

COGGO

Council of Grain Grower Organisations Limited
ACN 091 122 039

Final Report

COGGO Research Fund 2014

A project completion report covering the project. The acceptance of a satisfactory report against the objectives of the project, and agreement on the sharing of any commercial returns and/or IP will trigger payment within 4 weeks, by COGGO for any outstanding payments.

This Final Report should be completed with reference to the Research and Intellectual Property Agreement (the Research Agreement) signed between the proponent and COGGO Pty Ltd.

1. Project information

Project title	To research the use of Residual Herbicides for effective summer weed control and to assist in delaying development of resistance in summer weeds.
Commencement Date	14 th January 2014
Completion Date	31 st December 2014

Name of Proponent	Synergy Consulting / Insight Ag
ACN/Legal Name or ABN	Synergy Consulting WA Pty Ltd 34 101 737 964
Mailing Address	PO Box 1540 Osborne Park WA 6916

Administrative Contact	David Pfeiffer
Position	Managing Director
Telephone	0429990596
Fax	0893470531
Email	dpfeiffer@synergyco.com.au

Project Supervisor/Principal Researcher	Travis Hollins
Position	Agronomic Consultant
Telephone	0427086738
Fax	
Email	tihollins@bigpond.com

COGGO Use Only

Project Number	
----------------	--

Date Received	
---------------	--

2. Project results	This section provides a final report against the Project Aim and the Planned Outputs for the Project.
---------------------------	---

Achievement of the Project Aim	Brief statement of achievement in relation to the aim of the project
<p>Two trials were established as a part of this project. The first trial was established on the 14th January at the property of John and Jill Holmes Coalseam Road Mingenew. The second trial was established on the 11th February at the property of Des and Vicki Miguel Scotsman Road North Wialki.</p> <p>The trial at Mingenew was sprayed on the 14th January with the forecast of rain in the next five days shown by computer models to be significant. There had been no significant rain from the start of November to the start date of the trial. There were no weeds present at the time of spraying.</p> <p>No significant rainfall was received for the months of January, February and March on this site. A total of 23mm was received for these months. There were no germinations of summer weeds within the trial site or the surrounding paddock at this location. There was no significant differences throughout the year in crop growth or plant numbers establishment numbers throughout the growing season. The trial was not harvested.</p> <p>The aim of the trial was to assess summer weed control therefore this trial did not achieve its aims due to the lack of rainfall in the months from January to April.</p> <p>The trial at North Wialki had received 54mm of rainfall before the 11th February. The trial was sprayed with the forecast of rainfall over the next 4 days with thunderstorms present in the area on the day of spraying. The trial had summer weeds present. The weeds present were Small Burr Grass, Pigweed, Caltrope, Tarvine and Afghan Melons.</p> <p>All treatments controlled the weeds that were present. The trial received for the rest of February, March and until the 25th April received 18mm of rainfall. Although not a significant amount of rain it stimulated another germination of summer weeds.</p> <p>The trial was harvested 21/11/14. There was no significant difference between herbicide treatments.</p> <p>Due to only one trial giving any meaningful results it is difficult to conclude that the use of residual herbicides during summer spraying for residual weed control is beneficial. The variability of rainfall will impact on the effectiveness of these herbicides. Although the results at Wialki suggest that there could be a benefit the lack of follow up rain gives inconclusive evidence to suggest that this could be used as standard farming practices.</p>	

Project Outputs	Please provide a report on the achievement, or otherwise, of the project outputs as per the planned outputs provided in the Project Proposal.
------------------------	---

1	-	Output 1 (from Project proposal) Effective weed control options for the changing summer weed species
		Comment: Two herbicide applications gave effective residual control of subsequent summer weeds. The applications of Balance and Imazapic & Imazapyr which are present in the herbicide Sencor. These two application gave effective residual control Pigweed, Caltrope, Tarvine, Small Burr Grass, Afghan Melons and Radish. If more significant rainfall had have been received at the trial site these products may have performed differently under greater weeds pressure.
2	-	Output 2 (from Project proposal) Reduce the cost and number of applications of herbicides in the summer period.
		Comment: Two herbicide applications have potential to reduce 2-3 summer weed control applications to one. Due to the lack of rainfall post herbicide application it cannot be conclusive that all applications would prevent further herbicide control if substantial rainfall is received in the months post application of residual herbicides.
3	-	Output 3 (from Project proposal) Reduce the reliance on glyphosate and metsulfuron in the summer weed herbicide applications.
		Comment: Balance herbicide is a group H herbicide. It is in the same category as Velocity which is relied heavily in controlling radish populations with varying degrees of herbicide resistance. The cost of this application is Approximately \$30/ha. Which makes it an expensive option as a standalone application. Imazapic & Imazapyr is approximately \$8/ha but both are group B herbicides the same as Metsulfuron. With Balance giving the only effective residual control of all products that isn't classified as a group B or M and the cost of this herbicide it will be extremely difficult as an industry to get farmers to move away from cheaper herbicide applications for controlling summer weeds. The low amount of summer rain following the application of Balance did not give a definite result that an application of a group H herbicide could be a one spray strategy.
4	-	Output 4 (from Project proposal)
		Comment:

Project results	Please provide brief statements on the results of the Project
------------------------	---

Method

Two trial were set up at Mingenew and North Wialki. The sites were selected due to the history and diversity of summer weeds present in recent years. The Mingenew trial was sprayed on to bare earth with the expectation of rain in the coming week. The North Wialki was sprayed after 54mm of rainfall had been received and summer weeds where present with the expectation of significant rain in the coming days. Each experiment consisted of residual herbicides from different chemical groups to assess their effectiveness of long term control and reducing the reliance on glyphosate and metsulfuron and the number of applications over the summer period. Weed present at the North Wialki site were Tarvine, Caltrope, Afghan Melons, Small Burr Grass and Pigweed.

Each trial was visually assessed for weed control against farmer practice. Plant and tiller counts were conducted throughout the growing season to assess potential herbicide damage from the residual herbicides.

The trial treatments were:

1. Balance 200g/ha
2. Terbyne 1.4kg/ha
3. Imazapic 100ml/ha + Imazapyr 30ml/ha
4. Alliance 2.5L/ha
5. 100ml/ha Imazapic
6. Garlon 120ml/ha + Ally 5g/ha + Roundup 1.2l/ha + SOA 1% + Enhance 0.5% (Farmer practice)

All treatments other than treatment 6 were applied with 2l/ha glyphosate 450 gai and Uptake 1%.

Results

Treatments	Weeds Present at time of spraying % Control	Residual Weed control 0-10 (10 Very good 0 Poor)	Plant/m2 (13/6)	Yield T/ha
1.Balance 200g/ha + Glyphostae 450 2L/ha + 1% Uptake	100	8	115	1.4
2.Terbyne 1.4kg + Glyphostae 450 2L/ha + 1% Uptake	100	2	103	1.39
3. Imazapic 100ml/ha + Imazapyr 30ml/ha + Glyphostae 450 2L/ha + 1% Uptake	100	7	108	1.38
4. Alliance 2.5L/ha + Glyphostae 450 2L/ha + 1% Uptake	100	4	110	1.39
5.Imazapic 100ml/ha + Glyphostae 450 2L/ha + 1% Uptake	100	5	103	1.39
Garlon 120ml/ha + Ally 5g/ha + Roundup 1.2l/ha + SOA 1% + Enhance 0.5%	100	0	107	1.4

All treatments controlled the weeds that were present. The trial received for the rest of February, March and until the 25th April 18mm of rainfall. Although not a significant amount of rain it stimulated another germination of summer weeds.

Treatments 1 & 3 showed excellent residual control of further germinations. Small Burr Grass and Self sown cereals were the only weeds present in these plots although in very low numbers. Images 1&2 below show the weed control of treatments 1 & 3.



Image 1. Residual Weed Control Treatment 1.

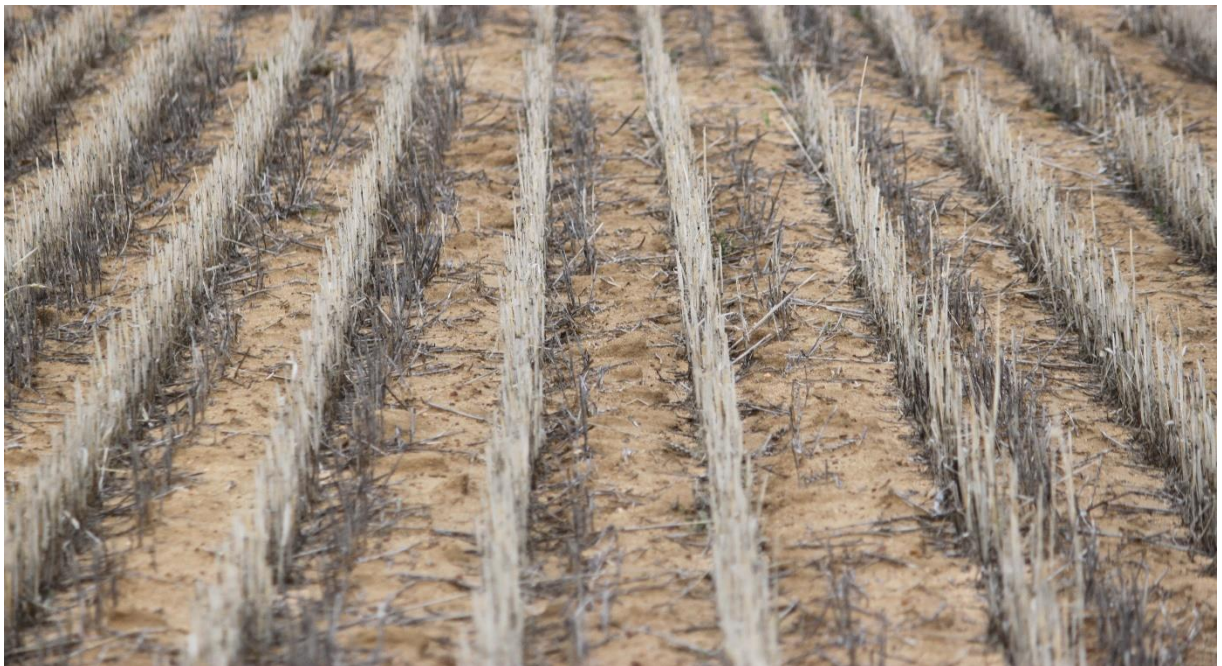


Image 2. Residual Weed Control Treatment 3.

Plots 2, 4, 5 & 6 had small burr grass, caltrop, pigweed, melons, self sown cereals and radish present at varying levels. Treatments 2 & 4 were rated poorly for residual control due to the medium to high of radish present in these treatments shown in images 3&4. The germination of wheat was not affected by any of the treatments with no significant difference in plant establishment counts taken 13/6/2014.



Image 3. Radish germination in Treatment 2.



Image 4. Radish Germination in Treatment 4.

In crop weed control was carried out at the zedock growth stage Z14 of the crop. Radish was present but not in large numbers across all plots. Any further residual control from the summer application of herbicides was not evident as further rain during the season was inconsistent and further germinations of winter weeds were not present.

Tiller counts were to be done but on the day of inspection due to the dry conditions of August the crop was aborting tillers. There was no difference across any plot. Tiller counts have not been added to the results due to tiller abortion being attributed to the dry weather conditions rather than any crop affect from herbicide application.

Due to the lack of follow up rainfall after the application of the herbicide treatments it is difficult to say conclusively that there is any benefit from applying residual herbicides for residual weed control. The cost of some of the residual treatments at \$20/ha will put a strain on farming budgets at this time of year. If there is a dry summer period after application the economic benefits to the farmer maybe be minimal as the yield results show no significant increase in yield to compensate for the extra expense for using residual herbicides.

Summary

There is no conclusive evidence from this trial that the use of residual herbicides is beneficial in overall residual summer weed control. The lack of follow up rainfall after application of residual herbicides impacted on the results of this trial. The lack of rainfall and forecasting rainfall at this time of year is the major difficulty in either recommending the use of residual herbicides and would be the most important decision making factor in the farmers mind on whether to use residual control or not. This experience has shown that for any meaningful data to be produced that could be disseminated to the broader farming community it would need to be conducted in a control climate experiment to have reliable data to publish. The lack of reliable data will see farmers keep pursuing the cheaper herbicide options for summer weed control rather than look at alternatives.

3. Project resources	This section describes use of the funding listed in the initial plan and any refunds due to COGGO
-----------------------------	---

Expenditure of funds requested from COGGO	\$ Total funds budgeted	\$ Total funds expended (actual)	\$ Total funds requested from COGGO*	\$ Total COGGO funds expended	\$ Refund due to COGGO of any unexpended COGGO funds
Salary/Contractors	13800	13800			
Operating costs	5170	5170			
Capital					
TOTAL					

*Funding provided by COGGO.

IMPORTANT: Return of unused funds to COGGO is required as per *Clause 3.3* of the Research Agreement.

4. Commercialisation	<p>Insert details of the proposed commercialisation process, as applicable, with reference back to the planned commercialisation plan in the project proposal) for any outputs from the project.</p> <p>This should include recommendations for the commercialisation of the results of the project and the registration or other protection of Project IP and Project Confidential Information as per the Research Agreement.</p>
-----------------------------	--

<p>Due to the nature of the project and the abandonment of the main trial at Mingenew I believe there is not enough data to commercialize any results of the project.</p>

It is understood that this may require further discussion and agreement with COGGO via its' agent GIWA, as per the undertakings given and terms agreed, in the project proposal. This can be the subject of an appended letter and attachments. In all cases such discussion and subsequent agreements need to be governed by *Section 8 Project IP, Improvements and Project Confidential information* of the Research Agreement.

5. Communication/ Extension	<p>Insert details of how the communication and extension of the project outcomes has been achieved to date and recommendations for future activities to disseminate and promote adoption of the results of the Project.</p>
<p>I believe that communication of any data from this project would need to be treated with caution. The variability of summer rainfall from year to year makes it difficult to give farmers a definitive best practice management guide for summer weed control.</p>	

Note: As per *Clause 7.3 (b) (ii)* of the Research Agreement COGGO may require the Researcher to produce an edition of the Final Report in a form suitable for general distribution. If so required by COGGO, the Researcher must produce a non-confidential version of the Final Report within 28 days of receiving a request to that effect from COGGO.

6. Certification

The Project Supervisor and the Research Organisation certify that all information contained in, and forming part of, this final project report is complete and accurate. The project supervisor and research organisation further warrant that the project complied with all the relevant guidelines affecting the conduct of research, for example in relation to ethics, bio-safety, environmental legislation, GMAC or National Health and Medical Research Council Codes.

Project Supervisor's signature _____

Name (in Capitals)

_____ Date:

Research Organisation signature _____

Name and title of authorised signatory (in Capitals)

_____ Date:

Completed Final Project reports

Email to coggoresearchfund@giwa.org.au or mail to
COGGO Research Fund, GIWA, PO Box 1081, Bentley DC, WA 6983

For any further enquiries please email questions to coggoresearchfund@giwa.org.au
Or phone (08) 6262 2128

COGGO representative

For the purpose of this Project agreement contract, COGGO will be represented by Grains Industry Association of Western Australia (GIWA), or such other representative that is nominated by COGGO as authorised to operate on behalf of COGGO.