

# Measuring calcium in serpentine soils

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Serpentine soils contain highly variable amounts of calcium, making them marginal lands for farming. Successful management of serpentine soils requires accurate measurement of the calcium they hold. Research published this month in the *Soil Science Society of America Journal* shows that multiple measurement techniques are needed to accurately measure calcium content in serpentine soils.

To make these marginal growing lands productive, farmers must apply fertilizers to make up for missing nutrients like calcium. Over- and under-application of nutrients can both be harmful to the land and its crop yield. Accurate measurement of the available calcium in serpentine soils is vital to determining the fertilizer needed.

Serpentine soils are formed primarily from serpentinite rocks. These rocks are formed from pieces of the earth's mantle through a metamorphic process involving heat and water. Serpentine soils can be found throughout northern California.

Scientists at University of California, Davis tested five techniques for measuring calcium in serpentine soils: X-ray diffraction, electron microscopy, polarized and plane light petrographic microscopy, and elemental analysis of the whole rock. Researchers found that a combination of all these techniques was necessary to accurately identify and measure the calcium in serpentinite rocks.

Researcher Donald McGahan said "The non-serpentinite rock bodies included in the serpentinite landscape and, to a lesser extent, calcium-

bearing accessory minerals in the serpentinite rock have the potential to act as a landscape fertilizer."

Source: Soil Science Society of America

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