

Precision Farming

Tema 4: TRANSFORMASI KE ARAH TEKNOLOGI DAN TEKNIK MODEN PERTANIAN

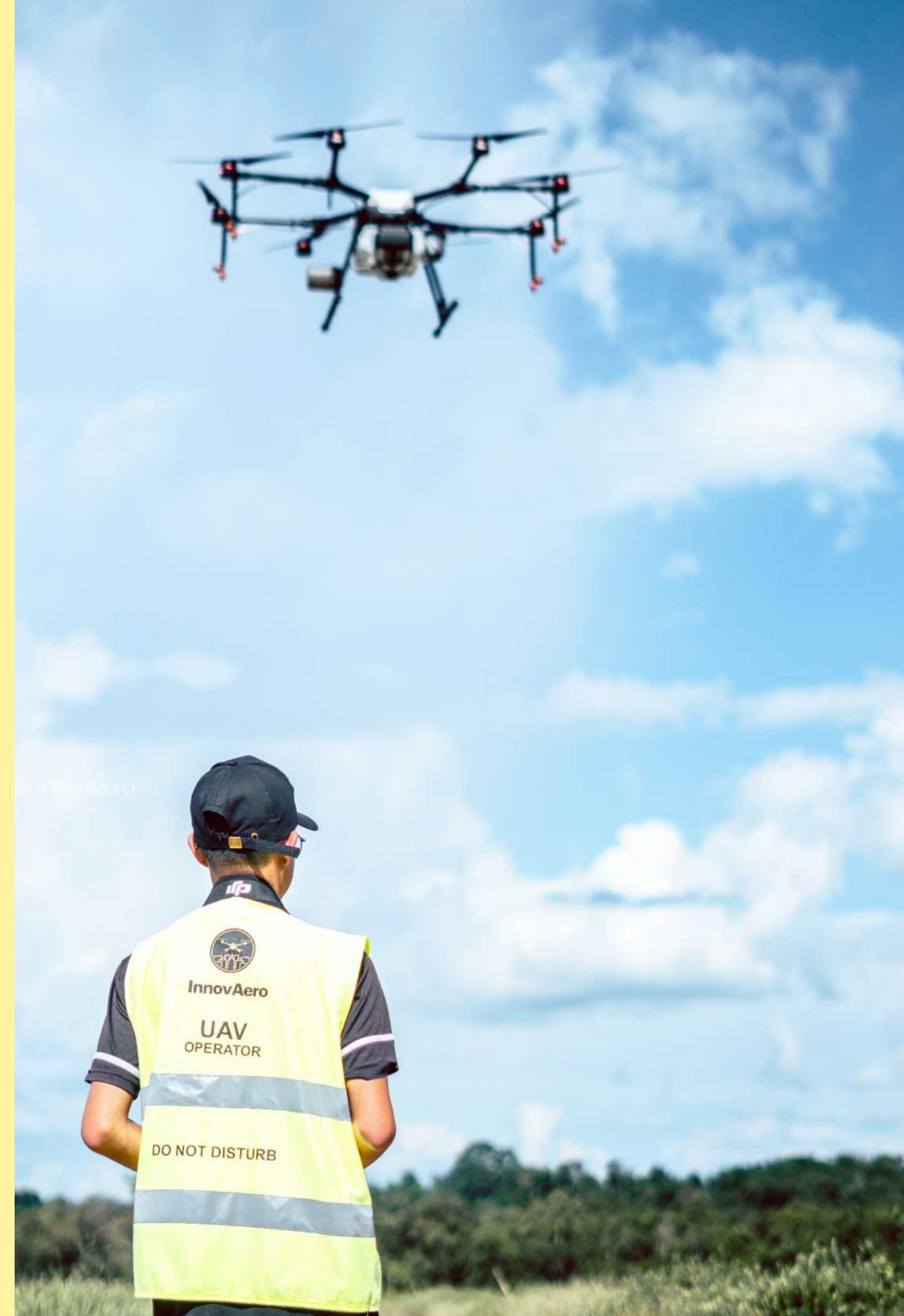
Sempena Hari Peladang, Petani, Penternak dan Nelayan ke-11



InnovAero

Enhancing the future with UAV innovation

By Nurhafizah Abd Manan

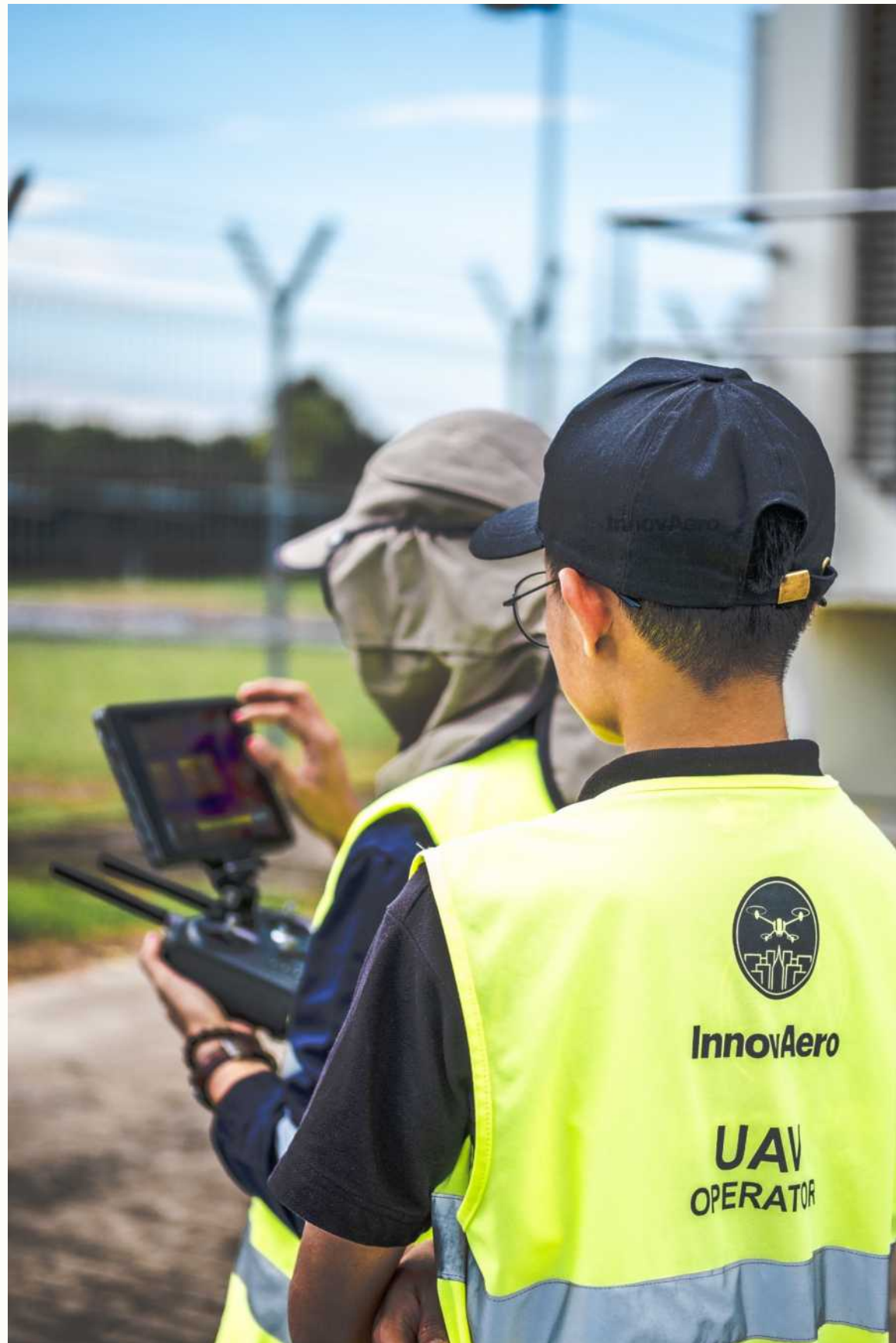


About InnovAero

A local based drone company that focuses on providing end-to-end enterprise solution through innovative method with drone, IoT and software

DAAS + **SAAS**
DRONE AS A SERVICE SOFTWARE AS A SERVICE

- Improve project situational awareness
- Improve project standards
- Ensure compliance to requirements
- Reduce costs, delays and mistakes
- Health and safety improvement
- High quality data acquisition for data driven decision making



MEET THE TEAM



IAN ONG
FOUNDER & CEO



HADI SABRE
MARKETING ANALYST



ANG KOK HO
PROJECT MANAGER



FIZAH MANAN
GEOSPATIAL ANALYST



AZIM ZAILI
JUNIOR UAV PILOT



MIZA RHYME
FRONT-END DEVELOPER



MIZAH BUJANG
BACK-END DEVELOPER



IQMAL FUAD
MARKETING
COORDINATOR



FAIZ JAYA
JUNIOR DATA ANALYST



AZRI SULAIMAN
JUNIOR UAV PILOT

POTENTIAL PROBLEMS IN AGRICULTURE

MANPOWER

- Insufficient trained workforce
- Under-trained labour force
- Shortage of skilled manpower

DATA

- Data are partially not digitized
- Late discovery & detection
- Lack of actionable data
- Lack of assurance in data

CLIMATE

- Climate change
- Reason for increasing rate of pests/diseases

RISK

- Humans are exposed to chemicals
- Potentially to get heatstroke due to working under the hot sun

What is Precision Farming?

“An approach where inputs are utilized in precise amounts to get increased average yields”



DRONES

Crop scouting for early detection and Drone spraying



SENSORS

Drone sensors for faster and easier crop scouting. Together, with IoT sensors will help to monitor crop conditions



BIG DATA

Big data supplements to change many aspects in agriculture to avoid big damages/losses



AUTOMATION

Reporting that can be a useful communication tool to monitor the performance of the crops

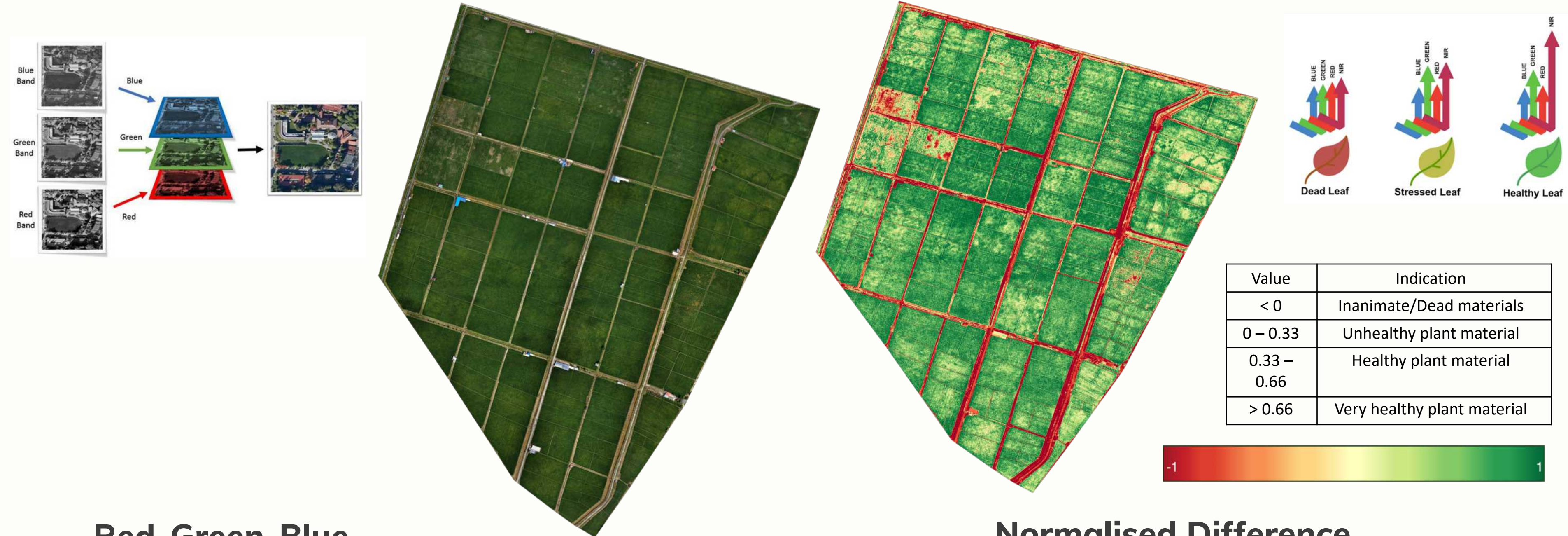


Who will benefit from the implementation of Precision Farming?

- Farmers
- Business owners
- Agronomists
- Agricultural Engineers
- Researchers
- Government bodies



MAPPING PROVIDING RGB AND NDVI DATA



Red-Green-Blue (RGB) Map

The usual image we always see to provide insights of the field

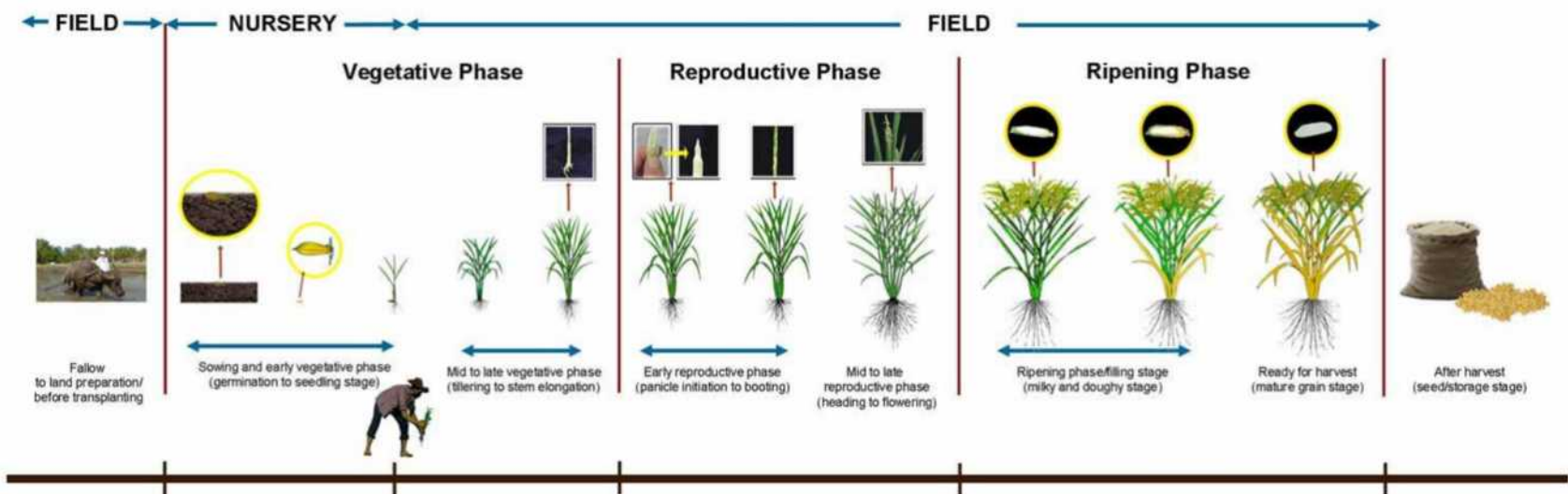
Normalised Difference Vegetation Index (NDVI) Map

The use of different wavelength obtained by the sensors to monitor the crop health of the field

Value	Indication
< 0	Inanimate/Dead materials
0 – 0.33	Unhealthy plant material
0.33 – 0.66	Healthy plant material
> 0.66	Very healthy plant material



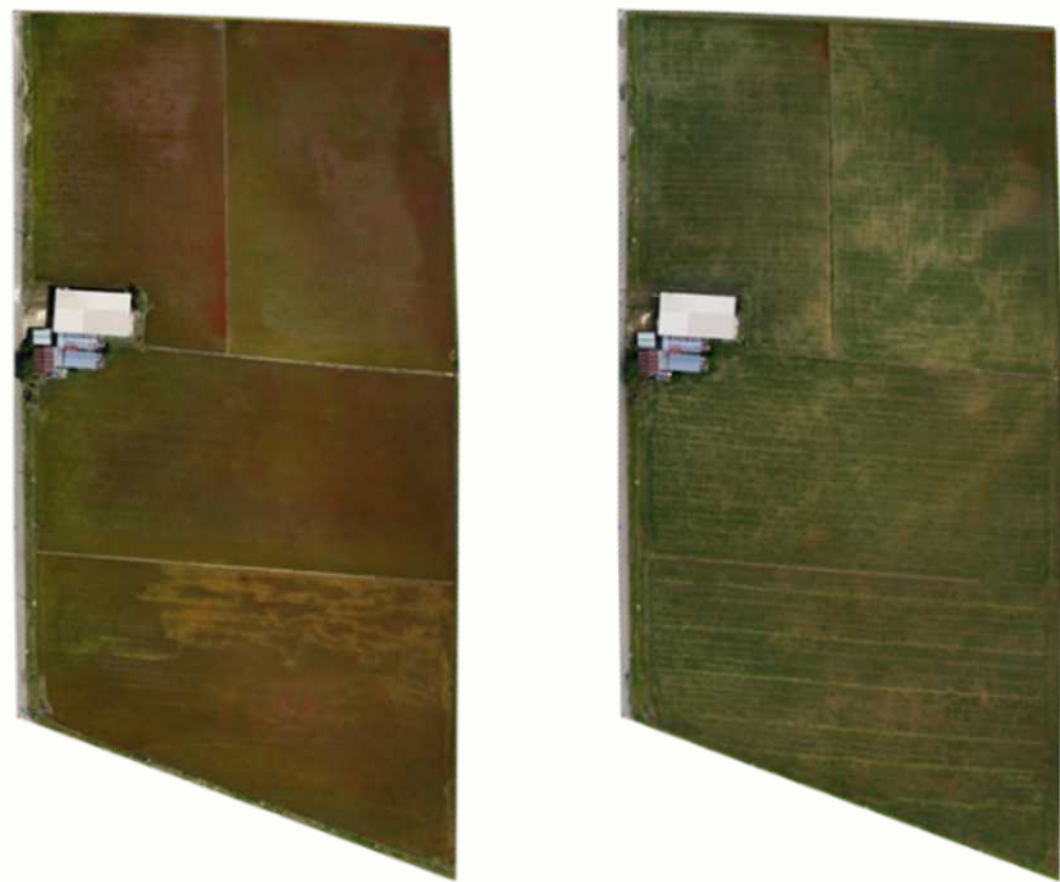
MONITORING GROWTH RATES & STAGES WITH DRONES



W1 to W3 - LAND PREPARATION



W4 to W5 - TRANSPLANTING



W6 - VEGETATIVE



W7 to W8 - VEGETATIVE



W9 to W11 - REPRODUCTIVE



W12 - RIPENING



W13 to W15 - RIPENING



W16 to W17 - AFTER HARVEST



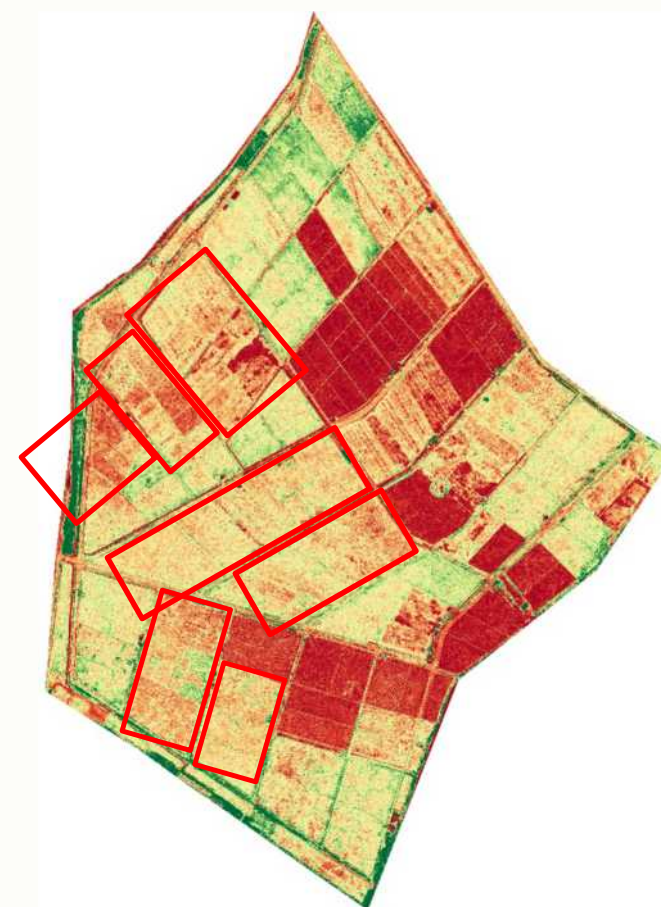
MONITORING PEST ATTACKS & DISEASES WITH DRONES



**Week
12**



**Week
13**



**Week
14**



**Week
15**

PRESENCE OF SNAILS

REFLECTANCE OF SOIL
ZERO TO NEGATIVE VALUE

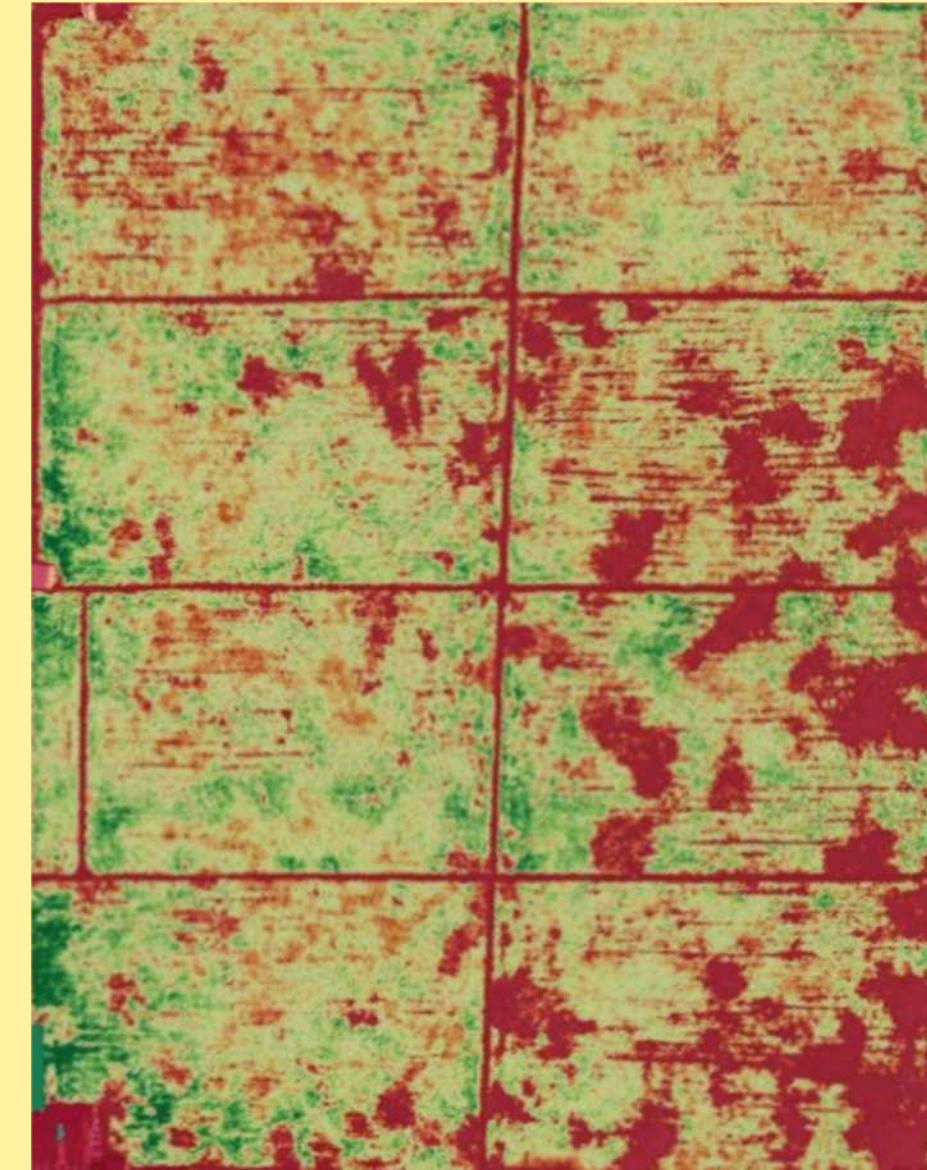
RED COLOUR REPRESENTS
AREAS OF MISSING
SEEDLINGS

WEEK 1

WEEK 3

WEEK 6

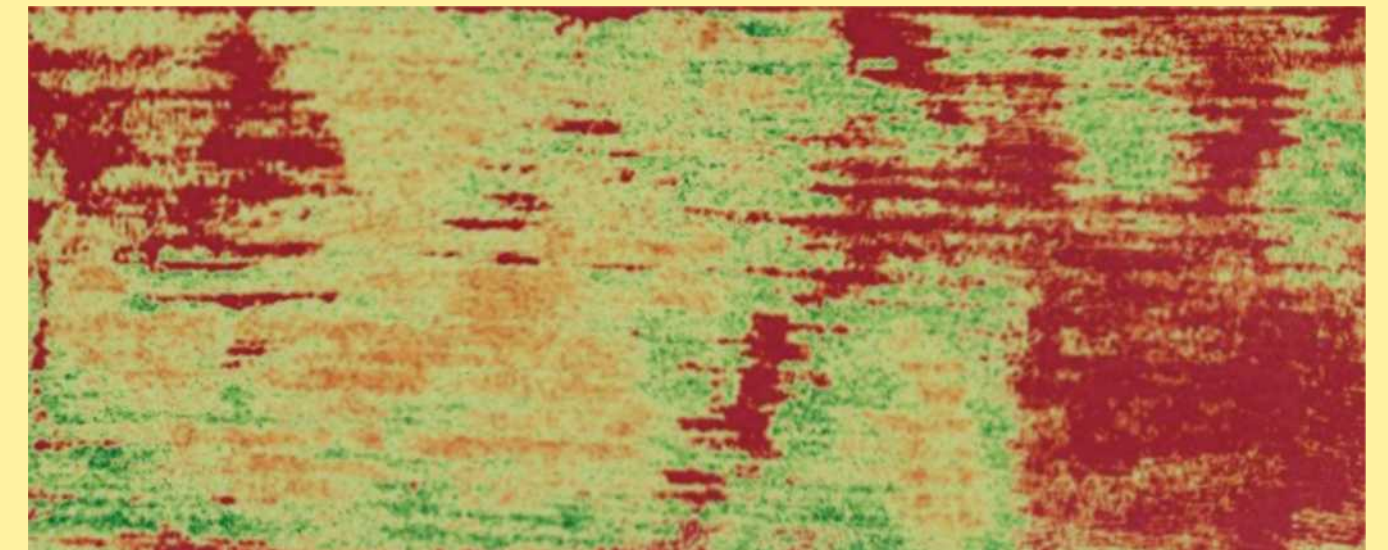
NDVI



NOTE:

- Monitor irrigation canals and rivers
- Proper water management and land levelling
- Fallow periods
- Tillage
- Draining of field
- Molluscicides

WEED MANAGEMENT



IDENTIFYING WEEDS

YELLOW TO RED NDVI COLOURS
YELLOW PLANT COLOUR
LESS PLANT SPACINGS /
CROWDED/ OVERGROWN

WHY?

Prevent losses in yield and production, preserve grain quality.
Decrease yield by competing for sunlight, nutrients & water

PRESENCE & GROWTH OF BROWN HOPPER (BENA PERANG)



IDENTIFYING BROWN HOPPER

PROGRESSION OF YELLOW TO RED NDVI COLOURS
YELLOWING, BROWNING, DRYING OF PLANTS, HOPPERBURNS
CIRCULAR PATCHES OF DRYING PLANTS/ LODGING OF MATURED PLANT
SPREAD OUT UNTIL IT COVERS THE WHOLE FIELD

DRONE SPRAYING

- ✓ Minimal labour requirement
- ✓ Less amount of pesticides used
- ✓ Effective spraying coverage throughout the field
- ✓ Cut down in production cost
- ✓ Time saving



HOW CAN DATA PLAY AN IMPORTANT ROLE IN AGRICULTURE?

- ✓ All-in-one platform
- ✓ Individual plot information
- ✓ Real-time data
- ✓ Early warnings and notifications for users
- ✓ Automated reports

AgriPlatform

Detail Audit Report

PLOT TABLE

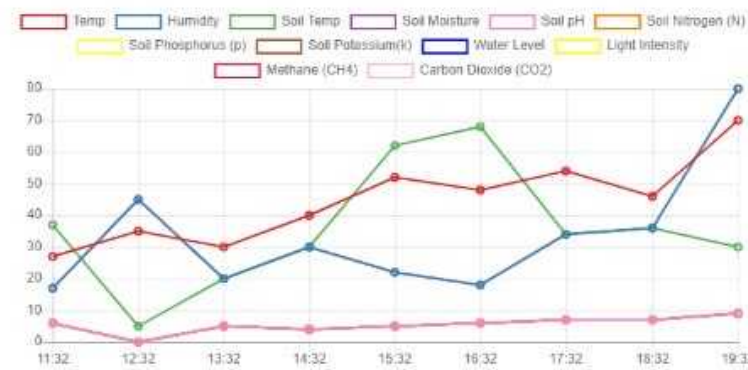
Plot No.	Location	Status	Date Start
Plot A	Wasan	Bad	23-05-2019
Plot B	Wasan	Warning	23-05-2019
Plot C	Wasan	Good	23-05-2019
Plot D	Wasan	Good	23-05-2019

PLOT A



Day Week Season

DAY



Temp & Humidity

Soil Temp & Soil Moisture

Soil pH

Soil NPK

Water Level

Light Intensity

Gasses

TEMP & HUMIDITY



InnovAero

Home

Explore Site

Display All Data

Display Data

PLOT NO.1

Overall Sensor

Temperature/Humidity

Soil Temperature/Soil Moisture

Soil PH

Soil NPK

Temperature/Humidity Sensor Bad

Water/Soil Temperature Bad

Water pH Level Good

Water Level Neutral

Soil Moisture Bad

PLOT NO.2

Overall Sensor

Temperature

Temperature/Humidity Sensor Bad

Water/Soil Temperature Bad

Water pH Level Good

Water Level Neutral

Soil Moisture Bad



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Precision Farming Using Drones



Our Services:

- Autonomous spraying of fertilizers and pesticides using drones
- Digitizing fields by providing high-resolution maps
- Digital scouting & crop protection to optimise harvest using sensors

Why Choose Us?

-  Starting at \$35 per hectare
-  9 minutes per hectare
-  HSE Improvements
-  Licensed Drone Pilots
-  100% Local Bruneian

CONTACT US

For any questions or clarifications on our services

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