

How did Sri Lanka's organic-only debacle begin? Simple — 'uninformed, flawed decisions based on wishful thinking'

If of us have had the experience of learning things, as the saying goes, "the hard way." That phenomenon has been captured perfectly by a meme found lately on everything from [T-shirts](#) to [sign-boards](#):

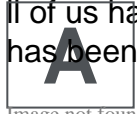
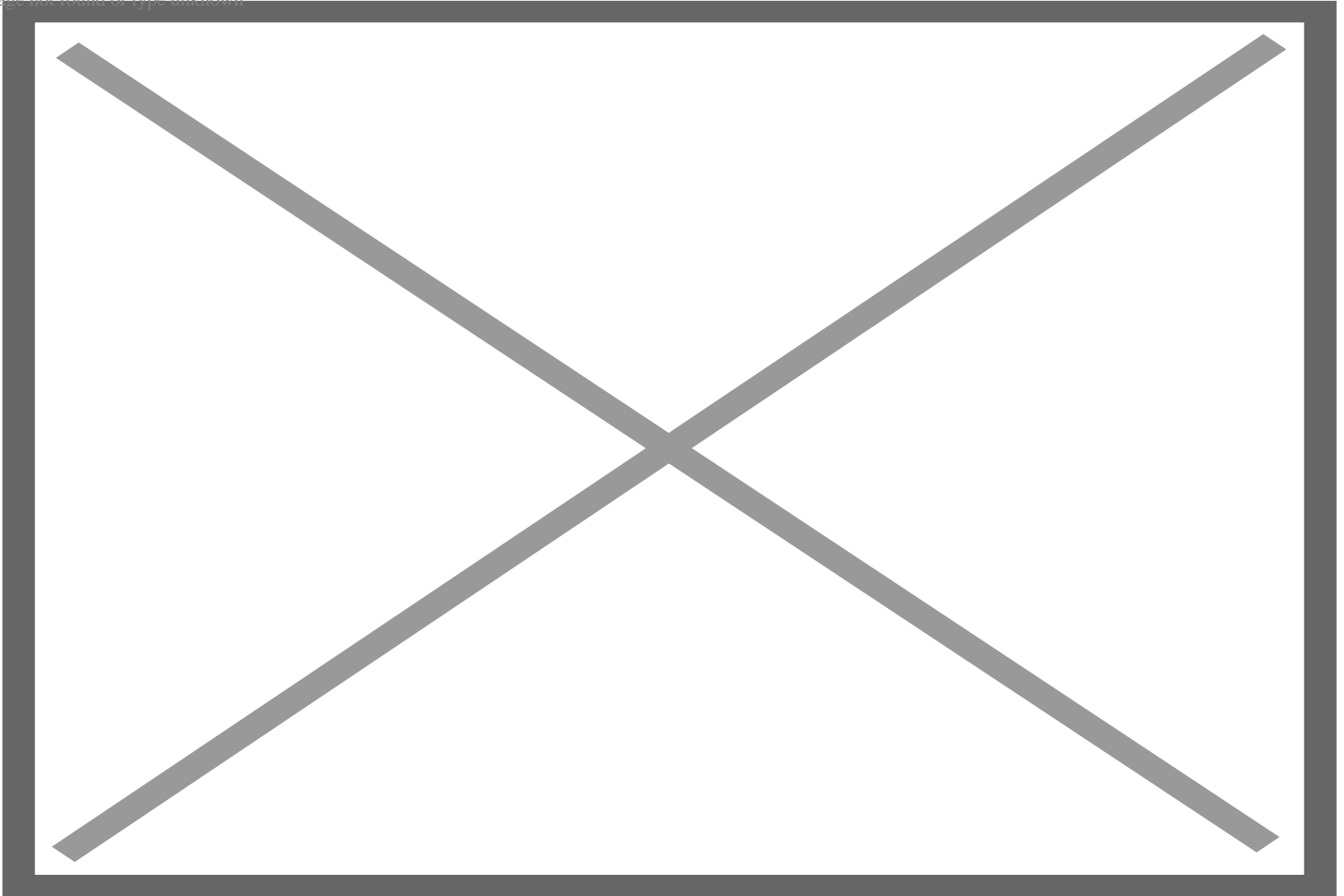


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The message is blunt but insightful, and applies to both individuals' and governments' decisions. Predictable governmental policy missteps can be costly, in terms of both lives and lucre. Consider, for example, the U.S. government's disastrous handling of the withdrawal from Afghanistan in August, which led to significant numbers of deaths and injuries, and the abandonment of huge amounts of material. Another, a near-miss, occurred in 1897, when the Indiana House of Representatives unanimously [passed House Bill 246](#), a measure that redefined the value of π , the ratio of the circumference of a circle to its diameter. Fortunately, the bill died in the state senate.

Less obvious are recent changes in international agricultural policies and their impact, which in some

respects seem to be the beginning of a slippery slope to a catastrophe worthy of a Shakespearean tragedy. The journey begins with the European Union's Farm to Fork (F2F) Biodiversity Strategy, picks up a glimmer of hope with the post-Brexit change in the U.K.'s policy on the genome editing of crops, and concludes with Sri Lanka's own-goal debacle of the "Green Sri Lanka" policy of transformation to organic agriculture.

F2F vs Brexit: A disagreement on genetic engineering

The F2F Biodiversity Strategy commits the EU to reducing the use of chemical pesticides by 50% and of fertilizers by 20%, while farming at least 25% of current agricultural land exclusively with organic farming practices. Given the inefficiency and lower yields of organic agriculture, food prices would inevitably rise, while international trade, farmers' revenues, and agricultural production would plunge. Because organic agriculture often requires tilling, which releases CO₂, efforts to reduce greenhouse gas emissions would be impaired. [A USDA-Economic Research Service impact assessment](#) predicts that the EU's policy initiatives would reduce gross farm income by 16%, with an annual increase in per capita food cost of 130 euros (\$151). Other analyses, such as [this](#) and [this](#), are more pessimistic.

The reviews described above do not consider the role that Brexit — the U.K.'s withdrawal from the European Union — will play with respect to the EU and other U.K. trading partners, now that they have decided to change trajectories from the ill-fated one taken by Europe, and instead embrace new technologies in agriculture such as genome editing. Although the break from EU agricultural policy could disrupt familiar, well-established relationships, the risk is well worth it, as new trading opportunities will be forged among nations that are more than willing to employ innovations in agriculture. Moreover, it is the "scientifically correct" thing to do, inasmuch as there is a [seamless continuum of techniques of genetic modification](#), ranging from selection and breeding, through mutagenesis, wide crosses, recombinant DNA technology, and, most recently, genome editing. Thus, there is no scientific justification for excessive regulation of the newer, more precise, more predictable technologies.

Until now, the UK has been a principal export market for the EU, so its digression from the EU F2F policy will ally Britain with new trading partners that welcome cutting edge new breeding technologies, including genome editing. While it may be a big step for UK policy, however, it is far from a complete one. Illogically, Britain continues to be squeamish about recombinant DNA-modified crops, the predecessor genetic engineering technology of genome editing.

When related to crops, genetic engineering is an umbrella term that involves altering a plant's genome. This can include the deletion (or silencing) of a plant's genes, the insertion into a crop's genome of the same gene from a closely related crop ("cisgenesis"), or even from a completely unrelated organism (transgenesis). Plant breeders have long been able to introduce desirable new traits with a variety of techniques, including mutagenesis, wide cross breeding, polyploidy and protoplast fusion. Recombinant DNA technology, or "gene splicing," which has been around since the 1970s, has elicited significant opposition from activists. Genome editing, the newest of genetic engineering technologies, can do the same sorts of things and much more. All of these genetic USDA modifications have the same desired result: the introduction or enhancement of an advantageous trait, such as resistance to pests, higher yield, or enhanced nutritional content.

Britain's acceptance of genome editing as an important tool to improve the efficiency and yield of their agriculture — by creating disease resistant, nutritionally improved crops — while throwing technologies such as recombinant DNA under the bus is not atypical. There is a widespread misimpression that because recombinant DNA modification is often transgenic — involving the introduction of heterologous, or foreign, DNA, such as a gene that expresses a protein toxic to insect pests — it is somehow "less natural" than genome editing, in which the genetic modification is more limited and may not be transgenic. Genome editing, on the other hand, has been lauded as a technology that does not require the insertion of foreign DNA, celebrated as a way to change a genome by merely making a discrete, precise change.

Meanwhile, the EU maintains that for regulatory purposes, genome-edited and transgenic crops be classified (read: stigmatized) as no different, in the sense of needing to be subject to excessive and *sui generis* regulation. That restricts opportunities for their own scientists to conduct research and development that involves field trials with new crops that, for example, may be very useful to address drought, floods, or climate change. The post-Brexit British deviation from the EU's approach is certainly a step forward, albeit a maddeningly small one. The F2F strategy, if implemented in the UK, would without question disadvantage British farmers, inflate consumer prices, and weaken food security.

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All-organic Sri Lanka: A (predictable) disaster

As the UK plots its course on this and many other issues, and the EU becomes even more entrenched in its unscientific, regressive agricultural policy surrounding organically grown vs genetically engineered crops, it seems a propitious time to review an extreme example of a predictably awful agricultural policy: Sri Lanka's decision last summer to convert the country *completely* to organic agriculture. What can we learn from their decision to become the first country to pursue 100% organic food production and ban the use of all chemical pesticides and fertilizers?

How many ways can you spell disaster? Quite a few it seems, as farm incomes, food security and the

nation's economy have already tumbled. Following the doctrine of the new "Green Sri Lanka" task force policy, Sri Lanka banned the importation of synthetic fertilizers and other chemical inputs, including pesticides and herbicides. As a result, agricultural production has decreased and rural poverty is up. For example, tea production has been reduced by 35%, and rice paddy farming by 25% with the conversion to organic manure. Similarly, coconut yields are predicted to drop by 30%. On average, a drop in agricultural productivity of 20% could result in a drop of gross domestic product of more than 3%.

In October, Sri Lanka's agricultural policy disarray took some [new, bizarre turns](#). First, the government violated its own ban by importing from Lithuania 30,000 tons of potassium chloride, calling it (inaccurately) "organic fertilizer" — a characterization reminiscent of Newspeak, the fictional propagandistic language coined by George Orwell in "Nineteen Eighty-Four," marked by euphemism, circumlocution, and the inversion of customary meanings. Then, days later, the government formally backed down, reversing the ban on imports of chemical fertilizers.

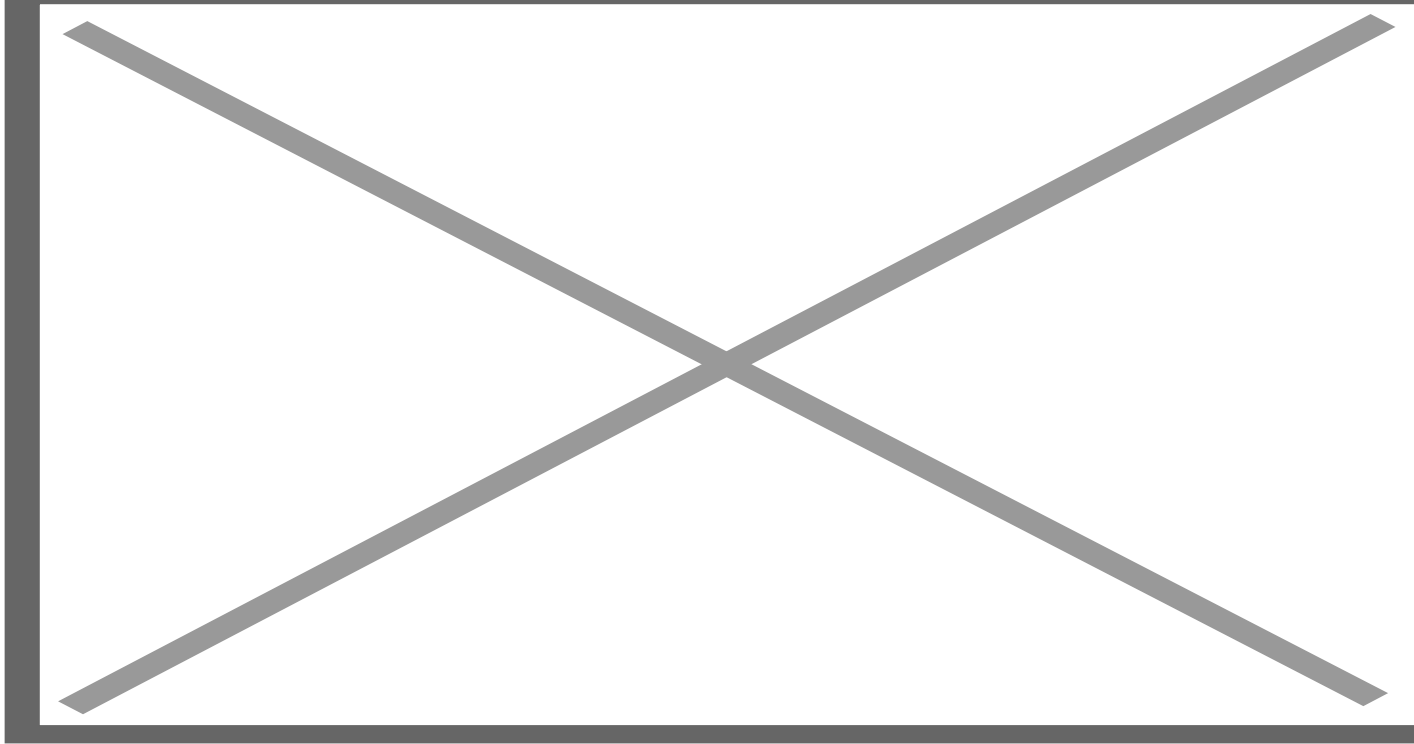
Lysenko's throwback

How could this ongoing debacle have happened? Simple — uninformed, flawed decisions based on wishful thinking instead of science. The task force excluded many scientists in agriculture and replaced them with others who have questionable credentials. This new "task force" apparently lacks respect for evidence-based facts; rather, the source of their logic and reasoning is obscure. Even more disconcerting is the fact that this reversal of agricultural policy came in the midst of the COVID-19 pandemic, which was accompanied by higher food prices, trade disruptions and a freefall of the tourist industry. That was no time to try a dubious, untested, unscientific policy.

The conversion to an extreme, primitive, all-organic farming policy should serve as a warning sign, not only for the EU, but also for developing countries under its influence. Countries that unwisely follow the same path could quickly find themselves in similar dire straits. In the best of times, organic agriculture's yields are, on average, about 20% lower than conventional agriculture. And that is when there is plenty of organic waste such as manure or compost. At present, there is not nearly enough waste to go around in Sri Lanka.

This ideological idiocy is reminiscent of the policies instituted in the old Soviet Union in the 1930s, when Communist ideologue [Trofim Lysenko](#) was put in charge of the nation's agricultural policy. He considered plant genetics to be reactionary and evil, because he believed it reinforced the status quo and precluded the capacity for change. He even [denied that genes existed](#) and banned the use of pesticides and fertilizers. He believed that plants and animals in the proper setting and exposed to the right stimuli could be remade to an almost infinite degree. His "modernization" of Soviet agriculture resulted in crop failures, famine, and the death of at least 7 million. Not having learned from the catastrophe of the USSR, in the late 1950s, Communist China adopted Lysenko's methods and [endured even worse famines](#). At least 30 million are thought to have died of starvation.

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Trofim Lysenko. Credit: Corbis

Sri Lanka is only the most recent country to ignore the lessons of history. The substitution of ideology and wishful thinking for science exacerbates food insecurity and rural poverty, particularly in a country such as Sri Lanka which has a large fraction of its population living on the edge of extreme destitution. Is this what Europe wants to emulate? The recent finding that [copper sulfate, a fungicide widely used by French \(and other\) organic farmers](#), has permeated the entire population of France, and in particular children who consume organic products, should be a warning to Europeans and others. Although copper at sufficient levels is toxic to both humans and the environment, it has been the “go to” product for organic farmers who have little else at their disposal to protect certain of their crops. If this toxic compound continues to be incorporated into the F2F biodiversity strategy, the situation will become increasingly grim.

Policymakers worldwide should heed the unfortunate examples of the EU and Sri Lanka and adjust their policies accordingly. As philosopher George Santayana reminded us, those who cannot remember the past are condemned to repeat it.

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