



# CottonInfo Extension Activity Report

## Part 1 - Summary Details

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*Please use your TAB key to complete Parts 1 & 2.*

**CRDC Project Number:** CSD2002

**CSD:** CSD 2002

**Project Title:** CottonInfo Field Demonstration Trail: Autumn cover crop trial

**Project Commencement Date:** 1/03/2020 **Project Completion Date:** 30/06/2020

## Part 2 – Contact Details

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**Administrator:** Mr James Quinn

**Organisation:** Cotton Seed Distributors

**Postal Address:** PO Box 117 Wee Waa NSW 2388

**Ph:** 0428 950028 **Fax:** n/a **E-mail:** jquinn@csd.net.au

## Part 3 – Final Report

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*(The points below are to be used as a guideline when completing your final report.)*

### **Background**

#### **1. Outline the background to the project.**

To encourage the use of cover crops for an optimised farming system.

## *Objectives*

### **2. List the project objectives (from the application) and the extent to which these have been achieved.**

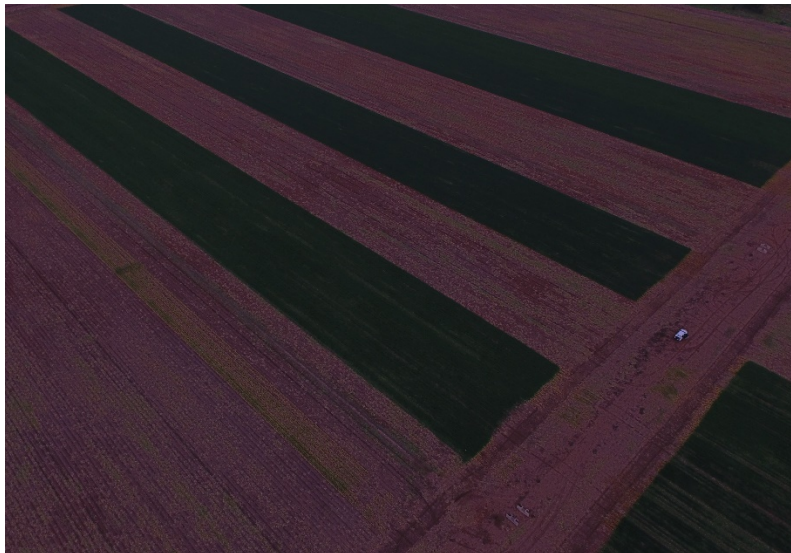
#### **Completed**

4 rollover bays selected at Benerembah with replicated and randomised trial design.

- Planting date 1st March 2020 before Autumn break, rain germination
- Cover crop not to be sown 20 cm on edge of 1 m hill for plant line.
- Wheat variety Beckom Barley La Trobe. Both sown at 50 kg/ha
- Cover crop was sprayed out 10<sup>th</sup> May at ear peep. Glyphosate followed 10 days later with gramoxone.
- Soil samples taken after cover crop sprayed out. (wheat, barley and bare).

#### **To be completed**

- Cotton to be planted in October 2020. Crop growth and Nitrogen levels to be tracked through the season.
- Yield of cotton taken and measured by bale trailer.
- Yield map and analysis of data



Cover crop trial Benerembah 28<sup>th</sup> April

## *Methods*

### **3. Detail the methodology and justify the methodology used. Include any discoveries in methods that may benefit other related projects.**

- Soil samples were taken on the 2<sup>nd</sup> June in each of the 4 replications of the treatments Bare, Wheat and Barley. Sample depths were 0 to 30 cm and 30 to 60 cm using a hand auger. A total of 24 samples were tested.
- Nitrate Nitrogen levels are relatively high in the bare treatments averaging 66.5 mg/kg in the 0 to 30 cm samples and 97 mg/kg in the 30 to 60 cm samples.
- Nitrate Nitrogen soil levels have been reduced under the wheat and barley cover crops. The wheat samples are averaging 15.5 mg/kg in the 0 to 30 cm samples and 22.6 mg/kg in the 30 to 60 cm samples. Barley is at 10.4 mg/kg in the 0 to 30 cm samples and 12.6 mg/kg in the 30 to 60 cm samples.
- Individual replicate results are attached.

- It is expected that the Nitrogen taken up by the cover crop will cycle back into the soil as the cover crop breaks down.
- The stubble from the cover crop is at 50cm in height. Soil temperatures in the bare and cover crop treatments are being tracked with tiny tags. The stubble will be left standing at planting time.



### *Outcomes*

#### **4. Describe how the project's outputs will contribute to the planned outcomes identified in the project application. Describe the planned outcomes achieved to date.**

- The soil tests have provided an insight into the Nitrogen cycling happening in the farming system.
- As part of an ongoing CottonInfo extension activity in 2020/2021 further soil tests will be needed to track the Nitrogen levels just before the cotton crop is planted in October and through the cotton crop growth stages through petiole analysis.

#### **5. Please report on any:-**

- a) Feedback forms used and what the results were
- b) The highlights for participants or key learnings achieved
- c) The number of people participating and any comments on level of participation
  - **Not applicable at this stage**

### *Conclusion*

#### **6. Provide an assessment of the likely impact of the results and conclusions of the research project for the cotton industry. What are the take home messages?**

The completed project (depending on yield results) has the potential to see an increased adoption of autumn/winter cover crops before cotton planting. See attached PowerPoint slide Wheat in the rotation highlighting rotation benefits.

### *Extension Opportunities*

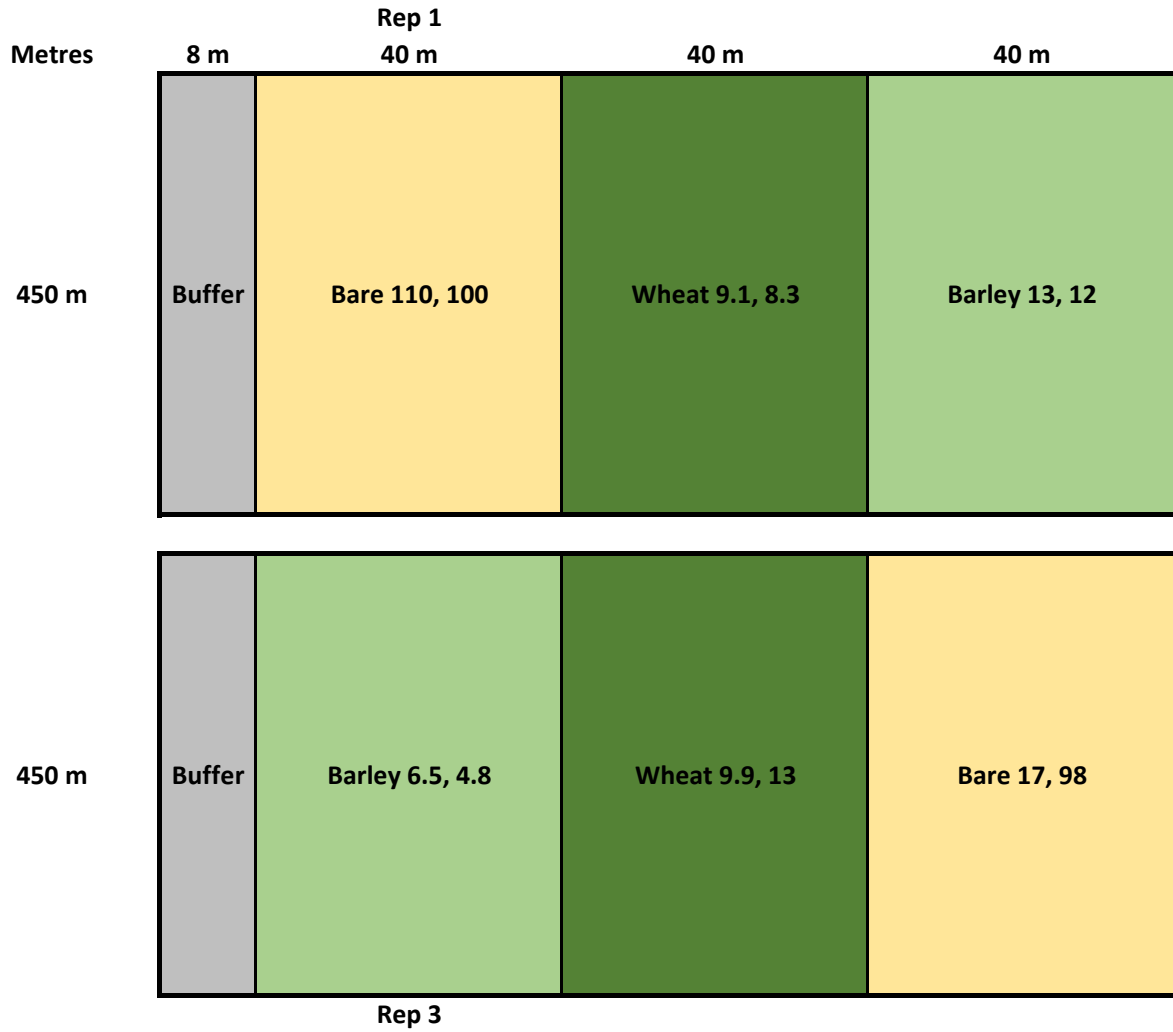
#### **7. Detail a plan for the activities or other steps that may be taken:**

- (a) To tell other CGAs/growers/regions about your project.
- (b) To keep in touch with participants.
- (c) For future projects.

**A detailed report will be available on completion of the project.**

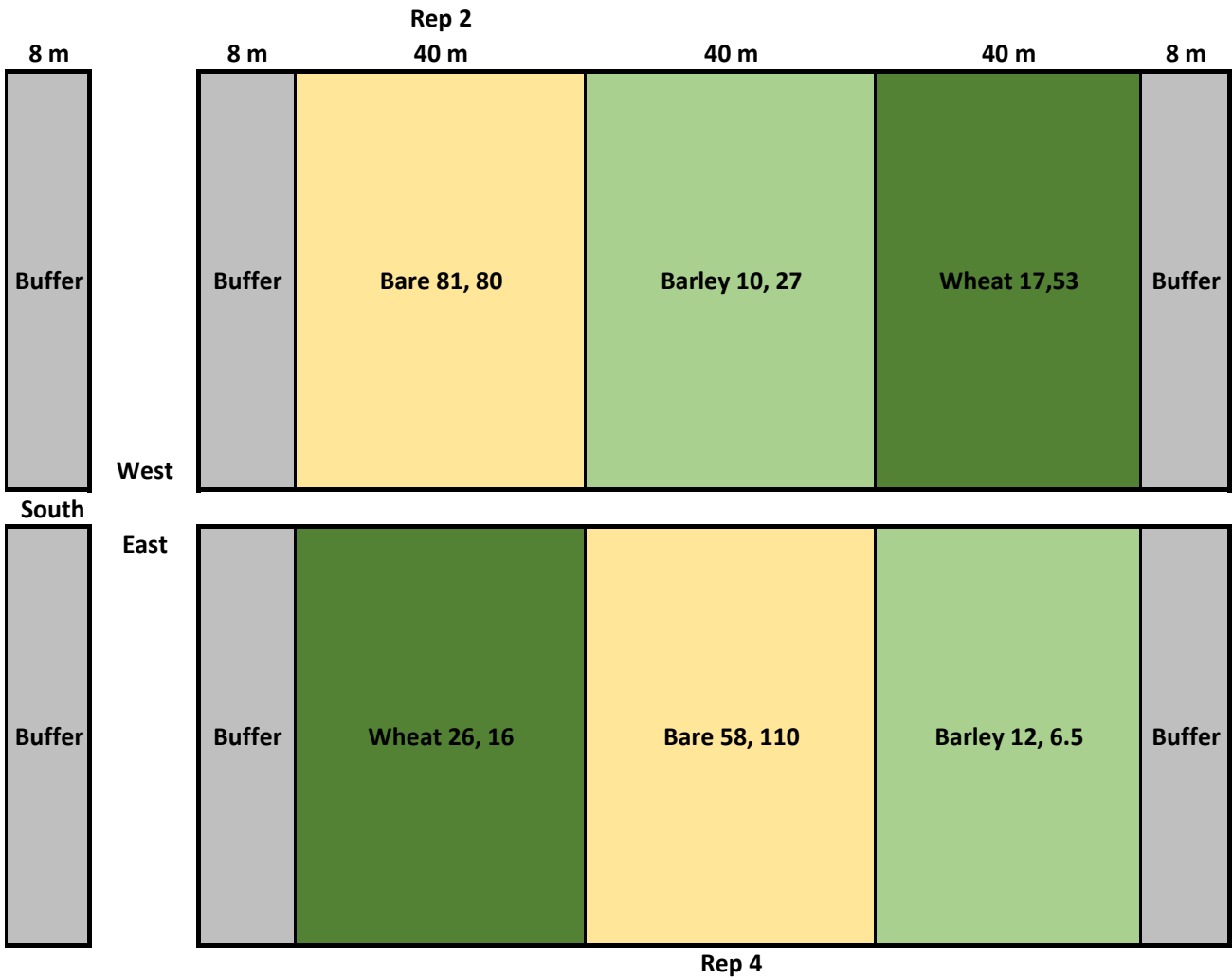
**CottonInfo Cover crop trial 2020**

**Numbers indicate N levels taken 2nd June at 0 to 30**



Samples taken at 0 to 30 cm and 30 to 60 cm  
 Units are mg/kg.

cm and 30 to 60 cm. Units are mg/kg



Sample Name	Paddock Name	Sample Depth (cm)	Sample Depth (cm)	pH (1:5 CaCl <sub>2</sub> )	Nitrate Nitrogen (mg/kg)	Ammonium Nitrogen (mg/kg)	Soil N kg/ha	Calcium/Magnesium Ratio (Meq/100g)	Cation Exch. Cap. (Meq/100g)	Organic Carbon (W&B) (%)	Calcium (Ammonium acet.) (%)	Magnesium (Ammonium acet.) (%)	Potassium (Ammonium acet.) (%)	Phosphorus Environmental Risk Index
BARE	REP 1	0	30	6.2	110	1.7	462	1.7	22.9	1.03	57	34	6.3	0.5
BARE	REP 2	0	30	6.1	81	1.5	340.2	1.9	22.1	1.05	61	31	7	0.46
BARE	Rep 3	0	30	7.8	17	1.1	71.4	2.5	34.3	0.72	68	27	4	0.29
BARE	Rep 4	0	30	6.9	58	1.1	243.6	1.8	28.4	0.81	60	33	5.1	0.27
					<b>66.5</b>		<b>279.3</b>			<b>0.90</b>				
BARE	REP 1	30	60	6	100	1.5	420	1.5	22.3	0.98	55	35	6.3	0.52
BARE	REP 2	30	60	6	80	0.8	336	1.5	19.9	0.72	53	36	6.1	0.2
BARE	Rep 3	30	60	7.8	98	1.3	411.6	2.4	36.1	0.66	65	29	3.5	0.19
BARE	Rep 4	30	60	6.6	110	0.9	462	1.5	29.6	0.62	57	36	4.4	0.08
					<b>97</b>		<b>407.4</b>			<b>0.7</b>				
WHEAT	REP 1	0	30	6.1	9.1	1.3	38.22	2.1	20.9	1.16	61	30	7	0.47
WHEAT	REP 2	0	30	7.1	17	1.2	71.4	2.3	27.8	1.05	65	28	5.2	0.47
WHEAT	Rep 3	0	30	7.5	9.9	1.4	41.58	2	27.4	0.81	62	30	4.8	0.42
WHEAT	Rep 4	0	30	7	26	2.2	109.2	1.7	26.1	0.91	58	33	5.6	0.37
					<b>15.5</b>		<b>65.1</b>			<b>1.0</b>				
WHEAT	REP 1	30	60	5.8	8.3	1.4	34.86	1.8	20.1	1.09	58	33	6.4	0.44
WHEAT	REP 2	30	60	7	53	1.7	222.6	2.3	27.9	0.94	65	28	4.9	0.46
WHEAT	Rep 3	30	60	7.9	13	0.9	54.6	1.8	33.9	0.58	59	32	3.2	0.12
WHEAT	Rep 4	30	60	6.9	16	1.2	67.2	1.4	28.1	0.77	53	39	4	0.15
					<b>22.6</b>		<b>94.8</b>			<b>0.8</b>				
BARLEY	REP 1	0	30	7.5	13	1.5	54.6	2.4	28.6	0.93	66	28	5.1	0.39
BARLEY	REP 2	0	30	6.4	10	1.3	42	2	24.6	1.12	62	30	6.2	0.66
BARLEY	Rep 3	0	30	7.1	6.5	1	27.3	1.9	26	0.88	60	32	5.2	0.32
BARLEY	Rep 4	0	30	7.6	12	1.1	50.4	2.5	33	0.82	67	27	4.4	0.38
					<b>10.4</b>		<b>43.6</b>			<b>0.9</b>				
BARLEY	REP 1	30	60	7.6	12	1.1	50.4	2.6	29.8	0.85	68	26	4	0.33
BARLEY	REP 2	30	60	6.5	27	1	113.4	1.6	24.7	0.92	57	34	5.1	0.31
BARLEY	Rep 3	30	60	7.3	4.8	0.8	20.16	1.6	28.6	0.58	56	36	4	0.11
BARLEY	Rep 4	30	60	7.8	6.5	0.8	27.3	3	39	0.62	71	24	2.7	0.13
					<b>12.6</b>		<b>52.8</b>			<b>0.7</b>				

# Wheat in the rotation



- Lower yields- lack of wheat rotation due to bogging (see notes)
- Clear evidence of crop rotation benefits on yield
- Cotton monoculture or fallow without rotation may limit the yield potential of cotton