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## NEWS FROM THE WONDERFUL WORLD OF SOIL AND PLANTS

By John Ferguson

Last week we were talking about the importance of using our landscapes to help protect our pollinators and birds. This week I read an article on how wildlife can also play a part in reducing global warming.

From 1970 to 2018 global wildlife populations dropped 69%! The process of restoring animals is sometimes referred to as *rewilding*.

The study found that preserving and restoring wildlife in wilderness areas increased carbon sequestration. The scientists studied nine species from whales to wolves and wildebeests, elephants, and American buffalo.

They found that preserving or restoring populations of just these few animals would help ecosystems capture and additional 6.41 billion tons of carbon dioxide each year. Nature Climate Change (2023)

A few years ago, I read the book below about using animals to remove carbon from the air and use it to build humus in the soil and restore the organic matter and fertility. The numerous case studies indicate animals can be a powerful tool to help mitigate climate change.

**Geotherapy- Innovative Methods of Soil Fertility Restoration, Carbon Sequestration, and Reversing CO<sub>2</sub> Increase**, Edited by: Thomas Goreau, Ronal Larson, Joanna Campe, CRC Press, 2015, ISBN: 13:978-1-4665-9539-2

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I read an interesting article the other day that was in the Agronomy Journal (2022) on using microbes to increase carbon sequestering, increase grain yields and use less fertilizer. This was the result of 30 different studies that used data collected over ten years.

The researchers found that by inoculating Maize (corn) with only two types of bacteria, one that makes phytohormones and one that fixes nitrogen they could reduce fertilizer requirements by 25% but increase yields.

Using this method, they also reduced costs by \$15/acre and reduced CO<sub>2</sub> emissions by 236 kg equivalents (519 pounds).

All we have to do is study nature and follow what God has given us to solve many of our environmental problems.

**A**s gardeners we all know how important light is to grow healthy plants. Plants have evolved to use the visible portion of sunlight but not the ultra-violet or higher frequencies of sunlight.

Researchers in Japan used the element europium (Eu) to make a thin film coating. This coating can be applied to plastic sheets that converts the energy in ultra-violet light to red light frequencies that plants can use for photosynthesis.

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Visible light passes on through hence with the conversion of ultra-violet light more usable energy from sunlight reaches the plant. This will allow greater productivity for many plants especially in lower light latitudes, winter, or cloudy winter days.

Speaking of energy, researchers from several universities have published a fascinating article on how swarming insects (bees, locust, etc.) can contribute/produce as much electrical energy as a thunderstorm cloud.

This type energy in the form of electricity helps shape weather events, lifts spiders up in the air to migrate over large distances, or help other insects find food.

Historically we have studied how physics affects biology, now we are finding that biology can also be affecting the physics of our environment. Journal iScience (2022).

**M**ost gardeners know that the neonicotinoid family of pesticides are very harmful to our pollinators from bees to butterflies. We had to quit purchasing milkweeds from some commercial growers in our area, as they had been treated with these chemicals. When a Monarch butterfly lays their eggs on the treated plants the larval hatch and soon die.

The EPA has failed to act and protect people and wildlife. Hence, last year New Jersey became the first state to restrict the usage of these toxic class of chemicals. Five other states have similar legislation in progress (Maine, Maryland, Massachusetts, New York, and Rhode Island).

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