

Digital Tools Revolutionizing Farming in Indonesia



Digital tools are becoming increasingly popular among smallholders as they help to improve productivity and increase profitability. The benefits extend beyond farmers and contribute to the development of the wider community and the conservation of the environment. This article covers some examples of digital tools that smallholders in Indonesia are using throughout the farming process to improve their productivity, yields and incomes.

Drones and soil sensors

Nestled in the Ulu Danau village in South Sumatra, Indonesia, is Lake Rakihan. With a height of 800 meters above sea level, this pristine lake and its surroundings is the perfect place for growing a variety of crops including Robusta coffee which is highly profitable for smallholders. Due to the area's mountainous terrain, HRNS Indonesia has introduced smallholder coffee farmers in Ulu Danau village to drones.

These aerial vehicles support farmers to map out the surrounding gradients, tree coverage and conservation areas. This is important for farm planning enabling them to make informed decisions about the best location for planting, determine appropriate shade management strategies, and identify areas that require conservation measures.

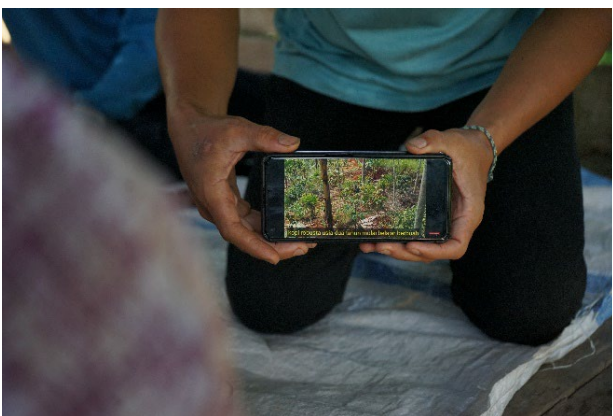


The data collected from drones can also be used to monitor changes over time and evaluate the effectiveness of management practices. This information can help farmers optimize their crop yields, reduce their environmental impact, and promote long-term sustainability.

Another technological innovation that has been introduced to Indonesian farmers is soil sensors. They are used to monitor soil moisture, nutrient levels, and pH levels. This information enables coffee farmers to make timely decisions about fertilizer applications and selecting appropriate crops and plant varieties that the soil is conducive for. Soil sensors can also show the effect of ground cover and mulching - techniques that help retain moisture and nutrients in the soil.

Educational videos on good agricultural practices

In addition to in-person training, HRNS Indonesia is supporting coffee farmers in South Sumatra with information on good farm management practices to help them to improve their productivity and livelihoods through videos. Wimpi Mahendra, a deeply committed Field Officer of HRNS Indonesia is one of the individuals championing this effort. To enhance coffee farmers' knowledge about how to grow coffee sustainably and productively, Wimpi uses and disseminates videos that can be accessed on YouTube through mobile phones. These videos provide valuable training on Robusta coffee production including how to prune, graft, plant and harvest. Other topics covered include information on best practices to grow various other crops and how to make compost to use as organic fertilizer.



Wimpi shows the videos during meetings with farmers, either in Farmer Field Schools (FFS) or during individual household visits. Videos are often more detailed than live demonstrations, especially those made

by professional videographers. Additionally, they can be shared and watched multiple times should any information need to be viewed again after the initial training. There is also no need for note-making if videos can be shared and farmers can take them home and follow instructions directly on their farms.

Wimpi also disseminates the videos via WhatsApp so he can reach more farmers than those he meets physically. So far, he has reached up to 1000 farmers by sharing the videos on WhatsApp. Other benefits of using WhatsApp include the fact that it is free (aside from the internet mobile data), widely known, and has other helpful functionalities such as sharing photos and audio. Through WhatsApp, farmers can also communicate with Wimpi about their progress and compare notes with their peers about their learnings.

Solar dryers

The introduction of solar dryers in South Sumatra has transformed coffee processing, ensuring that farmers can produce high-quality coffee beans with greater ease. Solar dryers provide protection from the frequent rains and with the free energy of the sun, quickly remove moisture from freshly harvested coffee beans. The process takes place inside a closed chamber with vents that regulate airflow, temperature, and humidity. As the coffee beans dry, they are rotated continuously, ensuring even drying.

Humidity is a critical factor in coffee processing because it can cause the beans to rot or develop mold, leading to a reduction in quality, spoilage and post-harvest losses. Solar dryers are equipped with humidity sensors that ensure that the optimal humidity inside the dryer is maintained at all times - regardless of any changes in the weather.



Temperature is another critical factor in coffee processing, as high temperatures can cause the beans to lose their flavor and aroma. Solar dryers are equipped with thermostats that ensure that the temperature inside the dryer does not exceed the recommended level. Farmers regularly check the meters and adjust the airflow to maintain the optimum drying conditions.

The use of solar dryers in coffee processing offers numerous benefits for small-scale farmers. Firstly, it reduces the time required for the drying process, allowing farmers to process their beans quickly and efficiently. Secondly, solar dryers ensure consistent quality, reducing the risk of spoilage and improving the overall quality of the coffee beans.

Solar dryers also offer environmental benefits. Traditional coffee processing methods often involve burning wood or other fossil fuels to power the drying process, leading to deforestation and contributing to climate change. Solar dryers use renewable energy, the sun, reducing the carbon footprint associated with coffee processing.

Digital market spaces and online micropayment systems

Even in the most isolated areas of South Sumatra, farmers are embracing e-commerce platforms that provide them with access to wider markets for their produce. They don't have to rely solely on local markets and can reach a wider customer base, including customers in other parts of the country or even abroad. It is already working very well in Ulu Danau Village where online applications for digital payments make purchasing products easier. Furthermore, online digital payment systems make it easier for farmers to purchase agricultural inputs such as seeds, fertilizers, and pesticides.

In conclusion, the integration of various digital tools including drones, soil sensors, educational videos, solar dryers, and digital market spaces is ushering in transformation in the lives of farmers residing in remote and isolated regions of South Sumatra. By harnessing the power of these tools, farmers can enhance their agricultural practices, empower their decision-making processes, and ultimately improve their livelihoods.

Watch the video below to see how Indonesian farmers are using digital tools and the ways that HRNS Indonesia is partnering with smallholder families to improve their livelihoods.

