



GROWING VEGETABLES IN GALVANIZED CONTAINERS

Launa Herrmann, U.C. Master Gardener, Solano County

Large metal containers are gaining popularity as an option for raised bed plantings. Available in a variety of shapes and sizes, galvanized stock tanks require no assembly and sit at just the right height for tending vegetables or flowers. My initial introduction to these containers was during an early April visit in to Petaluma’s Cottage Gardens nursery. A month later I had my own oval shaped 2’x2’x6’ container sitting in my side yard filled with 14 bags of soil (½ cubic feet each). I found exactly the size I wanted at Western Ranch in Vacaville which offered a wide range of choices including home delivery.



Vegetables Growing in Galvanized Container
All photos in this story by Launa Herrmann

At the time of this writing, a zucchini, tomato and a cucumber vine are thriving inside the tank along with two sweet banana peppers and two basil plants, plus a row of long white bunching onion sprouts. I admit I pushed the planting space to the limit to experiment with what grows well and what doesn’t. I’m already eating zucchini and basil and within days will savor the first fruit of the tomato. Watering is a learning experience. With normal 80 degree days I get by watering three times a week but when temperatures climb above 100, it’s daily. Meanwhile, while researching others’ experiences in using these galvanized containers, I discovered that the Internet is aflutter with fear over possible harmful chemical contamination from galvanized items. Most people worry they will be poisoned by zinc leaching into the soil and being absorbed by the plants.



Various Shapes of Galvanized Containers

So what is galvanization? Should a gardener be concerned?

Galvanization is a coating process of applying zinc to steel to resist oxidation and prevent corrosion or rusting. Livestock eat and drink out of galvanized troughs all the time. Until a couple decades ago, all residential water pipes were galvanized. In remote or rural sections of the country, many people still collect rain water runoff from galvanized roofs. Galvanized steel is used for nails, metal frame buildings, air ducts, cables, coiling and street lights among other items. Tomato cages are often

(Continued on page 9)

Growing Vegetables in Galvanized Containers	1
Preservation Pointers: Safe Summertime Salsas	2
Consider the Scuffle Hoe	3

Ten Reasons to Become a Master Gardener	4
Quarterly Pest Notes.....	5
Public Plant Exchange	7
Summer Gardening Guide.....	8

SAFE SUMMER SALSAS

Pearl Eddy, U.C. Master Gardener and U.C. Master Food Preserver, Solano County

Often, in the summer I don't find time to make salsa or sauces when tomatoes first ripen and must be picked, so these are thrown into the freezer. When the peppers mature those may be frozen, also. Later, when I finally find time, I'll raid my freezer and make up a couple of batches of salsa. To freeze tomatoes, no blanching is needed. Simply rinse, seal whole in plastic bags and freeze. When defrosted, the skins will slip off easily. Also, do not blanch peppers. Freeze smaller peppers such as Anaheim's or Jalapeños whole. Large peppers may be quartered or sliced to save space.

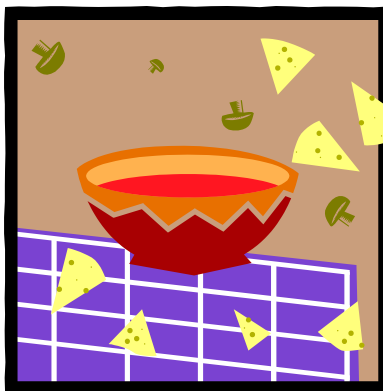
In recent years the USDA recommendations have changed for safe food processing. Amounts of required acid and processing times were increased. When canning foods, it's essential to follow safe, USDA approved recipes and methods. We still find recipes published in magazines and cookbooks which are not safe and could result in food poisoning.

It is important to understand the difference between low-acid and high-acid foods. Dangerous bacteria which cause botulism do not grow in high-acid foods which have a pH below 4.6 (the lower the pH, the higher the acid.) High acid foods include most fruits, and some tomatoes. Low-acid foods include poultry, fish, meats, olives, vegetables and some tomatoes. If you want to can these you must process them at 240 degrees (10 pounds pressure) in a pressure canner for the recommended amount of time for each food. Some foods, however, are "borderline," such as ripe tomatoes, figs, and overripe pears, so to can these products using a "boiling water bath" we must add a recommended amount of acid, such as 5% vinegar or bottled lemon juice. Do not use fresh squeezed lemon juice or homemade vinegar as the acid content may be less than the required 5%. Read labels to be sure.

Very ripe tomatoes and fruits have less acid than those that are less ripe. I like to use very ripe red tomatoes so MUST use an adequate amount of acid for safety. For instance, to can a pint of tomatoes, we must add 1 Tbsp. lemon juice or 1 Tbsp. 5% vinegar or ¼ tsp. citric acid before processing in a water bath canner.

When we add the recommended amount of acid when pickling fish, eggs or vegetables (such as beets or green beans) we are changing the product from low-acid to high-acid, which allows for a shorter processing time at a lower temperature (i.e. water bath). Tomato mixes, such as salsa, must have acid added to ensure their safety. One additional type of approved acid is citric acid, which can be found in some health food stores, pharmacies, or shops carrying wine-making supplies. I even found some on sale in an outlet store labeled "sour salt." In recipes, ½ teaspoon citric acid crystals equal 2 tablespoons lemon juice or vinegar.

My favorite salsa recipe is one recommended by the University of California Cooperative Extension. For 6 to 8 pints of "Hot Chile Salsa" you will need 5 pounds chopped tomatoes (peeled, if desired), 1 pound chopped or ground onions, 2 pounds chopped or ground peppers (hot or milder) ¾ to 1 cup vinegar, ½ tsp. pepper and 2 tsp. salt. (For my own personal touch I add at least 1 tsp. dried oregano or some fresh, chopped cilantro.) Simmer in a kettle for 10 minutes. Pack into clean, hot, pint or half-pint jars, seal and process 15 minutes in a simmering water bath. It is safe to use less onions or peppers for a milder salsa, but do not decrease the amount of vinegar or tomatoes.



The following **Creole Sauce** must be pressure canned, frozen, or refrigerated for a few days soon after making it. It makes about 4 pints and is delicious with shrimp and rice. In a large pan combine all ingredients: 3 quarts tomatoes, peeled and chopped; 2 cups chopped onions; 1 cup chopped peppers; ½ cup chopped celery, 1 clove minced garlic; 1 finely chopped hot red pepper; 1 Tbsp. chopped parsley; 1 Tbsp. sugar; 2 tsp. salt; ½ tsp marjoram; ¼ tsp. chili powder. Cook slowly until thick, stirring frequently. Ladle hot sauce into hot jars, leaving 1-inch headspace. Adjust two-piece caps. Process pints 25 minutes, quarts 30 minutes at 10 pounds pressure in a steam-pressure canner. 🌿

CONSIDER THE SCUFFLE HOE

Gene Ekenstam, U.C. Master Gardener, Solano County

The hoe has been an agricultural tool for thousands of years, and it is believed to have preceded the invention of the plough in ancient times. There are two kinds of hoes, distinguished by how they “work” or are used. The pull (or draw) hoe is forced with a chopping action into the ground on the far side of the plant and is drawn (or dragged) toward the body, digging up or cutting off the offending weed. Its blade is set at approximately a right angle to the hoe handle

The push hoe, as the name implies, is pushed forward and slices off the weed with that push action. It uses the mass of the body from the waist up to force the hoe blade to slice just under the surface of the soil and cut off the plant from its roots.

There are various types of push hoe: scuffle hoe, hula hoe, Dutch hoe and stirrup hoe are some of those. For the hula hoe and stirrup hoe the blade is formed in the shape of a stirrup and is not firmly seated in its attachment to the long handle.

Rather, there is a certain amount of “play” in that attachment so that the angle of the blade changes slightly with the back-and-forth motion of the hoe as it is “scuffled” through the soil surface. The blade is sharp on both edges, so the weed can be severed both coming and going. The user’s body motions resemble a hula. The Dutch hoe has a fixed blade and it cuts on both push and pull strokes



Hula Hoe

Another type of scuffle hoe blade is attached at a slight upward angle into the end of the hoe handle. That blade can resemble a diamond or a triangular shape. All edges are sharpened. These can come in a variety of sizes—one vendor quotes five sizes from 6 x 6 x 10 inches down to 2 1/2 on all three sides. Some types are simply round sharpened discs.

Several benefits to using a scuffle hoe:

- ◆ By slicing the weeds just below the surface, you don’t bring up as many weed seeds that are stored in the soil as you do with the chopping motion of the draw hoe.
- ◆ In contrast to the draw hoe, you don’t penetrate very deeply and contribute much to evaporation of soil moisture.
- ◆ The push-pull motion is easier on the arms and upper body.
- ◆ The blade is easier to control and you can work closer to the plant you are growing without excess disturbance to its roots.



Scuffle Hoe

Photo by Gene Ekenstam

Some limitations to the scuffle hoe:

- ◆ It does not permanently kill weeds or grasses that sprout from stolons or roots, such as Johnson grass, Bermuda grass, or dandelions because scuffle hoes will not bring up all the root.
- ◆ The scuffle hoe is not easily used for hilling (as in mounding around potatoes) or minor trenching.
- ◆ A scuffle hoe works best in well-mulched or loose soil. It is difficult to force into the ground if you are working in compacted clay, for example.
- ◆ Weeds should be caught at an early growth stage. These hoes don’t work as well on tall weeds with well-established root systems, at least not without a lot of effort.

Considerations:

- ◆ When shopping for a scuffle hoe, try one out in a hardware store to be sure that the angle of the blade is comfortable for your height.
- ◆ Check out the cutting edge(s) to be sure that the tool can be re-sharpened.
- ◆ Think about whether you want a handle of wood or of metal or fiberglass. I prefer the wood handle because, they generally are of lighter weight. (Remember, you are pushing, not chopping, so the handle doesn’t get very stressed.)



Dutch Hoe

going on in the garden, and I usually catch new weeds at an early stage. 🌱

◆ There are several on-line vendors of scuffle hoes: rogue.com, leevalley.com, gardentoolcompany.com, as well as amazon.com

My personal experience is that for my small backyard garden, a scuffle hoe is my preferred weed eradicator. It is easy to pick up and take along on my inspection of what is

TEN REASONS TO BECOME A MASTER GARDENER

Kathy Low, U.C. Master Gardener, Solano County



If you enjoy gardening, or want to learn more about gardening, the thought of becoming a Master Gardener may have crossed your mind. But it may have been a fleeting thought that you never acted upon. Now it's time to seriously give it some consideration since the application cycle for the 2015 class will be opening soon. So, here are ten

reasons why you should take action now to become a Master Gardener.

1. Receive a quality education

Over the course of sixteen weeks, Master Gardener trainees receive instruction from University of California and other local college faculty and experts on topics ranging from soils to entomology and plant pathology. By the end of the training program, you will have gained an extensive knowledge of home horticulture, pest identification, landscape management and other environmental issues.

2. The pleasure of endless learning opportunities

As a Master Gardener, you'll receive notifications of countless continuing education opportunities in the region. The opportunities include talks, workshops, and on-campus seminars. The subjects run the gamut from weeds, pollinators, and the drought to miniature gardening and how to lose your lawn.

3. Fun opportunities to serve your community

You can choose from a wide range of exciting volunteer opportunities to share your knowledge with others. Whether

you enjoy demonstrating hands-on gardening techniques, answering gardening questions at information tables, giving presentations, preparing display gardens at the Solano County Fair, helping with gardening related children's craft programs at the library, or writing about gardening, you'll be able to select from a constantly updated calendar of enjoyable opportunities to share your passion for gardening and give back to your community.

4. Access to experts to help you with your gardening problems or questions

You'll have access to a large network of Master Gardeners and program staff with a vast array of expertise to diagnose your toughest gardening problems, provide you with solutions to your problems, and answers for your difficult questions.

5. Enjoy a wide range of gardening resources at your disposal

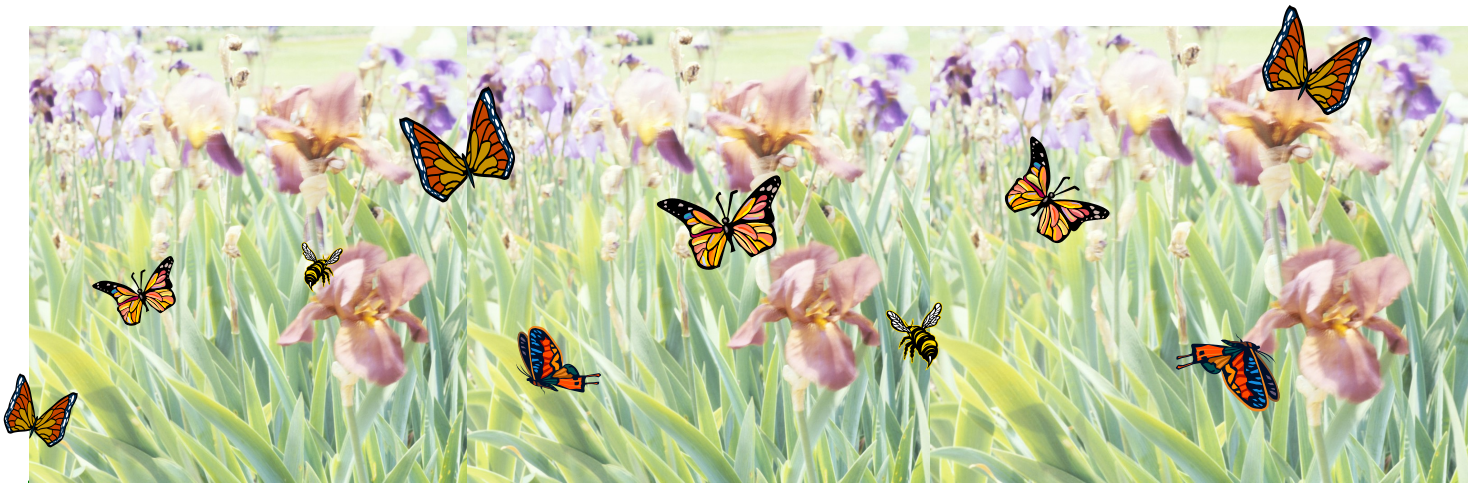
In addition to access to countless reliable websites and internal Master Gardener online documents, you'll also have access to print and other resources in the county Master Gardener Office.

6. Leaving an important legacy

As a Master Gardener, you provide individuals with research based solutions to yard, garden and pest problems that are the least harmful to the environment and to human health. Through the advice and assistance you provide to others, you are creating a legacy of leaving behind a healthy earth to your children, grandchildren and future inhabitants of this planet.

7. Opportunity to forge new friendships

(Continued on Page 6)



QUARTERLY PEST NOTES

Contributed by Dave Harper, U.C. Master Gardener, Solano County

What is Integrated Pest Management (IPM)?

Integrated pest management, or IPM, is a process you can use to solve pest problems while minimizing risks to people and the environment. IPM can be used to manage all kinds of pests anywhere—in urban, agricultural, and wildland or natural areas.

How Does IPM Work?

IPM is based on scientific research it focuses on long-term prevention of pests or their damage by managing the ecosystem

With IPM, you take actions to keep pests from becoming a problem, such as by growing a healthy crop that can withstand pest attacks, using disease-resistant plants, or caulking cracks to keep insects or rodents from entering a building.

Rather than simply eliminating the pests you see right now, using IPM means you'll look at environmental factors that affect the pest and its ability to thrive. Armed with this information, you can create conditions that are unfavorable for the pest.

In IPM, Monitoring and Correct Pest Identification Help You Decide Whether Management is Needed

Monitoring means checking your field, landscape, forest, or building—or other site—to identify which pests are present, how many there are, or what damage they've caused. Correctly identifying the pest is key to knowing whether a pest is likely to become a problem and determining the best management strategy. After monitoring and considering information about the pest, its biology, and environmental factors, you can decide whether the pest can be tolerated or whether it is a problem that warrants control. If control is needed, this information also helps you select the most effective management methods and the best time to use them.



UC Statewide IPM Program

Photo from UC IPM Online



IPM Programs Combine Management Approaches for Greater Effectiveness

The most effective, long-term way to manage pests is by using a combination of methods that work better together than separately. Approaches for managing pests are often grouped in the following categories.

- **Biological Control**

Biological control is the use of natural enemies—predators, parasites, pathogens, and competitors—to control pests and their damage. Invertebrates, plant pathogens, nematodes, weeds, and vertebrates have many natural enemies.

- **Cultural Controls**

Cultural controls are practices that reduce pest establishment, reproduction, dispersal, and survival. For example, changing irrigation practices can reduce pest problems, since too much water can increase root disease and weeds.

What is a Pest?

Pests are organisms that damage or interfere with desirable plants in our fields and orchards, landscapes, or wildlands, or damage homes or other structures. Pests also include organisms that impact human or animal health. Pests may transmit disease or may be just a nuisance. A pest can be a plant (weed), vertebrate (bird, rodent, or other mammal), invertebrate (insect, tick, mite, or snail), nematode, pathogen (bacteria, virus, or fungus) that causes disease, or other unwanted organism that may harm water quality, animal life, or other parts of the ecosystem.

(Continued on page 6)

(Continued from Page 4—Ten Reasons to Become a Master Gardener)

From the start of the training class to the numerous volunteer activities, you'll have the opportunity to forge new friendships with like minded gardeners.

8. Explore botanic gardens and other places and events through organized field trips

Solano Master Gardeners can participate in planned field trips with fellow Master Gardeners. Recent trip destinations included the UC Botanic Garden, Filoli Gardens, and the National Heirloom Exposition.

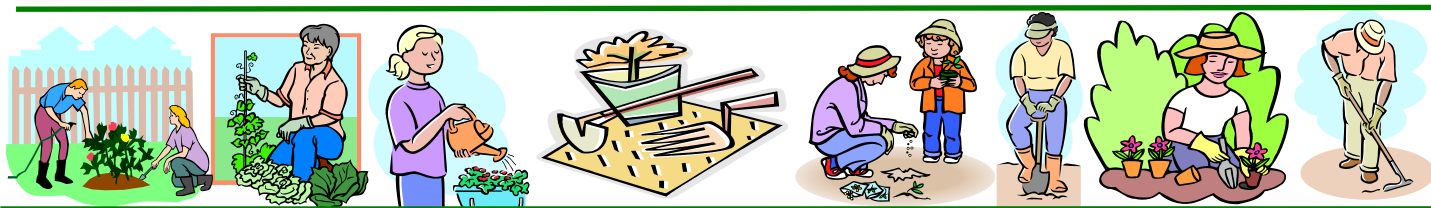
9. Discounts on UC publications

We all like to save money. As a Master Gardener you'll receive a 40% discount on UC Agriculture and Natural Resources publications, including the popular Pest ID cards.

10. Enjoy the camaraderie of fellow gardeners

Most of the volunteer opportunities involve several Master Gardeners who share your passion for gardening. And since Master Gardeners are by nature nurturing and supportive individuals, you will join the camaraderie of a group of gardeners bound to bring a smile to your face whenever you think of them.

So now is the time to take action and do something for yourself, something you'll enjoy. To be notified when the application period opens, or if you have questions about the program, contact Jennifer Baumbach, UC Cooperative Extension Master Gardener Program Coordinator at (707) 784-1321 or jmbaumbach@ucanr.edu. See Page 9 for further information. 🌱



(Continued from Page 5—Quarterly Pest Notes)

• Mechanical and Physical Controls

Mechanical and physical controls kill a pest directly or make the environment unsuitable for it. Traps for rodents are examples of mechanical control. Physical controls include mulches for weed management, steam sterilization of the soil for disease management, or barriers such as screens to keep birds or insects out.

• Chemical Control

Chemical control is the use of pesticides. In IPM, pesticides are used only when needed and in combination with other approaches for more effective, long-term control. Also, pesticides are selected and applied in a way that minimizes their possible harm to people and the environment. With IPM you'll use the most selective pesticide that will do the job and be the safest for other organisms and for air, soil, and water quality; use pesticides in bait stations rather than sprays; or spot-spray a few weeds instead of an entire area.

IPM Programs

These IPM principles and practices are combined to create IPM programs. While each situation is different, five major components are common to all IPM programs:

1. Pest identification
2. Monitoring and assessing pest numbers and damage
3. Guidelines for when management action is needed
4. Preventing pest problems
5. Using a combination of biological, cultural, physical/mechanical and chemical management tools 🌱

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<http://www.ipm.ucdavis.edu/index.html>
Or at your local Cooperative Extension office*



You're Invited!

To the Master Gardener Public Plant Exchange

Date: September 27, 2014

Time: 9:00 am to 12:00 pm

Place: UC Cooperative Extension Office
501 Texas Street, Fairfield, CA 94533

This event is a public plant exchange! It's all things related to gardening; kind of like a huge garden garage sale, but FREE.

The public is invited to bring their plants (seeds, slips, cuttings, bulbs, etc.), magazines, books, tools, clothing, pots, etc. to exchange with the Master Gardeners and other local residents.

Bring a plant, take a plant!



For more information, contact Jennifer Baumbach at 707-784-1321 or jmbaumbach@ucanr.edu

All leftover plants will be donated to Loma Vista Farm, Vallejo.

Summer Gardening Guide

	JULY	AUGUST	SEPTEMBER
P L A N T I N G	<ul style="list-style-type: none"> ◇ For summer-to-fall color, choose ageratum, celosia, coleus, marigolds, and zinnias ◇ Continue planting warm-season vegetables until midmonth: beans, corn, tomatoes ◇ Start perennials from cuttings: dianthus, geraniums, verbena ◇ Sow seeds of columbine, coreopsis, forget-me-nots and foxglove 	<ul style="list-style-type: none"> ◇ Start seeds of cool-season crops: broccoli, cabbage, lettuce—to set out in August ◇ Direct-sow edibles: carrots, onions, peas, radishes ◇ Start sowing seeds of cool-weather bedding flowers in flats now: calendula, candytuft, pansies, snapdragons, stock 	<ul style="list-style-type: none"> ◇ Seed: try a selection of colorful salad greens, which are easy to grow at home ◇ Time to start thinking of what tree to buy. Consider fall color and shop when the leaves color up ◇ Shop for bulbs now to get the best selection ◇ After midmonth, sow seeds of California poppy and clarkia
M A I N T E N A N C E	<ul style="list-style-type: none"> ◇ Control weeds—pull or hoe them as soon as they appear ◇ Deadhead (remove old flowers from dahlia, black-eyed Susan, rose and other perennials) ◇ Fruit trees: brace limbs that are sagging with fruit. Clean up any fallen fruit ◇ Continue to irrigate plants, especially when hot and windy weather is forecast 	<ul style="list-style-type: none"> ◇ Deep water trees. Use a soaker hose and place at drip line of tree ◇ Fertilize warm season annuals ◇ Deadhead spent blooms ◇ Refresh hanging baskets with new transplants. Succulents work well ◇ Continue to harvest vegetables for maximum production 	<ul style="list-style-type: none"> ◇ Get flowering annuals and perennials as well as fall-planted vegetables off to a strong start by incorporating a high-nitrogen fertilizer into the soil before planting. Fertilize again in 2–4 weeks, or follow label instructions ◇ Later this month is one of the best times to rejuvenate bluegrass, fescue, and rye grass lawns. Rake and reseed. Be sure to irrigate and keep moist
P R E V E N T I O N	<ul style="list-style-type: none"> ◇ Budworms—inspect plants for holes in buds and black droppings. Use Bt's to control ◇ Deep water trees. Midsummer heat can cause drought stress. Deep water citrus, fruit and flowering trees once every week or two. Water less thirsty trees once a month. ◇ When foliage dries completely, dig up spring-flowering bulbs and tubers. If daffodils and Dutch iris appear crowded, dig them up too. Store bulbs in a cool, dry place until fall planting ◇ Dig and divide overcrowded bearded iris clumps. Share with friends and neighbors! 	<ul style="list-style-type: none"> ◇ Continue to deep water all plants to avoid sunburn and other damage from hot weather ◇ Continue garden clean up. Remove fallen fruit and garden debris ◇ Inspect plants for signs of spider mites. Apply a blast of water spray to undersides and tops of leaves to dislodge dust mites. 	<ul style="list-style-type: none"> ◇ Use a selective pre-emergent herbicide on lawn to keep winter weeds under control ◇ Clean up fallen fruit and leaves to keep diseases at bay ◇ Clean up old vegetables to prevent overwintering of insects and disease

(Continued from page 1--Growing Vegetables in Galvanized Containers)

galvanized steel in addition to fencing used around gardens. (Visit <http://wikipedia.org/wiki/Galvanization> for a detailed description of galvanization. For more on the safety of galvanized wire, check out www.motherearthnews.com/organic-gardening/galvanized-wire-zb0z09zblon.aspx).



More Sizes and Shapes of Galvanized Containers

Perhaps knowing the history of the container you are purchasing is the first step. We can drive ourselves crazy worrying about every possible contaminant. Yet a salvaged stock tank formerly used to hold herbicides, pesticides or fungicides is suspect. And the safety of a used galvanized container that could have contained petroleum products or drugs would be questionable. Zinc in and of itself is not the villain, but a mineral essential for growth in the right quantities. And truth be told, each time we pour water and fertilizers onto our plants, we add chlorides and other chemicals to the soil which are absorbed by those plants.

What I personally know for sure is this: I know more about the tomatoes, cucumbers, zucchinis, peppers, onions and basil I'll pick from the galvanized container sitting in my side yard than I do about the produce I purchase at the market. Until all the data is in, the health benefits of a fresh-picked vegetable outweigh possible risks and keep my concerns in check. 🍌

Interested in Becoming a Master Gardener?

The application period starts soon!

Later this summer:

Check the website at http://cesolano.ucanr.edu/Master_Gardener/ for application information contact Jennifer Baumbach, Solano Master Gardeners Program Coordinator at (707) 784-1321 or jmbaumbach@ucanr.edu with questions.



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It is available through the internet for free download:

<http://cesolano.ucdavis.edu/newsletterfiles/newsletter130.htm>

A handwritten signature in black ink that reads "Baumbach".

Jennifer M. Baumbach

Master Gardener Program Coordinator



**U.C. Cooperative Extension
Solano County Master Gardeners**

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SEEDS FOR THOUGHT



**summer
2014**