

Introduction

Use of drones in agronomy

- 1 Rapid scouting
- 2 Crop health monitoring
- 3 Field variability
- 4 Better decisions

Traditional Crop Monitoring

- Limited Data Availability
- Often Destructive
- Limited Scalability
- Environmental Variability
- High Cost of Implementation

Crop Monitoring Using Drones

- Non-Destructive Monitoring
- Precision Measurements
- Temporal Growth Insights
- Cost and Labor Efficiency
- Data-Driven Decision Making

Data Collection: Components needed for UAV imagery

Drone platforms



Multirotor

Detailed plot scouting; easy takeoff and landing.



Fixed-wing

Longer flights; efficient mapping over large fields.



VTOL

Large-area mapping with vertical takeoff flexibility.

Choose the platform based on field size, resolution needs, and flight logistics.

Sensor types

RGB



Multispectral



Thermal



LiDAR



Sensor choice determines which crop traits can be mapped.

Other accessories

Battery



Controller/tablet



RTK/GCPs



Calibration panel



Mission planning & Flying

MISSION PLANNING



- ✓ Set area of interest
- ✓ Define flight lines
- ✓ Set altitude & overlap
- ✓ Check weather & battery



Data Processing: From raw images to mapping products

Flight planning



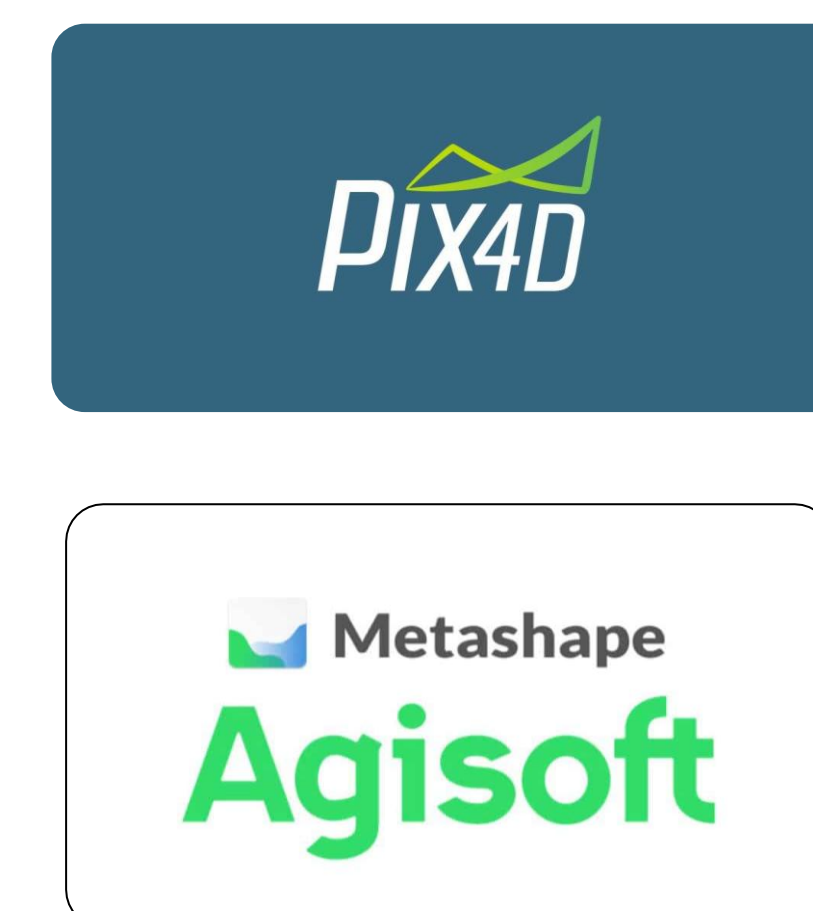
Capturing Drone Data



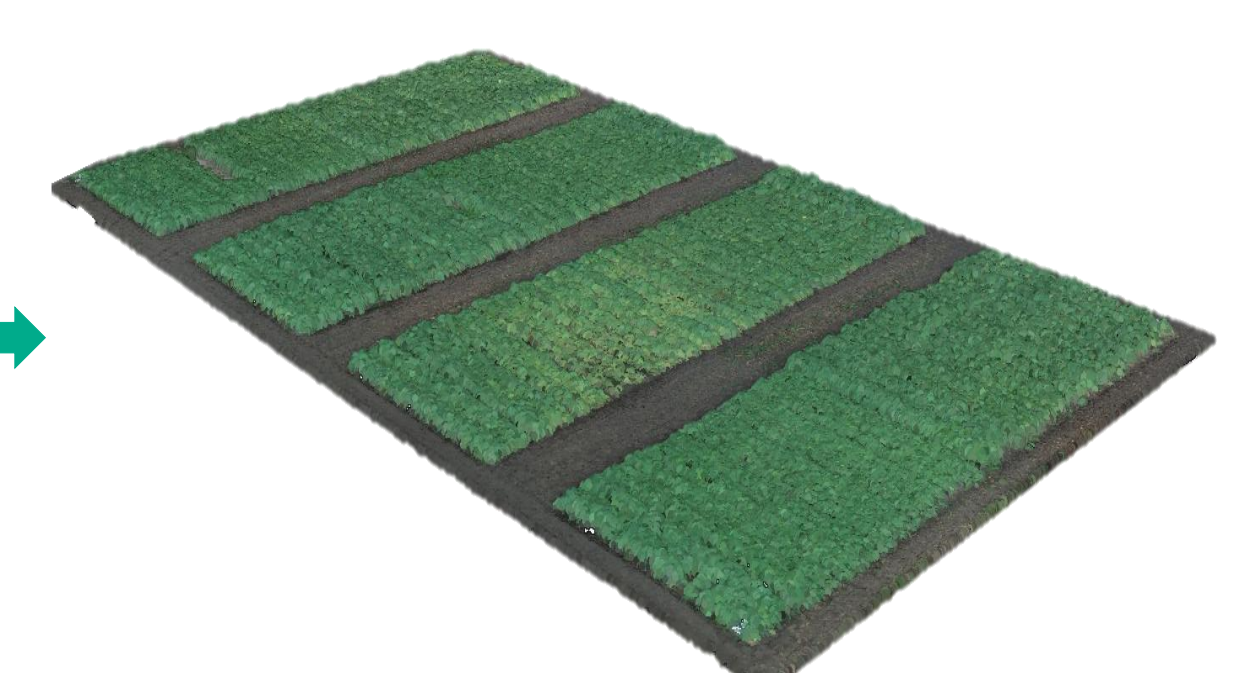
Raw Data



Aligning and Stitching Images

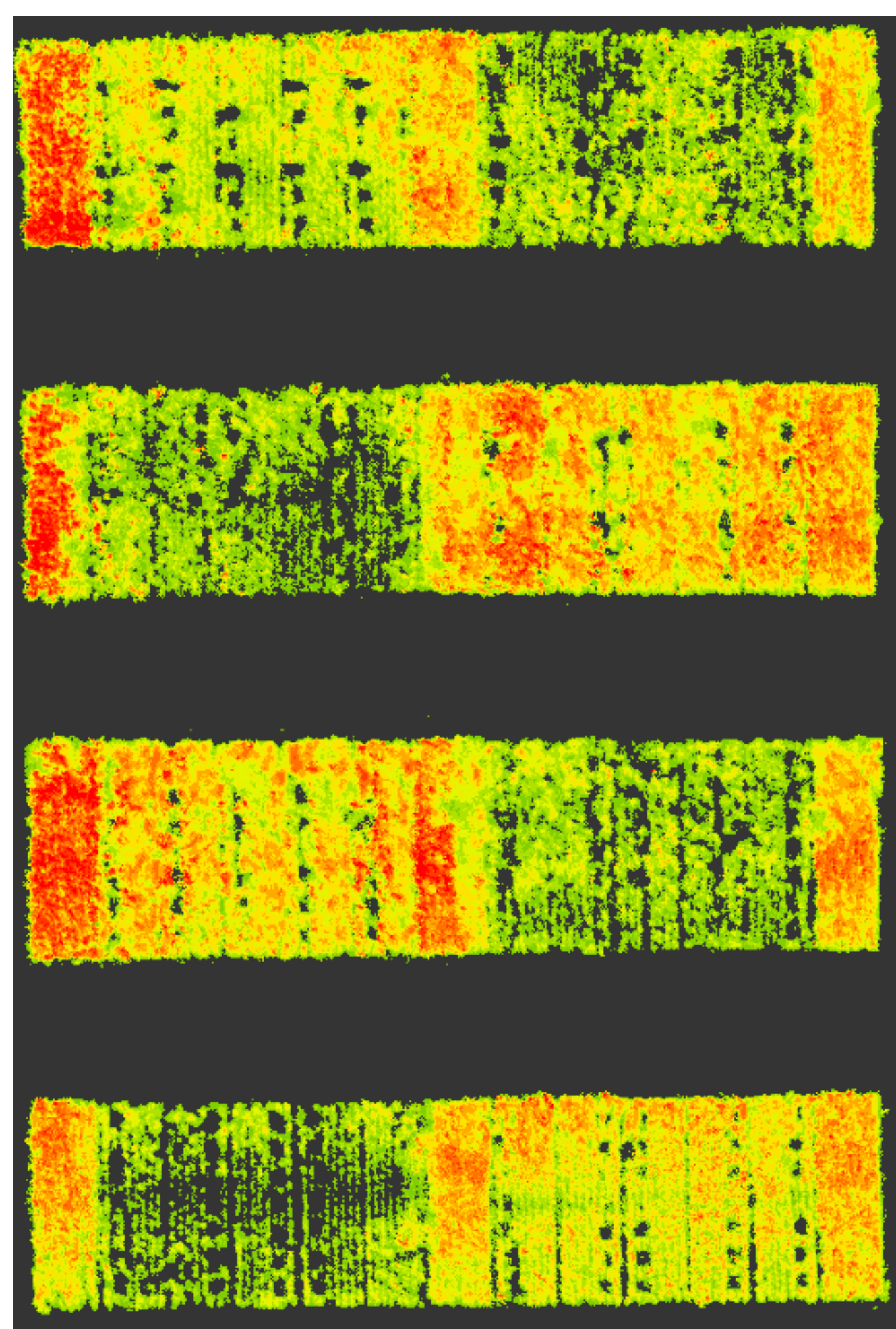


Final Field Map

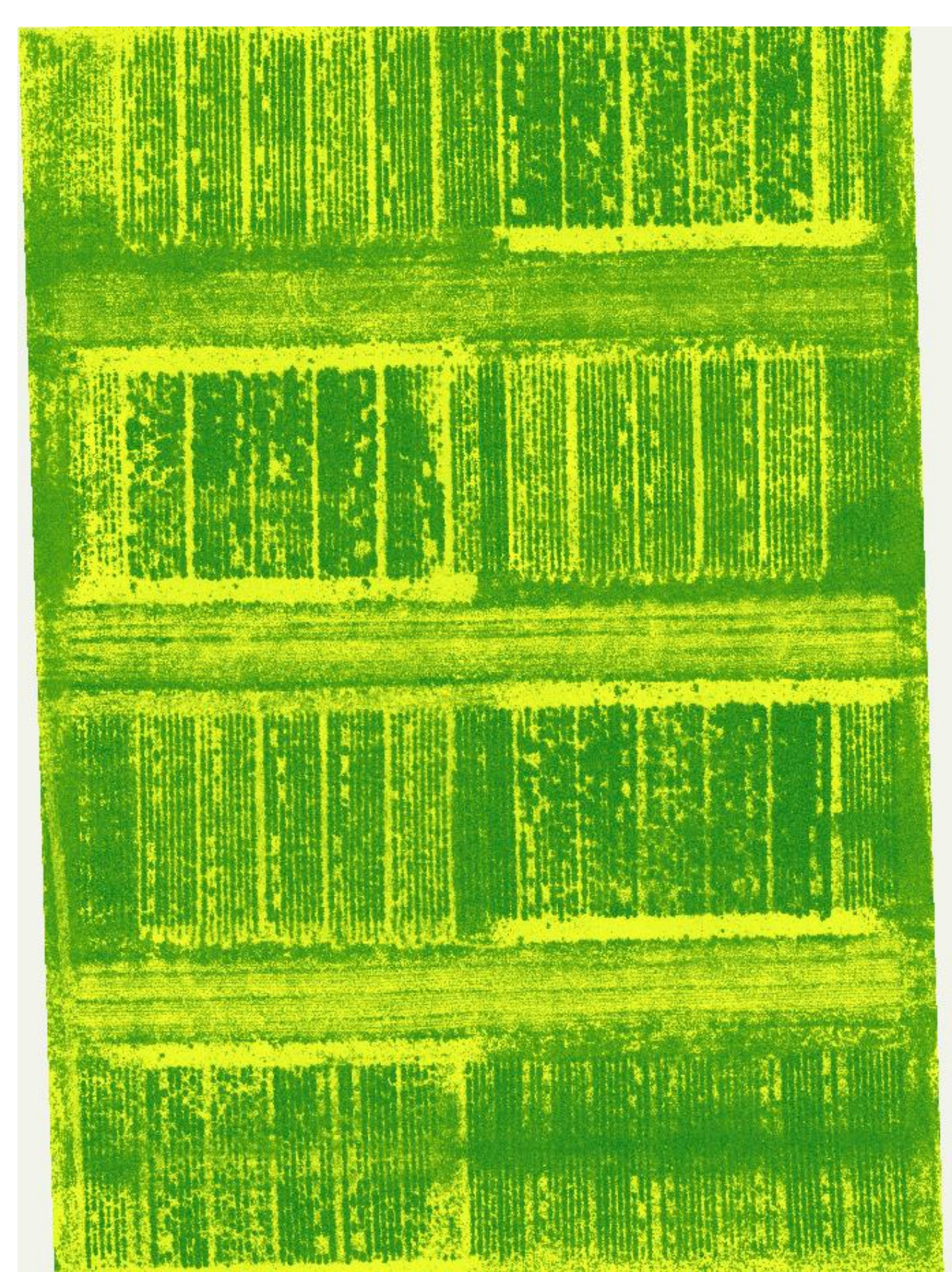


Interpretation: Turning maps into agronomic insight

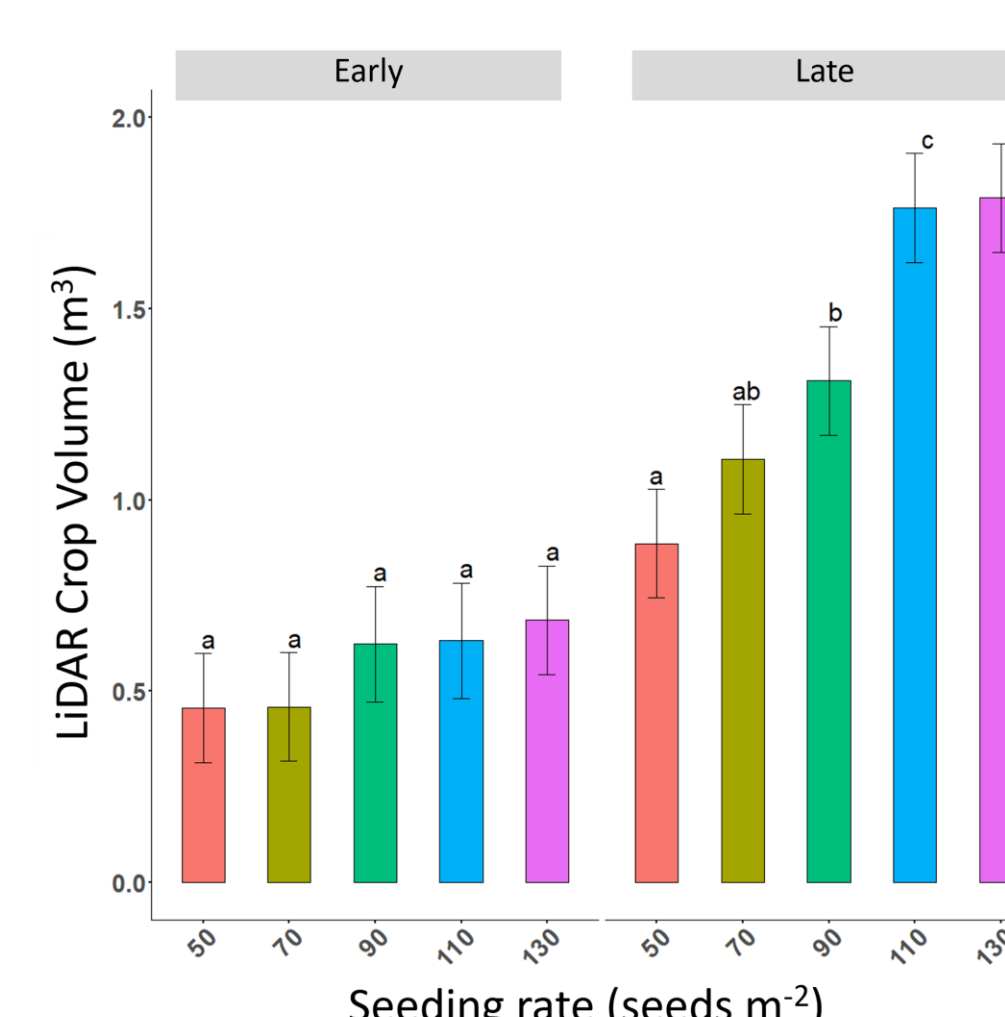
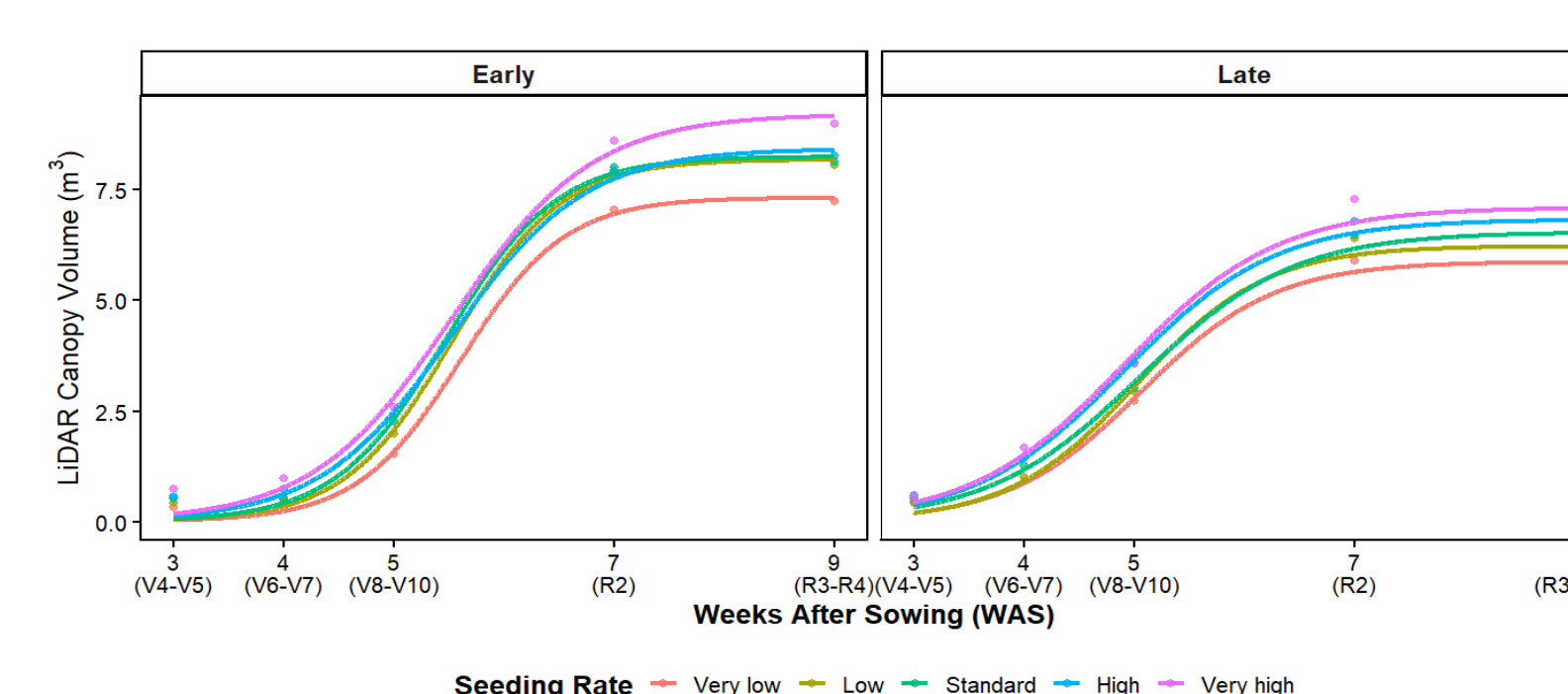
Canopy height map



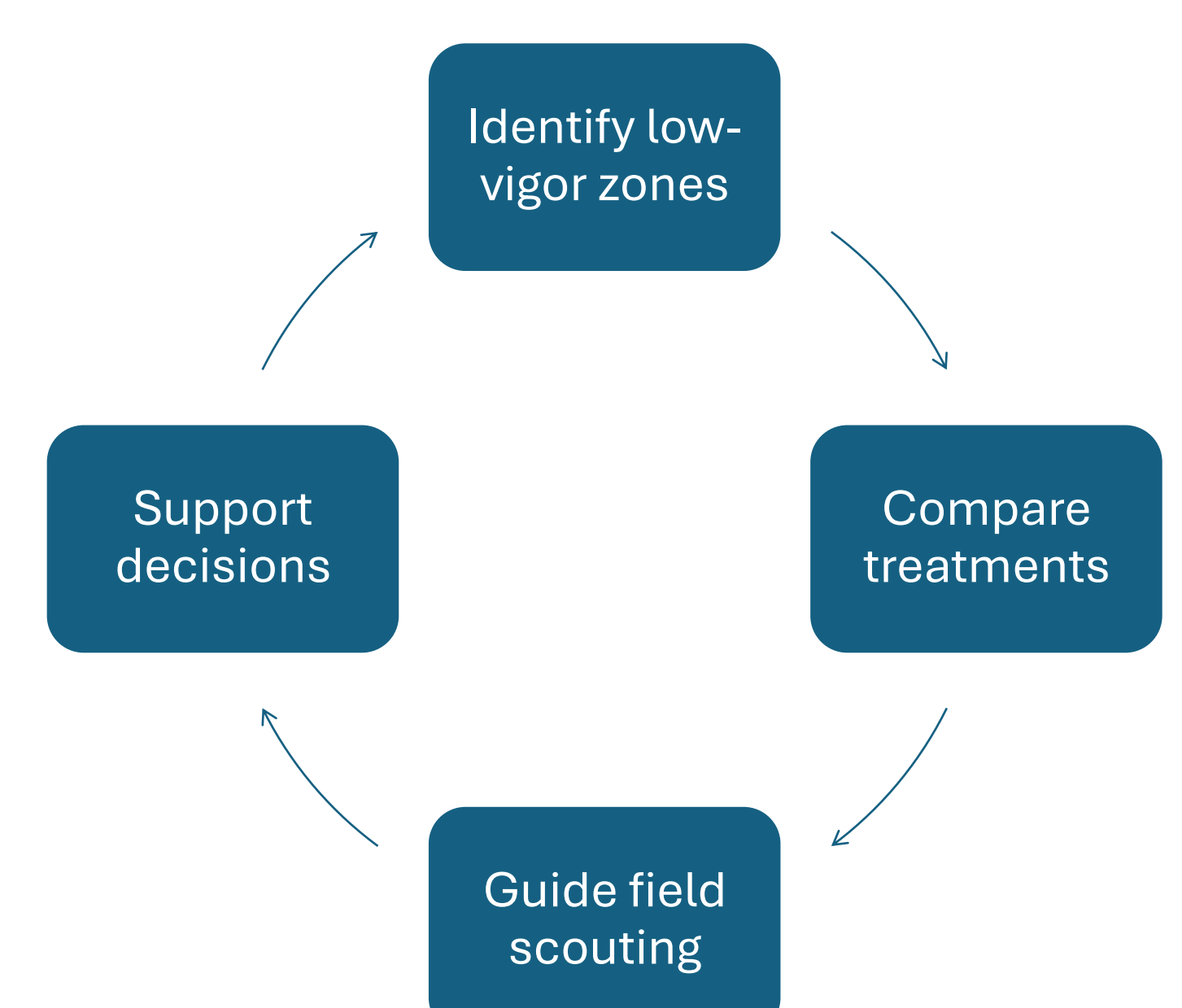
NDVI/NDRE map



Result analysis



Interpretation



Acknowledgement