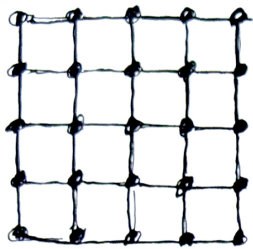
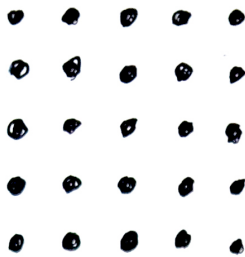


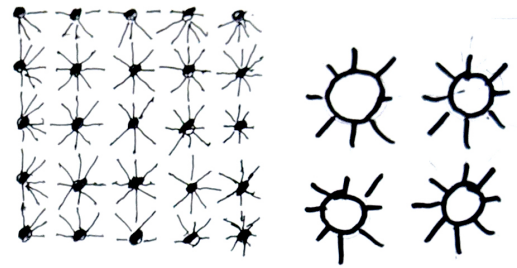
Crystal



Sol



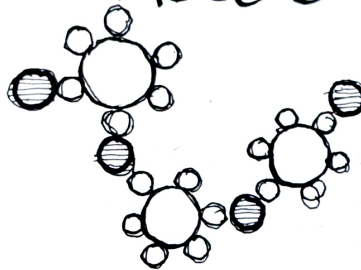
Gel



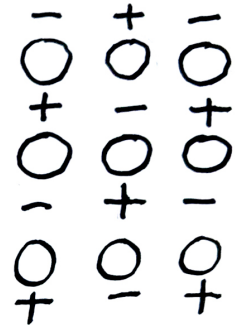
Floc / flake



Metal



SOL



Reducing particle size

- old solution for fines
- herb compost - oil/water bridge
- honey/yeast - ferment
- terra sigillata - lubricant
- VINEGAR - organic acids

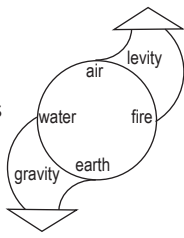
- New solution for fines

Fulvic acid

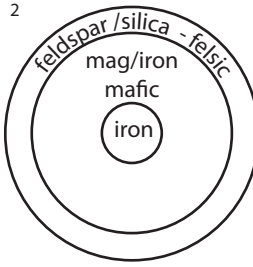
Mica

{ oil water bridge
organic acid
micro-organisms
lubricant

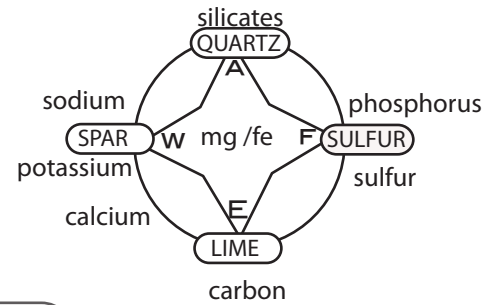
COAGULA
Fixed
Earthly
Centric
Inner planets
Calcic
Root / leaf
Calcium
Sulfur



SOLVE
Mobile
Cosmic
Peripheral
Outer planets
Silicic
Flower / seed
Potassium
Phosphorus

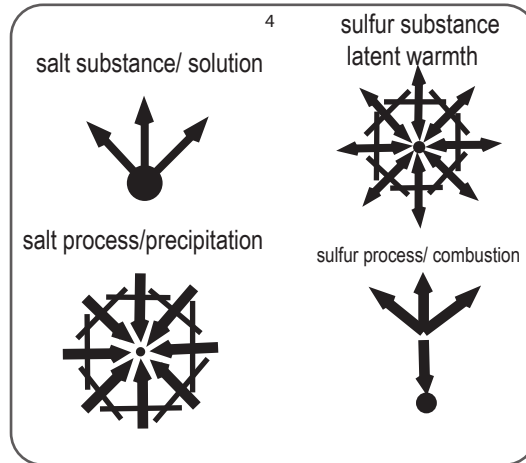


3 MINERAL CROSS



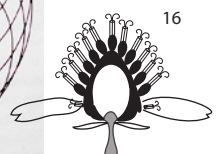
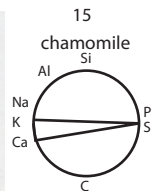
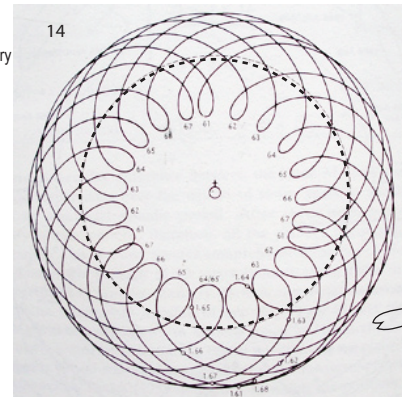
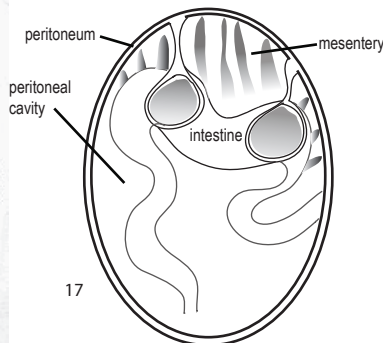
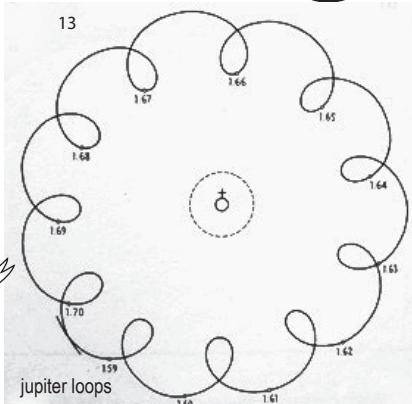
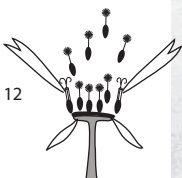
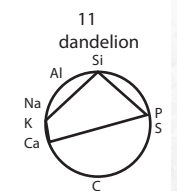
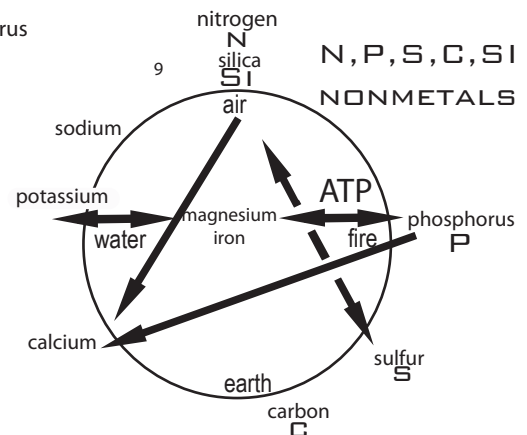
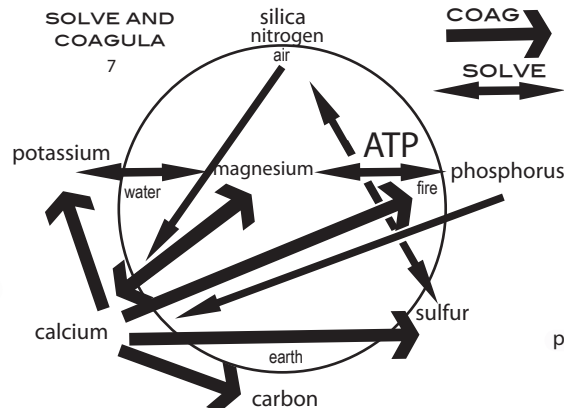
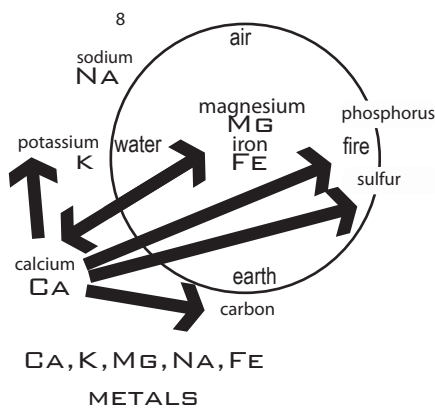
- 5 Salt pole- forming and dissolving
Potassium-mobile / creates
potassium channels for ionic
transfer- active in clay complexes
in mineral transport
unavailable-feldspars and micas
available- clay colloid humus
complex composed of
weathered clay interstices

Calcium –selectively mobile-
strongest fixing agent for
phosphorus and potassium-needs
nitrogen to become active
Unavailable- feldspars and lime
Available- calc phosphate process-
phosphorus and nitrogen activate
calcium, calcium fixes phosphorus
over time as the calcium
phosphate process develops in the
earth through weathering

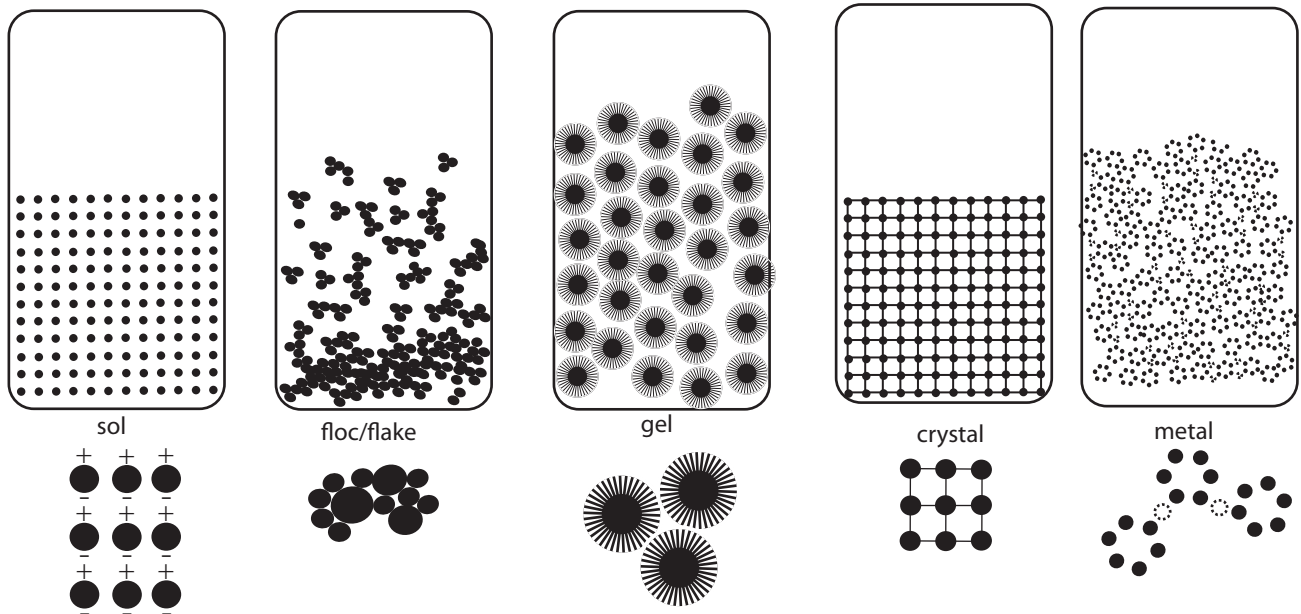


- 6 Sulfur pole- combustion and assimilation
Phosphorus- mobile, very available- Adenine
triphosphate- active in energy transfer for
fruit and seed production. Phosphorus
circulates freely in entire plant during growth
pushing it towards flowering.
Unavailable- phosphate rocks/ combines
readily with calcium becoming fixed
Available- animal and plant residues largest
source of phosphorus in calcium phosphate
formation- important pH buffer

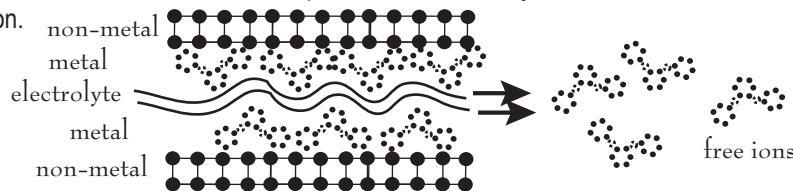
Sulfur- selectively mobile in young tissues-
mobility dependent upon nitrogen Calcium
locks sulfur into mature organs(leaves)
Nitrogen shunts sulfur in the plant from
mature tissues to rapidly growing areas.
Conditionally available- determined by
environment. Important in ribulose light
antenna of photosynthesis (ribulose
bi-phosphate) carbon enters biosphere



types of colloidal arrangements



The difference between a true solution and a colloidal solution is the size of the particles. In a solution, such as salt water, the molecules are fully dissolved into water, and the solution can pass through a membrane without becoming separated. In a colloidal solution (sol) larger particles don't dissolve, but become equally dispersed through a liquid. These larger particles will not pass through a membrane as the liquid does. Examples of sols include blood or paint. The finest sols settle out (floc) very slowly the coarser sols settle out quickly especially when the particles are of different sizes in the sol. A gel forms when an organic colloid creates a field of webs between the particles of a sol. A crystal is a molecular fixed field of tension. A metal is a flexible field of tension.



soil solution dynamics

Potassium, calcium, magnesium are metals that promote activity in the plant sap by interaction with non metals.

Phosphorus, sulfur, nitrogen, carbon are non metals that attract the metals into chemical activity

Clays and organic matter (humus) act as the go betweens for these interactions through the creation of countless inner surfaces of silicates and protein colloids that house the metals.

Copper, boron, aluminum and sodium are trace elements that also engage the clay/ humus complexes to promote growth from leaf formation through seed production.

Sandy soils- least capacity to hold nutrients///organic -humic humus (heart) have greatest capacity to hold nutrients.

chelation

A chelator is a substance that binds to a metal or mineral allowing it to be more interactive in the chemistry of the organism. In the health food industry zinc and copper supplements are typically chelated with EDTA (Ethylenediaminetetraacetic acid). This acid is a strong synthetic version of the humble apple cider vinegar. Also a typical system for the delivery of the chelated metals is some form of colloid. A mini-compost batch can be made to chelate gem slurry. Chelation involves linking the metals in a gem to more organic substances so that the organisms that receive the metals can assimilate them. A good chelation process makes use of herb compost, honey, fine terra sigillata clay and vinegar to which a gem slurry is added. This is composted until the gems and the metals in them are digested into a clay humus complex.

Electrochemical series

(react with acids) lithium, potassium, calcium, sodium, magnesium, aluminum, water zinc, chromium, iron, cobalt, nickel, oxygen, tin, lead, iron, hydrogen, copper, mercury, silver, platinum, chlorine, gold(non reactive)

Triboelectric series (glass to resin)

Glass, mica, nylon, wool, fur, lead, silk, aluminum, paper, cotton, steel, wood(neutral) amber, sealing wax, hard rubber, nickel, copper, silver, brass, gold, sulfur, celluloid, acrylic, polyurethane, natural rubber, PVC, silicon, silicone rubber.(resin)