Silicon Benefits to Crops and Soils in New Jersey

Joseph Heckman

Findings from twelve years of field trials conducted on silicon soil fertility research plots at Rutgers University, Snyder Research & Extension Farm show that calcium magnesium silicate is both an effective liming material and silicon fertilizer.

The parent material of this calcium magnesium silicate product is stainless steel slag. This steel-making by-product is then processed to remove metals resulting in a silicon based fertilizer product with a calcium carbonate equivalent of 93%.

Crops grown on amended soil exhibited increased silicon uptake. Pumpkin fruit and wheat grain yields were increased in some years in association with suppression of powdery mildew disease on amended soil. Corn plants grown on previously amended soil exhibited less injury to the stem tissue from European corn borer. Forage yields were similarly improved by liming low pH soil with either calcium carbonate or calcium magnesium silicate. Cabbage yields were improved by liming low pH soil but calcium magnesium silicate increased marketable head yields more than calcium carbonate.

The residual benefits of calcium magnesium silicate applications were evident in crops produced 3 to 4 years after the last application. In summary, field trials using calcium magnesium silicate slag finds that enhanced levels of silicon uptake sometimes imparts crop production benefits beyond its service as a liming material. Enhanced silicon soil fertility and nutrition often helps to control powdery mildew disease on a wide variety of crops.

Photos: Cabbage and Wheat Harvests