W 1128-B

Caring for Indoor Plants

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Indoor plants are popular because they provide the opportunity to manage, grow and enjoy plants no matter where you live. With increasing urbanization and more time spent indoors, plants in our living and working spaces can provide a great connection to nature. They can be a fun way for younger generations to get interested in the plant world or for experienced gardeners to try something new. Plants are not only pleasing to the eye, but they can also reduce stress and provide a range of quality of life benefits.

The urge to buy a houseplant is often driven by the plant's appearance. However, the plant's life may be short lived if its new home isn't part of the decision-making process. Since there are many different types of indoor plants to fit the space in which you live and work, do not be intimidated by making a plant decision because adopting the right plant to share your space can be easy and fun! For more about indoor plant selection, see UT Extension publication W 1128-A.

Don't become discouraged if you lose a plant now and then. There are always plenty of options to replace plants you have lost, so try another and keep learning. Success in the plant world doesn't mean we never lose a plant- just that we keep learning and trying new crops. There are always plenty of options to replace plants you have lost, so try another and keep learning. Success in the plant world doesn't mean we never lose a plant- just that we keep learning and trying new crops. Enjoy the plant journey and keep in mind that some houseplants develop character as they age. Providing the right conditions and having a plant for years can reward you with an amazing specimen that is unlike anything available at the nursery. To support this long-term goal, this publication is focused on the common tools and materials needed for houseplants and care techniques.

I. Bringing New Plants to Your Home or Office

Enabling indoor plants to adapt to a new growing environment is one of the first and most important aspects of successful indoor gardening. Consider it similar to hardening off transplants before they are planted in gardens. Acclimatization is the term that refers to transitioning a house plant from rapid growing conditions experienced in a production greenhouse to slower growing conditions experienced indoors. Light levels will be lower, which will slow down plant growth and lead to a lower need for water and nutrients. Additionally, there will often be lower humidity in the indoor growing environment as well.

Often this process of acclimatization will be done by the producer or retailer, and the time invested in preparing the plant for indoor conditions may well increase its cost. If leaves are medium to dark green, relatively thin and flat, and have long internodes with relatively thin stems, there is a good chance the plant has already been acclimatized. Thicker, lighter colored leaves, more upright leaf orientation and many new leaves that are close together on the stem indicate the plant has not been acclimatized.

If the plant has not been acclimatized, then the plant should be taken to a bright indoor location or even a porch or patio (in summer) for two to four weeks before moving to the final indoor location. This step-down period will gradually slow down the plant growth processes. Specific acclimatization techniques can vary by plants, but it is common for defoliation or changes in leaf coloration to be a part of this process. These leaf losses should slow down, and the plant will gradually stabilize after a few weeks.

II. The Tools of the Trade

A. Containers

Figure 1. *Examples of some common container types including from left to right, ceramic, terra cotta and glazed ceramic. Each will have different rates of substrate drying and be suited for different types of plants.*

Selecting growing containers for indoor plants provides you an opportunity for creativity and interesting aesthetics to accompany the foliage or flowering beauty of the plants ***(Figure 1)***. However, appearance is not the only selection criteria for growing containers for houseplants. Different containers have variable permeability and air exchange, so they can influence aeration to the roots as well as the speed at which the growing substrate dries out. Terra cotta is likely the most well-known type of container. It is a very porous material that provides high air exchange and rapid substrate drying. Terra cotta can work well for many cacti and succulents as well as other foliage plants that prefer the substrate to be relatively dry between waterings. Ceramic containers are similar to terra cotta but can vary in color as well as porosity. Glazed ceramic containers have less air exchange than terra cotta due to the glazing, so substrates are slower to dry. Plastic containers offer the least air exchange and slowest substrate drying, which can be a detriment for some plants and an asset for others. Use plastic containers for plants that prefer the substrate not dry out between watering. Plastic containers are also often lighter weight, which can be an asset in some situations but they do not provide as much weight to offset taller, heavier plants. For additional information on selecting containers and media for indoor plants, check out this video by our UT team: https://youtu.be/T586Zdw3URs.

While container type is important, you should also pay attention to the drainage of the container. Most terra cotta pots will have a large drainage hole at the bottom, while some decorative glazed ceramic pots may not be designed with drainage holes. If drilling a drainage hole would risk damage to the pot, you can place the plant in a smaller pot that does have a drainage hole in the bottom and nest it inside the pot without a

drainage hole. Be sure to use gravel or some other material to aid in air flow and allow space for the water to collect inside the larger pot and below the drain of the smaller pot so that roots are not left in standing water.

B. Substrate

It is not wise to use garden or field soil for indoor plants due to its weight, slow drainage and the risk of soil borne diseases and pests. So, indoor plants are grown in substrates that are not actually soil. While soil contains sand, silt and clay minerals, soilless substrates contain organic materials, such as peat moss, pine bark or coconut husks (coir) as well as mineral materials, such as sand, perlite and vermiculite. The substrate that indoor plants are grown in can be specifically designed to provide support as well as water and nutrient holding capacity and drainage. Soilless substrates also have the benefit of being largely pathogen free.

Different types of plants that prefer more or less aeration and moisture for their roots can be grown in mixes with ratios of components that best provide those conditions. While many commercial mixes are available that are tailored to specific types of indoor plants, the raw components are simple to find, and gardeners can prepare their own mixes for different types of houseplants. Table 1 below provides some common mixes for different types of indoor plants.

Table 1. Substrate components and ratios for different types of indoor plants (adapted from Clemson pub. 1456)

Plant type	Components- by volume
Foliage plants (Begonia, Ficus)	2 parts peat moss, 1 part vermiculite, 1 part perlite
Foliage plants that need more rapid drainage (Peperomia, Dieffenbachia, Hoya, Monstera, Philodendron)	1 part peat moss, 1 part fine pine bark, 1 part perlite
General indoor plant mix	2 parts pine bark, 1 part peat, 1 part sand

III. The Practices

A. Watering

Watering properly is a plant management task that is more complex than it may appear. Because of the limited rooting volume of indoor plants in containers, proper watering can actually be more critical indoors than outdoors. Underwatering will limit plant growth and lead to wilting and leaf damage while overwatering can damage or kill roots and often entire plants. Different types of houseplants will respond to water excesses or deficits with varied symptoms. Some of the more moisture loving plants may quickly wilt ***(Figure 2)***, while succulent plants may show limited signs of needing water ***(Figure 3)***.

Figure 2. *This plant has wilted and died for lack of water. Peace lilies prefer a consistently moist substrate. Also notice that it was grown in a clay pot, which is not ideal for plants with higher moisture needs.*

Figure 3. *This jade plant is a succulent that shows water needs more subtly. The slight puckering of the leaves is an indication that the substrate is too dry even for this succulent plant.*

Keep in mind, though, that overwatering can also lead to wilting. So, check the substrate and the drainage as well as observing the plants. As a general statement, overwatering is a more common cause for indoor plant death than underwatering. It is important to be aware of three key aspects in managing water for indoor plants.

1. Water quality is important because the small volume of growing substrate may not have the ability to buffer ions and salts like outdoor soil would. Chlorine and fluorine are elements that can be dissolved in water as ions that can lead to plant issues. Several foliage plants, such as Dracaena, are sensitive to fluorine and can have leaf damage if the levels are too high. Water softeners can also be a source of high salts that can damage indoor plants because ions such as calcium or magnesium in the water are replaced with sodium. There are water tests to accurately identify if water quality is potentially an issue or you could purchase deionized water.

2. Water quantity will depend on the size of the plant and the container volume. As a general rule, watering should be done until water drains out of the bottom of the container. This will help prevent the buildup of salts in the substrate. Also, do not let drained water stand in the tray since that can increase the time plant roots are exposed to water with a high salt content. Water that drains from a container should be discarded. Bottom watering houseplants can be a simple way to keep leaves dry. It might also lead to salt accumulation, so periodically flush the substrate well with top watering. You can still keep leaves dry when wetting the substrate from the top. However, it can be messier and taking the plant to a sink or even a bathtub can be helpful.

3. Timing of watering will depend upon the location conditions (temperature, humidity and light level) as well as the size and type of the plant and season of the year. It is common for plants to have a lower growth rate and therefore lower need for water during the winter months. Different types of houseplants also prefer different levels of dryness between waterings. Some plants, such as peace lily, prefer for the substrate to never dry ***(Figure 2)*** while succulents are best watered when the substrate has lost much of the moisture. For simplicity, three general levels of watering that are commonly used for indoor plants are presented in the companion Extension publication for selecting indoor plants (UT Extension 1128-A) to provide information on what moisture level the substrate should be at watering.

B. Fertilizing

As with watering, over-fertilizing is more common than under-fertilizing. Indoor plants typically grow slowly and do not need the level of nutrition that many fruiting or flowering plants outdoors would need. Also, the small volume of growing substrate can easily become high in salts (fertilizer is often delivered in a salt form that dissolves in water) due to frequent fertilization or lack of watering.

Most houseplants will have nutrition for several weeks or months in the substrate when purchased. As a general rule, start with small, monthly applications of fertilizer during the warmer and higher light months and use 1/3 to 1/4 of the suggested rate of soluble fertilizer (fertilizers that do not have filler material but dissolve completely in water). Indoor specific fertilizer mixes will generally have a lower level of nutrients than more common soluble fertilizers used for flowers, vegetables and such. So, there is less need to reduce the rate as described above. Many indoor plants will have a rest period in the lower light months, so lower or eliminate fertilizer applications during this time.

Use the plant itself as an indicator of nutrient needs. Lighter colored leaves can be an indication of the need for fertilization while long internodes or a plant that is stretched might suggest overfertilization. Larger plants as well as those in higher light environments will need more frequent fertilization. Be on the lookout for salts that accumulate on the substrate surface or the container as they indicate salt buildup. Tip burning on leaves can also indicate over fertilization.

C. Cleaning and Leaf Pruning

Managing indoor plants involves a combination of routine and periodic tasks. Keep an eye on substrate moisture at least a couple times a week. Also monitor plant growth. Look for signs of new leaves that indicate good growth conditions and see if plants are stretching toward light or showing signs of wilting ***(Figure 3)***. Light pruning is also an ongoing task. Removing dead or damaged leaves as well as any spent blooms should be done routinely. You can consider it a weekly task to remove browning or dead leaves. Sometimes brown tips can be trimmed without removing the whole leaf to retain the productive leaf tissue. In addition to leaf removal, pinching the tips out of small stems will keep most houseplants more compact and likely fuller. Removing dust from leaves is also a good aesthetic practice that can increase light interception as well as removing particles that may block air and water movement in and out of the leaves. A damp sponge will work well for most leaves or small plants can even be dipped in water. Do not sponge or wet leaves with small hairs. A small brush can be used instead.

D. Repotting

Repotting is a periodic practice that is crucial to keep plants healthy and growing well. Roots can be pruned and then replaced in the same pot with some additional substrate, but to maintain continued growth, repotting to a larger container will likely be needed. The need to repot can be determined by plant appearance. If the plant is very root-bound, roots are growing out of drainage holes, or if the plant is top heavy or full of new shoots, it may well be time to repot ***(Figure 4)***.

Figure 4. *Rootbound Sansevieria plant that is ready for repotting. This division and repotting will be simple as there is clearly a point of division in the center of the plant.*

A key part of repotting is to increase pot size gradually in 1 inch increments in pot sizes. If plants are repotted into much larger pots, the extra substrate can retain too much water and possibly lead to root rot or other issues. A hands-on look at repotting developed by UT Extension can be accessed at this link: https://youtu.be/7LR_SNbjt5M.

To begin, select a new or clean and sterilized container (10 percent bleach can be used). Then place a small amount of new substrate in the new container. The substrate should not be overly loose but also not packed too firmly. Then carefully remove the plant from its current pot. If roots are strongly circling or very dense, a bit of root pruning will be beneficial. Then place plant vertically in the center of the new pot. Fill in media around the sides to provide about 1 inch of new substrate all around the repotted plant. Don't fill the pot completely up with media. Make sure to leave 1/2 to 1 inch at the top of the pot as a reservoir for watering.

Being aware of indoor conditions and matching those conditions to the needs of plants is a crucial first step for success. Then, focusing on proper plant selection, watering, fertilizing, pruning, repotting and being on the lookout for any pests or diseases will all be a part of indoor plant success ***(Figure 5)***.

We hope you enjoy the process of living the plant life!

Figure 5. *A newly emerged young leaf of this fiddle leaf fig is a good sign that the plant is in a location where the light, temperature and moisture meet its needs.*

Resources Cited and Additional Reading

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