



NEW EMPLOYEE TRAINING PROGRAM  
PREPARED BY GARDEN CENTERS OF COLORADO

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In December 2022, GCC Board of Directors formed a Training and Education Committee to collect, organize and create an updated training program for new employees including seasonal and full-time and part-time staff.

The Committee members included Diana Munding, Eagle Crest Nursery; Michael Morris, The Flower Bin; Hannah Lucey, City Floral Garden Center; Trela Phelps, City Floral Garden Center; Jeff Echter, Echter's Nursery and Garden Center; and Cheryl DeBaise, Garden Centers of Colorado.

The content of this training program is a collection of input from numerous garden centers and will be updated on an annual basis.

The Garden Centers of Colorado is the premier trade association representing the retail operations of the green industry in Colorado. As a member of the Garden Centers of Colorado, you and your employees have an opportunity to network and learn from other garden industry professionals in the state of Colorado. Involvement in GCC means you will be afforded many opportunities to connect and learn to grow your own business. The mission of GCC is to support locally owned independent garden centers and suppliers to successfully compete through education, networking, promotions and developing new services to support increased business opportunities.

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## CONTENT OUTLINE

Store Operations (including Sales and Marketing)

Technical Operations

- Nursery Department Training
- Hard Goods Department Training
- Houseplant Training
- Annual Flower Training
- Herbs and Vegetables Training

Additional Resources

- Basic Terms
- How Plants Are Classified or Named
- Resource List

## STORE OPERATIONS (INCLUDING SALES AND MARKETING)

Any position from cashier to carry out is a sales position. You are the face of business with every encounter you have with customers and the impression you leave with them is how they will remember the company. Carrying a positive and friendly attitude goes a long way. Often that means a simple greeting and leaving them alone to explore all the beautiful offerings in the store. Watch for body language signs that they are ready to ask questions.

It is easy to get wrapped up in any of the many tasks of the nursery but the #1 task is always take care of the customers. They are the ones who ultimately pay your paycheck! Stay aware. Circle back to answer question that arise. Be honest with the customer if you don't have the answer to their questions but help them find it by checking with more experienced employees. Pay attention to your coworkers' reply so that you can answer the question the next time it comes up. Just remember to be authentic and not a "pushy" salesperson.

The store most likely offers promotions such as regular sales or loyalty programs. Be aware of what those may be so you can quickly answer customers inquires. Get to know any social media platform that your store may use and stay current with it.

## Customer Service

Why is customer service so important?

Because without the customer, we don't have a business.

All customers must be greeted with a smile and a simple greeting of "Hello!" or "How are you?" upon entering the store. When attempting to help a customer, assess the situation and adjust your approach according to it. For instance:

- Are they the kind of shopper who wants help?
- Do they prefer to chat or take their time?
- Are they an in-and-out kind of shopper?
- What do they need on their visit?

If you feel you are unable to assist them in any way, please ask for help. People would rather see you asking than they would have you guessing and giving the wrong information.

If you leave a task to assist a customer, please ensure that any tools or supplies are out of the way of other patrons.

If things get thorny . . .

Each and every customer is important, regardless of the situation. You can easily deal with an irritable customer by staying calm and asking questions to better understand their situation.

People generally want to feel that they are heard. Give the patron that opportunity and try to help solve their problem as efficiently as possible. If you are unable to accomplish this, feel free to call a manager to help you out. We are here to help!

Remember: The customer is not against you. They are simply for themselves.

What Sets Us Apart?

There are two equally important parts to your job:

- The hard skills of keeping the sales floor clean, stocked and well-presented.
- The soft skills of greeting people as they walk in and helping out whenever you can.

These two aspects go together to create a pleasant experience for both you and for the customer.

As an employee, you represent this Greenhouse. We care about our customers, and we want them to make us the primary source for their gardening needs. Good service and a smile will help us reach that goal with every single person who walks through the door.

# TECHNICAL OPERATIONS: NURSERY DEPARTMENT TRAINING

Most Garden Centers have a tree and shrub or nursery department. These “woody” plants are the backbone of the landscape and are usually the longest lived, most permanent plants a customer will purchase. Care should be taken to help them find the “right plant for the right place”. Although sales in this department are best handled by the more experienced or knowledgeable employees, it is important that even new staff become familiar with where these plants are located and what the store offers so that they can point customers in the right direction. One of the joys of working in a garden center is that it allows for continual learning.

What is a tree/shrub?

Unlike perennial plants that die down to the roots each season, trees and shrubs have a woody structure that persists year-round. They may be evergreen and retain their leaves (usually needles) or deciduous plants which will lose leaves in the fall and form new leaves each spring. As you will see, each will have a preferential placement in the landscape which you can help suggest to customers.

Plant Attributes

Since these plants persist so long in the landscape it is important to realize the many characteristics of each plant when making recommendations including:

- Hardiness. In Colorado we have quite a few USDA hardiness zones depending on where in the state you are located and at what elevation. Be sure you know the hardiness zone at your location and in your selling region. For example, garden centers may be in Zone 4 or 5, but service customers at high elevation Zone 3 where some of the plants at the nursery will not survive the winter minimum temperatures. Ask customers where they live and help them plan for success. See reference section “USDA Plant Hardiness Zone Map.”
- Mature plant height and spread. The cute Colorado Spruce in a #5 pot will eventually grow into a tree measuring 60’ tall and up to 20’ wide. This is not a plant you would suggest being planted close to a house or under power lines. Know how to research a plant’s mature size. Plant tags may be an excellent resource for this information, but remember that Colorado’s unique, high-altitude climate may change mature plant sizes and light requirements.
- Sun preference. Most plants prefer either sunny or shady areas.
- Water requirements. With increasing interest in “waterwise” landscaping, identifying plants that thrive in low water use situations has become more important.
- Aesthetics. Customers may be looking for formal hedges and require shrubs such as Cotoneaster, Alpine Currant, Privet or Boxwood that can handle shearing to create the look. Conversely, a more natural look will suggest other options.
- Seasons of Interest. Flower timing, plants for fall color, plants with winter interest are all possibilities. Planning a landscape combining shrubs with varied seasonal attributes can result in year-round appeal.



- Plants for Home Energy Improvement. For example, planting evergreens on the north side of a house may block winter winds while deciduous trees on the south side will provide shade in the summer while allowing sun penetration in the winter.
- Maintenance Requirements. Some customers may be looking for slow growing plants that require little pruning or other maintenance chores. Or perhaps they need a plant that will not drop much litter in a certain area such as near a pool. Privacy. Add trees and shrubs to the landscape to block noise and visibility from busy streets, neighbors, or unpleasant views.
- Home Value. According to research, well-chosen trees shrubs planted in the right place can add up to 15% to the value of a home.
- Other Considerations. High or low soil pH needs, soil type preferences, fruit production (or no fruit to prevent bear conflicts), erosion control, Etc.

#### How trees and shrubs are grown and sold

- Bare root. These are plants without soil around the roots. They must be sold in the dormant season and handled appropriately to keep the roots from drying out. The advantages are that they are lighter weight and easier to handle and usually less expensive.
- Containerized. Plants can either be grown in containers or grown in the ground and transferred to containers. The advantage of this technique is that they can be held and sold all season and can be seen in full leaves and even during flowering.
- Balled and Burlapped. These are plants that are dug from the ground usually during the dormant season. The soil ball is wrapped in burlap and usually has a wire basket around that to hold the soil ball together. Generally, this allows for larger tree specimens to be sold. Trees and shrubs sold this way are heavy and require special handling techniques and equipment.

#### Best Practices for Success

Once the perfect plant is chosen, we must help ensure success. Customers will return if they have a positive experience with previous purchases.

First make sure planting brochures are available.

**See reference section** “Colorado Master Gardener – The Science of Planting Trees #7.833”

Most nurseries have a recommended planting policy based on local soils, plant needs, experience and current research. Aid Customer success with tie in items. Make soil amendment, starter fertilizer and mulch recommendations based on that policy. All will agree that planting depth is extremely important. Planting too deep and circling/girdling roots are common causes of tree failure.

#### After Planting Maintenance

Once a tree or shrub is planted, further maintenance is necessary for success.

- Staking may be required in windy conditions. Attach tree straps loosely to allow slight movement and remember to remove stakes after the first 1-2 years.
- Watering regularly is essential in the first few years of a plant's life. Even drought tolerant plants need to establish a good root system with some supplemental watering first. Available natural moisture, exposure, soil types and more can affect the need for water.
- Fertilizer is generally not recommended for the first 2 years or so (the establishment phase) with the possible exception of root stimulators or low dose, slow-release fertilizers. After establishment, fertilization may contribute to a healthy tree or shrub.
- Prepare newly planted trees and shrubs for winter. Water once a month in the absence of natural moisture, mulch, wrap thin-barked trees in fall (around Thanksgiving) and remove wrap in spring (around Easter).

#### Tree and Shrub Display Maintenance in the Nursery

You may be called on to help with incoming plant loads or to help loading customer vehicles with trees or shrubs. Learn the proper techniques for handling. Do not carry trees in the trunk but in the container. Always ask for help when handling these heavy plants to prevent injuries. Get help for larger plants that may require special equipment.

Watch for plants that may have blown over in high winds and stand them back up once the wind subsides. Be aware of irrigation in the nursery and report to a supervisor if trees appear to need water.

Use observation to notice changes in plants that may be caused by disease or insects and report it. Trees and shrubs should look their best in the sales yard.

#### Turfgrass

Turfgrass plays an important part in many customers' landscapes. The keys to maintaining a strong, healthy lawn spring, summer and fall are regular fertilization, along with aeration plus good mowing and watering practices. Healthy turfgrass will stand up to foot traffic and is likely to have fewer weeds and disease problems.

#### Care and Maintenance of Existing Turf

##### Watering

Bluegrass, perennial rye and turf type fescue need supplemental irrigation, typically 1.5" to 2.0" per week during the summer season. The amount of water needed to maintain a healthy lawn is directly proportional to the quality of the soil the turf is growing in. Heavily compacted clay soils limit root growth. Shallow rooted turf quickly takes on a grey cast, leading the homeowner to water it more frequently.

Daily watering is not recommended nor necessary.

The way to encourage deeper root systems is to core aerate 2 to 3 times a year, followed by the application of 1 to 1.5 inches of organic material watered in thoroughly. Core aeration removes small plugs from the turfgrass. This can be accomplished with a machine or with a hand-held tool.

Core aeration allows water, nutrients and organic amendments to reach the root zone more readily.

Power raking turfgrass in Colorado is not recommended.

### Mowing

The basic rule when it comes to mowing is to mow higher, more often. For most cool season grasses, mowing at a height of 2 to 3 inches works best. We also encourage customers to let the clippings fall. This returns nutrients to the soil, adds organic material and does not contribute to thatch buildup.

### Repairing

When customers are looking to seed or overseed an existing lawn, it's important to understand what caused the problem to appear in their turf, as well as identify the variety of turfgrass.

Turf dieback can be attributed to several factors, including poor irrigation, irrigation design, and mowing practices, compacted soil, competition from weeds as well as trees, shrubs and diseases. It's important to identify and resolve the problem before reseeding or overseeding the turf.

While most lawns are cool season grasses (Blue grass, perennial rye, fescue), it's not uncommon to encounter warm season grasses such as native Buffalo grass or Blue Gramma or even Dog Tuff™ grass. Many lawns contain combinations of Blue Grass, Perennial Rye, Fescue.

Advise the customer to avoid the use of products intended to prevent seed germination. If they have already applied a pre-emergent, they will have to wait until fall to reseed. An alternative would be to lay sod instead of seed. Sod won't be adversely affected by pre-emergents.

While seeding can be done anytime of the season, fall is preferable due to generally cooler temperatures, lower water requirements and less weed pressure.

Prepare the site by raking up any vegetation and applying a 1" layer of organic material. Once the site is ready, apply the seed evenly using a spreader. Cover the seed with no more than a quarter of an inch of organic material and water thoroughly. Once the seed is wet, it's important to maintain a consistent moisture level until the seed germinates. This may mean watering more than once a day, depending on ambient temperatures and wind velocity.

### Weeds

Weed mitigation in turf begins with identification of the weed(s) and a discussion on whether to use a selective herbicide or a non-selective herbicide. Selective herbicides are designed to kill weeds without harming turf, when used as directed. Selective herbicides are available in granular, liquid concentrates and ready-to-use products. Each customer's situation is unique. By listening carefully and asking relevant questions, you'll be able to recommend the right product(s) to resolve their problem.

Remind your customer that many weed problems can be prevented with the application of a granular pre-emergent early in spring.

### Fertilizing

Cool season turfgrass responds best when fertilized 4 times a year:

Mid-March to Mid-April Fertilizer with a Preemergent weed preventer.

Memorial Day Fertilizer with post emergent weed control

Labor Day with a Fertilizer Plus Iron

Halloween with a Winterize fertilizer.

Warm season grasses should be fertilized in late June or July when they are actively growing.

### New Turfgrass

Prepare the site by incorporating 4 cubic yards of organic material per 1,000 square feet into the top 8" to 10" of soil. Grade out the site and add a granular new lawn starter fertilizer and work into the soil to a depth of 4" to 6".

Turfgrass can be started from seed or sod.

Seed is less expensive and there are more varieties to choose from. Weeds can be a problem because they often respond quicker to the increased moisture than turfgrass seed does. It can take up to a full season to become dense and established enough to withstand regular foot traffic.

Sod costs more than seed, but laying sod creates an instant lawn. Sod establishes quickly and is better for controlling weeds.

Seed or sod, the key is to maintain a consistent moisture.

## TECHNICAL OPERATIONS: HARD GOODS TRAINING

## Customer service

As Independent Garden Centers, we are always challenged by other businesses who stock similar product lines, often at lower prices. To differentiate ourselves and maintain our position as the preferred gardening resource, it's important to:

- Be visible and recognizable in the Hard Goods area(s)
- Greet each customer.
  - Make good eye contact!
  - Smile
  - Say hello, how are you, etc.
- Listen actively!
- Be able to correlate the customer's question or concern to a specific product.
- Know where products are located within the Hard Goods area and escort the customer to where the product is located.
- Demonstrate and articulate product knowledge in a way the customer can understand and comprehend.
- Assure the customer leaves Hard Goods with the product they need and the confidence they know how to use it correctly.
- If we are out of stock on a particular product, offer to take the customer's contact information and as soon as the product is back in stock, follow up with the customer.
- When answering a Hard Goods call on the phone, thank the caller for holding, identify our department and yourself.
- Use polite language and address customers and other team members in a courteous, respectful manner. Do not interrupt.
- Always thank the customer for shopping with us

## Safety

It's everyone's responsibility to create and maintain a safe, functional work environment for yourself, your co-workers, and our customers.

- Get trained and know how to use tools and equipment safely, including pallet jacks, and the forklift.
- Report any unsafe conditions to your manager as soon as you notice them.
- Keep aisles open and clutter free.
- Recycle as necessary and appropriate.
- Hardgoods chances for spills and breakage is high. In case of a spill, vermiculite is effective for absorbing liquids. Spill Kit.
- Be aware of the chemicals used in products, both organic and non-organic.

- Inspect retail areas first thing in the morning to ensure the areas and aisle are clean and accessible.
- Whether you are loading pottery, fountains, statuary or a bird bath, page for help If you think the item is too heavy for you to load safely by yourself.

## Receiving and Inventory

Deliveries that arrive on pallets require a forklift to be unloaded. Do not attempt to unload the truck If you have not been trained in forklift operation. There are forklift operators available to get the truck unloaded. Use the paging system to call for a qualified forklift operator.

Once the shipment is on the ground, locate the packing list(s) and turn them over to the data entry people. This is an important step in maintaining inventory integrity.

- No product should be unpacked or stocked until it has been entered into the POS system, priced and a stocking document generated.
- During data entry, the order can be verified, entered and priced.
- Any existing inventory can be identified and marked for price changes, if necessary
- Once entered in the system, a stocking document is generated including quantity received as well as QOH numbers for pricing.
  - Price the existing inventory first, then price the new order.
- During product check in, verify quantity received.
  - Note any damaged or missing items.
  - When stocking hardgoods, move the oldest inventory forward. Stock the latest inventory received behind the aging inventory (FIFO/LILO)
- Return the stocking document to data entry.

## Diagnostics

Our plant and product knowledge along with our attentive customer service are what sets us apart from other businesses. It helps drive traffic to our store.

Over time, you will learn how to diagnose common problems but if you're not certain, call the Department Manager to help identify the issue.

It is critical that we accurately diagnose the problem. The wrong diagnosis can potentially cause more damage or alarm the customer unnecessarily.

To provide the best diagnosis possible, we encourage customers to bring samples and pictures of the particular issue they're having.

Avoid the urge to search the internet or use a plant app to identify the customer's problem. First, it's unprofessional. Second, there's a good chance the customer has already done some research

on their own and discovered vague answers that don't relate to our climate or a customer's microclimate. They're here in the store because we have the reputation of being able to identify problems and offer solutions that will work for their specific issue.

## Fountains

Fountains should be checked daily to ensure they are clean, full of water and running properly.

With a fully functioning fountain, the customer can observe and hear the water flowing, thus making a better decision as to the fit in their landscape.

Delivery is available. Delivery costs are based on 20% of the fountain cost, plus mileage and the number of associates required to load, unload, and set up the fountain safely.

## Pottery

Pottery should be recovered and replenished daily. During recovery, watch for damaged pottery. If found, the item(s) need to be taken to the front end and removed from inventory.

## Potting Soils, Amendments and Mulches

There are many different types of soil and mulch products sold in the garden center that have specific uses. Some are designed to be planted directly into, while other are designed to be incorporated into a mix or used as a top dressing. It is important to understand the differences so that the customer gets the correct product for their intended use.

- Potting soils, container mixes, garden soils: These soil mixes are designed to be ready-to-use and planted directly into. Of the different mixes, it is important to note that some are geared more for indoor use or outdoor use. There are also different mixes for small containers, large containers, hanging baskets or raised bed gardens.
- Soil amendments: These are designed to be incorporated into potting mixes, garden soils or into the native ground soil to produce a more desirable mix. Amendments commonly used in Colorado include compost, manure, sphagnum peat moss, coconut coir, perlite, vermiculite, expanded shale, biochar and composted bark fines.
- Mulches: These products are designed to be used as top dressings to aid in moisture retention, temperature insulation in the root zone and to inhibit weed seed germination. There are two categories of mulches: organic and inorganic.
  - Organic mulches include any that are plant based. The most common organic mulches in Colorado are wood chips (including cedar, pine/fir and recycled wood products) and straw. Organic mulches decompose over time and can improve soil structure.
  - Inorganic mulches include gravel and rock mulch. Inorganic mulches do not decompose and will last forever in the garden. They can transfer radiant heat into the underlying soils.



## Fertilizers

Fertilizer, or plant food, is essential to plant health. There are many different types and formulations of fertilizer sold in the garden center. All fertilizers are required by law to have the uniform labeling guaranteeing the minimum percentage of nutrients, commonly referred to as the three number N-P-K analysis. This stands for Nitrogen, Phosphorus and Potassium and gives the minimum percentage of each by weight of the package.

## Pesticides

Pesticides are any products that are used to deter or destroy plant pests, which include: insects, mites, fungi, diseases or animals. Pesticides are regulated by the Environmental Protection Agency and the Department of Agriculture to ensure that they are safe and effective for people, pets, wildlife and the environment. It is important to note that there is a legal requirement for the end user to follow all label requirements and instructions. This also makes it important for all of us at the garden center to only make suggestions in accordance with the product label. We do not want to mistakenly give advice that could harm our customers' plants, or even the customers' health.

## TECHNICAL OPERATIONS: HOUSEPLANT TRAINING



## Department Information, Sales, and Responsibilities

Houseplants have become very popular over the past few years. Colorado Garden Centers stock their displays with a vast selection to offer their customers. Keeping plants healthy and happy is relatively easy if you find the right varieties for the conditions in the home. With the appropriate amount of light, water, and fertilizer, they are easy to care for.

### Light

- The necessary amount of light varies for each plant. Most houseplants thrive in conditions like their native homes such as dappled light in the jungle.
- Removal of dust from leaves can encourage better photosynthesis.
- Supplement light with grow lights if needed especially during winter months.

### Troubleshooting:

- Not enough light:
  - plant is leaning heavily towards light source – rotate often.
  - Flowering plants are not producing blooms.
  - New growth is smaller, spindly, and less colorful.
  - Interior and lower leaves fall off.
- Too much light:
  - sunburned leaves
  - Color fading or looking washed out.

<u>Basic low light plants</u> Alocasia	<u>Bright light plants (no direct sun)</u>	<u>Sun loving plants.</u> Cactus
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Bamboo and areca palms	Aloe	Citrus
Cast Iron	Aralia	Euphorbia
English Ivy	Bird of paradise	Herbs
Lucky bamboo	Dieffenbachia	Hibiscus
Peace lily.	Dracaena	Jade
Peperomia	Ferns	Olive trees
Philodendrons	Ficus	Some Bonsai (Fukien tea, elm)
Pothos	Orchids	Some Palms (pygmy date palm, adonidia "christmas" palm, Bismarck palm)
Pilea	Ponytail palms	Succulents
Sansevieria snake plants	Rubber plants	Yucca
Zamioculcas Zamifolia, ZZ plants	Schefflera	
	Spider pants	

## Water

- Be mindful when watering. It's not always helpful to stay on a regimented schedule due to many variables. The average temperature in the room, the amount of light, and the variety of plants must be taken into consideration.
- Allowing the roots to breathe is paramount. Most plants prefer to dry out between 1/3-1/2 way down the soil line.
- Some plants like ferns thrive in a humid environment and can benefit from being in a well-lit bathroom.
- When watering plants, it's important to soak the entire pot of soil so that the moisture gets to the middle of the root-ball. This may require one to push the soil line down, creating a reservoir for the water so that it can saturate all the way through. When plants dry out as much as they truly need to, the soil can pull away from the sides of the pot and the water will drain straight through.
- Terra cotta and porous pots may dry out faster than plastic containers.

## Troubleshooting:

- Too much water:
  - Fungus and gnat issues
  - Plant itself is rotting.
  - Odor comes from plants.

- Water remains in saucer for longer than ten minutes.
- Not enough water:
  - New growth curls and shrivels, appearing dehydrated.
  - Leaves and flowers drop prematurely.

#### Fertilizer

- Many plants are fertilized at the nursery and again at the garden center. Over time, the nutrients in the soil diminish.
- An all-purpose plant food can be beneficial for houseplants during the period of active growth, spring (starting around St Patrick's Day), and summer months.
- Fertilizer generally comes in two forms, a dry slow-release food, or a water-soluble blend.
- Liquid plant food can be absorbed faster but slow release is an easier approach that doesn't involve too much mixing and measuring.

#### Control of Pest and Disease

- It is beneficial to wash the leaves with water, oil based, or soap-based products periodically as a preventative measure.
- There are many natural remedies for pests and disease such as soaps, neem oils, etc.
- Be mindful of the type of plant being treated as some plant varieties can be damaged from certain products especially flowers on blooming plants and young leaves/growth points.
- Systemic insecticides are an easy way to control some pests and insects.
- Sticky traps are a good product for fungus gnats in the flying stage, but the soil must also be treated for larvae.

#### Re-potting and Maintenance

- Prune dead and yellowing leaves as often as needed but keep a close eye out for any residue or questionable discoloration.
- Most houseplants can be in the same pot for years whereas others grow quickly and may need to expand every year or two.
- As a rule, the new pot should be approximately 1-3 inches larger in diameter.
- Terra cotta and porous pots may dry out faster than plastic containers.
- Pots with drainage holes are best to repot in. Baskets and cachepots are decorative, but plants can easily sit inside and be taken out to water. It's very important not to let plants sit in excess drainage that cannot be soaked up within about 10-15 minutes after watering.
- The best time to repot plants is during the spring and summer months.

## Propagation

- There are many methods to propagate new house plants, especially from cuttings. This includes water propagation, soil rooting with hormone gel/powder, and division.

## Other Considerations

- Plants improve air quality and some even remove pollutants (peace lily, pothos, areca palm, Boston ferns, Ficus, Chinese evergreen)
- Plants with variegation and more color generally need more light to maintain their look (red/pink Chinese evergreen, colorful calathea, crotons, etc)
- Rare, novelty, and hard to find plants may be at a higher cost to the customer.
- Colorado is a dry zone, and many plants can benefit from added humidity, but it is not necessary. The growth of plants slows down in the winter months. The soil may not dry out as fast and the watering schedule needs to be adjusted accordingly.

## Tie-In sales:

- Pottery
- Potting soil
- Fertilizer and nutrients
- Insecticide
- Watering can
- Mister
- Moisture meter
- Gravel for pebble tray
- Grow lights.

TECHNICAL OPERATIONS: ANNUAL FLOWER TRAINING



## Key Characteristics

Annual plants complete their life cycle in one growing season but offer long lasting color with proper care and fertilization. Depending on the flower, some can be planted as early as the ground thaws, but others are less cold tolerant and are safer to plant after the last chance of frost (generally Mother's Day).

## Three Categories of Annuals Dependent on Weather

The United States Department of Agriculture (USDA) provides an online hardiness map. This map divides the country into 13 zones based on average annual minimum temperature and is searchable by zip code. See reference section "USDA Plant Hardiness Zone Map."

The Denver metro area is listed as zone 5a-5b (-10 to -25 degrees Fahrenheit)

Classification of annuals determines a plant's ability to withstand frost and colder temperatures.

**Hardy annuals:** most tolerant to cold weather and frost that can be sown by seed or planted in early spring. Examples include violas, pansies, and ornamental kale/cabbage.

**Semi-hardy annuals:** can withstand some colder temperature and can be planted a few weeks following the last hard frost. Examples include petunias, snap dragons, and lobelia.

**Tender annuals:** warm-weather crops with little to no tolerance for freezing temperatures. Examples include geraniums, marigolds, begonias, and impatiens.

## Other weather considerations:

- Because most crops are grown in warm greenhouses, some annuals such as pansies need a hardening off period to endure cooler weather. Hardening off refers to the plant's gradual exposure to cool temperatures.



- Hardened off annuals can withstand a light frost. It is important to protect most annuals from deeper frosts by using a frost guard cloth or by bringing them indoors.

### Soil preparation and planting

- In general, annuals prefer well-drained soil with a pH between 6.3 and 6.7. Annuals are great for container planting or in the ground. Annuals can be planted close together or spaced per the recommended distance for each type. Generally, annuals triple in size throughout the spring/summer season.
- When planting in the ground, adding a good amount of compost or peat moss will help build the soil's organic material, assist with drainage, and allow plants roots to thrive.
- When planting in containers, it is especially important to use a potting soil medium and a pot with drainage holes.
- Fertilization can take place at the time of planting with a slow-release granular product or during watering with a water-soluble plant food high in phosphorus which is the middle number in the fertilizer calculation of macronutrients used by plants (nitrogen-phosphorus-potassium; 10-10-10).
- When planting annuals it's important not to bury the root ball as this could cause the plant to rot. Plant the roots surface level with preexisting soil line and only lightly cover any exposed roots.

### Care and Maintenance

Most annuals will flower all season long until cold temperatures or frost arrives. However, to keep them blooming, maintenance is required.

- Deadheading is most important, which involves pinching off old flowers just as they begin to fade. Because annuals grow to flower and eventually seed, deadheading will help the plant continue to produce flowers rather than putting energy into seed development.
- Annuals have shallow root systems and require a regular supply of water which can be more than what a sprinkler system provides, especially in the hottest part of the summer. Avoid overhead watering on plants such as petunias which can damage the flower. Using a watering can at soil level, a soaker hose or a drip irrigation system is best. Morning or early evening is the preferable time to water to avoid sunburn on the leaves.

### Planting Conditions

When selling annual flowers, the most important question to ask is how many hours of direct sunlight will the area receive? Garden Centers typically sell full sun annuals and shade annuals in separate locations whereas some box store garden departments do not.

- Full sun garden: 4-6+ hours of direct sunlight. Some annual plants can take more sun but may require more frequent watering. Geraniums, Petunias, snap dragons, and salvia are great choices.
- Partial sun/ partial shade garden: 3 to 6 hours of sunlight. A partial sun garden means the area gets closer to 6 hours of sunlight. Morning sun is best as afternoon sun in Colorado can be intense. Pansies do well in partial sun during the summer months. Coleus is another versatile option.
- Shade garden: less than 3-4 hours of direct sunlight each day, with the bulk of the sun exposure occurring during either early morning, late afternoon, or dappled sunlight (filtered) throughout the day. Morning sun is best as afternoon sun in Colorado can be intense. Impatiens, begonias, and many varieties of coleus do well in the shade.

### Pest and Disease

As with any plants, annuals sometimes contract issues. This is especially true when plants endure the heat of the summer which can be stressful, thus compromising their ability to resist infestation. This may include aphids, spider mites, leaf minor, and powdery mildew. Customers will request help by describing these issues, bringing in samples, or displaying pictures. Rather than guessing, please direct these concerns to a senior member of the supply team to properly diagnose and suggest treatment options. This is also a great opportunity to learn about the different issues that affect plants as well as ways to prevent and treat the problem. Garden centers offer a wide variety of options, especially natural and organic approaches, that some other stores do not.

### Taking care of annuals in the garden center

Annual plants are often sold in small pots and cell packs. The smaller the container, the faster it will dry out. In the hottest part of the summer, these plants will need a thorough soaking each day. Be careful not to overwater; skip something that seems wet and heavy but return to it later to check for dryness. Plants that are more tolerant of cool weather should be checked more often as it is easy to overwater.

When watering, it is important to soak the entire pot which means it may need to be watered 2-3 times until the water drains through the bottom and the entire container of soil is wet.

Many garden centers run fertilizer through the irrigation system. Please don't drink the water from the hose 😊

Dead plants, those that are not thriving, and anything with pests or disease, should be removed from the sales floor and dealt with at the manager's discretion.

May is by far the busiest month for the garden center industry. Garden center staff will be asked to help unload many trucks and shipments of plant material. Safety always comes first.

Staff will be trained to use the vehicles properly, operate and maintain equipment, and safely unload heavy material.

### Sales tips

Encourage customers to get creative with their use of colors, textures, and growing habits. Container gardening doesn't necessarily need to be balanced. Some like to take an asymmetrical approach.

When planting patio pots and containers, one helpful method is the "Thriller, Filler, Spiller" concept.

Thrillers – vertical and eye-catching interest. Usually the focal point. This can include tall flowering plants, grasses, some houseplants, and sometimes vines.

Fillers – midsize mounding plants that fill space and enhance thriller plants. Some examples are geraniums, petunias, lantana, and coleus.

Spillers – these plants cascade and trail down the sides of containers. My favorites include sweet potato vine, vinca vine, bacopa, ivy, and calibrachoa.

### Other considerations:

- Annuals can be priced differently. It's important to note that some annuals are grown from seed and other more premium plants are grown from cuttings. Some plants are graded for size and quality, thus resulting in a price difference. Fortunately, the industry has advanced by labeling pots used in production with UPC, care, and price information, making it much easier for sale staff and cashiers to answer customer questions.
- Many houseplants can also go outside in the summer once temperatures are consistently above 40 degrees Fahrenheit. Many lowlight houseplants make great additions to shade containers. Please recommend treatment such as an insecticidal soap or a systemic insecticide for existing and potential pests prior to bringing them back indoors.
- Garden centers also sell a range of blooming tropical plants such as hibiscus, bougainvillea, Mandevilla, jasmine, oleander, and banana trees. While these plants commonly grow as perennials in some areas of the country, they are considered temperature sensitive in Colorado and must be treated with care. They can be brought in as houseplants after the season but will not survive the winter outdoors.
- When providing customer service, maintain a pleasant demeanor and provide the appropriate answers. There is a lot to learn about flowering annuals; don't hesitate to ask a senior staff member for suggestions and guidance.
- Customers shop from independent garden centers to gain accurate advice, shop from a wide selection, and receive quality products. This is what differentiates the garden centers from chain stores.



## TECHNICAL OPERATIONS: HERBS AND VEGETABLES

## Herb and Vegetable Gardening

Colorado garden centers are known to carry a wide selection of herbs and veggie seeds and plants. The choices go far beyond those of other retailers. Planting your own edible plants has increased in popularity as more individuals are working from home and enjoying the delights of gardening. Although Colorado's growing season is relatively short, there are many new varieties that can be harvested up until frost and beyond with proper protection.

- Seeds can be started indoors for transplanting in the spring when the ground warms.
- Herbs and veggies can be grown in the ground as well as containers although the mature size of the plant must be taken into consideration. Pay close attention to growth-height and width. For example, mature tomato plants vary in size. Some do very well in containers and others need significant space to develop and produce a sizeable crop.
- Most plant tags will advise of the spacing required, the amount of sun required, and days until harvest.
- The majority of herbs and vegetables need full sun with some exceptions such as leafy vegetables and root vegetables that can tolerate shadier areas.
- Well-draining and compost rich soil is key to success.
- Supplemental watering and fertilization are necessary.
- Herbs often grown for culinary purposes include basil, chives, dill, fennel, oregano, parsley, rosemary, sage, and thyme.
- There are herbs and vegetables that are perennial in Colorado's climate. Some perennial vegetables include some kales, asparagus, artichokes with protection, horseradish, and rhubarb. Many berries are also perennial in Colorado.
- Cool season vegetables include broccoli, cabbage, kohlrabi, onions, lettuce, peas, radish, spinach, turnips, arugula, beets, carrots, cauliflower, parsley, potatoes, Swiss chard, strawberries.
- Warm season vegetables include beans, celery, corn, cucumbers, squash, eggplant, peppers, tomatoes, pumpkins, melons.
- Many fruits can be planted and harvested in Colorado to include apples, apricots, cherries, currants, raspberries, elderberries, gooseberries, grapes, pears, peaches, and plums.

Sales Tip: Why is it beneficial to grow your own vegetables?

Customers can ensure their crops are organic by growing plants themselves. The gardener can control soil amendments, watering, fertilization, and frost protection. It's a fun and educational experience for adults and children alike. There is no better flavor than home grown herbs, fruits, and veggies!

#### Herb Bloom Time

- Early to late spring: violets
- Late spring to early summer: sweet cicely, all flags, pyrethrum, rosemary, Sweet woodruff
- Early to mid-summer: bedstraw, borage, chamomile, dittany of crete, feverfew, Foxglove, germander, heliotrope, lavender, marjoram, Nasturtium, rue, clary sage, valerian, yarrow
- Mid summer to autumn: bergamot, calendula, coneflower, autumn crocus (saffron), fennel, hyssop, pineapple sage, tansy

#### Herbs with Colorful Flowers

- Red: bergamot, pineapple & baby sage
- Purple-rose: germander, pyrethrum, valerian
- Pink: dittany of crete, hyssop, chives
- Orange: calendula, nasturtium, tansy
- Yellow: nasturtium, rue, yellow flag, yellow bedstraw
- Purple: heliotrope, coneflower
- Blue: borage, blue flag, fennel, hyssop, lavender, rosemary, violets
- White: feverfew, pyrethrum, white bedstraw, white flag



#### (Almost) Evergreen Herbs

Burnet, chamomile, horehound, hyssop, rue, sage, gray santolina, winter savory, southernwood, caraway, thyme, common thyme.

## Salad Herbs

Anise - leaves	Fennel - leaves, flowering umbels
Lemon balm - leaves	Lovage - leaves
Basil - leaves	Sweet marjoram - leaves
Borage - leaves, flowers	Nasturtium - leaves, petals, pickled seeds
Burnet - leaves	Rose - petals
Calendula - flower petals	Summer savory - leaves
Caraway - leaves	Sorrel - leaves
Chervil - leaves	Tarragon - leaves
Chives - leaves	Sweet violets - flower petals
Dill - leaves, flowering umbels	Watercress - leaves

## Tea Herbs

Angelica	Horehound
Anise (seeds)	Lovage
Lemon balm	Mints
Bergamot	Rosemary (green sprigs)
Caraway (seeds)	Common sage
Catmint	Sweet marjoram
Catnip	Pennyroyals
Chamomile	Saffron (stigmas)
Costmary	Thyme - lemon, common
Dill (seeds)	Lemon verbena
Fennel (seeds)	Wintergreen
Feverfew	Yarrow



## Herbs for Dry Places

Alkanet	American pennyroyal
Borage	Perilla
Bedstraw	Rosemary
Burnet	Sage
Chives	Winter savory
Fennel	Santolina
German/roman chamomile	Soapwort
Germander	Southernwood
Dittany of crete	Thyme
Feverfew	Wormwood
Lavender	Yarrow

## Herbs for Moist Places

Angelica	Mint
Bergamot	Parsley
Blue, sweet & yellow flag	English pennyroyal
Sweet cicely	Valerian
Lovage	Watercress (will adapt easily to ponds)

PLEASE NOTE: even drought tolerant herbs must be kept watered until they are established.

Most herbs prefer a sunny location. Indoors, a sunny windowsill is a must. Outdoors, there are a few herbs that can tolerate partial sun. Please keep in mind that less sun may result in 'stretched' plants in some cases and slightly lower water requirements.

## Herbs that Tolerate Partial Sun

Angelica	Parsley
Lemon balm	French tarragon
Chervil	Valerian
Comfrey	Violets
Costmary	Wintergreen
Mints	Sweet woodruff
English pennyroyal	

## The Short and Tall of It: Herb Heights

- Ground Cover:
  - SUN: roman chamomile, thyme, caraway
  - SHADE: wintergreen
  - PART SHADE: sweet woodruff, common violet
- Short Edgings:
  - Sweet basil, chives, germander, parsley, pennyroyal, winter savory, common thyme, sweet woodruff.
- Medium Edgings:
  - Most basil, feverfew, germander, hyssop, english lavender, rosemary, rue, common sage, santolina, southernwood. Note: hyssop, rosemary, rue and southernwood may be clipped like a box hedge but hyssop and rue will not flower if kept clipped.
- Tall Edgings:
  - Angelica - 5'
  - Sweet bay - 3-4' (bay laurel can get 10' in pots)
  - Sweet fennel - 3-4'
  - Lovage - 5'
  - Clary sage - 3-4'
  - Tansy - 3-4'
  - Wormwood - 3-4'

## Fragrant Herbs

- Ground Cover Low: johnny jump-ups, english pennyroyal, thymes, violets, sweet woodruff
- Medium Low: dwarf basil, chamomiles, stoechas lavender, sweet marjoram, nasturtium, american pennyroyal, winter savory.
- Medium High: sweet basils, burnet, feverfew, heliotrope, hyssop, english lavender, spike lavender, mints, scented geraniums, rue, sage, tarragon, yarrow.
- Medium Tall: lemon balm, bergamot, sweet cicely, costmary, dill, sweet flag, southernwood.
- Tall: angelica, sweet bay, fennel, lovage, pineapple sage, tansy, valerian, wormwood.

## Companion Planting Herbs

- Basil - any vegetable
- Borage - squash, tomatoes
- Chamomile - cabbage
- chives - carrots / avoid beans & peas
- Dill - cabbage, cucumber, lettuce, onions / avoid tomatoes & carrots
- Fennel - avoid vegetables
- Garlic - beans
- Geraniums - any vegetable except cucumbers
- Hyssop - cole crops
- Mints - cole crops, radishes, tomatoes
- Oregano - cole crops
- Parsley - corn, asparagus, carrots, tomatoes
- Rosemary - cole crops, beans, carrots
- Sage - any vegetable except cucumbers
- Summer savory - tomatoes, beans, onions
- Winter savory - any vegetable
- Tansy - cole crops



- Thyme - any vegetable
- Valerian - any vegetable

Remember: some herbs are insect repellants; some attract insects away from vegetables and some are symbiotic (other plants grow better when they are nearby). Some herbs can even inhibit the growth of certain vegetables.

Hints:

- Grasshoppers love tansy. Tansy is very invasive!
- Cats dislike rue (it doesn't bother dogs).
- Yarrow is very symbiotic and serves to increase most vegetables' resistance to adverse conditions.
- Valerian may attract field mice and rats from nearby open fields or empty lots.

## Herb Growing Guide

name	type	light	growing tips	comments
Basil	annual	full sun	lots of water; grow near tomatoes, which they complement	a culinary must for its great flavor; spicy globe basil makes an excellent edging plant; scented basil has different fragrance and flavors
Beebalm (bergamot)	perennial	sun		aromatic plants with beautiful flowers that attract bees
Catnip	perennial	anywhere	spreads	cats love it
Chervil	annual	part shade	keep moist	a classic culinary herb with anise flavor; use in soups & salads
Chives	perennial	anywhere		excellent edging plant; use purple flowers and the leaves for flavor
Lemon Balm	perennial	anywhere		wonderful lemon scent
Sweet Marjoram	perennial	sun	tender plant—treat as annual	one of the basic herbs
Mint	perennial	shade	keep moist	peppermint has crisp, sharp flavor for tea; spearmint has bright shiny leaves and excellent flavor; mints can be dried

Oregano	perennial	sun	low growing	works well in rock garden; pizza herb
Parsley	biennial	sun-part shade	easily grown indoors	use for flavoring & garnishing
Rosemary	perennial	sun	keep on dry side	bring indoors in fall; classic herb
Sage	perennial	sun	keep on dry side	prune in fall; dry foliage for use in winter
Sorrel	perennial	sun		great source for vitamin C; use in soups, salads and with fish
Tarragon, french	perennial	sun		top culinary herb; great with anything, especially eggs
Thyme	perennial	sun	prune back in fall	beautiful small shrubs with attractive purple flowers; pungent flavor

## ADDITIONAL RESOURCES

## BASIC TERMS

### Annuals, Perennials, and Houseplants

- Horticulture - The science and art of intensively cultivating flowers, fruits, vegetables and ornamental plants in an orchard, garden, or nursery, on a large or small scale.
- Herbaceous - Soft green, non-woody tissue of current year's growth.
- Annuals - Plants that complete their life cycle in one season and are thought to have primarily herbaceous stems. These plants come back from seeds, or cuttings.
- Perennials - Live through several growing seasons and can survive a period of dormancy between growing seasons. These plants come back from the root system or protected buds, in addition to seeds.
- Biennials - Plants that complete their life cycle within two growing seasons. These plants come back from seeds and root system.
- Houseplants - Plants that originated in warmer climates and are grown indoors for decorative purposes.
- Bulbs - Modified leaf tissues.
- Corms - Modified stem tissues.
- Tubers/Rhizomes - Modified root tissues that can produce all the necessary plant parts to survive.
- Deadhead - The act of removing blossoms or "spent" blooms from a flowering plant.
- Harden Off - The gradual process of conditioning plants from an indoor atmosphere to an outdoor atmosphere. Also, from one climate to another. Refers to temperature, light and moisture.
- Hardiness Zone - The climatic zones provided by the United States Department of Agriculture. The zones are based on average winter low temperatures. The zone system is widely used because low winter temperatures limit where many plants can be grown.
- Microclimate - A climate that is evaluated on a smaller scale such as a location within a city, neighborhood or front yard and backyard.
- pH - A measure of alkalinity/acidity. On the pH scale, 7.0 is neutral. 1.0 is extremely acidic and 14.0 is extremely alkaline. Generally, the soil in this area is alkaline.
- Up-potting-The process of transplanting plants that are root bound into a larger pot.

### Pests & Chemicals

- Pests - Anything unwanted that causes trouble, injury, destruction, or annoyance.
- Insects - Small, jointed-foot animals in the phylum Arthropoda, class Insecta
- Spiders and mites - Eight -legged animals in the phylum Arthropoda, class Arachnida.
- Disease - Caused by conditions that disturb normal healthy growth.
- Biotic - Disease caused by organisms or insects.
- Abiotic - Disease caused by cultural or environmental factors.
- Bacterial Disease - Caused by a bacterium.

- Fungal Disease - Caused by a fungus.
- Weeds - Plants out of place.
- Pesticide - Chemical that controls pests.
- Insecticide - Chemical that controls insects.
- Miticide - Chemical that controls spiders and mites.
- Fungicide - Chemical that controls fungi.
- Herbicide - Chemical that controls unwanted plants.
- Fertilizer - Chemical that aids a plant's growth process.

### Trees, Shrubs, and Turf

- Arboriculture - The scientific cultivation of trees and shrubs.
- Herbaceous - Soft green, non-woody tissue of current year's growth.
- Woody - The secondary tissue that develops from herbaceous stems of some plants.
- Tree - Woody, perennial plants with one main stem or trunk which develops many branches, usually at some height above the ground.
- Shrub (Bush) - Woody, perennial plants with several permanent stems instead of a single trunk
- Deciduous - Woody perennial plants shedding all leaves in one season.
- Evergreen - Woody perennial plants bearing leaves throughout the year.
- Broadleaf - Having leaves that are usually broad and deciduous.
- Bark - A protective outer tissue that develops with age.
- Cambium - A thin green layer of cells just under the bark on stems and trunk. This is the stem's growing point responsible for increase in diameter.
- Roots - The underground portion of a plant. The root system is the most important part of a healthy plant. The #1 cause of plant death is usually associated with the plant's root system and the soil and water relationship.
- Fibrous Roots - Profusely branched roots that occupy large volumes of shallow soil around a plant's base.
- Taproot - One or two rapid-growing, sparsely branched roots growing straight down where soils permit.
- B & B - Short for Balled and Burlapped tree.
- Container - Plants that are in containers.
- Bare root - Plants without soil or containers.



# How Plants Are Classified or Named

## Annuals, Perennials, and Houseplants

Carolus Linnaeus was the Swedish botanist considered to be the founder of the binomial nomenclature that is the basis of modern taxonomy.

It is good practice to learn scientific names which are usually Latin or sometimes Greek names. Plants often have more than one common name, but only one scientific name.

Botanic or Latin names of plants are organized as follows:

- Kingdom (i.e., Plant vs. Animal) Anything that has leaves, roots, flowers, seeds and produces their own food.
- Phylum/Division - In biology, a phylum is a level of classification. In botany, the term division has been used instead of phylum.
- Class – Is the arrangement of plants into categories for clear understanding.
- Order – Most commonly used when teaching about plants and rarely used by the average gardener.
- Family- One genus or several genera which have basically the same floral or leaf pattern. (i.e., Rosaceae)
- Genus - A genus refers to a group of species of plants that share certain structural characteristics as determined by botanical study. The genus name, a noun, may come from mythology, literature, or other sources which refer to something the plant resembles.
- Species -The species, an adjective, often refers to a place, the plant's characteristics/appearance, or the name of the person credited with discovering it. Species are botanically classified by analysis of the flower parts and characteristics of flowering plants, and by the seed/cone for coniferous and other non-flowering plants. This is why plants with distinctively different foliage or other characteristics can be classified as the same species. Species are abbreviated sp. or spp.
- Variety -A subdivision of species which describes naturally occurring changes, sport, or mutations that create a distinctively different plant in appearance. The same plant may grow on two different continents but grow taller on one than the other or have identical flower forms but different colors. These would be an example of different forms or varieties. The key words are "naturally occurring." Those that reproduce the different characteristics without human intervention are named true varieties (var.) or forms (forma). Those varieties that require human intervention (asexual reproduction methods), are known as cultivated varieties or "cultivars" for short. These are sometimes abbreviated cv.

- Cultivar (Cultivated Variety) - A cultivar is any hybridized or selected plant that is clearly distinct, uniform and stable in its characteristics and able to be maintained by propagation.
- Hybrid - A new variety of plant that is created through human intervention through sexual means (crossing the pollen of one plant with the egg, contained in the pistil of another which results in a distinctively new plant. Continued reproduction may require the same crossing technique as rarely do seeds produced from a mature plant created by hybridization or from a cultivar reproduce the same desired characteristic. Hybrid crosses are readily done among plants of the same species and rarely between plants of different genera.
- Example- Genus: *Malus*      Species: *domestica*      Cultivar: '*Jonathan*'

## Resource List

USDA Plant Hardiness Zone Map

<https://planthardiness.ars.usda.gov/>

Colorado Master Gardener – The Science of Planting Trees #7.833

<https://static.colostate.edu/client-files/csfs/pdfs/planting-trees.pdf>

Herbs and Vegetables

<https://planttalk.colostate.edu/topics/annuals-perennials/1003-planning-plants-herb-garden/>

<https://cmg.extension.colostate.edu/Gardennotes/720.pdf>