



A farmer holds gene-edited corn that was produced on a farm in Minnesota. Regulations on gene-edited crops are less stringent in the US than in the EU

marketplace unlabelled and would therefore also be difficult to trace if any adverse outcomes were to be found,” he adds.

In Antoniou's view, gene editing is “unquestionably” a genetic modification procedure and should continue being regulated in the UK as it is in the EU.

But many scientists argue that gene editing is crucial to supporting a more sustainable food system.

“Genome editing is already used in medicine and has immense potential for tackling major agricultural challenges related to food security, climate change and sustainability,” says Prof Denis Murphy from the University of South Wales.

Denby agrees and says gene editing can play a part in making the UK's food system more sustainable, healthy and affordable, while admitting it's “not going to be a magic bullet”.

But for Antoniou the focus really needs to be on the agricultural system as a whole, rather than improving individual crops and seeds.

Gareth Morgan, head of farming and land use policy at the Soil Association, has called gene editing a “sticking plaster” that diverts vital investment and attention from other more effective solutions.

“The focus needs to be on how to restore exhausted soils, improve diversity in cropping, integrate livestock into rotations and reduce dependence on synthetic nitrogen and pesticides,” he says. “We want to see immediate progress in these areas rather than using Brexit to pursue a deregulatory agenda for genetic modification.”

by **JOCELYN TIMPERLEY**
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COMMENT

COVID-19 IN 2022: IS THERE HOPE FOR A BETTER TOMORROW?

Despite the doom and gloom of the pandemic, light remains at the end of the tunnel. But what can we realistically hope for in 2022?

The year 2020 is likely to live in our memories as the year COVID-19 brought the world to a standstill. Many are hesitant to hope for a more normal 2021, choosing to tentatively take life one day at a time as our future remains uncertain. But how does the world appear if we cast our eyes forward to 2022?

Although the world has experienced pandemics in the past, the closest example we have to a blueprint would be the severe acute respiratory syndrome (SARS) epidemic. This was a coronavirus that cost over 770 lives, largely in eastern Asia, during the early 2000s. But after complications cropped up in animal trials for a SARS vaccine and the virus died out in humans, research funding dried up. Little progress was made into coronavirus vaccine research.

Now, with multiple COVID-19 vaccines available and more on the horizon, life post-vaccine is imminent for those in countries that can afford it. But the dangers of vaccine nationalism may mean that poorer countries will go unvaccinated until 2022, 2023 or beyond, by which time the threat of new variants – given the opportunity to spread and potentially be resistant to current vaccines – is likely to grow.

Although Moderna has confirmed its vaccine is still effective against the new variants that have emerged so far, this news will make little immediate difference to the Global South, as all Moderna's vaccines for 2021 have been bought by richer countries. Despite the vaccines preventing severe disease, it's still left to be seen if they reduce transmission and how long immunity will last; some experts believe annual vaccinations may be necessary. So for those who can't be vaccinated and who exhibit different responses to illness, ongoing research into multiple therapeutics, such as antivirals and antibodies, could be life-saving.

LONG ROAD

While our bodies are capable of some immune response to the virus, assuming that we'll eventually ‘get used’ to COVID-19 is a deadly gamble – not dissimilar to

“The danger of vaccine nationalism may mean that poorer countries will go unvaccinated until 2022, 2023 or beyond”

the ‘herd immunity without vaccination’ suggestions that prevailed early in the pandemic and proved to be harmful. Likewise, while there are other human coronaviruses that cause colds, a comparison with COVID-19 seems unhelpful as research has shown COVID-19 infects both the upper and lower respiratory tract. Also, whereas life often returns to normal after recovering from a cold or the flu, the ‘long-COVID’ phenomenon has seen many continue to suffer with multiple organ damage, fatigue, muscle aches and difficulty breathing, for months after the initial infection. Even 15 years after the SARS outbreak, a follow-up study found that many are still experiencing reduced lung-diffusion capacity.

To reduce the number of strains emerging, a zero-COVID strategy is the best course of action: by limiting community transmission. Even if a more harmful strain were to evolve, it would eventually die out as SARS did. This can be achieved through a cocktail of interventions, like maintaining hand hygiene, wearing masks, a functioning test-trace-isolate system, government support (such as financial remittance during quarantine) and restrictive measures that hinder social gatherings. While each intervention doesn't provide complete protection, the more interventions there are, the better the protection is.

It may be that as the situation becomes more controlled, there will slowly be a re-introduction into shared indoor spaces, such as offices. How much we limit community spread is what will determine if COVID-19 continues to circulate, like colds and tummy bugs – only more dangerous.



Our next challenge becomes one of logistics, careful planning, and whether equitable access for countries unable to afford the vaccine for their most vulnerable will be championed. But the progress we've made in one year since the World Health Organization's declaration of COVID-19 as a Public Health Emergency of International Concern has been remarkable. Rapid genome sequencing, scientific investigation and multiple vaccine candidates mean elimination is possible. So what state will the world be in a year from now? That's up to us: as individuals, as government leaders and as a global society. **SF**

by **LOIS KING**

Lois is a PhD candidate in global health governance at the University of Edinburgh.

ABOVE Global access to COVID-19 vaccines is imperative to reduce the chances of outbreaks of new variants