A drone being used to spray biofertiliser over a padi field in Tanjung Karang, Selangor.

Demand soars for drone operators

Service helps Selangor padi farmers, plantation workers to complete big tasks faster

Story and photos by GRACE CHEN
gracechen@thestar.com.my

UPON graduating from Universiti Islam Selangor in 2019, Shahmi Farhan Ridzuwan sought work.

Shahmi, who hails from the *padi*-growing region of northwest Selangor, wasted no time in between interviews.

He helped at a friend's burger stall and took part-time jobs at paddy fields to cut grass and clean ditches.

Life for the business degree graduate changed after he was offered the chance to become a drone operator with Koperasi Wawasan Tani Simpang Lima Sungai Besar Bhd (KWTSL).

The government cooperative was formed under the agricultural sector during the Economic Transformation Programme in 2012.

Drone training, business

Shahmi said he learned to fly drones that could dispense sprays for plant nourishment, soil treatment or pest control.

"We started with theory lessons at the Sungai Burung Agricultural Department.

"There was even a simulator. Participants with the highest scores were given prizes," he said.

With a RM42,000 loan from his mother, he bought his own drone and offered his service to paddy farmers.

Now at 31, he makes close to RM6,000 a month providing service at these fields in Sabak Bernam, Selangor.

His clients are mostly in Bagan Terap, Sungai Besar as well as Kampung Seri Tiram Jaya and Sawah Sempadan in Tanjung Karang.

But his most unforgettable task involved dispersing pesticide to combat fly infestations in Bagan Terap and Sungai Tengi in Kuala Kubu Baru two years ago.

"Due to nearby chicken farms, the fly infestation in the residential area got so bad that the people found it hard to even eat. While they were eating, no fewer than six flies would settle on their hands," he said.

Mohd Naim shows a modified device with a turbo system for a drone using a shower head to deliver a high-pressure spray.

On an average day, Shahmi's drone is able to cover up to 21.78ha.

By rough estimates, the time required for his drone work to cover each hectare is no more than 10 minutes, but this also depends on whether manual or automatic modes are used.

"In fields where there are structures such as farmhouses, the drone will be operated manually so that pesticide don't end up on roofs, which will be a loss.

"Automatic mode is used over open fields. (Boundary) Points can be set on the controller and the machine will fly on its own," he said.

The wind factor is also crucial when operating a drone.

This includes knowing the wind's direction at all times to prevent the drone from colliding with utility poles or trees.

"It is also to ensure the drone's spray load does not end up in neighbouring fields.

"In the worst-case scenario, misjudging the wind direction can result in poisons like insecticide or pesticide being blown into your face," said Shahmi.

Looking to the skies

Mohd Maksom Ramli, 61, and Sulaiman Chik, 70, both former KWTSL chairmen, recalled when drones first made an appearance in Sungai Besar.

Mohd Maksom said it was 2013, a year after the formation of the cooperative. Older *padi* farmers, he said, questioned its efficacy.

"Being used to the traditional way of carrying a heavy knapsack sprayer to apply pesticide and fertiliser, they could not accept that the task could be done just by pressing buttons while standing beside the road.

"They changed their minds after one season (approximately 120 days) when they saw the results," he said.

Sulaiman says he saw the potential of using remotely controlled flying robots for agriculture after watching a demonstration.

Mohd Maksom says older farmers were at first sceptical but changed their minds after seeing the results of drone use.

Supramaniam says drone use has made agricultural work less laborious.

In 2017, KWTSL invested RM68,000 to buy two 15-litre capacity drones.

The cooperative also got a RM75,000 drone from the Selangor Economic Planning Unit in 2021.

Sulaiman said drone use had resolved labour shortage faced by farmers.

In 2014, farmers had to collectively pay as much as RM1mil for foreign labour to work on 547ha of paddy fields under the cooperative.

"Back then, foremost on my mind was how to reduce this dependency.

"Coincidentally, at around the same time, some engineering students from Universiti Putra Malaysia (UPM) were conducting a demonstration at Sawah Sempadan in Tanjung Karang, Kuala Selangor.

"So I got UPM to carry out a similar demonstration at Sungai Panjang.

"After watching the demonstration, I could see the potential for this technological edge," said Sulaiman.

To address the issue of manpower shortages, the cooperative started offering drone services to farmers for about RM50 per lot, paying village youths to do the job.

"In the beginning, we sought assistance from UPM and subsequently a private drone company to get the job done.

"Halfway through, we were approached by an agricultural solutions company from Kedah.

"Besides selling us the machines, it provided after-sales services in the form of training classes for customers.

"The spillover effect from this was the creation of new jobs for the village youths as drone operators," said Sulaiman.

Banking on new technology

Among the village youths who adopted the new technology were Sulaiman's sons.

Mohd Naim Shah Sulaiman, 36, is now part of a family-owned enterprise in Simpang Lima that sells pesticides, does drone repairs and crop dusting as well as provides training for agricultural drone operators.

Mohd Naim said the demand for drone use had prompted his four brothers and him to go into business in 2020.

"We started while the movement control order (MCO) was still in force.

"This was a time when there was an acute shortage in foreign labour.

"Incidences of pest attacks and diseases were also high, to the extent that KWTSL's drone unit was unable to cope with the high demand.

"So, we applied for a loan from AgroBank and we bought four agricultural drones," he said.

Today, the family business has seven drones, including a unit from the Selangor Economic Planning Unit.

"During its period of service with KWTSL from September 2021 to January 2022, the drone crashed multiple times, requiring expensive repairs.

"To offset the cost, KWTSL handed the drone to our company to be used on a commission basis," said Mohd Naim.

To achieve better efficiency, a "turbo nozzle" was affixed to its arms. The nozzle is a shower head outfitted with a motor to deliver higher pressure output, in order to achieve better spray coverage.

The company was also appointed as sales representative for Selangor by the agricultural drones distributor.

There are now about 50 drone operators who are doing this full-time.

While demand for their services remained high, Mohd Naim said there was growing concern over directives from the Civil Aviation Authority for drone operators to conform to regulatory requirements.

"The RM3,500 fee to obtain the competency certificate for remote pilots is too expensive.

"The manual is written entirely in English. Many operators in our village have limited proficiency in the language. As such, it would be helpful if the manual for the certificate of competency for remote pilots could be translated into Malay," he said.

Plantation sector veteran Supramaniam Ramasamy, 66, said the earliest use of agricultural drones could be traced back to 1987 in the United States of America when they were used to take photos.

In 2006, drones were used to spray pesticides and by 2010, their usage for this function had become widespread.

"We have used drones for several functions such as fertilising, applying pesticide, seeding and precision mapping, whereby we fly these robots over an area to chart its topography," said Supramaniam, managing director of a company that specialises in plantation management, development and advisory.

A graduate of Universiti Pertanian Malaysia (now Universiti Putra Malaysia) and the University of Chicago in the US, he has over 40 years of experience in the plantation sector for palm oil, rubber, cocoa, almond and coffee.

"With drones, we are able to see if an area is hilly, if water logging is occurring at low-lying zones or if there is a river flowing through," he said.

"We can also see the types of vegetation growing there, whether it is grassland or a degraded forest.

"All this information is useful for planning and decision making," he elaborated.

He also utilises the technology for crop monitoring, where a drone is flown over plants to map foliage colour.

For example, if the colour is yellow, it may mean nitrogen levels are low, and if there is crinkling, it may indicate boron deficiency.

Supramaniam said drone use had made agricultural work less laborious.

Tasks that had in the past required a fair amount of physical strength, could now be done with more ease.

But Supramaniam has observed that despite the advantages, drones are still not widely used in Malaysia.

"There are various reasons for this, including the cost of purchasing a drone and the skill needed to fly one.

"Company policy also matters. Some companies are more comfortable with hiring workers.

"In a nutshell, the uptake on drone use is still slow.

"Compared to Australia and Europe, we still have a long way to go," he concluded.

(Above) Readings on the console of a spraying drone being used on a plantation.

(Left) Shahmi filling his drone, which has a 60-litre capacity, with liquid fertiliser.