BONSAI

The word bonsai comes from the Japanese ‘bon’ meaning pan, and ‘sai’, a plant. It is the art of dwarfing and shaping trees or shrubs, growing them in small shallow pots or trays so that they remain miniature replicas of their natural counterparts in the wild.

Bonsai is true miniaturization of natural real trees, not dwarf species, are kept small by rigrous pruning of branches. A tree or shrub grown by this method.

There are certain misconception about bonsai one such is that bonsai are very old trees. This is not the whole truth old bonsai. Even a young tree can be trained and given appearance of old age by shortening the branches, so that the trunk looks thicker (hence older) in proportion. The same effect can be had also by training the branches downward as in old trees rather than upward as in young trees.

Cultivation and care

Bonsai cultivation and care requires techniques and tools that are specialized to support the growth and long-term maintenance of trees in small containers.

Material sources

All bonsai start with a specimen of source material, a plant that the grower wishes to train into bonsai form. Bonsai practice is an unusual form of plant cultivation in that growth from seeds is rarely used to obtain source material. To display the characteristic aged appearance of a bonsai within a reasonable time, the source plant is often mature or at least partially grown when the bonsai creator begins work. Sources of bonsai material include:

- Propagation from a source tree through cuttings or layering.
- Nursery stock directly from a nursery, or from a garden centre or similar resale establishment.
- Commercial bonsai growers, which, in general, sell mature specimens that display bonsai aesthetic qualities already.
- Collecting suitable bonsai material in its original wild situation, successfully moving it, and replanting it in a container for development as bonsai. These trees are called yamadori and are often the most expensive and prized of all Bonsai.

Techniques

The practice of bonsai development incorporates a number of techniques either unique to bonsai or, if used in other forms of cultivation, applied in unusual ways that are particularly suitable to the bonsai domain. These techniques include:

- Leaf trimming, the selective removal of leaves (for most varieties of deciduous tree) or needles (for coniferous trees and some others) from a bonsai's trunk and branches.
- Pruning the trunk, branches, and roots of the candidate tree.
- Wiring branches and trunks allows the bonsai designer to create the desired general form and make detailed branch and leaf placements.
- Clamping using mechanical devices for shaping trunks and branches.
- Grafting new growing material (typically a bud, branch, or root) into a prepared area on the trunk or under the bark of the tree.
- Defoliation, which can provide short-term dwarfing of foliage for certain deciduous species.
- Deadwood bonsai techniques called jin and shari simulate age and maturity in a bonsai.

Bonsai styles

Formal upright style Bald cypress

Informal upright style Juniper

Cascade style conifer

Forest style Black Hills Spruce

The Japanese tradition describes bonsai tree designs using a set of commonly understood, named styles. The most common styles include formal upright, informal upright, slanting, semi-cascade, cascade, raft, literati, and group/forest. Less common forms include windswept, weeping, split-trunk, and driftwood styles. These terms are not mutually exclusive, and a single bonsai specimen can exhibit more than one style characteristic. When a bonsai specimen falls into multiple style categories, the common practice is to describe it by the dominant or most striking characteristic.

A frequently used set of styles describe the orientation of the bonsai tree's main trunk. Different terms are used for a tree with its apex directly over the center of the trunk's entry into the soil, slightly to the side of that center, deeply inclined to one side, and inclined below the point at which the trunk of the bonsai enters the soil.

- **Formal upright** or chokkan style trees are characterized by a straight, upright, tapering trunk. Branches progress regularly from the thickest and broadest at the bottom to the finest and shortest at the top.

- **Informal upright** or moyogi trees incorporate visible curves in trunk and branches, but the apex of the informal upright is located directly above the trunk's entry into the soil line.

- **Slant-style** or shakan bonsai possess straight trunks like those of bonsai grown in the formal upright style. However, the slant style trunk emerges from the soil at an angle, and the apex of the bonsai will be located to the left or right of the root base.

- **Windswept** or fukinagashi style describes a tree that appears to be affected by strong winds blowing continuously from one direction, as might shape a tree atop a mountain ridge or on an exposed shoreline

- **Cascade-style** or kengai specimens are modeled after trees that grow over water or down the sides of mountains. The apex (tip of the tree) in the **semi-cascade-style** orhan kengai bonsai extend just at or beneath the lip of the bonsai pot; the apex of a (full) cascade style falls below the base of the pot

A number of styles describe the trunk shape and bark finish. For example, the deadwood bonsai styles identify trees with prominent dead branches or trunk scarring.

- **Shari** or sharimiki style involves portraying a tree in its struggle to live while a significant part of its trunk is bare of bark.
- Although most bonsai trees are planted directly into the soil, there are styles describing trees planted on rock.

- **Root-over-rock** or sekijoju is a style in which the roots of the tree are wrapped around a rock, entering the soil at the base of the rock.

- **Growing-in-a-rock** or ishizuke style means the roots of the tree are growing in soil contained within the cracks and holes of the rock.

While the majority of bonsai specimens feature a single tree, there are well-established style categories for specimens with multiple trunks.

- **Forest (or group)** or yose ue style comprises a planting of several or many trees of one species, typically an odd number, in a bonsai pot.

- **Multi-trunk** or ikadabuki style has all the trunks growing out of one spot with one root system, and is actually a single tree.

- **Raft-style** or netsuranari bonsai mimic a natural phenomenon that occurs when a tree topples onto its side, for example, from erosion or another natural force. Branches along the top side of the trunk continue to grow as a group of new trunks.

Size classification

Japanese bonsai exhibitions and catalogs frequently refer to the size of individual bonsai specimens by assigning them to size classes. Not all sources agree on the exact sizes or names for these size ranges, but the concept of the ranges is well-established and useful to both the cultivation and the aesthetic understanding of the trees. A photograph of a bonsai may not give the viewer an accurate impression of the tree's real size, so printed documents may complement a photograph by naming the bonsai's size class. The size class implies the height and weight of the tree in its container.

In the very largest size ranges, a recognized Japanese practice is to name the trees "two-handed", "four-handed", and so on, based on the number of men required to move the tree and pot. These trees will have dozens of branches and can closely simulate a full-size tree. The very largest size, called "imperial", is named after the enormous potted trees of Japan's Imperial Palace.

Miniature bonsai - from 5cms. To 15cms.

Small bonsai - from 15 cms. To 30 cms.

Medium bonsai - from 30 cms. To 60 cms.

Big bonsai - over 60 cms.

The size of a bonsai should be determine by the size of the same tree growing in the nature. For example shrubs like mini roses or Lantana when left unpruned grown upto half to two meter then they can be miniaturized to small bonsaiermame. Many trees like Murrraya exotica,hibiscus etc. grow upto 2 to 4 meter and they will make medium size bonsai. Trees like banyan, tamarind etc. growing to very great heights will look appropriate as big bonsai.

Care

Small trees grown in containers, like bonsai, require specialized care. Unlike houseplants and other subjects of container gardening, tree species in the wild, in general, grow roots up to several meters long and root structures encompassing several thousand liters of soil. In contrast, a typical bonsai container is under 25 centimeters in its largest dimension and 2 to 10 liters in volume. Branch and leaf (or needle) growth in trees is also large-scale in nature. Wild trees typically grow 5 meters or taller when mature, whereas the largest bonsai rarely exceed 1 meter and most specimens are significantly smaller. These size differences affect maturation, transpiration, nutrition, pest resistance, and many other aspects of tree biology. Maintaining the long-term health of a tree in a container requires some specialized care techniques:

- Watering must be regular and must relate to the bonsai species' requirement for dry, moist, or wet soil.
- Repotting must occur at intervals dictated by the vigour and age of each tree.
- Tools have been developed for the specialized requirements of maintaining bonsai.
- Soil composition and fertilization must be specialized to the needs of each bonsai tree, although bonsai soil is almost always a loose, fast-draining mix of components.
- Location and overwintering are species-dependent when the bonsai is kept outdoors as different species require different light conditions. It is important to note that few of the traditional bonsai species can survive inside a typical house, due to the usually dry indoor climate.

Soil

- Soil mixture should be providing basic need to a plant like water, oxygen for roots and nutrition in the form of mineral elements. The texture of the soil should be coarse enough to drain out water easily. At the same time, it should retain some water which will not dry out the plant during the day.
- Well balanced bonsai soil mixture will consists of 3 parts of garden soil, 3 parts of manure and 2 parts of brick pieces. This mixture is suitable for majority of the plants.

Containers

Assorted bonsai pots

A variety of informal containers may house the bonsai during its development, and even trees that have been formally planted in a bonsai pot may be returned to growing boxes from time to time. A large growing box can house several bonsai and provide a great volume of soil per tree to encourage root growth. There are no aesthetic guidelines for these development containers, and they may be of any material, size, and shape that suit the grower.

Completed trees are grown in formal bonsai containers. These containers are usually ceramic pots, which come in a variety of shapes such as rectangular,oval,square,tall square or tall round etc. with varying depths, sizes and colors and may be glazed or unglazed. Pots usually have vertical sides, so that the tree's root mass can easily be removed for inspection, pruning, and replanting, although this is a practical consideration and other container shapes are acceptable.

There are alternatives to the conventional ceramic pot. Multi-tree bonsai may be created atop a fairly flat slab of rock, with the soil mounded above the rock surface and the trees planted within the raised soil.

In general, containers with straight sides and sharp corners are used for formally shaped plants, while oval or round containers are used for plants with informal designs. Many aesthetic guidelines affect the selection of pot finish and color.

Potting and repotting

Whether a plant is purchased from a nursery, is trained from a cutting, grown from a seed, got by layering or collected from the wild, a pre-bonsai plant must be healthy with plenty of roots, many branches and leaves. Prepare the tree before putting it in a bonsai pot. Take out the plant from its mud-pot. Removed extra soil sticking to the roots. Disentangle the roots, cut off long roots with sharp scissor and keep only the necessary roots depending on the type of the tree. Select the best side of the tree as the front side. Clip off all extra long branches and other branches which cross each other. Keep only those branches that are necessary for the good shape of the bonsai.

Spread bottom soil all over the bottom of the pot. Then spread a little medium soil over it. Now put the prepare plant in position. Tie a wire around the trunk base and secure its position. Fill the soil around the plant almost upto the top. Some of the soil surface can be covered with moss.

The first watering of the bonsai is done in a little different way because the soil is too dry, Instead of pouring water from the top. The pot is immersed upto its neck into a tub filled with water. The water enters from the drainage hole and slowly rises to top. Keep the pot in

the tub a little longer till the soil is thoroughly soaked. Then remove it from the tub and wet the leaves with a fine watering can.

Repotting

When a plant is well cared and healthy it gives out many new roots. In course of time these rots crowed the pot so densely as to block water and air from penetrating into the soil. The roots take away most of the nourishment from the soil and no longer conducive to the healthy growth of plant. Therefore necessary to cut off some of the roots to encourage new growth and also to replace the impoverished state of soil. Flowering and fruit trees often need repotting every year. The need for repotting also depends on the size of the pot. The best season for repotting is early spring or monsoon when the first new buds appear. Pruning, thinning or training of branches should be done before repotting.

To remove the plant from the old pot, first cut off the wires from the bottom of the pot, if any, had been use for the bonsai to the pot. Then turn the pot upside down and holding the tree with hand lightly tap the sides of the pot. The bonsai came off the pot with a complete ball of soil attached to its roots. Shake off and removed the soil from all around the roots ball. Separate and cut off the long roots. Generally about 1/3rd off the roots are required to be removed before repotting.

However while repotting the plant may be kept in such a way that the thick roots on the surface remain exposed to view. The object is to give the plant an appearance of age similar to what is found in nature. Finally the surface of the soil may be topped with moss.

Pruning

Pruning is necessary for plant to thin the dense growth. It will allow sunlight and moisture to reach inside and upto the lower portion of the plant. Pruning done at the correct time by proper methods encourages growth of flowers and fruits. The best season for this is when the tree is awakening from period of dormancy.

Feeding

In order to dwarf a tree it is starved for water or food. Fertilizer in some from or the other have to be supplied to bonsai. Organic manure can be used especially FYM is not suitable of the plants have to be kept indoors. Incase of inorganic fertilizer one has to be extra careful in the amount to be used slight excess off inorganic fertilizer can prove fatal for plant. The best mixture is prepared from oil cakes. This is the safest and probably the best for bonsai.

Pest and disease

As soon as insects are found on the bonsai or in the soil the treatment has to be started without delay. It is best to kept bonsai on an elevated shelf and in a sunny and airy location. Spraying with a general purpose insecticide at regular interval is very essential. The most common pests found are Ants, Aplrids, earthworms, red spiders, mealy bugs etc.

Insecticides: rotenone, pyrethrum mixed with vegetable oil, pesticure: Rogor, Mathron etc. are available. They can control the pests.

Benefits of Growing a Bonsai Tree

Other than the fact that these trees are simply beautiful they also offer many other benefits beyond splendor. There is deep philosophy in the spiritual dimension of the art as the grower. With that being said, it is a relaxing hobby. The process brings a Zen state of mind. As you trim, prune, re pot, water, and so on, it takes your mind elsewhere and allows you to focus on these simple tasks. Since patience is also a requirement of the grower, this much needed virtue is certainly tested throughout the Bonsai growing process. If you have patience, it will be practiced and if you don't, it can even be learned. You also get to experience creating a piece of art that is actually living. You get a sense of aesthetics and learn how to maximize the beauty of the plant. As the Bonsai grows, others will also admire them, giving you a sense of accomplishment. Lastly, many people enjoy the benefit of growing something that can last a lifetime. A Bonsai will literally grow old with you and many even last well over one-hundred years. This means you will get to enjoy your creation for years to come.

Bonsai tools and materials

Proper equipment is very important for the training and care of bonsai trees. You must be able to execute accurate cuts on the trees, with a special profile and clean, even edges. For beginners it is advisable to acquire a few basic tools at first, like a quality concave cutter and a standard shear. The more intensive you work with bonsai, the more special tools you will need later on.

Japanese bonsai tools are wellknown for their high quality (and for their high prices), while Chinese tools provide increasingly better quality for their prices. The black steel of which most tools are made, needs a bit more maintenance because it can rust. High quality stainless steel tools are even more expensive. Use your bonsai tools only for the purpose they were made for and treat them well. Then you won't ruin them ahead of time and they will work well for many years.

Bonsai tools; a short introduction

Bonsai Shears and Pliers

Shears are available in many sizes and shapes. They are meant for cutting twigs, smaller branches, leaves or roots.
If most of the trees in your collection are small bonsai, don't buy very large shears and pliers! There are shears with a wide standard shape, which are strong enough for thicker twigs, and shears with narrower and longer shapes, which make it easier to work in the middle of a dense canopy, and small shears for shohin bonsai or for trimming azaleas and removing their wilted flowers. In this article we explain what to look for when buying trees/tools; Bonsai trees for sale.

Concave cutters are needed for removing branches from the trunk where we want to achieve deepened cuts which will heal without leaving a swollen scar. There are concave cutters with straight blades, those with semi-round blades and knob cutters which leave a particularly deepened cut. All these plier types are available in different sizes, of course.

The Bonsai tools, from the top middle clockwise:

1. pruning shear
2. standard shear
3. long slim twig shear
4. leaf cutter
5. shohin and azalea shear
6. large concave cutter with straight blades
7. small concave cutter with straight blades
8. knob cutter
9. tweezer spatula
10. large foldable saw
11. medium sized foldable saw
12. thin pruning saw
13. grafting knife with wooden sheath
14. root hook

15. small root rake
16. larger root rake
17. sickle saw
18. sickle knife
19. root plier
20. strong standard shear for root pruning
21. jin / wire beding plier
22. large wire cutter
23. small wire cutter
24. small angled jin / wire bending plier
25. (middle) set of soil scoops

Saws and Knifes

When you have to cut branches, trunks or roots which are too thick or too hard for using a plier, you should use an appropriate saw.
Keep in mind that Japanese pruning saws cut when you pull them back towards yourself. Don't push them strongly because then the saw blade will bend or break. For smoothing the cuts and wounds left by pliers and saws, grafting knifes are most suitable, like those used by professional gardeners.

Bonsai tools for Working on Roots and Repotting

For removing the rootball from the pot there are special sickle knifes and sickle saws which are used to cut along the inside of the pot. Solid angular plastic bowls in which you can work on the roots or mix new soil make work more comfortable and cleaner. Root hooks and root rakes, which are available in different sizes and variants, with one, two or three teeth, are used for opening the rootball, carefully combing the roots and removing old soil between the roots.

Root-pruning is done with a strong standard shear with big strong blades and solid handles. If you find strong, hard roots, use a root plier or a saw.

If you use granular soil components like Akadama, Kanuma, pumice etc. you should sieve them before use, to separate different grain sizes and remove the smallest, dusty particles. There are sieve sets made of stainless steel with various mesh sizes for this purpose. For filling the soil into the bonsai pot there are scoops in different sizes which are specially shaped for pouring soil under overhanging low branches. To push the soil into cavities between the roots of the bonsai, chopsticks or bamboo sticks are helpful. But you should take care not to damage the roots by poking too hard. For applying moss or removing weeds etc. you will use a tweezer spatula, which is also useful for pressing wet moss to the soil or for excavating persistent weeds.

Tools for Wiring and Bonsai Wire

For wiring a bonsai tree you obviously need wire in various diameters, a wire cutter and a plier for bending the wire which is also used for deadwood (jin). Those tools are available in different shapes and sizes. Buy small ones if you have many shohin bonsai. Wire for bonsai purposes is either made from annealed aluminum or copper. Beginners should use aluminum as it is easier to apply.

Bonsai tools for Bending and protective Material

If you want to bend branches or trunks very heavily, protective measures are advisable to prevent the wood from breaking and the bark from tearing and to help minor cracks and fissures heal without risking the branch or trunk to die. The traditional method is to wrap wet raffia tightly around the part to be bent before the wire is applied. Fusing rubber tape (wrapped on top of a layer of gauze) or bicycle tube is also suited for this purpose.

Thin, transparent rubber tubes (fish tank or infusion hoses) are helpful for protecting trunks, branches and roots where fixation or guy wires are attached. For heavy bendings there are tools like ergonomically designed massive steel levers padded with rubber. Special screw clamps, available in various shapes and sizes, can be useful for some purposes. Turnbuckles can help to tighten strong guy wires more and more in intervalls. Iron rebars can be used as a lever for bending strong trunks if you use wooden wedges as a counterpart and guy wires for fixation.

Tools and Carving Knifes for Deadwood

The main objective of working on deadwood is that it should look naturally and that no traces of human work should be perceptible. It seems paradoxical that this is why a huge variety of tools are available for this purpose.

The branch splitter is a sharp plier for multiple splitting of dead branches and stumps. For pulling fibres (on conifers with fibrous wood) or breaking of little wood particles (on deciduous trees with less fibrous wood) the jin plier is used.

A slim chisel which should not be too sharp is well suited for lifting wood fibres. Various loop knifes and carving hooks are used for peeling off bark and for carving slight furrows, which should follow the course of the fibres.

There are lots of differently shaped carving tools, often sold in sets, in different qualities and sizes, which work well for shaping, smoothing, contouring, narrowing or hollowing out deadwood.

In order to erase the last traces of your work and remove wood fibres sticking out it is best to use a gas torch which is fueled with lighter gas for example. After scorching, the charred wood layer is brushed off with steel, brass or nylon brushes.

For preserving decayed deadwood you can use wood hardener, which consists of liquid plastics soluted in acetone. The wellknown Japanese jin liquid consists of lime sulphur which is mostly used for whitening the deadwood but also has some preserving effect.

Tools for repotting, wiring, bending and carving Bonsai. From the top middle clockwise:

1. raffia
2. fusing rubber tape and gauze
3. infusion hose
4. branch / trunk bending lever
5. screw clamp
6. rust eraser (dark grey) and grindstone
7. disinfectant
8. gun oil
9. camelia oil
10. nylon brush
11. brass brush
12. steel brush
13. tooth brush

14. coco brush
15. bicycle tube

Electric Bonsai Tools

When you use powertools extreme caution is necessary because bad injuries can happen very easily. Always wear protective glasses to avoid wood splinters or metal bristles getting hurled into your eyes! An overall, gloves, dust mask and even a helmet can be a good idea for extensive deadwood work with powerful electric bonsai tools. Work with full concentration and very thoughtful, hold the machine firmly in your hands and be careful with the speed control dial and the power button.

The „Dremel“ is a small machine for which a large assortment of bits with a 3 mm shank is available. There are similar machines by other manufacturers for which the same bits can be used: rotating brushes made of nylon, brass or steel for removing bark and smoothing deadwood, various cutters, grinders, abrasive wheels and much more.

The „Makita“ is one of the most popular large machines among bonsai enthusiasts, for bits with a 6 mm shank. Other manufacturers offer similar die grinders. It is important that you choose a machine with a speed control dial because the various bits must be used with different speed. For these large powertools there is also a wide variety of powerful bits like rotating brushes made of different materials, cutting wheels, circular saws, grinding bits and abrasive wheels in many different shapes. Due to the enormous power and heaviness of the large die grinder machines, which often make their use difficult and dangerous, they are not recommended for beginners and inexpert handymen.

Some bonsai professionals use sandblasting machines for deadwood work. Those are big, expensive devices for which a special work environment, protective gear and special knowhow is required. The results of this deadwood work method are often very convincing.

Electric Bonsai tools, carving and deadwood work accessories. From top right clockwise:

1. "Dremel 300" machine
2. wood hardener
3. a selection of useful Dremel bits (grinders, circular brushes, abrasive wheels, drillbits, screw wrench)
4. a set of 5 different carving tools
5. a set of 4 flex cut carving tools
6. round carving hook with thin, sharp tip
7. angled carving hook
8. small, angled jin plier
9. large jin plier
10. branch splitter
11. spear plough
12. small loop knife

13. strong, straight scalpel
14. curved scalpel
15. set of 10 small carving tools
16. a selection of grinders, circular brushes and screw wrenches for large die grinders
17. jin liquid
18. "Makita GD 800C" die grinder
19. gas torch
20. (middle) protective glasses

Tools and Materials for Maintenance

For removing rust and dirt on the tools' blades there are rust erasers (like „Clean Mate“) and for sharpening the blades various types of grindstones are available. Sharpening needs a bit excercise and it is a good idea to practise on old, worthless shears first. Bonsai tools should be disinfected now and then, in order to prevent taking fungi, bacteria or virus infections from one tree to the next. For the maintenance of hinges and blades gun oil or camelia oil are suitable. Coco brushes are used for sweeping trunks, nebaris, soil surfaces, shelves, tables, tools etc.

Watering Tools, Watering Systems, Collecting Rain Water

For watering a small collection of bonsai trees a ball-shower or a watering can is fine. There are different shapes and sizes of watering cans, but it should have a fine nozzle and a long neck to produce enough pressure to get the water out of the tiny holes of the nozzle. If you have a large bonsai collection, a garden hose with a sprinkler stick is convenient. Click here for an image.

For misting the bonsai trees with water or spraying plant protection products or leaf fertilizer solution you need spray cans, either those you pump up before use or those you must pump with your fingers for each spray puff.

If you have nobody who can water your trees properly at any time of the day when you are at work or travelling, a watering system can be a good idea. The most simple thing to help out for a few days would be to place a lawn sprinkler in front of your trees with a timer.
Of course there are more complex, reliable and comfortable watering systems (like Gardena MDS, Tropf-Blumat, misting systems and flooding systems) you should retrieve detailed information about if you are interested. Those systems can be quite expensive for a larger collection but they are worth the expense. For images, click here, here and here.

In many areas the tap water contains a lot of limescale and sometimes even chlorine which makes the water inapplicable for bonsai trees. Especially maples and azaleas need soft water. Well water is also often calciferous and additionally ferreous. It is therefore useful to collect rainwater. A rain barrel which is filled by a downpipe or a larger water tank will do a good job. Ideal is a large underground water tank or cistern from which you can tap the water with a hand operated or electrical pump. For an image, click here.