathy Michener (including plants). If you don’t know for sure that the items will be donated, send the info anyway. It will be used to check retail prices and to print plant information sheets.

**Starting Plants**

Several MGs in the Verde area are working with Bob Burke to start seeds. Steve McIntyre is coordinating a similar effort in the Prescott area. A “Monsoon Madness Seed-starting Demo and Organizing” meeting will be held at the Prescott Extension office on Saturday, April 3rd, at 9:00am. If you live in the Prescott area and are not sure how to go about starting seeds, or can share your knowledge to help other MGs start seeds, please attend. Contact Steve at zpsteve@yahoo.com
More Activities & Events

Monsoon Madness cont.

Pots
If you have plastic or clay pots to donate to other Master Gardeners who want to start plants bring them to the Cottonwood or Prescott Extension offices. Clean them first. If you need pots contact Mary Barnes, mcbarn1@cableone.net

Guidelines for plant donations. Keep in mind that the public expects a pretty high quality because we are Master Gardeners.

Pots –Sanitize re-used pots before planting. Wash with a solution of 1 part bleach to 10 parts water.

Roots - Plants should be established (i.e. have some anchoring roots) in their pots before the sale, so plant transplants, cuttings or seedlings as soon as possible.

Soil - Use appropriate planting mix, e.g. do not plant transplants or cuttings in pure mulch or native soil. If you are donating established landscape plants, like natives, and you do use native soil, be sure it is not from an area with soil-born diseases.

Plants Density - Make the pots look nice and full, e.g. instead of putting 1 cutting in a 3” pot, put 2 to 3 cuttings in the pot.

Plant Names - If you don’t know the names of the plants try to get an id before you bring the plants to the sale – it is really difficult to identify a lot of plants at the last minute. If you can’t identify the plant, provide some information about the plant on a Plant I.D. sheet. A Plant I.D. sheet will be included in the next e-mail message on Monsoon Madness.

2010 Master Gardener Garden Tour: Saturday, June 5, 2010. Tour will begin at 8:00 AM, at Windmill Gardens, 9550 E. Cornville Road, Cornville, and ends at 10:30AM. Cost recovery fee is $5.00 per-person-fee. Garden tours will continue through the day until 4:00PM. Garden owners are, Sally Berkshire, Bob Burke, Jeannette Teets, Jan Billiam, Joan Tyler and Linda Scheerer. The gardens are located from Sedona to Rimrock to Cottonwood, which makes a comfortable loop drive. The Tour Committee is looking for volunteers to help at each garden. There will be a morning and afternoon shift. We will make every effort to place volunteers in their first-choice garden. Sign up early to get the time and garden you want. This year’s gardens are beautiful, and different from each other, so there will be lots to learn and share. If you do not have an opportunity to sign up to volunteer at the March 17th Master Gardener meeting in Cottonwood you may do so by contacting both Janet Mansoldo: briddie@msn.com and Ron Zmyslinski: rm5840@msn.com We hope to see you there!

Water Harvesting Workshop
If you attended the Highlands Garden Conference last fall you heard Brad Lancaster’s talk – he is a great speaker and has done some wonderful, creative things to harvest rain water in Tucson. He is giving a talk at Prescott College on April 19th. It is free and open to the public. It qualifies as Continuing Education hours. For more information check out these websites


Spring Native Plant identification Hike led by Master Gardener Sue Smith – Prescott
May 21, Friday  Meet at the Williamson Valley Trailhead parking lot 8 a.m.
Please RSVP Sue Smith suejs01@yahoo.com

“Poodled” Texas Sage (photo from www.azplantlady.com)
The Verde Valley Area Iris Society (VAIS) Meeting  Wednesday March 31, 2010 at the Cottonwood Public Safety Building (corner of 6th and Aspen) at 5:30 PM. Iris show scheduled tentatively for April 24, call Linda Smith for more information.

Topic: Artistic Design with Flowers
The American Iris Society has put together a unique presentation of making interesting flower arrangements. Please bring any flowers (they can be artificial) and a vase. Hopefully you will have the opportunity to try out what you learn. This will help you have an idea of how to make an arrangement with iris for the upcoming “Iris Display” presented by VAIS on April 24. This is a vote by the public and is a lot of fun.

There will be some potted iris available for sale. RSVP: Linda Smith 928-567-7470 or e-mail iriscrower@cableone.net

Prescott Area Iris Society Annual Iris Show, May 8, Mortimer Nursery, located at 3166 Willow Creek Road, Prescott. It will feature stunning iris stalks and floral arrangements. This is the second sanctioned show by the American Iris Society. This year’s exhibit is entitled Iris Impressions. We have 6 judges for the iris stalk division and 3 judges for the floral arrangements. In the Artistic Design Theme, your artistic challenge is to create a floral arrangement inspired by old world artists’ paintings. Painters range from Van Gogh and Monet to Georgia O’Keefe, so let your imagination run wild. Just remember, iris must be the principle flower.

We have doubled our tent size and have been blessed with air conditioning to give our stems the best possible advantage of surviving the heat, not to mention us! Entries will be professionally adjudicated; ribbons, rosettes and AIS medals will be given as awards, as well as gift certificates from local nurseries and iris growers. Members of all the local garden clubs are welcome to participate in this “no entry fee” event. Won’t you come be part of the fun? More information is available by calling Roger at 442-2498 or dropping by Mortimer Nursery to pick up a copy of the show rules. Entries will be accepted from 7:00 to 8:30 AM and judging will start at 9:00 AM. Public viewing is 12:00 to 4:00 PM.

FROM THE EDITOR: Please send or email articles and announcements to the address below. All articles must be in my hands by the 10th of the month. Short announcements (no more than 2 or 3 lines) will be accepted until the 25th.
Nora Graf
PO Box 3652
Camp Verde, AZ  86322
mesquite2@hotmail.com
(928) 567-6703

Don’t try this at home. This guy is suspended by a crane to prune a large hedge. I’m sure this is a workplace safety violation.
Next Meeting
April 21st 6:30 p.m.
Prescott Ext. Office

Program: “Urban Mt. Lion Research, Preliminary Results” & “What Is Planted in Our Yards & Gardens Can Affect Our Interface with Wildlife”

Speaker: AZ Game & Fish Wild Life Manager Scott Poppenberger

This program, presented by Arizona Game and Fish Department, Wildlife Manager Scott Poppenberger, will provide information obtained during a research study of how several mountain lions used different types of habitat. It will be presented in power point format. The study focused on habitat utilization comparing lions that used habitat in and near urban areas with those thought to exclusively use wild land areas. Scott will also be available to answer question and discuss mountain lion and other wildlife biology and natural history.