

Water-soluble Elements

The water-soluble elements determine the concentration of substances in the soil solution. Solute substances always occur as loaded parts (ions). These are able to conduct electricity. That's why the electrical conductivity in the soil-water-extract is used to measure the salt content (=sum of solute parts, acronym: eC, unit: mS/cm).

Ecological Importance:

The **soil solution** is the most important medium for plant nutrition. Plant roots are only able to absorb solute substances. The soil solution should hold an ideal composition of nutrient concentrations. Plants can't absorb nutrients selectively. This means that the absorption of certain nutrients is only working optimally in an ideal composed soil solution.

The solute substances are also a **mineral source for microorganisms** and contribute to **aggregate stability**. But they also may be washed out with the seepage water and influence neighbouring systems.

The Concentration of the Soil Solution is influenced by:

Input of organic and mineral fertilizers, tillage, substances on the sorption complex, soil acidity, rising ground water climatic conditions.

Certain Substances are **easily soluble in water** (=instantly plant available / prone to washout). Others are **poorly water-soluble**, e.g. chemical bonds of carbonate, phosphate and silicate.

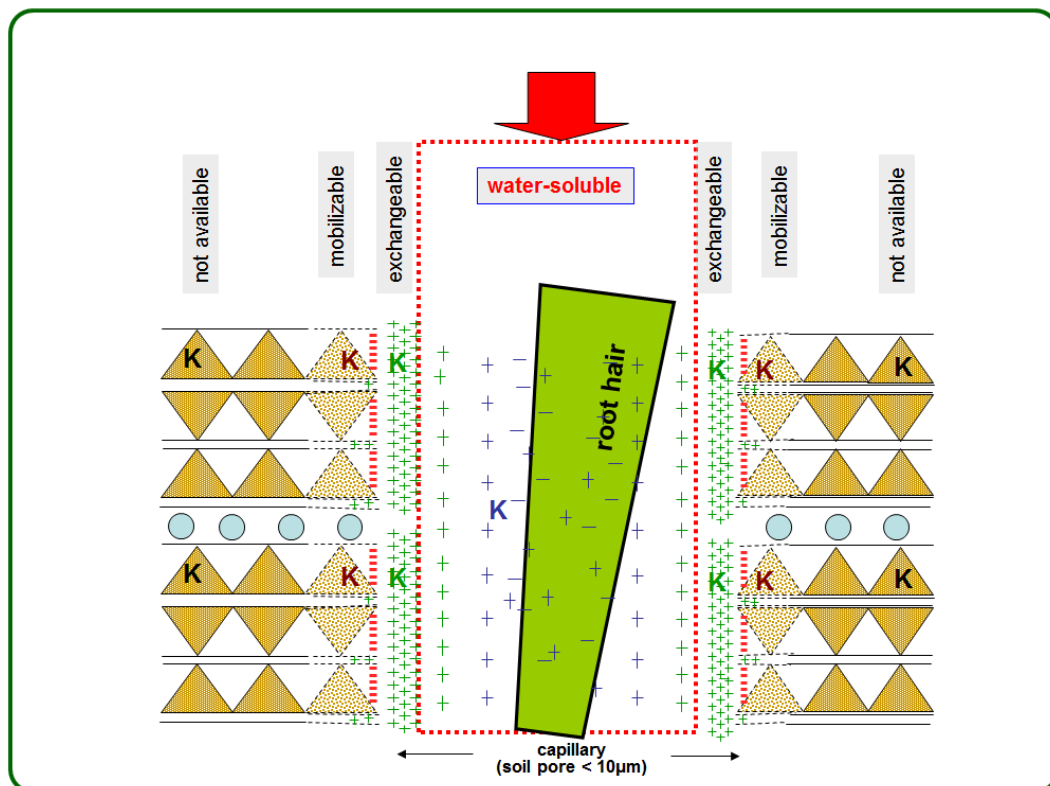


Figure: Soil pore, elements (e.g. K) in different solubilities, highlighted: water-soluble elements.