Review

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Food (security) for thought in Asia

By Paul S. Teng, J. Jackson Ewing & Margarita Escaler , For The Straits Times

What modern societies need to do now is to continue improving the knowledge for sustainably managing human-created and human-managed ecosystems in agriculture. We do not have the luxury of going back to the pre-modern norms of farming if we are to maintain the current living standards of the majority of people, and keep the price of basic food commodity items affordable.

Any significant move away from modern farming means that the food security of those living in cities will be threatened. This is especially so in the supply of foodstuff that requires countrysides to grow, such as rice and wheat. -- PHOTO: XINHUA

RECENT comments by the Prince of Wales at Georgetown University on food security have reignited a contentious debate: Does sustainable food production require modern technology and inputs that affect the environment?

It is important and timely to frame this debate against the backdrop of two recent announcements. The first was the Asian Development Bank's claim that more people will be driven into poverty because of spiralling food prices. And the second was the United Nations' assertion that the world's population may exceed the nine billion projected by 2050 or even exceed 10 billion.

More than half of the world's human population are now living in cities; in Asia, at least 70 per cent will live in cities by 2050. This demographic change underlies the importance of the nexus between growing food and sustaining the environment to support farming. Even with the best efforts from science, technology and land-use planning, cities will not be able to produce many of the food items now commonly expected in modern societies.

How will the additional billion mouths be fed, given that most of these people will live in cities? How will food be grown when there will be fewer people farming and less land and water available for food production?

It has been estimated that in the next 50 years, humankind will consume as much food as in the past 10,000 years. What will sustainable food production look like in Asia where the number of hungry mouths far exceed the entire population of Britain?

While the 1960s 'Green Revolution' had in some areas led to environmental degradation, it also helped stave off mass starvation in Asia. The late Norman Borlaug, Nobel Peace Laureate in 1971, warned that if modern technologies are not used to maintain crop yield increases, more forests would have to be cut down to produce enough food for the growing human population. There will be about four billion more mouths to feed in the next 40 years, mainly from Asia. And that does not include the current one billion hungry people estimated by the World Bank!

Instead of knocking technology, the germane question to ask is what sustainability means in an Asian context. All farming involves environmental disturbance. But what kind of technology supports sustainable food production at an acceptable level of environmental impact?

Agriculture has been and will continue to require technological innovations. The early strains of today's modern staples were low-yielding and possessed many natural traits that made them difficult to harvest. Through a process of selection over the centuries, humans were able to gradually improve the strains of such crops. But it was not until the 20th century that modern plant breeding techniques were introduced and strains with more manageable traits were developed.

These improvements meant that farming had become specialised and could be counted on, barring unexpected disasters, to feed growing populations. Some have classified the evolution of farming systems along a typology of feeding capacity.

The 'slash and burn' systems, still practised in parts of Kalimantan and among hill tribes in the Mekong sub-continent, can feed only single families. The intensive modern rice fields of Vietnam and Thailand, in which modern rice technology is employed, have enabled one farm family to produce enough rice to feed another 20 to 30 families.

This modern rice technology includes improved rice strains, fertiliser, and pest and water management techniques. The International Rice Research Institute has calculated that it takes a rice farmer over 100 hours of ploughing a hectare of land with a caribou to get it ready for planting. Mechanisation has reduced this time, reduced the drudgery and has made life easier for small farmers.

Does the conundrum become a paradox? Rice fields are complex man-made agro-ecosystems. They can be managed in such a way that ecosystems are protected without reducing the need for higher yields to feed growing populations. Environmental degradation is not the norm in modern farming despite what doomsayers claim.

What modern societies need to do now is to continue improving the knowledge for sustainably managing human-created and human-managed ecosystems in agriculture. We do not have the luxury of going back to the pre-modern norms of farming if we are to maintain the current living standards of the majority of people, and keep the price of basic food commodity items affordable.

Any significant move away from modern farming means that the food security of those living in cities will be threatened. This is especially so in the supply of foodstuff that requires countrysides to grow, such as rice and wheat. Countries like China and India have invested heavily in agricultural research; the irony is that biotechnology actually has the potential to produce the ideal organic crop strain if its detractors allow it to do so.

With more than 60 per cent of the world's population and some of the fastest growing economies, Asia's food security issues are magnified in contrast to those of the Americas or Europe. Dr Borlaug was a strong advocate of using modern science and technology to increase food production. He had estimated that without an increase in farm productivity, an additional 1.6 billion hectares of arable land will be needed by 2050 to grow enough food.

This is clearly untenable. Deforestation and other land conversions in several Asian countries are already having significant negative consequences. The choice for Asian governments is to increase the investment in R&D. This will generate the knowledge and technology for producing more food from the same, if not, reduced land areas.

The first two writers are, respectively, professor & senior fellow, and post-doctoral fellow, at the S. Rajaratnam School of International Studies, NTU. The thrid writer is a research fellow at the National Institute of Education.

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