

UNDERSTANDING THE AFFORDABILITY OF RECLAIMED WATER: AN AGRICULTURAL ENTERPRISE PERSPECTIVE

Water recycling schemes benefit users, water authorities, communities, and the environment. For example, the use of reclaimed water in agriculture enables fresh water to be preserved while providing farmers with climate-independent and nutrient-rich water. But the economic viability of some reclaimed water schemes has been a major concern, despite the non-interruptible supply through reuse being logically attractive to water-dependent businesses, like agriculture (Hoey 2020). A better understanding of the economic barriers and preferences of farmers is therefore key to maximising the uptake of reclaimed water by agribusiness. This study sought to understand how important water supply and cost was likely to be for different agricultural enterprises so that supply contract could be shaped to suit enterprise needs.

Aim:

Develop farm enterprise models to:

1. Examine how profitability is determined across different crop types
2. Identify parameters that are most influential (e.g. operating costs, irrigation rates, yield, commodity price)
3. Identify which crops and which scenarios are sensitive to water access e.g.:
 - Where does water cost and access rank, relative to other factors that impact production risk?
 - Assist with targeting strategies to foster higher uptake of reclaimed water from those enterprises who stand to benefit most

Method:

- Data covering several years were collected for different farm enterprises.
- This included input costs, yields and outputs prices.
- Because each of these variables might vary from year to year, simulation models were developed that highlighted which variables are most important in driving profitability.
- This was then used to estimate:
 - How much each business could pay for water and remain profitable;
 - How important the supply and cost of water were to driving profitability.

Key findings:

Reservation price

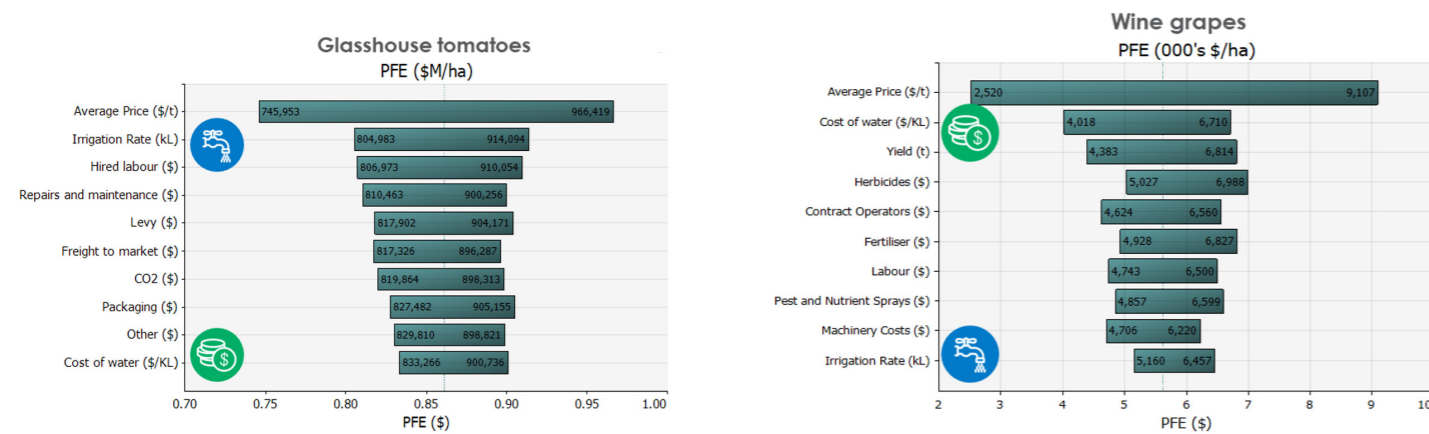
- All enterprises have a reservation price that significantly exceeds the current asking rate from most reuse schemes in Australia
- Suggests that all these enterprises will benefit from access to reclaimed water
- Modelling showed production costs and profitability risks differed between crop types, hence each will be motivated by different terms and conditions

Water price risk

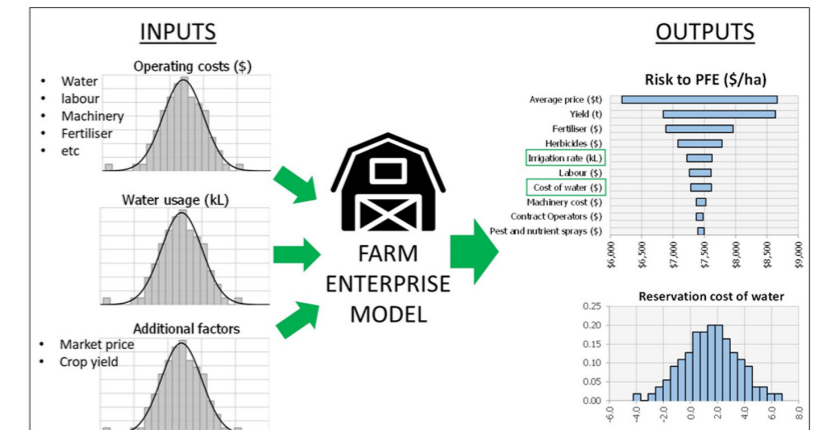
- The profitability of wine grapes followed by lettuce were the most exposed to risks that relate to the cost of water rather than water availability. These enterprises are most likely to be interested in securing water at a reasonable price.

Water supply risk

- Irrigation rate was a more important risk driver for glasshouse tomatoes and almonds. These enterprises are more inclined to seek security of water supply.



Crop type	Almonds	Lettuce	Wine grapes	Glasshouse tomatoes
Medium price (\$/kL)	\$1.73	\$1.92	\$2.49	\$42.58



Research Team

Dr. Bethany Cooper, Senior Research Fellow, UniSA Business
Dr Ben van den Akker, SA Water
Prof. Lin Crase, Professor of Economics and Dean of Accounting & Finance, UniSA Business
Dr. John Kandulu, Senior Economist at BDO



The Future

- Assess the impacts of water quality (e.g. TDS) on profitability to allow utilities to explore trade-offs in relation to the adoption of more advanced treatment options (e.g. RO).
- Insights will help achieve fit-for-purpose reuse by better aligning treatment options and capital spend with end-user preferences
- Inform water tariff structure to understand the sensitivity of different enterprises to a range of fix (connection) and variable (usage costs)



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