

Digging Deeper – Soil Data Tables

1. Relationships of Soil Depth to Plant Growth and Water Storage

Soil depth*	Water storage
Deep soil (over 107 cm)	Excellent water storage and plant growth
Moderate deep soil (51-107 cm)	Good water storage and plant growth
Shallow soil (51 cm & under)	Poor water storage and plant growth

* total depth to bedrock

Condition	Colour		
	Dark (dark grey, brown to black)	Moderately dark (brown to yellow-brown)	Light (pale brown to yellow)
Amt. of organic material	High	Medium	Low
Erosion Factor	Low	Medium	High
Aeration	High	Medium	Low
Available Nitrogen	High	Medium	Low
Fertility	High	Medium	Low

2. Subsurface Soil (B Horizon)

Subsurface soil colour	Condition
Dull Grey (if in low rainfall soils 0-20")	Water-logged soils, poor aeration
Yellow, red-brown, black (if in forest soils)	Well drained soils
Mottled grey (if in humid soils)	Somewhat poorly to poorly drained soils

3. Some Effects of Texture on Soil Conditions

Subsurface soil colour	Condition	Looseness of soil
Sandy	Poor	Good
Loamy	Good to excellent	Good
Clayey	High (water held too tightly for plant use)	Poor

4. Some Effects of Structure on Soil Conditions

Type	Water penetration	Drainage	Aeration
Columns	Good	Good	Good
Blocky	Good	Moderate	Moderate
Granular	Good	Best	Best
Platey	Moderate	Moderate	Moderate

5. Relationship of Soil pH to Plant Species

1	4.5	6.5	7.0	8.5	14
(1 to 3.5 is too acid for most plants)		(most plants do best here)		(8.5 to 14 is too alkaline for most plants)	

Example of soil pH indicators:

- pH 4.0-5.0: rhododendrons, camellias, azaleas, blueberries, fern, spruce, pine, firs, red cedar
- pH 5.0-6.0: pine, fir, holly, daphne, spruce, oak, birch, willow, rhododendron, alder, red cedar
- pH 6.0-7.0: maple, mountain ash, pansy, asters, peaches, carrots, lettuce, pines, firs, alder, red cedar
- pH 7.0-8.0: beech, mock orange, asparagus, sagebrush

Note: These relationships may vary in different environments.

6. Some Relationships of Soil Temperature to Plant Growth

Soil temperature °C	Conditions during growing season
Less than 4.4	No growth, soil bacteria and fungi not very active
4.4 to 18.3	Some growth
18.3 to 21.1	Fastest growth
21.1 to 29.4	Some growth
Above 29.4	No growth

7. Colour Chart

COLOUR	INFLUENCE
Reddish, yellowish or brownish	<i>Iron oxides</i>
Red	<i>Hematite</i>
Yellowish brown	<i>Goethite</i>
Reddish brown	<i>Ferrihydrite</i>
Grey	<i>Quartz & silicate</i>
White	<i>Carbonates, volcanic ash</i>
Green	<i>Potassium</i>
Black/very dark brown	<i>Organic matter</i>
Black	<i>Manganese oxides</i>