

BlacklegCM: a New App to Manage Blackleg in Canola

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Key messages

- Blackleg CM, the Blackleg Management App has been developed to provide growers and advisers with an interactive interface to explore the economic outcomes of different blackleg management strategies and their relative importance.
- Download BlacklegCM from the Apple App Store or Google Play

Blackleg Management

Blackleg stem canker is a serious disease of canola across Australia. The best approach to manage blackleg in any situation depends on many factors including variety choice, yield potential, proximity to canola stubble from previous years, and several fungicide options. All of these factors have implications for costs and returns.

The current Blackleg Management Guide contains information on the management factors that influence the severity of blackleg in your crop. It specifically lists cultural practices such as crop rotation and distances to canola stubble (inoculum source), the appropriate scenarios for fungicide application and presents the Blackleg Rating and Resistance Group for each cultivar. The Management Guide is updated twice yearly as the resistance status of individual cultivars can change as the blackleg fungus overcomes host resistance genes.

Although the Management Guide provides much useful information, it has some limitations in its current paper form. Currently, it is difficult to consider complex interactions. For example, the use of cultivars with different Blackleg Ratings in high or low rainfall environments and the effect of fungicide use. Consequently, there has been a need to develop a management tool that can provide disease forecasting based on the management principles proposed by the manager of an individual paddock.

Welcome to the new Blackleg Management App “BlacklegCM”. This App assists you to manage blackleg in Australian canola crops by integrating the information provided in the Blackleg Management Guide and by producing a potential economic outcome. BlacklegCM can be tuned to account for some of the major factors that relate to risk of yield loss due to blackleg disease in your paddock. It allows you to compare the likely profitability of different disease management strategies including paddock selection, cultivar choice, seed dressing, banded fungicide and sprayed fungicide.

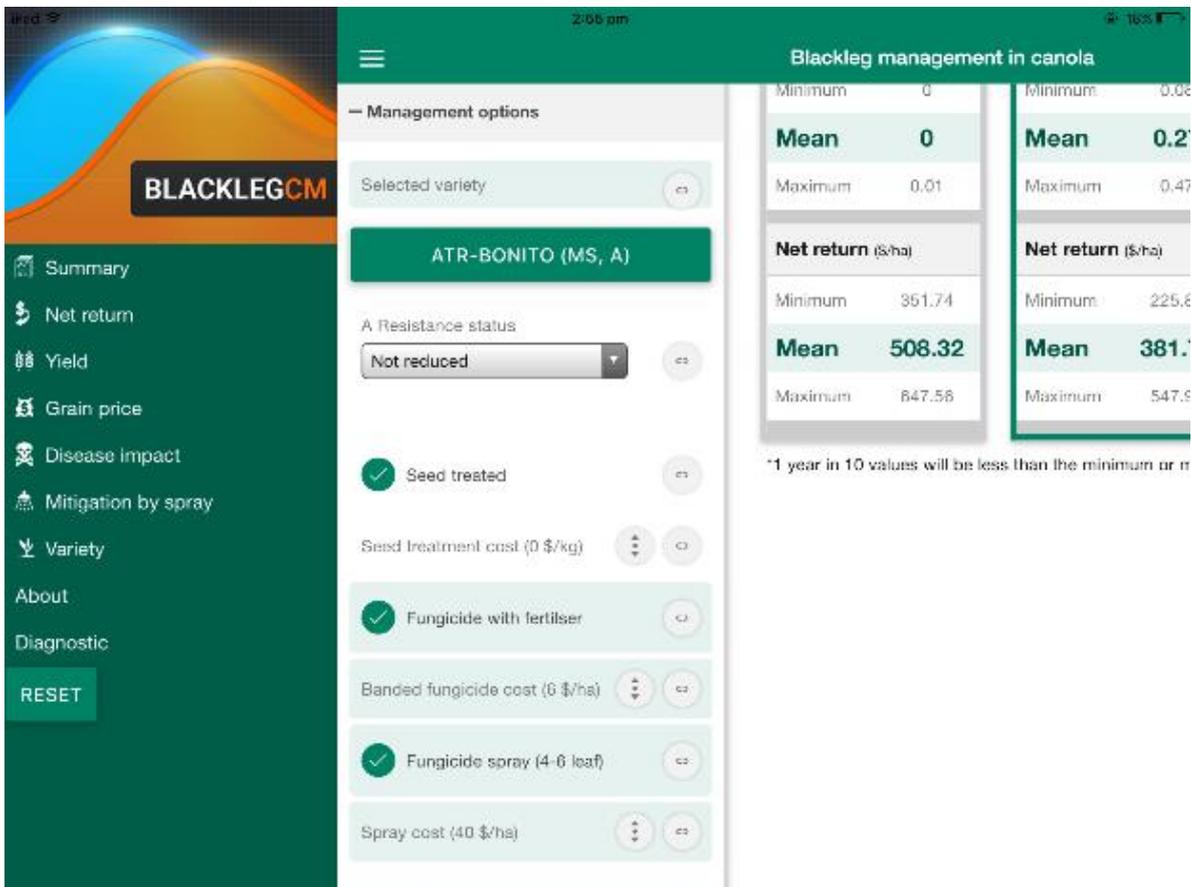
Blackleg Management App - BlacklegCM

BlacklegCM takes account of costs, yield benefits and grain price to give you the best case, worst case and most likely estimates of financial return.

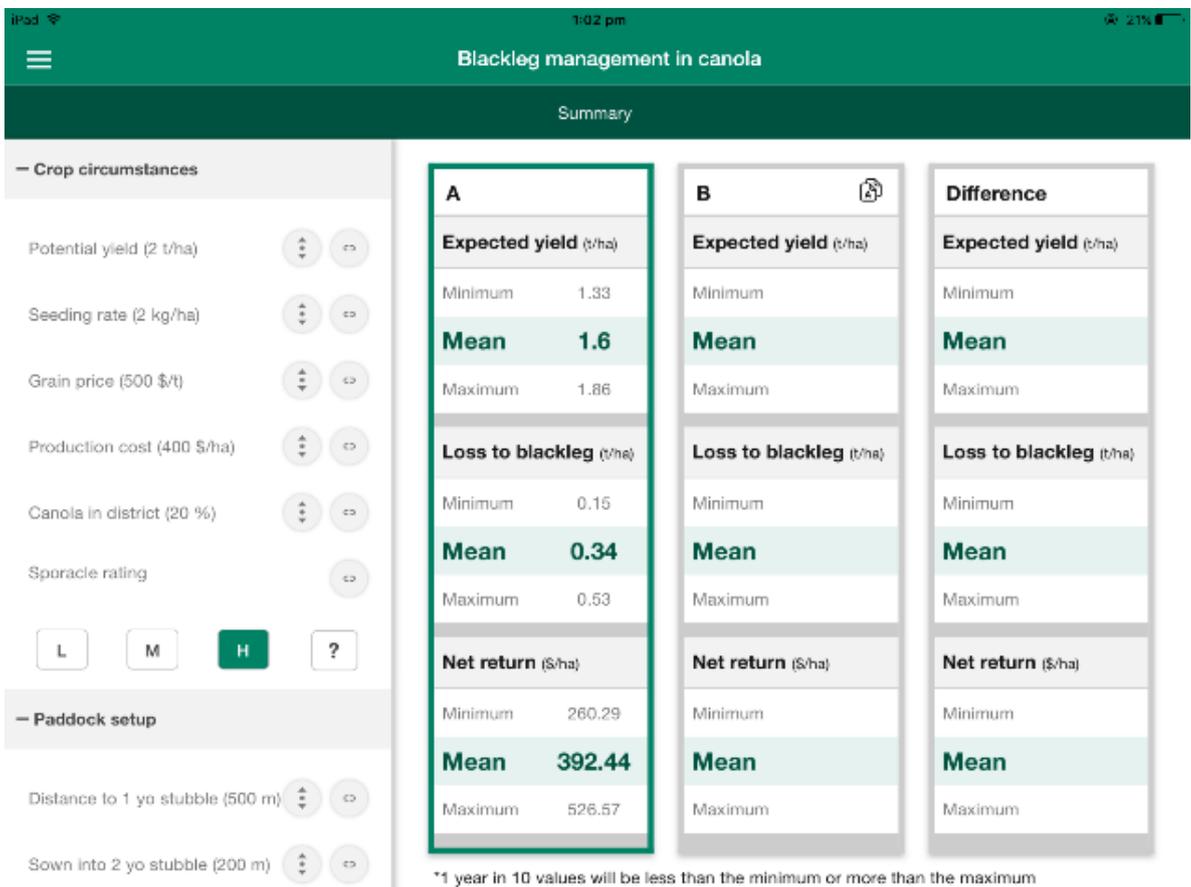
BlacklegCM accounts for the major factors that influence blackleg severity. The user has the option to change each parameter to tailor the output to their cropping circumstance. Therefore, the user can explore their options for disease control and understand the relative importance of each factor. For example, distance to one-year old stubble has a large influence on disease severity, whilst two-year old stubble has a minor influence. Foliar fungicide has a small influence if used in isolation but is very effective if used in combination with a seed dressing fungicide. Foliar fungicide on a one-tonne crop is likely to cause an economic loss whilst fungicide on a three-tonne crop is more likely to result in a significant profit.

The strength of the App is that it allows the user to make as many comparisons as they wish to determine the best and most profitable way for them to reduce disease and increase profits.

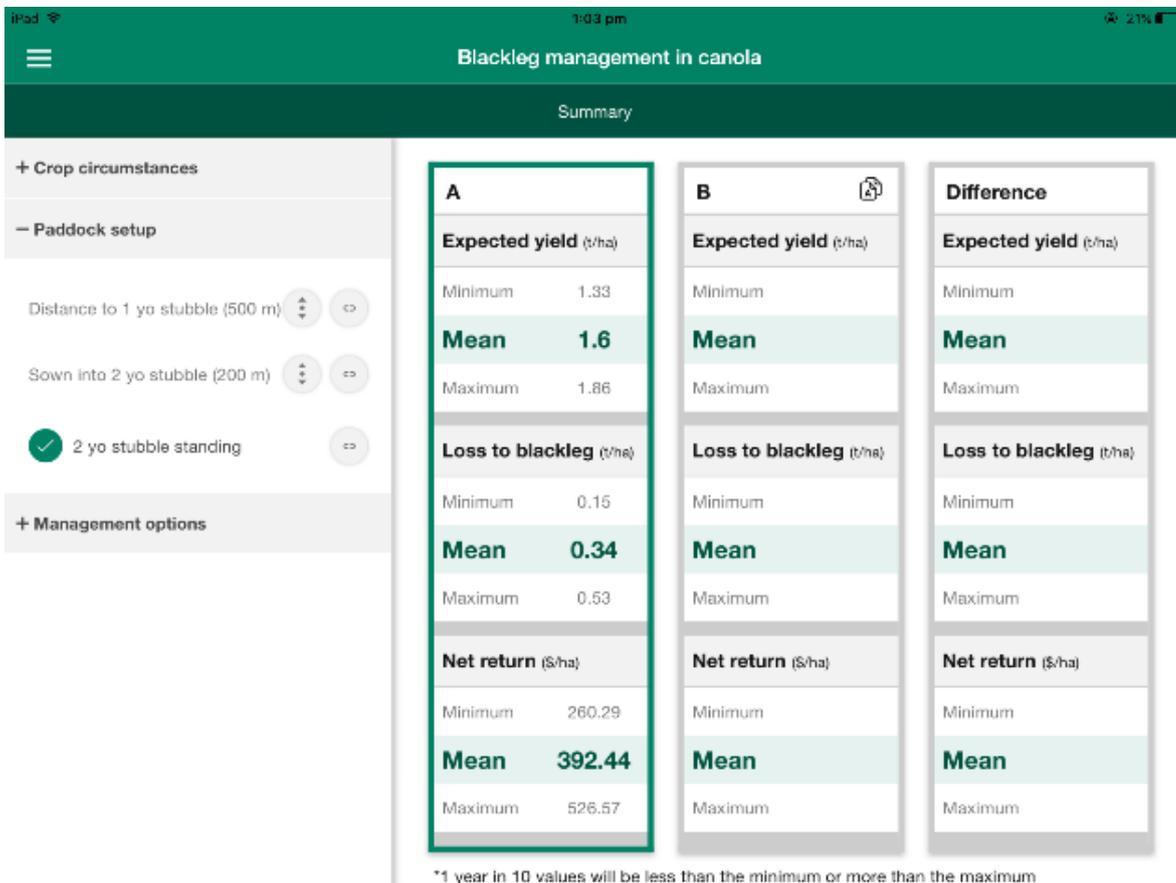
The App is a result of 30 years of blackleg research. It has had input from all members of the GRDC investment “National canola pathology program” and has been built by the “National pathogen management modelling and decision support project”. The App has already been extensively tested by growers advisers and the interfaces were determined based on their recommendations.



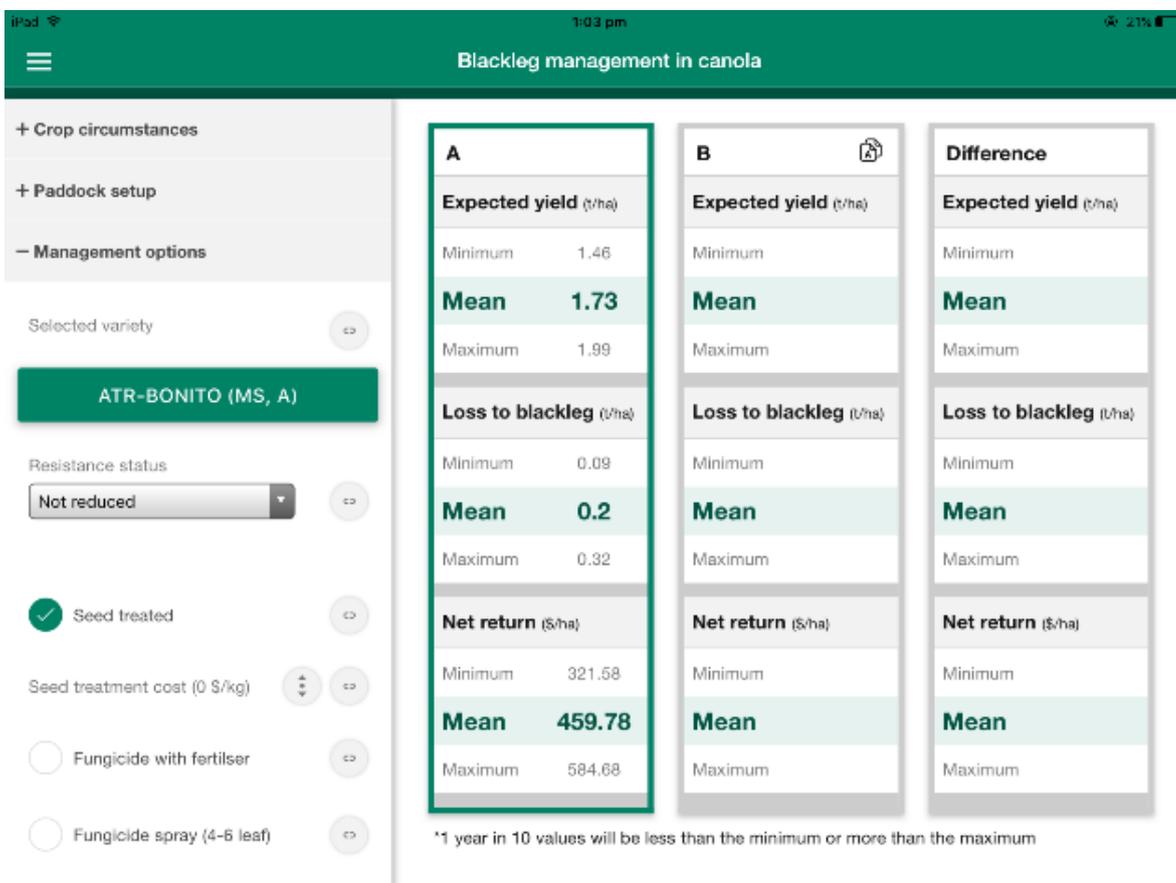
BlacklegCM App loads with many options. The user can set these options to best match their circumstance.



Crop circumstances - The user puts in basic parameters such as target yield, production costs, grain price, and regional canola intensity.



Paddock set up - This section lets the user fill in distance to 1 and 2 year old stubble and whether the stubble has been left standing or has been knocked down.



Management options - In this section you choose your cultivar, and if your cultivar has reduced resistance in your region. This can be determined from monitoring past crops, if unknown the App will default to "Not reduced". If major resistance changes have occurred there will be published warnings, such as Group D resistance warning on the Eyre Peninsula in 2012. The management options section also enables the user to add their fungicide plans, seed treatment, fertiliser amended or foliar application.

Once all the parameters have been entered, the real power of the App becomes apparent as it determines the likely blackleg severity, yield loss and economic return from the parameters that have been entered. But unlike the current paper management guide, the App can calculate an immense number of interactions. For instance, in a low rainfall environment the App will determine that most management options do not result in yield loss and fungicide use may even result in economic loss. Whereas in the high rainfall, high canola intensity regions even small changes in management may result in varying levels of disease.

The other output from the model is that it enables the user to compare different management options.

Case Study

In 2018 a grower has ATR-Bonito seed, which formerly had a blackleg rating of MR, however, it has fallen to Blackleg Rating MS. Should the grower use their ATR Bonito seed as intended or get new seed of a more resistant cultivar?

The grower puts in their parameters:

- Potential yield: 2t/ha
- Seeding rate: 3kg/ha
- Grain price: \$500/t
- Production cost: \$400/ha
- Canola in the district: 20%
- Spore maturity risk: High
- Distance to 1 year old stubble: 10 metres
- Distance to 2 year old stubble: 200 metres
- 2 year old stubble: standing
- Cultivar: ATR Bonito (MS)
- Seed treatment: No
- Fungicide with fertiliser: No
- Fungicide spray: No
- The predicted yield loss from blackleg is 20%.

The grower can now change parameters:

- New cultivar with R rating = 20% yield loss reduced to 0% yield loss
- ATR Bonito with seed dressing and foliar fungicide = 20% yield loss reduced to 4% yield loss.
- ATR Bonito sown with increased distance of 500m to one year old stubble = 20% yield loss reduced to 10% yield loss.

The App will also be updated continuously to ensure that it has all the current canola cultivars and their current blackleg rating. All new knowledge will also be incorporated, for instance knowledge on upper canopy infection and different fungicide timings will be incorporated in the near future.

The App can also be used during the growing season, for example a grower may plan for a 2t/ha crop at planting, but soon realised that yield potentials are higher based on good establishment and early rainfall. In this scenario in July growers could re-run the App with 3t rather than 2t yield target and compare the predictions for plus or minus foliar fungicide.

It is envisioned that this App will continue to grow and evolve with the canola industry and become the mainstay for blackleg knowledge in Australia.

Keywords

fungicide, disease control, variety choice, resistance, separation distance, cropping intensity, stubble management, costs, benefits, decision support tool

Acknowledgments

The research undertaken as part of this project is made possible by the significant contributions of growers through both trial co-operation and support of the GRDC. The authors would like to thank them for their continued support.

Useful resources

<https://grdc.com.au/resources-and-publications/all-publications/publications/2017/09/blackleg-management-guide>
www.nvt.com.au

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GRDC Project Number: DAW00228, UM00051