Containers for Growing Plants

Container gardening is extremely popular today, because it is compact, flexible, and portable. Even the urban gardener with limited space can grow everything from fruits and vegetables to beautiful flower gardens, trees and shrubs in containers. Success is just a matter of providing the basic needs of plants; adequate growing medium, sufficient light, proper temperature and necessary moisture and nutrients. Plants will grow in just about anything that will hold soil, so the art of container gardening is limited only by the imagination.

In today's world of limited time and space and increasing mobility, container gardening seems more and more appropriate. It has become an art form of its own. A plant that may seem common and lack special appeal in a landscape, can take on an entirely new character when displayed in a container where its unique shape and interest is spotlighted.

Choosing the right container for your plants is very important. There are many types and styles of containers available for indoor and outdoor display. Planters can be strictly functional or they can serve to enhance the aesthetic beauty of plants and tie them into the decor of a room or the theme of a landscape. Regardless of the aesthetic needs, a container must provide the proper root environment.

The environmental needs of different plants vary. One plant may prefer to have its root system tight and compacted in a container. Another may prefer more space around its roots, for growth. Some plants, like cacti and succulents, prefer to be planted in a porous container that allows "breathing" and moisture release, where most other plant varieties may not. So specific planter types can provide ideal conditions for one plant, yet prove less than ideal for the needs of another plant. Here we will discuss basic functional features to look for in choosing the proper container.

Indoor Containers

The choices in variety of planter construction and surfaces are wide, as is the price range for these containers. You can get a simple look to a high-tech look, or a rustic, natural look to an elegant look. Here we will list the most common materials used in planter construction.

Plastic: The most common and inexpensive type of planter is the plastic planter. These are available in a multitude of sizes, shapes and designer colors and range in price from downright cheap to the more expensive designer lines. These planters are available with or without drainage trays and with smooth or textured surfaces. These containers are water-tight and non-porous. The advantage of a nonporous material is that moisture does not "bleed" through the container, staining it and possibly leaking onto household surfaces. The disadvantage in a non-porous material is that soil is not allowed to "breathe" or aerate and more care must be taken to insure adequate drainage.

Ceramic: Ceramic planters are usually slightly more expensive than plastic planters. They are also available with or without water drainage trays. Trays are a must for ceramic planters which do not have sealed surfaces, as they are porous and will "bleed". Ceramic containers come in natural, textured surfaces or painted and glossy finishes. Some are hand-formed, imperfect and artistic. Some are geometric and have a high-tech look. Ceramic planters can create a quality custom look and they come in a wide range of prices.

Wood: Wood planters are less common than other types. Custom planters commonly constructed in wood, come in a variety of finishes and can give a particular decor a natural look. These planters should be lined with a non-porous material because wood can stain and rot if water-soaked. Wood planters are used in outdoor areas where leaking is not a problem and where weathering of the planter surface is either desirable or unimportant. Wooden planters can be treated with a preservative, using only products recommended for applying to wooden greenhouses and avoiding those like creosote that could harm the plants. Wood planters are often built into interior carpentry to blend with the interior architecture and are finished to complement the decor.

Fiberglass: Fiberglass planters are used widely in commercial plantings. The surface is durable and easily formed into different custom shapes for any look. They can be given many different surface textures and painted any color or pattern imaginable. They are water-tight; ridges are often built into bottom surfaces to provide drainage isolation. Fiberglass planters are available to the homeowner, but primarily through designer outlets and catalogs. They are considerably more expensive than plastic planters.

Metal: Metal planters provide a nice accent for plants. Their reflective quality is a pleasing contrast and adds dimension. The most common metals used in planter construction are brass, copper, stainless steel and aluminum. Wrought iron is also commonly used as a decorative container. Metal surfaces range from antique to highly polished to brushed. Metals require more maintenance than other surface materials. Treating of surfaces with sealants can reduce the tendency for tarnishing and minimize maintenance. Most metal containers do not provide drainage and are used primarily as outer covers for plant containers. Prices range from moderate for simple thin brass and copper containers to expensive, heavier, intricate units. Polished and brushed aluminum is moderately priced and stainless steel is extremely expensive, but also very sturdy. A viable alternative to achieve the look of more expensive metal planters, chrome-and brass-plated plastic planters are readily available in retail outlets at a fraction of the cost of metal planters. Metal planters are available in all shapes and sizes.

Clay/Terra Cotta: Clay pots can be used for interior display. Because they are porous, it is necessary to place pots on a waterproof tray to catch excess water and prevent bleeding of moisture through the pot onto carpet, floor or other surface areas.

Ways To Use Planters Indoors

Hanging*:* Hanging planters are available in plastic, fiberglass, wood, metal, ceramic, basket weave and wire frame for natural mossed display. Hangers can be sealed, placed in drainage trays or self-watering just like floor planters. They can be suspended by decorative chain, jute, wire or fish line for an invisible suspended look.

Floor Planter*:* Floor planters are available in cylinders (short and tall), squares, rectangles, half rounds, triangular and hexangular shapes. The most common planters are cylindrical.

Table Planter*:* These are planters which are placed on tables, counters, sills, ledges or any surface above the floor. They are usually shorter and generally available in the same colors, styles and varieties as the floor planters.

***Wall Planter**:* These planters mount directly onto wall surfaces and commonly are flat on one side. They are available in colors and styles to match floor and table planters.

***Custom Planters**:* Permanent planting containers can be constructed as a part of the interior structure itself for natural incorporation of interior landscape design. The cost is of course a consideration, but the results are very pleasing.

***Terrariums**:* Terrariums are gardens displayed in glass domes, bowls, aquarium tanks and other clear glass or plastic containers which hold soil. These can be enclosed or open and create an environment which is partially self-sustaining and moisture retentive. These displays can be very interesting, but do require general knowledge of care.

Selecting A Container

Size, shape and drainage are critical factors in the selection of the container that will provide the best environment for growth of your plants.

***Size**:* For free-standing and table plants, the size of the planter should be proportionate to plant size, allowing ample room for root systems. Some plants prefer to be root-bound, so it is important not to transplant these plants into containers that are too large. The container should always have sufficient room for planting and a reasonable depth for the growing medium. A minimum depth of four inches at the edges is recommended.

Indoor plants are generally sold from the greenhouse or retail outlet in plastic containers, known as "greenhouse pots" - non-ornamental pots with holes for drainage in the bottom and rims around the top for carrying. Sizes of plants are usually given by the diameter of the greenhouse pots in which they are planted, ie. a 14-inch plant is a plant which is planted in a 14-inch diameter pot. The height and size of the plant may vary, but pricing is generally listed by pot diameter.

***Shape**:* Most greenhouse pots are cylindrical. Some taper from a wider top rim to a more narrow base. Taller pots are called "standard" pots and shorter, squattier pots are called "azalea" pots. Plants with lower, rounder growth habits may prefer azalea pots, while more upright or "tree" form plants prefer the deeper standard pots. Containers with narrow mouths should be avoided, as this gives little width at the rim and can be difficult to plant. The shape of the outer decorative planter is less important to the growth needs of the plant, and should be chosen for their aesthetic value. Decorative planters are available in many shapes.

***Drainage**:* The most important consideration when planting in containers is providing for drainage of the excess water from watering the plant. Water must not be allowed to stand in the soil around roots. This encourages root rot and decay. To avoid standing water try one of these two options.

1) The greenhouse pots may be dropped into a decorative planter for display, without planting directly into the decorative container. This is actually a good option, because water is allowed to drain through the greenhouse pot with each watering, and excess water enters the outside decorative planter, which may also have a water tray to prevent drainage water build-up. If water is not allowed to drain freely from the soil, the roots will become water-logged. If the outer decorative container does not have a drainage tray and water collects within this container, the water must be emptied out or it will reenter the inner pot and soil as the water level rises.

2) Plants may be planted directly into decorative containers which provide for drainage of excess water. When planting directly into containers with no means of drainage, it is necessary to be extremely careful and only provide enough water to moisten the soil evenly. This will prevent build-up of water in the

planter. Decorative planters are either sealed or have bottom trays which collect excess water through the holes at the bottom.

***Sealed Planters**:* It is recommended that inner pots be used when displaying plants in sealed decorative containers. If plants are planted directly into sealed units, there is no escape for excess water. Water may build-up in the soil and may encourage fungal root rot and decay, damaging or even killing the plant. A common idea and practice for plant growers has been to put gravel or sand at the bottom of sealed planters, to provide a pocket for drainage to accumulate. This is not an effective approach to proper drainage and aeration, as stagnation and rotting is not avoided.

***Water Tray Planters**:* Many planters available to the homeowner have built-in water trays which catch excess water. Plants may be planted directly into these containers or greenhouse pots may be dropped into them. These planters are effective in providing an outlet for drainage, but care should be taken not to overwater as the trays can overflow and cause damage to surfaces.

***Self-watering Planters**:* Decorative planters are now available to the homeowner which actually give the plant the water it needs as it is needed. These units have reservoirs which are filled periodically and which release moisture to the soil evenly as needed. A small float indicates the amount of water in the reserve and when to refill These planters are of particular value to homeowners who travel or who have difficulty maintaining a balance of moisture to houseplants. They are used extensively in commercial building plant maintenance and are very effective. These planters are also considerably more expensive than regular decorative planters.

Outdoor Containers

In selecting outdoor containers for your plants, aesthetics, drainage and size are important considerations. You also need to consider weather ability when choosing an outdoor container. The construction and surface of the container must be able to withstand exposure to the elements.

Common Outdoor Container Types

***Concrete**:* Concrete planters are extremely durable and may be painted, antiqued or left natural.

***Wood**:* Wood can be used to create natural planters or planting areas. Planters may be stained, painted or left natural. Unseasoned wood should be treated with a safe preservative.

***Clay/Terra Cotta**:* Clay pots are available in many shapes and sizes. They can be found in simple, plain surfaces to ornate, intricate designs and are relatively inexpensive. Clay pots are porous and "breathe." They provide excellent drainage and can be glazed for a more finished look. Terra cotta containers may be damaged by frost in winter, except for those which are frost-resistant types. They need to be kept dry and under cover.

Bricks, Concrete Blocks, Stone: These materials can be used to create interesting custom planters. If left unmortered, they can be easily expanded or altered as the situation requires.

***Wrought Iron**:* Wrought iron is widely used as a classic planter style with charm and elegance. It is very durable when painted and protected against rust. These planters are usually equipped with aluminum or plastic liners.

Functional Types

***Hanging Baskets**:* Plastic hanging baskets have become increasingly popular, as opposed to the traditional wire baskets. The plastic baskets are durable with hangers now mostly made of plastic also. Most have built-in drainage reservoirs as a drainage tray or internal fitment. These containers are flat on the bottom which makes them easy to plant and stand on surfaces while plants are being established. These containers are limited in available sizes and generally not found larger than 12-inches in diameter.

Wire baskets are available in various shapes and sizes from 8-inches in diameter to 36-inches in diameter. Some have a galvanized finish. More decorative styles are painted or coated in brass. Many styles are now available in wire coated with vinyl plastic that protects the wire from rust and corrosion. Wire baskets are a good choice for outdoor or greenhouse display where possible water leakage is not a problem. Larger baskets can be planted with a variety of plants to create fantastic displays. When sheet moss or sphagnum moss is used to line the wire baskets and retain the soil medium, plants can be grown through the sides to further enhance the natural, lush effect. This is a unique advantage of wire baskets over plastic. Paper Mache, natural coconut and other pressed fiber liners are available for wire baskets. Baskets may be suspended by chain or wires with a ring which are usually provided with the baskets. Because these larger baskets are heavy, care should be taken to provide adequately strong brackets. A layer of plastic sheeting may be used to keep moss-lined baskets from drying out quickly, but is not practical if planting through the sides is desired.

Wooden baskets are still available and are made of durable woods such as teak. They are slatted and sometimes used for growing specific greenhouse orchids and tree dwelling plants.

***Window Boxes**:* Window boxes adorn many homes and serve to showcase seasonal displays and accent the architecture. Sunny locations are usually preferable, but boxes can be adapted to a more permanent display using plants that will do well even in shady areas. Of course, drainage is also important. Holes should be drilled in the bottom toward the back edge of the container, with care taken not to position over an area which could be damaged by moisture.

Window boxes have a tendency to dry out quickly, due to their exposed position. Plastic liners are available and help to prevent rapid drying. It is important to cut slits in the plastic to allow excess water to drain.

A general rule of thumb for the size of a window box is “the bigger the better”. This is of course dictated by the area and available space. Larger planters provide more space for multi-row plantings and more beautiful displays. They also hold more planting medium and require less frequent watering. These boxes should be securely supported as they can become very heavy. Brackets secured to the wall below the box provide the best support.

***Tubs and Troughs**:* These containers can be made from many of the materials we have discussed, wood, stone, concrete, terra cotta, ceramics and metal. Excellent plastic and fiberglass units are now available.

Wooden “whiskey” barrels or half-barrels have been widely used as planters for many years and are still popular, though harder to acquire and expensive. Unseasoned wood should be treated with a preservative which is not harmful to plants. The inside of the barrel should be charred to reduce rotting. A blow-lamp is ideal for this purpose.

***Unusual and Improvised Containers**:* Anything which holds an adequate amount of compost, provides ample planting depth, drainage and does not expose plants to toxic chemicals, may be used to display plants.

Old tree stumps can be hollowed out and planted. Also, large diameter hollow log sections cut in lengths of

about one foot give ample planting depth and make interesting planters. Rotted material should first be removed and only solid wood should remain after cleaning. Charring will reduce rotting.

Wooden wheelbarrows and carts provide excellent display space and allow for easy movement into and out of the sun.

Strawberry jars provide an interesting display for flowers and vining plants and are available in a variety of clay and ceramic materials.

Now that you understand the basic requirements for growing plants in containers, you can begin to look for potential imaginative containers for display of your plants. There are no rules for style, and creativity adds interest.

Container Soil Mixes

Is a special soil mix necessary for growing plants in containers? The vast majority of commercial growers of container plants and also most home gardeners say, yes. Plants grown in containers have different requirements than those in the ground, different soil, fertilizer, water and cultural requirements. You need only understand these basic requirements and you will be able to successfully garden in containers.

Garden centers sell soil mixes under a variety of trade names. Don't be confused by the term given to these mixes, "soilless" or "synthetic" mixes. This doesn't mean they are artificial. They contain only natural ingredients.

Container soil mixes are composed of organic and mineral parts. The organic part may be peat moss, fir bark, redwood sawdust, shavings, pine bark, hardwood bark, or a combination of any two. The mineral part may be vermiculite, perlite, pumice, builder's sand, granite sand, or a combination of any two or three. Vermiculite, perlite, and sand are the most common minerals found in container mixes. Vermiculite is a mica material expanded under heat. Its granules retain water in air spaces. Perlite is also expanded under heat, but it retains water around the granules rather than in them, so their value in a soil mix is primarily water retention and "lightening" of the soil through aeration. "Soilless soil" must provide fast drainage of water through the soil, air in the soil after drainage, and a reservoir of water in the soil after drainage.

If you prefer to mix your own soils for containers, here are some simple recipes.

Pot Plant Mix: Good for containers up to one gallon in size.
1 part peat moss
1 part vermiculite
1/2 oz. dolomite limestone per gallon
1/4 oz. triple superphosphate per gallon

Planter Mix:
1 part pine or fir bark (nuggets)
1 part ground pine or fir bark
1 part peat moss
1/2 oz. dolomite limestone per gallon
1/4 oz. triple superphosphate per gallon

Aeration*:* Air left in the soil after drainage is a critical factor for root development and plant growth. The plant's roots need to breathe. Soil which is too heavy allows little pore space between the soil particles and needs to be lightened with materials which provide air space. A container mix has both small pores (micropores) and large pores (macropores). When you water a plant, water is held in the micropores, but

quickly drains through the macropores, allowing air to follow. The water drives out air by filling the small pore spaces. So it is necessary to introduce materials which also provide macro-pores for proper aeration.

Plants vary greatly in the amount of aeration they require. Aeration is the percentage of air space in the soil after the has drained away. Most foliage plants require high aeration, as do begonias, gardenias, rhododendron and snapdragons. Azaleas and some ferns require extremely high aeration levels and are sometimes grown in straight, coarse peat moss for this purpose. Most conifers, ivy, geraniums and carnations can get by with low aeration.

***Drainage**:* The rate of drainage in a container should be a minimum of 5 inches per hour. This is different from the rate that some plants will tolerate in garden soil, where drainage as slow as 1/10 inch per hour is acceptable. Soil should retain moisture and also allow a constant flow of air through the soil. Packed soil is soil in which individual particles are compressed into a solid mass. Adding organic materials will aggregate the particles into porous granules which have space for air and water.

Planting and Transplanting

When using a lightweight synthetic soil mix, it is a good idea to wet the mix before using it. It is difficult to properly wet a pot filled with dry soil mix. One way of doing this is to add water directly to the plastic bags containing the mix, then knead until the soil mixture is evenly moist. It is beneficial to let the bag sit overnight to allow the moisture to be evenly distributed in the mixture. Fill your container and firm the mix down, especially near the edges. Nursery and greenhouse plants generally are sold in “greenhouse pots,” non-ornamental containers. Water these plants as you would any container plant, until you are ready to plant them into your container of choice. It is important not to let your plants dry out before getting a chance to repot them. Most damage to plants occurs during the first few days after bringing them home. So, handle them with care and give consideration to light, temperature and moisture levels.

Never pull plants directly out of containers. Remove plants from cell packs by squeezing the bottom of the container to force the rootball above the lip. Plants which are purchased in market trays should be separated by using a putty knife to cut the soil into blocks before removing rootballs. Straight-sided cans should be cut before removing the rootball. Plants grown in cans with tapered sides can be tapped out of the container.

If necessary, prune the roots of the plant transplanting. You should prune roots which have formed outside the rootball before setting them into a larger container by making three or four cuts from top to bottom with a sharp knife down the side of the rootball. Formation of new roots and penetration of roots into the surrounding rootball will be accelerated by this activity.

The next step is to hold the plant over the new container at a level where it grew in the nursery container and fill soil in the container around the rootball, firming the soil around the rootball. Then water thoroughly. The rootball should be kept moist until the roots have spread into the surrounding soil.

Fertilization

Plants grown in containers need to be given more attention than those planted directly into the soil in garden areas. Containers provide a limited volume of soil to hold moisture and nutrients, so you must compensate by watering more frequently.

Soil has a tendency to dry out more quickly in containers and the dryness of indoor environments also contributes to this condition. Fertilizer is leached out of the soil mix by watering, so the frequency of watering of container plants determines how often you should fertilize. Fertilizers will leach more rapidly

from a soil mixture containing perlite than from those containing vermiculite. If you are using a peat moss/perlite mix, even more applications of fertilizer are required.

Plants don't require large amounts of fertilizer, but they do need to be fed continually. Many container gardeners recommend using a weak nutrient solution and fertilizing every other watering. It is important to note that if you choose this method, only 1/5 of the recommended amount of fertilizer specified on the product label for monthly application should be used. For example, if the label recommends 1 tablespoon to a gallon of water, use 1 tablespoon, but dilute the solution by mixing it into 5 gallons of water.

Another popular method of feeding plants is through timed-release fertilizers. These fertilizers release nutrients in small amounts as the plant needs them. Timed-release fertilizers are available in three-month and twelve-month formulas.