Once completed this template is to be submitted **in Word format** (as an attachment) via email to project_reports@grdc.com.au

Reports will only be evaluated by the GRDC if they:

- Are submitted in Word format
- Are sent via email to the correct email address project_reports@grdc.com.au

Include within the email

- GRDC project code and title
- GRDC Manager and Contract Administrator for this project
- Any sensitivities in the report

Please do not embed this completed template within any GRDC forms.

The report should be limited to a maximum of ten (10) pages.

Annual Results Report Template

2018
Annual Results Report
Improving grower profits though longer season wheat crops

Project code:	CWF1804-001SAX
Prepared by:	Helen McMillan helen.mcmillan@dpi.nsw.gov.au Dr Neil Fettell nfettell@une.edu.au Central West Farming Systems [insert research administrator name] [insert research administrator email address]
Date submitted to GRDC:	1 February 2019

REPORT SENSITIVITY

Does the report have any of the following sensitivities?

Intended for journal publication	NO	
Results are incomplete	YES/NO	
Commercial/IP concerns	NO	
Embargo date	NO	If Yes, Date: DD/MM/YYYY

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KEY MESSAGES

SUMMARY

Results at a glance

BACKGROUND

Why do the work? Why was the trial done? What is the issue that led to the project, impetus for the work, or previous work that has led to this project?

Growers in central and southern NSW are interested in sowing wheat earlier than the traditional May sowing window. There are a number of drivers of this change.

1. Advances in summer fallow management, which have led to improved soil water storage and sowing opportunities
2. Declining frequency and magnitude of traditional autumn breaks and winter rainfall but some increase in summer rain

3. Improvements in no-till seeding technology, with greater moisture seeking abilities and more accurate seed placement
4. An increase in farm size and sowing programs which have lengthened the sowing program for many growers
5. Improved understanding of pre-emergent herbicide use in early sowing

To ensure crops flower in the preferred window, earlier sowing requires a change in phenology and hence in variety, and most Australian breeding programs have recently increased their emphasis on developing varieties with a vernalisation and/or photoperiod response. Traditionally, winter wheats have been grown in the eastern, higher rainfall section of the wheatbelt, although Fettell et al. (2016) showed that varieties such as EGA Wedgetail could perform well in lower rainfall areas when grown on long fallow. More generally, however, quicker developing winter varieties (strong Vrn sensitivity, insensitive Ppd) were found to be best suited to early sowing in medium-low rainfall environments (Hunt et al. 2017). The first variety of this type, Longsword, was released by AGT in 2017 and other breeding programs have varieties close to release.

OBJECTIVES

What are the objectives of the trial/experiment? What is intended to be achieved in carrying out the trial/experiment?

Outcomes of this project will include an increase in farmer and advisor confidence to further develop profitable and sustainable farming enterprises based on maximising varietal choice and early sowing window options.

A suitable development and extension project, linked to existing research projects, could fill this need in two seasons. Issues include:

1. **Optimal establishment time and performance of new long season varieties in the target region where the emphasis is on grain-only production.** This is not met by NVT trials as in 2017 only 2 of the 25 so-called early season trials were sown in April, and these were on the 27th and 29th April. This is similar to earlier seasons, when typically only 4-5% of these trials were sown in April, usually in the last week. It is proposed that drip irrigation technology developed in CSP00178 be used at three sites (potentially Tottenham, Condobolin and Rankins Springs) to ensure that timely sowing is achieved at each of the three planned sowing dates. Suitable entries will be requested from each of the major breeding programs.

2. **Interaction with stored water at sowing.** Earlier work in the region (CWFS, CSIRO, AgGrow Agronomy) showed that EGA Wedgetail performed reliably when sown on long fallow with high stored soil moisture availability. It is likely that this

requirement could be less for quicker winter wheats, and it is proposed that this be tested, manipulating the stored water available by pre-sowing drip irrigation.

3. **Biomass and harvest index management by seeding rate & nitrogen timing.** Early sown wheat crops often yield more because less water is lost to evaporation, roots grow deeper, water is converted to dry-matter more efficiently and a longer stem elongation phase increases grain number. However, vegetative growth can be excessive, and early sown crops may require lower seeding rates and/or delayed nitrogen application to maximize harvest index and grain yield. This will be tested with a limited number of varieties at two sites.

METHODS

How was the trial/experiment conducted? Avoid overly technical language; yet describe the way the project has approached the task.

Two sites established, one at Condobolin and one at Rankins Springs

Twelve wheat varieties that included, short season (Condo), long season (Wedgetail) and newer winter wheats (DS Bennett). Three times of sowing (TOS) and at Condobolin three water storage treatments.

Flowering dates collected, harvest index cuts and header harvest grain yield. Grain quality on all samples.

LOCATION

NOTE: Where field trials have been conducted please include location details: Latitude and Longitude, or nearest town, using the table below (please add additional rows as required):

	Latitude (decimal degrees)	Longitude (decimal degrees)
Trial Site #1		
Nearest Town	Condobolin, NSW	
Trial Site #2		
Nearest Town	Griffith, NSW	

If the research results are applicable to a specific GRDC region/s (e.g. North/South/West) or GRDC Agro-Ecological Zone/s please indicate which in the table below:

Research	Benefiting GRDC Region (can select up to three regions)	Benefiting GRDC Agro-Ecological Zone (see link: http://www.grdc.com.au/About-Us/GRDC-Agroecological-Zones) for guidance about AE-Zone locations	
Experiment Title Improving grower profits through longer season wheat crops	Northern Region Choose an item. Choose an item.	☐ Qld Central ☐ NSW NE/Qld SE ☐ NSW Vic Slopes ☐ Tas Grain ☐ SA Midnorth-Lower Yorke Eyre ☐ WA Northern ☐ WA Eastern ☐ WA Mallee	☒ NSW Central ☐ NSW NW/Qld SW ☐ Vic High Rainfall ☐ SA Vic Mallee ☐ SA Vic Bordertown-Wimmera ☐ WA Central ☐ WA Sandplain

RESULTS

What happened? Description of the results from the work so far, can include graphs / photos; some interpretation of what these mean in terms of farm practice or modified approaches to the underlying issue when interpreted for on-farm use.

CONCLUSIONS

Summary of findings, implications and future activities.

SOCIAL MEDIA POSTING

GRDC uses social media to showcase research investments and disseminate timely, relevant and practical information to key stakeholders in the grains industry. Our audiences are predominantly growers and agricultural advisers.

SOCIAL MEDIA ACCOUNTS:

Facebook: https://www.facebook.com/theGRDC
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Is there any reason why this report cannot be communicated on social media? No

If no, please provide the following:

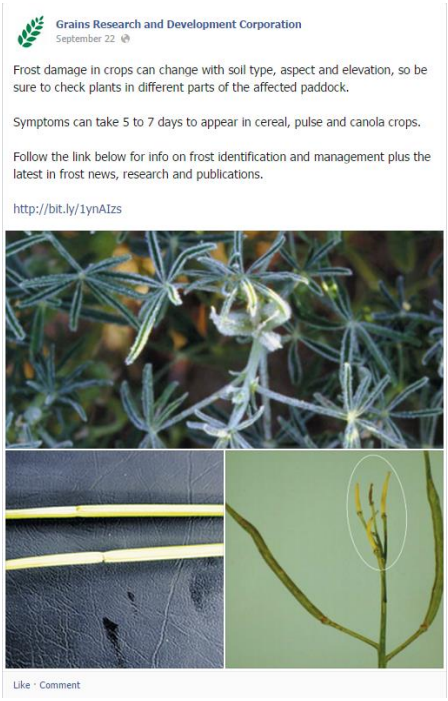
1. Who is the target audience for this content? (e.g., growers, adviser, researchers, policy makers, etc.)
    a. *Growers and advisers advisors*

2. At what time of year is this content most relevant to the target audience?
    a. *Early post-harvest and pre-sowing when growers are making decisions on which varieties to grow*

3. On which of GRDC's social media accounts would you like this content posted? Please provide text (2-3 sentences for Facebook and LinkedIn and 140 characters for Twitter), images, graphs, or charts that support the content. Where applicable, please include any relevant Twitter handles (usernames) for project staff.
    a. *(Insert info here)*

PROJECT SOCIAL MEDIA ACCOUNTS

Facebook: @CentralWestFarmingSystems Twitter: @CWFS_Condo



Contact the social media team at socialmedia@grdc.com.au with any questions.

Please note that publication of content to GRDC social media accounts is at the discretion of GRDC's social media team.

REFERENCES & USEFUL LINKS

List of key publication references and web links relevant to the project and for further exploration of the topic.