Chapter 5: The root of it all

Fig. 5.2

Root hairs

Fig. 5.5: Dicot root
Fig. 5.6

Comparison of Monocot and Dicot roots

Lateral Root formation

Specialized Roots

Fig. 5.8 Food Storage
- Water storage
  - Members of the Cucurbitaceae (pumpkin family)

- Pneumatophores

- Aerial roots

Fig. 5.12 Prop roots

Fig. 5.14 Buttress roots

Prop roots in corn
Fig. 5.13 Contractile roots

Fig. 5.15 Parasitic roots

Root mutualisms - Mycorrhizae

Fig. 5.16cd

Soils: Formation
Mosaic and rich sand and humus loam

Porosity and permeability

Increasing sandy clay clay

Soil properties

Porosity and permeability
Infiltration
Leaching

Water

High permeability

Table 5.1

<table>
<thead>
<tr>
<th>MINERAL</th>
<th>DIAMETER (RANGE IN MM)</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stones</td>
<td>&gt;76 mm</td>
<td>Do not support plant growth but affect permeability and erosion of the soil</td>
</tr>
<tr>
<td>gravel</td>
<td>7-76 mm</td>
<td>Weak to poor to good</td>
</tr>
<tr>
<td>very coarse sand</td>
<td>2-7 mm</td>
<td>Weak to poor to good</td>
</tr>
<tr>
<td>coarse sand</td>
<td>0.05-2 mm</td>
<td>Good to very good</td>
</tr>
<tr>
<td>Medium sand</td>
<td>0.05-0.25 mm</td>
<td>Good to very good</td>
</tr>
<tr>
<td>Fine sand</td>
<td>0.025-0.05 mm</td>
<td>Good to very good</td>
</tr>
<tr>
<td>Very fine sand</td>
<td>0.01-0.025 mm</td>
<td>Good to very good</td>
</tr>
<tr>
<td>silt</td>
<td>0.01-0.062 mm</td>
<td>Good to very good</td>
</tr>
<tr>
<td>clay</td>
<td>&lt;0.062 mm</td>
<td>Do not support plant growth but affect permeability and erosion of the soil</td>
</tr>
</tbody>
</table>

Alkaline, dark, and rich in humus Clay calcium compounds

Table 5.1

Soil Mineral Components as Classified by the U.S. Department of Agriculture

Increasing percentage clay

Increasing percentage silt