

WEATHER STATION: ENABLING INSTRUMENT FOR PRECISION FARMING

Dew covering grass lawn means high humidity. If you see a dragon flying low, brace for heavy rain. Fruit growers have long been using these nature observations in combination with weather forecast provided by the government agency to manage their fa activities. But these may not be sufficient for next generation farmers.

Doungporn Wetchasit, Thammarat Chandee, Kittipat Sriram and Natarada Phisantanakul are members of Young Smart Farmer Group in Chanthaburi Province. Young Smart Farmer Group recognized the power of technology in improving efficiency of their fruit orchards. They started using “weather station” in 2018.

“Our parents’ generation made observation on the weather and learned to manage their orchard based on their accumulated knowledge and experience,” says Thammarat, a former office worker who now runs a 14-rai (2.24 ha) orchard. “Now that we have the

weather data, we can match what our previous generation observes and actions taken to the scientific data that we have. We then have a clearer understanding and can manage our orchards with precision.”

The crucial stage of fruit orchard is flowering which is highly influenced by water input, so precise information on the weather and accurate weather forecast are essential. “If a mistake is made with flowering induction, one has to wait for 2-3 weeks to redo the process, which is not time efficient,” Doungporn, Vice President of Mango Orchard Group in Khao Khitchakut, says. Kittipat adds





that young smart farmers want to manage their orchard with scientific principles and understanding, rather than guessing.

Weather station is equipped with sensors for measuring temperature, soil moisture, relative humidity and light intensity, as well as an anemometer and a rain gauge. These sensors and instruments provide real-time data which are recorded to the weather station system. It is these data that these young smart farmers use in making operational decision on orchard management.

“Based on the weather station data, we decided to irrigate our orchard for 2 hours in November,” Dounporn recounts her experience using data from the weather station to schedule the irrigation of her mangosteen orchard the previous year. Trusting the data, Dounporn was the first of the group to apply water. “The owner of our neighboring orchard disagreed with our assessment. She watered her orchard 2 weeks later, at the time that we did not think she should by looking at the weather data.

As it turned out, we were right. While we were harvesting fruits in our orchard, the neighboring orchard just started flowering.”



Natarada’s 100-rai (16 ha) orchard is located 300 m. above sea level, facing longer rainy period than other orchards in this area. Due to more rain, fruits in her orchard usually are ready later than others’ and are more at risk of damage caused by rain. Weather data is therefore very vital for Natarada. “We wanted to make our orchard produce flowers and fruits at the same time as other orchards located at sea level. We compared the weather data at our orchard to those at sea level and developed our orchard management plan, i.e. identify time to irrigate, to prepare workers, gasoline for water pump, etc. These are costs that we have to manage.”

These days, these four orchard owners regularly check the weather data on their mobile phones, particularly Doungporn and Natarada who do not reside near their orchards. “Since I am not on site, I rely on the chart on my mobile phone to manage the orchard. If I were to ask my worker about the weather on site, his reply is only subjective,” Doungporn says.

Although each of the four growers has a weather station installed at his/her orchard, they have access to weather data of each other’s station, and even share their data with other growers in their group. They now have full confidence in the weather data. Thammarat uses the data to analyze the spread of insect pest and factors determining flowering. He can now control the flowering stage using the weather data. Kittipat added that the real-time data help identify immediate action to take, but historical data enable him to draw the correlation between the weather and the disease and insect outbreaks.

AGRITEC-NSTDA and NECTEC-NSTDA have installed the weather stations in 16 orchards and farms in Rayong, Chanthaburi, Buriram, Nakhon Phanom and Chiang Mai.

