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## Time for ASEAN to Step up to Biotechnology in Food Production

*By Paul Teng and Jose M. L. Montesclaros*

### SYNOPSIS

*China is reportedly planning to double the land it is using for the production of genetically-modified corn amidst the global rise in food-related supply chain tensions. When an agriculture giant like China shifts towards the use of biotech crops to produce high-yielding seeds, it behooves ASEAN to do so as well to assure itself of sufficient feed and food, and to achieve the goals set out in several recent ASEAN declarations pertaining to sustainable agriculture, climate resilience and food security.*

### COMMENTARY

States have generally adopted conservative stances toward genetically-modified (GM) food biotechnologies given the claims, yet to be scientifically proven, about their negative side-effects on health and the ecosystem.

Recent events have forced governments to be more open and more science-based in their approach, and to recognise that GM technology's benefits may outweigh any potential costs. The COVID-19 crisis and the economic losses, supply chain disruptions, and geo-political tensions it induced, and the consequential price hikes, have forced many Asian countries to be more pragmatic in their production of food.

China is reportedly ready to double its land given to [GM corn](#) production and to increase its land under [soybean](#) in 2024, so as to reduce its huge imports of these two commodities which come mainly from the Americas.

In the ASEAN member states (AMS), more can be done to exploit the potential of biotechnology in enhancing food security. Malaysia and the Philippines have already repositioned themselves to reduce their dependency on commodity imports which cost them millions of dollars.

In 2023, ASEAN agriculture ministers endorsed several initiatives to grow more food sustainably in the face of intensified challenges due to climate change effects, and increased concerns about the long-term impact of agriculture on the environment.

AMS could benefit by following the lead of agriculture giant, China, in adopting modern biotechnology through GM and gene-edited (GE) crops produced by New Plant Breeding Technology, which describes a suite of biotechnology-based methods designed to improve plant traits rapidly and precisely. ASEAN needs to shed its hesitancy towards genetically-modified organisms (GMOs) specifically, and to up its exploitation of the new biotechnologies.

## **2023 a Year of Pivotal Initiatives**

ASEAN, through its forum for ASEAN Ministers on Agriculture and Forestry (AMAF), endorsed important policy statements in 2023, notably the ASEAN Regional Guidelines for [Sustainable Agriculture in ASEAN](#) and the ASEAN Declaration on [Strengthening Food Security](#). These came on top of the ASEAN Regional Guidelines for Promoting [Climate-Smart Agriculture Practices](#), Volume 3 (2022), and the ASEAN Guidelines on Promoting the [Utilisation of Digital Technologies for ASEAN Food and Agricultural Sector](#) (2021). These underscored the realisation that the region is facing serious challenges to its agriculture and food systems, and the need for new approaches to ensure regional food security.

The past year was also marked by increased trade tensions arising from inter-regional geopolitical rivalries with food production negatively affected by supply chain disruptions caused by the Russo-Ukraine war, Houthi attacks on shipping in the Red Sea arising from the Israel-Hamas war, and by natural calamities and climate influences on production. The net result was that many countries, including China, Indonesia, the Philippines, and Malaysia, affirmed directional changes towards increased domestic production and lower import-dependency.

The actions of China, as the world's largest importer of corn and soybean, and in some years, rice, are watched by other importing countries as its demand dwarfs that of smaller countries. Therefore, the announcement in late 2023 by China's Ministry of Agriculture and Rural Affairs that a total of [37 GM corn and 14 GM soybean](#) varieties had been approved for commercial planting on about [1.66 million acres \(671,000 hectares\)](#) was important given its potential to impact the supply-demand dynamics of these two commodities.

China's action reflects its assessment that the use of [improved seeds](#) developed through biotechnology is an important innovation. Indeed, in 2017, a Chinese government corporation acquired one of the world's foremost seed companies (Syngenta) to access improved seeds, which gave it a leg up.

## **The Current Downside in not Adopting Modern Biotechnology**

Currently, the yields of most crops in Asia are dismally low. Even with rice, [yield gaps are high](#), with many farmers able to derive only half of the potential yield inherent in seeds. Although the reasons are manifold, technology, especially seed technology, can play a key role in overcoming these yield gaps. Almost every corn and soybean

exporting country has adopted new biotechnologies and GM crops, with significant benefits as shown by the experience of smallholder farmers in the Philippines who grow [GM corn](#).

Besides stepping up its game to make up for current crop yield deficiencies, ASEAN could take a pro-active, forward-looking approach by using modern biotechnology tools such as [GE](#) to breed new higher-yielding crop varieties that are more tolerant of drought and flooding, pests and diseases, and which make use of water and fertilizer more efficiently.

### **Need for Regional Collaboration**

Although ASEAN has collaborative mechanisms such as the ASEAN Sectoral Working Group on Crops (ASWGC) and the ASEAN Technical Working Group on Agricultural Research and Development (ATWGARD), there is little evidence of initiatives to pool resources for synergies that could expedite research in achieving common targets. For example, given the huge imports of soybeans for animal feed and wheat for food, collaborative research on new biotechnology-enabled soybean and wheat varieties which suit ASEAN agro-ecologies, would help to reduce the region's [import dependency](#).

ASEAN has many excellent agricultural research entities but currently, influenced by domestic interests, most of them work independently on disparate issues. ASEAN dialogue partners and donors could assist by supporting collaborative projects among select AMS to solve common problems.

The region has at least one entity that facilitates cross-AMS research in agriculture, i.e., the Southeast Asian Regional Center for Graduate Study and Research in Agriculture ([SEARCA](#)), which has alumni in all the ASEAN countries. Multilateral and bilateral donors could also work with such entities to define and support research addressing common regional needs.

### **Encouraging Signs of Change**

ASEAN was an early mover on GM crops in the 1990s, but in the intervening years, only the Philippines and Vietnam (and Indonesia in a small way) moved to use biotechnology to benefit their farmers. But change is in the air.

The unproven fear of new biotechnologies raised by anti-biotechnology activists in the 1990s have now been largely discredited. Instead, [compelling evidence](#) has built up to assure us of the safety of GM and biotechnology-derived crops. These crops have proven that they can contribute to increased yield while reducing loss or waste. The forward-looking moves by China to adopt new biotechnologies are a testament to the contribution the new crops have made over the past twenty years in enhancing food security.

At the National Biotechnology Symposium held in Malaysia in November 2023, the Minister of Science, Technology and Innovation pledged renewed support for biotechnology under the [National Biotechnology Policy 2.0](#) to improve food security and reduce food import costs. The [Philippines](#), as the first mover in ASEAN to grow

GM corn, is also showing the way by being the first in ASEAN to approve a GE banana with reduced fruit browning developed by a British biotechnology company named [Tropic](#).

So far, however, these applications are only encouraging signs of change. The success of ASEAN's foray into sustainable agriculture and food systems will ultimately depend on how well it adopts modern science and technology to achieve its aspirations. It is also necessary for increased public education on the benefit of GM crops for ASEAN.

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