

# From the Ground Up

A Gardening and Native Plants Quarterly

Colorado State University Extension-Pueblo County

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## KNOW YOUR NATIVES

### SAVE THAT GAMBEL OAK!

By Marge Vorndam, Colorado Master Gardener, 1997, and Native Plant Master, 2007

Since Gambel Oaks (*Quercus gambelii*) profusely cover such a huge area of the U.S. Southwest, it is often viewed as a plant to be eradicated (read, pest plant!) as development proceeds into mountain communities. But *Quercus* evolved with the ecological topography of the mid elevations of the mountainous West (6,000 – 9,000 feet) and is a critical plant for preserving wildlife in our area of the Rockies. It also can be attractive as part of an urban landscape screen - a shrub growing in “clump” fashion to 20 feet tall and 20 feet wide, or as a small tree to 40 feet tall for shade in a native landscape design.

*Q. gambelii* is named after William Gambel, a field assistant who worked with Botanist Thomas Nuttall. It is part of the *Fagaceae* (Beech) Family. It has several common names, depending on what part of its Western home it is found in—Colorado Scrub Oak and Rocky Mountain White Oak are alternative designations. It is a hardwood. The wood contains vessel elements, broad leaves that fall off in the fall and it produces seeds that are protected by a fruit, the oak acorns, full of starch. Fruits and growing habits provide food and shelter for most of Colorado’s wildlife species—so DON’T cut down those scrub oaks.



Gambel Oak leaves.  
Photo from wildflower.org

The most critical threat to our wildlife populations is loss of habitat, so clearing oak impacts numbers of nesting birds, rabbits, deer, porcupine, turkey, elk, pronghorns, bear, native squirrels and so many other indigenous wildlife. Hummingbirds feed heavily on exudates from insects that use the oak bark and leaves as a breeding source. This fruit plant also provided food, medicines, and fabric dyes for our ancestors, and also for interested present day Americans. While the shrub contains tannic acid, and can be poisonous if eaten in large numbers by livestock, the acorns can be processed to eliminate this effect by those of us who choose to use them.

This oak is found in USDA growing zones 2-7 to -40° F. In the mid to late spring, profuse numbers of insect pollinator species are drawn in by the developing inconspicuous, monoecious yellow flowers. Summer features lobed leaves with shiny upper surfaces. In fall, the deciduous leaves turn to shades varying from maroon to yellow. The small acorns appear, offering much-needed carbohydrate sustenance to Colorado wildlife which are building fat stores for winter survival.

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Gambel Oak acorns.  
Photo from wildflower.org.

On the microscopic side of life, Gambel helps its soil environments through the root exudates and falling leaves - in and on the soil surface. Degrading leaves and Gambel roots preserve soil health by replenishing levels of nitrogen, phosphorus, sulfur, calcium, magnesium and potassium to surrounding soils – higher even than the contribution of Ponderosa pine. This, in turn, enhances soil organisms and soil fertility near this plant.

So, DON'T cut down those scrub oaks—worth repeating. They represent a huge part of what makes our state great. Find a way to live with and replenish them in your environment. Our ecological system here in Colorado will thank you! 🌱

## Yellow Leaves? A Soil Problem

By Maureen Van Ness, Colorado Master Gardener, 2015

Our trees are valuable investments. On our side, the watering, feeding, pruning (and sometimes pleading) we do for our trees takes time and energy. On the trees' side, the years of slow growth while tossed by gusts of wind, hammered by hail, frozen by mounds of snow, baked in heat, and chewed on by various insects, all add up to stress and effort to survive.

When we see signs of that struggle to survive, it can be heartbreaking to watch. Over the last three years, I worked to help our Red Maple overcome its battle with iron chlorosis. It succumbed. Any new spring leaves this year were tiny, oddly off the trunk rather than the branches, and they withered quickly. When we cut down the tree, the trunk was dry and brittle, lifeless. Sad.

Iron Chlorosis is the condition of lack of iron, a mineral the tree needs to make chlorophyll for photosynthesis. The distinct looking leaves are an unnatural yellow, with obvious green veins, which indicate the tree's inability to produce green chlorophyll needed for food and growth. Chlorosis means, lack of chlorophyll.

Our soil here in Colorado is rich in iron. Think of the Red Rocks Amphitheater, or Garden of the Gods. Those beautiful red rocks are caused by high iron content in the soil, hence our state name, from Color Rojo (red color). The problem comes from our alkaline soil; its calcareous quality inhibits the plant's ability to take up the iron it needs. The iron is there, but chemically bound up in a form unavailable to the roots.

What to do? First, alleviate any stress factors. Be sure the tree has the water it needs, deep watering, especially in the early spring (March) as it is beginning to grow, and in the fall (October) as it is moving toward dormancy. Check with a long screwdriver to be sure the soil is damp twelve inches down, but not soggy. Too much water can create problems, too, especially in compacted, dense soil that will not allow the roots to penetrate or provide oxygen for the roots to uptake. Heavy clay soil, or soil with poor drainage, is easily overwatered – be sure to amend the soil before planting to correct those stress factors.

Planting a tree in a lawn does not give the tree sufficient water, or allow for proper mulch around the trunk. An organic mulch, such as compost (without manure to avoid salt build up) or sphagnum peat, protects the roots and builds soil tilth over time.



Iron chlorosis symptoms.  
Photo from PlantTalk®

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Tree suffering from iron chlorosis.  
Photo from PlantTalk®

Beyond the routine care of all your plants, a tree with iron chlorosis needs additional help. Iron Chelates in powder form can be purchased, sprinkled around the drip line and watered in. The chelates make the iron available to the roots. Be sure to follow package directions. Sulfur can be added, but it is not a long-term solution. Iron can be sprayed in a liquid form on the foliage, although it is difficult to spray every leaf, especially on larger trees. Trunk injections can be applied, but it is recommended that it be done by a professional arborist.

If you are looking to plant a tree, avoid trees susceptible to iron chlorosis: Maples (Red, Silver, or Amur), Oaks (Red, Swamp White, Pin), Apple, Crabapple, Peach, and some Pines. These all have high iron requirements, and don't do well in our conditions. Some shrubs also have a tendency toward iron chlorosis: some Roses, Hydrangeas and Spireas.

If you are having problems with iron chlorosis, a soil test is a good idea. Specify on the test the issues you have. You can pick up free soil test kits at the CSU Extension/Pueblo County office.

In advanced stages of iron chlorosis, the leaf edges appear scorched and the leaf interiors turn brown as cells die. Even as I made sure our tree had good water, applied iron chelate, fertilized and pleaded, our Red Maple withered and died. We'll replace it with a tree that is known to do well in our area - we're thinking a Locust or maybe Austrian Pine. A good prevention is observation, catching a problem in its earliest stages. I've learned the hard way how to avoid iron chlorosis and deal with the deeper soil problems that cause it. 🌱



## GARDEN WALKS

### **LEAFY FISH AQUAPONICS FARM**

by Vicki Linden, Apprentice Colorado Master Gardener, 2017

Master Gardeners are always looking for new adventures and new ways of growing natural food. Driving over bumpy dirt roads, a new adventure took them to The Leafy Fish Aquaponics Farm. The owners of this exciting farming alternative are Dan and Rhoda Barbour, and Dan's parents, Bruce and Janice Barbour.

Aquaponics is a form of organic farming which uses fish waste as a food source for plants. The plants in turn act as a natural filter for the water the fish live in. Through aquaponic processes, vegetables grow naturally, free from pesticides, herbicides, and GMOs. Whether there is rain, sleet, snow, or drought is no concern to the Leafy Fish. The bio farm is located inside a greenhouse, completely sheltered from all elements, which means reliably fresh, nutritious food can be produced year round. Additionally, plants grow more quickly in the controlled environment. For example, from seed to harvest, romaine lettuce matures in only one month; in traditional farming, the average length is six weeks. That means satisfied commercial customers and chefs in upscale restaurants in Colorado Springs and Pueblo. Not to mention the supply of Tilapia sold to those same customers, and others, is highly prized.

As a closed-loop, sustainable growing system, there is a need for aquaponics farms. Our county and nation are facing a growing population to feed, decreasing water resources, and shrinking farm land due to home building expansion. Aquaponics is a viable solution for all three rapidly increasing demands.



Colorado Master Gardeners and CSU Extension staff on a tour of the Leafy Fish

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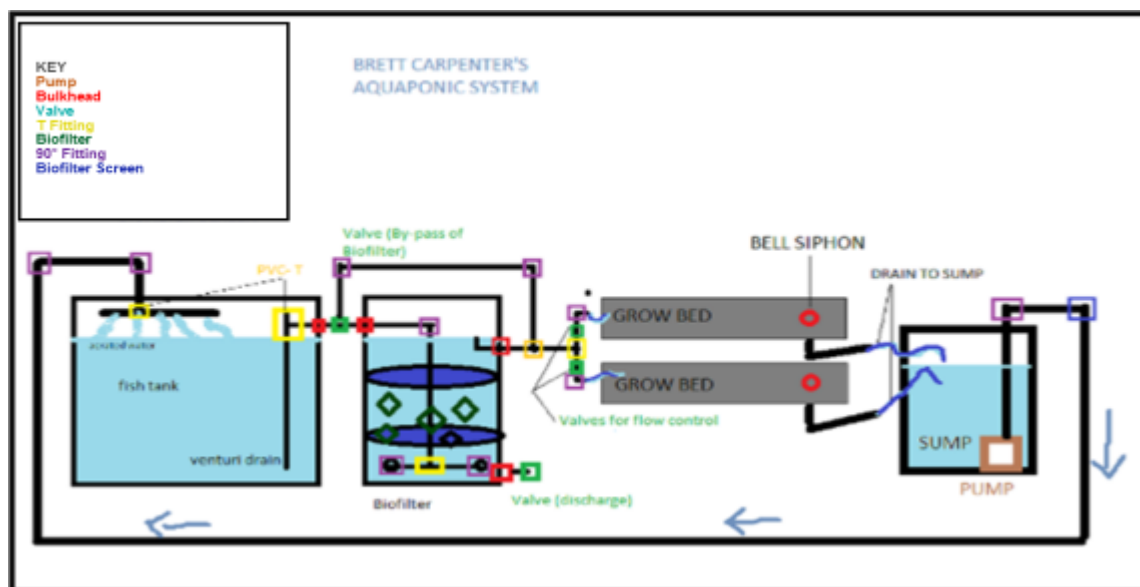




Aquaponics has a far reaching history. The idea of combining fish and veggie production into an integrated system is far from new. Ancient precedents for integrated aquaculture include the Chinampas of Mexico and the integrated rice paddy systems across parts of Asia. In a modern context, Aquaponics emerged from the aquaculture industry as fish farmers were exploring methods of raising fish while trying to decrease their dependence on the land, water and other resources. In the mid 1980's, Mark McMurtry and Professor Doug Sanders created the known closed loop aquaponic system (From Kirstin Bradley, Milkwood Company, 2014). An example of an aquaponics set up from Brett Carpenter can be seen below.

Across our country aquaponics is being used from commercial growers to backyard gardeners. Will aquaponics become the farming method of the future? We'll see.

The adventure continues . . . 



CSU Extension—Pueblo County Presents:

## Cottage Foods Safety Training

Are you interested in bringing your food product to craft sales or farmers markets? Learn food safety considerations in setting up your home for a food business:

- New development in the Colorado Cottage Food Act
- Foods permissible for sale to the end consumer
- Ingredient labeling requirements
- Basic food safety— including proper hygiene, preventing cross contamination and cross contact of food allergens, temperature control for safe food preparation, storage, transport and sales
- Special considerations for food inspection or critique

**Upcoming Classes:**

*Class one*  
Tuesday, October 3, 2017, 1:00—5:00 p.m.  
Tuesday, November 7, 2017, 5:30-9:30 p.m.  
Fee: \$40.00

To register: Mail or bring payment, cash or check only (check made payable to Extension Program Fund), to CSU Extension, 701 Court St., Suite C, Pueblo, CO 81003 or register online by credit card at: <http://pueblo.extension.colostate.edu/cottagefoods/>

**Class Location:**  
CSU Extension—Pueblo County  
701 Court Street, Suite C  
Pueblo, CO 81003

Space is limited to 16 participants.  
For more info, call 719-583-6566.  
Presented by CSU Extension Agent, Laura Krause



**Do you want to be a Colorado Master Gardener Volunteer?**

We are recruiting now for the 2018 CMG training class. Attend one of these informational meetings to hear more about the program and to get application materials.

**Tuesday, October 17 at 6:00 p.m.**  
**Thursday, October 19 at 10:00 a.m.**

**Both at the CSU Extension-Pueblo County office,  
701 Court St. Suite C**

**Classes start January 18, 2018**  
**Fee for volunteer track (CMG)- \$180**  
**Fee for non-volunteer track (CGC)-\$530**

If you need any special accommodation(s) to participate in any Colorado State University Extension event, please contact CSU Extension-Pueblo County at 719-583-6566. Your request must be submitted at least five (5) business days in advance of the event. Colorado State University, U.S. Department of Agriculture and Pueblo County cooperating. Extension programs are available to all without discrimination.

### **Garden Tip:** Fall Lawn Care

Don't forget to keep watering this fall and winter, once every month or so when it is 50° or above. Fall is the perfect time to seed or sod a bluegrass lawn. It is also a good time to do some re-seeding if you have bare patches. Give bluegrass lawns their final fertilizing of the year in the fall, about 1 pound of nitrogen per 1,000 square feet of lawn.

## **It's Chile Festival Time!**

By Kerry Caruselle, Colorado Master Gardener, 2015

Get ready! It's time for the mouth-watering aroma of roasting chiles! The beginning of September signals the countdown for the 23rd annual Pueblo Chile and Frijole Festival. The Festival is presented by Loaf N' Jug and sponsored by the Greater Pueblo Chamber of Commerce.

The popular Festival is held on the third weekend after Labor Day in September. This year the Festival will be held along Union Avenue in historic downtown Pueblo. The hours of the Festival are from 3:00 p.m. to midnight on Friday, September 22, 10:00 a.m. to midnight on Saturday, September 23 and 10:00 a.m. to 6:00 p.m. on Sunday, September 24. The cost is \$3.00 for admission for adults. Children under the age of 12 are free. Parking can be found in designated lots around the downtown area.

More than 100,000 people attend the annual three-day Festival dedicated to two of Pueblo's most delicious and best loved crops – frijoles, or pinto beans, and Mira Sol, or Pueblo, green chilies. Visitors come from around the world and all over the United States. Many of the attendees are from Pueblo, its surrounding communities, Colorado Springs, northern Colorado and northern New Mexico.

What is there to do at the Festival? Well, buy your year's supply of roasted chilies and fresh frijoles. There are over 150 vendors slated to be at the Festival. There will be live music, lots of food choices, a farmer's market, various arts and crafts booths, and information from government and civic offices. And of course, the Colorado Master Gardeners (CMG) will have an educational booth there as well!




Visit the CMG booth this year!



CMG volunteers at the  
2016 Chile Fest

This year the CMG program Committee has decided to expand upon the topic of food safety regarding the handling of the chiles. Many of the Festival attendees buy mass quantities of chiles, but do not know how to prepare them for future uses. We are also planning on passing out USDA approved recipes for dishes using the roasted chilies and fresh frijoles.

Another area in which the CMGs will be assisting our community is gardening outreach regarding various questions about planting, propagation, harvesting, etc. We will have feedback forms available for questions to be answered by a CMG at a later time. Soil test kits will be available for distribution to the community. Information about the All Pueblo Grow Seed Library will be presented. We will also have a giveaway that anyone can enter, and an educational activity for the little ones.

This is an excellent opportunity for the CMG program to come in contact with various people, not only from our local community, but from throughout the Southwest. It is also a prime event to publicize our amazing Colorado Master Gardener program that we have here in Pueblo County, and to offer information on 2018 CMG training for potential new volunteers. 







## The Flair of The Faire!

By Derrick Mason, Idea Factory Makerspace Librarian, Pueblo City-County Library District

Lights flickering and flashing! The sound of cardboard boxes being crushed. The whirring of drones flying overhead. 3D Printers beeping to a melodic tune as they build fidget spinners. Where in the world could you have such a unique experience? The first annual Pueblo Mini Maker Faire, that's where! Come see all the fun at the Colorado State Fairgrounds on October 27th and 28th!

A Maker Faire is a celebration of all things Do-It-Yourself. It can be crafts, robotics, art, performance art, machining, cooking, welding, and much more! There is an emphasis on STEAM (Science, Technology, Engineering, Arts and Mathematics) education and entrepreneurship. The Pueblo Mini Maker Faire is hosted by Colorado State University Extension-Pueblo County, Pueblo Community College, Pueblo City-County Library District and Colorado State University-Pueblo. Maker Faire is supported by MAKE Magazine and O'Reilly Media.

On Friday, October 27th from 5 p.m. to 10 p.m., the Maker Faire will open the public event with our Fire & Lights show, Box Truck Night Market and a MakerCon Costume Contest. Saturday, October 28th from 9 a.m. to 5 p.m. will feature local and regional makers in our Maker Marketplace, makers that glow and illuminate with Makers in the Dark, Innovation Maker presentations on our Think-up Stage, and Challenge Makers with robot, drone and RC Challenges.



Participant with a maker project

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Kids engage with maker projects

Meet our Featured Makers and Exhibits: Dragonami - a 40 foot street legal art-car built for Burning Man. Dianna Hall - Founder of ActivArmor: watersafe, breathable, custom 3D printed splints, and Drew Johnson Founder of TechWears: upcycled tech wearable art.

The Pueblo Mini Maker Faire is a family friendly event intended to bring the Southern Colorado Maker Community together. Admission to Pueblo Mini Maker Faire ranges from \$3 to \$12. To purchase tickets in advance or if you are interested in participating as a Maker, visit [pueblo.makerfaire.com](http://pueblo.makerfaire.com). Pueblo Mini Maker Faire would love for you to share your creations and knowledge.

The spirit of Maker Faire is to inspire, inform, connect, and entertain thousands of Makers and aspiring Makers of all ages and backgrounds. Join us for all the fun! 

## Community Gardens Grow Community

By Frank Cordova, Director of Local Food Pueblo ([lfpueblo.org](http://lfpueblo.org))

A common metaphor for spreading a good idea is “planting a seed”. As a gardener and lover of plants, I know from experience that growing from seed can be a challenge. If an idea is a seed, we need to learn where and how to “plant” it and nurture it so that it will grow and thrive. If the conditions are not right, seeds will not sprout or will not survive to maturity, but under the right conditions a seed will not only germinate but it will thrive. Planting the seed is only the first step.

Though a new idea to some, community and school gardens have existed for as long as communities and schools have existed. During World War II in the United States there was a need for community and school gardens to grow food for the people who lived in those communities because a lot of the industrially produced food was reserved for Americans fighting abroad. They were called “Victory Gardens” because they helped ensure victory in the war. There are many conflicts around the world today, but we also fight many battles near our homes. Some of Pueblo’s battles include violence and crime, homelessness, access to healthy food and a bad reputation for those things and more. Many caring community members dwell on the problems rather than focusing on solutions. People in Pueblo—like people elsewhere—feel separated from and distrustful of one another. Anything we can do to reconnect people to each other, empower one another, and rebuild or strengthen our communities is a victory.



Community gardens bring people together

Pueblo County already has at least a dozen school and community gardens of various sizes at various stages. In the past year at least three new school gardens have been started. School administrators and staff, parents, and volunteer community members along with myself, director of LocalFood Pueblo (part of the local nonprofit organization NeighborWorks Southern Colorado) helped start gardens at Ben Franklin Elementary, Minnequa Elementary, and Cesar Chavez Academy. All three schools built raised bed gardens in the spring of 2017, planted them, and successfully grew crops. Unfortunately, the garden at Ben Franklin was vandalized late in the summer. It has a fence around it, but until the vandalism occurred it was not locked. I have heard that Central High School was designing an aquaponics or hydroponics garden. I have not been involved in that project so I don’t know its status, but I would love to learn more and share it with the community if the administrators would allow it.

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Many lessons can be learned in a school garden

Like any worthwhile endeavor, community and school gardens are not a quick and easy project. It might be a bit cliché, but where there's a will there's a way! Depending on the vision and mission of the garden it does not have to be large or cost a lot of money. You can start small, but it does require dedication by a handful of people to start and ideally a dozen or more people to maintain and grow. Some concerns for starting a garden are soil quality and nutrients, availability of water and light, weeds, pests, security (potential vandalism), funding, and safety. It takes a lot of planning and preparation to address all of the concerns and minimize the risks, but with a passionate and hardworking group anything is possible.

There's no time like the present to start preparing for next season if you have a garden already or to start planning a new garden if you don't have one yet. If you want to start a garden in the spring of 2018, it will be a challenge but it isn't impossible. Depending on your space, team, and resources you have it might be more plausible to build and plant in the spring of 2019. In any case, planning needs to start immediately.

Where do we go from here? I am glad you asked! The CSU Extension-Pueblo County office and LocalFood Pueblo (part of NeighborWorks Southern Colorado) are hosting a Community/School Garden Meet-up the evening of Monday, October 16, 2017. This meeting will be the first of many likely held once a quarter (every 3 months). It will take place at the Extension office at 701 Court St, 2nd Floor at 6 p.m. Any leader or representative of an existing community or school garden or anyone who wants to start one (particularly in Pueblo County) is welcome to attend. There will be some refreshments and likely snacks and it will be a less formal event. The CSU Extension-Pueblo County office is a great resource and horticulture coordinator Sherie Caffey and her crew is awesome. If you have any questions or would like to RSVP, you can email or call me at [fcordova@nwsoco.org](mailto:fcordova@nwsoco.org) or 719-423-4642. I hope to hear from you soon or see you on October 16. Bee there or bee square! 🐝

### ***Garden Tip: Harvest Time***

You've been working hard on your garden all year, now it's time for harvest! Enjoy the fruits of your labor by harvesting correctly. It's best to harvest your crops in the morning before it gets too hot, or on a cool day with no rain. You can pick tomatoes when they start to turn color and ripen them indoors. Pick peppers when they are the desired size. Most leafy herbs and greens should be harvested when they are young and tender. Don't forget to wash and dry your produce properly. If you have grown an amazing crop, consider saving the seed and growing it again next year, or donating it to the All Pueblo Grows Seed Library.



Check out all of the **CSU Extension-Pueblo County** Facebook pages!

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