UAVs in Agriculture

Leighton Pearce

leighton.pearce@gmail.com

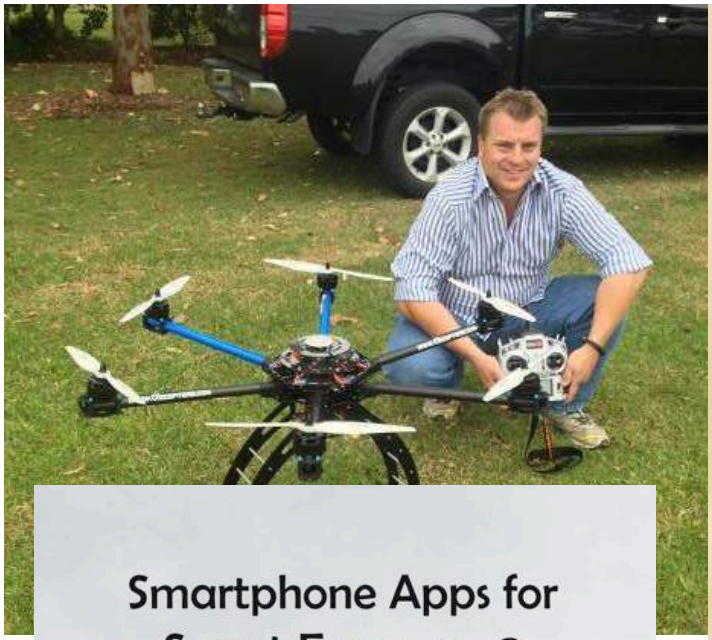
0427 688 028

Growing Solutions

Growing Solutions

MagPIE

growing solutions



Getting it done for the agricultural and environmental industries

- Unmanned Aerial Vehicle (UAV) services, sales and support
- Project management
- Events and workshops
- Video production, from start to finish
- Social media marketing

http://agex.org.au/project/smartphone-apps-smart-farmers-v2/

MagPIE

growing solutions

Drones

MagPIE

growing solutions

Terminology

Drone

UAV – Unmanned aerial vehicle

RPAS – Remotely piloted aerial system

Fixed wing Vs Multi-rotor

MagPIE

growing solutions

The law - CASA

- >30m from people
- Do not fly over populated areas
- Do not operate within 3nm of aerodrome
- Only operate in day light
- Do not fly above 400 ft
- Visual line of sight
- Can not discharge

MagPIE

growing solutions

The Process

becoming accredited!

MagPIE

growing solutions

OBTAINING YOUR CASA

UAV CONTROLLER CERTIFICATE

OBTAIN your ARN.
An ARN is an Aviation Reference Number. It is similar to an account or customer number & should be quoted with all official communication with CASA.

1

2

PURCHASE PPL THEORY **BOOKS** & EXAM **TOOLS.**

STUDY for the PRIVATE PILOT THEORY EXAM
You can self study or join our UAV focused PPL Theory Course covering the official CASA requirements.

3

4

Get **AROCP.**
An AROCP allows the certificate holder to communicate via an airband radio from the ground to all aircraft & helicopters in normal & emergency operations.
Note: The iCOM A6 handheld radio IS certified for Australian ground to air communication & the A15 is NOT.

Get a **BAK EXAM EXEMPTION.**
Apply for a "Letter of Introduction" from CASA to receive this exemption.

5

6

BOOK the PPL THEORY **EXAM DATE.**
Book your CASA PPL Theory exam date online via ASL or at an authorised flying school.

PASS the PPL THEORY **EXAM.**
Pass: 70 %
Duration: 3.5 hours
Multi-choice questions

7

8

Obtain your UAV **MANUFACTURER'S ASSESSMENT.**
This includes flying skills, checks, planning & safety requirements according to the specifications of the RPA manufacturer.

LOG 5 HOURS of Flying Experience.
Use a spreadsheet or "RPAS Logger", a mobile app enabling you to log all your air-frames, controllers / remote pilots, batteries etc.

9

10

Obtain a Class 2 **MEDICAL CERTIFICATE.**
This is optional (depending on your company).

SUBMIT your UAV Controllers Certificate Application Form to CASA.

11

= Services we offer.

AROCP = Aircraft Radio Operator Certificate of Proficiency
RPA = Remotely Piloted Aircraft
UAV = Unmanned Aerial Vehicle
PPL = Private Pilot License

www.rpastraining.com.au
info@rpastraining.com.au
1300 772 787 / 1300 RPASTRAINING

RPAS TRAINING & SOLUTIONS

OBTAINING YOUR CASA

UAV OPERATOR CERTIFICATE

1. **Introduction to ICAO, CASA, CASR101 & Relevant RPAS Operations**
   1) Aerial Spotting
   2) Aerial Photography
   3) Power Line Inspections
   4) Aerial Surveying
   5) Visual Line of Sight
   6) Beyond Visual Line of Sight
   7) Your Idea
2. **Development of a Business Plan & Market Analysis**
3. **Conduct a Risk Assessment**
   1) Risk Register
   2) Risk Assessment
   3) Job Safety Assessment
   4) Hazard Reports
4. **Crew Induction RPAS Operation**
   1) Pilot Records
   2) Remote Pilot Certificate Checks
   3) Understand Internal Operations Procedures
5. **Crew Induction Technical**
   Implies learning the below & more:
   1) Applying Regulations & Policies during RPAS operations
   2) Completing a Notice to Airmen
   3) Maintaining RPAS Aeronautical Radio Communications
   4) Use of IT devices in the workplace
   5) Controlling the RPA on the ground & in normal flight
   6) Managing RPAS emergency / battery resources
6. **Develop the Operations Manual**
   1) General Policies & Procedures
   2) RPAS Operating Procedures
   3) Internal Training
   4) Aerial Work Operations
7. **Develop the Flight Manual**
   For each RPA Type.
8. **Develop the Maintenance Manual**
   For each RPA Type.
9. **Appoint the Chief Controller**
   Remote Pilot Certificate needs to be approved by this point.
10. **Compile the Suite of Documents for the Pre-Application Interview**
    1) Operations Manual
    2) Flight Manual
    3) Maintenance Manual
11. **Submit the Operations Manual Suite**
12. **Conduct the Pre-Application Interview with CASA**
13. **Lodge Official UOC Application Form 041**
14. **Address Comments & Changes required by CASA until the Operations Manual is approved**
    Desktop Approval
15. **Prepare for the Practical Flying Assessment**
16. **Obtain Public Liability Insurance**
    We have already contacted Insurance Companies prepared to insure RPAS Businesses
17. **Complete the Practical Flying Assessment**
18. **Once the Assessment is passed, wait for your UOC to be issued by CASA**

RPAS = Remotely Piloted Aircraft System RPA = Remotely Piloted Aircraft UAS = Unmanned Aircraft Systems UAV = Unmanned Aircraft Vehicle

www.rpastraining.com.au
info@rpastraining.com.au
1300 772 787 / 1300 RPASTRAINING

RPAS TRAINING & SOLUTIONS

The Process

Manuals

Pilots Log book

Maintenance Manual

Operation Manual – Procedures (DAMP, LiPo, Risk Assessments)

Flight Manual – User guide

Flight Control Manual

Licenses

RPAS Vs PPL for individuals

OC for business

MagPIE

growing solutions

Why UAV's in Agriculture

On demand - Real time analysis

Flexibility

Low cost

Detailed imagery

Versatile

MagPIE

growing solutions

What do we want !

Autonomous

Battery life, duration, flight time

Cost

Fail safes

Legal requirements – Farmers Vs CASA

Insurance, Professional, Public and RPAS

Sturdy, stability, replaceable part

FPV, live streaming

Full system, software, training

Easy to fly, Decision support system

MagPIE

growing solutions

System

A group of interacting, interrelated, or interdependent elements forming a complex whole

- Air vehicle
- Ground control station
- Flight controller
- Auto pilot
- Datalink, Telemetry & GPS
- Camera & Gimbal
- Power source
- Software

MagPIE

growing solutions

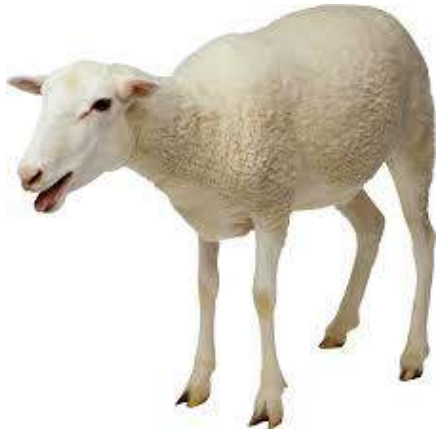
It’s all about the information

MagPIE

growing solutions

Uses of UAV's in Agriculture
SAMI

- Surveillance
- Assessment
- Monitoring
- Inspection



MagPIE

growing solutions

Uses of UAV's in Agriculture
SAMI - Mapping

Defining zones

- Yield
- Production (incl. feed production, Plant height sensors)
- Land use

Defining Infestations & Issues

- Weeds
- Pests (Vertebrates & Invertebrates)
- Drainage, soil (type, salinity, sodicity, soaks)

Defining Health

- Crop & Pastures
- Livestock
- Water

MagPIE

growing solutions

Uses of UAV's in Agriculture
SAMI - Scouting

Stock Management

- Stock movement (incl. herding)
- Stocking rates

Inspections

- Stock
- Fencelines
- Water points
- Infrastructure

MagPIE

growing solutions

Uses of UAV's in Agriculture
SAMI - Other

Cultural

- Spraying
- Seeding

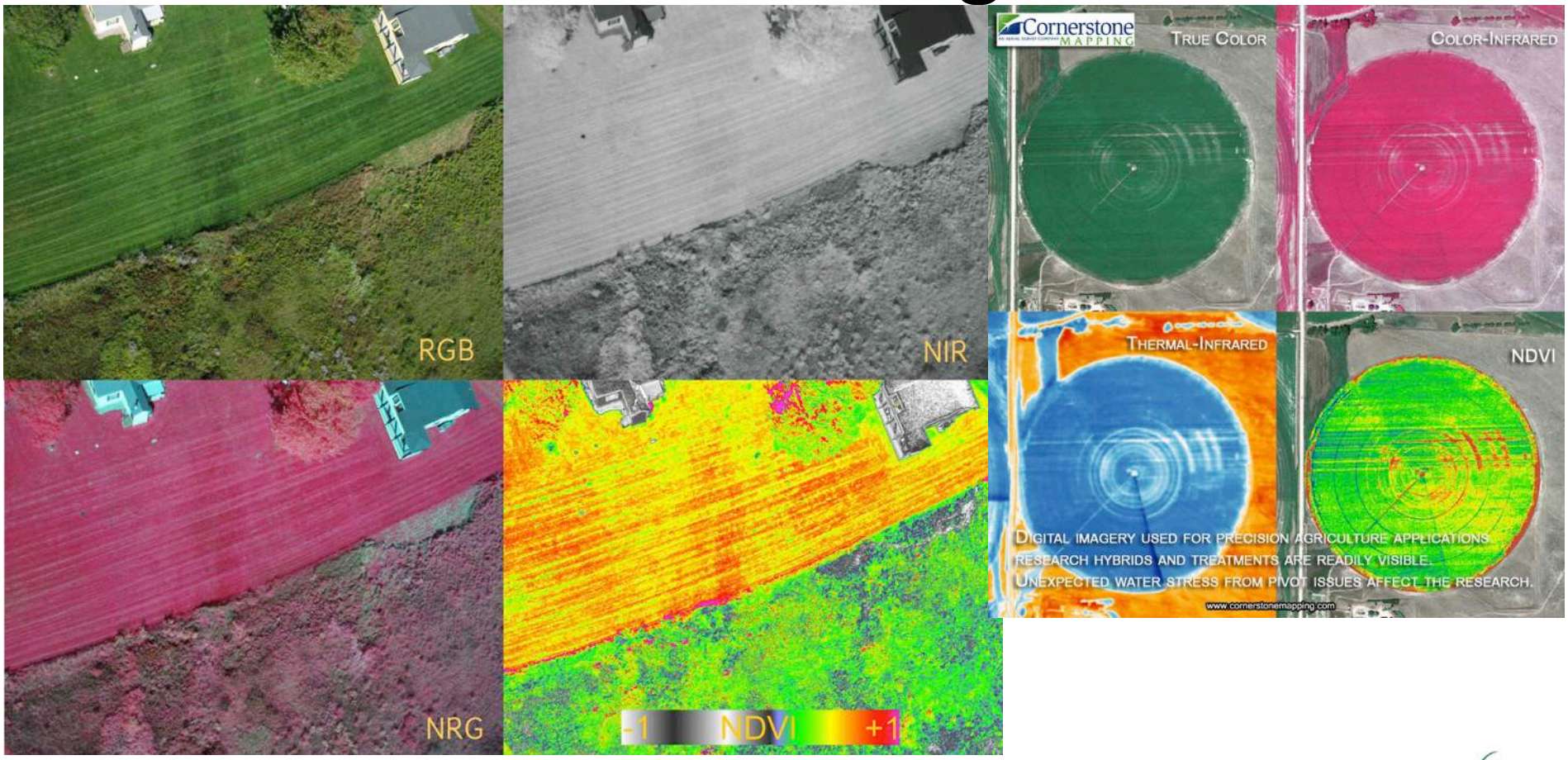
Environmental

- Wetland monitoring
- Before & After's
- Re-veg
- Erosion events

MagPIE

growing solutions

Uses for UAV's in Agriculture



MagPIE

growing solutions

Research shows

- Correlation between airborne sensors and ground sensors
- 100% field covered (addit. no compaction or fuel use)
- As sensors improve, the uptake will increase
- Savings on weed monitoring, irrigation planning have been significant
- Resolution Satellite > Light aircraft > UAV
    - 5m 10” 1”

MagPIE

growing solutions

Limiting factors

- Wind
- Rain
- Daylight
- Law
- Do we require 1” resolution
- Cowboys

MagPIE

growing solutions

MagPIE

growing solutions

Thank you

Leighton Pearce

leighton.pearce@gmail.com

0427 688 028

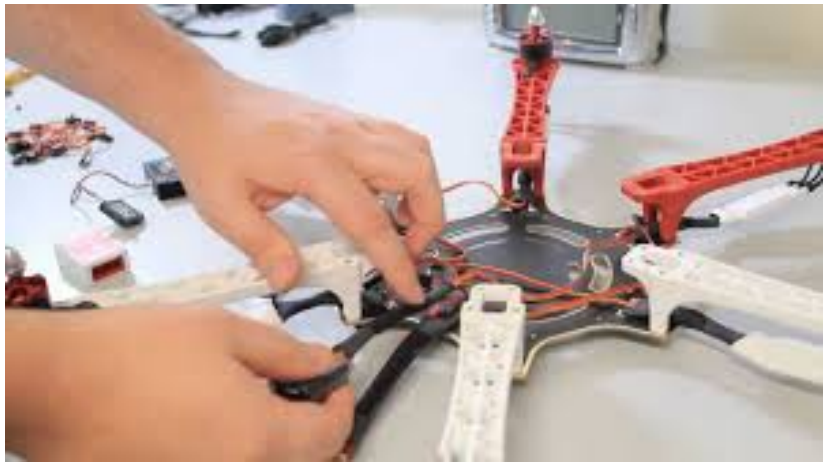
Growing Solutions

Growing Solutions

Build your own DRONE

Easy & cost effective method to enter the market !

- Group session over two days (10 participants)
- Build from scratch & learn to fly
- Custom built and upgradable platform
- Reputable backup service



THE DRONE

- Quad-copter or Hex-copter
- Autonomous & Manual flight
- Robust & reliable
- All tools, software & hardware supplied

Contact Leighton Pearce to register your interest
0427 688 028 leighton.pearce@gmail.com

MagPIE

growing solutions

MagPIE

GET THE BIG PICTURE IN ONE SWOOP

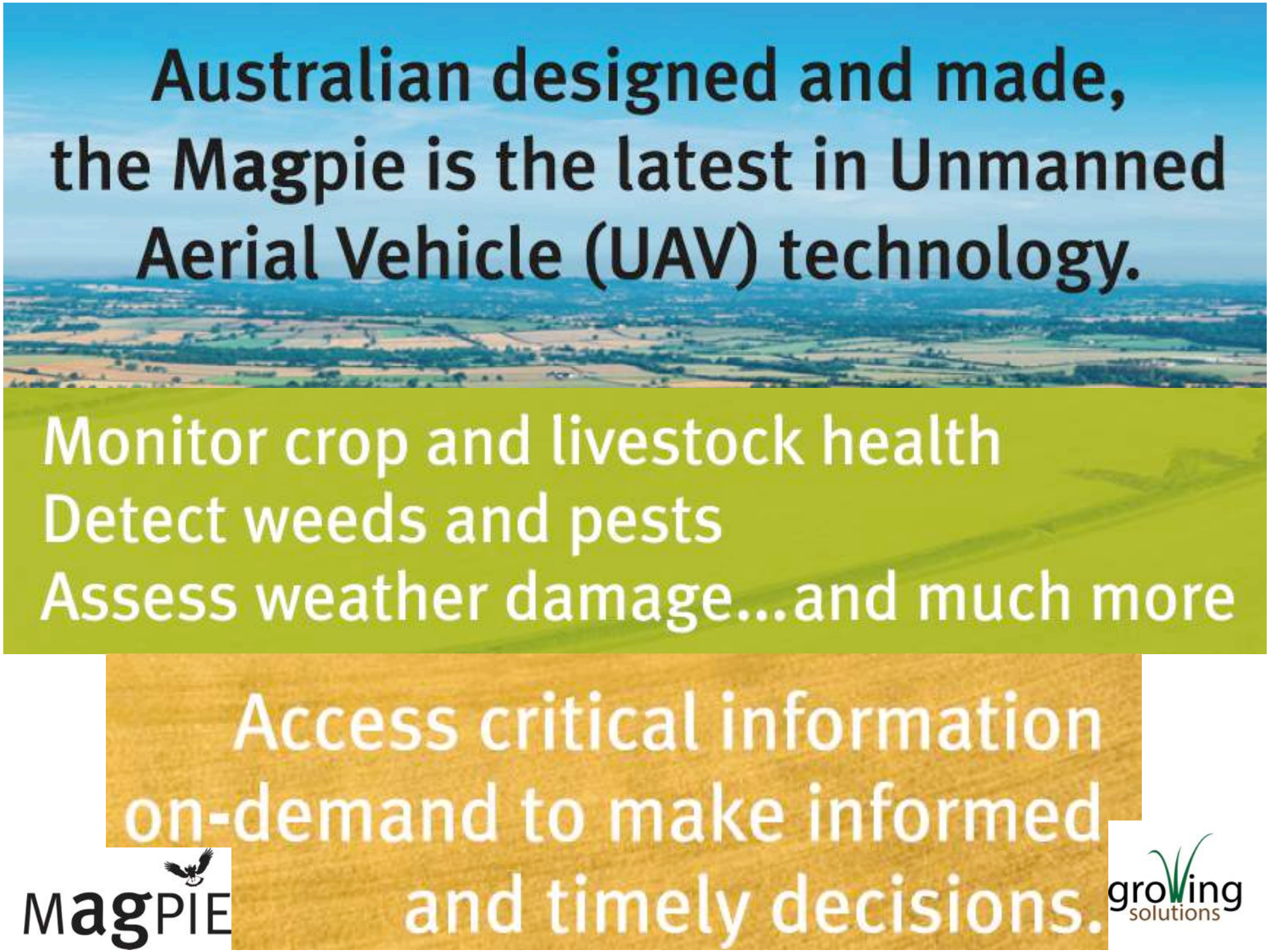
MagPIE

growing solutions

MagPIE

GET THE BIG PICTURE IN ONE SWOOP

MagPIE


Australian designed and made,
the Magpie is the latest in Unmanned
Aerial Vehicle (UAV) technology.
Monitor crop and livestock health
Detect weeds and pests
Assess weather damage...and much more
Access critical information
on-demand to make informed
and timely decisions.
MagPIE
growing
solutions