



# Blue Mountain Minerals

## Aglime Quarterly

### What's Happening

Duarte Friends Day  
*Hughson*  
May 4

OFAC Meeting  
*Chico*  
June 15



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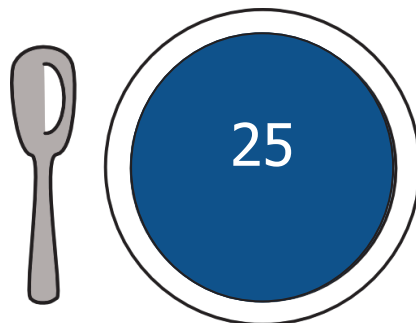
## Soil CEC is like a Dinner Plate

Cation Exchange Capacity, (CEC) is a measure of the soils ability to hold positively charged ions. A soil report with a high CEC number (>25) means the more clay or organic matter your soils have. Clay and organic matter particles are responsible for holding the cations on their exchange sites. This very important soil property influences the soil structure, nutrient availability, pH and how the soil reacts to fertilizers and other amendments.

Soil clay particles have negatively charged sites on their surfaces that attract the positively charged cations like a magnet, adsorbing to it (soil organic matter has both negative and positive sites). The positive cations that labs typically measure are Calcium (Ca<sup>++</sup>), Magnesium (Mg<sup>++</sup>), Potassium (K<sup>+</sup>) and Sodium (Na<sup>+</sup>). The first three are nutrients that feed your crop and aid in creating productive soil structure. The cation Na<sup>+</sup> adsorbs to the clay particle but is not needed for crop production.

Think of CEC like a dinner plate, the greater the reported CEC number, the bigger the dinner plate. A big plate can hold more nutrients making it more fertile, resistant against leaching and more buffered against rapid changes.

High CEC Dinner Plate (Clay)



Low CEC Dinner Plate (Sand)



## CEC and Calcium Needs

Calcium is a strong positive cation having the greatest significance with respect to plant health and soil structure. Soil pH is an estimated measure of the active positive Hydrogen (H<sup>+</sup>) cations. Hydrogen also adsorbs to the negative exchange sites on the clay particles. When there is a high percentage of H adsorbed on the exchange sites soils are acidic soils (low pH). Soils with a near neutral pH will typically have more Ca cations adsorbed onto the negative exchange sites and less H.

Calcium has a strong, double positive charge, while H and Sodium (Na), have single weaker charges. This means Ca can push H and Na aside easily. When optimal Ca levels are achieved for the CEC soil type on your farm, soils will have better pH and structure, are more aerated, and have increased water infiltration. This allows high levels of Na to be leached and allow the crop to take up water more efficiently. Always test your soil. Why apply something you haven't measured?

Basic Soil Type	Typical CEC Range	Soil Ca % Base Sat.	Ca Range ppm
Sand	2-6	70%	700
Loam	7-15	75%	2,250
Clay	15-30	80%	4,000

References:

\* [www.soilminerals.com/Cation\\_Exchange\\_Simplified.htm](http://www.soilminerals.com/Cation_Exchange_Simplified.htm)

\*\* Western Fertilizer Handbook, Ninth edition

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