DJI Mavic 3M Guide for Mapping Broadacres Fields

This guide will help you to map broadacres fields in different growing stages with ease

Introduction

Hi!
I am Nemanja Carapic, the Lead Drone Pilot and Drone Operation Specialist at Agremo, with over seven years of experience in drone mapping and operations.

As a certified drone operator, I have conducted over 800 mapping missions using various types of drones.

My experience includes drone mapping, data processing, organizing mapping projects, and providing drone training.

In this guide, we will demonstrate how to configure flight parameters for mapping broadacre fields with the DJI Mavic 3M for two specific use cases: early and mid-season mapping.

Mapping app

For mapping with the DJI Mavic 3M, we suggest utilizing DJI Pilot 2, which is pre-installed on the DJI PC Pro controller. DJI Pilot 2 provides a user-friendly interface and a variety of mapping features to generate high-quality maps and models using your Mavic 3M.
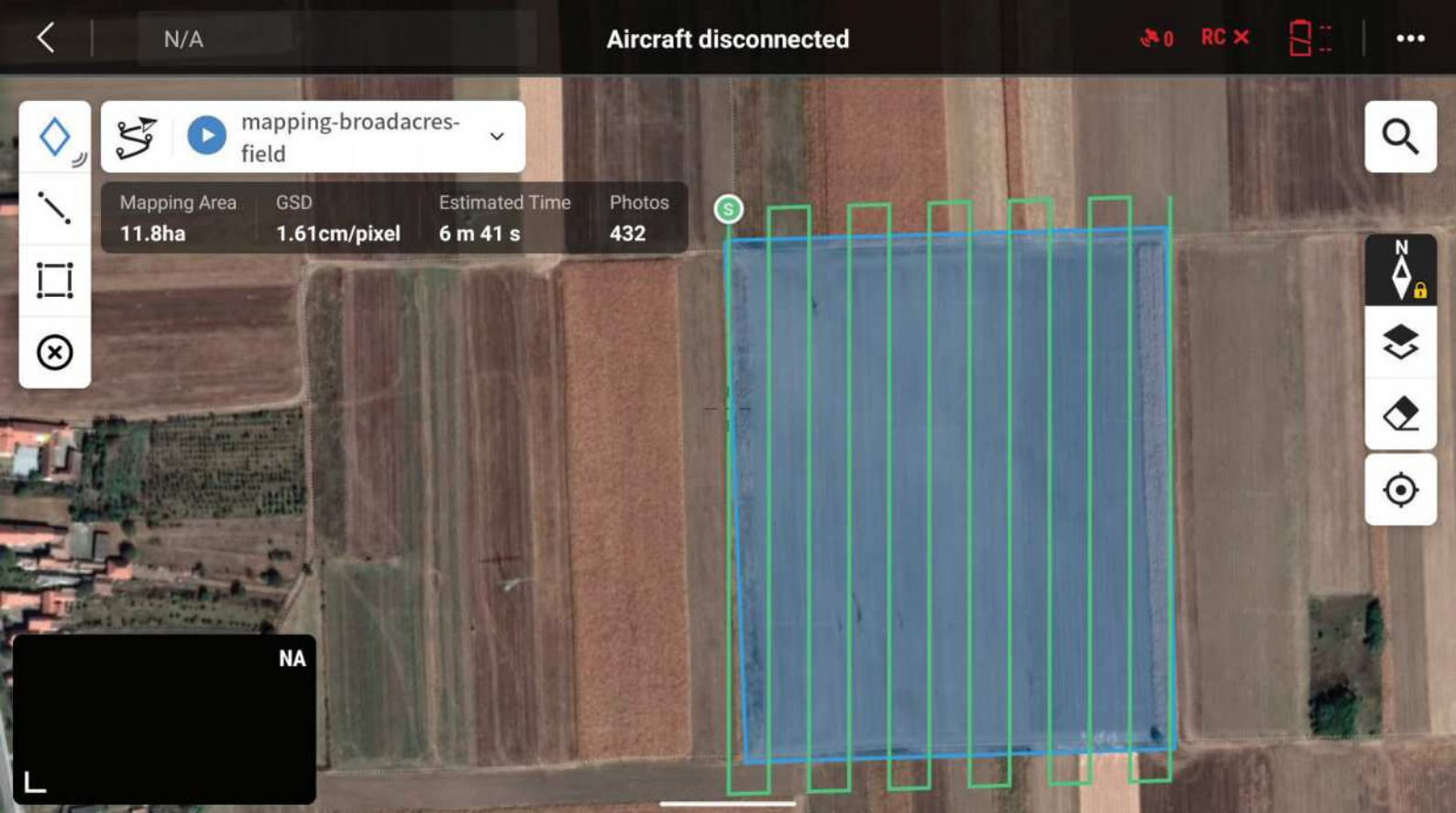
Creating mapping area or Area of Interest (AoI):

Manual Area Selection: Draw the boundaries of the area you want to map directly on the map interface using the manual selection tool.

Importing KML Files: Import a KMZ file from your controller. To do this, create a KMZ file using Google Earth, transfer it to an SD card, insert the SD card into the controller, and import the file into the controller's software.

Mapping area margin

When defining an area of interest, whether through freehand drawing or file upload, access the advanced settings and specify a margin. For this particular flight, we suggest setting the margin to 33 feet (10 meters).

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mapping-broadacres-field

Mapping Area	GSD	Estimated Time	Photos
11.8ha	1.61cm/pixel	6 m 41 s	432

GSD & Altitude - RGB

EARLY SEASON	MID-SEASON	MID-SEASON
Suitable for stand count, vigor, and weed analyses	Weed Analyses	Suitable for vigor, yield, and damage analyses
Targeted GSD: 1.0 in/pix (2.5cm/pix) or lower	Targeted GSD: 1.0 in/pix (2.5cm/pix) or lower	Targeted GSD: 2.0 in/pix (5cm/pix) or lower
Altitude: 300 feet (90m)	Altitude: 300 feet (90m)	400 feet (120m)

Overlap Settings - RGB

The front overlap is set to 80%, while the side overlap is set to 70%.

Speed Setting - RGB

The speed is set to 13.7m/s, calculated by the flight planning application based on the flight altitude and overlap.

GSD & Altitude - Multispectral

EARLY SEASON Suitable for stand count, vigor, and weed analyses	MID-SEASON Weed Analyses	MID-SEASON Suitable for vigor, yield, and damage analyses
Targeted GSD: 1.0 in/pix (2.5cm/pix) or lower	Targeted GSD: 1.0 in/pix (2.5cm/pix) or lower	Targeted GSD: 2.0 in/pix (5cm/pix) or lower
200 feet (60m)	200 feet (60m)	360 feet (110m)

Overlap Settings - Multispectral

The front overlap is set to 80%, while the side overlap is set to 70%.

Speed Setting - Multispectral

The speed is configured at 13.7m/s, determined by the flight planning application based on the flight altitude and overlap.

RTK

Given the Mavic 3M's support for RTK, this feature can be leveraged to produce high-precision maps.

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Step 2.
Fly the mission

Pre-flight:

Identify a suitable area for takeoffs and landings.

Check for nearby power cables.

Set up the aircraft and ground station.

During Flight:

Execute the flight as planned.

After Flight:

Verify that nothing is left behind.

Checking Captured Data:

After the flight, ensure that all photos are collected.

Check for any gaps in data capture.

To ensure a smooth upload process and accurate processing, follow these steps when uploading your RGB and/or MS raw data to the Agremo app:

Select Data	Choose the RGB and/or MS raw data from your SD card or device.
Zip Files	Zip the selected data files.
Upload to Agremo	Upload the zipped file to the Agremo app either as a file or via a public link.
Stitching Process	The new Agremo stitching process merges all map bands (JPGs and TIFF) to ensure full alignment.
Orthomosaic Output	After stitching, the orthomosaic output (GeoTIFF) is divided into RGB orthomosaic (the first three bands) and MS bands (G-R-RE-NIR).
Two Maps	Users who upload RGB&MS raw data will have two maps: one RGB map and one MS map on the Agremo app.
Processing Notification	You will receive an email notification when all of your images are uploaded and processing begins.
Completio Notification	A second email will be sent when processing is finished.

By following these steps, you can ensure that your RGB and/or MS raw data is processed accurately and efficiently in the Agremo app.

Step 4.
Request an analysis

Analysis Request:

Upon receiving a notification that your map is ready, access the Agremo app. Draw or import your Area of Interest (AOI), select it, and choose the desired analysis.

Analysis Results:

After the analysis is completed, access and manage the results through the Agremo web interface. Utilize Agremo's agricultural tools, such as Zone Management or Variable-rate Spraying tools, for further analysis and decision-making.

Conclusion

The DJI Mavic 3 Multispectral agricultural drone, when paired with DJI Pilot 2, is highly suitable for mapping agricultural fields.

The Mavic 3M is 50% more efficient than other best-in-class multirotor drones, covering 50% more Area of Interest (AoI) with a single flight (battery). There is no need for MS sensor calibration. The actual flight time in real field conditions with one battery is approximately 33 minutes when using both sensors simultaneously.

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Happy
mapping