

Environmental requirements for indoor plants

To keep plants healthy and attractive, we must control a number of environmental factors such as light, temperature, humidity, water, and plant nutrients.

The right combination results in healthy plants. Too much or too little of any factor results in poor plant health or death.

- The key to successful indoor plant culture is to select plants that are adaptable to the conditions in your home
- The normal home provides a number of different environments.
- Light varies from sunny windows to dim corners. Plants in living areas receive long hours of light (either natural or artificial) year-round, but those in bedrooms normally receive only minimal supplemental light.
- Humidity usually is much higher in kitchens and bathrooms than in living rooms and Temperatures vary widely

Management

- Each plant has its own set of desired environmental conditions
- By selecting the best site for each plant and managing the supply of water and nutrients, it is possible to grow most common houseplants in any home.

Light

- The major environmental factor limiting plant growth indoors is lack of adequate light.
- As natural light enters homes, it decreases very quickly. For example, a plant 1 foot away from a window may receive 100 foot-candles of light.
- If it is moved 2 feet away from the window, it will receive only 25 foot-candles of light

- At 3 feet it receives only 11 foot-candles
- To increase light intensity you can:
 - Moving the plant to a lighter room (southern versus northern exposure)
 - Placing the plant near an electric light
 - Providing separate artificial light for the plant
 - Providing reflected light with a light-colored wall or mirror
 - Keeping leaves free of dust and grime

- To reduce light intensity you can:
- • Place a lace curtain between the plant and window
- • Use venetian blinds to intercept and divert direct sunlight
- • Reduce reflected light with a dark backdrop
- • Shade the plant with another plant
- • Move the plant back from a strong light source (for example, a south-facing

Temperature

- Home temperatures are adjusted for the comfort of people, but temperatures vary considerably in most homes
- Bedrooms usually are cooler than bathrooms or living areas
- Southern-exposure rooms usually are warmer during the day than northern-exposure rooms

- Fortunately, most plants tolerate a fairly broad range of temperatures and thrive at normal home temperatures if other environmental factors are satisfactory

Humidity

- Many plants require a more humid climate than the average home
- Ferns, ivies, and other humid-climate plants may grow best in bathrooms or kitchens, where the air usually is more humid.
- You can increase relative humidity around a plant by placing its pot on a shallow tray of moist gravel . The gravel will evaporate water into the air around the plants.

- Grouping plants together in the same room raises the relative humidity for all.
- The higher relative humidity that plants prefer also is healthier for people

Water

Plants must have a continuous and adequate supply of water, but they can absorb water from the soil only under certain conditions.

- First, there must be available water in the soil. Soil particles hold some water too firmly for plants to take up. The quantity and type of soil mix will determine how much water the pot retains for plant use.

- some air must be in the soil for plant roots to function and absorb water. Therefore, the soil must not contain so much water that no room is left for air.
- A good potting soil will not hold too much water if a hole in the bottom of the container allows excess water to drain away.

Guidelines for watering indoor plants

- Use a well-prepared potting soil to assure good water-retention capacity as well as space for air.
- • Make sure containers have at least one drainage hole so excess water can drain away.
- • When watering, apply enough water to run out the drainage hole. This usually assures that you have replenished the available water supply and also reduces salt buildup.
- • Do not let pots sit in excess water. Pour it away or raise pots so they always are above the level of drained-out water in the saucer.

- • Do not water on a time schedule. Allow the soil to become dry on the surface before you water again. This method maintains a good balance of air and water in the soil.
- • If some plants require frequent watering, move them into slightly larger pots (with greater water-holding capacity).
- • Some plants, such as desert cacti and succulents, should be watered only a little, if at all, during the short days of winter. With the exception of seedlings and very young plants, these plants need no water from about mid-November to mid-March. Most cacti and many succulents are best kept bone-dry and quite cool during the winter.
- Flush soluble salts from pots on a regular basis, about every six months. Water three times at 30-minute intervals to wash salts out the drainage hole.

Keep these additional factors in mind when watering:

- • Chlorine in tap water will not harm plants.
- • Fluoride in tap water can damage sensitive plants. (See Table 1.)
- • Room-temperature water is best. Plants such as African violets and their relatives may require even warmer water.

Nutrients

Plants growing in containers have a limited volume of soil from which to extract mineral nutrients (fertilizer). The supply of nutrients rapidly becomes exhausted when the plant is actively growing. Replenish nutrients regularly. The easiest way is to water them in with a solution of soluble fertilizer.

- During the long days of the year when plants are actively growing, fertilize about every other week.

- During the short days of the year, fertilize only every 4 to 6 weeks.
- If plants are totally dormant, do not fertilize until new growth starts.

Here are some fertilizing hints:

- Slow or time-release fertilizers are a good way to fertilize houseplants. Follow label directions.
- Plants grow best with small amounts of nutrients constantly available.
- Do not apply fertilizers to dry soil.
- Do not overfertilize. More is *not better*. Plants can die from too much fertilizer. It's better to underdo than overdo.
- Both organic and synthetic fertilizers are acceptable sources of plant nutrients

Potting and Repotting

- Cultivating plants in containers requires occasional replanting from one container to another
- Small, rapidly growing plants may require repotting into larger containers every three to four months
- You can repot mature houseplants on an annual basis or allow them to remain in containers until they have outgrown them or become pot-bound

- If a plant is not doing well, and no obvious reason can be found, it may benefit from repotting.
- Handle plants carefully when potting or repotting to avoid injury and to provide optimum growth in the new container.
- When transplanting, consider such factors as size and condition of the plant, size and type of container, type and amount of soil mixture, and prevention of damage to the plant.

Houseplant problem symptoms, possible causes, and treatments.

Symptoms (what you see)	Possible causes	Treatment (corrective action)
Plants are spindly, stems grow abnormally long. Leaves lack color, are undersized, and may fall off.	Too little light	Move plant closer to a window or other light source. Don't fertilize when plants are dormant (winter).
Old leaves curl under. New leaves are smaller than old leaves. Leaves may brown around margins.	Too much light	Move plant farther from window or light source, or filter light through a curtain.
Yellow, brown, or white (bleached) spots on leaves (particularly on upper leaves).	Sun scorch caused by sudden increase in light intensity	Shade plant. Move plants from shade to sun gradually so they can adapt. Some always require shade.
Leaves turn yellow, curl downward, or wilt.	Too much heat	Move plant to a cooler spot. Avoid placing plants near heat registers or hot-air outlets.
Plants wilt even if soil is moist. Margins and tips of leaves burn. White crust may appear on leaf edges and on the soil surface when dry.	Salt buildup in soil	Water three times at 30-minute intervals to wash the salts out the drainage hole. Do not use soft water.

Symptoms (what you see)	Possible causes	Treatment (corrective action)
White crust on rim and sides of porous pots. Leaves touching rim wilt and die.	Salt accumulation on pot	Leach soil as above. Wash excess salts off pot with clear water. Wax the rim of the pot to prevent future salt deposits that might touch leaves.
White or yellow spots on leaves of African violets, gloxinias, and other hairy-leafed plants.	Cold water on leaves or in soil	Use room-temperature to luke-warm water for watering plants.
Dark brown spots around leaf margins of tropical foliage plants (especially philodendrons).	Raw natural gas or incompletely burned gas in home	Check gas lines and fittings for gas leaks. Adjust gas burners for blue flame. Have furnace checked for leaks or adjustments.
Plants wilt between waterings, roots fill pot and may grow out drainage hole. Growth slow.	Plant is too big for its pot	Repot in a larger container with a good potting soil mixture.
Sudden wilting or shedding of foliage during cold weather.	Chilling	Move plant away from chilling drafts.
Wilting and loss of foliage after repotting or initial potting.	Transplant shock	Give optimum care until plant adjusts to its new situation.

Symptoms (what you see)	Possible causes	Treatment (corrective action)
Tips of leaves turn brown, and leaves wilt. Lower leaves turn yellow and fall off.	Not enough water	Water until some water runs out the drainage hole, or submerge the pot in a pail of water for five minutes. Drain off excess water. Repeat when soil is dry to touch.
Lower leaves curl and wilt. Stems become mushy and rot. Soil in pot usually is wet.	Too much water	Water less frequently. Use pots with drainage holes in the bottom. Do not allow pot to stand in water more than 30 minutes.
Leaf edges are crinkly and brown. Tips of new leaves often dry up.	Lack of humidity	Increase humidity around plants by standing pots on a bed of moist gravel or placing them in planters with moist sphagnum moss packed around the pots. Use a humidifier or move plants to a more humid area (such as a bathroom or over the kitchen sink).
Plants grow rapidly with lots of foliage but few, if any, flowers.	Too much fertilizer	Fertilize less often or at half the suggested rate. Use low-nitrogen fertilizer during blooming season. Do not fertilize when plants are dormant.
Lower leaves lose color and may drop off. New leaves are progressively smaller than previous leaves. Stems are stunted.	Too little fertilizer	Fertilize regularly when plants are growing. Use a soluble fertilizer and apply per package directions.
Brown or black spots on leaves. Tip and marginal burning. Spider plants (<i>Chlorophytum</i>), corn plants (<i>Dracaena</i>), and palms are especially sensitive.	Fluoride in water supply	Use rain or distilled water. Keep pH up to 6.5.

Care and Grooming

- Keeping plants clean and neat through regular grooming improves the appearance of plants and 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 true soap – avoid detergent, which can cause damage to leaves and buds.

- Cover the pot to prevent soap from entering the soil.
- If tips of leaves become brown and dry, trim them off neatly with sharp scissors.
- Humidity can be increased by placing plants on trays lined with pebbles and filled with water to within one half inch of the base of the pot

- Pinching can be a one-time or continuous activity, depending on the need (pinching is the removal of one inch or less of the stem tip and leaf growth, just above a node, to stimulate new growth below the tip and encourage lateral branching)
- Frequent pinching will keep a plant compact, but well filled-out

- Pruning includes removal of plant material other than terminal shoot tips. Sometimes an entire branch or section of a plant should be removed for the sake of appearance.
- Disbudding is the removal of certain flower buds 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
- Trellising is an attractive way to display vines such as ivies and hoyas, as well as philodendron and syngonium.