

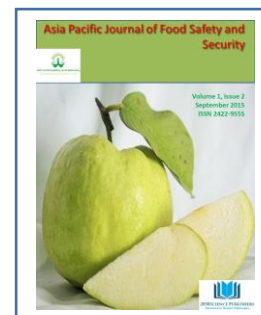
*Editorial***Food Security for the Asia-Pacific: Smart Farming to Feed the World****Ravi Gooneratne**

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The world population is predicted to increase by one billion by 2025 and another billion by 2050. That is nine billion people on the planet by 2050. Distribution of this increase will be unequal, and for developing countries this equates to their gaining the equivalent of a city of about one million every five days between now and 2050. In developing Asia and the Pacific, the economies have grown at more than 7% since 1990 – more than double the global average. The rise in affluence in conjunction with a growing population continues to drive greater demand for more protein-rich food and better nutrition. Food consumption in Asia-Pacific has grown steadily from about 2,300 kilocalories per capita per day in 1990 to in excess of 2,600. But close to a billion people in the region still live in absolute poverty (defined as living on less than \$1.25 a day, in 2005 purchasing power parity) and over 500 million remain undernourished.

These figures have enormous implications for the intensity of food production. The Food and Agriculture Organization of the United Nations (FAO) estimates world food production needs to double to cater for population increases alone and by much more to tackle poverty and malnourishment. But, according to a recent World Bank report, climate change could cut crop yields by more than 25%, which means even greater increases in crop production would be required. FAO estimates that we will also need to increase meat and dairy production by 75% and 60% respectively to meet the demands of the newly emerging ‘middle class’ in Asian countries for improved, more western style diets with increased consumption of meat and milk products.

In addition to the Asia-Pacific’s strong growth in population and personal incomes, industrialization and urbanization continue to be the driving forces behind the fundamental structural changes in food production and market systems in these countries. As Professor William Riley mentioned in last issue’s editorial, the Asia-Pacific, being home to two-thirds of the world’s population, faces unprecedented food security and food safety challenges. Asia’s economic growth and ongoing structural transformation have deepened the complexity of the challenge of managing limited natural resources to ensure food security. To meet these challenges – and especially the increased food demand for animal proteins – within the constraints of environmental resources, will necessitate marked im-

provements in the efficiency of resource usage. If production efficiency and distribution are not improved, the world will face not just a major food crisis, but also unsustainable demands on the natural environment, which may in turn worsen the situation.

However, the world has risen to such challenges in the past and will do so again in the future. It is clear that most of the increase in food production will have to be technology based because land and water are limited in supply. But there is a question mark over whether there will be sufficient persons with the appropriate training. There is a major concern about the investment by most countries, including the Asia-Pacific countries, in agricultural science and technology research and the training of agricultural scientists. A major rethink of governmental policies needs to occur quickly to divert at least some the funding currently allocated to commerce-related courses to the training of agricultural graduates – including offering scholarships at world-class universities – so that the next generation can be trained to think ‘out of the box’ to come up with new technologies that best suit their respective countries and regions in order to accelerate increases in food production.

Aggravating the world’s food security is the diversion of food and feed crops to bioenergy, mostly by the developed countries; this has led to a profound increase in world food prices and higher food prices would remain the norm in future. High food prices have the greatest effect on the most vulnerable sector in our population, the poor. Many pockets in the Asia-Pacific continue to struggle with high levels of poverty and poor nutrition. It is well recognised that many poor families have to eat less nutritious food, with long-term implications for the physical and mental well-being of many millions of our future generation. Malnutrition can increase infant and child mortality and hinder learning and overall productivity. It is estimated that globally, one-third of all child deaths are due to malnutrition. Another concern is the ever-increasing interactions between animal and human diseases, especially the zoonotic diseases. It is estimated that over 70% of human pathogens in the past three decades – including swine flu, bird flu and the mutant influenza strains – were zoonotic. How much of this is being brought about by climate change is a matter for speculation.

We need to learn from our mistakes. In past decades the agricultural practices developed to support an ever-increasing population have led to land degradation; indeed our land, oceans, forests, biodiversity, and other forms of natural capital are being depleted at unprecedented rates. Unless we change how we grow our food and manage our natural capital, food security, especially for the world’s poorest, will be at risk. If we continue with our current practices, future extreme weather events, deterioration of biological diversity, greenhouse gas emissions, depletion of forests and water resources, and declining groundwater reserves (due to over-extraction) will have a profound impact not only on future food security, but also on environmental, animal and human health. The challenges for agricultural and food scientists in the 21st century are to work in partnerships with governmental and non-governmental organisations to work within land and water constraints to breed more resilient, drought-resistant nutritious crops and food-producing animals including aquaculture; to develop climate-smart farming techniques; to improve food storage; and to fine-tune supply chains for maximal food production to feed the world.

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