

# From the Ground Up

A Gardening and Native Plants Quarterly

Colorado State University Extension-Pueblo County

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## Extending the Season with Cold Frames

By Linda McMulkin, Native Plant Master, 2007

We all know that winter is long in Colorado, even on the plains. Gardeners in Colorado often wish for a way to extend the growing season with specialized structures to protect plants during cold weather but don't want the expense of installing a full greenhouse. My search for a season extending option led me to cold frames. While cold frames have some disadvantages, this relatively inexpensive option provides a protected space for me to grow plants beginning in February.



Cold Frame with cinder block walls

When I started thinking about adding protected growing space at my home, I first considered what I wanted to accomplish and what I could afford. I have a large flower garden and help maintain a couple of public gardens in Pueblo, and I wanted to plant local natives at each site. And, while I could buy seed and start them indoors, I didn't have appropriate space to maintain the plants until spring planting. Last year, the cold frames provided a sheltered space with adequate light to allow about 900 seedlings to get big enough to plant in gardens in May and June. Since that original goal, I've found that I can overwinter tender perennials like rosemary, plus grow pots of lettuce and cilantro until about Thanksgiving, when light becomes the limiting factor.



Empty cold frame with wood frame

A cold frame is basically a short greenhouse, where plants get natural light but are protected from wind and, in my foothills setting, critters. They can be temporary or permanent structures, built from a large range of materials in various sizes. Temperature can be manipulated to a certain extent using passive and active heat sources (technically making it a hot box). They are much less expensive than a greenhouse, but the major disadvantage is that their low profile means lots of work on your knees.

Full disclosure: I didn't design or build my cold frames. I described to my husband what I wanted and he made them for me. We started with a small cold frame (4' x 3') 2 years ago, then added 2 8' x 3' cold frames last year. I've requested upgrades along the way and Mike has figured out how to make my vision a reality.

*Continued on page 2*

## INDEX



Cold Frames..... 1-3  
Growing Natives..... 3-5  
Digging Deeper..... 6-7

Plants for Pollinators.. 8-10  
Perennial People..... 11  
Garden Walks..... 12



Cold frames can be as simple as a few hay bales formed into a U-shape with an old window angled from the higher back to the ground in the front. Other construction materials can be concrete blocks, wood, and recycled plastic deck boards, with hinged lids covered with plastic, fiberglass, Plexiglas, or glass.

When designing your cold frame, consider where you will place it, whether the structure will be temporary or permanent, when and what you plan to grow, and your budget for materials. Easy to assemble kits are available online, but with a table saw and a few tools, they are fairly easy to build at home.



Temporary cold frame made of hay bales

The site for your cold frame should be relatively level and well drained. You can use landscape pavers to raise a corner of the cold frame if necessary. Don't forget to fill gaps along the bottom to block cold drafts or invasion by rodents. Temporary cold frames made of hay bales can sit directly on garden soil, but wood products should be lifted above the soil with landscape pavers to avoid rot. My cold frames are placed on the well-compacted soil of an unused gravel driveway, which is conveniently raised above grade to allow for good water runoff.

A cold frame can be placed in any sunny spot in your yard, but you may find that afternoon shade helps keep it from getting too warm; the interior temperature can be 50 degrees warmer than the outside air. Your cold frame should face south, which means the taller back of the structure will catch north wind. You can shelter the north side by placing it against a wall, backing the structure with hay bales, or lining the interior with plastic or Styrofoam.



Small plants ready for the garden

If your cold frame is to be used to overwinter tender perennials or start new plants for spring planting, angle the lid steeply to catch as much light as possible. If used primarily in the summer, the angle can be less steep, allowing for the front lip to be higher. The disadvantage of the winter angle is that only very short plants can fit in the front.

Automatic window lifts can be added to the lids to help control the interior temperature by the lid rising up at a predetermined temperature (mine are set at about 70 degrees). The lift mechanism contains a hydraulic cylinder filled with gas or a petroleum product that expands and contracts as the air in the cold frame heats and cools, lifting and lowering the lid. I purchased my lifts at Harbor Freight but when I went in to buy a replacement this year, I was told that they no longer carried the product. Unfortunately, I have been unable to find the same design at a price I'm willing to pay. So, if you want to use automatic lifts, purchase them before you design your cold frame so that you have enough clearance for the lift to work properly.

There are a number of options to add heat to a cold frame/hot box. If you are growing in a garden or raised bed, you can dig out the soil, add a layer of manure, replace the soil, place the cold frame over the bed, and plant. The decaying manure will release enough heat to warm the soil a few degrees. Or, you can add a string of 25-watt bulbs under the lid, just make sure the fixtures are waterproof. For more information on building hot boxes, see the University of Missouri Extension's fact sheet, *Building and Using Hotbeds and Cold Frames*, at <https://extension2.missouri.edu/g6965>.

Continued on page 3



I'm using two heat sources in my cold frames. I use plastic, water filled, jugs as a passive heat source, which provides enough heat to keep perennial herbs I overwinter barely alive. Now that the cold frames are filling up with native plant seedlings, I've turned on the electrical heat coils installed under a layer of hardware cloth and rock. With a thermostat set at 50 degrees, the coils provide enough heat to keep plants alive at 9 degrees outdoor temperature. Last winter, they survived a few nights of negative 20 degrees with a tarp over the cold frames.




First flats of 2018 in the cold frame



Overwintering plants in a cold frame

I said that cold frames were cheaper than greenhouses, but they can still be pricy depending on the materials and accessories you choose. The two cold frames described above were built with pressure treated 2x8s, with angled edges to accommodate the lids. The lids are made of wood and covered with clear Plexiglas and 30% shade cloth (my small cold frame has a double layer of 4 mil plastic). The interior walls are insulated with 2" Styrofoam. The cold frames were built to be easy to disassemble, although I think we have them in their permanent position this year.

I encourage you to consider adding cold frames as a season extending option in your garden. If you would like to get more information about cold frames, I'd be happy to share what I've learned. You can contact me at [lkcmulkin@gmail.com](mailto:lkcmulkin@gmail.com). 

## Growing your Own Native Plants

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

We all, as avid gardeners, have grown our own vegetable plants, and possibly ornamentals, from seeds. There's a special experience in being the parent of a home-grown plant. Have you ever thought about growing native plants (NPs) from seed? This article is a general "how-to" and is not intended to be definitive, but it will give you an idea about what you will be doing if you decide to attempt it. The information here is a brief synopsis of Edward Roland's presentation, "How to Grow Western Native Plants from Seeds and Cuttings" which he presented on February 17 at the Rawlings Library.

Beside the personal satisfaction that comes from trying a new venture, why should you consider growing a NP garden or using NPs in your garden? There is the singular comfort of perpetuating native species that belong in our local ecological niches which also provide food and shelter for our local birds, butterflies and insects. NPs can be long-blooming under cultivation (my favorite here is *Salvia*) and they are xeric, requiring very little, if any, water to grow once they are established.

Why might you decide to propagate your own NPs from seed? Currently, NPs aren't widely available in commercial nurseries, and can be expensive, especially if purchased in the larger specimen pots. It's a great hobby to raise the specific NPs that you choose to feature.

If not available in nurseries, where do you find NP seeds? One method is to collect your own from a naturally growing NP. Identify the plant's location when it is in bloom, then collect the seeds after the plant has set the seeds and the seeds are mature. If the plant is not located on your own property, you will need permission to collect the seed heads. Then, you must clean the chaff, or protective covering from the seed before planting. An easier method would be to obtain free, cleaned, and ready-to-germinate seeds from the Pueblo County Master Gardeners' All Pueblo Grows Seed Library at Rawlings Library. The Master Gardeners do a wonderful service in obtaining and cleaning seeds from a wide variety of native and domesticated plants.





*Coreopsis grandiflora*

Be sure to research your NP choices before choosing which varieties to grow to ensure that the plant will fit in the space that you have dedicated for it. Popular, easy, non-woody native plants to start with are Butterfly Weed (another favorite of mine), Coreopsis, Coneflower, Columbine, *Delphinium*, *Dianthus*, *Gaillardia* sp., Mexican Hat, *Salvia*, Evening Primrose, and *Penstemon* sp. Also available are a variety of native ornamental bunchgrasses.

One very important point to keep in mind is that NPs of choice should come from life zones in adjacent areas that match your location features. The locations should share similar conditions of soil type, temperature, precipitation, and so on. For instance, *Penstemon bartabus* doesn't grow well in Pueblo. It's essentially a lower montane plant that usually won't thrive here (It does nicely in Co. City and Rye, however). A better selection for Pueblo is the very similar bright red flowered (same size flowers and color) *Penstemon etonii*, which has a habitat of mesas, fields, dry rocky slopes, etc. at lower elevations on the west side of the Rockies.

How would one go about beginning? Know your plant. Do the research. What conditions does it need to grow, e.g., elevation, temperature, type of soil, soil pH, amount of light, amount of water, or natural seed inhibitors? How tall and wide will it get? Will it fit with your landscape, or can you make changes to your landscape to enable it to thrive?

Know the necessary growing conditions required for seed germination. Roland recommends web site <http://tomclothier.hort.net> as a great resource. The Perennial Germination Database there will provide info on specific species and how to germinate them. For example, for *Coreopsis grandiflora*, Clothier recommends conditions to sow seed at 20°C (68°F) in light. The seed should germinate in less than two weeks.

A note on seed germination inhibitors: Most seed will grow well in the soil /light conditions outlined below just as vegetable seeds will, but some seeds require special treatment (to release the seed embryo from the seed coat to break the seed's dormancy). In nature, a few types of seeds would take years to grow naturally based on habitat requirements (some seeds require smoke or passing through an animal's gut, for instance). Seed treatment for these unique seeds that have germination inhibitors to consider allows you to bypass that time step. See Tom Clothier's web site for further information on required germinating conditions to germinate your particular seed. In the case of some seeds (not all), the following conditions might be essential to getting your seed to sprout:

- Cold stratification for some time in a refrigerator (use petri dishes with coffee filters layered under and over seeds)
- Scarification by abrading the seed coat (use sand paper or a knife)
- Light or no light
- Buried or surface sowing on soil substrate
- For fleshy fruits, wash to remove the inhibiting germination hormone from the seed
- Cold germination in cool soil temperature

Continued on page 5



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

CSU Extension Pueblo County  
CSU Extension Pueblo County Ag and Range  
CSU Extension Pueblo County Horticulture Program  
Pueblo County Extension-FCS  
Pueblo County 4-H  
STEAM 4-H Youth Development



Roland recommends a soil system for growing seeds. Start with a sterilized general potting soil to avoid beginning issues with fungal disease issues. Soil layering of a germinating system would be:

- Base layer in container (planting flat or pot) – coarse potting soil
- Top layer – potting soil screened through 5/32<sup>nd</sup> inch hardware cloth to allow for easy root penetration
- Plant seed at 1 x the depth of the seed. A ¼ inch seed would require planting at a ¼ inch soil depth, for instance. Some seeds may require surface sowing.
- Add a scant layer of small sharp sand. This will help to prevent fungal attacks on your seedlings.
- Ensure good drainage via holes at the bottom of your germination unit. No standing water allowed!
- Control water on soil to be moist, not wet. Use a turkey baster rather than a spray bottle to intermittently flood the plant growing cells. This will minimize fungal issues. (See diagram for visual.)

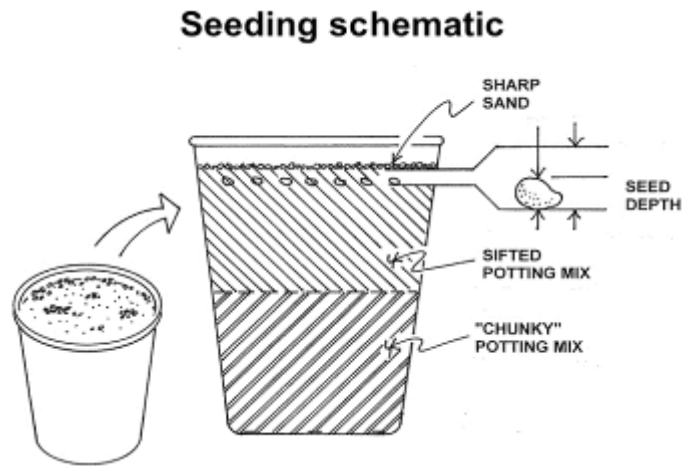


Diagram provided by Ed Roland

For your germination and primary growing conditions, you have a few options, but enhancing your germination environment with light and heat is a recommended practice, depending on the seeds that you plan to grow. Both Ed Roland and Linda McMulkin (see her article on a cold frame design in this newsletter) generally grow and recommend starting seedlings under heated soil and fluorescent lighting conditions, again depending on the species. Seeds can be started indoors, outdoors in a cold frame, or outdoors in natural conditions, depending on the species and what your limit of challenge to promote good germination might be. Most NP species grow well using a heating cable or heat mat system set at 72°F and fluorescent shop lights with T5 or T12 bulbs that emit a bluish wavelength which is optimal for spring germination.

When your seedling plants are large enough (3"- 4"), transplant into a medium that reflects their final soil environment. Harden off, as you would vegetable seedlings, by placing in dappled shade for ten days. Once hardened off, plant directly outdoors. As an alternate method, Roland suggests planting seedlings directly to the final outside location. Seedlings will require intermittent watering until they show new growth.

Happy Native Plant gardening and know that you are contributing to the perpetuation of our Prairie/Foothills ecosystem by making this investment of your time and talent! 🌱

#### Enter the Pueblo County Fair Community Open Class Competition!

*Any Pueblo County resident can compete at County Fair in many categories. There is no pre fair entry or entry fee required.*

Exhibit check in will be Sunday, July 15, 2018 from 9:30 a.m. to 12:30 p.m. in the Events Center on the Colorado State Fairgrounds.

Judging is open to the public and begins at 1:30 p.m. on July 15, 2018.



Categories you can enter include:

- Baking
- Food Preservation
- Knitting/crochet
- Quilting
- Paper arts
- Woodworking
- Photography
- Horticulture
- ...and more!

Visit the website at <https://www.pueblocountyfair.com/> for classes, rules, and more information







## DIGGING DEEPER

# A CRACK IN CREATION, BY JENNIFER DOUDNA AND SAMUEL STERNBERG

Reviewed by Ed Roland, Native Plant Master, 2009

This book is about the dramatic and collaborative pursuit of the most effective biological tool ever invented for changing the code of life. And, it's about the almost unbelievably successful result which, as the subtitle says, is "the unthinkable power to control evolution."

The principal author, and the narrator throughout, is Jennifer Doudna, the scientist and co-developer of the process Science magazine named the "2015 Breakthrough of the Year," and the prominent Harvard geneticist, George Church, says is nothing short of "a revolution that could change our world."

It's called CRISPR (pronounced "crisper"), and it's a gene editing tool that is so easy to use and so precise it can't really be compared with anything else, including the older hit-or-miss methods (used to produce GMOs, for example) that require high tech labs using leading edge equipment.

It turns out that CRISPR is incredibly accessible. So accessible, "CRISPR kits" are being offered to everyone from DIY science buffs to high school and even middle school biology students. Yes, gene editing in middle schools!

With the assistance of her former student and fellow researcher, Samuel Sternberg, Doudna explains in non-technical language how CRISPR was discovered in her Berkeley lab (in 2012) as a mechanism used by many bacteria and almost all archaea to destroy viral infections.

She and her team realized that, by employing this same mechanism, any known sequence of DNA that comprises a gene in any cell -- plant or animal -- can be targeted, knocked out, and in a more advanced application, replaced with a modified or "corrected" gene.

Doudna implies that agriculture, with its attendant sciences of plant breeding and hybridization, will be totally upended by CRISPR. She points out that the laborious and often multi-year effort to produce desirable hybrids through conventional plant breeding "floods the genome with thousands of new genes." CRISPR, however, targets specific genes (and plant characteristics) to provide "a level of control over the genome that is unparalleled."

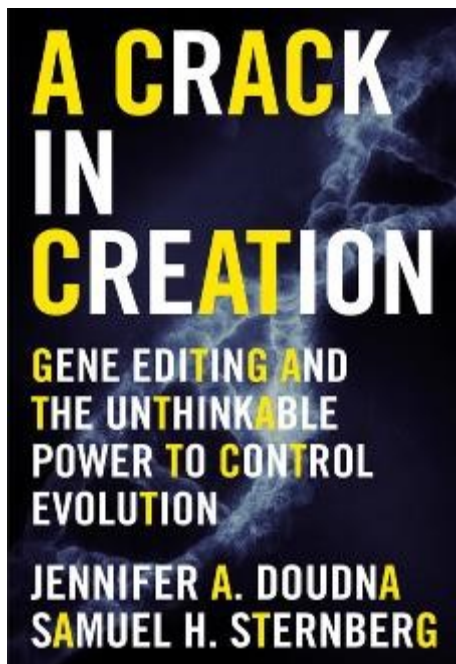
Plant pathologies are also targets, with researchers already using the technology to potentially eliminate the blight of powdery mildew in bread wheat. Another application incorporates the CRISPR mechanism into cells throughout the plant so that any viral infection is destroyed at its inception.

These applications alone have the potential to affect the world's population by dramatically lowering the cost of food production. And, plant scientists are just getting started.

In another chapter focused on medical applications, she says researchers in genetic diseases, such as cystic fibrosis and autoimmune diseases, are excited about the potential for CRISPR with good reason. With this tool, she says, "the genome -- an organism's entire DNA content, including all its genes -- has become almost as editable as a simple piece of text."

Mosquito-borne diseases like malaria (which killed an estimated 400,000 people just last year), yellow fever and even the Zika virus could be history with the help of CRISPR.

*Digging Deeper Continued on page 7*



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.



Researchers have used CRISPR to introduce mutations in mosquito reproductive cells that may completely eliminate species that are vectors, or at least greatly limit their populations.

Other labs are busily engaged in rewriting the genomes of higher organisms. Doudna cites experiments that have produced a "menagerie" (her word) of creatures ranging from hyper-muscular dogs to pet pigs as small as house cats. Another lab at Harvard, she says, is using CRISPR and fully-preserved woolly mammoth DNA to potentially bring the creatures back to life.



But, she's most concerned about the human genome. So concerned that in early 2015 she called for a worldwide moratorium on the use of CRISPR to make changes in the human embryo. (This was after her lab was approached to form a new company to offer "designer babies.")

A good deal of the book is an expression of her angst over the dawn of a new age where CRISPR effectively allows us (humans) to take control of our own evolution, and the evolution of any other organism whenever someone decides there is a reason to do so.

This leads her to call for some sort of international control on how CRISPR is used, especially in human tissues; but unfortunately, she fails to provide any actionable recommendations. (That may be forgiven: she's a scientist, not a politician.)

This book is your opportunity to learn about CRISPR and its implications directly from the person who oversaw the lab that invented it. It's well-written, easy-to-understand (she even explains the basic cell biology you need to know), and it's simply a book that's too important not to be read. Sooner better than later. 📖

#### **Garden Tip:** Pruning Flowering Shrubs



Prune summer flowering shrubs in early spring before buds start to appear.

Spring flowering shrubs should be pruned after flowering. You should also remove all spent flowers, otherwise known as "deadheading".



**Colorado Native Plant Society**

## **ESSENTIAL BOTANY**

*What you need to know to successfully identify Colorado's native plants.*

**Saturday, April 21, 9 a.m. to 2 p.m.**

**Appropriate for beginners or as a refresher class!**



**Southeastern Colorado Water Conservancy District Building & Garden**  
(31717 United Ave., Pueblo Airport Exit from Highway 50 East)  
**Workshop cost is only \$20 per attendee.** (Special discounted cost of \$10 for Colorado Master Gardeners and Members of the Co Native Plant Society.)  
Advance registration is required by 4 p.m., Friday, April 13

**Principal Instructor - Dr. Neal Osborn** (prof. emeritus, CSU-Pueblo)  
*This unique "hands on" 5-hour workshop teaches you how to i.d. almost any Colorado native plant to species!*

*You'll be mentored as you apply your new knowledge by successfully identifying native plants from the SECWCD garden.*

Class size is limited, so please register as soon as possible by calling the CSU Extension Office at 719 583-6566.  
(IMPORTANT NOTE: Due to time constraints, please bring a sack lunch or snack for a scheduled short break.)



## Plants for Pollinators

By Nicole Gennetta, Colorado Master Gardener, 2017

Spring is a great time to start planning (or finalizing) your garden. With the many plants available, why not consider adding dual purpose blooms to your landscape? There are a variety of plants that are not only beautiful, but offer great benefit to our local pollinators.

Pollinators aren't just honeybees! Colorado is home to about 950 species of native bees, 250 species of butterflies, over 1000 species of moths, 11 species of migratory hummingbirds and 18 species of bats.

When planting for pollinators, it is best to provide an ample variety of plants that offer nectar as well as pollen, and bloom at varying times throughout the season.

Another consideration when purchasing seeds or plants is to ensure your selection has not been treated with neonicotinoids. Neonicotinoids are a systemic pesticide that remains in the plant and surrounding soil for many years. These pesticides can be found in the plant itself as well as the pollen and nectar, making them toxic to the pollinators that feed upon them.

Below you'll find a list of drought tolerant, pollinator friendly plants. There are many additional plants available, however these will tolerate our hot temperatures and require less water than most all while providing nectar and pollen.

| Common Name                         | Scientific Name                              | Bloom Time    |
|-------------------------------------|--|---------------|
| <b>Perennials</b>                   |  |               |
| Crested Prickly Poppy               | <i>Argemone polyanthemus</i>                 | Summer        |
| Fringed Sagebrush, Prairie Sagewort | <i>Artemisia frigida</i>                     | Summer        |
| Butterfly Milkweed                  | <i>Asclepias tuberosa</i>                    | Summer        |
| Chocolate Flower                    | <i>Berlandiera lyrata</i>                    | Summer        |
| Purple Prairie Clover               | <i>Dalea purpurea</i>                        | Summer        |
| Scarlet Hedgehog Cactus             | <i>Echinocereus coccineus</i>                | Spring        |
| Sulphur Buckwheat/Flower            | <i>Erigonum umbellatum</i>                   | Summer        |
| Four Nerve Daisy                    | <i>Hymenoxys scaposa</i> var. <i>scaposa</i> | Summer        |
| Scarlet Gilia, Skyrocket            | <i>Ipomopsis aggregata</i>                   | Summer-Fall   |
| Gayfeather, Dotted Blazing Star     | <i>Liatris punctata</i>                      | Summer-Fall   |
| Blue Flax                           | <i>Linum lewisii</i>                         | Spring-Fall   |
| Blackfoot Daisy                     | <i>Melampodium leucanthum</i>                | Spring-Fall   |
| Colorado Four O'Clock               | <i>Mirabilis multiflora</i>                  | Summer        |
| Tufted Evening Primrose             | <i>Oenothera caespitosa</i>                  | Summer        |
| Yellow Sundrops                     | <i>Oenothera (Calylophus) serratulata</i>    | Spring-Summer |
| Broadbeard/Narrow-leaf Penstemon    | <i>Penstemon angustifolius</i>               | Spring-Summer |

Continued on page 9





| Common Name                       | Scientific Name                           | Bloom Time    |
|-----------------------------------|---|---------------|
| Colorado Beardtongue              | <i>Penstemon auriberbis</i>               | Spring-Summer |
| Beardlip Penstemon/Scarlet Bugler | <i>Penstemon barbatus</i>                 | Summer        |
| Desert Beardtongue                | <i>Penstemon pseudospectabilis</i>        | Summer        |
| Sidebells Penstemon               | <i>Penstemon secundiflorus</i>            | Summer        |
| Rocky Mountain Penstemon          | <i>Penstemon strictus</i>                 | Summer        |
| Prairie/Mexican Coneflower        | <i>Ratibida columnifera</i>               | Summer-Fall   |
| Yarrow                            | <i>Achillea asteraceae</i>                | Spring        |
| Aster                             | <i>Aster asteraceae</i>                   | Summer-Fall   |
| Coreopsis                         | <i>Coreopsis asteraceae</i>               | Summer-Fall   |
| Blanket Flower                    | <i>Gaillardia asteraceae</i>              | Summer-Fall   |
| Pasque                            | <i>Pulsatilla patens</i>                  | Spring        |
| Lemon Queen Sunflower             | <i>Helianthus 'Lemon Queen'</i>           | Summer        |
| Hyssop                            | <i>Hyssopus officinalis</i>               | Summer-Fall   |
| Lavendar                          | <i>Lavendula lamiaceae</i>                | Summer        |
| Catmint                           | <i>Nepeta lamiaceae</i>                   | Summer        |
| Agastache                         |   | Summer-Fall   |
| Salvia                            |   | Spring-Summer |
| <b>Grasses</b>                    |   |               |
| Indian Ricegrass                  | <i>Achnatherum (Oryzopsis) hymenoides</i> | Summer        |
| Big Bluestem                      | <i>Andropogon gerardii</i>                | Summer        |
| Silver Bluestem                   | <i>Bothriochloa laguroides</i>            | Summer-Fall   |
| Sideoats Grama                    | <i>Bouteloua curtipendula</i>             | Summer-Fall   |
| Blue Grama                        | <i>Bouteloua gracilis</i>                 | Summer-Fall   |
| Switchgrass                       | <i>Panicum virgatum</i>                   | Summer-Fall   |
| Little Bluestem                   | <i>Schizachyrium scoparium</i>            | Summer        |



| Common Name      | Scientific Name  | Bloom Time    |
|------------------|--|---------------|
| <b>Shrubs</b>    |  |               |
| Leadplant        | <i>Amorpha canescens</i>   | Summer        |
| Rabbitbrush      | <i>Ericameria nauseosa</i><br>( <i>Chrysothamnus nauseosus</i> ) | Summer-Fall   |
| Tree Cholla      | <i>Cylindropuntia imbricata</i> var.<br><i>imbricata</i>         | Spring-Summer |
| Apache Plume     | <i>Fallugia paradoxa</i>   | Summer        |
| Winter Fat       | <i>Krascheninnikovia lanata</i>                                  | Summer-Fall   |
| Soapweed Yucca   | <i>Yucca glauca</i>  | Summer        |
| Blue Mist Spirea | <i>Caryopteris lamiaceae</i>                                     | Summer        |
| Russian Sage     | <i>Perovskia lamiaceae</i>                                       | Summer-Fall   |
| Goldenrod        | <i>Solidago asteraceae</i>                                       | Summer-Fall   |
| <b>Trees</b>     |  |               |
| Piñon Pine       | <i>Pinus edulis</i>  | Spring        |
| American Plum    | <i>Prunus americana</i>  | Spring        |
| Gambel's Oak     | <i>Quercus gambellii</i>   | Spring        |

For those interested in small scale production, from backyard to small business, CSU Extension is offering

## BACKYARD POULTRY WORKSHOP

**DATE:** Wednesday, March 28, 2018  
**TIME:** 6:00—8:00 p.m.  
**PLACE:** CSU Extension/Pueblo County, 701 Court Street, Ste. C, Pueblo, CO  
**COST:** \$10/person, \$15/couple—Cash or check only if paid through the office. Credit or debit card payment through Eventbrite only:  
<https://www.eventbrite.com/e/backyard-poultry-workshop-2018-tickets-4374234801>  
 Registration due Friday, March 23, 2018.

Topics covered:

- » Purchasing Chickens
- » Nutrition
- » Health
- » Care
- » Waste Management

Presented by:  
 Tom Laca, Small Agriculture/Range/Natural Resources Management,  
 CSU Extension—Pueblo County Extension Agent  
 Call 719-583-6566 for more information.

 **PUEBLO COUNTY**  
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 EXTENSION

Extension programs are available to all without discrimination. If you have a disability for which you need an accommodation, please notify CSU Extension at 719-583-6566 at least 30 days prior to the date of the event. \*Colorado State University Extension, U.S. Department of Agriculture and University Extension cooperating.

Yard & Garden Series  
 Sponsored by CSU Extension-Pueblo County

## Growing Vegetables

**WHEN:** Saturday, April 7, 2018  
**WHERE:** CSU Extension-Pueblo County  
 701 Court St. Suite C, 81003  
**TIME:** 10:00 a.m.-1:00 p.m.  
**COST:** \$10 per person  
 We accept cash or checks (payable to Extension Program Fund) through CSU Extension-Pueblo County.  
 Pay with credit or debit card through Eventbrite only:  
<https://www.eventbrite.com/e/growing-vegetables-2018-tickets-4434833366>

**REGISTER:** Payment due at time of registration on or before April 3, 2018.  
 Call 719-583-6566 for more information.

Learn tips and techniques for successful vegetable gardening in Pueblo.  
 Topics include:

- \*straw bale gardening
- \*gardening in containers
- \*composting
- \*plant selection
- \*irrigation

 **PUEBLO COUNTY**  
 COLORADO STATE UNIVERSITY

\*Free and any special accommodations for participants in delivery please contact Colorado State University Extension at 719-583-6566. \*Free request must be submitted at least 30 days prior to the date of the event. \*Colorado State University Extension, U.S. Department of Agriculture and Pueblo County Extension cooperating. Extension programs are available to all without discrimination.





## PERENNIAL PEOPLE

### INTRODUCING THE TWELFTH ANNUAL WESTERN LANDSCAPE SYMPOSIUM KEYNOTE SPEAKER: MARCIA TATROE

By Maureen Van Ness, Colorado Master Gardener, 2015

The Western Landscape Symposium on March 17, 2018, welcomes Marcia Tatroe as the keynote speaker. Marcia has gardened in the Denver area since 1987. She was fascinated from the first by xeriscape and learned from other successful gardeners. Her topic, “More Color, Less Water,” springs from her experience growing over two thousand plants on her suburban sized home garden.

I imagine you’ve heard the term, “a sense of place,” applied to garden design. For Marcia, this sense of place is critical to growing a garden here in Colorado. For her, to develop a garden’s regional character, or aesthetic, is vital. We should not attempt to transpose our traditional national home landscape concept of lawn, one tree, a boring shrub, and foundation planting to our climate, here. She says, in her book, *Cutting Edge Gardening in the Intermountain West*, we should be “...creating a new garden aesthetic—one where gardens speak strongly about where we live and who we are.” That identity, that sense of where we garden can be easily identifiable, defined from the large picture around us into a local, specific habitat in our own yard and garden.

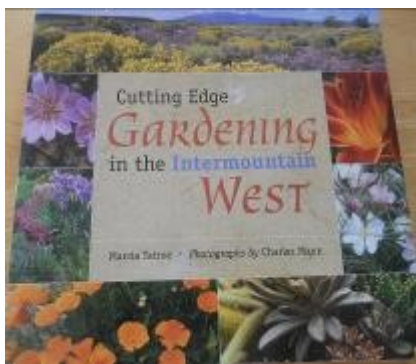


Marcia Tatroe

Her best advice, the “how” she recommends, is to observe the undeveloped, wild areas around you. The Front Range is semi-arid, not desert, and lots of plants thrive here. Start with that palette of native plants and plant a landscape unique to our region.

She uses rabbitbrush as an “example of a well-adapted shrub. It withstands extreme heat and cold and difficult soils. It is beautiful in all seasons, especially the silver varieties, attracts butterflies, has seed heads that glow in winter, and requires almost no maintenance. Doesn’t get much better than that!” As a native local plant, it also will help your garden blend in with open, wild areas around us.

Her advice for what to do with lawns? “Replace irrigated lawns with patios, decks, useful surfaces for outdoor living,” or flagstones interspersed with plants.



Marcia’s book cover

I asked her about weeds, and how she deals with them. She does not spray or “use any sort of pesticides.” Her solution is to keep the ground covered, either with lots of plants or mulch, as weeds thrive in bare ground. She’ll use newspaper covered with shredded bark to stop weed germination. She said the “shredded bark stays put best,” a solution for bark that blows away. For her xeric plants, since they don’t appreciate the amendment from organic mulch, she uses a rock mulch and stays on top of weed seedlings since rock doesn’t stop weeds.

Her definition of waterwise gardening is to “use less water than a traditional landscape.” Plain and simple. Choose xeric plants and water carefully and judiciously, paying attention to a plant’s needs. She says, “There is no one right way to achieve this and there is not one style or method.”

A key idea from her: “In my own garden every time a plant dies I replace it with one that is xeric.” Following this advice, over time, little by little, our gardens will transform to gardens that will more accurately reflect our wonderful region.

I love what she says at the end of her book: “But ultimately, any plant that doesn’t make it here is a clue to our true identity and not necessarily a reflection on our horticultural skills. Only when we stop treating nature as an adversary – and stop trying to be something we are not – can our gardens and landscapes reach their full potential.”







## GARDEN WALKS

### SPANISH GREENHOUSES

By Sherie Caffey, CSU Extension-Pueblo County Horticulture Agent

Late last year, I was lucky enough to help facilitate an educational tour of the agriculture industry in Spain. On this tour, we visited many interesting facilities ranging from stud farms, to feed lots, to wineries. For me, one of the most impressive facilities that we visited was operated by a company called Bio Procam. This company cultivates, packages, and markets organic vegetables and subtropical fruits. They crank out over 15,000 tons of produce every year, using farmers that belong to the cooperative, and 25 acres of company owned greenhouse land. They have 26 full-time workers that keep their greenhouses going. White plastic greenhouses stretch as far as the eye can see in the area where their operations are located.




Organic produce

And, 43% of the company's production is cucumbers, tomatoes and avocados each account for 20%, zucchini is 9%, and subtropical fruits are 8% of their total production. Twenty-eight percent of what they grow gets exported to Germany. This is followed by France getting 22%, 21% stays home in Spain, the UK gets 8% and the other 21% is spread throughout the rest of Europe. The success of this company is even more astonishing when you consider that they only grow and distribute produce during the fall and winter months. They have found a niche growing all winter long until April or May, when competition becomes too much.

Bio Procam is committed to being 100% organic. For this reason, everything is grown in the soil, no hydroponic production is done. There cannot be any kind of organic contaminants presented into the system, so the workers cannot live on the site. To keep things clean and working well, they replace the plastic on all of the greenhouses every three years. They have a company that recycles the used plastic for them.

In front of the vegetable crops, they grow wheat and barley to feed beneficial insects that will feed on aphids and other pests in the event that they arrive in the greenhouse. In the summer, the greenhouses are taking a break from vegetable production, but they grow radish and mustard seed for bio-fumigation. These plants will help rid the greenhouse of things like nematodes and fusarium wilt. They also use sticky traps to control whiteflies, and sulfur dust to keep spiders at bay.

To pollinate the vegetables, the company buys bumblebees. They live in a box in the greenhouse, and come out during the day to do buzz pollination. Our guide described to us how they harvest the tomatoes when the ends just start to turn red. He showed us how at this point, the inside is already red, as they ripen from the inside out. They use moisture meters to know when the tomatoes need watered. After February, the humidity will be lower and they can prune the tomato plants without the concern of disease. They clean up the bottom of the plant up until the first large branch. The company practices crop rotation, after the tomatoes are all harvested they will plant Dutch cucumbers. They purchase all of their seedlings from another great company we toured, Saliplant, but that is another Garden Walk... 



A sea of green...houses



Wheat and barley for good bugs



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