

Quidich: Agriculture Case Study

Account Background

In late April Quidich mapped a small, 0.3 acre farm near Boisar, Maharashtra. Using drone imagery we can make maps that allows the farmer to identify problem areas in their crop before it is apparent to the naked eye. By creating a Normalized Difference Vegetation Index (NDVI) map the farmer is able to have a better understanding of how his crop is growing. This map colors plants which are growing healthily as green, the darker the green the more “lush” the plant. Plant’s which are stressed appear as shades of light green to red. This way the entire farm can be examined from this map, and resources such as water, pesticide, fertilizer, ect can be better managed. This map can allow the farmer to understand the spatial variation of the soil in the fields, see where disease may be spreading, or see where pest’s are a problem.

Solution Deviced

Using an in house customized multirotor drone equipped with a Mica Sense Red-Edge multispectral camera we surveyed the field. This camera simultaneously capture’s five different spectral bands, giving us the flexibility to produce not only high resolution true color images, but also the NDVI map. We planned the flight in the office by drawing a polygon over satellite imagery of the farm and mapped out the flight path. The day we choose to fly was sunny and had little clouds; NDVI maps can be inaccurate if shadows are present on the images. We ensured no clouds were creating any shadows, and proceeded to fly. This project had a flight time of less than 10 minutes, and flew at roughly 5 m/s at 100m of altitude capturing 50 images. We used three GCP’s (ground control points) set with a powerful differential GPS unit to ensure geographic accuracy. Combining our powerful data processing machine (32gb RAM, 8gb video RAM, overclocked 3.00 GHz i7 processor) and a complex understanding the environmental conditions at the time of the flight we use photogrammetry software to make our maps. Because of the small size of this farm, we were able to produce these two maps very quickly after returning to the office from the field. This information hopefully increases the farmer’s overall yield and quality of the crop.

Results

Team: 2 people

Flight time: 10 min

Flight Altitude: 120m

Number of pictures: 50

Number of GCP’s: 3

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GSD (Pixel Resolution) – 5cm

Total worktime: 1 day

Drone: Customized multirotor with multispectral camera

