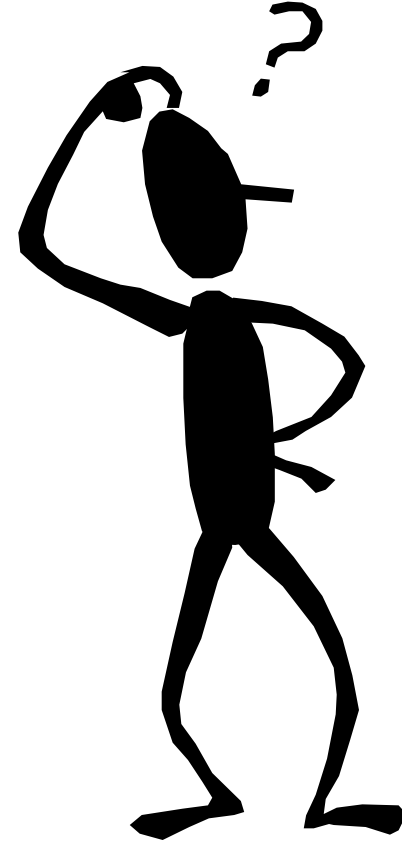


Soil and site



Harry Backhouse



Soil and site

- Soil type - texture
 - moisture content
 - pH
- How to alter soil type
- Adding nutrients
- What plant where?

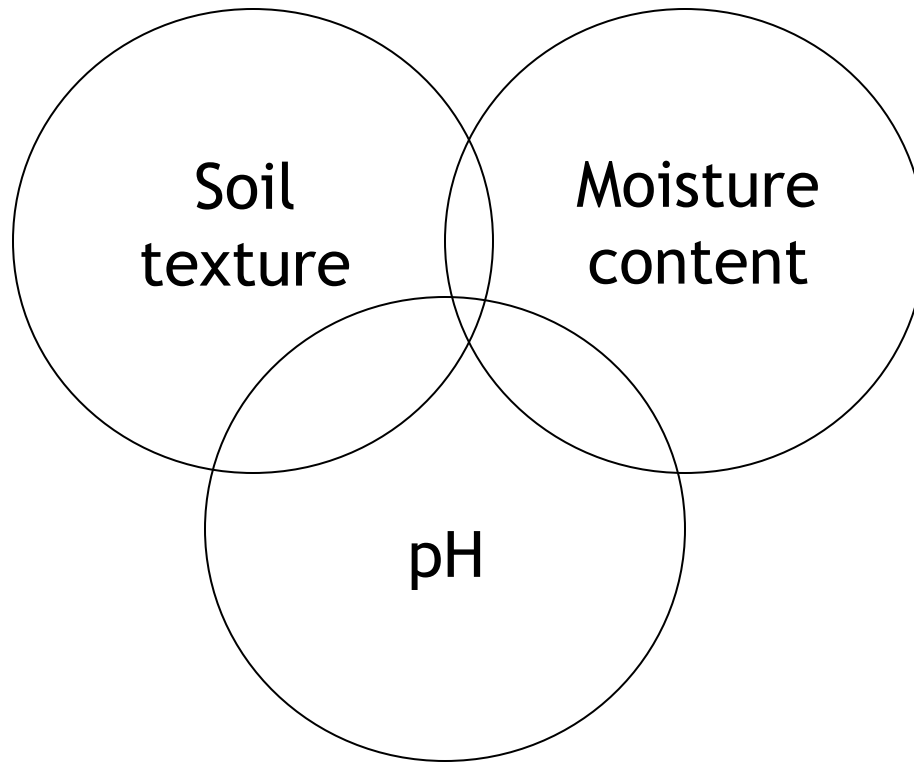


What is soil made up from?

- Parent material - particles ground down from basic rock (includes minerals)
- Humus / organic matter
 - dead and decaying
 - living and live
- Water
- Air

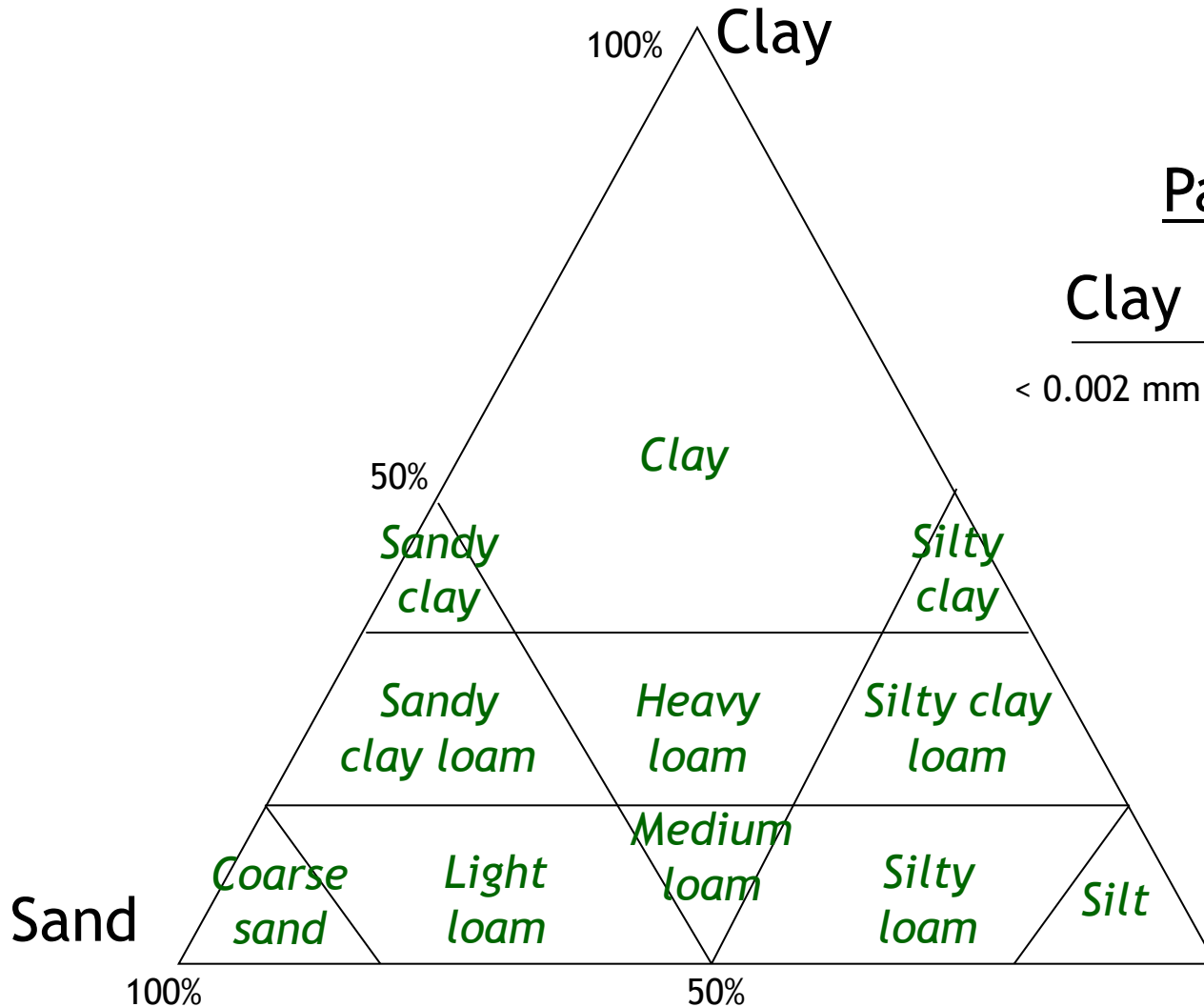


Soil properties



Soil Texture Diagram

Soil texture - the most important soil property



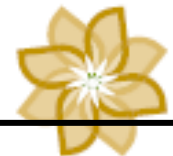
Particle Size

| Clay | Sand | Silt |
|------------|-------------------------|--------------|
| < 0.002 mm | Fine sand 0.02-0.2mm | 0.002-0.02mm |
| | Coarse sand 0.2-2mm | |



Soil Texture - some descriptions

| <u>Clay</u> | <u>Sand</u> | <u>Silt</u> | <u>Loam</u> |
|---|---|--|---------------------|
| Very small particles, compressed | Bigger particles, moisture flows straight through - nutrients get washed away | Small particles which don't stick together. | Best all round soil |
| Roots cant penetrate | Not very fertile | Needs drainage but soil quickly blocks up drains | Warms up early |
| 'Late soil' due to high moisture content which stays cold | Deep rooting trees and plants more successful as water is further down | Average fertility | Naturally fertile |
| Relatively fertile | | | |



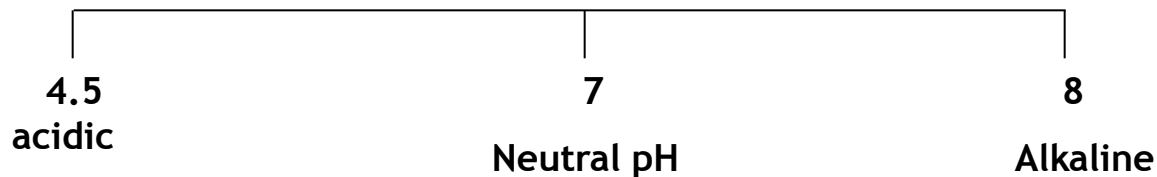
Quick 'Hand Test' guide to soil texture

- Coarse sandy soil will feel gritty
- Sandy soil will leave your hands clean
- Silt and clay will leave your hands dirty
- Clay soil can be rolled into a ball and 'polished'



Soil pH

The lower the number, the higher the acidity.



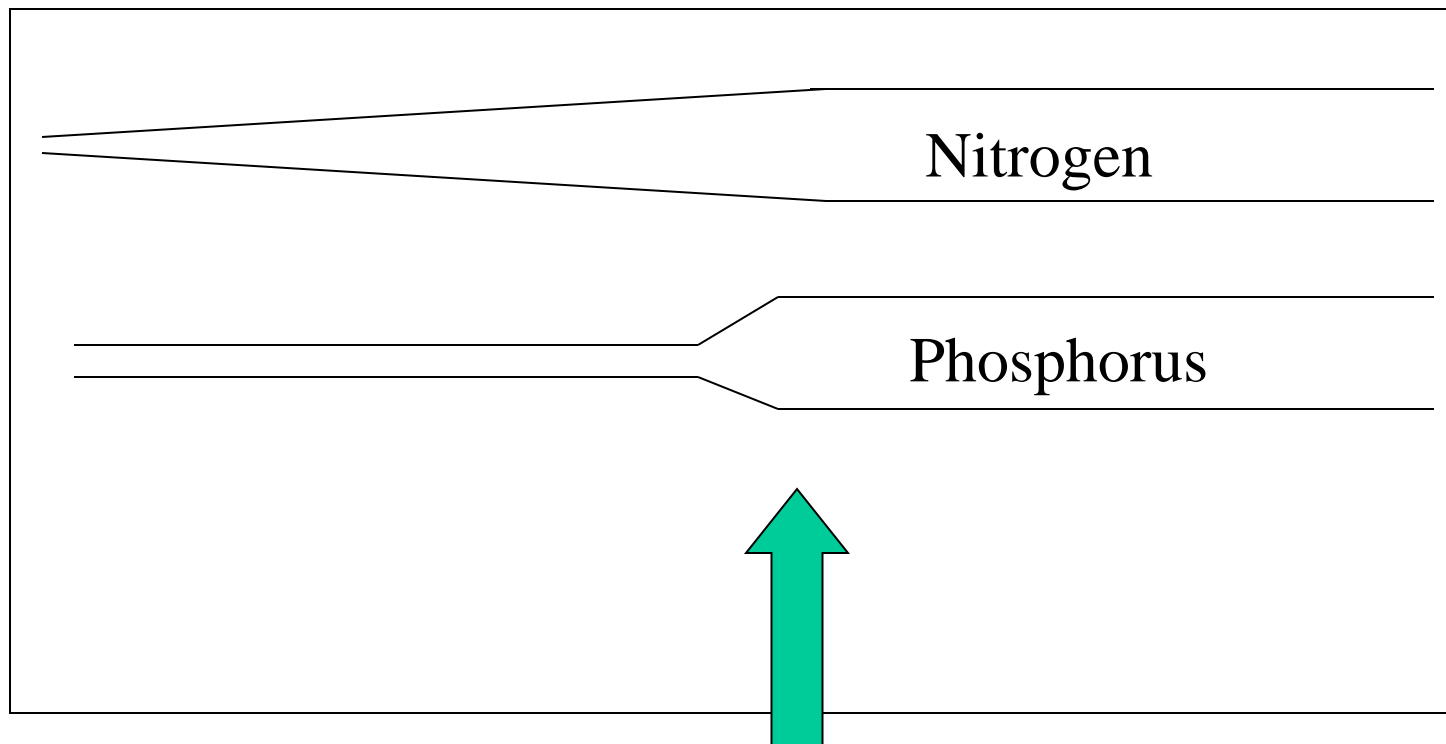
Many traditional plants, including lawn, are happiest with a soil pH near 6.5. NOTE--- Worms don't like acidic soil!

Soil acidity is influenced by local sources

- Many evergreens make the soil around them more acidic
- Rainwater, especially in polluted areas is acidic
- Limestone makes the soil more alkaline



Effects of pH on nutrient availability



Most beneficial pH is 6.5.



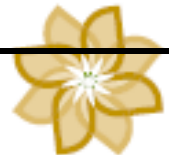
The determinants of soil moisture

1. Annual rainfall
2. Depth of your water table
3. Slope
4. Competition from surrounding plants.
 - are they water hogs?
5. Overhead foliage or obstacles
 - create drier microclimates under them
6. Exposed - sun and wind can dry out an area
7. Particle size
 - small particle soils hold more water
 - larger particle soils let water flow straight through



Improving soil texture

| <u>Clay</u> | <u>Loam</u> | <u>Sand</u> | <u>Silt</u> |
|--|---|---|--|
| <ul style="list-style-type: none">-Break up by deep digging- Install drainage- Add organic matter to give it structure, sand to help drainage- Add lime which binds particles together-Don't work in wet weather or with heavy machinery | <p>Celebrate!</p> <ul style="list-style-type: none">- Don't work when wet, especially clay loams. | <ul style="list-style-type: none">-Blend with organic matter or peat to increase humus level and assist with water retention -Deep dig if clay is below to combine | <p>Cry!</p> <ul style="list-style-type: none">-Challenging to deal with - Consider importing topsoil. |



Correcting soil pH

Add lime to neutralize
acidic soil

Alkaline soils are
difficult to change.

- Apply lime annually, sparingly.

Hydrated/ burnt lime (more concentrated)

Ground lime (less concentrated)

(these are the most common types available)

- Add 1kg per m₂ to move pH from 5.5 to 6.5 -
(organic soil + clay soil)- sandy soils ½ kg/m₂



Adding nutrients

Only add nutrients once the pH is correct- otherwise it's a waste

| Mineral | Nitrogen (N) | Phosphorous (P) | Potassium (Potash) (K) |
|---------------------|---|---|--|
| Deficiency shows as | Small leaves with a yellow tinge | Poor roots and general development | Tips of stems and leaves wither and die |
| Adding it promotes | <ul style="list-style-type: none">-large dark green leaves-speed of green growth | <ul style="list-style-type: none">-shortens seedling growth times to maturity-good root vegetables | <ul style="list-style-type: none">-disease and frost resistance-the absorption of N and P |



What to plant where?

Things to consider in addition to aesthetics

Consider...

Soil pH

Sunny or
shady

Exposed or
sheltered

Soil texture

Damp or
dry

There are plants suitable for everywhere.

- Roy Lancaster 'What plant where?'

