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Apply ICT to ensure food security

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WHILE addressing a conference on the impact of globalisation on the Islamic community earlier this week, Prime Minister Datuk Seri Dr Mahathir Mohamad reminded Muslims that they could not afford to ignore the prevalent information and communications technology revolution.

The Islamic world clearly lost out in the industrial revolution that took place a couple of centuries ago.

The Western domination over the rest of the world is almost absolute simply because they are able to initiate, exploit and reap the maximum benefits of the Industrial era.

Prior to the Western-dominated industrial revolution, the world was dependent on agriculture. The Muslims actually contributed significantly to the agricultural revolution.

The Muslims practised medieval "k-agriculture" by contributing to the then software and hardware of this field.

On the software or knowledge side crop diffusion, that is, the transfer of traditionally tropical crops like rice, watermelon and sugar cane into the cooler and drier regions of the Muslim empire became prevalent.

A virtually new planting season was introduced because many of the new crops required hot conditions to flourish. These became summer crops. This set the stage for the practice of crop rotation.

Previously idle land and labour became more productive. It was possible to harvest the land four times or more instead of once during every 24-month period.

However, extensive use decreased land fertility rapidly. To get around this problem, soil types and quality were thoroughly studied. New manures were formulated and used.

This led to the second form of input to agriculture by Muslim scientists, that is, the technology or hardware input. Better and more robust tools were built for the endless ploughing, digging, hoeing and harrowing.

Many new irrigation schemes were initiated, and ingenious water-raising devices introduced. The technology of storing, conveying and distributing water was further enhanced and diffused.

Thus, it seems that the adoption of k-agriculture had enabled the margins of farming to be pushed back into inferior or near-desert lands, previously used only for sporadic grazing.

The whole community within, as well as far beyond, the Muslim empire was guaranteed a sufficient supply of good food. However, with the decline of the Islamic civilisation, agriculture lost its shine among the Muslims.

By and large since then, the Muslim world has not been able to ensure food security for its own people.

The advent of globalisation again reveals the seriousness of the problem. Today, even though all Muslim countries have gained independence from their colonial masters, many remain backward and under-developed.

Some are still having problems meeting the food need of their population, let alone fulfilling the dietary requirements that can help build a strong generation.

Also since different foods contain different proportions of proteins, carbohydrates, fats, minerals, and vitamins, an appropriate balance must be maintained among these so that all segments of the body's metabolic systems can be supplied with the requisite materials. If too little food

is taken, then inanition or starvation will occur.

Since proteins are essential for maintenance of cellular functions, death ordinarily ensues when the proteins of the body have been depleted to approximately one-half their normal level.

Consequently, each day 24,000 people die from hunger. No doubt, many of them are those from Muslim countries.

The annual growth rate of food production in the developing countries in the next 10 years is expected to be between 1.8 and 2.1 per cent as compared to 2.2 to 2.4 per cent increase in consumption.

Trading volume in food especially for rice is expected to be thin and volatile. As such, there is uncertainty in the long-term international supply of staple food.

The agricultural labour figure does not look promising either. Labour productivity increased by only 4.5 per cent between 1990-1995 against farm wages expansion by 48.6 per cent between 1993-1995.

Currently, labour productivity in agriculture is only 60 per cent of labour productivity in the manufacturing sector. There is also a need to maximise land utilisation as agricultural land is being left idle.

Then there are sometimes unfair and unreasonable demands for environmental care from both local and international pressure groups that do not give two hoots about sustainable development.

How do we respond to these high expectations, challenges and calamities? A country like Malaysia may be able to afford going back to k-agriculture. ICT may be able to offer part of the solution to the food security problem.

The developed countries are already benefiting from what is known as precision agriculture. Field management systems have been devised to help farmers stay at the edge of farming efficiency.

The system measures the impact of new cropping strategies, for example when new varieties are tried or new sprays or fertilisers are tested, one can quickly measure the yield response and calculate the cost benefits.

A farmer with his or her laptop in a remote farm may get connected to the field management information centre hundreds or even thousands of kilometres away.

Expert system where the skill of experts, including old and wise farmers, have been incorporated into the system, especially on decision-making, to address the problem of limited technical know-how and managerial skills and experience in managing.

Perhaps the most promising area of the use of ICT in agriculture is the Geographic Information System.

GIS is a computer system capable of assembling, storing, manipulating and displaying geographically referenced information i.e. data identified according to their locations.

In Malaysia the first GIS was set up in 1970 in the form of the Land Data Bank of Sabah. Now, a National Land Information System or NaLIS is in operation. It is hoped that this can spur the re-adoption of k-agriculture.

In all the applications stated above, a fundamental requirement is competent human resource. Hence, the 'ICTisation' of farmers and the staff of the agriculture department is vital.

The Eighth Malaysia Plan has spelt out the need as one of the policy thrusts for the agricultural sector, that is, to generate k-farmers by enhancing the skill and knowledge of agricultural front-liners.

As for infrastructure development required to accelerate the adoption of ICT in agriculture, perhaps the MSC's R&D Cluster and Worldwide Manufacturing Flagships, be made available for product development.

Demonstrator Application fund, too, may be tapped to initiate prototype

projects of using ICT in agriculture.

It is true that we cannot afford to be by-standers of the ICT revolution, what more, we must not be by-standers of ICT revolution in agriculture. If the medieval Muslims could ensure food security through k-agriculture, so do we.