Using Chinese Elm for Indoor Bonsai

The Brooklyn Botanical Gardens published a series of books on various topics related trees and plants. One of the books in the series is titled Indoor Bonsai. The following article on Chinese Elm comes from that book. Although I wrote the following article many years ago for that publication, it is still relevant for growing Chinese elm today. However, I have introduced more current photos.

"Chinese Elm Bonsai"

By Randy Bennett

Growing Chinese elm (*Ulmus parvifolia*) for indoor bonsai is very rewarding. There are several reasons which account for its success. First, its adaptability to a wide range of climatic conditions. Second, it develops quickly, allowing for the creation of good bonsai in a relatively short time. Third, Chinese elm is easy to obtain (readily available from landscape and garden nurseries due to its popularity as a landscape tree) and fourth, it is resistant to disease.

Characteristics

Chinese elm is often referred to as the Chinese evergreen elm. This is due to its' tendency to retain its' leaves through much of the winter in southern region where temperatures are mild. In fact, some of the Chinese elm cultivars may retain leaves for several years before losing them.

Ulmus parvifolia is a subtropical tree native to parts of China, Korean and Japan. It is recognized by its' relatively smooth bark that exfoliates in thin, scale-like layers. The leaves are 1 ½ to 2 inches long, obovate and serrate. It flowers and fruits in the fall. Trees may reach heights of 60 feet (18 meters) if given enough time and space. Chinese elm has a natural growth pattern which form multiple branches from the same point of the trunk and continues to ramify into the basic broom style. Although this is its' natural tendency, it in no way resists being styled into any bonsai design.

Chinese elm and its' cultivars develop thick root structures quickly and give young trees the desirable appearance of age. The thick roots are also very pliable and make the species one of the easiest to work with when creating root-over-rock and root-on–rock designs.

Ulmus parvifolia may be propagated from seed, branch cuttings, root cuttings or layering. I have successfully propagated Chinese elm from branch cuttings over an inch in diameter. Some of the cultivars are more difficult to propagate from cuttings, but if you can locate a source for Hormex or Hormodin rooting powders, the job will be a simple one.

Chinese elm started from seed will develop a long single taproot. If the taproot is cut back drastically when the seedling is two to three years old, it will throw out radial roots which will thicken quickly and form a good base. Cuttings and air-layers develop radial roots at the outset and only need routine pruning to encourage their proper development.

Cultivars

There are numerous cultivars of Chinese elm. Each cultivar has unique and interesting characteristics and all exhibit desirable qualities for use in bonsai. Some of the more easily obtainable cultivars are listed below.

'Catlin' – a dwarf cultivar with smooth bark. Leaves are thick, dark green, obovate crenate and shiny, from ½ to ¾ of an inch long. It has good branching characteristics. It exhibits moderate to fast growth. The trunks thicken slowly.

'Cortica' – a semi-dwarf variety whose bark is rough and corky with deep vertical furrows. Fast growing shoots may exhibit corky wings similar to the 'winged elm'. Leaves are rough, obovate and are from 1 to 1 ¼ inches long.

'Drake' – a semi-dwarf elm with smooth bark which exfoliates when mature. Dark green, obovate, crenate leaves from 1 to 1 ½ inches in length. This cultivar exhibits a weeping habit with good branching. It is fast growing.

'Frosty' – a smooth-bark, dwarf, shrub-like cultivar with leaves variegated only along the edges. Leaves are obovate, serrate and from 1 ½ to 2 inches long. Good branching characteristics. Medium growth.

'Hokkaido' – a miniature cultivar with extremely thick, rough and corky bark. Leaves are orbicular, crenate and 1/16 to 1/8 inch in length. Excellent twigging. Slow growth. Best used for mame sized bonsai.

'Seiju' – a dwarf cultivar which develops very corky bark with deep vertical fissures, even on young trees. Leaves are obovate, crenate and from ¼ to ½ inch long. Excellent twigging. Fast growing.

'Stoney's Dwarf' – a dwarf variety similar to 'Seiju' but with slightly larger leaves from ½ to ¾ of an inch in length. Bark is more knotted in appearance and without vertical fissures. Good twigging. Medium growing.

'Suberosa' – a semi-dwarf cultivar with very rough, corky bark. On a tree with a 2 ½ diameter trunk, about an inch is bark. Leaves are rough, obovate, crenate and from 1 to 1 ½ inches in length. Good twigging. Medium growth.

'Yatsabusa' – an unusual dwarf variety with rough bark that is much thinner than the other cork-bark varieties. Leaves are spathulate, crenate and from ½ to ¾ on an inch in length. This is a cultivar with excellent, very delicate, almost lace-like twigging. Moderate growth.

Soil

Ulmus parvifolia originated from the lower elevations (under 1,000 feet) of southern China along the river regions. It thrives in a soil high in organic matter. In bonsai, however, soil requirements must balance with good drainage, especially in the indoor environment. The number one cause of indoor plant death is overwatering in soil that has poor drainage. Therefore, a proper soil mix is the single most important element in indoor bonsai culture.

The more ingredients you use, the more difficult to discern what changes to make if your soil mix has problems. You must, therefore, keep the mix simple. I use two ingredients for my indoor Chinese elms: 1. Pine bark mulch sifted through a ¼ inch screen with everything smaller than 1/8 inch discarded. This provides

nutrients as it breaks down and retains moisture in the soil. Avoid using peat moss or any other organic material which is too fine. It will become packed in the soil, inhibit air circulation, retain too much water and thus cause root rot. 2. Haydite or Turface sifted through a 1/8 inch screen and eliminate anything that falls through a 1/16 inch screen. It will then have excellent drainage qualities and provide good air circulation.

The drainage material is even more important than the organic. Avoid materials which have a smooth or polished surface. They do not provide surface adhesion for water and air. Also avoid drainage materials which are flat such as certain low-fired clay materials. These will tend to pack down in layers with each watering and stratify the soil, preventing air circulation and poor water adhesion. Use a material which is angular and has a rough surface or one which is filled with tiny holes, such as Haydite.

I provide the elms I keep indoors with a 60% Haydite / 40% pine mulch mixture. These proportions work excellently given the amount of humidity, light, temperature, air circulation and the species. The mixture that is right for your will depend on the climate in your area and the environment in your home. But do not spend a great deal of time worrying over it. It is the nature of *Ulmus parvifolia* to adapt to conditions which may be too wet or too dry for other species.

Humidity

The warmer you keep your home during winter, the greater the need for supplemental humidity. The means to increasing humidity for Chinese elm is standard for all bonsai: increased watering, a flat tray filled with water or with gravel and water, watering by wicks, or keeping your bonsai in a terrarium.

Temperature

Ulmus parvifolia is a subtropical tree. Subtropicals typically need a winter temperature between 41 and 54 degrees to provide the needed “resting period” or dormancy. Here again is where the Chinese elm shows itself to be the ideal tree for indoors. It will tolerate winter temperatures between 64 and 72 degrees while still maintaining its period of rest. Just remember that during the winter, the Chinese elm needs at least six weeks of rest and you should help it out by keeping the room as cool as possible.

Although Chinese elm is a subtropical species, it is hardy to zone 5. Zone 5 indicates that the average low winter temperature for that region is between 10 to 20 degrees below zero. Some of the cultivars mentioned above are not as winter hardy as the standard Chinese elm.

Watering

The frequency of watering will be determined by the soil mix and how quickly it dries out in the climate of your home. The best practice with Chinese elm is to allow the soil to dry out somewhat and then water again. Otherwise, its’ care is the same for other bonsai. When determining how and when to water, there are several variable to take into account: the humidity level inside your home, the temperature, whether or not the tree is in a state of active growth or dormancy, the soil mix, the foliage mass on the tree, the size of the container and whether or not it is glazed and whether or not the tree is getting direct or indirect sunlight and for how long. Basically, it is something that you will have to experiment with initially.

Location and Light

Three things must be considered when siting Chinese elm indoors: the cultivar, air circulation and light. Which cultivar you are growing will dictate, to some extent, where it must be placed. The smaller the leaves, the more light is required by the tree. So, if you are growing *Ulmus parvifolia* 'Hokkaido', you will need as much light as possible. Conversely, the larger the leaf, the less light required for proper health. The variegated cultivars also require less light than their counterparts.

Air circulation is essential to the health of Chinese elm indoors. Air movement allows the exchange of carbon dioxide with the cells inside the leaves. Your elm uses the energy from light to split water molecules so that the hydrogen atoms can bond with the carbon dioxide to form carbohydrate molecules which the elm uses for food. If the air circulation is poor where your elm is located, it may not be getting the carbon dioxide it needs. Thus, your elm's health and its ability to produce food is more often affected by a lack of carbon dioxide than light.

Your elm will use light to convert carbon dioxide and water into sugar. The sugar that is manufactured is the stored energy that feeds the tree. This photosynthesis can only be performed in certain light and is dependent upon the level of carbon dioxide present in the air, amount of moisture and temperature.

Although the manufacturing of food can only take place in light, your elm can use its stored energy anytime – including at night! This can affect your elm in that it will begin using its stored energy if not receiving enough light. When the tree has used all its stored energy, it begins to consume itself. This will be evidenced through pale leaves and weak, spindly growth. A lack of light may also cause yellowing and dropping of leaves, particularly at the bottom of the tree. Providing artificial light to maintain the health of your Chinese elm is a simple task, but there are things which need to be kept in mind.

First, your elm will not only utilize certain wavelengths of light. The red, blue and violet wavelengths are responsible for plant growth. Second, incandescent light bulbs are not suitable for providing light. Their light does not have the necessary spectrum for plant growth and the heat they emit may damage your tree if greater than 25 watts. Third, if you use artificial light to supplement existing natural light, exposure should be between six and eight hours. Fourth, where artificial light is the only source, the duration of exposure should

be between 10 and 16 hours. Automatic timers insure consistent exposure even when you are away from home.

I have my Chinese elms in my living room in three different locations. I utilize a row of east-facing windows using a combination of natural light and about 6 hours of artificial. A north-facing sliding glass door is used where there is only indirect light and so I rely on my florescent lights more heavily – about 10 hours. A third site is a brick planter extending out from the wall by the front door. This area receives no natural light, so florescent grow light is the only source – for a duration of about 16 hours.

Once you have selected your site, there are a couple of ways to improve the lighting. First, keep the windows clean! Dirty windows can cut down the transmission of light by as much as 40%. Second, increase light reflection by painting white the surfaces that surround your tree – such as shelves, side panels and the area behind any artificial light. You might also try a light-colored curtain behind your trees (which would also serve to block the hot, dry air from the heating ducts in winter and provide a cooler microclimate for your trees).

Do not forget to move your trees around. Rotate them from site to site if they are in areas of diverse light and temperature. That way each tree benefits from its "fun in the sun". Also remember to turn your trees if you are not using any artificial light. Otherwise the trees will tend to grow toward the window and you may lose foliage and even entire branches.

Styling

The natural growth pattern of Chinese elm is in the broom style with no central leader. However, this species can be styled into other bonsai designs. It develops fine twigs and branches and beautiful canopies of tiny delicate leaves.

Wiring is best done in early spring before buds begin to swell. Be sure to keep an eye on wired branches as initial spring growth is quite rapid with most species and branches may be damaged by leaving the wire on too long.

General pruning can be carried out any time of the year. If, however, you are removing a major branch, wait until early spring before buds begin to swell.

Fertilizer

Chinese elm responds well to any of the typical fertilizers recommended for bonsai. The best practice is to vary the type of fertilizer. No two fertilizers are exactly alike. Some may contain certain minerals or trace elements absent in others, even though the primary ingredients may be of the same type and proportion. Fertilizer may be applied at any time during the growing season, April to September, but remember that your elm must undergo a resting period during the late fall and winter.

Containers

The container uses for Chinese elm will depend upon the bonsai style in which it has been trained. They look equally at home in glazed or unglazed containers. I tend to favor oval to rectangle containers because elms develop such soft, rounded canopies and delicate, airy foliage. If a glazed container is used a shade of green compliments the color of the foliage and serve as a good contrast to the bark color if you keep your elm cold enough in winter to lose its leaves. Glazed containers may also be useful if you have a problem with the soil drying out too quickly. The glaze helps to slow evaporation through the pottery surface.

Diseases and Pests

The number one cause of indoor plant death is overwatering. Number two is under-watering. Number three, too much fertilizer. After that, it is a toss-up for which comes next – not enough light, temperatures that are too high (heat transmitted by direct sunlight through glass can cook a tree) and not enough humidity (remember that central heating systems are designed to dry the air indoors).

When any of these things happen, alone or in combination, the tree is weakened. It is in this weakened state that a tree is most susceptible to attack by insects and disease. Seek to prevent the cause of insect infestation and not simply employ the agents used to rid the tree of the insects.

Chinese elm is highly resistant to disease and pests. But if chemical treatment is necessary, you may use any of the usual insecticides for treating the specific pest that is affecting your tree that is designed for elms, but with this caution: do not use at the recommended strength on the various cultivars. The foliage on some of them is too sensitive to normal doses of Diazinon (for example) and may defoliate the tree and cause severe damage or even death. Malathion or insecticidal soap may be used without worry.

Insects and diseases will usually attack a plant where it is weak or damaged. It is, therefore, important to keep the tree “clean” by removing dead leaves and dead branches and twigs. Areas such as these create ideal breeding places for pests.