


## Optimised Canola Profitability (CSP00187)

*Update and outcomes from 2018*


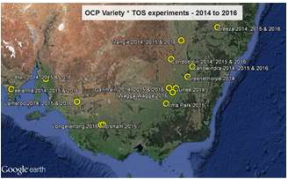

Julianne Lilley

SAGRICULTURE AND FOOD  
www.csiro.au




1

## Optimising canola profitability (2014-2019)

Rohan Brill  
Don McCaffrey  
**NSWDPI**  
**SARDI**  
Andrew Ware


John Kirkegaard  
Jeremy Whish  
**CSIRO**  
Therese McBeath  
Julianne Lilley



2

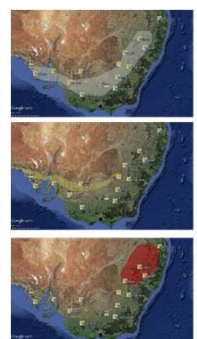
## Key project objectives/outcomes

- Understand the physiology that underpins agronomy *in order to...*
- Increase yield, oil, profitability; manage risk




3

## Strategies

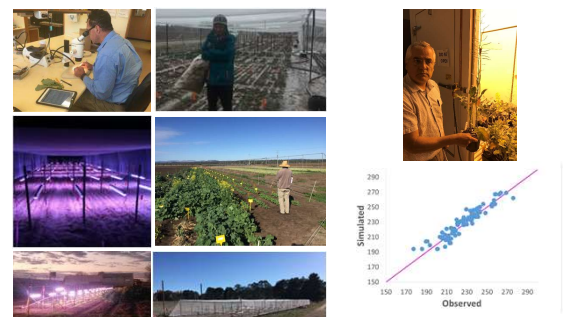


- Early sowing systems (low/medium rainfall)
  - Co-located Pathology experiments
- Risk management – low input (low rainfall)
- Harvest management (north)
  - Up to date agronomic advice throughout




4

## Understanding phenology drivers

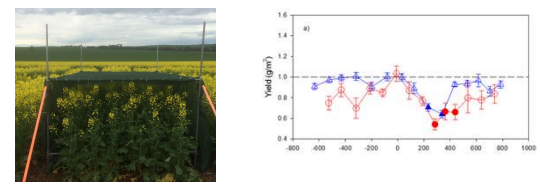


Whish, Lilley, Pitt, Moroni




5

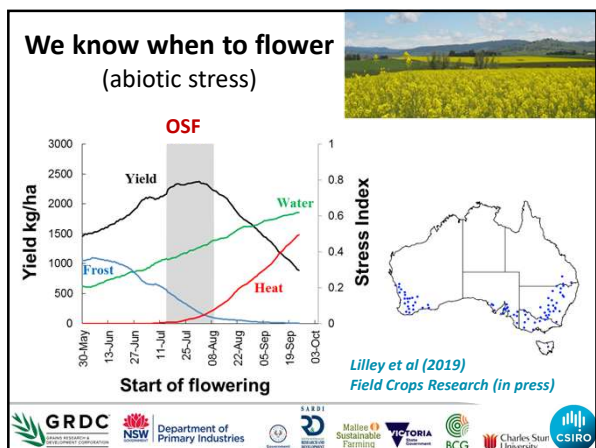
## Identified the critical period for canola



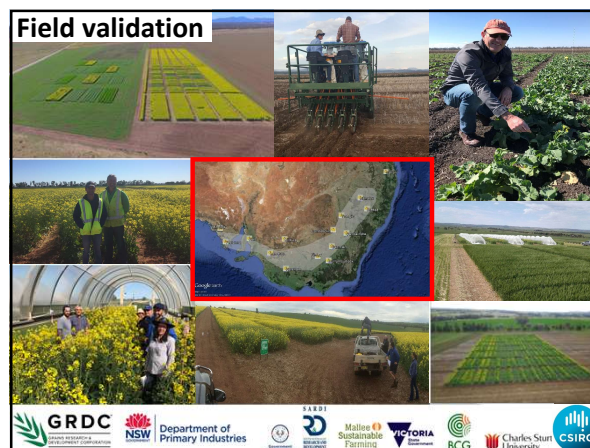
The critical period for yield and quality determination in canola (Brassica napus L.)  
John A. Kirkegaard<sup>1</sup>, Julianne M. Lilley<sup>2</sup>, Rohan D. Brill<sup>3</sup>, Andrew H. Ware<sup>4</sup>, Christine E. Wallis<sup>5</sup>



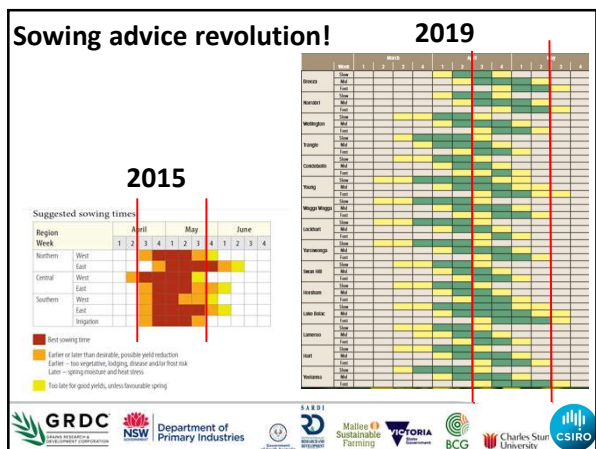
6



7



8



9

### E-Booklet

#### TEN TIPS TO EARLY-SOWN CANOLA

GRDC

Changing rainfall patterns, disciplined summer fallow management and improved no-till seeding systems have facilitated a shift to earlier sowing of canola, capitalising on soil moisture opportunities and reducing production risk. The Optimised Canola Profitability project, a collaborative project with co-investment from GRDC, investigated the potential for early sowing of canola in regions from northern NSW to the Eyre Peninsula of South Australia, with a focus on tactical agronomic requirements. It found...

SOWING CANOLA EARLY CAN INCREASE PRODUCTIVITY AND PROFITABILITY BY FOLLOWING 10 IMPORTANT GUIDELINES...

1. CHOOSE YOUR LOCATION
2. CULTIVATE THE SOIL
3. SOW EARLY
4. SOW DEEP
5. SOW DENSE
6. SOW STRAIGHT
7. SOW CLEAN
8. SOW WITH CARE
9. CONSIDER DISEASE PRESSURE
10. SOW WITH CARE

<https://grdc.com.au/resources-and-publications/all-publications/publications/2018/ten-tips-to-early-sown-canola>

GRDC, NSW, Department of Primary Industries, SARDI, Mallee Sustainable Farming, VICTORIA, BCG, Charles Sturt University, CSIRO

10

### E-Booklet

#### Optimal Start of Flowering (OSF)

GRDC

Target flowering to start within the acceptable range of the OSF date to minimise frost/heat stress and maximize yield.

**NORTHERN NSW & SOUTHERN QLD**

**CENTRAL & SOUTHERN NSW**

**SOUTH AUSTRALIA**

**VICTORIA**

<https://grdc.com.au/resources-and-publications/all-publications/publications/2018/ten-tips-to-early-sown-canola>

GRDC, NSW, Department of Primary Industries, SARDI, Mallee Sustainable Farming, VICTORIA, BCG, Charles Sturt University, CSIRO

11

### E-Booklet

#### Sowing time guidelines for phenology types at various eastern Australia locations

GRDC

**TOO EARLY**

**TOO LATE**

<https://grdc.com.au/resources-and-publications/all-publications/publications/2018/ten-tips-to-early-sown-canola>

GRDC, NSW, Department of Primary Industries, SARDI, Mallee Sustainable Farming, VICTORIA, BCG, Charles Sturt University, CSIRO

12

### E-Booklet

Proposed 'phenology' ratings of canola varieties compared with commercial 'maturity' ratings

24 canola varieties were included in the Victorian Canola Productivity project from 2014-2016. Phenology differences between varieties were measured and phenology data used to determine maturity ratings for early sowing. The project continues a program to improve canola production in low rainfall zones by identifying suitable varieties for early sowing date conditions and to get the Canola Best of Breeding period.

GRDC  
Department of Primary Industries  
SARDI  
Mallee Sustainable Farming  
VICTORIA  
BCG  
Charles Sturt University  
CSIRO

<https://grdc.com.au/resources-and-publications/all-publications/publications/2018/ten-tips-to-early-sown-canola>

13

### Managing risk in low rainfall zone

- Hybrid vs OP
  - only > 1.5 t/ha
- Time of sowing
  - ensure establishment
- N management
  - amount, timing, variable
- Whole-farm context
  - cereal disease and weeds

Non-wetting soils | *McBeath et al., Unpublished* | Grain or hay?

GRDC  
Department of Primary Industries  
SARDI  
Mallee Sustainable Farming  
VICTORIA  
BCG  
Charles Sturt University  
CSIRO

14

### Profit-risk analysis

Elizabeth Meier  
CSIRO

GRDC  
Department of Primary Industries  
SARDI  
Mallee Sustainable Farming  
VICTORIA  
BCG  
Charles Sturt University  
CSIRO

15

### Canola Phenology Model

GRDC  
Department of Primary Industries  
SARDI  
Mallee Sustainable Farming  
VICTORIA  
BCG  
Charles Sturt University  
CSIRO

16

### Matching sowing date and optimal flowering period

GRDC  
Department of Primary Industries  
SARDI  
Mallee Sustainable Farming  
VICTORIA  
BCG  
Charles Sturt University  
CSIRO

17

### So what's it all been worth?

**“Old” system in 2014**

- Sow in late April or early May
- Use best available OP – TT
- Use moderate N rate (Decile 3 to 5)

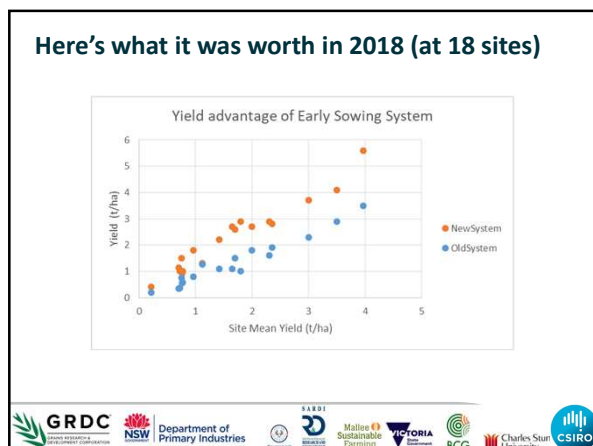
**“New” system in 2019**

- Sow from early April to flower in OSF (which we now know)
- Use suitable variety, and best hybrid
- Use robust N rate (Decile 7 to 9)
- Manage as per E-Booklet

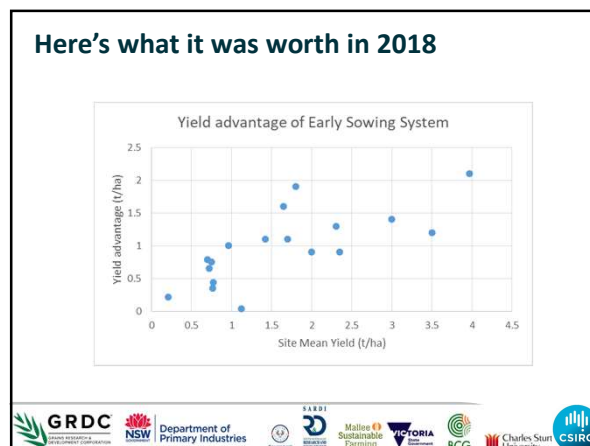
GRDC  
Department of Primary Industries  
SARDI  
Mallee Sustainable Farming  
VICTORIA  
BCG  
Charles Sturt University  
CSIRO

18

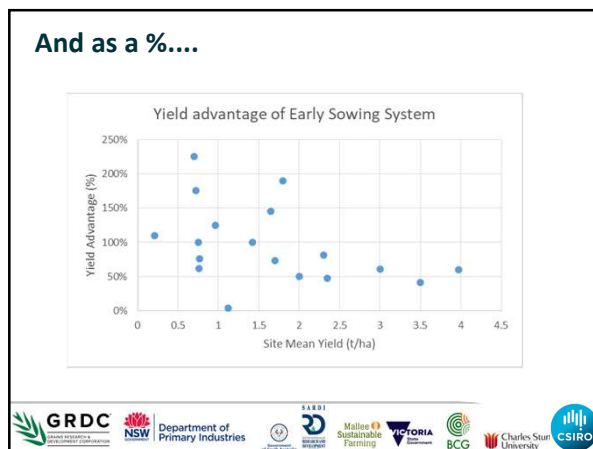




19



20



21

### A whole new paradigm for canola

“We now finish (rather than start) sowing canola at the end of April and its worth about 0.3 t/ha on average to our clients....”  
*Greg Condon, Consultant Junee  
 (manages around 10,000 ha of canola)*

“Early-sown hybrids with good plant stands and robust N rates have routinely performed well across a range of environments despite a fear they would “crash”  
*The OCP Team, 2019*

22

### New phenology genetics project (2019-22)

Develop knowledge of genes which underpin phenology

- vernalisation and daylength responses

- Diversity panels
  - >200 Australian and >150 international genotypes
- Field, glasshouse, cabinet experiments
- Genomic, transcriptomic sequence data
- International collaboration

Improved predictive tools (models and markers)

23

### What's next

Roadshows

- Moree 3 September, Wagga Wagga 5 September
- Birchip 17 September, Adelaide 19 September

Continuing work – variation request for 2019

- Phenology experiments
- Phenology app - validation
- Soil water capture and value of stored water in early sowing systems
- Nitrogen use efficiency
- Windrow timing – sensor techniques
- Profit / risk analysis

24

GRDC  
NSW Department of Primary Industries  
SARDI  
Making Sustainable Farming  
VICTORIA  
BCG  
Charles Sturt University  
CSIRO

*This work is a component of the 'Optimised Canola Profitability' project (CSP00187), a collaboration between, CSIRO, NSW DPI and GRDC, in partnership with SARDI, CSU, MSF and BCG.*

Thank you

CSIRO AGRICULTURE & FOOD  
www.csiro.au

CSIRO

25