

# Colorado Master Gardener's Garden Gate

The Newsletter of Adams & Broomfield Master Gardeners -- May 2023

## Grow for Grow & Give!

Cassey Anderson, Horticultural Specialist, Adams County

Do you have a vegetable garden? Do you want to have a vegetable garden? Do you want to give back to your community? If the answer to any of these is "yes", you should check out *Grow & Give*, a CSU Extension program. The *Grow & Give* program provides detailed horticulture information and education for growing vegetables in Colorado, providing all this great educational material so you can grow better, grow more, and donate your excess to those in need.

*Grow & Give* is open and available to all, whether you are a seasoned gardener or just starting out. You do not need to have any formal Horticulture training, but we hope you get some education from us! *Grow & Give* covers information about growing in the mountains, along the Front Range and beyond. You can learn about season extension, best ways to water, and how to tell if your vegetables are ready to harvest. There are specific details on crops, videos and resources about pests, diseases, and weeds, as well as safe harvest practices and more. The website also provides a comprehensive list (that is always growing) of Hunger Relief Organizations (HRO) you can work with in your local area.

In 2022 there were over 1400 donation events with over 32,000 pounds of produce donated. Vegetable donations included beans, cucumbers, leafy greens, peppers, tomatoes, and squash. We would love to see us beat these numbers for 2023, and you could help with that effort! Whether you donate once or weekly, your contribution can help to reduce food insecurity in your community. We want to hear about it! If you have a HRO in mind, you can reach out to confirm their drop off days and times, and see if they have specific vegetables or fruits they want to receive.

Participation in the program is simple: sign up at [www.GrowAndGiveColorado.org](http://www.GrowAndGiveColorado.org), and when you donate to friends, neighbors, HROs or beyond, you report your donation on the website. There is a running tally on the website of total donations for the year, so you can see your donation help the numbers tick up!

If you're in need of additional help you can reach out to your local CSU Extension office for suggestions.

## All About the Adams/Broomfield Master Gardener Program

Annie Costakis, CMG Coordinator, Broomfield County

**Who?** Anyone with the desire to share research-based horticulture knowledge with the public can apply to become a master gardener! CSU Extension offers rigorous horticulture training to Master Gardener Apprentices through Green School, which covers topics such as botany, lawn care, soil and entomology.

**What?** Master Gardeners give back to the community through volunteer service. MGs have the opportunity to teach vegetable gardening classes to youth and adults at Brunner Farmhouse, answer gardening questions at Ask a Master Gardener booths in the community, help with our Adams and Broomfield Xeriscape Demonstration Gardens, and much more!

**Where?** If you have any gardening questions for our MGs, you can connect with us via phone, online or in-person. For our Broomfield office contact information, click [here](#). For our Adams office contact information, click [here](#).

**When?** Applications to our program will open in the fall. To be notified when applications open, you can [click here to subscribe](#) to our CSU Extension Newsletter. Please select "CSU Extension Monthly Newsletter" from the list of options.



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Another winter goes by in 2022 and I'm out surveying the garden. Things are starting to spring up, including my roses. Last year, after a very dry winter, I saw some unexpected insects for the first time ever. Every single rose bush (including the Hot Cocoa pictured right) had them. What are these tiny little white creatures? Well, upon further inspection, they were Rose Leafhoppers. Here I thought I had a fungus as I looked at the top of the leaves and found yellow mottling. As a CMG, I have learned to look under the leaves, too. There they were in all their massive glory.

What will this year 2023 hold after a cold snowy winter? We shall see. In the meantime, let's talk about the prominent insects that may land on our roses sometime this year. The main insects that detrimentally affect our roses are Aphids, Japanese Beetles and Rose Leafhoppers.

Aphids are the chief insect you will probably find on your roses. They cluster on the stems and buds in Spring and early Summer. They are quite visible with their little green or black bodies. They excrete a sticky fluid known as honeydew which can cause nuisance problems like dripping on plants below and attracting undesirable insects such as ants and yellowjacket wasps. Most aphids cause only cosmetic problems, but having a high number of them can cause wilting of leaves, curling and dieback of shoots and buds.

The best control is a strong jet of water applied whenever they are present. They can also be squished with fingers. If insecticides or insecticidal soaps are used, always read labels first for complete instructions especially for preparations that may kill natural enemies of aphids. Some insecticides/insecticidal soaps are: Bifenthrin, Cyfluthrin, Malathion, Neem Oil, Permethrin, Pyrethrin. Ladybeetle (Ladybug) larvae are voracious eaters of aphids. Flower fly larvae, lacewing larvae and parasitic wasps are also natural enemies of aphids. (See link below)

Japanese Beetles (JB) are quite destructive pests as they feed on a large number of plant species. I've never had a JB on my Hot Cocoa. However, on my other roses I have seen this beetle feasting frequently. They are about ½" long with a metallic green body and legs and coppery-brown wing covers. They also have white spots that encircle their abdomens. These beetles do fly!

The Japanese Beetle begins its life cycle in the ground as a grub moving deeper in soil as winter comes on. When the soil is warming up, they move closer to the surface feeding on grass roots, and adults emerge in late June and early summer. They have chewing mouthparts that leave ragged edges or holes in petals. Rose leaves are mainly skeletonized leaving only their veins.

The most effective control for the Japanese Beetle (if you have a few) is to handpick and drop in soapy water. For larger infestations care must be given to pollinator activity when applying insecticides. Find an insecticide that is less toxic to bees and apply early in the morning or at dusk on blooms when bees are not active. Insecticides labeled for homeowner use include sprays containing bifenthrin, cyfluthrin, lambda cyhalothrin, neem oil, permethrin or pyrethrin. Soil drenches or granular applications of imidacloprid or dinotefuran BT (Bacillus thuringiensis), BeetleJUS, beetleGONE! have little if any toxicity when roses are in bloom. Japanese Beetle traps are discouraged for use in our small urban landscapes as they will attract a large number of JB's from the surrounding neighborhoods.

Rose Leafhoppers are another common insect found on our roses and the one I discovered for the first time last year. As the name implies, they do hop, so a jet shot of water just sends them hopping elsewhere. I learned that the hard way as I watched them jump from rose to rose.

Leafhoppers are wedged shaped with colors that vary from white to gray and yellow to green. They lay eggs in the bark of a rose cane in the Fall and nymphs emerge in the Spring, leaving openings in the cane that can provide stem canker causing fungal pathogens. Leafhoppers will be found on the underside of leaves and will leave stippling marks on the upper surface. They also excrete a sticky substance that attracts ants. It may look like a fungus to start with, but look under the leaf and they will be obvious.

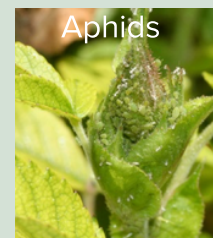
For leafhoppers, control includes pruning canes in dormant plants before the eggs hatch. Insecticidal soaps and horticultural oils are best as they have the least interference with predatory insects: Sevin, Bifenthrin, Azadirachtin, Spinosad. Make sure to spray the underside of the leaves thoroughly. Natural enemies of the leafhopper are lacewings, minute pirate bugs, damsel bugs, and assassin bugs.

These are the three main insects

that may invade your rose garden at some point this year. They can also invade other garden plants. I hope this will help you in your rose growing success!

<https://extension.colostate.edu/topic-areas/insects/aphids-on-shade-trees-and-ornamentals-5-511/>

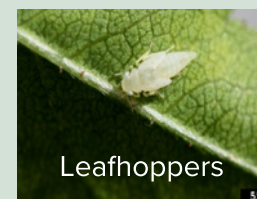
<https://extension.colostate.edu/topic-areas/insects/japanese-beetle-5-601/>



Whitney Cranshaw  
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5th year Master Gardener, and a member of the Adams County MG Rose Squad. The program has given me the knowledge to help correct my gardening mistakes and to help others through Rose Squad home visits, Hydroponics in the Classroom or observation with the Native Bee Watch. In my spare time I enjoy rubber stamping and sitting on the porch.



# The Science of Gardening

## The Secret Life of Peas (and their genes)

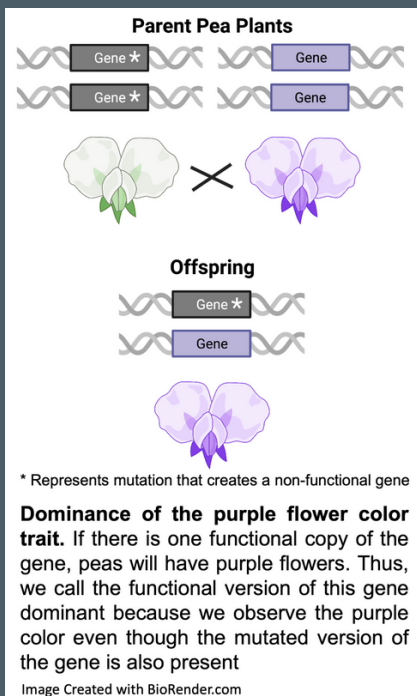
By Kristin A. Moore, Ph.D.



Although we are just starting our summer gardening season, one of the cold-hardy plants that you may be currently enjoying, the garden pea, is not only an important food source, but has also played a fundamental role in our understanding of both plant and human genetics for centuries. Terms like Punnett square, dominant and recessive, and alleles, may elicit fond (or possibly not so fond) memories of biology classes spent trying to figure out how different combinations of genes impacted pea plants. You may have gotten the impression that this aspect of biology was fully understood. However, it's only been within the past 15 years that we've been able to start identifying and determining the function of the genes that are responsible for many of the well-studied pea-plant traits that gardeners observe.

Genetically, one of the most interesting pea characteristics is the color of the pea plant flower. Peas often have either purple or white flowers. Through centuries of genetic experiments, it's been determined that a single gene controls whether the purple pigment that gives the flower its color is present in peas. Peas (like people) get two copies of each gene, one from each parent plant. If a pea plant inherits two mutated copies of this gene, then it will not be able to make the purple pigment, and it will have white flowers. However, if it inherits at least one normal copy of the gene, the pigment can be made, and the plant will have purple flowers. In genetics speak, we say that the purple trait is dominant, because you only need one functional copy of the gene to get the purple pigment and therefore a purple flower.

What was mysterious about this discovery is that only a single gene appeared to control this process, even though it's well known that many different genes contribute to making the purple pigment. However, as scientists began to figure out the function of the gene that controls flower color, they made an interesting discovery. The gene that is mutated in the white-flowered pea variants has nothing to do with actually creating the pigments that produce the purple color. Instead, this gene is important for ensuring that all the genes that are responsible for making those pigments get turned on in the first place. This type of gene is called a transcription factor. In the cell, transcription factors are analogous to the conductors of an orchestra. An orchestra may have the best musicians in the world, but they won't make any music unless the conductor directs them to do so. In the same way, a cell can have the genes required to make the purple pigment, but without the transcription factor that turns on this capacity, no pigment will ever be made, resulting in white flowers. Additionally, as an orchestra only needs one conductor, the cell only needs one functional copy of this gene to activate the pigment producing pathway. When there are two functional copies of the gene, the second one is a backup rather than a requirement. This type of genetic regulation is universal to all organisms, further demonstrating the power of plant genetics for contributing to our greater understanding of biological processes.



# Planning & Planting

**Happy Spring!**  
**by Kim Poland**

It's finally time for gardening season. Some of you have already planted your cole and cool weather crops, but for the rest of us, it's time to get dirty. You've planned your garden location and chosen what to grow based on your climate's growing season. Before you start planting, there are a few things to do to prepare. One of these is to clear last year's debris if you haven't. Doing this in the fall will help to prevent bugs and disease from overwintering. It's also time to remove any winter covering, such as leaves, mulch, or pine branches from your vegetable gardens. Covering your gardens in the fall protects the microbiome and living things that contribute to your soil's health. Soil health, referred to as soil tilth, is a significant factor in growing healthy and happy plants. CMG Garden Notes #213 provides a great definition of soil tilth: "Soil tilth is a function of soil texture, structure, fertility, and the interplay with organic content and the living soil organisms that help make up the soil ecosystem." For more information on soil tilth, please refer to this Garden Note.

Nutrients in your soil play an important role in a great harvest. The best way to determine if your soil lacks any nutrients is by having a soil test done. You can find information on soil testing through CSU or by contacting your local extension office. Please note that results may take longer this time of year due to the number of tests submitted to the lab.

To ensure adequate nutrient retention, aeration, and drainage in your soil, add organic matter such as compost. This can improve most garden soils, but be careful not to add too much at once! Too much of a good thing can do more harm than good. I like to call it "loving your garden to death." A good rule of thumb is about 1" of organic matter over the entire surface of your garden in one year. Also, be careful when adding manure-based compost. Many manure composts, like steer manure, are very high in salts and can burn your crops. It's best to use manure-based compost in the fall so that it has plenty of time to leach out the salts (including sodium). [CMG Garden Notes #711](#) has a great chart for application rates for compost.

Make sure you are not working wet soil to avoid soil compaction and avoid over-tilling your soil. You'll need to mix in your compost based on the application chart, but otherwise, try not to turn it over. Over-tilling can result in poor soil health and will also turn up seed banks, resulting in many weeds. However, you do want to loosen up the soil for more air and water flow, and in order to do this without over-tilling your soil, you can use something called a broad fork or something similar. This will open up your soil without turning it over (a garden fork or shovel will work too).

Alright! We are on our way to healthy soil, and the weather is warming up. A great tool to have before you get plants in the ground is a soil thermometer. The frost date is essential to know, but the soil temperature is going to help determine if you have a successful germination of any seeds you direct sow. There are things you can do to help raise your soil temperature, such as covering your garden in black plastic. You can refer to [CMG Garden Notes #720](#) for a guide on germination temperatures for different vegetables. If you didn't get seeds started indoors, don't worry! Vegetables such as broccoli, tomatoes, peppers, onions, and many other vegetables tend to thrive better as transplants, allowing for an early harvest. These can be plants that you started yourself or purchased from a reputable nursery. However, before transplanting, you'll want to harden these seedlings. The hardening process should begin once they have at least four true leaves. Start by taking them outside during the day for a few hours in a protected and shaded location and bring them in at night. Gradually expose them to more light and outdoor conditions each day. Typically, one to two weeks is enough time to acclimate them to their new environment.

It's important to pay attention to the soil temperature, weather, and the last frost date before planting. In Colorado, a rule of thumb is to avoid planting until after Mother's Day, and often closer to Memorial Day. It's important to keep an eye on the forecast, as Colorado tends to surprise gardeners with unpredictable weather this time of year. Be sure to have a game plan for hail in the forecast. A small tarp or buckets can help protect your young plants from hail or extreme Colorado weather.

[The Colorado Vegetable Guide](#) and the [Garden Notes](#) I referenced earlier are excellent resources for getting started with your vegetable garden. You will find many pointers there that I have shared with you, as well as many more!





## LIONS AND TIGERS AND BULBS, OH MY!!

Pam Pairan, Adams County Master Gardener



I became a Master Gardener in the Fall of 2018, and in 2019 began working with young landscapers at the Denver Zoo Horticulture Department. We had a strong team of professionals and volunteers, and it is still the only program at the Zoo where volunteers and paid staff work together. It is hard labor! I was a brand new Master Gardener and I thought I would be able to work hard and fast at landscaping. I survived that first season because the staff had to take a real lunch! Thank goodness working hours for the Hort department were from 6 am to 2 pm, while volunteer hours were more like 8 am to Noon. Blazing hot. The Denver Zoo volunteer department made sure we had sunblock, proper equipment, belts with Hori in them, water, etc. I had a toolbelt with a Hori in it. I was, for the first time in my life, a “Bad to the Bone” gardener.

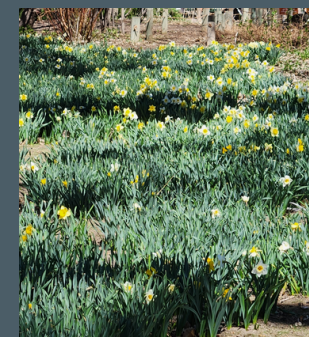
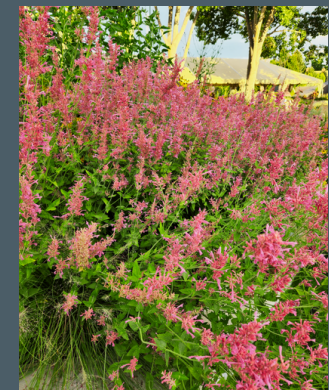
The Horticulture Department at the Denver Zoo in early 2019 was filled with designers with great knowledge of native and regional plants, and it still shares a greenhouse with the City of Denver. The greenhouse had non-hardy palms, yuccas, and aloes, along with some very rare and cool succulents. The pots would come out of the greenhouse and be buried in the Xeric areas so visitors to the Zoo would not notice the pots. As Autumn approached they moved all these lovely, but non-hardy cacti and succulents back to the warmth of the greenhouse. I worked in the greenhouse too, planting succulent leaves in tiny little trays, and somehow managed to dump it all into the huge soil bin, after several Horts had worked hard on it. I managed to save them all, or most of them, but felt a bit careless and not bad to the bone at all. Probably did not even have my belt on.

Bulbs and the plants! When I was on the Hort Team we planted a ton of bulbs in the fall, spring, and summer: Fritella imperialis, Narcissus, Scilla Hyacinthoides, Galanthus Icaria, (snowdrops), Chionodoxa, (my favorite sky blue bloomer in early Spring), displays of tulips along the main walk, Crocosmia, Allium, Muscari and many others. The goal of the Horticulture Team is to match the environment with the animals that live there. In the arid parts of the zoo world there are displays of Chrysothamnus, which is just too hard to say so everyone uses the common name, Rabbitbrush. Long prairie grasses are at home in these areas as well. Annual displays in containers and raised beds along the front walks are also planted with bulbs that perennialize or seasonal annual. Primate Panorama has more shade and tree-lined pathways. One of the most thrilling experiences for me was working behind the scenes. Sometimes right next to amazing hoofstock animals who will gladly try to get your attention. Nose to nose, but volunteers have to remain focused; touching any animal in the Zoo is a good way to lose your volunteer career.

The environmental hazards of tending to plantings at a Zoo are a bit different. If an elephant wants to tear down a newly planted tree it will do so, and of course our bears are famous for destroying quite a lot of new plantings. Sometimes the team puts in a 10 foot tall (expensive) tree just to watch it being torn out by inquisitive critters. Many of our animals are omnivorous or totally vegetarian and love to eat their favorite trees and tall shrubs. So trees are grown solely for the purpose of feeding our animals and offering them a more natural way to get their food. This year I hear through the grapevine that they are also growing vegetables for their animals. I planted tomatoes outside the Great Apes building last year and will do so again.

Next time you go to the Denver Zoo, please stop and smell the old garden roses that line the older areas of the zoo. The summer of 2019 I learned first hand about Japanese Beetles, and would happily go out in the early a.m. to kill as many as I could. Also, make sure you notice the annual non-hardy display of gorgeous Aloe by the main entrance toward the restaurant.

I am no longer working on the Horticulture Team because it is too difficult physically for me at this stage of my life, but still work as a Keeper Assistant at the Zoo, which is a much longer story. The opportunity of making the grounds as beautiful as possible was tremendously satisfying and there were lots of happy comments from visitors. Beautiful landscaping at the Denver Zoological Gardens is somewhat in the background of people's minds, but it influences and completes their journey to the wild at the Denver Zoo.



# Native Plants

## Native Plants and Adapted Non-Natives Rebecca Fitzpatrick

From the fuzzy “tails” on the mountain mahogany seeds to the gorgeous fall reds of little and big bluestem grasses; from the attractive little pinecone like fruits on the thinleaf alder to the deliciously scented blooms of the chocolate flower, there are many aesthetic and environmentally supportive reasons to plant natives.

Native plants are indigenous to a region. In the United States, we may describe native plants as those that existed in a place before European settlement. Natives are plants that live in an area without previous human introduction.

Beyond their natural beauty, natives function as a key part of the environment, providing resources for local fauna and pollinators. Planting natives assures that wildlife habitats and local ecosystems remain intact. Natives are already naturally adapted to our climate and growing regions. They tolerate and thrive in local soils and environmental conditions without a lot of (or any) additional irrigation or fertilizers.

An interest in native gardening does not necessarily exclude using non-native adapted plants. Adapted non-natives are all those beauties we want in our garden because they do well under the same conditions as natives but were introduced later due to human activity. Whether hitchhiking in on goods from abroad or across country, or horticulturally developed for the trade, non-natives are not necessarily a threat to native species, but may not support the ecosystem as well as true natives. As always, make sure you are siting adapted species and native species with the same horticultural needs for the best outcome.

Including natives in your growing space encourages pollinating insects and local birds, replenishes their habitat and food sources, and ensures the longevity of our local species in our increasingly urbanized landscapes.

For more information on Native Plants in Colorado, please check out the CSU Extension Fact Sheets and Native Plant Guide publications by region listed under Native Plants at [extension.colostate.edu](http://extension.colostate.edu).



Massage therapist and tree, shrub and native plant nerd, Rebecca Fitzpatrick has had the honor of being a Denver County and Sedgwick County (KS) MG prior to moving up to Broomfield in 2019. She likes digging deep to answer questions about all things plant and bug related.



## Meet Amsonia, Blue Ice (*Amsonia tabernaemontana*)

Ruth Vazquez



Sometimes called Colorado Desert Blue Star, this western native shrub-like herbaceous perennial is dependable even in Colorado's zig-zag weather. Light blue, star-shaped flower clusters bloom April to early summer at the tips of stems. Its lustrous green leaves shine all summer, turning clear yellow in the fall.

Variety 'Blue Ice' is more compact (3 feet high and wide) with darker blue spring flowers than the parent plant. It is a handsome presence in the back of a garden bed.

Widely adaptable, Amsonia thrives in ordinary and even unwatered xeriscape gardens. Its stems contain a toxic milky sap which helps deter rabbit and deer damage.

Its 'cousin' *Amsonia heubrectii* also grows to about 3 ft high and wide, and is a threadleaf variety with slim, feather-like leaves that turn brilliant yellow in the fall, making a stunning sight as they blow and sway in the winds.

*Amsonia heubrectii* 'Jonsii' is a dwarf threadleaf variety also prized for its brilliant yellow fall color. Slow growing to about 14" high and wide, it is listed in [www.plantselect.org](http://www.plantselect.org) as a plant great for our Front Range.

Let's see .... Native... grows in most any well-drained soil in full sun to part shade..... when mature fairly drought tolerant..... star-shaped, tiny, light blue spring flowers..... gorgeous fall leaf color..... handsome in the garden the full growing season .... Comes full size or dwarf .... I think you're going to want at least one of these in your garden!

'Blue Ice' can be seen in Section 7 of the Adams County Xeric Garden which is near the back of the Waymire Dome building in Adams County Riverdale Regional Park. Starting its fourth year in our Xeric Garden, 'Blue Ice' has now made a baby a few feet from 'mom'!



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