



ฝ่ายเกษตร ประจำสถานกงสุลใหญ่ ณ นครลอสแอนเจลิส Thailand Office Of Agricultural Affairs, Los Angeles

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DOA presents smart solar powered irrigation system technology for durians to accurately irrigate and efficiently utilize water resources



Ms. Khanit Whannarong, Director of Plant Production Engineering Research Group, Agricultural Engineering Research Institute (AERI), Department of Agriculture (DOA) said “The research and development of the solar powered irrigation system for durians were conducted in response to durian farmers’ demands. AERI developed solar powered water pump system to precisely control the quantity of water for irrigation accordingly to the plant’s needs. The reasons we chose solar power are the decreasing price of solar panel and remote areas with no electricity access can enjoy the adoption of the system. Furthermore, this smart solar powered irrigation system for durians does not require the farmers to invest in a big water tower. At the same time, the system operation can be easily adjusted accordingly to the changing conditions such as plant type, length of growing, and planting region.”

The system controls the water distribution with embedded board *Arduino Mega 2560* and is programed with *Matlab Simulink* for easy learning. Since it only requires 200 liters water tank, the farmers can save some cost from not having to build the big water tower. The system pumps water into the tank by using solar power. Therefore, it does not require much of the battery to pump the water from the pond, helping farmers to utilize water efficiently while reducing the cost.



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The smart solar powered irrigation system is used to accurately control water in the New Theory Agriculture durian plantation at Nakhon Ratchasima Agricultural Research and Development Center (ARDC). At Nakhon Ratchasima ARDC, 24 durian trees are planted in the area of 1 rai with 8x9 meter plant spacing. The embedded board controls the electric valve to distribute 50 liters of water each time. The frequency of water distribution depends on the durians' needs. For instance, the system irrigates when the sun light is sufficient and will stop when the sunlight is insufficient. The system calculates the water quantity durians need each day basing on the information from the studies of DOA's agriculturists. The required daily water quantity varies depending on the growth stage from preparing the plant to harvesting, and the region of the plantation.

“The smart solar powered irrigation system for durians is a great example of how we adopt the technology to tackle water management challenges in agriculture. The system also supports durian farmers for a better economic opportunity while cutting down the environmental impacts. DOA is planning to deploy this system in other agricultural areas to increase the efficiency of water and energy usage in agriculture. This action is in alignment with green economic system under the BCG Economy Model which is to efficiently utilize resources, reduce pollution problem, decrease cost, and increase produce quality. For more information or inquiry, please contact AERI at 02-940-5791.” concluded Ms. Khanit

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