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Apart from the spread of the coronavirus disease 2019 (COVID-19) that has taken a toll on the economy and society at large, in which we have to closely monitor the situation, the country's drought problem is a key issue that has persistently caused severe impacts on the entire socio-economic sector, especially on the Thai farmers nationwide.

The Ministry of Agriculture and Cooperatives' Agricultural Disaster Monitoring and Resolution Center estimates the drought impacts in Thailand to intensify during March–May 2020 period due largely to the volume of water in natural water sources is lowering as a result of below-average precipitation of 12% last year as the availability of disposable water in reservoirs is at 22% of storage capacity.

Meanwhile, farmers must keep their eyes on the inconsistent precipitation which will lead to the water levels in reservoirs dropping. Hence, water usage and consumption will be closely monitored.

Such negative factors might affect the agricultural and plantation areas designated for key economic crops such as crops that are cultivated outside the irrigation zones totaling around 370,000 rai in 30

provinces, which they are at risk of water shortage. Other economic crops in other farming areas include rice, which is entering its growing season and it might be affected by drought as well.

One of the state agencies that has continuously provided assistance and support to society, communities, rural communities and domestic farmers to further enhance their potential through adopting the digital technologies and innovation in order to improve the quality of life and get through crises is the Digital Economy Promotion Agency (depa) by the Ministry of Digital Economy and Society (MDES).

Dr. Nuttapon Nimmanphatcharin, President/CEO of depa, said depa's department of community development proposed assistance measures and supported the adoption of digital technologies and innovation in rural communities with funding sought from the depa Digital Transformation Fund for Community with an aim to encourage farmers and community enterprises to adopt and apply digital technologies in the agricultural sector.

"depa will play a key role in connecting farmers with developers of digital technologies before applying suitable digital technologies to enhance agricultural productivity and farming competitiveness, reduce operating costs, generate more income. It will enable farmers to be ready to enter the digital economy and digital society in accordance with the new normal as digital technologies will help raise the quality of life of people in communities in a sustainable manner," said the President/CEO of depa.

An important project to help address the drought problem is the Internet of Things (IoT) Technology and Automatic Water Distribution Management for Agricultural Sector project, aimed at enhancing the efficiency in water management in the agricultural sector. There are 13 agricultural management projects proposed by farmers and community enterprises across the country that received support from the depa. They are currently in operations such as smart greenhouse project to increase production of cherry tomato proposed by Suan Kluay U Thong Community Enterprise at U Thong District in Suphan Buri; IoT-based development system to evaluate and control farming and cultivation at greenhouse proposed by Baan Nong Sai Fresh Vegetables and Processed Fruits Community Enterprise at Phanom Sarakham District in Chachoengsao; Technology for organic farming development project proposed by Khao Mai Kaeo Organic Farming Community Enterprise at Khao Mai Kaeo District in Prachin Buri; and smart farming project initiated to boost income of people with disabilities proposed by the Sairung Foundation in Rayong.

Sunthorn "Laem" Khomkai, president of Khao Mai Kaeo Organic Farming Community Enterprise, said weather is a crucial factor that is dealing with the condition of leaf vegetables, especially such Chinese vegetables varieties as False Pak Choi, Chinese Morning Glory or Chinese Water Spinach, Bitter Melon, etc. They are core staple vegetables that are available in the market throughout the year. As such Chinese vegetables varieties are fragile and are easily damaged, so they need sufficient water supply and close monitoring.

Therefore, Khao Mai Kaeo Organic Farming Community Enterprise proposed the technology for organic farming development project at Khao Mai Kaeo in order to receive promotion and support from the depa. Prior to the selection process, the depa and digital technology developers provided support of smart farming practice at the greenhouse in order to control the organic farming under the controlled-environment agriculture as the IoT technology was utilized to control water supply and monitor automatic fertilizer distribution system through the application on mobile phone. Farmers can follow up on the operation of the IoT-based system and growth of vegetables via closed-circuit cameras.

"After adopting the digital technology in farming and production process, it has helped with

enhancing the precision farming. It is worth the cost and has provided farmers with an efficient water management, cost and time saving and helped reduce labor costs. All agricultural produce and products have good prices. There are advanced orders and certain customer base," said Sunthorn.

Another project that received promotion and support is the smart farming project to support people with disabilities initiated by the Sairung Foundation in Rayong. The smart farming project applied an advanced use of IoT technology to control and monitor automatic water supply and distribution system in the farming plots in place of human labor of people with disabilities. Disabled farmers can take time from not having to manually engage with water supply to prepare new farming plots. Such practice has led to increasing income and improving the quality of life of people with disabilities. It can also serve as the agricultural learning center for interested people.

"Drought is a critical problem that farmers have to deal with. The depa stands ready to provide support and promote the use of digital technologies in multiple dimensions so as to improve the entire production process from upstream to downstream. Digital technologies can help with labor cost saving for farmers, increasing quality produce, generating more income, elevating quality of life of people in communities so that all people will be able to get through the crisis together with sustainability," said the President/CEO of depa.

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