Algorithms to improve efficiency in agtech using high-detail image processing systems to estimate yield, detect stress levels in plants and manage land using commercial, off-the-shelf hardware and consumer devices. These tools give large-scale visibility that improve productivity while saving time and money.

**Competitive advantage**
- Simple to use image processing systems that give large-scale visibility with much greater detail than aerial imaging
- Uses highly affordable and available image capture systems
- Robust algorithms backed by ground-truth data

**Impact**
- The development of more robust algorithms for processing images from tree-size to microscopic level will reduce labour requirements in vineyards and orchards, improve the reliability of image data management and provide greater insight into yield estimation processes.

**Successful applications**
- There have been nine finished deployments and evaluations of the technology, with three in process.
- Refined the data collection practices of Pernod Ricard in the Marlborough region of New Zealand.
- Apple flower and canopy density mapped by SwarmFarm using algorithms
- QR code based image processing tools simplifying data collection to identify leaf and trunk disease by Plant and Food Research New Zealand
- Algorithms applied by Tasmanian Institute of Agriculture for flower counting and early-stage yield estimation
- Algorithms being used by researchers in the Netherlands for stomata detection
- Komatsu Japan is implementing patented earth-moving algorithms

**Capabilities and facilities**
- Local and remote computing servers configured for large-scale image processing.
- Field sites for evaluating mobile sensing systems.

**Our partners**
- SwarmFarm
- Bosch
- Adama
- Horticulture Innovation Australia Limited
- Plant and Food Research New Zealand
- Lincoln Agritech
- Pernod Ricard Winemakers Australia Pty Ltd
• Treasury Wine Estates
• Australian Wine Research Institute
• Wine Australia
• Makinex