BONSAI SOIL MADE SIMPLE

Start here for success!

YOU WILL LEARN:

Why is bonsai soil not "soil?"

Fundamental balance of water and oxygen

Oxygen, water and cation exchange capacity

Soil component characteristics

Particle size

Soil "mix"

Soil preperation

TRADITIONAL POTTING MIX

- NOT FOR BONSAI

- High organic component
- Holds water
- Low oxygen
- Small particle size

BONSAI MIX IS NOT "SOIL"

- Aggregate blend
- Little / no organics
- Higher oxygen content
- Free draining
- Larger particle size
- Holds less water than "soil"

Courtesy of Bonsai Tonight

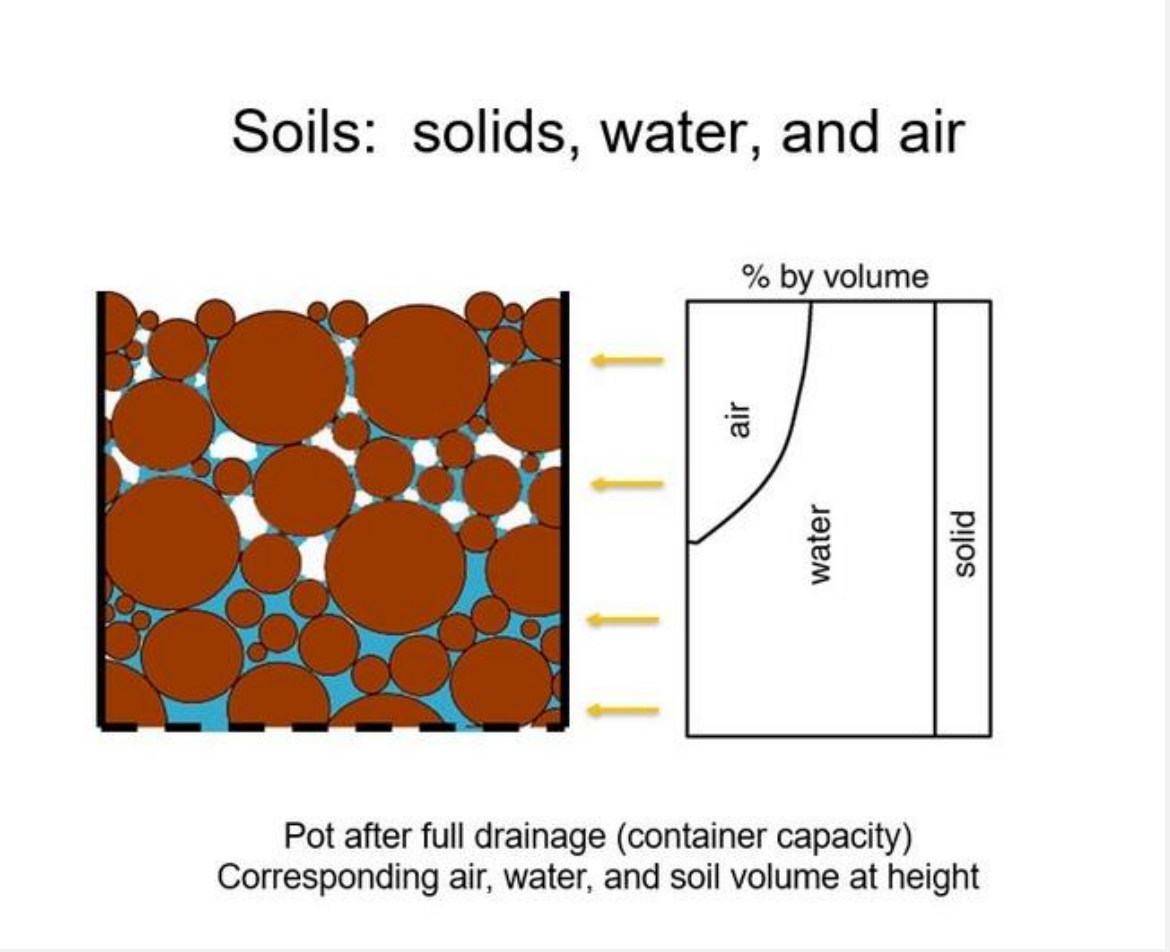
BALANCE OF WATER AND OXYGEN

- THE MOST IMPORTANT CONCEPT
- **Air (oxygen) content controlled by:**
  - Particle size (smallest component)
  - Particle Type (porosity)

Water content linked to above:

Particle type (permeability) is as important as particle size

*Each species will have different requirements, but will exist along the spectrum



https://ucanr.edu/blogs/blogcore/postdetail.cfm?postnum=29390

OXYGEN, WATER AND CATION EXCHANGE

3 most important factors

- **Oxygen:**
  - Root systems need respiration, oxygen exchange to prevent rot and "drowning"
- **Water:**
  - Essential for health and photosynthesis
- **Cation Exchange:**
  - Soil's ability to transfer N,P,K and essential elements to roots

How to control

- **Oxygen**
  - Smallest particle size, porosity of components
- **Water**
  - Permeability of component, size, container shape and size (perched water table)
- **Cation Exchange**
  - Intrinsic ability of component to provide N,P,K

RMBS MOST COMMONLY USED AGGREGATE

- Pumice
- Scoria (lava)
- Akadama
- Turface

SOIL COMPONENT CHARACTERISTICS

	Water	Oxygen	Cation
• Pumice (water holding)	+++	+	+
• Scoria (aeration)	+	+++	--
• Akadama (cation exchange)	+	-- / +	+++
• Turface (water and cation)	++	-- / +	++

*Oxygenation can always be increased with bigger particle size regardless of component

PARTICLE SIZE

- Bonsai aggregate must be sifted to remove "fines"
- Removing these small particles improves drainage, but more importantly increases oxygenation
- Even purchased "pre-mixed" soils will need screening to remove these small particles

General rule:

- All aggregate mix components screened:

  - 1/4" Largest
  - 1/8" medium
  - 1/16" Smallest

*Accomplished with 3x sifting through appropriate sized screens. WEAR RESPIRATORY PROTECTION

SOIL MIX GENERAL PRINCIPLES

REMOVE 1/16” SIZE FOR:

- Large Bonsai
- Most conifers (unless small or shohin)
- Needs increased aeration
- Decrease water holding

REMOVE 1/4” SIZE FOR:

- Small bonsai, pots, shohin
- Most deciduous (unless large)
- Increase moisture content
- Less need for aeration

BASIC SOIL MIX=SUCCESS FOR MOST

	Pumice		Scoria		Akadama or Turface	Application	Size
"Boon Mix"	1 third	:	1third	:	1 third	All species	1/4-1/16"
	1 third	:	1 third	:	1 third	Conifers	1/4-1/8"
	1 third	:	1 third	:	1 third	Deciduous	1/8-1/16"
Deciduous Mix	1 sixth	:	1 sixth	:	2 thirds	Deciduous	1/8-1/16"
Deciduous Neil	0	:	0	:	All akadama	Deciduous	1/8-1/16"
Shohin Boon	1 third	:	1 third	:	1 third	Shohin	1/16"
Shohin Neil	0	:	0	:	All akadama	Shohin	1/16"

BOTTOM LINE

- Screened aggregate mix is **well draining with good aeration**
- Understanding component characteristics key to establish **balance of water/oxygen** (porosity vs. permeability)
- Need to utilize mix that possess **cation exchange** for bonsai nutrient needs
- 1/4”-1/16” **particle size** is appropriate: modulate based on species, size of bonsai
- Some **basic mixes** can be made with this understanding **for success with nearly all bonsai species and sizes**

MANY THANKS ARE DUE

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