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NEWS FROM THE WONDERFUL WORLD OF SOIL AND PLANTS

By John Ferguson

Subject: carbon pollination plants sound black cumin fungi leather

I read an interesting statistic the other day on carbon and soil, in the crop science newsletter. Modern agriculture has resulted in an estimated loss of 133 petagrams of carbon from our soils. A petagram is a trillion kilograms!

Carbon lost from the soil forms carbon dioxide a major greenhouse gas. The salt-based artificial fertilizers release nitrous oxides and ammonium to the atmosphere which are dozens of times worse than carbon dioxide in contributing to climate change.

As a species we need to quit destroying our soils and our health with toxic chemicals and use modern biologic methods to start building or regenerating our soil.

This means quit placing organic waste into landfills, and recycle it into compost and mulches, to rebuild our soils organic matter.

A few months ago, I was listening to a local gardening radio show. There was a lot of issues with a lack of fruit set due to a lack of pollination. Researchers in England have found that moths are more efficient at pollinating plants than the day flying insects like bees and butterflies.

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Outdoor floodlights, street lights, etc. are causing a loss of our moth pollinators along with our bats (that also pollinate) and some bat species are voracious eaters of mosquitos.

Hence, a couple ways gardeners can help is turn off outside lights when not outside using them and plant both host plants and night blooming flowers for the moths. Leave stags for bat homes or add bat houses for the bats.

A research paper published in the journal Cell (2013) by scientists at the University of Tel Aviv have found that plants emit sound when they are stressed.

They discovered that each type of stress caused plants to emit different sounds. These sounds were in the 40-80 kilohertz region far outside of human hearing (20-20 kz).

Healthy plants only emitted one sound per hour while stressed or dehydrated plants emitted dozens of sounds per hour (Were they crying for help?). From the level and type of sound the researchers were able to identify the type and severity of the stress.

The plant we know as Black cumin (*Nigella sativa*) is known for its medical properties. The seeds have been used for thousands of years as a spice and condiment. The bible mentions this plant as a “curative black seed.”

Several studies have now shown black cumin to be highly effective for the treatment and prevention of COVID-19. The combination of vitamin-D and nigella sativa have been

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found to be “remarkably effective” for the prevention and treatment of viral infections. There are over 1,900 publications on the benefits of this plant.

We often talk about fungi in this column. However, this is on a novel use of fungi to produce synthetic leather, a vegan leather if you will. The leather is made from the threadlike hairs of the fungi that we call mycelium.

Researchers at Vrije University in Brussels have found a way to grow a fungal mat that floats on a liquid substrate. When thick enough they skim the fungal mat off and dry it (gently bake it), forming a leather like substance.

What I thought was cool was the fact if you tore the jacket, one could wake up the spores and the fungi would start growing again and heal the tear. Self-repairing clothing. *Journal of Advanced Functional Materials* (2023)

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