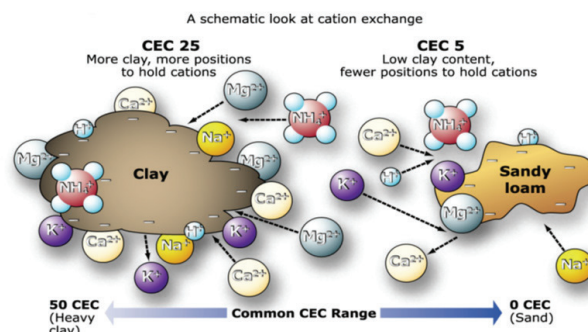


Cation Exchange Capacity (CEC) and Soil Characteristics

In soil science, CEC is the maximum quantity of total cations, of any class, that a soil is capable of holding, at a given pH value, available for exchange with the soil solution. CEC is used as a measure of fertility and nutrient retention capacity. It is expressed as milliequivalent of hydrogen per 100 g of dry soil (meq+/100g). Clay and organic matter have electrostatic surface charges that attract the solution ions, and hold them. This holding capacity varies for the different clay types and clay-blends present in soil, and is very dependent of the proportion of clay and organic matter that is present in a particular soil.

In general, the higher the CEC number the higher the soil fertility.

The CEC can give insight into soil quality and site characteristics. Higher CEC likely indicates more clay, poor internal drainage, limited structure and soil compaction in high traffic areas. Low CEC is indicative of sandy textured soils prone to drought that invariably needs more organic matter to improve water holding capacity, but have open grainy structure that resist compaction.



CEC	Texture	Soil Characteristics
<10	Sand	Low organic matter, leachable soils, low nutrient and moisture holding capacity.
10-15	Sandy loam	More desirable soil, higher clay content, improved nutrient and moisture holding capacity, more structure.
15-20	Loam	Ideal soil from a texture standpoint, higher organic matter content, more structure, improved nutrient and moisture holding capacity.
20-25	Clay loam	Higher clay content, tight soil structure restricts subsoil movement, increases compaction and nutrient run-off, soil improvement and aggregation needed.
>25	Clay	Tight soil structure due to high clay content, restricts subsoil movement, increases compaction and nutrient run-off, soil improvement and aggregation needed.