



Improved farm equipment has a significant impact on how farmers raise crops.

AGRICULTURE

ROBOT TECH A BOON FOR FARMERS

WITH rising population and per capita income, as well as urbanisation, the global demand for food continues to outpace production growth, albeit by a narrow margin.

The world population is projected to increase from 7.5 billion to 9.7 billion by 2050.

The world will need to produce 70 per cent more food calories in 2050 than in 2006.

This has dire consequences for every nation, including Malaysia, where the population is projected to grow to 40.7 million in 2050.

Over the next few decades, the global food system will come under renewed pressure from fundamental and systematic factors.

To address the challenge, the agricultural sector needs to employ technologies and farm practices.

Innovation and investments in agriculture system technology will foster agricultural productivity.

Examples of these technologies are soil and water sensors, weather tracking, satellite imaging, automation, minichromosomal technology, vertical farming, artificial intelligence, nanotechnology, global positioning system applications, robots and precision agriculture.

In using these technologies, farmers no longer have to apply water, fertilisers and pesticides on fields.

Instead, they can use the minimum quantities required and target specific areas, or even treat individual plants differently.

In developed economies, improved farm equipment has had the most significant impact on how farmers raise crops.

These technologies have enabled farmers to be profitable, efficient, safer and environmentally friendly.

In addition, robotic technologies enable reliable monitoring and management of air and water quality.

It gives producers greater control over plant and animal production, processing, distribution and storage, which results in greater efficiencies and lower prices, safer growing conditions and safer foods, and reduced environmental and ecological impact.

In Malaysia, low levels of agricultural system technology applications are a stumbling block to achieving productivity growth.

This needs to be supported by research and development in physical sciences, engineering, computer sciences; development of agricultural devices, sensors, and systems; assessment on how to employ the technologies economically and with minimal disruption to existing practices; and extension services to farmers on how to use new technologies.

The role of engineers is important to design and develop technologies to be applied by farmers.

Engineers need to be in farms to facilitate the design and adoption of technologies.

In terms of capacity building, other than academic programmes in agricultural engineering, offered by Universiti Putra Malaysia, universities may also consider offering academic programmes in Agricultural Systems Technology.

Graduates focus on managing, using and troubleshooting technology, instead of engineering design, by applying their knowledge of technology, agriculture and processing systems.

Farmers need the right signals for the adoption of technologies.

Farmers will adopt technologies and farm practices if they expect the investment will be profitable, if they have the right education, information and motivation, and if government policies set clear goals.

Incentives must be provided to alter prices facing farmers for their inputs and outputs, which in turn will influence their decisions on investment and can lead to sustainable and profitable farming practices.

PROF DATUK DR M. NASIR SHAMSUDIN

Faculty of Agriculture, Universiti Putra Malaysia