<div align="center">Current differences in agricultural
Multispectral tools and analysis sharing</div>

1. **Satellite multi-spectrum is a common method of farmland management.**

   It is widely used in large-area crop condition monitoring; yield estimation, flood, freezing damage, and other agricultural disaster monitoring. Its revisit cycle is currently as fast as 3-4 days.

   The current high resolution is about 1M-5M. The general satellite is about 20-30M. If you subscribe to this service, the data is already a few days ago when you get the map. If the weather is bad on the day when you encounter the map you ordered, or there is just a cloud blocking the farmland, then the data you get is of no use to your farmland management. Because the most effective management time may have been missed.

2. **Manned aircraft Multispectral:**
   Usually, it is carried out on a manned fixed-wing aircraft to scan a specific area to collect data. The flying altitude of the aircraft is required to be between 500-1000 meters. Flying too low will not only cause the pilot to have the risk of the aircraft falling but also the aircraft's exhaust will pollute the crops. At the same time, it is impossible to hover and take pictures of important areas.

3. **Make your own multispectral drone**
   Go to the market to buy a multi-spectral camera and hang it on the drone for aerial crop detection sometimes there are many problems with the connection and application of the camera software configured by yourself, and it usually takes several hours or days to process the data.

4. **Investigate by naked eyes**
   Although you could say, I can just drive my car and look around my plot, yes, that's true, the on-site investigations of farmland can tell the problems that are already visible to the naked eye right away, but when the problem is already showing up, it may have badly damaged the crop.

5. **Phantom 4 Multispectral Drone**

It is a high-precision integrated unit; Its time and space synchronization system, Centimeter-level positioning system and Integrated Spectral Sunlight Sensor ensure the accuracy of the data in the scanning area, which is a feature that ordinary multi-spectral cameras do not have.
https://www.youtube.com/watch?v=OuNQEyPzPd0&t=3s

(For example, without this system, it is like the GPS of our vehicle. When you want to navigate to an address, you visit your friends; you can't always stop at the exact location. This is because the vehicle is not equipped with this system).

DJI Phantom 4 Multispectral its functions and the value it can bring to our farmland management.

Let's introduce this product in detail, its functions, and the value it can bring to our farmland management.
1. High pixel multispectral imaging system
2. Integrated Spectral Sunlight Sensor
3 Centimeter-level RTK positioning system
4. Precise RTK location service solutions
5. Integrated multispectral imaging system
6. Real-time Live View of RGB and NDVI images
7. Simplified operation process+GS Pro and Terra
8. 3-axis stabilized gimbal
9. Integrated design, ready to fly out of the box

1. High pixel multispectral imaging system
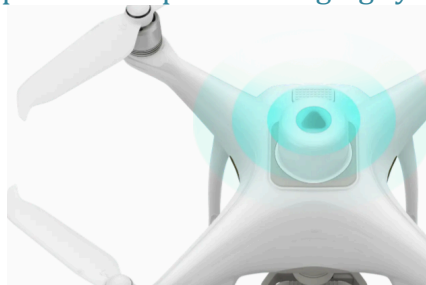
The system consists of an RGB camera and 5 five narrowband multispectral cameras (including red edge and near-infrared). All cameras have a resolution of 2 million pixels and are equipped with a global shutter. This excellent imaging system is installed on a three-axis stable pan-tilt, with clear and stable images.

2. Spectral Sunlight Sensor for Accurate Results

An integrated spectral sunlight sensor on top of the drone captures solar irradiance, which maximizes the accuracy and consistency of data collection through different times of the day. When combined with post-processed data, this information helps to obtain the most accurate NDVI results.

OcuSync and TimeSync system.
Video: https://www.youtube.com/watch?v=QJbWfIzOnrA

Simply say, it is to achieve accurate measurement accuracy and synchronization of photo space and time during the flight.

3/4. Centimeter-level RTK positioning system/Precise RTK location service solutions

You may not have enough network signals on the farmland. We have DJI's DRTK2 mobile station, which can help you have a good network signal in the field.

RTK can provide real-time three-dimensional positioning results of the station in the specified coordinate system, and achieve centimeter-level accuracy.

5. Integrated multispectral imaging system
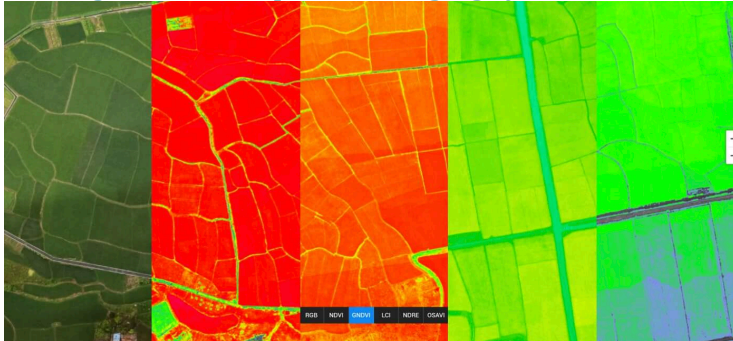
Combine the captured images into a more accurate multispectral index map, which is usually what we call a prescription map, which is used for in-depth analysis of crop and soil conditions and provides reference information for precision agriculture.

6/7. Real-time Live View of RGB and NDVI images/Simplified operation process+GS Pro and Terra

GS Pro is easy to use: the screen has a good menu and it only takes a few minutes to plan a route.

The flight data is recorded on a single SD card of P4M, and you can see real-time input of NDVI and RGB from your iPad during the flight in the farm field. If you find a problem area, you can make a quick decision.

The RTK and integrated sensors on P4M mean that the map overlaps perfectly

 Phantom 4 RTK and P4M provide us with the highest level of pixels with low complexity, and the data analysis and processing function of P4M is very powerful. Many scientific research institutions and many data processing software can perform professional and classified processing on them to obtain The required data.

It has a max mapping area of approx. 0.47 km2 for a single flight at an altitude of 180 m, i.e., GSD is approximately 9.52 cm/pixel.
At a flying altitude of 100 meters, its GSD can reach to 5.3 cm.

GSD(ground sampling distance.) GSD is the actual size of the pixels in the image. The smaller the number, the clearer and more detailed the map.

Terra is DJI's data processing software, uploading images is very easy and can be processed in a few seconds, so as to provide beautiful RGB and NDVI maps. Very fast. It is very easy to use Terra to set up, plan, and fly. It is a beautifully integrated system that can directly generate NDVI maps. Especially when you first use it, it's amazing to be able to create such a beautiful map so quickly.

As an RTK and through a single gimbal camera, all maps (RGB, NDVI, NDRE) overlap completely. Very neat work.

Pix4Dfields
If you need more detailed multispectral analysis software, we recommend using Pix4Dfields.

Pix4Dfields from Pix4D can easily input P4M data, and NDVI and NDRE maps can be obtained within a few minutes

Pix4Dfields is an excellent tool because these prescription maps can be sent directly to its data center MyJohnDeere, and then sent back to the machine

Pix4Dfields is also fast, provides accurate results, and has analysis tools.

Mapper is very slow, but it can create the best index map and provide variable rate prescription output.

The field investigation was successful, showing that P4M is fully capable of providing good field crop health information.

8/9.
8. 3-axis stabilized gimbal
9. Integrated design, ready to fly out of the box.

This technology can provide reliable information and data for farmland. Through this technology, you can have a comprehensive, real-time, and accurate understanding of the crop growth environment, carry out accurate field fertilization and irrigation, and easily detect pests or bacterial invasion, so that you can discover problems in time and quickly respond to problem areas.

With the use of Phantom 4 RTK, you can quickly see the specific situation of the problematic area in the farmland area in more detail. Therefore, after using Phantom 4 RTK to plan and measure the problem area, spray equipment is used to diagnose and deal with the problem area effectively and timely.

About DJI:
https://www.youtube.com/watch?v=JInz16OSaAc

www.wonderfull.ca