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Building Soils with Volcanic Basalt

by *RICH AFFELDT*

By definition, organic farming is a system of agriculture that strives to mimic the natural ecosystem and its focus on building healthy soil. Healthy soil in turn is derived from a marvelously complex interaction between biology and geology in which rock material decomposes and reacts with soil microorganisms and plant material to release minerals and nutrients that are essential to optimal plant growth and increased agricultural yields. By mimicking the Earth's own method for producing healthy soil, rock dust helps support the biological processes required for optimal and sustainable plant growth.

Given the opportunity, plants will actively seek to acquire nutrients from their surroundings to overcome imbalances. Recent research shows that fine roots will attack rock particles as a physiological consequence of mineral deficiency. In soil that is properly mineralized, however, plants don't have to work nearly as hard to survive. Across a variety of conditions, volcanic basalt has been proven to minimize deficiencies, improve root systems and help grow stronger crops with higher yields and higher levels of nutrition.



For generations of sustainable farmers, basalt's benefits have been indisputable. Today, scientists across the globe continue to validate the benefits of rock dust. The latest research focuses on rock dust's ability

to enhance the innate resistance of plants to a multitude of physical and biological stressors. Silicon (Si), which occurs naturally in volcanic basalt and is a key component of cell walls, strengthens stems and helps plants stand tall to capture more light and maximize photosynthesis. Silicon has also been identified as playing a particularly significant role in helping plants stay healthy and boosting their resistance to pests and disease.

Jian Feng Ma at Kagawa University in Japan cites extensive evidence to support the conclusion that silicon is “likely the only element able to enhance the resistance to multiple biotic and abiotic sources of stress.” Ma’s research shows that the beneficial effects of silicon are dependent on a plant’s ability to accumulate silicon in its stems, leaves and buds. The more silicon in a plant’s shoots, the better its ability to resist the stresses that cause pests and disease.

Sounds relatively straightforward, right? After all, silicon is the second-most abundant element in the earth’s crust after oxygen, and yet crops around the world show signs of silicon deficiency. The problem — and the potential solution — lies with the form of silicon that can be absorbed by plants. Only a small fraction of silicon in our agricultural soils is soluble and readily available for plant growth.



One of nature’s best sources of soluble silicon is volcanic basalt. Adding silicon back to soil that has been depleted of this essential element not only makes it easier for plants to ward off plant-eating insects, but it also improves plant resistance to leaf and foliar diseases and makes them stronger in the battle against environmental and climate stress.

One believer in the resistance-boosting benefits of volcanic rock dust is Bob Wilt, owner and operator of Sunset Valley Organics. Located in the middle of the Willamette Valley in western Oregon, Sunset Valley Organics is a family farm producing great-tasting, nutrient-dense organic berries. Unlike many other berry growers in the region, Sunset Valley Organics’ blueberry crops haven’t been affected by the dreaded spotted wing drosophila (SWD). Wilt has never had to spray against the insect and attributes this to healthy growing conditions and plants with Brix levels of 12 and better.

Wilt has been using volcanic basalt for the past two years as part of a holistic, organic soil management plan and has seen good growth and healthy plants with fewer insects and disease, which he credits to a balanced system which includes carbon, rock minerals and microbes.

“It’s all about getting our soils together,” he says.
“We need to replace what we take out, and rock minerals are essential because minerals are food for microbes.”

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