

AGS 2110

Lecture 2

Relationship between soil science and pure and applied sciences

The development of soil science as a discipline has been a multidisciplinary effort involving chemists, physicists, geologists, agronomists, mathematicians, IT. All these disciplines have contributed immensely to our understanding of soils in relation to crop production. These disciplines have helped in developing the understanding of soil in relation to the biosphere, hydrosphere, atmosphere and lithosphere.

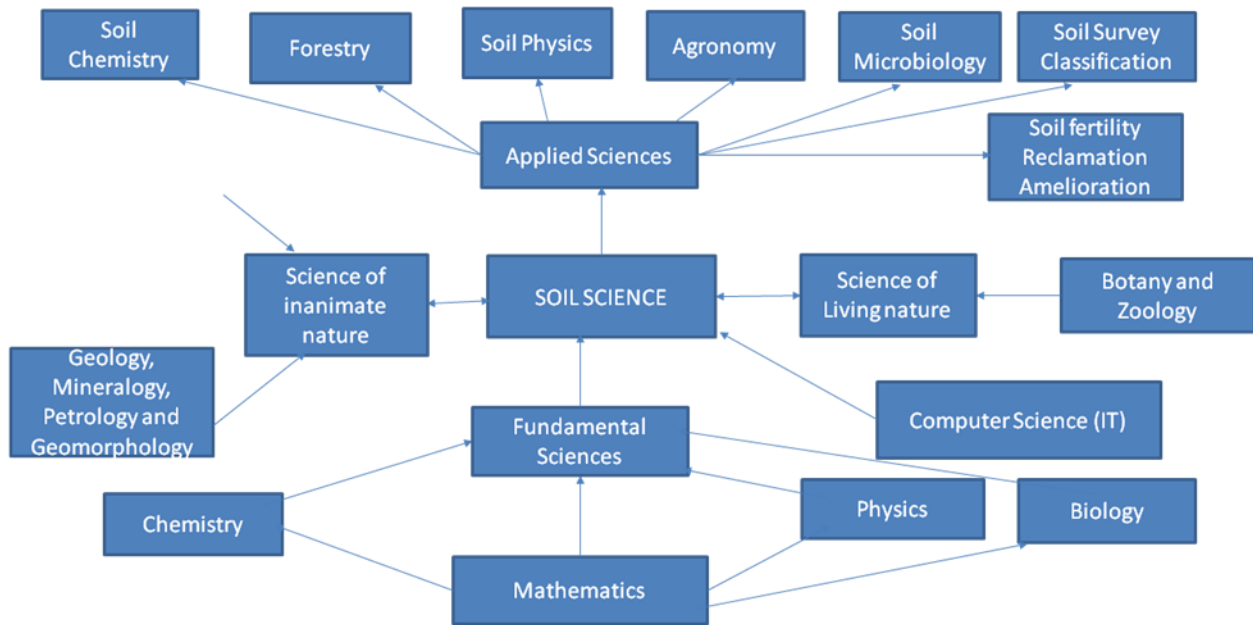


FIGURE 1. RELATIONSHIP BETWEEN SOIL SCIENCE AND OTHER SCIENTIFIC DISCIPLINES

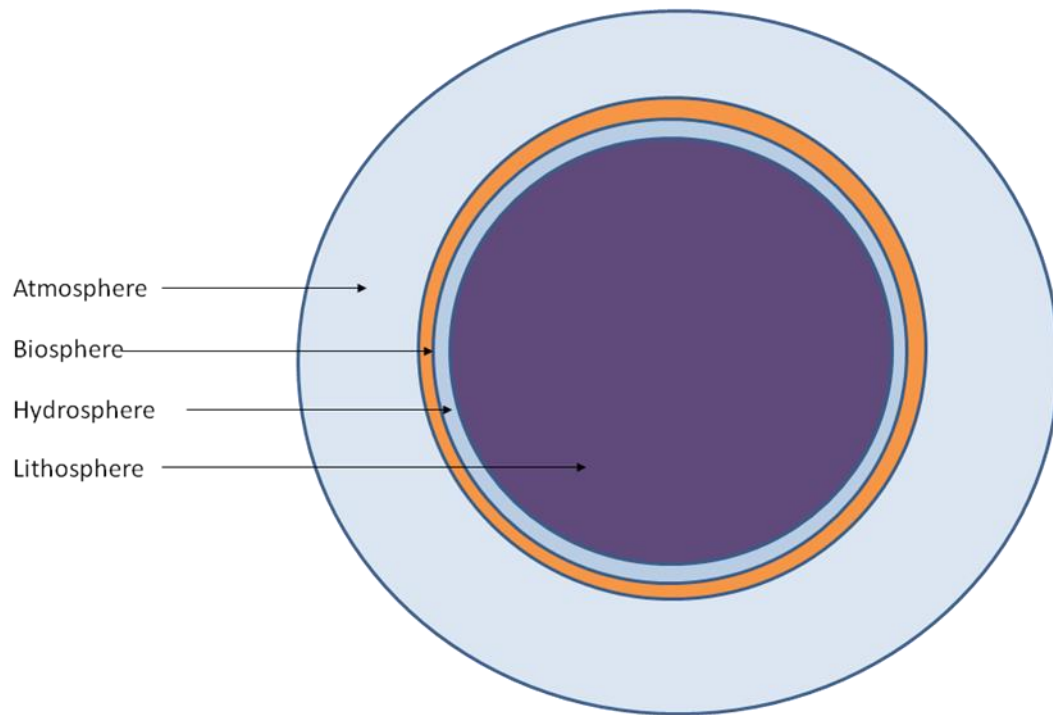


FIGURE 2. COMPOSITION OF THE EARTH

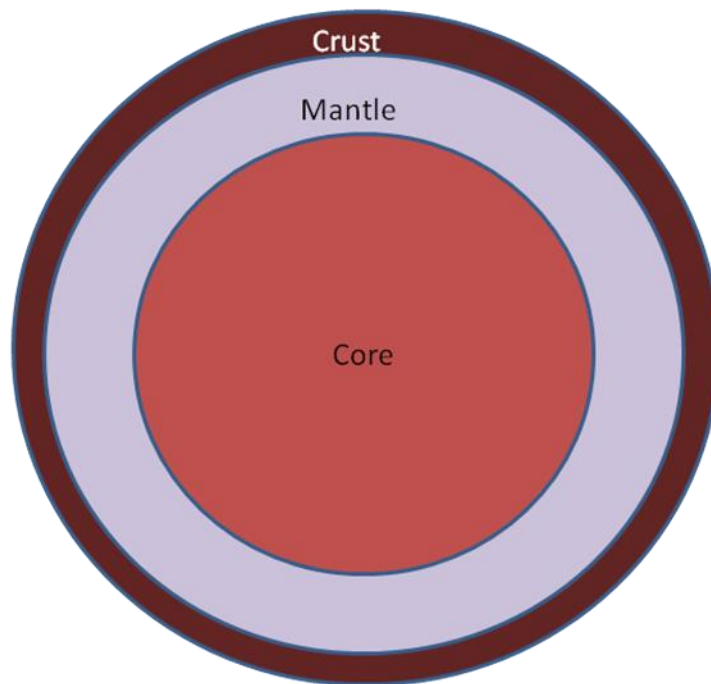


FIGURE 3. COMPOSITION OF THE EARTH'S LITHOSPHERE (HARD PORTION OF THE EARTH)

The core of the earth is rich in iron, while the mantle has more Mg, Ca and O₂.

The crust, 15km thick has Si, O₂ more than the mantle.

The hydrosphere is made up of C, O₂, H and N

The crust comprises 28% by weight of Si, 47% of O₂. Besides this, 6 other elements Al, Fe, Ca, Mg, Na and K are important, representing 24% by weight. All the other elements 95 of them represent less than 1%. Essential elements important for plant growth such as S and P are scarce: That is why fertilizers are frequently used.

COMPOSITION OF THE EARTH'S CRUST

Element	Weight
O ₂	46.6%
Si ⁴⁺	27.7%
Al ³⁺	8.1%
Fe ²⁺	5.0%
Mg²⁺	2.1%
Ca²⁺	3.6%
Na ⁺	2.8%
K⁺	2.6%
P	Negligible
S	Negligible

