Opinion

Drones in Malaysian Agriculture - The Way forward after Covid-19

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Opinion

As someone who is passionate about utilizing technology in agriculture, we are excited about the potential of drones to revolutionize the way we farm, especially in Malaysia. Drones, or unmanned aerial vehicles (UAVs), are becoming an increasingly important tool for Malaysian farmers, especially post Covid-19 pandemic, providing a fast and efficient way to perform various tasks, ranging from monitoring crops and identifying areas that may be suffering from pests or disease, to spraying pesticides and distributing seeds while covering large areas that may not be readily accessible using other means. Initially developed for military use, large drones have evolved to become smaller and more maneuverable machines to assist operations in various other industries, ranging from agriculture to emergency services, and from food delivery to security.

One of the key advantages of drones is their ability to quickly and easily survey large areas. Using drones, Malaysian farmers can quickly and easily assess the health of their crops, identify areas that may be in need of treatment, and target specific areas with pesticides or other treatments. This can save time and money, and can help them to improve the productivity of their operations. In addition to their use in pest and disease control, drones can also be used to monitor soil moisture levels and assist with tasks such as planting and harvesting. This can help farmers optimize their irrigation practices and improve the efficiency of their operations. Another benefit of drones in agriculture is their ability to reduce the environmental impact of farming. By using drones to apply pesticides and other chemicals, farmers can reduce the amount of chemicals that are used and minimize the risk of water pollution and soil degradation. This can help to protect the environment and ensure that our food is produced in a sustainable and responsible way.

Drones can be more efficient and effective when it comes to spraying pesticides, when compared to the traditional manual method that was once prominent before the Covid-19 pandemic hit Malaysia. Pesticide spraying drones cannot be flown higher because of the spray distribution that is affected by the propeller and winds, so these agricultural drones need to be flown close to the crops and spraying area. Additionally, the down-force winds created by the propellers also contribute to more efficient and effective spraying of pesticides as the crop leaves are blown and spread to distribute pesticides to the hard to reach areas where the pests usually can be found. Also, night-time operations of drones can target the pests better as most are more active at night. This is because these drones do not need lighting and can be operated based on maps and fly automatically to cover the entire crop area without much control from the pilots who would initially setup the flying route.
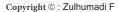
Briefly, drones can assist in the following aspects in agriculture:

a) **Precision farming:** Drones equipped with sensors and cameras can collect high-resolution images of crops and fields, allowing farmers to identify areas that need more water, fertilizers, or pest control. This can help farmers optimize their resources and improve crop yields.

b) **Monitoring crops:** Drones can be used to monitor crops for signs of stress, disease, or pests, which can help farmers take timely action to prevent crop damage.

c) **Mapping:** Drones can create detailed maps of fields, including elevation data, which can be used to optimize irrigation and fertilization.

d) **Spraying:** Drones can be equipped with sprayers to apply pesticides, herbicides, and fertilizers, which can be more efficient and cost-effective than traditional methods.

e) **Data collection:** Drones can collect a wide range of data, including temperature, humidity, and plant health, which can be used to improve crop management decisions.

f) **Time and cost savings:** Using drones can save farmers time and reduce labor costs, as they can cover large areas quickly and efficiently.

Since the farmers themselves perhaps do not have the capability to utilize drones in-house, in Malaysia, a new industry specializing in drone flying has emerged recently. Companies like DJI are offering sales and support for agricultural drones which can be purchased by individuals and companies, who are not necessarily involved in farming. These individuals and companies can support the agricultural, and other, industries by providing drone related services. Meanwhile, other companies like Aerodyne, are creating job opportunities for job seekers by providing drone training and services, and as a result of this, these drone pilots can work in various industries, especially agriculture. This is especially pertinent, since many school leavers and graduates are facing tough times in finding work after the Covid-19 pandemic. This booming drone industry has the potential to assist various industries to improve and enhance their operations, as well as provide new jobs for the job-seekers.

Of course, there are also some concerns about the use of drones in agriculture. For example, there are concerns about privacy and the potential for misuse of drones. Additionally, there are safety concerns, as drones can pose a risk to other aircraft if they are not properly operated. However, it is believed that these concerns can be addressed through proper regulation and education.

One of the key challenges in implementing the use of drones in agriculture is the need for trained operators. While drones can be relatively easy to fly, operating them safely and effectively in agricultural environments requires specialized knowledge and skills. This means that farmers and other users of drones will need to be trained in the proper use of drones

and the relevant regulations. However, in Malaysia where the average farmers are aging, they would rely more on the younger generation to pilot the drones. Since the cost of purchasing agricultural drones is expensive, these farmers would outsource to external parties to perform drone-related activities, such as pesticide and fertilizer spraying.

Another challenge is the need for effective regulations to govern the use of drones in agriculture. In many countries, the laws governing the use of drones are still being developed and refined. This means that farmers and other users of drones may be uncertain of the exact rules and regulations that have been set by the authorities. However, in some cases like Malaysia, further refinement is necessary to separate the low altitude flying agricultural drones and the actual UAVs that occupy higher altitudes in the atmosphere and can be potential risks to commercial and military aircraft. Briefly, the disadvantages of using drones in agriculture, can be summarized as follows:

a) **Cost:** Drones can be expensive to purchase and maintain, especially if they are equipped with specialized sensors or sprayers.

b) **Training:** Operators of drones need to be trained in their use and be licensed to fly them. This can be a time-consuming and costly process.

c) **Weather:** Drones are vulnerable to bad weather, such as strong winds and heavy rain, which can make it difficult or impossible to fly them.

d) **Regulation:** In many countries, there are strict regulations governing the use of drones, including rules about where and how they can be flown. These regulations can be complex and may limit the ways in which drones can be used in agriculture.

e) **Privacy:** There are concerns about the use of drones for surveillance, as they can collect high-resolution images and other data. This can raise privacy concerns, especially if drones are used to monitor large areas or fly over private property.

f) **Reliability:** Drones can be prone to malfunctions or crashes, which can be costly and time-consuming to repair.

In conclusion, drones can offer many benefits to agriculture, including precision farming, crop monitoring, mapping, spraying, and data collection. They can save farmers time and money and help improve crop yields. However, drones also have some disadvantages, including cost, training requirements, weather vulnerabilities, regulation, privacy concerns, and reliability. Whether or not drones are a good fit for a particular farming operation will depend on the specific needs and goals of the farmer, as well as the local regulatory environment and other factors. In Malaysia, the drone industry has certainly grown in size, as other industries are finding uses and employ drones to further enhance their operations and monitoring, especially in the agriculture. With this in mind, certain companies like Aerodyne, are taking advantage as the demand for drone and drone operators/pilot increase, thus enhancing the agricultural operations even further. Due to its potential in contributing toward the national economy, certain banks, like the Agrobank in Malaysia, provide loans and credit facilities for purchasing drones to further support this growing industry. It is hoped that, through the various supporting efforts from different players and sectors in the industry, this technology will be expanded upon for enhancing greater yields in agriculture through more efficient and effective operations with the use of this technology for the benefit of all.

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