



## **NEWS FROM THE WONDERFUL WORLD OF SOIL AND PLANTS**

**By John Ferguson**

**We** often talk about the importance of trace elements (minerals). The April issue of Mother Earth News had an advertisement with few quotes on this subject:

“You can trace EVERY sickness, EVERY disease, and EVERY ailment to a mineral deficiency.” Dr. Linus Pauling, two-time Nobel prize Winer.

According to the USDA, “in North America we have seen an average of 85% mineral depletion over the past 100 years, worse than any other country in the world.”

Thirty-five million Americans suffer from arthritis because of a lack of zinc and other minerals (elements).”

In horticulture we often forget Liebig’s law of the minimum, “plant growth is limited by the nutrient (element) in shortest supply.”

There are many gardening supplements to address this issue. Like the advertisement referenced above, there are mineral packages derived from evaporated seawater with the sodium (Na) removed, there are clay minerals like those in Azomite, some mined humates have some minerals in them, mineral sands like greensand, granite sands, basalt sands, have been used for years by experienced gardeners, etc. Each offering a variety of elements.

There is also Re-mineralizer which is a blend of greensand, basalt sand, and granite sand to give a more complete range of elements in one product. It is also the most cost

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effective as all the minerals as it is sourced in Texas and it is a byproduct of other industries. This means no wetlands or wild areas were destroyed to mine the materials as in the other products. There is also less greenhouse gases produced from the mining and transportation into Houston from northern states.

**A** disease that affects stone fruits like *Prunus sp.* and citrus is Gummosis. This is a disease found all over the world which occurs mainly on the tree trunks and main branches. Researchers have found a strong correlation of this disease and the minerals (elements) available in the soil.

The study found that high levels of nitrogen (N) from artificial fertilizers increased the occurrence of this disease as did manganese (Mn) build up from pesticides.

They also found that lower levels of several minor and trace elements in the soil also increased the occurrence and severity of this disease. HortScience (2021)

Adding trace minerals (elements) every 3-4 years to all our gardening beds is very cheap insurance to ensure our plants are getting all they need.

**A**nother paper in HortScience (2021) on trace minerals was on the element strontium (Sr). Strontium is an essential trace element for humans and other mammals.

If you remember from our study of the elements a few months ago, strontium is in the same column on the periodic table as calcium (Ca). This means it has similar chemical properties.

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Strontium in the past was not considered an essential element for plants. However, the study found that adequate levels of strontium promoted the growth of Chinese cabbage (*Brassica rapa*). However, at high levels it had an inhibitory effect.

They also found that strontium, even though it has similar chemical properties, could not replace the function of calcium (Ca) in plants at low calcium levels.

I often get asked about using black weed mats for weed control. I have learned over the years that it causes more problems than it solves.

There was an article in HortScience (2021) last year that had an interesting statistic. The researchers found that the weed mat over bare ground, increased irrigation requirements by 50% compared to a sawdust or wood chip mulch.

We know the chemicals in our public water supply kills off good microbes, which then leads to more disease issues in our lawns and gardens. Hence, the more one waters, the greater the potential for other problems. As you can see, weed mats worsen this problem.

**We** have often discussed the benefits of microbes in our soil. Healthy populations of good bacteria and fungi in the soil helps us have beautiful gardens with low maintenance costs (both time and money).

The journal HortScience (2021) had an interesting research paper on arbuscular mycorrhizal fungi (AMF) that illustrates the benefits. They found that when AMF were added to tomatoes, peppers, and cucumbers at planting time, these plants had greatly

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increased vigor and endurance under heat stress. The plants also had greater productivity and quality.

When we use chemical fungicides or other toxic chemicals in our gardens, we lose these type benefits.

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