Overview of GRDC investments : Canola Pathology Workshop - 5 Feb 2020

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GRDC PURPOSE

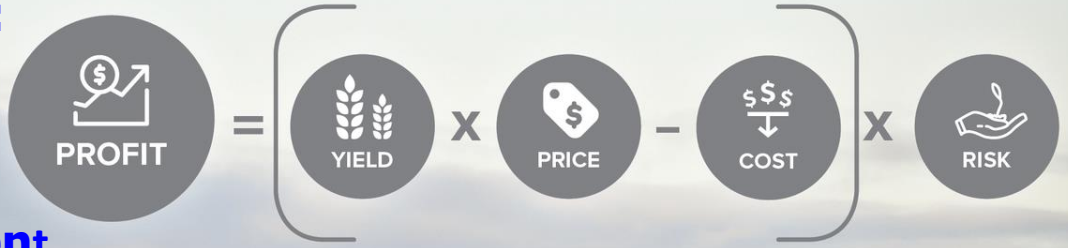
Invest in RD&E to create enduring profitability for Australian grain growers

GRDC – FOCUSED ON GROWER PROFITABILITY

Targeted investment in grains RD&E to ensure on-ground impact

Focus on key profit drivers:

- **Yield**
- **Price**
- **Optimised costs**
- **Effective risk management**



RD&E PLAN – DELIVER IMPACT TO GROWERS

Future investment to deliver on purpose

- Creating transformational impact
- Higher value opportunities
- Investing with the best
  - ✓ Traditional
  - ✓ Non-traditional
- Innovative

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Key Investment Targets (KITs)

- Key Investment Targets underpin the core objectives
- KITS will enable targeted RD&E investment for maximum impact
- Provides a framework for prioritisation and a transparent and agreed rationale for investment

KIT 3.3

Develop and implement management options to minimise the cost of effectively and sustainably managing diseases.

Impact	**Growers are able to sustainably reduce the impact of the most important diseases on farming systems and grain production.**
Summary	• Growers have access to options to effectively minimise the impact of diseases on farming systems and profitability. • Growers implement integrated management strategies to maintain the effectiveness of disease control options.

SCOPE	INVESTMENT OUTCOMES
Understanding of the distribution and impact of diseases The current and potential future distributions and impacts of diseases are quantified.	3.3.1 Growers have access to and use tools and technologies to identify, quantify and map the distribution of diseases in farming systems. 3.3.2 Growers and researchers understand the current and future potential impacts of different diseases. 3.3.3 Research efforts focus on diseases prioritised on the basis of current or future potential impacts.
Understanding of the biology and ecology of priority diseases Knowledge of disease life cycles under current and future growing conditions is improved to support the development of optimal management options.	3.3.4 Growers and researchers understand the life cycle, dispersal, survival and distribution characteristics of diseases. 3.3.5 Growers have the knowledge and tools to effectively monitor changes in the impacts, crop interactions and fungicide resistance status of diseases.
Tools and technologies to manage disease Tools and technologies are developed to assist growers to optimise management of priority diseases in farming systems.	3.3.6 Growers have access to tools to accurately and rapidly detect endemic and exotic diseases in the field. 3.3.7 Growers have access to diverse genetic, chemical, biological and cultural options for the control of diseases. 3.3.8 Growers minimise the development of fungicide resistance through the use of diverse and practical disease management strategies.
Integration of disease control decision-making in farming systems The management of diseases is optimised in a whole-of-farm business and farming system context.	3.3.9 Growers understand the risk and economic implications of disease management options within farming systems. 3.3.10 Growers and their advisers have knowledge of seasonal disease risks at paddock, farm and regional levels. 3.3.11 Growers have knowledge of the short-term and long-term relevance of varietal responses, rotations, disease thresholds and farming system changes in making informed decisions on disease management.

Canola blackleg

- **Blackleg is the most serious diseases of canola in Australia with annual estimate costing $134 million.**

- **While progress are being made in the control and management of the disease, ongoing challenges remain:**

-The pathogen populations are highly diverse and rapidly evolving.

-Chemical controls are effective but chemical resistance is developing.

-Genetic resistance exists although major qualitative resistance sources are quickly overcome.

Blackleg investments – Strategic plan

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Outcome : Growers with access to canola varieties with improved yield, quality and possess robust & effective blackleg resistance

GENETIC

- Phenotyping methods for major and minor genes
- Gene discovery & characterisation
- Gene deployment
- Mechanism of resistance
- Selection tools
- Gene accumulation : developing strategies for resistance management
- Post graduate training

- Pathogenicity surveillance
- Epidemiology
- Evolution of *L. maculans*
- Collection and storage of isolates
- Post graduate training

CULTURAL

- Multi-locational testing : monitoring field disease
- Characterisation of germplasm
- Communication and extension of existing and new knowledge to industry
- Impact of changes in farming practices
- Blackleg management guide
- Fee-for-service screening of germplasm
- Modelling
- Biosecurity including Trading issues via AOF/ DAF

CHEMICAL

- Fungicide management
  - Fungicide resistance
  - Fungicide replacement
  - New fungicide targets

New Blackleg Investment :Towards Effective Control of Blackleg Pathogen of Canola

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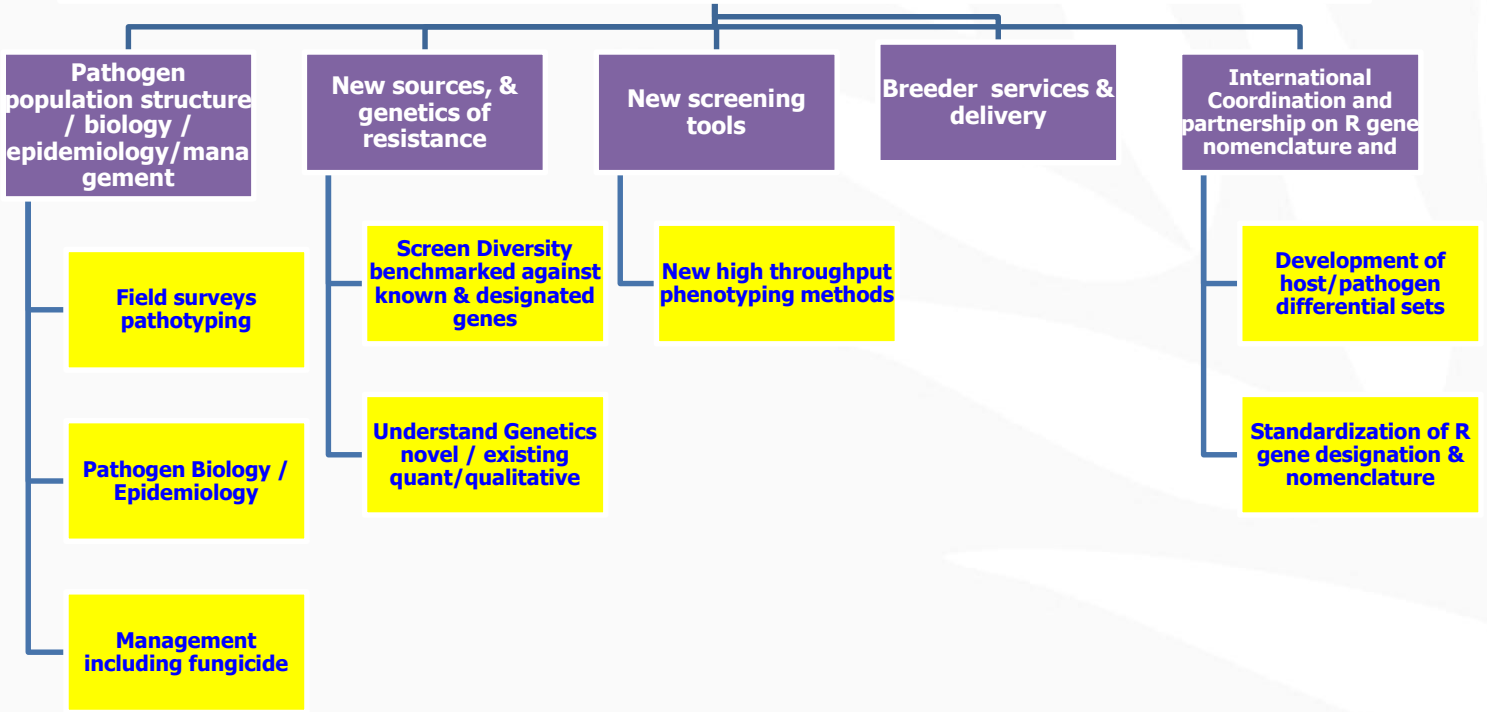

Procurement : Investment procured in five programs of work

- **Program 1: Disease epidemiology and management including surveillance and monitoring of pathogen populations.**
- **Program 2: Coordinating International Blackleg R&D**
- **Program 3: Screening of diverse germplasm for novel sources of resistance : identification and characterisation of new sources of blackleg resistance in canola including from its wild relatives (A, B, and C genomes).**
- **Program 4: Phenotyping for adult plant resistance (APR - quantitative resistance) in canola.**
- **Program 5: Critical infrastructures to support the screening for blackleg resistance including fee-for-service provision**

Thank you

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