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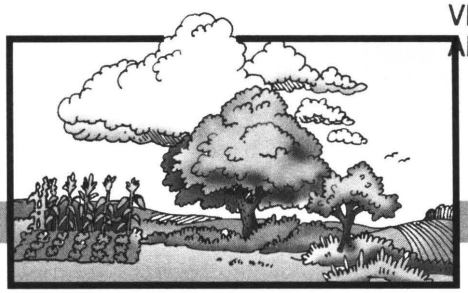

Indoor Plant Culture

*Diane Relf and Elizabeth Ball**

Purchasing an Interior Plant

Select only those plants that appear to be free of pests. Check the undersides of the foliage and the axils of leaves for signs of insects or disease. Select plants that look sturdy, clean, and well-potted. Choose plants with healthy foliage. Avoid plants with yellow or chlorotic leaves, brown leaf margins, wilted foliage, spots or blotches, or spindly growth. In addition, avoid those with torn leaves and those that have been treated with "leaf shines," which add an unnatural polish to the leaves. Plants that have new flower and leaf buds along with young growth are usually of superior quality. Optimal light requirements are usually included on the tag with the plant. Make sure your interior can meet the requirement from natural sunlight. If not, artificial lighting may be required.

Transporting House Plants.

When transporting plants, remember the two seasons of the year that can cause damage to the plants: the hot summer and the cold winter months. In the summer, avoid placing plants in a car with the windows shut, because temperatures will rise and destroy the plant in a short period of time. Shade the plant from direct sun while it is in the car; the plant can be burned by the sun shining on it, even though the air conditioner is on and it's comfortable in the car.

During winter months, wrap plants thoroughly before leaving the store to carry them to your car. A short run from the store to the car in very low temperatures can kill or severely damage plants. Wrap plants thoroughly with newspaper or paper bags, place in the front of the car, and turn on the heater. The trunk of most cars is too cold to carry plants safely during winter months.

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 much 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.

Research conducted in Florida in the late 1970s revealed an interesting phenomenon. Tropical plants grown in full sun have leaves (so-called 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 inefficient. If these same plants are placed in low light, they must either change existing sun leaves into shade 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 again 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.

Repotting

Actively growing indoor plants need repotting from time to time. How often a plant needs to be repotted depends upon how fast it is growing. In general, foliage plants require repotting when their roots have filled the pot and are growing out the bottom holes.

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Containers

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 pot the plant is currently growing in; should have at least one drainage hole; and must be clean. Wash soluble salts from clay pots with water, soap, and a scrub brush, and wash all pots in a solution of 1 part liquid bleach to 9 parts water. Rinse thoroughly or wear gloves.

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

Clay and Ceramic Containers.

Unglazed porous and glazed clay pots with drainage holes are widely used. Unglazed 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, unglazed clay pots provide excellent aeration for plant roots and are considered by some to be the ideal type of container for a plant.

Ceramic pots are usually glazed on the outside, and sometimes on the inside. Frequently they are designed without drainage holes, which necessitates careful watering practices to avoid soil saturation and root rot. In addition, it does not allow for leaching, thus causing a build-up of salts in the soil. Avoid using small novelty containers, as they have little room for medium and roots, and are largely ornamental. 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 medium where some excess water can drain inside the pot. There is no substitute for adequate drainage holes.

Ornate ceramic containers are often used as an outer shell covering a plain clay or plastic 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 clean and sterilize for reuse, and, because they are not porous, they need less frequent watering and tend to accumulate fewer salts.

Potting 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 artificial, which means they contain no soil. High-quality artificial mixes sometimes contain slow-release fertilizers, which take care of a plant's nutritional requirements for several months. A number of excellent commercial mixes are available for houseplant culture.

Preparing Artificial Mixes.

Artificial mixtures can be prepared with a minimum of difficulty. Most mixes contain a combination of organic matter, such as sphagnum peat moss or ground pine bark, and inorganic material, like washed sand, vermiculite, or perlite. Materials commonly used for indoor plants are mixtures consisting of sphagnum peat moss, vermiculite and perlite.

Sphagnum Peat Moss is readily available baled or bagged. Such materials as Michigan peat, peat humus, and native peat are usually too decomposed to provide necessary structural and drainage characteristics and should be avoided. 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.

Vermiculite is a sterile, lightweight, mica product. When mica is heated to approximately 1800°F, its platelike 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. Avoid insulation grade vermiculite.

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 medium 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 medium. 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) is as follows:

1 bushel shredded sphagnum peat moss

1 bushel perlite

1 bushel vermiculite (do not use construction grade which may contain poisons)

1/2 cup finely ground agricultural limestone

1/3 cup 20% superphosphate (0-20-0)

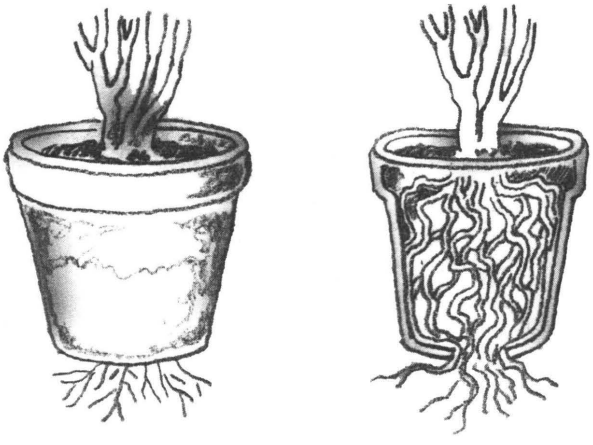
1/2 cup 8-8-8 or similar analysis mixed fertilizer

1 level teaspoon chelated iron

Garden soil. Potting mixes with garden loam should be avoided, as loam is highly variable from shovel-full to shovel-full, and must be pasteurized in the kitchen oven (not microwave). This process of pasteurizing your own soil can be difficult and smelly. Bagged commercial soil, on the other hand, may be an acceptable alternative to commercial mixes and artificial soilless mixes. Bagged potting soil is sterile, but may have water-holding or drainage problems (which may be indicated by fungus gnats), as well as high levels of soluble salts. Because of the heterogeneous nature of soil, different lots from the same manufacturer may perform differently. Experiment with different commercial potting mixes and soils to determine which is best for your situation. The key to a good potting media is good drainage. Commercial mixes should contain $^{1}/_{2}$ to $^{2}/_{3}$ perlite and vermiculite..

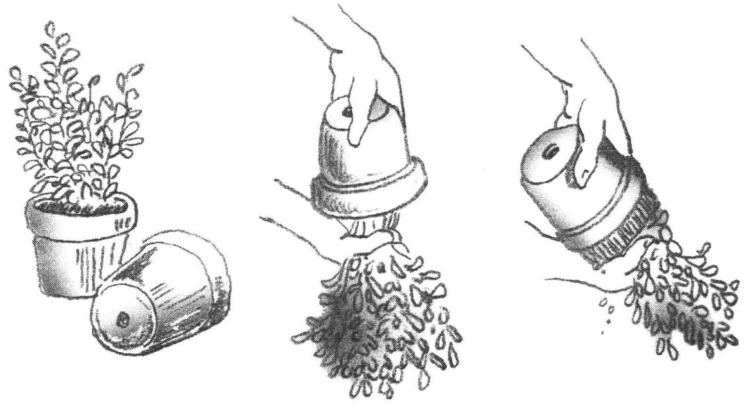
Mixes for specific plants:

Most foliage and flowering plants can be successfully grown in the media mixes previously highlighted, with some modifications in certain cases. Specific nutrient needs can be readily met with soluble or slow-release fertilizers as recommended on the product packages. Plants such as African Violets, Cacti and Succulents, Orchids, etc., that are more sensitive to specific proportions of media components, can easily be grown in commercial mixes specially prepared for these plants. Though their costs may be somewhat more expensive than standard mixes, it can be well worth the costs.

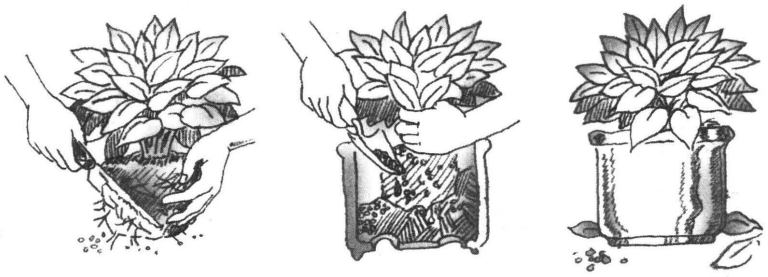


The Process of Repotting

Most plants requiring repotting can be easily removed from their container if it is held upside-down while knocking the lip of the container sharply on the edge of a table. Hold your hand over the medium, straddling the plant between the fore and middle fingers.



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 medium surface has accumulated salts, the top layer should be removed.



Potting media should be moistened before repotting begins. To repot, put some medium in the bottom of the new pot, which should be two to four inches larger in diameter than the old pot. Set the root ball in the middle of the new medium. Fill medium around the sides between the rootball and pot. Do not add medium above the original level on the root ball, unless the roots are exposed or it has been necessary to remove some of the surface medium. Gently press or firm the medium with your fingers. After watering and settling, the medium level should be sufficiently below the level of the pot to leave one-half to an inch or more headroom - depending on the size of the container. Headroom is the space between the medium level and the top of the pot that allows for watering a plant. If not enough headroom, water may spill over the top of the rim when watering; if too much headroom, the volume of medium has not been optimized and overwatering may occur.

Care and Grooming

It is important to keep plants clean and neat through regular grooming. This 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 true soap - avoid detergent which can cause damage to leaves and buds. Cover 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. If you heat with wood, keep a pot of water on the stove.

Training includes a number of minor care activities that distinguish the beginner from the more experienced indoor plant grower. For example, pinching is the removal of 1 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. Pinching can be a one-time or continuous activity, depending on the need and the desires of the plant owner. 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 vining plants such as Ivies and Hoya, as well as Philodendron and Syngonium.

Watering and Fertilizing

Adding fertilizer to a dry root ball burns the roots, damaging or killing the plant, so water dry houseplants before fertilizing and NEVER fertilize wilted plants. It's better to water plants a couple of hours before fertilizing. Houseplants can be fertilized beginning in March, and more frequently with the onset of spring and new growth. Keep winter fertilization of most houseplants to a minimum as plant growth is at its slowest and the added nutrients stress the plant.

Most plants should not be watered until the soil feels dry. Water thoroughly, let the water soak in, then water again until water drains into the saucer. Empty the saucer within an hour. Water again when the soil is dry to the touch.

Putting Houseplants Outside for the Summer

When the weather warms in the spring, houseplants can be put outside. Don't be too anxious to move your houseplants outdoors, even a good chill can knock the leaves off tender plants. Check with your local Extension agent to find out what the last frost date is in your area. Monitor houseplants spending the warm months outside. Move plants to calmer spots if leaves are being wind damaged. If pots dry out rapidly, move plants into some protection from wind or shade, or repot if needed. Inspect your houseplants for signs of insect damage. Pest control is much easier and safer while the plants are outside for the summer than after you bring them in this fall.

Houseplants that have been outside all summer should be allowed to make a fairly slow transition to indoor conditions. Quick changes in environment can result in yellowed foliage and leaf drop. To avoid injury, bring plants indoors before temperatures dip below 55 ° F, do not wait for frost warnings. Check for insect pests before you move the plants; it is easier to get rid of pests while plants are still outside. Rinse the plants' leaves, and soak pots in water for 15 to 20 minutes to drown most soil-dwelling pests.

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