OVERVIEW

# ACCELERATING PRECISION AGRICULTURE TO DECISION AGRICULTURE

## Enabling digital agriculture in Australia

## 1. INTRODUCTION

This overview summarises the key findings of the Accelerating precision agriculture to decision agriculture project (P2D) project. The P2D project has evaluated the current state of digital agriculture in Australia, modelled the potential future economic benefits and makes recommendations to realise these potential economic gains at the farm gate.

The P2D project was funded via the Australian Government Department of Agriculture and Water Resources Rural R&D for Profit program. The P2D project was supported by all fifteen Research and Development Corporations (RDCs), led by the Cotton Research and Development Corporation (CRDC) and the research was undertaken by six Australian research organisations.

**ESTIMATED INCREASE OF**
**25%**
**$20.3** billion

### THE PRINCIPLE FINDINGS OF THE P2D PROJECT ARE:

Digital agriculture in Australia is in an immature state in many parts including strategy, culture, governance, technology, data, analytics, and training. This is to the detriment of innovation and producer adoption of digital agriculture in Australia.

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To achieve maturity, cross-industry and cross-sector collaboration is vital as many of the issues impeding maturity are common and this scale of investment is required to implement solutions for Australian conditions and to keep pace with the rest of the world.

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With maturity, the economic modelling identified that the implementation of digital agriculture across all Australian production sectors (as represented by the 15 RDCs) could lift the gross value of agricultural (including forestry, and fisheries and aquaculture) production by $20.3 billion (a 25% increase on 2014-15 levels).

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# 2. THE POTENTIAL ECONOMIC BENEFIT OF DIGITAL AGRICULTURE

**Unconstrained digital agriculture will deliver $ to producers**

Estimated potential increase in gross value of production (GVP) by agriculture[iv]

## $20.3 billion
(25% increase on 2014-15 levels)

Overall potentially increasing National GDP by

## $24.6 billion
(a 1.5% increase on 2014-15 levels)

## ESTIMATED POTENTIAL GVP IMPACTS FROM INDUSTRIES WORKING TOGETHER

**Automation and labour savings $7.4B**
e.g. machinery, animal handling & product processing

**Genetic gains through objective data $2.9B**
e.g. animal & variety selection

**Tailoring inputs to need $2.3B**
e.g. fertiliser seed, & water

**Market access and biosecurity $1B**
e.g. pest & disease control

| Sector | GVP[a] Increase ($M) | GVP Increase (%) |
|---|---|---|
| Rice | 78 | 30 |
| Grains[b] | 5,930 | 51 |
| Cotton | 394 | 28 |
| Sugar | 291 | 23 |
| Horticulture[c] | 403 | 40 |
| Beef | 1688 | 16 |
| Sheep meat | 516 | 17 |
| Wool | 452 | 18 |
| Pork | 55 | 5 |
| Dairy | 497 | 15 |
| Eggs | 180 | 25 |
| Chicken meat | 503 | 24 |
| Wine | 706 | 12 |
| Forest and wood products | 5,511 | 37 |
| Livestock exports | 72 | 4 |
| Red meat processing | 2081 | 14 |
| Fisheries and aquaculture | 928 | 44 |
| **Total** | **20,285** | **25** |

[iv] including forestry, and fisheries and aquaculture

[a] *Gross Value of Production (GVP)* measures the actual production output of an establishment or sector.

[b] Including oilseeds and pulses.

[c] Leafy greens, brassicas, and carrots only.

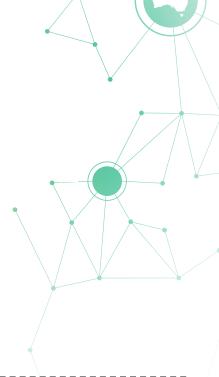# 3. THE CURRENT STATE OF DIGITAL AGRICULTURE IN AUSTRALIA

# KEY FINDINGS

## Leadership

A need **for greater leadership in digital agriculture** was identified, with common issues across industries. There is a **need for digital agriculture policy, governance, strategy and cross industry collaboration**.

## Trust & Legal Barriers

Currently, the **legal and regulatory frameworks around agriculture data are piecemeal and ad hoc**. 56% of producers indicated having no trust or little trust in service/technology providers maintaining their data privacy.

## Value Proposition

Producers **indicated the value of changing to digital agriculture is not clear**. Value was not only related to monetary value, but also peace of mind, confidence, social and lifestyle factors. If digital agriculture is to be adopted, it needs to be sustained by consistency of service and support and the reliability of technology.

## Connectivity

A lack of access to mobile and internet **telecommunications infrastructure is a major impediment to the adoption** of digital agriculture systems. 55% of producers reported that they relied on the mobile phone network for internet, yet 43% had patchy or no mobile reception across their property.

## Availability of Appropriate Data

The **whole agriculture value chain irrespective of industry sector could gain from improved access and interoperability of stored data** through dissemination of datasets that are valuable across the rural sector that are also widely used in other industries.

## Digital Literacy

A **digital skills and capability gap was identified** across the value chain, including within the RDCs. It was identified that education support was not only required to up-skill the agricultural sectors but also to generate more data scientists and engage them with agriculture.

## Data Analysis and Decision Support Tools

There is a **need for a platform for owners and users of agricultural data to exchange, market and value add data** for a variety of end purposes. Fully-enabled decision agriculture require models and analytics with the ability to transform data into insights applicable to decision-making.

## 4. RECOMMENDATIONS IN BRIEF

1. Develop a Data Management Policy for Australian Digital Agriculture.

2. Develop a voluntary Data Management Code of Practice and a Data Management Certification or Accreditation Scheme.

3. Policy and investment to improve telecommunications to farms and rural businesses.

4. New investment models including public/private investment.

5. RDC's develop Digital Agriculture Strategy's and implementation roadmap.

6. Big Data Reference Architecture and Data Management Implementation Plan.

7. Establish, review and refine foundational data sets.

8. Establish a Digital Agriculture Taskforce for Australia (DATA) headed by the Chief Digital Agricultural Officer – to deliver outcomes.

9. Establish a Digital Agriculture Taskforce for Australia Working Group (DATAWG) – to provide guidance.

10. Provide education and capacity building to increase digital literacy in the agricultural sector.

11. Establish baseline patterns of data usage and a national mobile network coverage (data speed and volume) database.

12. Digitise and automate data collection including for regulatory compliance activities.

13. Execute a cross Industry Survey every three years to identify producers' needs and issues in digital agriculture.

**Policy**

**Strategy**

**Leadership**

**Digital Literacy**

**Enablers**

## 5. NEXT STEPS

All RDCs co-invest in the recommendations with the Australian Government. Support the establishment of Digital Agriculture Taskforce for Australia (DATA) and Working Group (DATAWG).

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**Australian Government**
**Department of Agriculture and Water Resources**

RDC PARTNERS

**Australian Government**
**Cotton Research and Development Corporation**

FRDC

awi Australian Wool Innovation Limited

AMPC

Australian eggs

AUSTRALIAN Pork

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Wine Australia

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RESEARCH PARTNERS

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une University of New England

Griffith UNIVERSITY

USC AUSTRALIA

DATA 61 CSIRO

DATA TO DECISIONS CRC UNLOCKING THE VALUE OF AUSTRALIA'S DATA

Australian Farm Institute

PROJECT LED BY COTTON RESEARCH AND DEVELOPMENT CORPORATION