Organic farming has a sustainability problem — and now the EU is in a dilemma of their own making

European Union (EU) agricultural scientists are in a bit of a pickle. I'm not sure to what extent it is one of their own making or how much it was imposed upon them by politics and public opinion, but they are now confronting a dilemma they at least ignored if not helped to create. The question is – how best to achieve sustainable agriculture in a world with a growing population? This problem is made more difficult by the fact that we already tapped the most efficient arable land, so any extension of agricultural land will necessarily push into less and less efficient land with greater displacements of populations and natural ecosystems.

The dilemma stems from the EU's regulatory support for organic farming. The core problem is actually the very concept of organic farming itself, which is rooted historically and ideologically in pseudoscience. Organic farming is philosophy-based rather than science-based farming – it is a manifestation of the appeal to nature fallacy. The result is a set of specific rules in order to qualify as "organic" that mostly represent a rejection of modern agricultural technology. There are some good things in there as well. Sometimes low tech methods are best. But organic farming does not use the best most sustainable methods. It uses the most "natural" methods, by some vague, arbitrary, gut-feeling criteria. So, for example, you can use pesticides, but only if they are derived from natural sources, even if they are less effective and more toxic. You also can't irradiate food, because irradiation seems scary (even though it safely reduces food spoilage thereby reducing waste and foodborne disease).

Copper sulfate is considered an acceptable organic pesticide — yet it is toxic to both humans and the environment.

And of course the organic farming industry is driving the biggest controversy in agriculture – the use of genetically modified organisms (GMOs). This is the focus of a new paper by EU agricultural scientists who now have to confront the organic farming hobgoblin which is getting in the way of sustainable farming. Here are the highlights: They open by dispensing with the most common argument used to dismiss the need for GMOs and justify organic farming inefficiency –

> Sustainable food systems will require profound changes in people's consumption patterns and lifestyles, which is true regardless of the farming methods used and does not change the fact that organic farming often requires more land than conventional farming for the same quantity of food output.

I have made this point often myself. Sure, let's reduce food waste, reduce meat consumption, and improve food distribution. Even if we do all that, organic farming still uses more land than conventional farming, so it really doesn't address that criticism. It is a non-sequitur, a distraction. This is a common strategy in defending pseudoscience. Opponents of water fluoridation, for example, will often argue that people can simply brush their teeth with fluoridated toothpaste. Sure – but managing the fluoride content in consumer water is still a good idea with demonstrable health benefits.

Then they get to the core point:

> Some features of organic farming in the EU contribute to the Sustainable Development Goals (SDGs); other features may jeopardize the achievement of SDGs 2, 13, and 15. The negative indirect effects of additional land-use change may outweigh the positive direct effects on global climate and biodiversity, so that a large-scale switch to organic farming in the EU could possibly turn out to be a disservice to global sustainability.

Use of organic farming can reduce global sustainability through increased land use. Where have I heard that before? The science is actually increasingly clear on this point – organic farming is not good for the climate or global ecosystem. This often leads hardcore organic farming defenders to argue that we need to reduce the human population (again, non-sequitur – this does not justify inefficiency), often without stating explicitly that they are talking about mass starvation (of other, usually dark-skinned, people, of course).

Deforestation in the Gran Chacho area in Brazil. Credit: Adriano Gambarni/WWF Brazil

What do scientists do when confronted with a popular and well-funded pseudoscience? We confront this in SBM all the time. Should we aim to eradicate chiropractors or reform them? Reform has historically worked – osteopaths started out as pseudoscientific as chiropractors but were welcomed into the fold of scientific medicine when they accepted its rules. Chiropractors rejected the same offer, and now continue to be a main source of medical pseudoscience.

So – do we try to reform the organic farming industry, allow it to evolve into a more science-based version of itself, or do we try to minimize it? I could go either way, as long as the end result is the same. But I fear that reform may not be possible – the ideological roots go too deep.

We could propose an alternate approach that essentially makes organic farming redundant and takes the wind out of their sails – namely “sustainable farming”. Of course this already exists, but the organic has done a good job of branding themselves a the sustainable option when they aren’t. In reality the organic industry has taken the wind out of the sustainable farming sails, which is unfortunate. It would take a major counter movement with the backing of scientists and regulators to establish a sustainable farming standard, and allow the organic myth to wither.

The EU agricultural scientists, in this paper, have chosen another root. They wish to modify organic

farming so that it allows for GMOs, which they correctly argue are necessary in order to achieve our goals of sustainability. They are basically calling organic farming's bluff – if you truly want sustainability, then embrace GMOs. GMO technology has and is leading to crops with enhanced nutrition, higher yields (more land efficiency), drought and disease resistance, reduced need for fertilizer, and longer shelf-life. All of these technologies can be leveraged to enhance sustainability and reduce land use and the ecological impact of farming. But organic farming is opposed to it for purely ideological reasons, which they then justify with a list of demonstrable false lies.

These authors are not the first to try this strategy. A 2015 article about agricultural scientist, Pamela Ronald, makes the same point.

> But her innovations aren't limited to science. She's also trying to mend the perceived schism between genetic engineering and organic farming. To do so, she's promoting a form of sustainable agriculture that draws on both practices. Only by combining elements of each, she contends, will we have a chance of feeding the world's swelling population (expected to reach 9.2 billion by 2050) while also protecting the planet's natural resources and countenancing the effects of climate change.

As you can see this idea, that we need science-based sustainable farming and that organic farming is in the way, is not new. By the way, this is not a "perceived schism" – it is a real schism, created by the organic industry's dedication to a century-old pseudoscience and logical fallacy. I fear that these scientists don't know what they are up against. It's a little like climate scientists first realizing that just pointing out the evidence for climate change is not enough, there are actually dedicated opponents to science on the other side.

Advocating for science-based sustainable farming is a good start, but these scientists have to learn quickly that this is not just about facts, evidence, and logic. They are up against a well-funded deeply rooted cultural pseudoscience. They are brining a knife to a gun fight and are going to get slaughtered (many already have been and learned the hard way, through direct attacks and smear campaigns, what going up against the anti-GMO and pro-organic crowd can mean).

Hopefully, however, we will get a critical mass of agricultural scientists who see what needs to be done. Then those of us who have familiarity with science-denial can educate them on the history of such conflicts and what they are truly up against, and we can work together to get to our ultimate goal – sustainable farming that actually works.

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