**GRDC Project Specification**

**Title: Nitrogen management of hybrid and open-pollinated canola in the WA low rainfall mallee**

**Start Date: May 2012 Finish Date: Report due by April 2013**

**GRDC Theme: Profitable Farming Systems**

**GRDC Region: Western Region**

**Regional Zone: Regional Cropping Solutions Esperance Zone – Project 1 of 4 Hybrid Canola Nitrogen Management in low rainfall mallee areas**

Project Supervisor

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| --- | --- | --- | --- |
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**Proposal.**

Initial small scale trial work in 2011 found that there was some benefit in nitrogen application to hybrid canola varieties above the benefits seen by application of nitrogen to other canola types. In 2012 it is hoped that this work can be repeated with more cultivars and to also investigate the timing of nitrogen, which is ill-defined for low rainfall areas in the mallee region. The low initial rates of N on hybrids may help to offset the higher establishment costs of hybrids due to higher seed costs

**Background.**

In 2011 DAFWA conducted nitrogen management of hybrid and open-pollinated canola in the low rainfall WA mallee. In that trial it appeared hybrids continued to respond to nitrogen in terms of GY and $/ha compared to Open Pollinated varieties in both TT and RR technologies. Also hybrids at rates of N below 25 kg N/ha produced equal or better yields than OP varieties at higher rates. This opens up the idea of using the improved genetics of hybrids with low rates of N near seeding, watching the season and applying more N as the season allows.

There are gaps currently in this area which can be addressed with this trial. The research and extension gaps include:

* Lack of suitable break crops – better agronomy packages for hybrid canola will enable this crop to be established as a profitable break crop for the low rainfall mallee areas. Hybrids have good seedling vigour and generally better yield potential than OP or other canola types.
* Nitrogen use efficiency – there are numerous trials/studies that have been undertaken that show that compared to OP varieties, Hybrid canola varieties appear to be more efficient users of N (Brandt, Ulrich et al). However these studies were done quite some time ago and very few have been conducted to WA conditions. New cultivars could change how nutrition in hybrids is managed in low rainfall areas.
* Hybrid canola cultivars have been introduced in medium to high rainfall environments in WA, but less is known about their performance and response to nitrogen in low rainfall areas. Some work has been conducted (Amjad, White 2009) on comparing Hybrid to OP varieties in the northern wheatbelt in low rainfall zones; however varying rates of nitrogen were not compared.
* A general lack of agronomy knowledge surrounding hybrid canola management

**Recent on-farm research.**

Very little validated on-farm research has been undertaken. After consultation with the Esperance Zone Regional Cropping Solutions group, it was found that no-one knew of this work being done; if so it hasn’t been quantified or extended. It will be of great benefit to low rainfall farmers to see how low N rates can go on canola before yield or $/ha is affected, particularly in variable seasonal conditions as experienced by these farmers in recent years.

**Research objective.**

Topdressing all or splitting nitrogen applications can help manage the bulkiness of the hybrid canola crop. Research has shown that as long as there is at least 40 kilograms per hectare, or units, of available nitrogen in the top 50 centimetres at sowing, there is generally no yield penalty associated with delaying or splitting nitrogen applications (GRDC Canola Factsheet – Growing Hybrid Canola Aug 2010). The initial trial work undertaken on the WA low rainfall mallee showed that in fact rates of nitrogen could be much lower than this 40 kg/ha of Nitrogen and see no yield penalty. The further research indicated above will show how low these rates can go before yield penalties can be expected; and on which varieties.

**Research methodology.**

The experiment will consist of three Roundup Ready cultivars (two hybrid – Hyola 404 RR and Pioneer 43Y23 RR, and one OP – GT Cobra) and three TT cultivars (one hybrid – CB Junee HT, and two OP – CB Telfer and CB Tanami). Nitrogen treatments will be 0, 25, 50, 75 and 100 kg N/ha applied in split applications. In addition 100 kg N/ha will be applied either at seeding, 4 weeks after sowing (WAS, @ 2-4 leaf)), 8WAS (@ 6 leaf) and 12 WAS (near bud at top of canopy).

**Communication and extension.**

The Trial will be shown to growers and consultants at Salmon Gums/North Mallee and/or Grass Patch Farm Improvement group field walks in Spring. Results will be shown at Salmon Gums/North Mallee Crop Updates in Autumn 2013, may be discussed at Esperance farmer crop update, Perth agribusiness or Esperance consultants crop updates in 2013, will appear in Esperance Agmemo which goes to every farmer in the Esperance port zone, and will likely be part of a scientific journal and may be used to update decision support tools such ‘Select your Nitrogen (SYN)’

**In relation to the specific selection criteria:**

1. Supervisor track record

Mark Seymour- over 20 years of conducting and reporting field trials in WA, with DAFWA and other farmer groups. Successfully managed GRDC projects for 20 years, including budgets, writing of reports and extension.

1. The trial protocol and experimental design outlined in this document.

Final trial design will be sent once funding is approved and biometrics department have OK’d.

1. Cost effectiveness

This trial is very cost effective when looking at the proposed learnings that can be extended to local farmers, and to other low rainfall mallee canola growers in the southern parts of Australia. The in-kind proportion of funds also shows the commitment from the researchers and support organisations.

Intellectual Property (IP)

**Background IP to be used in the project:**

**a) GRDC IP**

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| N/A |

b) Tenderer IP

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| N/A |

Third Party IP to be used in the project:

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| N/A |

Project IP:

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| N/A |

Risk Assessment

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| Within Project Risk: | Project staff unavailable to complete research |
| Likelihood: | Low |
| Consequence: | Trial not properly managed or written up |
| Controls: | Two researchers involved, DAFWA has many staff capable of completing trial if principals not involved |
| Technology Risk: | Field trial fails due to drought |
| Likelihood: | Medium |
| Consequence: | Low use of data |
| Controls: | Early sowing and correct management should ensure some useful data – as per 2011 |
| Adoption / Commercialisation Risk: | Canola prices collapse and farmers drop canola from their programs – |
| Likelihood: | Low |
| Consequence: | Do not need research |
| Controls: | Ensure information is publically available for later use if and when canola prices reach a level farmers grow canola again |

Research Agency Information

Participating Personnel

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| Name / Title | Agency | Position in Agency | Date to be Engaged | % Time Allotted | % Salary Funded by GRDC through this project |
|  |  | Project Supervisor | May 2012 | 10% | 9% |
|  |  | Project Leader |  | % | % |
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Cost

All GRDC Budget items and Non-GRDC contributions are to be GST exclusive.

GRDC Budget

| GRDC Budget | Main Items Required | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | Total $ GRDC |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |
| Salaries | Casual assistance at harvest/biomass cuts | $0 | $0 | $0 | $0 | $3000 | $3000 |
| Travel |  | $0 | $0 | $0 | $0 | $0 | $0 |
| Operating | CSBP soil and plant sampling charges (@$50/sample) | $0 | $0 | $0 | $0 | $7000 | $7000 |
| Capital |  | $0 | $0 | $0 | $0 | $0 | $0 |
| Grand Total GRDC $ for project duration | | $0 | $0 | $0 | $0 | $10000 | $10000 |

Explanatory notes on GRDC budget items

Salaries

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Travel

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Operating

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Capital

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General Notes

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Non-GRDC Contributions

| Non-GRDC Contribution | Main Items | 2007/08 | 2008/09 | 2009/10 | 2010/11 | 2011/12 | Total Non-GRDC |
| --- | --- | --- | --- | --- | --- | --- | --- |
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| Host Agency | DAFWA - Monitoring & evaluation of the trial/demo site; Seed cleaning and quality testing (NIR); preparation and delivery time for extension, trial report; further CSBP soil and plant sampling charges (@$50/sample) | $0 | $0 | $0 | $0 | $59880 | $59880 |
| Other Sources | RSU – sowing, management and harvest of trial | $0 | $0 | $0 | $0 | $10000 | $10000 |
| On-going base | DAFWA - overheads | $0 | $0 | $0 | $0 | $20000 | $20000 |
| Grand Total Non-GRDC $ for project duration | | $0 | $0 | $0 | $0 | $89880 | $89880 |

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| Please calculate GRDC’s equity share based on the above contribution tables. This amount represents the percentage of the total budget to be contributed by the GRDC. Claims for existing IP may be negotiated prior to signing a Research Agreement. | GRDC’s Equity Share (%): | 10% |

Administration Contact

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| --- | --- | --- | --- | --- | --- |
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Certification

The Project Supervisor and Research Organisation certify that all information contained in, and forming part of, this proposal is complete, accurate and provided in good faith as at the date given and that any subsequent changes to the information given will be notified promptly. The Project Supervisor and Research Organisation warrant that the proposal complies with all the relevant guidelines affecting the conduct of research, for example in relation to ethics, genetic engineering, bio-safety, environmental legislation, or National Health and Medical Research Council Codes.

In addition, the Project Supervisor and Research Organisation certify that this application is a true and accurate copy of the electronic copy that has been emailed to the GRDC and are aware that the application is being evaluated based on the data contained in the electronic copy.

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| **Project Supervisor’s signature:** | **Signature.JPG** |
| Name: | **Mark Seymour, DAFWA** |
| Date: | **10/4/12** |
| **Lead Organisation Signature:** | C:\Users\Julianne\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.Word\CCE30042012_0000.jpg |
| Name and Title of authorised signatory: | **Ben Curtis, DAFWA** |
| Date: | **10/4/12** |
| **Participating Organisation Signature:** |  |
| Name and Title of authorised signatory: |  |
| Date: |  |
| **Participating Organisation Signature:** |  |
| Name and Title of authorised signatory: |  |
| Date: |  |
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