

# VIRGINIA COOPERATIVE EXTENSION GARDENER HANDBOOK

## CHAPTER 12 INDOOR PLANTS

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Original content of this handbook was compiled from many sources. We have made every effort to identify and attribute original sources of material.

**Suggested citation:** Virginia Cooperative Extension (2023). Virginia Cooperative Extension Gardener Handbook. Blacksburg: Virginia Cooperative Extension. <https://doi.org/10.21061/vcegardener>. Licensed with CC BY-NC-SA 4.0. <https://creativecommons.org/licenses/by-nc-sa/4.0>.

**Publisher:** This work is published by the Virginia Cooperative Extension State Administrative Office, 101 Hutcheson Hall (0402) 250 Drillfield Drive, Blacksburg, VA 24061 USA <https://ext.vt.edu>

**Digital book:** <https://pressbooks.lib.vt.edu/emgtraining>  
**Downloadable PDFs:** <https://doi.org/10.21061/vcegardener>

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# CHAPTER 12: INDOOR PLANTS

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This chapter is designed to familiarize you with the basic aspects of indoor plant care rather than attempting to acquaint you with specific cultural requirements of the more than 250 common plants available for indoor growth. Indoor plant gardeners need to carefully select plants that can best withstand the conditions of a specific indoor location, as home and office locations are often challenging environments for plants to thrive.

## Purchasing an Indoor Plant

When purchasing a plant, consider the environmental conditions of where it will live, such as light, temperature, humidity, and ventilation. Select plants that are sturdy, clean, well-potted, and shapely. Plants which have new flower and leaf buds along with young growth are usually of superior quality.

Choose plants with healthy foliage. Check the undersides of the foliage and the axils of leaves for signs of insects or disease.

Avoid plants which have yellow or chlorotic leaves, brown leaf margins, wilted foliage, spots or blotches, or spindly growth. In addition, avoid those with torn leaves and those which have been treated with "leaf shines," which add an unnatural polish to the leaves.

Remember that it is easier to purchase a plant which requires the same environmental conditions your residence has than to alter the environment of your home to suit the plants.

## Transporting House Plants

When transporting plants, remember that heat or cold weather can cause damage to the plants. In the summer, avoid leaving the vehicle shut because temperatures will rise and destroy the plant in a short period of time. The plant can be burned by the sun shining on it even though the air conditioner is on and it's comfortable in the vehicle. Shade the plant from direct sun while it is in the vehicle.

Transporting a tropical indoor plant in very low temperatures can kill or severely damage plants. During the winter, you may need to wrap plants with newspaper or paper bags, place in the front of the vehicle, and turn on the heater. In most vehicles, the trunk or covered truck bed is too cold to carry plants safely during winter.

On an extended trip, make special arrangements so that plants will not be frozen or damaged by cold weather. Many foliage plants will be damaged considerably if the temperature drops below 50°F, so maintain as warm a temperature as possible around these plants when transporting them from one location to another. Never allow wind to blow across them from open car windows.

## Acclimatization

Tropical plants grown in full sun have leaves (sun leaves) which are structurally different from the leaves of plants grown in shade (shade leaves). Sun leaves have fewer chloroplasts, and thus less chlorophyll. Their chloroplasts are located deep inside the leaves and the leaves are thick, small, and large in number. Shade leaves have greater numbers of chloroplasts and thus more chlorophyll, are thin, large, and few in number. When plants are grown in strong light, they develop sun leaves which are photosynthetically very inefficient. If these same plants are placed in low light, they must either remake existing sun leaves or drop their sun leaves and grow a new set of shade leaves which are photosynthetically more efficient. To reduce the shock which occurs when a plant with sun leaves is placed in shade, gradually reduce the light levels it is exposed to. This process is called acclimatization. The gardener should acclimatize plants when placing them outdoors in summer by gradually increasing light intensities, and reverse the process before plants are brought indoors in the fall. For newly purchased plants grown in high-light conditions, acclimatize them by initially locating them in a high-light (southern exposure) area of your home and gradually moving them to their permanent, darker location over a period of 4 to 8 weeks.

## Factors Affecting Plant Growth Indoors

Light, water, temperature, humidity, ventilation, fertilization, and soil are chief factors affecting plant growth, and any one of these factors in incorrect quantity will prevent proper plant growth indoors.

### Light

Light is probably the most essential factor for indoor plant growth because they use this energy source to photosynthesize. When examining light levels for tropical plants, consider three aspects of light: intensity, duration, and quality.

**Light intensity** influences the manufacture of plant food, stem length, leaf color, and flowering. A geranium grown in low light tends to be spindly and the leaves light green in color. A similar plant grown in very bright light would tend to be shorter, better branched, and have larger, dark green leaves. Indoor plants can be classified according to their light needs by high, medium, and low light requirements. The intensity of light a plant receives indoors depends upon the nearness of the light source to the plant (light intensity decreases rapidly when moved away from the source of light). The direction the windows in your home face will affect the intensity of natural sunlight that plants receive. Southern exposures have the most intense light, eastern and western exposures receive about 60% of the intensity of southern exposures, and northern exposures receive 20% of a southern exposure. A southern exposure is the warmest, a western exposure is warmer than eastern as it receives the warm afternoon sun, and a northern exposure is the coolest. Other factors which can influence the intensity of light penetrating a window are the presence of curtains, trees outside the window, weather, seasons of the year, shade from other buildings, and the cleanliness of the window. Reflective (light-colored) surfaces inside the home/office will increase the intensity of light available to plants. Dark surfaces will decrease light intensity. Excessive dust on leaves can decrease light intensity reaching the leaves.

**Day-length** or duration of light received by plants is also of some importance, but generally only to those plants which are photosensitive. Poinsettia, kalanchoe, and Christmas cactus bud and flower only when day-length is short (11 hours of daylight or less). Most flowering indoor plants are indifferent to day-length. More information on this topic can be found in the "Environmental Factors Affecting Plant Growth" section in Chapter 1: Botany.

Low light intensity can be compensated by increasing the time (duration) the plant is exposed to light, as long as the plant is not sensitive to day-length in its flowering response. Increased hours of lighting allow the plant to make sufficient food to survive and/or grow. However, plants require some period of darkness to develop properly, and thus should be illuminated for no more than 16 hours. Excessive light is as harmful as too little light. When a plant gets too much direct light, the leaves become pale, sometimes burn, turn brown, and die. Therefore, during the summer months, protect plants from too much direct sunlight.

Light quality is the third aspect that should be taken into consideration with indoor plants. **Light quality** refers to the spectral distribution of light, or the number of different colored photons emitted by the light source (for example, blues, reds, greens). Additional lighting may be supplied by either incandescent or fluorescent lights. Incandescent lights produce a great deal of heat and are not very efficient users of electricity. If artificial lights are to be used as the only source of light for growing plants, the quality of light (wavelength) must be considered. For photosynthesis, plants require mostly blues and reds, but for flowering, infrared light is also needed. Incandescent lights produce mostly red and some infrared light, but are very low in blues. Fluorescent lights vary according to the phosphorus used by the manufacturer. Cool-white lights produce mostly blue light, and are low in red light. Foliage plants grow well under cool-white fluorescent lights, which are also cool enough to position quite close to plants. Blooming plants require extra infrared light which can be supplied by incandescent lights or special horticultural-type (fluorescent or LED) lights.

## Water

Overwatering and underwatering account for a large percentage of tropical plant losses. The most common question gardeners ask is, “How often should I water my plants?” There is not a good answer to this question. Some plants like drier conditions than others. Differences in potting medium and environment influence water needs. Watering as soon as the soil crust dries can result in overwatering.

Plant roots are usually in the bottom 2/3 of the pot, so do not water until the bottom 2/3 starts to dry out slightly. You can't tell this by looking at the plant. By the time the plant wilts or changes color due to lack of water, it has been damaged and will be less vigorous. You have to feel the soil. For a 6-inch pot, stick your index finger about 2 inches into the soil (approximately to the second joint of your finger). If the soil feels damp, don't water. Keep repeating the test until the soil is barely moist at the 2-inch depth. For smaller pots, 1 inch into the soil is the proper depth to measure.

Water the pot until water runs out of the bottom. This serves two purposes. First, it washes out all the excess salts (fertilizer residue). Second, it guarantees that the bottom 2/3 of the pot, which contains most of the roots, receives sufficient water. However, don't let the pot sit in the water that runs out. After a thorough watering, wait until the soil dries at the 2-inch depth before watering again. If the soil has become excessively dry and pulled away from the sides of the pot, it will be necessary to soak the container in the sink or other container until the soil is fully rehydrated and expanded. When testing for watering, pay attention to the soil. If your finger can't penetrate 2 inches deep, the plant either needs a more porous soil mix or the plant is becoming root-bound.

Be aware of the temperature of the water. Cold water can stun or damage some tropical plants. Warm or room temperature water is best.

## Temperature

Most house plants tolerate normal temperature fluctuations. In general, indoor foliage plants grow best between 70 and 80°F during the day and from 60 to 68°F at night. Most flowering indoor plants prefer the same daytime range but grow best at nighttime temperatures from 55 to 60°F. The lower night temperature induces physiological recovery from moisture loss, intensifies flower color, and prolongs flower life. Excessively low or high temperatures may cause plant failures, stop growth, or cause spindly appearance and foliage damage or drop. A cooler temperature at night is actually more desirable for plant growth than higher temperatures. A good rule of thumb is to keep the night temperature 10 to 15° lower than the



Figure 12-1: Black root rot on a potted plant. Root rot can be caused by over watering.

day temperature. When purchasing a new plant, check the label or do research on ideal temperature conditions. Some plants prefer cooler temperatures, while some need warm temperatures.

## Humidity

**Atmospheric humidity** is expressed as a percentage of the moisture saturation of air. When humidity is too low, brown tips and margins may appear on tropical plant leaves. To provide increased humidity, attach a humidifier to the heating or ventilating system in the home, or place gravel trays (in which an even water level is maintained) under the plant containers. This will increase the relative humidity in the vicinity of the containers. As the moisture around the pebbles evaporates, the relative humidity is raised. Make sure the bottom of the pot does not come in contact with the water in the pebble tray, as it could soak up too much water and damage the plant roots.

Another way to raise humidity is to group plants close together. Some people spray a fine mist on the foliage, however, this is of doubtful effectiveness for total humidity modification unless repeated frequently throughout the day. Time this so that the plants will be dry by night. This lessens the chance of disease, since cool dampness at night provides an ideal environment for disease.

## Fertilization

Indoor plants, like most other plants, need fertilizers containing three major plant food elements: nitrogen (N), phosphorus (P), and potassium (K). They are available in many different combinations and under a multitude of brand names. Each brand should be analyzed on the label, indicating specifically how much water-soluble elemental nitrogen, phosphate, or potash is available in every pound of the product. The three numbers on a package of fertilizer, such as 20-5-20, indicate the percentages (by weight) of nitrogen, phosphorus, and potassium, respectively, in the fertilizer product. Commercial fertilizers used for indoor plants are sold in granular, crystalline, liquid, or tablet forms. Each should be used according to instructions on the package label. Frequency of fertilizer application varies somewhat with the vigor of growth and age of each plant. Some need it every 2 weeks, while others will flower well for several months without needing any supplement. As a general rule, fertilize every 2 weeks from March to September. During the winter months, no fertilizer is needed because reduced light and temperature result in reduced growth. Fertilizing at this time could be detrimental to some plants.

## Soluble Salts

Reduced growth, brown leaf-tips, dropping of lower leaves, small new growth, dead root-tips, and wilting are all signs of high **soluble salts**. These salts will accumulate on top of the soil forming a yellow to white crust. A ring of salt deposits may be formed around the pot at the soil line or around the drainage hole. Salts will also build up on the outside of clay pots, but is generally not harmful.

Soluble salts are minerals dissolved in water. Fertilizer dissolved in water becomes a soluble salt. When water evaporates from the soil, the minerals or salts stay behind. As the salts in the soil become more and more concentrated, plants find it harder and harder to take up water. If salts build to an extremely high level, water can be taken out of the root-tips, causing them to die.

High soluble salts damage the roots directly, and because the plant is weakened, it is more susceptible to attack from insects and diseases. One of the most common problems associated with high salt levels is root rot.

The best way to prevent soluble salt injury is to stop the salts from building up. Water correctly. When you water, allow some water to drain through, and then empty the drip plate. Water equal to 1/10 the volume of the pot should drain through each time you water. Do not allow the pot to sit in the water! If you allow the drained water to be absorbed by the soil, the salts that were washed out are taken back into the soil. Salts can be reabsorbed through the drainage hole or directly through a clay pot.

Plants should be leached every 4 to 6 months. Leach a plant before fertilizing so that the fertilizer does not wash away. Water the soil thoroughly as usual. Then, after about five minutes, water again, letting excess water flow out the bottom

drain holes. The first watering dissolves the fertilizer salts. The second washes the salt out of the soil. If a layer of salts has formed a crust on top of the soil, you should remove the salt crust before you begin to leach. Do not remove more than 1/4 inch of soil. It is best not to add more soil to the top of the pot. If the soluble salt level is extremely high or the pot has no drainage, repot the plant.

The level of salts that will cause injury varies with the type of plant and how it is being grown. A plant grown in the home may be injured by salts at concentrations of 200 ppm. The same plant growing in a greenhouse, where the light and drainage are good, will grow with salts at 10 times that level, or 2000 ppm. Some nurseries and plant shops leach plants to remove excess salts before the plant is sold. Consider leaching newly purchased plants the first time you water them.

## Growing Media

The potting soil or medium in which a plant grows, must be of good quality. It should be porous for root aeration and drainage, but also capable of water and nutrient retention. Most commercially prepared mixes are termed soil-less, which means they contain no soil. High-quality artificial mixes generally contain slow-release fertilizers, which take care of a plant's nutritional requirements for several months. You can also prepare your own soil-less mix.

### Preparing Soil-less Mixes

Soil-less mixtures can be prepared with a minimum of difficulty. Most mixes contain a combination of organic matter, such as peat moss or ground pine bark, and an inorganic material, like washed sand, vermiculite, or perlite. Materials commonly used for indoor plants are the peat-lite mixtures, consisting of peat moss and either vermiculite or perlite. The following are the most common media components.

**Peat moss** is readily available baled or bagged; sphagnum peat moss is recommended. Such materials as Michigan peat, peat humus, and native peat are usually too decomposed to provide necessary structural and drainage characteristics. Most sphagnum peat moss is acid in reaction with a pH ranging from 4.0 to 5.0. It usually has a very low fertility level. Sphagnum peat moss is mined, creating concerns about environmental damage, while **coconut coir** is readily renewable and environmentally friendlier than peat moss. Coir is a pH-neutral, non-hydrophobic soil amendment that aerates and improves water retention of soil.

**Vermiculite** is a sterile, lightweight, mica product. When mica is heated to approximately 1800°F, its plate-like structure expands. Vermiculite will hold large quantities of air, water, and nutrients needed for plant growth. Its pH is usually in the 6.5 to 7.2 range. Vermiculite is available in four particle sizes. For horticultural mixes, sizes 2 or 3 are generally used. If at all possible, the larger-sized particles should be used, since they give much better soil aeration. Vermiculite is available under a variety of trade names. Vermiculite collapses with time and loses its positive characteristics.

**Perlite** is a sterile material produced by heating volcanic rock to approximately 1800°F. The result is a very lightweight, porous material that is white in color. Its principal value in soil mixtures is aeration. It does not hold water and nutrients as well as vermiculite. The pH is usually between 7.0 and 7.5. Perlite can cause fluoride burn on some foliage plants, usually on the tips of the leaves. The burn progresses from the tip up into the leaf. Fluoride burns can be prevented by adding 1 1/2 times the recommended amount of lime when mixing the soil. Artificial mixtures are usually very low in trace or minor elements, therefore, it is important to use a fertilizer that contains these trace elements. A good formula for artificial mix (makes 3 bushels of media) follows.

- 1 bushel shredded coconut coir or peat moss
- 2 bushels perlite or vermiculite
- 1/2 cup finely ground agricultural lime
- 1/3 cup 20% superphosphate
- 1/2 cup 8-8-8 or similar analysis mixed fertilizer
- 1 level teaspoon chelated iron



Figure 12-2: Sphagnum peat moss.

## Soil Mixes for Specific Plants

Soils must have the most efficient composition for the type of plant to be grown. We can divide indoor plant soils into four distinct groups, according to the type of plant to which they are most suited.

Artificial soil mixes work well but a mixture with soil could be used. Any soil containing garden loam should be pasteurized. This can be done easily at home. Spread the soil on a cookie tray and bake it at 180°F for 30 minutes. Do not heat it longer than 30 minutes, and be aware that it will smell unpleasant while baking.

**Foliage Plants:** This soil should be moderately rich, have a good base of clay loam, and hold moisture and fertility adequately. It must be a crumbly, well-textured soil. It is generally made up of one part of good garden loam, one part of clean sand or perlite, and half to one part of either peat moss, compost, leaf mold, or vermiculite. Mixing about 1 teaspoon of superphosphate with each quart of mixed potting soil is desirable and encourages good root growth after repotting. If the garden soil is alkaline, sphagnum peat moss will have enough acid reaction to neutralize the mixture. This soil is used for all foliage plants and some flowering plants that do not prefer a rich soil.

**Flowering House Plants:** This soil is often referred to as humus soil because it contains about 50% humus-rich materials or similar ingredients. It is important that the soil does not become so rich that it is soggy after watering. Two parts of sphagnum, or one part sphagnum and one part vermiculite, are added to one part garden loam and one part clean sand. Also add 1 teaspoon of superphosphate per quart of soil mixture. This soil is generally used for African violets, gloxinias, begonias, calla lilies, and other tropical flowering plants.

**Cacti and Succulents:** This soil does not need any humus material. It is composed of equal parts of sand, garden soil, and vermiculite or perlite. It is preferred for cacti and other fleshy leaved, desert-type succulents.

**Orchids:** Fir-tree bark or Osmunda fiber is generally used in glazed or plastic pots. The container should be large enough so that new growth is 1-2 inches from the rim of container. Broken clay pieces can make up the lower inch in the container.

## Containers

There are many types of containers from which to choose. A good container should be large enough to provide room for soil and roots, have sufficient room above the soil line for proper watering, provide bottom drainage, and be attractive without competing with the plant it holds. Containers may be made from ceramics, plastic, fiberglass, wood, aluminum, copper, brass, and many other materials.

### Clay and Ceramic Containers

Unglazed and glazed porous clay pots with drainage holes are widely used. Ornate containers are often nothing but an outer shell to cover the plain clay or plastic pot. Clay pots absorb and lose moisture through their walls. Frequently the greatest accumulation of roots is next to the walls of the clay pot because moisture and nutrients accumulate in the clay pores. Although easily broken, clay pots provide excellent aeration for plant roots and are considered by some to be the healthiest type of container for a plant.

Ceramic pots are usually glazed on the outside, sometimes also on the inside. They are frequently designed without drainage holes. This necessitates careful watering practices and does not allow for leaching. Small novelty containers have little room for soil and roots and are largely ornamental. They should be avoided. It should be noted that putting pot chips, clay pot shards or gravel in the bottom of a pot does not improve soil drainage; they only provide a small space beneath the soil where some excess water can drain inside the pot.

### Plastic and Fiberglass Containers

Plastic and fiberglass containers are usually quite light and easy to handle. They have become popular in recent years because they are relatively inexpensive and often quite attractive in shape and color. Plastic pots are easy to sterilize or clean for reuse, and because they are not porous, they need less frequent watering and tend to accumulate fewer salts.

## Repotting

Actively growing indoor plants need repotting from time to time. This occurs very rarely with some slower-growing plants, more frequently with others. Foliage plants require repotting when their roots have filled the pot and are growing out the bottom holes. It is useful to know that certain species actually prefer to be pot-bound, such as African violets, aloe, and jade plant.

When repotting becomes necessary, it should be done without delay. The pot selected for repotting should be no more than 2 inches larger in diameter than the plant's current pot, should have at least one drainage hole, may be either clay, ceramic, or plastic, and must be clean. Wash soluble salts from clay pots with water and a scrub brush, and wash all pots in a solution of 1 part liquid bleach to 9 parts water.

Potting media should be coarse enough to allow good drainage, yet have sufficient water retention capabilities. Most plants are removed easily from their pot if the pot is held upside-down while knocking the lip of the container sharply upon the edge of a table. Hold your hand over the soil, straddling the plant between the fore and middle fingers while knocking it out of its present container. Do not pull the plant out of the container.

Potting media should be moistened before repotting begins. To repot, place soil in bottom of pot. If the plant has become root-bound it will be necessary to cut and unwind any roots that circle the plant, otherwise the roots will never develop normally. If the old soil surface has accumulated salts, the top inch should be removed. Set the rootball in the middle of the new soil. Fill soil around the sides between the rootball and pot. Do not add soil above the original level on the rootball, unless the roots are exposed or it has been necessary to remove some of the surface soil. Do not pack the soil as this decreases aeration. To firm or settle it, tap the pot on a level surface or gently press the soil with your fingers. After watering and settling, the soil level should be sufficiently below the level of the pot to leave an inch or more headroom.

Headroom is the space between the soil level and the top of the pot that allows for watering a plant. A properly potted plant has enough headroom to allow water to wash through the soil to thoroughly moisten it.

Large indoor trees may require assistance to safely remove the plant from the pot. It should not be pulled out by the trunk or branches. It is easier to remove if the soil is moist. If the tree is root bound or has roots growing through the drain hole, the pot may have to be broken to avoid damaging the roots. It is often best to repot a large plant outdoors in warm weather.



Figure 12-3: This pot-bound plant is in need of repotting.



Figure 12-4: Steps in repotting a plant include carefully removing the plant from old container, breaking up root ball, planting into a pot a few inches larger than the current pot, setting the plant in the new pot and adding media around the sides and bottom, and watering and settling the soil.



## Training and Grooming

Pinching is the removal of 1 inch or less of new stem and leaf growth, just above a node. This leaves the plant attractive and stimulates new growth. It can be a one-time or continuous activity, depending on the needs of the plant. If a plant should be kept compact but well-filled out, frequent pinching will achieve this.

Pruning is a similar activity. Pruning includes removal of other than terminal shoot tips. Sometimes an entire branch or section of a plant should be removed for the sake of appearance.

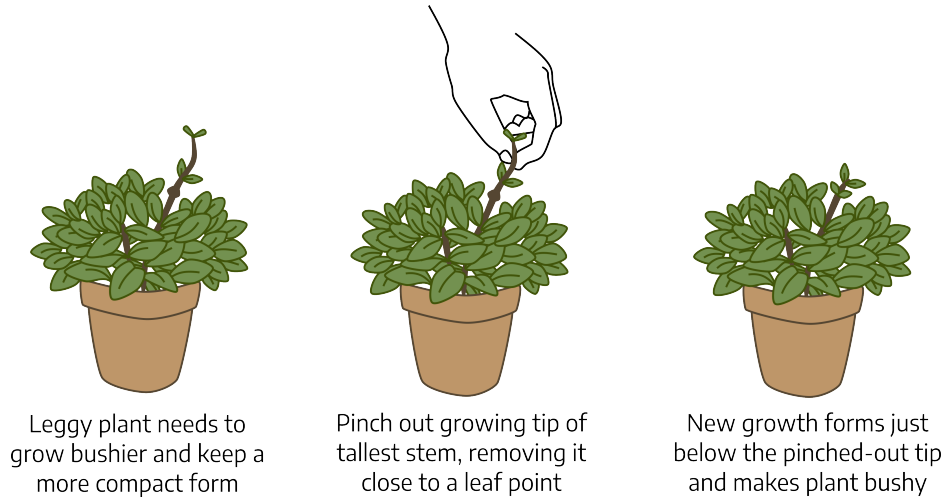


Figure 12-5: Pinching plants leaves them more attractive and stimulates new growth.

Disbudding is another related care activity. Certain flower buds are removed either to obtain larger blooms from a few choice buds or to prevent flowering of a very young plant (or recently rooted cutting) that should not bear the physical drain of flowering early.

Ivies and hoyas, as well as philodendron and syngonium, can be easily trained on trellises.

It is important to keep plants clean and neat. It not only improves the appearance of plants but reduces the incidence of insects and disease problems. Remove all spent flowers, dying leaves, and dead branches. Keep leaves dust-free by washing plants with warm water and mild soap (cover pot to prevent soap from entering the soil). Dust can clog stomata and reduce respiration. If tips of leaves become brown and dry, trim them off neatly with sharp scissors.

## Common Indoor Plant Pests

Indoor plants may still be exposed to potential plant pests. It is important to inspect for pests prior to purchasing plants to ensure that you are buying a healthy plant and to prevent possible infestation of any other indoor plants you may have at home. It is also important to inspect plants that you may have kept outside during the summer months. Here we will describe some of the common indoor plant pests you may see and different pest control options. Please remember to read any pesticide labels to assure you are using the appropriate product for your plant, pest, and environment.

**Table 12-1: Common Indoor Plant Pests**

Pest	Description	Mechanical Control Options	Chemical Control Options
Mealybugs	Soft-bodied insects with a white, waxy, cotton-like covering; suck sap from plant phloem; prefer tight crevices (between touching leaves, crotches of branches, on pots and tools)	Remove heavily infested leaves/branches	Insecticidal soaps are NOT effective; rubbing alcohol via cotton swab or spray
Aphids	Small, piercing-sucking insects that feed on plant juices; can be green, orange, red, black, etc.; molt ~4x leaving behind white sheds of exoskeleton that are easier to notice	Remove heavily infested leaves/branches; squish by hand; wash off with water	Insecticidal soap labeled for indoor plant use
Spider Mites	Extremely small arthropods- usually require a lens with 10X magnification; damage is more noticeable than the mites; stippling of leaves, loss of color, webbing	Wash off leaves with water	Insecticidal soap or a miticide labeled for indoor plant use (multiple treatments are usually needed); discard heavily infested plants
Scale	Small, armored insect from 1/16 to 1/8 in in diameter; attach to plants to feed; most do not move as adults; crawler stage is best time to control chemically	Remove heavily infested leaves/branches; physical removal with fingernail, brush, cotton swab	Horticultural oil or insecticidal soap labeled for indoor plant use (multiple treatments are usually needed)
Thrips	Small, slender insects about 1/16th inches long; 2 pair of fringed wings; mouthparts used for rasping leaf surface giving a stippled effect; frass commonly noticed before the insect; commonly found on flowers	Yellow/blue sticky traps	Insecticidal soap or neem oil labeled for indoor plant use
Whitefly	Small, white, gnat-like insect that hold their wings roof-life over their body; both larvae and adults have sucking mouthparts; feed on leaves; resembles aphid damage; common on hibiscus, poinsettia, tomatoes, etc.	Yellow sticky traps	Insecticidal soap or neem oil labeled for indoor plant use; discard heavily infested plants
Fungus Gnats	Small, black flies with larvae that feed on decaying matter in the soil; usually introduced from infested potting soil; can cause root damage if populations are extremely high; not a huge threat to plant health, but more of a nuisance	Yellow sticky traps; potato slices stuck into the soil (larvae will eat into the slice); discard slice (with the larvae) after a couple of days	Bacillus thuringiensis, subspecies israelensis applied to the soil (for larvae only)

## Troubleshooting Indoor Plant Problems

Do your plants look unhealthy? Are you unsure of what might be the cause of your plant's condition? Below, we provide some signs of common indoor plant problems unrelated to plant disease and the potential treatments for these issues.

**Table 12-2: Troubleshooting Common Indoor Plant Problems**

Problem	Symptoms	Treatment
Overwatering	Lower leaves curl and wilt Mushy stems and rot Wet soil Yellow falling leaves	Water less frequently Use pots with drainage holes Do not allow water to sit in water for more than 30 minutes Repot in fresh soil
Underwatering	Tips of leaves brown Wilting Crispy leaves Leaf drop Yellowing leaves Dry soil	Water! Water until water drains from the bottom of the pot Submerge pot in water for 5 minutes; drain off excess

## Table 12-2: Troubleshooting Common Indoor Plant Problems (continued)

Problem	Symptoms	Treatment
Light	Too little light: - Spindly stems, leggy plants - Small leaves - Loss of color in leaves	Too little light: - Move to a better lit area - Supplement with artificial light
	Too much light: - Old leaves curling - Brown margins - Brown spots on leaves	Too much light: - Mover further away from light source - Provide shade

## Care of Specific Plants

There are a number of wonderful house plants currently available for gardeners of all skill levels. When making the decision what plant is best for your space, choose plants that fit the light duration, light intensity, and temperature levels your house can provide. You should also consider growing what you enjoy having in your home, house plants are as much about beauty and enjoyment as they are about the health benefits they provide. Indoor plants can be a wonderful addition to any room and with the diversity of plants available through local plant nurseries and online, you will certainly be able to find a plant that fits your needs. The following are a few of the broad categories of houseplants that you may encounter:

### Bulbous Plants

Just like bulbs are planted outside for beautiful seasonal blooms, they can also be grown indoors. The constant temperatures and control over the environment allows for varieties to be grown that may not survive many outdoor conditions. Bulbous plants are generally grown for their beautiful blooms.



Figure 12-6: Amaryllis.

Additional information can be found here: [VCE Publication "Forcing Flower Bulbs for Indoor Bloom" HORT-67NP](#), [Cornell Extension publication "Bulbous Plants for Indoor Bloom" \(http://chemung.cce.cornell.edu/resources/bulbous-plants-for-indoor-bloom\)](#) and [University of Minnesota Extension "Growing bulbs indoors" \(https://extension.umn.edu/planting-and-growing-guides/growing-bulbs-indoors\)](#).

### Trailing and Climbing

Trailing and climbing plants can add a wonderful dimension to any indoor plant collection. They can be trained to grow on different support structures within the home or as set in the pot where they are planted. There are many varieties of climbing and trailing plants, so ensure that you know what your specific plant needs to thrive in an indoor environment. For example, some ivies are able to thrive under fluorescent lights in an office environment, where other vining plants may not be able to do so successfully. Trailing and climbing indoors plants are often grown for their foliage and shape.

Additional information on ivy: [Clemson Cooperative Extension "Growing English Ivy Indoors" \(https://hgic.clemson.edu/factsheet/growing-english-ivy-indoors/\)](#).

## Ferns

There are a number of ferns that can successfully grow indoors under the correct conditions. Humidity, temperature, and light are all important factors for ferns and a fern that doesn't receive exactly what it needs will not grow well in its indoor setting. Fiddlehead and staghorn ferns are two popular varieties that can add a great deal of interest to the home. Additional information on ferns: [University of Georgia Cooperative Extension "Growing Ferns"](https://extension.uga.edu/publications/detail.html?number=B737&title=Growing%20Ferns) (<https://extension.uga.edu/publications/detail.html?number=B737&title=Growing%20Ferns>).

## Flowering Plants

Bringing beautiful blooms inside can be a rewarding experience and there are many flowering plants well adapted to growing indoors. As with other types of plants, be sure to understand the requirements for your plant. Some may need periods of darkness, cool temperatures, additional artificial light, or more in order to bloom indoors. However, when those needs are met you are granted with a colorful and exciting addition to your home!

Additional information on specific flowering plants can be found here: [University of Missouri Extension "Care of Flowering Potted Plants"](https://extension.missouri.edu/publications/g6511) (<https://extension.missouri.edu/publications/g6511>).

## Foliage Plants

Many indoor plants are grown solely for their interesting leaves. Whether you'd like to grow plants for unique colors, shapes, sizes, or patterns, there are indoor foliage plants that will fit your interests.

For more on easy to grow foliage plants: [New Hampshire Extension "Which foliage houseplants are easiest to grow?"](https://extension.unh.edu/blog/2019/12/which-foliage-houseplants-are-easiest-grow) (<https://extension.unh.edu/blog/2019/12/which-foliage-houseplants-are-easiest-grow>).

## Succulents

A succulent describes a type of plant that stores water in its stems and leaves. There are hundreds of plants that fall into this category of all shapes, colors, and sizes. Succulents can be hardy and able to survive outdoors in colder climates, or soft. Soft succulents are those that need consistent temperatures and are the ones that thrive in indoor environments when properly maintained. Succulents require regular watering once the soil has dried and should be placed in bright direct or indirect sunlight. Cacti are one large category of succulents often available for indoor growing.

More information here: [Iowa State University Extension and Outreach "Care of Succulents Indoors"](https://hortnews.extension.iastate.edu/2021/12/care-succulents-indoors) (<https://hortnews.extension.iastate.edu/2021/12/care-succulents-indoors>).

## Trees and Tree-Like Plants

Indoor trees and plants that have been trained to take a tree-like form can add a lot to an indoor space. Not only can some citrus fruits grow indoors, sharing their fruits for your kitchen, but they also offer the height and mass that many indoor plants aren't able to offer. A tree can fully fill a space and adds interest to a room.

For information on growing citrus indoors: [University of Minnesota Extension "Growing Citrus Indoors"](https://extension.umn.edu/house-plants/growing-citrus-indoors) (<https://extension.umn.edu/house-plants/growing-citrus-indoors>).

## Indoor Plants and Toxicity for Pets

*By Marion Ehrich and Dennis Blodgett, Virginia Maryland College of Veterinary Medicine, Virginia Tech*

Family pets can be poisoned by a number of different toxic plants found inside the home or outside in the home garden. Lists are long, for example the ASPCA (American Society for Prevention of Cruelty to Animals) Animal Poison Control Center lists over 400 plants that can be toxic to dogs and cats. A full [list of these toxic plants is available from the ASPCA: https://www.aspc.org/pet-care/animal-poison-control/toxic-and-non-toxic-plants](https://www.aspc.org/pet-care/animal-poison-control/toxic-and-non-toxic-plants). Another good source of information is your local veterinarian.

Veterinarians and other health professionals are often called about poisonous plants because plant poisonings are on rule-out lists for many different pet disorders. Most plant poisonings are not life-threatening, but anything eaten, even non-toxic plants, can cause gastrointestinal disturbances such as vomiting. Dogs are notorious for indiscriminate eating. Cats are more fastidious, but may ingest toxic houseplants and end up with minor to life threatening clinical signs. Certain common houseplants belonging to the *Araceae* family can release insoluble calcium oxalate crystals. These include dieffenbachia, philodendron, pothos (pictured), in addition to Calla lily and Peace lily. These crystals cause mouth and gastrointestinal irritation almost immediately, can be painful, and can last from hours to days. Contact with a local veterinarian should be considered.



Figure 12-7: Dieffenbachia can release insoluble calcium oxalate crystals when ingested.

## Terrariums and Dish Gardens

### Terrariums

A terrarium is a "miniature garden" in which plants are often contained within a tightly closed glass or clear plastic vessel, usually with a moveable top and requiring very little attention. Because such containers are kept closed most of the time, air inside stays at high humidity, similar to a greenhouse. This is an ideal environment for a variety of houseplants. Condensate eventually forms on the inside of the container and is returned to the medium as water, which may preclude the addition of water for several weeks. Overwatering is one of the most common problems in terrarium care – medium should be kept moist, not wet. If conditions inside become too moist, the top should be removed to evaporate excess water. A standard medium, along with a sand and/or gravel base for drainage and charcoal to absorb unpleasant odors are commonly used. Fertilizer applications are made only to sustain plants and when in use should be in soluble dilute form. The terrarium should be placed in bright, but not direct sunlight at average room temperatures.



Figure 12-8: Terrarium.

### Dish Gardens

Desert dish gardens can be made by planting various arid type cacti and other succulents together in a decorative dish container. Open, shallow dishes are the best choices for containers. Choose the soil based on the type of plant being grown.



Figure 12-9: Dish garden.

**Table 12-3: Light requirements for selected indoor plants**

Plant (common name)	Direct Light	Bright Light	Average Light	Low Light
Areca palm	x	x		
Asparagus - Sprengeri	x	x		
Asparagus - Meyeri	x	x		
Aloe vera		x	x	
Boston fern		x	x	
Burro's tail	x	x		
Chinese evergreen		x	x	x
Coleus	x	x		
Corn plant		x	x	
Croton		x	x	
Devil's ivy	x	x	x	
Dieffenbachia	x	x	x	
Fiddleleaf fig		x	x	
False aralia		x	x	
German ivy - green		x	x	
German ivy - variegated		x	x	
Gold dust dracaena		x	x	
Grape ivy		x	x	
Heartleaf philodendron		x	x	x
Jade plant	x	x		
Japanese aralia		x	x	
Kangaroo ivy		x	x	
Maidenhair fern			x	x
Moses-in-the-cradle		x	x	
Norfolk island pine		x		
Parlor palm		x	x	x
Peperomia		x	x	
Piggyback		x	x	
Ponytail palm	x	x		
Rubber plant	x	x		
Schefflera	x	x	x	
Snake plant	x	x	x	x
Spider plant		x	x	
Spiderwort	x	x	x	
Strawberry begonia		x		
Swedish ivy	x	x	x	
Tahitian bridal veil	x	x	x	
Velvet plant	x	x		
Weeping fig		x		

## Plant Lists

### Cool Temperature Plants

Grow best at 50-60 °F during the day and 45-55 °F at night

- Azalea
- Cacti and succulents<sup>1,2</sup> (only during winter rest periods)
- Camellia
- Cast-iron plant<sup>2</sup>
- Chrysanthemum
- Citrus (grapefruit, lemon, orange)
- Creeping fig
- Daffodil, Narcissus
- Easter lily<sup>2</sup>
- Euonymus japonica (Spindle tree)
- Ivy<sup>2</sup>
- Hyacinth
- Hydrangea
- Japanese aralia
- Jasmine
- Jerusalem cherry
- Miniature rose
- Mock orange
- Norfolk Island pine
- Persian violet
- Primrose
- Tulip
- Tree ivy
- Wandering Jew
- White calla lily
- Zephyr lily

#### Key for temperature lists:

<sup>1</sup> Will also do well at high temperatures

<sup>2</sup> Will also do well at medium temperatures

<sup>3</sup> Will also do well at cool temperatures

### Medium Temperature Plants

Grow best at 60-65 °F during the day and 55-60 °F at night

- Amaryllis
- Asparagus fern
- Avocado
- Baby's tear
- Begonia
- Bird's nest fern
- Bromeliads<sup>3</sup>
- Bush violet
- Cacti and Succulents<sup>1,3</sup>
- Cast-iron plant<sup>1</sup>
- Christmas cactus
- Citrus
- Coleus
- Crown of thorns<sup>3</sup>
- Earth star<sup>3</sup>
- Easter lily<sup>1</sup>
- English ivy<sup>1</sup>
- German ivy
- Gold-dust tree
- Hibiscus
- Kangaroo vine<sup>3</sup>
- Living stones<sup>3</sup>
- Palms
- Panda plant
- Peperomia
- Piggyback plant
- Pilea
- Podcarpus
- Purple passion fruit
- Schefflera
- Shamrock plant
- Snake plant<sup>3</sup>
- Staghorn fern<sup>3</sup>
- Strawberry begonia
- Wax plant

### High Temperature Plants

Grow best at 70-80 °F during the day and 64-70 °F at night

- African violets
- Bromeliads
- Cacti and Succulents<sup>2,3</sup>
- Caladium calathea (Peacock plant)
- Chinese evergreen
- Coconut palm
- Copperleaf
- Cordyline
- Croton
- Crown of thorns<sup>2</sup>
- Dracena
- Earth star<sup>2</sup>
- False Aralia
- Ficus
- Flame violet
- Geranium
- Golden pothos
- Hen and chicks
- Impatiens
- Kangaroo vine<sup>2</sup>
- Living stones<sup>2</sup>
- Peace lily
- Philodendron
- Prayer plant
- Purple velvet plant<sup>2</sup>
- Sensitive plant
- Snake plant
- Staghorn fern<sup>2</sup>
- Swiss cheese plant
- Screw pine

## Plants for Specific Indoor Gardening Uses

### Plants that will grow in water

- *Aglaonema modestum* Chinese Evergreen
- *Crassula arborescens* Jade Plant
- *Dieffenbachia* (all varieties)
- *Hedera helix* English ivy
- *Hemigraphis colorata*
- *Hoya carnosa* Wax plant
- *Monstera deliciosa* Philodendron Cutleaf
- *Pellionia pulchra* Satin Pellionia
- *Philodendron cordatum* Philodendrons
- *Philodendron micans* (all climbing types)
- *Piper nigrum* Black Pepper
- *Piper ornatum* Celebes Pepper
- *Scindapsus aureus* Devil's Ivy
- *Scindapsus pictus* Painted Devil's Ivy
- *Stephanotis floribunda* Stephanotis
- *Syngonium podophyllum* Arrowhead, Syngonian
- *Tradescantia* (all varieties)

### Plants that withstand adverse house conditions

- *Aglaonema modestum* Chinese Evergreen
- *Anthurium aemulum* Climbing Anthurium
- *Aspidistra elatior* Iron Plant
- *Chamaedorea elegans* 'bellas' Dwarf Parlor Palm
- *Cissus rhombifolia* Grape Ivy
- *Crassula arborescens* Jade Plant
- *Dieffenbachia amoena*
- *Dracaena fragrans* Massangeana Dracaena
- *Euphorbia mili* Crown of Thorns
- *Ficus elastica* Indian Rubber Tree
- *Ficus benjamina* 'Exotica' Java Fig
- *Hemigraphis colorata* Hemigraphis
- *Howeia belmoreana* Kentia Palm
- *Pandanus veitchii* Screw pine
- *Peperomia obtusifolia* Peperomia
- *Philodendron cordatum* Philodendron
- *Sansevieria trifasciata* Snakeplant
- *Sansevieria laurentii* Goldenstripe
- *Sansevieria zeylanica* Sansevieria
- *Scindapsus aureus* Devil's Ivy
- *Syngonium podophyllum* Arrowhead, Syngonium

### Plants well-suited as large container decorative specimens

- *Acanthus mollis* Artists Acanthus
- *Acanthus montanus* Mountain Acanthus
- *Alocasia cuprea* Giant Caladium
- *Alsophila australis* Australian Tree Fern
- *Codiaeum pictum* Croton
- *Dieffenbachia amoena* Spotted Dumbcane
- *Fatsia japonica* Japan Fatsia
- *Ficus eburnea* Ivory Fig
- *Ficus elastica* 'variegata' Variegated India Rubber
- *Ficus lyrata* Fiddleleaf Fig
- *Monstera deliciosa* Cutleaf Philodendron
- *Pandanus veitchii* Screwpine
- *Philodendron elongatum* Philodendron
- *Philodendron giganteum* Giant Philodendron
- *Philodendron* x *mandaianum* Philodendron
- *Philodendron panduraeforme* Philodendron
- *Philodendron selloum* Philodendron
- *Philodendron wendlandii* Philodendron
- *Polyscias paniculata* 'variegata' Jagged-leaf Aralia
- *Schefflera digitata* Schefflera
- *Strelitzia reginae* Bird of Paradise

### Plants that perform well under average home conditions

- *Acanthus montanus* Mountain Acanthus
- *Aechmea calyculata* Bromeliad
- *Aechmea ortlandiana* Bromeliad
- *Asparagus sprengeri* Sprenger Asparagus
- *Araucaria heterophylla* Norfolk Island Pine
- *Begonia aconitifolia* Begonia
- *Begonia ulmifolia* Elm-leaved Begonia
- *Beloperone guttata* Shrimp plant
- *Caladium bicolor* Fancy-leaved Caladium
- *Cissus antarctica* Kangaroo Vine
- *Cissus rhombifolia* Grape Ivy
- *Cordyline australis* Grass Palm
- *Cyrtanthus acaulis* Earth Star
- *Cyrtomium falcatum* Holly Fern
- *Dieffenbachia x bausei*
- *Dieffenbachia picta*
- *Euphorbia milii* Crown of Thorns
- *Fatsia japonica* Japanese Fatsia
- *Fatsihedera lizei* Bush Ivy
- *Ficus benghalensis* Banyan Fig
- *Ficus eburnea* Ivory Fig
- *Ficus religiosa* Bo-tree Fig
- *Grevillea robusta* Silky Oak
- *Hedera helix* (all varieties) English Ivy
- *Pedilanthus tithymalooides* Slipper or Red Bird Flower
- *Peperomia clusiaefolia* Peperomia
- *Peperomia crassifolia* Peperomia
- *Peperomia obtusifolia* 'Variegated' Variegated Peperomia
- *Peperomia sandersii* Watermelon Peperomia
- *Pereskia aculeata* Lemon Vine
- *Philodendron cordatum* Heartleaf Philodendron
- *Philodendron* 'dubia' Philodendron
- *Philodendron giganteum* Giant Philodendron
- *Philodendron* Philodendron
- *Philodendron imbe* Imbe philodendron
- *Philodendron* x *mandaianum* Philodendron
- *Philodendron panduraeforme* Panda Plant
- *Philodendron erubescens* Redleaf Philodendron
- *Philodendron selloum* Philodendron
- *Philodendron tripartitum* Trileaf Philodendron
- *Philodendron wendlandii* Philodendron
- *Pilea involucreta* Artillary Plant
- *Piper nigrum* Black Pepper
- *Piper ornatum* Celebes Pepper
- *Polyscias balfouriana* Balfour Aralia
- *Polyscias filicifolia* Fernleaf Aralia
- *Polyscias paniculata* 'Variegata' Jagged-leaf Aralia
- *Rhoeo spathacea* Moses-in-the-cradle



- *Sansevieria trifasciata* 'Hahnii' Hahn's Sansevieria
- *Sansevieria parva* Parva Sansevieria
- *Sansevieria subspicata* Rededge Sansevieria
- *Saxifraga sarmentosa* Strawberry geranium
- *Schismatoglottis picta* Painted Tongue
- *Scindapsus aureus* Devils Toy Pathos
- *Spathiphyllum* 'Clevelandii' Spathiphyllum
- *Syngonium podophyllum* 'Emerald Gem' Variegated Arrowhead
- *Tradescantia* (all varieties)

## Low, creeping plants for groundcovers in interior plant boxes

- *Episcia cupreata* Episcia
- *Ficus pumila* Creeping Fig
- *Ficus radicans* Climbing Fig
- *Fittonia verschaffeltii* Silver Fittonia
- *Hedera helix* 'Hahns' Hahn's English Ivy
- *Hemigraphis colorata* Hemigraphis
- *Pellionia daveauana* Pellionia
- *Pellionia pulchra* Pellionia
- *Philodendron cordatum* Heartleaf Philodendron
- *Pilea nummulariifolia* Creeping Artillery Plant
- *Saxifraga sarmentosa* Strawberry Begonia
- *Scindapsus aureus* Devil's Ivy
- *Tradescantia* (all varieties)
- *Vinca major* 'variegata' Variegated Vinca

## Vines and trailing plants for totem poles and trained plants

- *Anthurium almulum* Climbing Anthurium
- *Cissus antarctica* Kangaroo Vine
- *Cissus discolor* Begonia Cissus
- *Cissus rhombifolia* Grape Ivy
- *Clerodendrum Balfourii* Glorybower
- *Ficus pumila* Creeping Fig
- *Vanilla fragrans* 'Marginata' Vanilla

## Plants suitable for hanging baskets

- *Achimenes grandiflora* Bigpurple Achimenes
- *Aeschynanthus parasiticus* Lobecup Basketvine
- *Aeschynanthus parasiticus* 'Black Pagoda' Black Pagoda Basketvine
- *Aeschynanthus radicans* Lobbs Basketvine, Lipstick plant
- *Aeschynanthus pulcher* Scarlet Basketvine
- *Asarina erubescens* Creeping Gloxinia
- *Asparagus plumosus* Fern Asparagus
- *Asparagus sprengeri* Sprengeri Fern
- *Begonia* 'Elsie M. Frey' Elsie M. Frey Begonia
- *Begonia x hiemalis* Winter Flowering Begonias
- *Callisia elegans* Striped Inch plant
- *Ceropegia woodii* String of Hearts, Rosary Vine
- *Chlorophytum bichetii* St. Bernard's Lily
- *Chlorophytum comosum* 'Variegatum' Green Lily
- *Chrysanthemum morifolium* 'Anna' Daisy Cascade
- *Chrysanthemum morifolium* 'Jane Harte' Daisy Cascade
- *Cissus quadrangula* Winged Treevine
- *Codonanthe crassifolia* Central American, Bellflower
- *Coleus rehnelianus* 'Trailing Queen' Trailing Coleus
- *Columnnea x banksii* Goldfish Vine
- *Columnnea microphylla* Small-leaved Goldfish Vine
- *Commelina communis* aurea-striata Variegated Widows Tear
- *Cyanotis kewensis* Teddy Bear Plant
- *Cyanotis somaliensis* Pussy Ear
- *Cymbalaria muralis* Kenilworth Ivy
- *Davallia fejeensis* 'plumosa' Rabbit's Foot Fern
- *Episcia cupreata* 'Amazon' Amazon Flame Violet
- *Episcia cupreata* 'Chocolate Soldier' Carpet Plant
- *Episcia cupreata* Ember Lace Episcia
- *Episcia cupreata* 'Emerald Queen' Emerald Queen Episcia
- *Episcia cupreata* 'Silver Sheen' Silver Sheen Episcia
- *Episcia dianthiflora* Lace Flower Vine
- *Episcia* 'Moss Agate' Panama Episcia
- *Erythrorhopsis pilocarpa* Bristletufted twig cactus
- *Euphorbia mammillaris* Corncob Plant
- *Fittonia verschaffeltii* Mosaic Plant
- *Fittonia verschaffeltii* Silvernerve Fittonia
- *Fittonia verschaffeltii* var. Pearcei Snake Skin Plant
- *Fuchsia* 'Jubilee' Jubilee Fuchsia
- *Fuchsia* 'Swingtime' Swingtime Fuchsia
- *Hatiora salicornioides* Drunkard's Dream
- *Hedera helix* 'Hahns Variegated' Variegated Hahn's English Ivy
- *Hedera helix* 'Ivalace' Ivalace English Ivy
- *Hemigraphis colorata* Red Ivy
- *Hemigraphis* Exotica Waffle Plant
- *Hoya australis* Porcelain Flower
- *Hoya bella* Miniature Wax Plant
- *Hoya carnosa* 'Compacta' Compact Wax Plant
- *Hoya carnosa* 'Exotica' Exotic Wax Plant
- *Hoya carnosa* 'Krinkle Curl' Hindu Rope Plant
- *Hoya carnosa* 'Tri-color' Variegated Wax Plant
- *Hoya imperialis* Honey Plant
- *Hoya keysi* Pubescent Wax Plant
- *Hoya longifolia* shepherdii Shepherd's Wax Plant
- *Hoya motoskei* Spotted Wax Plant
- *Hoya purpureo-fusca* Silver Pink Wax Plant
- *Hypocyrta nummularia* Miniature Pouch Flower
- *Hylocereus undatus* Nightblooming Cereus
- *Ipomoea batatas* Blackleaf Sweet Potato
- *Kalanchoe gastonis-bonnierii* Life Plant
- *Kalanchoe manginii* Mangin Kalanchoe
- *Kalanchoe pubescens* Jinglebells Kalanchoe
- *Kalanchoe uniflora* Miniature Kalanchoe
- *Mammillaria elongata* Lace Mammillaria
- *Nephrolepis exaltata* bostoniensis Boston Fern
- *Nephrolepis exaltata* 'Rooseveltii' Tall Featherfern
- *Pelargonium x fragrans* Scented Geranium
- *Pellionia daveauana* Trailing Watermelon Vine
- *Pellionia pulchra* Satin Pellionia
- *Peperomia acuminata* Mexico Pepperface
- *Peperomia cubensis* Cuban Pepperface
- *Peperomia glabella* 'Variegata' Variegated Waxprivet Peperomia

- *Peristrophe hyssopifolia* 'Aurea-Variiegata' Marble-leaf
- *Philodendron micans* Velvet-leaf Vine
- *Philodendron oxycardium* Heart-leaf Philodendron
- *Pilea nummulariifolia* Creeping Charley
- *Platynerium allicorne* Elkhorn Fern
- *Plectranthus coleoides* 'Marginatus' Candle Plant
- *Plectranthus oertendahl* Prostrate Coleus
- *Plectranthus purpuratus* Moth King
- *Plectranthus tomentosus* Succulent Coleus
- *Polypodium aureum* Hare's Foot Fern
- *Portulacaria afra* 'Variiegata' Rainbow Bush
- *Rhipsalis capilliformis* Treechair Rhipsalis
- *Rhipsalis cassutha* Mistletoe Rhipsalis
- *Rhipsalis houlletiana* Snowdrop Cactus
- *Rhipsalis paradoxo* China Rhipsalis
- *Rhipsalis pentaptera* Fivewing Rhipsalis
- *Rhipsalis trigona* Triangle Rhipsalis
- *Ruellia makoyana* Monkey Plant
- *Schlumbergera bridgesii* Christmas Cactus
- *Schlumbergera gaertneri* Easter Cactus
- *Scindapsus aureus* Devil's Ivy
- *Sedum morganianum* Burro Tail
- *Senecio herreianus* Green Marbledvine
- *Setcreasea purpurea* Purple Heart
- *Stapelia gigantea* Giant Toadplant
- *Stenotaphrum secundatum* 'Variiegatum' Variegated St. Augustine Grass
- *Streptocarpus saxorum* False African Violet
- *Tradescantia albiflora* 'Albovittata' Giant White Inch
- *Tradescantia sillamontana* White Velvet, White Gossamer

## Plants suitable for desert dish gardens

- *Adromischus* Calico hearts, Leopard spots
- Aloe
- *Astrophytum myriostigma* Bishop's cap
- *Cephalocereus nobilis* Cylinder cactus
- *Cereus peruvianus* 'Monstrosus' Curiosity plant
- *Crassula Jade plant*
- *Crassula lycopodioides* Toy cypress, Watch chain
- *Crassula rupestris* Rosary Vine
- *Echeveria derenbergi* Painted lady
- *Echeveria elegans* Mexican snowball
- *Echeveria secunda* var. glauca Hens and chickens
- *Echinocactus Grusonii* Golden barrel cactus
- *Echinocereus pectinatus* var. neomexicana Rainbow cactus
- *Echinocereus reichenbachii* Lace cactus
- *Echinocereus micromeris* Button cactus
- *Euphorbia lactea cristata* Crested euphorbia, Frilled fan
- *Faucaria tigrina* Tiger jaws
- *Gasteria liliputana* Miniature gasteria, Miniature ox tongue
- *Haworthia Pearl plant, Wart plant*
- *Haworthia fasciata* Zebra haworthia
- *Haworthia margaritifera* Pearl plant
- *Lithops* species Living stones
- *Mammillaria bocasana* Powder puff cactus
- *Mammillaria elongata* Golden star cactus
- *Mammillaria fragilis* Thimble cactus
- *Opuntia erectoclada* Dominoes, Pincushion cactus
- *Opuntia microdasys* Bunny ears
- *Opuntia vilis* Dwarf tree opuntia
- *Portulacaria afra* Elephant bush
- *Portulacaria afra* variegata Rainbow bush
- *Rebutia kupperiana* Scarlet crown cactus
- *Rebutia minuscula* Red crown cactus
- Sedum Stonecrop
- *Sedum acre* Golden carpet, Gold moss
- *Sedum adolphi* Golden sedum
- *Sedum dasyphyllum* Golden glow
- *Sedum lineare* Carpet Sedum
- *Sedum morganianum* Burro's tail
- *Sedum multiceps* Miniature Joshua tree
- *Sedum pachyphyllum* Jelly beans
- *Sedum x rubrotinctum* Christmas cheer
- *Stahlia* Coral beads

## Plants suitable for tropical terrariums

- *Aglaonema commutatum* Chinese evergreen
- *Begonia boweri* Miniature begonias
- *Chamaedorea elegans* Neanthe bella, Parlor palm
- *Cissus antarctica* 'Minima' Dwarf kangaroo ivy
- *Coffea arabica* Arabian coffee plant
- *Cordyline terminalis* minima 'Baby Ti' Dwarf ti plant
- *Cryptanthus bivittatus* minor Dwarf rose-stripe earth star
- *Dizygotheca elegantissima* False aralia
- *Dracaena sanderana* Belgian evergreen
- *Dracaena surculosa* Gold dust dracaena
- *Ficus diversifolia* Mistletoe fig
- *Ficus pumila* 'Minima' Dwarf creeping fig
- *Fittonia verschaffeltii* Mosaic plant
- *Maranta leuconeura* kerchoveana Prayer plant
- *Nephrolepis exaltata* cvs. Boston fern
- *Peperomia sandersii* Watermelon peperomia
- *Pilea cadierei* 'Minima' Aluminum plant
- *Pilea depressa* Miniature pilea
- *Pilea microphylla* Artillery plant
- *Pilea nummulariifolia* Creeping Charlie
- *Pteris* species Brake ferns, Table ferns
- *Saintpaulia* cultivars Miniature African violets
- *Selaginella* Club moss, Moss fern
- *Selaginella kraussiana* Creeping club moss
- *Selaginella emmeliana* Sweat plant
- *Sinningia pusilla* (and other miniature cultivars) Miniature gloxinias
- *Syngonium* Arrowhead vine, Nephthytis

## Additional Resources

- [Colorado State PlantTalk information for growing many common houseplants: https://planttalk.colostate.edu/topics/houseplants/](https://planttalk.colostate.edu/topics/houseplants/)
- [“Forcing Flower Bulbs for Indoor Bloom” HORT-67NP: https://www.pubs.ext.vt.edu/HORT/HORT-76/HORT-76.html](https://www.pubs.ext.vt.edu/HORT/HORT-76/HORT-76.html)
- [ASPA houseplant toxicity information: https://www.aspc.org/pet-care/animal-poison-control/toxic-and-non-toxic-plants](https://www.aspc.org/pet-care/animal-poison-control/toxic-and-non-toxic-plants)
- [University of Connecticut “Safe and Toxic houseplants”: https://homegarden.cahnr.uconn.edu/factsheets/houseplants-safe-and-toxic-varieties/](https://homegarden.cahnr.uconn.edu/factsheets/houseplants-safe-and-toxic-varieties/)

## Attributions

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