

New nutrient sources, ag contaminants, plus the campaign for natives

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## COMING UP THIS WEEK:

- The Future of Nutrients
- Ag Contaminants
- Campaign for Natives
- US Biochar Initiative
- Report from the MT Outpost



## The Future of Nutrients: Insects & Electricity?

Rising fertilizer costs have you down? Well, here's some research that has everyone excited. Pamela Andrade of UC Davis delved into two newer developments in [THIS ARTICLE](#) on the American Floral Endowment website.

First off: They've been looking at using insect byproducts in nutrient management. Insect frass (aka manure) accumulates in mealworm production systems and is a source of both nitrogen and organic matter, making it a contender for use as a nutrient source in substrates.

Then there are the chitin-containing molted exoskeletons, which are shed during insect growth. "Chitin and its derivatives have been associated with enhanced microbial activity in soils, gradual nutrient release, and stimulation of plant growth," writes Pamela.

UC Davis has been evaluating soil amendments containing the molted mealworm exoskeletons and other sources of chitin. "Across the experiment, mealworm exuviae consistently produced stronger plant growth compared with the other materials tested, particularly across biomass-related measurements."

Her research team has also been looking at plasma-activated water (PAW), which is created when electrical energy (using plain old electricity) is applied to a gas under atmospheric conditions, with the potential to create nutrients right in the greenhouse. It produces compounds that, when dissolved in water, form plant-available nitrogen compounds, such as nitrate and nitrite. And studies indicate that PAW might also influence growth, nutrient uptake and stress response.

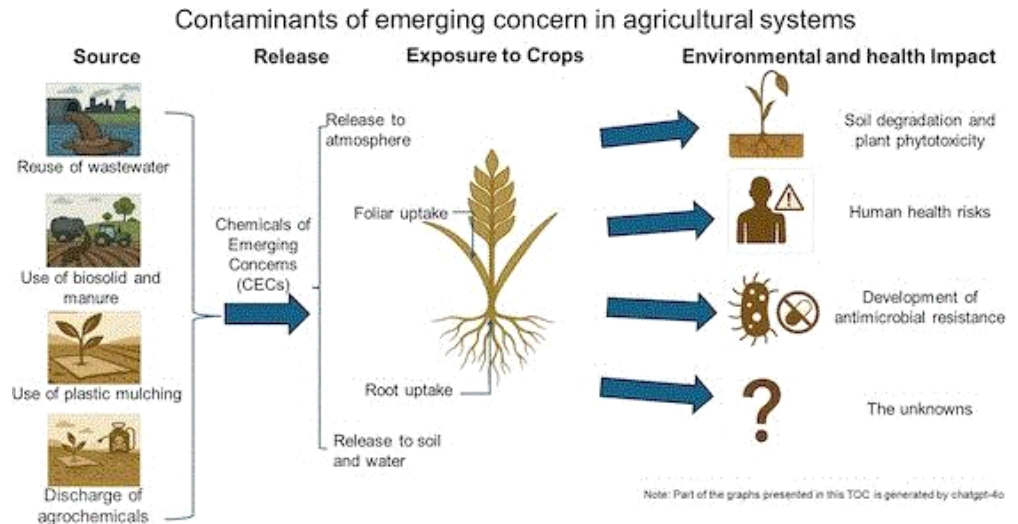
It may sound futuristic, but surveyed growers say they're interested in trying out the PAW systems in their own operations.



## Ag Contaminants of Emerging Concern

There's a growing list of things that can contaminate soil, and while the headlines often focus on their impact on human health, a new study, *Contaminants of emerging concern in agricultural soils: Current understanding, overlooked issues, and future priorities*, looks at the overall potential consequences, including plant physiology and overall soil health. The study was published in *Thomas Review* earlier this year.

First off, the list of “contaminants of emerging concern” (CEC) includes pharmaceuticals, microplastics, engineered nanomaterials and PFAS (aka forever chemicals). Even at low concentrations, they can alter plant physiology, soil health and the environment. For instance, micro and nanoplastics have been shown to impact soil pH, aggregation, bulk density and water-holding capacity. Plus, they can impact microbial activity and increase nutrient competition between plants and microbes.



But hey, it's not all negative impacts; a few of those CECs actually increase water-holding capacity and at times have shown increased crop yield.

There's a lot at play here. The authors of the study address the effects on plant, soil and human health, but they also acknowledge that the diverse array of chemicals involved produce a range of impacts, from antagonistic to cumulative to suppressive. Everything here is highly variable and context-dependent. Which means that assessing risk is challenging, and there's still a lot to learn.

But if you're looking to grasp the basics on how these contaminants impact growing, humans, and the environment, **TAKE A LOOK**. These CECs aren't going away anytime soon.



## Campaign for Backyard Nature

Wild Ones, a nonprofit that promotes native landscapes, is one of the partners in this year's "Less Lawn More Life" campaign by Wildr. Presented as a free 12-week program, everyone who signs up gets a weekly email with simple steps to create a healthier habitat in their yard. Participants also get a yard health scorecard and fun rewards along the way, and they have a bunch of experts lined up to answer questions throughout the campaign.



I signed up, so we'll see what each week contains, starting on May 7. One of my favorite authors, Robin Wall Kimmerer, is kicking off the campaign. I fell in love with her book *Braiding Sweetgrass* a long time ago, but I just learned that Robin recently launched her own grassroots movement called Plant Baby Plant.

FYI, I'm seeing a lot of crossover promotions/endorsements between Wild Ones, [Plant Baby Plant](#), and Doug Tallamy's [Homegrown National Park](#). They're all trying to get more native plants into the home landscape.



## New Rebrand for US Biochar Initiative



As biochar continues to grow, the US Biochar Initiative just announced a new name, logo and

website. Going forward, they are the American Biochar Institute with a mission to “deliver independent science-based information, technical assistance and standards on biochar.” Originally formed to promote the use of biochar and to increase biochar production in the U.S., the rebrand, they say, better reflects the growing and maturing biochar industry and its needs. Their new website is [biochar.org](http://biochar.org).

The Institute will also be co-hosting, along with the U.S. Biochar Coalition (a trade association), the [North American Biochar Conference](#) November 16-18 in New Orleans.

## Report from the MT Outpost



In the last issue of *GreenTalks*, I was boasting about how early spring arrived in Montana this year. We even got some early-season fishing in. Sandal weather.

Update: It has now been snowing for five days straight, which is to be expected up here in the spring, but given that it was dry nearly all winter, it still feels odd. However, we're all loving the moisture and savoring the green tint to the valley. The white star lilies seem to be the perfect match for the color palette right now. And the deer finally have enough green grass to leave my shrubs alone.

Meanwhile, there's a fox that has taken to late-afternoon hunts along the creek—a pattern that has repeated itself most every spring—and we usually begin seeing kits not long after. The dusky grouse have also returned to the creek bottom.

Yet, we're all eying wildfire season like an unwelcome relative who might move in at any time. (Right before the snow arrived, a large fire broke out on the other side of the Beartooth mountains, giving us a morning of hazy views that don't usually arrive until July or even August.) A lot depends on the spring weather yet to come, so I refuse to offer you full doomsday predictions. Just a hint of uneasiness is all.

Until next time,

A handwritten signature in black ink that reads "Jennifer". The script is cursive and elegant.

*Jennifer Duffield White*

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