

Bonsai Substrate (Soil)

- ✓ Bonsai soil is like spaghetti sauce; everyone has their own recipe.
- ✓ ***The most important factor for the health of a bonsai is the availability of AIR and WATER in the soil.***
- ✓ Drainage is also referred to as “percolation.”
- ✓ “Poor drainage” equals wet soil, leading to growth of anaerobic bacteria and root rot.
- ✓ Rapid growth is desirable for bonsai in DEVELOPMENT. Slow growth is desirable for bonsai in the REFINEMENT stage (shorter internodes and finer twigs.)
- ✓ We avoid garden soil due to poor drainage and poor balance of air versus water.
- ✓ We generally use a mixture of three or four components in our bonsai soil depending on what is available
- ✓ In the FBS, we tend to use various proportions of akadama, moca lava, volcanic cinder, and pumice.
- ✓ All the components in our typical bonsai soil mix are “inorganic” meaning they do not contain carbon-based material like leaf mulch or bark.
- ✓ Some experienced bonsai hobbyists add some organic material (like bark chips) which bind nutrients and promote soil bacteria.
- ✓ Using inorganic substrate allows us to control the nutrients in the soil and the tree’s growth rate.
- ✓ Akadama is crushed clay imported from Japan. It is used for bonsai soil because of 3 attributes:
 - 1) it absorbs some water and releases it slowly
 - 2) it absorbs and releases nutrients to the tree over time and
 - 3) it has “scalability” meaning that it can break down to permit fine roots to penetrate particles. This latter quality is important to fine root growth.
- ✓ Not everyone uses akadama and it is more expensive than other soil components.
- ✓ Akadama comes in bags with various particle sizes from 1/8 to 1/2 inch in diameter.
- ✓ Bonsai soil in the pot must be free of dust.

- ✓ The particle size must be uniform from top to bottom so that smaller particles do not migrate to the bottom and retain water
- ✓ Screen sifting is usually necessary to get uniform particle size and to eliminate dust.
- ✓ Soil mixes vary by type of tree (deciduous vs. conifer), stage of development (development vs. refinement), local climate and watering habits of the hobbyist.
- ✓ Many of us use 60 to 70% akadama for deciduous trees and 15-20% shale (called moca lava) and 15-20% volcanic cinder.
- ✓ For conifers, many of us use 30 to 50% akadama, and equal parts of moca lava and volcanic cinder.
- ✓ Pines prefer a “dryer” mix with as little as 25% akadama while junipers receive 30-40%.
- ✓ Moca lava and volcanic cinder colors that are more visually attractive.
- ✓ Shohin bonsai are often grown in 1/8 inch pure akadama because they require slow growth and reliable moisture in small pots.
- ✓ Rough rule of thumb: ¼ inch particle size for refined trees and 5/16 to 3/8 inch for trees in development.
- ✓ Larger particles increase air and increase growth for trees in development stage.
- ✓ Availability of soil components often change every year.
- ✓ A major goal of this bonsai club is to obtain whatever bonsai soil components that we can, as cheaply as we can, and make them available to our members before repotting season.

