*Rockbridge Extension Master Gardeners*

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# Indoor Plants

Extension Master Gardeners Bedford

Virginia Cooperative Extension
Virginia Tech • Virginia State University


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Updated August 2026

# Welcome to ‘Indoor Foliage’

In this module you will learn basic aspects of tropical plant care.

- Read Chapter 12, in your Master Gardener Handbook before viewing these slides
- Browse the Suggested Readings at the end of these slides.  They contain online sources that will be helpful for your learning
- The Test Your Knowledge section is for fun and review
- There is no quiz for this module

# What Will I Learn in This Module (Objectives)

1. Factors affecting indoor plant growth
2. Growing media best suited for houseplants
3. Containers best used for houseplants
4. How to repot a houseplant
5. Training and grooming of houseplants
6. Diseases and insects on houseplants
7. How to make terrariums and dish gardens

# INDOOR FOLIAGE

Photo courtesy P Turner





Photo courtesy P Turner

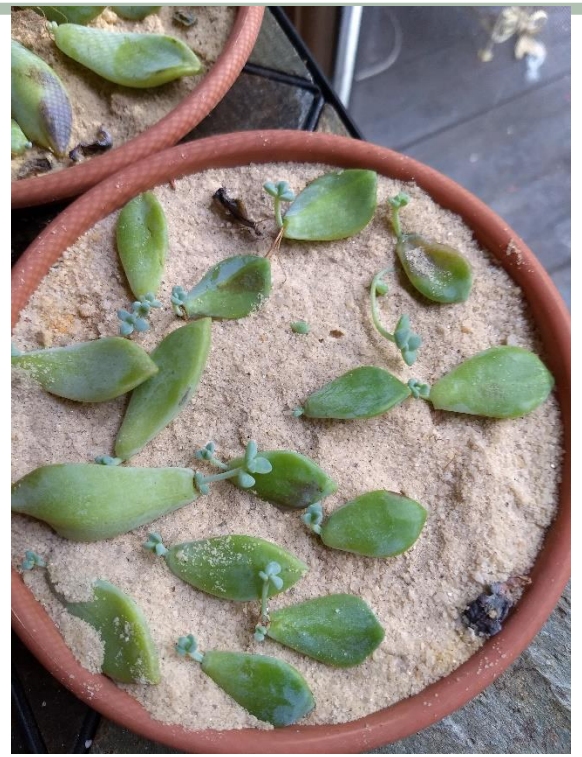

Photo courtesy P Turner

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# Factors Affecting Indoor Plant Growth

Light

Water

Temperature

Humidity

Ventilation

Fertilization

Soluble Salts

# Light

- The most essential factor for indoor plant growth
- Necessary for photosynthesis
- The more light a plant receives, the more carbohydrates are produced



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[Lighting Indoor Houseplants]

# Components of Light

Intensity: "Strength of light." The amount of light reaching a plant; high, medium, low

- High light intensity occurs within two feet of south-facing windows from October through March and within two feet of east or west-facing windows all year. These locations have at least four to six hours of daily sun.
- Medium light intensity occurs within two feet of north-facing glass from April through September and two to six feet back or one foot to the side of an east or west-facing window. Typically, ten to fourteen hours per day of fluorescent office lighting is considered medium light.

Duration: Day-Length; Most indoor plants are indifferent to day-length

- Low light intensity can be compensated by increasing duration

Quality: Wavelength or color; For photosynthesis plants require mostly blues and reds; for flowering they need infrared light; Incandescent lights produce mostly red and some infrared light; Cool-white light produce mostly blue light; Foliage plants grow well under cool-white florescent lights

# Water

- Overwatering and under watering account for a large percentage of tropical plant losses
- Plants can be divided into three groups based on their water needs:
  - Hydrophytes: Grow in water
  - Mesophytes:  Average water requirements
  - Xerophytes:  Grow in dry environment

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Indoor Plants: Watering

# How do I know When to Water?

The feel and color of the soil can be used as a guide in watering. Plant roots are usually in the bottom 2/3 of the pot. For most plants, do not water until the bottom 2/3 starts to dry out slightly. You can't tell this by looking, so you have to feel the soil. When the top 1/2 inch of the soil (in containers up to 8 to10 inches in diameter) feels dry, the plant probably needs watering. For a 6-inch pot, stick your index finger about 2 inches into the soil (approximately to the second joint of your finger). For smaller pots, 1 inch into the soil is the proper depth to measure.

# Temperature

- Most houseplants tolerate normal temperature fluctuations
- Houseplants grow best between 70 and 80 degrees F during the day and 60-68 degrees at night; flowering indoor plants prefer a nighttime temperature from 55 to 60 degrees F. (Rule of thumb: keep night temp 10-15 degrees lower than the day temp.
- Plants grown under slightly cooler conditions are more tolerant of lower light intensity than those grown at higher temperatures. Cooler temperatures also reduce the amount of moisture lost from leaf surfaces

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# Humidity

- Placing a gravel tray (in which an even water level is maintained) under the plant containers.
- Grouping plants close together raises humidity
- Increasing relative humidity helps slow moisture loss and discourages damaging mites and insects that thrive in warm, dry conditions

# Ventilation

- Indoor plants are very sensitive to drafts or heat from registers
- Forced air dries the plants rapidly, overtaxes their limited root systems
- Indoor plants are very sensitive to mixed gases (e.g. leaks from gas appliances)

Indoor Plant Care

# Fertilization

- Indoor plants need nitrogen, phosphorus and potassium
- General rule:  fertilize every 2 weeks from March to September
- Houseplants outside or in bright light will need more fertilizer

Fertilizing Houseplants

# Taking Houseplants Outside

- Houseplants may be moved outside during warm weather; they need to be protected from very hot sun and very bright sunlight
- Bring houseplants back inside when the temperatures drop into the upper 40's.
- When houseplants are brought back inside in the fall, they need to be inspected carefully for insects (aphids, spider mites, scale, lacewings); inspect intersections between leaves and stems; spraying with a garden hose, or dipping the entire plant into a large bucket of water will help rid the plant of insects; spraying with water that has dish detergent added may also help
- Insects may hide in the soil of the pot (slugs, sowbugs, earwigs, gnats, ants); Soaking the soil thoroughly with water infused with dish detergent can help rid the soil of these insects

# Soluble Salts

- Minerals dissolved in water; fertilizer dissolved in water becomes a soluble salt
- As the salts accumulate plants find it more difficult to take up water; root damage results
- Salts accumulate on top of the soil forming a yellow to white crust; May also accumulate on the pot
- Prevention:  When watering, water thoroughly, allowing water to drain through the pot; empty the drain plate; Do not allow the pot to sit in water; Leach the plant every 4-6 months – pour in lots of water and let it drain
- Signs of soluble salts:
  - Reduced growth; brown leaf tips; dropping of lower leaves; small new growth; dead root tips; wilting

Soluble Salts Damaging to Houseplants

# Growing Media for Houseplants

- Artificial mixes are best for houseplants
- Composition:
    - Organic matter:  peat moss (sphagnum); ground pine bark;
    - Inorganic matter:  washed sand; vermiculite; perlite
- Foliage plant soil should be moderately rich; a good base of clay loam; hold moisture and fertility adequately; be crumbly and well textured
- Flowering house plants prefer humus soil
- Cacti and succulents prefer a mix of sand, garden soil and vermiculite or perlite

Indoor Plant Culture

# Containers for Houseplants

- Should be large enough for soil and roots; have sufficient room above the soil line for proper watering; provide bottom drainage; and be attractive
- Clay pots absorb and lose moisture through their walls; provide excellent aeration
- Plastic and fiberglass need less frequent watering and tend to accumulate fewer salts
- Succulents do better in unglazed clay containers
- When using tall, narrow pots, you'll need to use a finer textured soil to maintain even moisture than when using short, wide pots. Larger pots require less frequent watering.



Photo Credit:
P Turner

# Repotting

- Actively growing indoor plants need repotting from time to time
- The new pot should be no more than 2 inches larger in diameter than the pot the plant is currently growing in
- Potting media should be moistened before repotting begins
- Cut and unwind any roots that circle the plant
- Do not add soil above the original level on the root ball
- Repot when they are actively growing



Video:  Transplanting a Houseplant

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# Training and Grooming

- Pinching:  removal of 1 inch or less of new stem and leaf growth just above a node; stimulates new growth
- Pruning: removal of other than terminal shoot tips
- Disbudding:  removal of some flower buds to obtain larger blooms from a few choice buds
- Keep plants clean and neat to reduce incidence of insects and disease problems
- Remove all spent flowers, dying leaves and dead branches
- Keep leaves dust free (wash with warm water and mild soap

# Diseases of Houseplants

- Diseases are rare on houseplants; most problems come from unfavorable growing conditions
- Prevention is the best way to avoid diseases:
  - Inspect plants and soil often; look for wilting or leaf spots or green growth on the soil
  - If possible, check the roots (should be white and well distributed)
  - Assure good drainage
  - Remove dead leaves and flowers
- Houseplant diseases are usually caused by bacteria or fungi. Bacteria usually produce angular lesions frequently surrounded by yellow halos or water soaked areas. Fungi produce a wide variety of symptoms including root rots, stem lesions, leaf spots, mildews and rusts.

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[Houseplant Diseases and Disorders]

# Diseases

- The most common disease of houseplants is root rot.  It can be prevented by not overwatering and by using sterile potting mix.
- Mildew is a fungus that may be found on houseplants.  It appears as whitish spots or patches on the leaves.  To prevent, provide good ventilation and do not get the leaves of the plant wet.
- Fungi may cause leaf scorch or spots that are small, circular and tan. Good ventilation and avoiding wetting the plant leaves is the best prevention.  Also, remove any dead leaves or flowers.

# Insects on Houseplants

- Prevention is best:  keep foliage clean; remove dead leaves; If you put plants outside for a while, inspect the plant and soil before bringing them back inside.
- The most common insect pests of houseplants are: aphids, scale, mealy bugs and spider mites.
- Control:  Minor infestations of aphids and spider mites can be controlled with a hose sprayer at the kitchen sink or by cleaning the leaves with a moist sponge.  Be sure to use lukewarm water. To prevent a reinfestation from egg hatch, repeat the treatment in 2 to 3 days. A cotton swab dipped in alcohol works well for localized infestations of mealybugs and scale insects.  For severe infestations or where large numbers of plants are involved, chemical control may be needed. If practical, move plants outside for treatment.

# Insects

Photo credit



- Aphids are globular-shaped sucking insects that are usually found in clusters at the stem tip and on the underside of foliage. They are only one-eighth of an inch long and are light green, pink, or black. They may cause the plant's foliage to be curled, twisted, or deformed.
- Scales are sucking insects that have little or no resemblance to insects except in their early life. Eggs hatch into tiny crawlers that move about for a short time before settling down into one spot. They attach themselves to stems and to the underside of leaves and, at first, appear to be small bumps or blisters. They are small (one-sixteenth to one-eighth inch) and somewhat protected by their outer shell, which is greenish-brown or black. Scale insects suck sap and cause leaves to turn yellowish and the ends of stems to die back several inches.



Photo credit

# Insects

Photo credit



- Mealy bugs are soft bodied, sucking insects, which are about one-fifth to one-third inch long. Their bodies are covered with a whitish or yellowish, powdery wax and waxy filaments. The masses of wax from their bodies and cottony egg sacks make the plant unsightly. The insect can move about and is typically found in crevices such as stems and leaf joints and near the base of leaves. Mealy bugs injure plants by sucking the sap with their needle-like mouth-parts
- Spider mites are nearly invisible mites. They are pale green, red, or brown. The spider mite uses its needle-like mouth-parts to puncture the plant tissues. This feeding causes a finely stippled, spotted, or mottled effect on the plant foliage. When infestations are severe, the leaves may become covered with silvery white webbing, spun by the mites

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# Terrariums and Dish Gardens

- Terrarium.  A miniature garden in a tightly closed clear container; the air inside stays very humid like a greenhouse; Growing medium is sand or gravel base with a layer of charcoal, then standard potting soil; kept in bright light, not sunlight
- Dish garden.  Planting succulents in a decorative dish container; make sure there are holes in the bottom for drainage
- You can find detailed instructions on the internet

Photo credit



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# End of Slide Set

- This is the end of the slides on Indoor Foliage.  You can continue to next slide:  'Suggested Readings'

OR

- Click on the house below to return to the Navigation Page

Photo: courtesy Phyllis Turner



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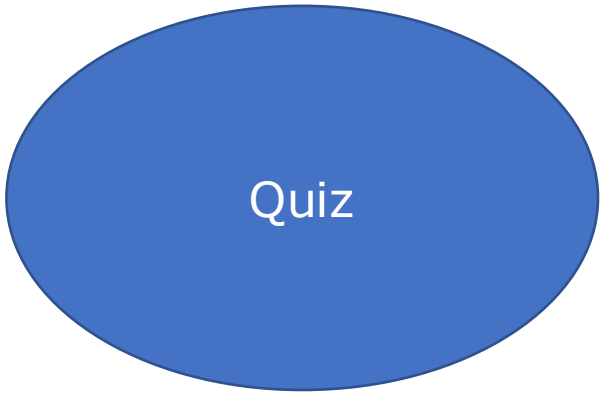
# Suggested Reading

Selection of Indoor Plants

Easy to Grow Indoor Plants

# Test Your Knowledge



# Help Desk Quiz (Answers on next slide)

1. The three aspects of light that affect plant growth are _____, _____ and _____

2. The window exposure that provides the LEAST amount of sunlight is : a) south; b) west; c) east; d) north

3. In general, fertilization should be reduced / ceased during _____ months

4. A container that needs less frequent watering and tends to accumulate fewer soluble salts is: a) clay; b) ceramic; c) plastic; d) compressed peat

5. When repotting, the new pot should not be more than _____ larger in diameter than the previous pot.

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# Help Desk Quiz

1. The three aspects of light that affect plant growth are _____, _____ and _____

   Answer: Intensity, duration, quality

2. The window exposure that provides the LEAST amount of sunlight is : a) south; b) west; c) east; d) north

   Answer: d) north

3. In general, fertilization should be reduced / ceased during _____ months

   Answer: winter

4. A container that needs less frequent watering and tends to accumulate fewer soluble salts is: a) clay; b) ceramic; c) plastic; d) compressed peat

   Answer: c) plastic

5. When repotting, the new pot should not be more than _____ larger in diameter than the previous pot.

   Answer: 2 inches

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