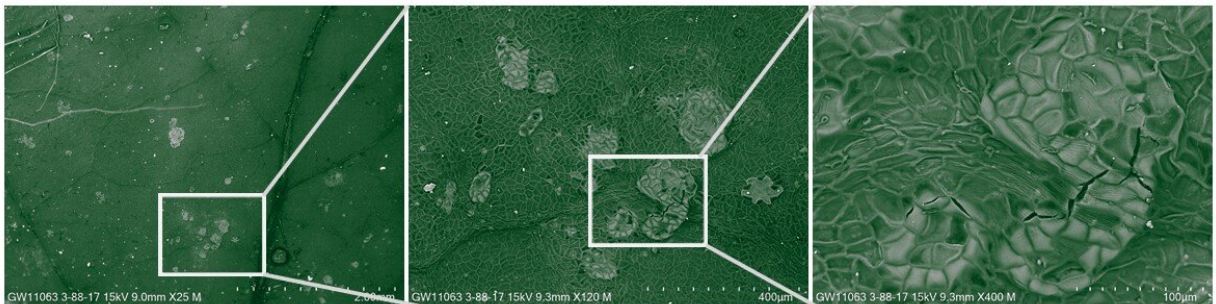


Unlocking better soil carbon sequestration by studying silicon deposits in plants

July 7 2022, by Stephanie G Seay



These images show increasing levels of magnification of phytoliths in the leaves of poplar trees, a key biofuel crop, imaged using ORNL’s specialized microscopy-spectroscopy. Credit: Elizabeth Herndon/ORNL, U.S. Dept. of Energy

Scientists at Oak Ridge National Laboratory are closer to unlocking the secrets to better soil carbon sequestration by studying the tiny, sand-like silicon deposits called phytoliths in plants.

Silicon makes plants rigid and helps protect them from stressors like drought. The phytoliths resulting from silicon accumulation also trap carbon in a structure that endures long after plants die, enhancing [soil carbon storage](#).

"We want to know whether we can shift the system enough to increase

the amount of carbon that can be sequestered by plants," said ORNL's Natalie Griffiths.

As part of their analysis of phytoliths in [poplar trees](#), scientists not only identified the gene conferring silicon accumulation, but also linked it to the stimulation of cellulose biosynthesis—a key process in creating biofuels, said ORNL's Madhavi Martin.

"It's a great example of the lab's research linking plant genetics to ecosystem impacts," Griffiths said, particularly as a natural decarbonization strategy.

Provided by Oak Ridge National Laboratory

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