SUSTAINABLE WINEGROWING AUSTRALIA

2018/19
MCLAREN VALE

REGIONAL RESULTS

McLaren Vale Grape Wine & Tourism Association

www.mclarenvale.info

SUSTAINABLE WINEGROWNG AUSTRALIA

McLaren Vale Results 2018/19

Publisher
McLaren Vale Grape Wine & Tourism Association.

Chair
Marni Cook.

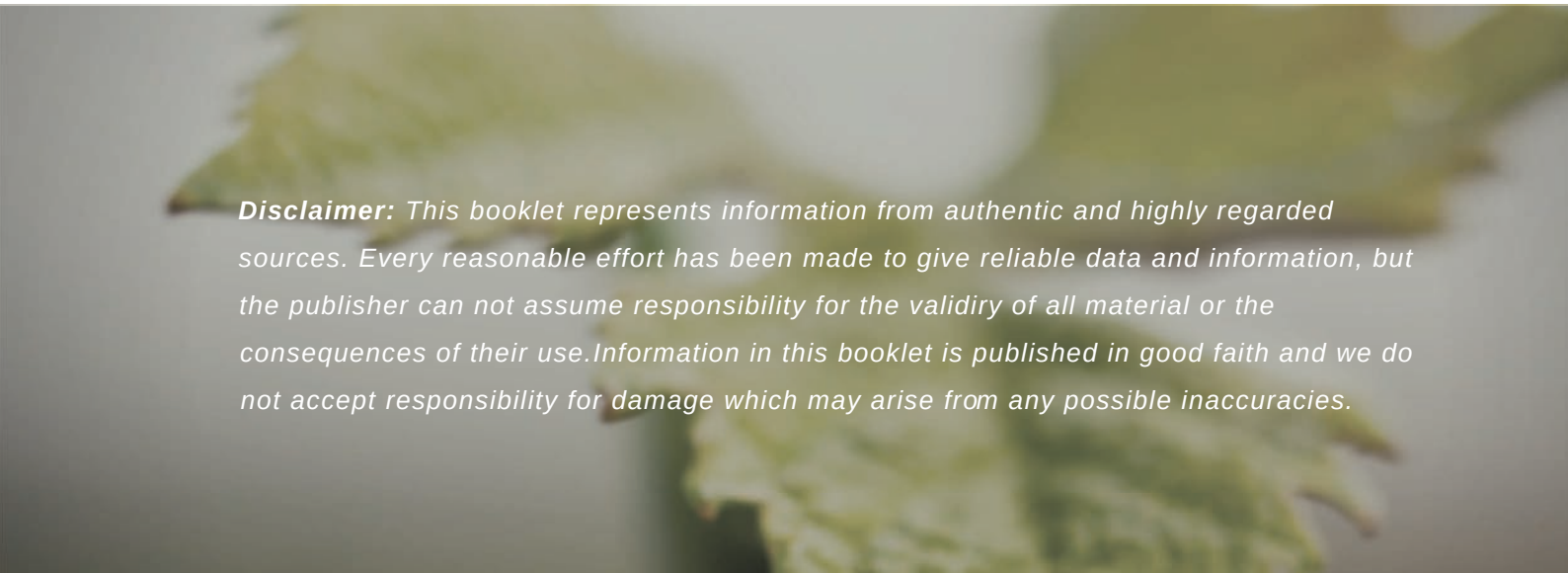
General Manager
Jennifer Lynch.

Grower Engagement Officer
Rachel Williams.

The Sustainable Winegrowing Australia membership data contained in this report was provided to McLaren Vale Grape Wine & Tourism Association by the Australian Wine Research Institute in an aggregated and de-identified format and was accurate at 11 June 2020.

For more information about Sustainable Winegrowing Australia, please visit:

www.sustainablewinegrowing.com.au



SUSTAINABLE WINEGROWNG AUSTRALIA

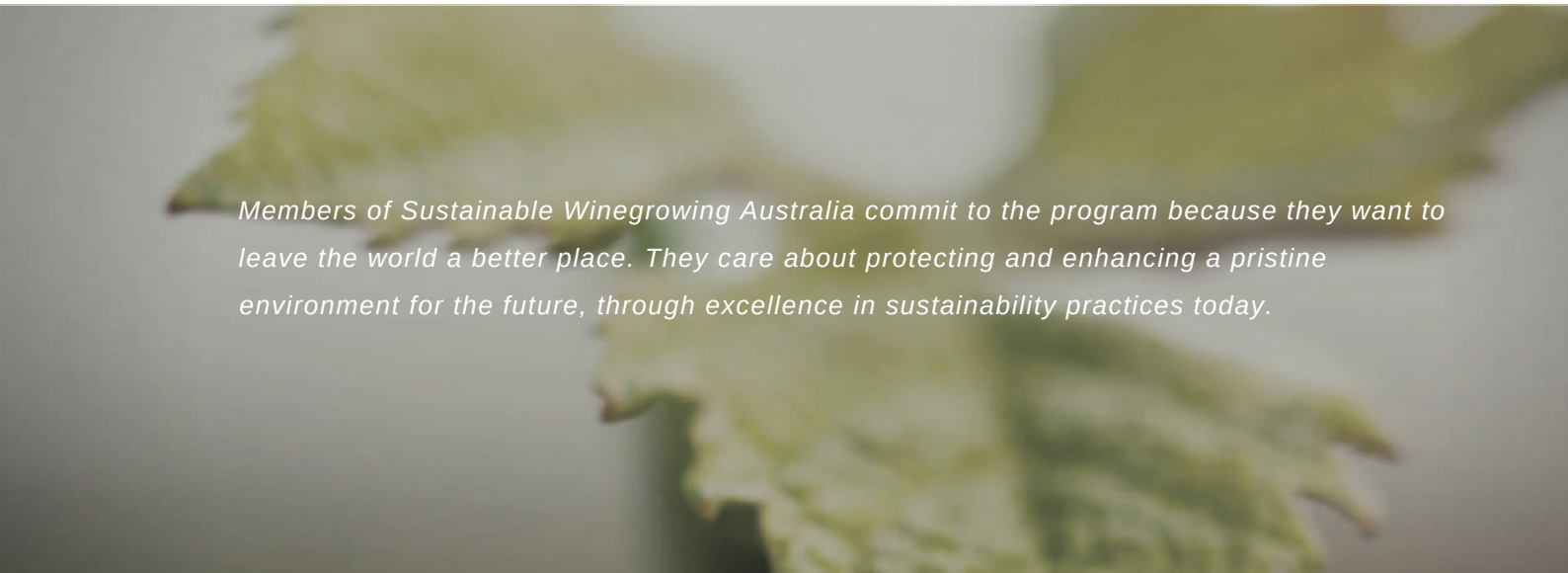
About The Program

Sustainable Winegrowing Australia is Australia's national program for grapegrowers and winemakers to demonstrate and continuously improve their sustainability in the vineyard and winery through the environmental, social and economic aspects of their businesses.

The program supports grape and wine producers to demonstrate and continuously improve their sustainability in the vineyard and winery through the environmental, social and economic aspects of their businesses.

The program takes a holistic approach to managing, supporting and promoting sustainability. It is administered by the Australian Wine Research Institute with governance, endorsement and active support from Australian Grape & Wine and Wine Australia.

The program is modeled on global best practices and aligned to the United Nations Sustainable Development Goals, with progress towards these monitored annually.



Members of Sustainable Winegrowing Australia commit to the program because they want to leave the world a better place. They care about protecting and enhancing a pristine environment for the future, through excellence in sustainability practices today.

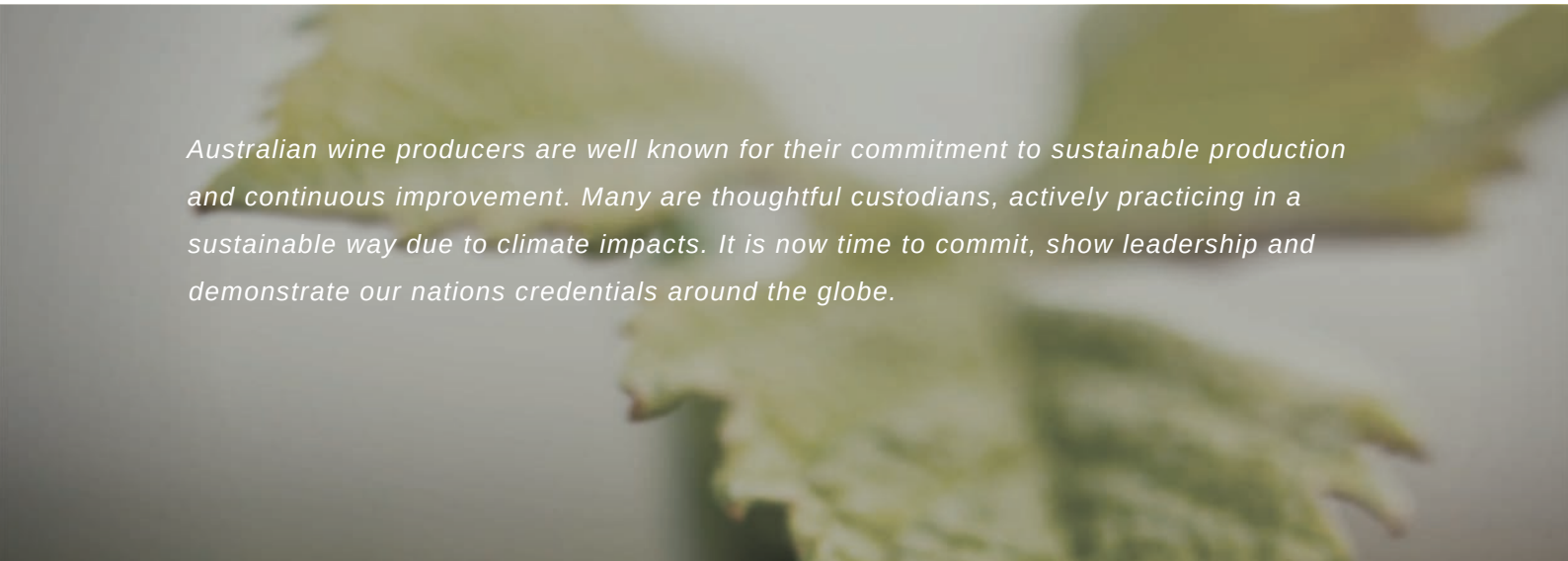
SUSTAINABLE WINEGROWING AUSTRALIA

Becoming a Certified Member

Sustainable Winegrowing Australia members wishing to become certified must complete an independent audit against the Australian Wine Industry Standards of Sustainable Practice (AWISSP) for Viticulture and Wineries. To maintain certification, a successful audit must be undertaken every three years by an approved certification body.

Benefits of certification:

- peace of mind that your sustainability claims have been independently verified
- use of a certified trust mark - an assurance to customers and consumers of how the product is produced
- enhanced international marketing through Wine Australia's marketing events programs
- integration of sustainability stories into wine Australia's education and content for customers and consumers.



Australian wine producers are well known for their commitment to sustainable production and continuous improvement. Many are thoughtful custodians, actively practicing in a sustainable way due to climate impacts. It is now time to commit, show leadership and demonstrate our nations credentials around the globe.

MEMBERSHIP STATISTICS

MEMBERSHIP

111

TOTAL MEMBERS

108 vineyard sites and **3** winery sites.

13

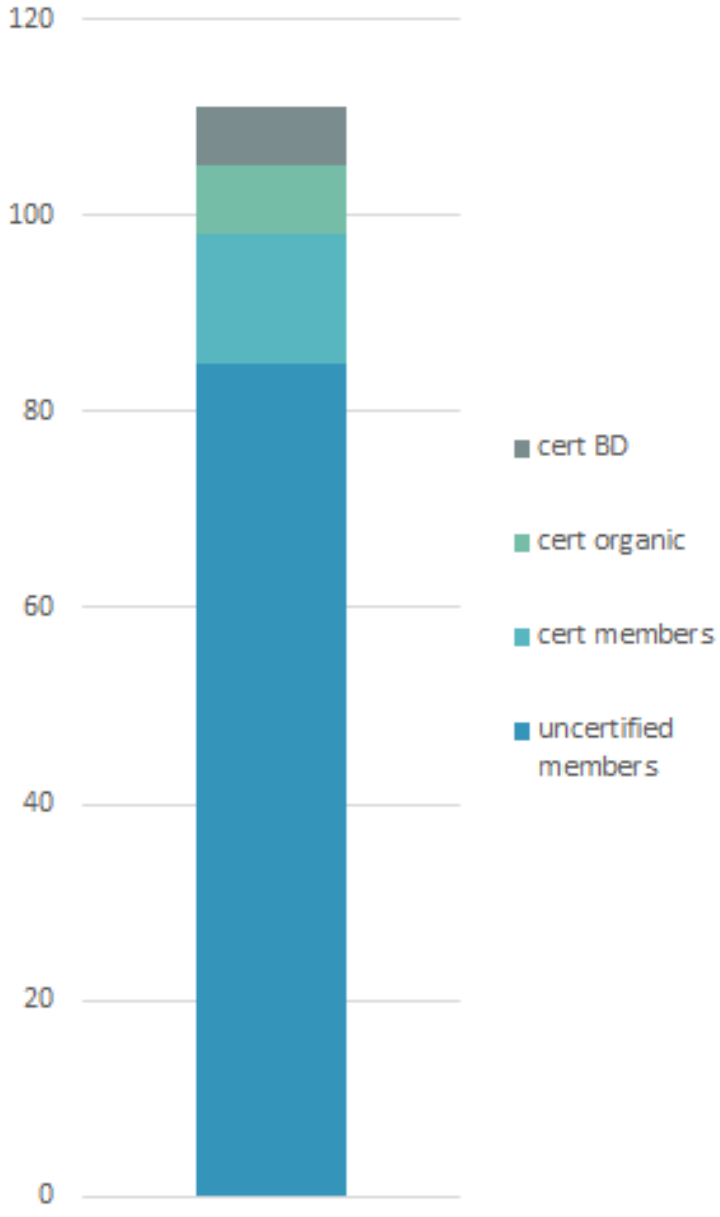
CERTIFIED MEMBERS

Members who have participated in and passed a Sustainable Winegrowing Australia audit to receive certification.

13

MEMBERS CERTIFIED ORGANIC OR BIODYNAMIC

7 members certified organic and **6** members certified biodynamic.



MEMBERSHIP STATISTICS

VINEYARD SITES

3578

TOTAL VINEYARD HECTARES

Included within the Sustainable Winegrowing Australia program in the McLaren Vale Wine Region

5.9

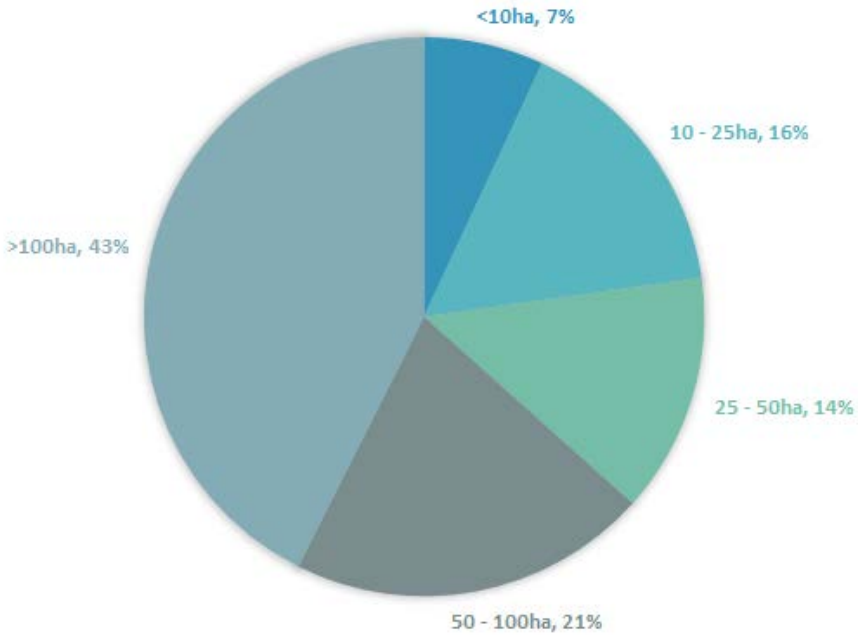
TONNES / HECTARE

Average Yield of McLaren Vale Sustainable Winegrowong Australia members.

4913.8

TONNES CRUSHED

Total crush for McLaren Vale Sustainable Winegrowong Australia winery members.



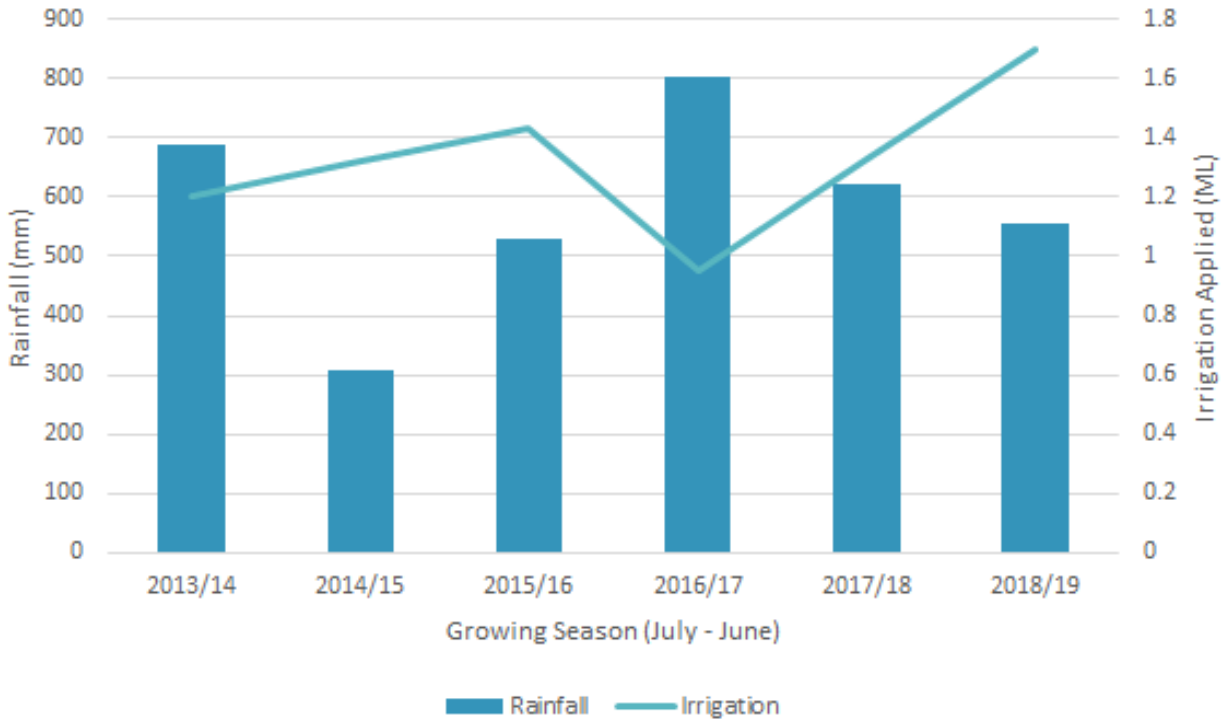
ABOVE: PERCENTAGE OF MCLAREN VALE MEMBER AREA IN VINEYARD SIZE CATEGORY.

WATER SOURCE AND USAGE

1.7

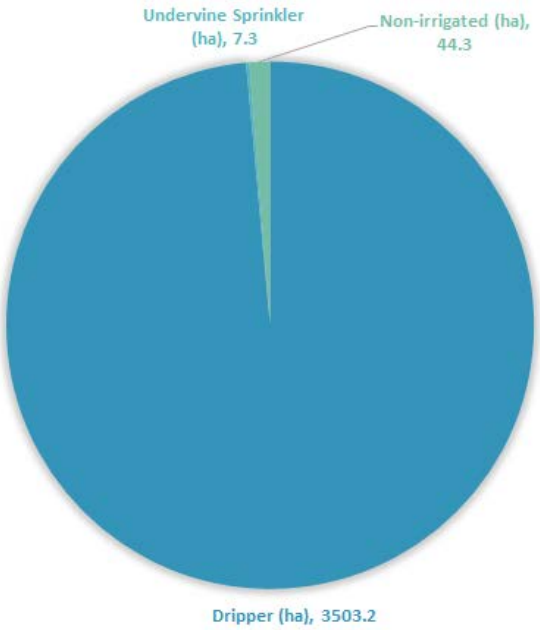
MEGALITRES

Total irrigation water per hectare of vineyard used by program members



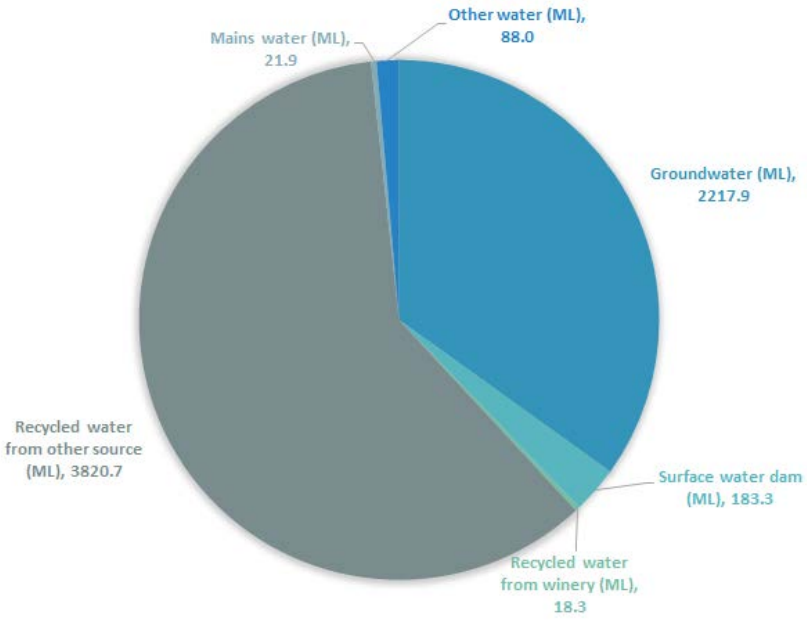
ABOVE: AVERAGE IRRIGATION APPLIED COMPARED WITH RAINFALL 2013 - 19

WATER SOURCE AND USAGE



RIGHT: TOTAL IRRIGATION DELIVERY BY TYPE.

Sustainable Winegrowing Australia members largely use drippers to irrigate their vineyards.

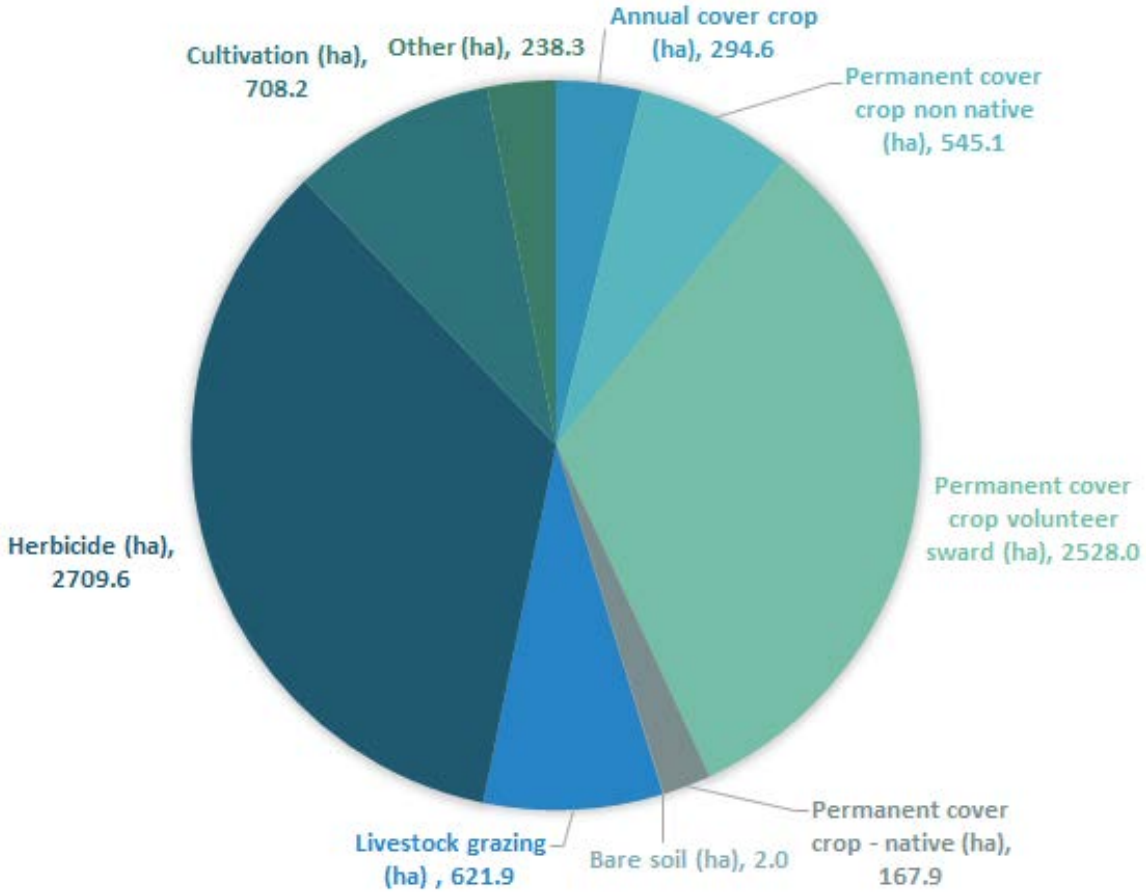


LEFT: TOTAL WATER USE BY SOURCE.

Sustainable Winegrowing Australia members utilise ground/bore water and Willunga Basin Water Company (WBWC) reclaimed water as the main irrigation water sources.

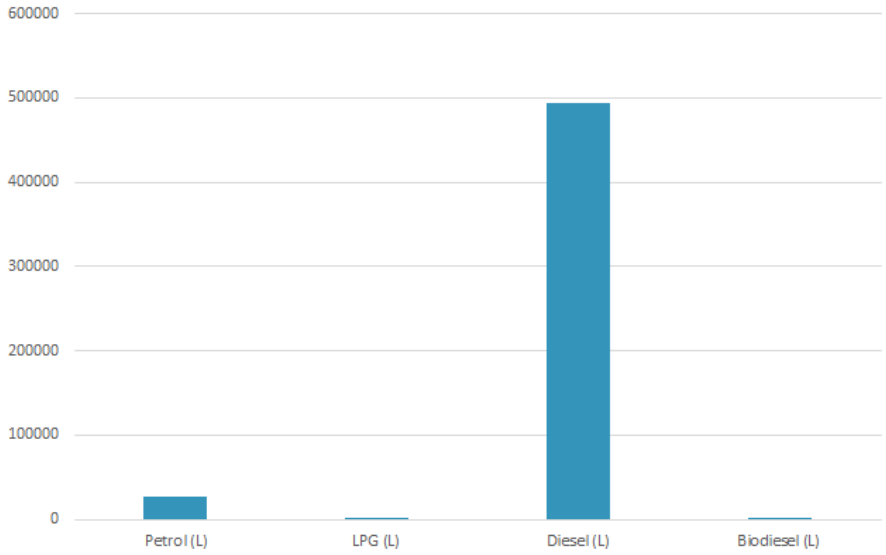
MEMBERSHIP STATISTICS

MIDROW MANAGEMENT



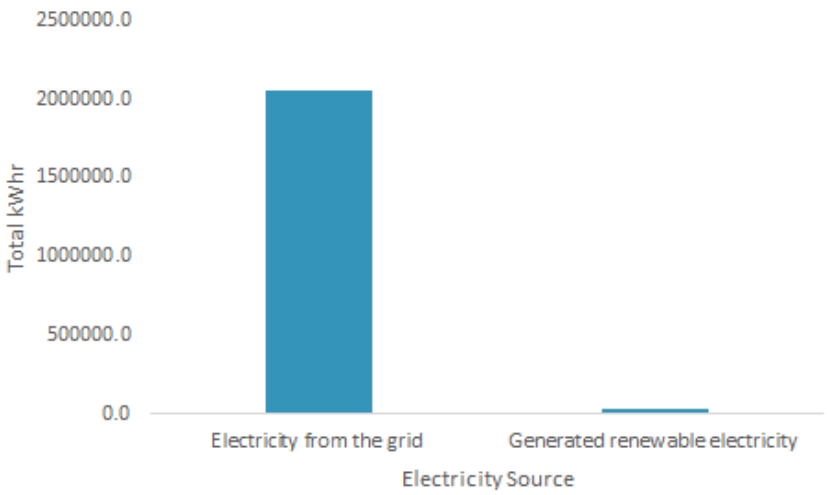
ABOVE: MIDROW MANAGEMENT SYSTEM (TOTAL HECTARES)

ENERGY USE



ABOVE: TOTAL FUEL USED

Members used a total of 493123 L of diesel, 26646 L of petrol, 1128 L of LPG and 350 L of biodiesel.



ABOVE: TOTAL ELECTRICITY USED

Members used a total of 2047191.9 kWhr's of electricity form the grid while 34571.0 kWhr's was generated from renewable electricity.

LAND AND SOIL MANAGEMENT

90%

HAVE A SOIL MANAGEMENT PLAN AND BLOCKS ARE TREATED DIFFERENTLY IF NECESSARY.

98%

HAVE IDENTIFIED THE MAJOR SOIL TYPES IN THEIR VINEYARDS AND DEGRADED, ERODED AND/OR CONTAMINATED AREAS HAVE BEEN IDENTIFIED.

70%

HAVE CONDUCTED SOIL ANALYSIS ACROSS THEIR VINEYARD INCLUDING PH, ELECTRICAL CONDUCTIVITY (ECE), EXCHANGEABLE SODIUM PERCENTAGE (ESP), AND ORGANIC CARBON. RECORDS OF THE ANALYSIS ARE KEPT.

WATER EFFICIENCY

85%

HAVE A PLAN TO MONITOR AND MANAGE WATER WHICH ENABLES THEIR YIELD AND/OR GRAPE QUALITY TARGETS TO BE ACHIEVED. WATER MANAGEMENT IS REVIEWED AT LEAST ANNUALLY. CONTINGENCY PLANS FOR WATER SHORTAGES OR POOR QUALITY WATER HAVE BEEN CONSIDERED.

71%

MEASURE SOIL MOISTURE USING GYPSUM BLOCKS, CAPACITANCE PROBES OR OTHER METHODS (DIG STICK/SPADE OR VISUAL OBSERVATIONS OF THE CANOPY). THIS IS CONDUCTED IN REPRESENTATIVE AREAS OF THE BLOCKS CONSIDERING SOIL TYPE AND VARIETY.

82%

SCHEDULE IRRIGATION BASED ON SOIL MOISTURE OR LEAF WATER POTENTIAL DATA, LOCAL WEATHER FORECASTS AND WATER AVAILABILITY, COST AND QUALITY. THE SCHEDULE IS REVIEWED THROUGHOUT THE GROWING SEASON.

PEST AND DISEASE MANAGEMENT & CHEMICALS

98%

HAVE A PEST AND DISEASE MANAGEMENT PLAN BASED ON THE PEST AND DISEASE PROBLEMS THAT HAVE AFFECTED THEIR VINEYARD AND/OR REGION IN THE PAST.

75%

MONITOR WEEDS AT LEAST SEVERAL TIMES PER YEAR AND MANAGE THEM USING AN INTEGRATED APPROACH WHICH MAY INCLUDE SYNTHETIC HERBICIDE, ORGANIC HERBICIDE, MECHANICAL OR OTHER METHODS. ALL DECLARED WEEDS ARE CONTROLLED (IF THEY EXIST).

42%

HAVE APPROPRIATE SIGNAGE AT THE MAIN ENTERANCE TO RAISE AWARENESS AND DETER UNAUTHORISED ACCESS. ATLEAST SOME BOUNDARIES ARE FENCED OFF AS A DETERENT TO ENTRY.

BIODIVERSITY AND ENVIRONMENTAL MANAGEMENT

74%

HAVE MAPPED THEIR DIFFERENT LAND MANAGEMENT UNITS (E.G. VINEYARD, FENCE LINES, BUILDINGS AND ROADS, RIPARIAN STRIPS ETC.)

57%

HAVE PLANTED MIDROWS, HEADLANDS AND/OR OTHER AREAS OF THE PROPERTY WITH A DIVERSITY OF COVER CROPS, SWARDS AND/OR VEGETATION.

28%

HAVE A WRITTEN BIODIVERSITY ACTION PLAN IN PLACE THAT INCLUDES A LIST OF DEFINED ACTIONS, PRIORITIES AND TIMELINES AND A LIST OF ALL THE RESOURCES AVAILABLE.

BUSINESS AND COMMUNITY

83%

HAVE A BUSINESS PLAN IN PLACE

75%

HAVE IDENTIFIED OPERATIONS THAT MAY IMPACT NEIGHBOURS AND THE COMMUNITY. ISSUES AND COMMUNICATION WITH NEIGHBOURS AND COMMUNNITY ARE MANAGED AS THEY ARISE. THE BUSINESS REGULARLY CONTRIBUTES TO THE COMMUNITY IN A POSITIVE WAY.

99%

CONSIDER THEIR ENERGY, MATERIALS, WATER USEAGE AND WASTE GENERATED BY THE EQUIPMENT AND PRODUCTS PURCHASED.

FUEL, ENERGY, AIR QUALITY AND WASTE

98%

ADHERE TO THE LOCAL COUNCIL AND STATE EPA WASTE REGULATIONS AND GUIDELINES.

71%

ACTIVELY MANAGE THEIR ACTIVITIES TO REDUCE ITS NEGATIVE IMPACT ON AIR QUALITY.

95%

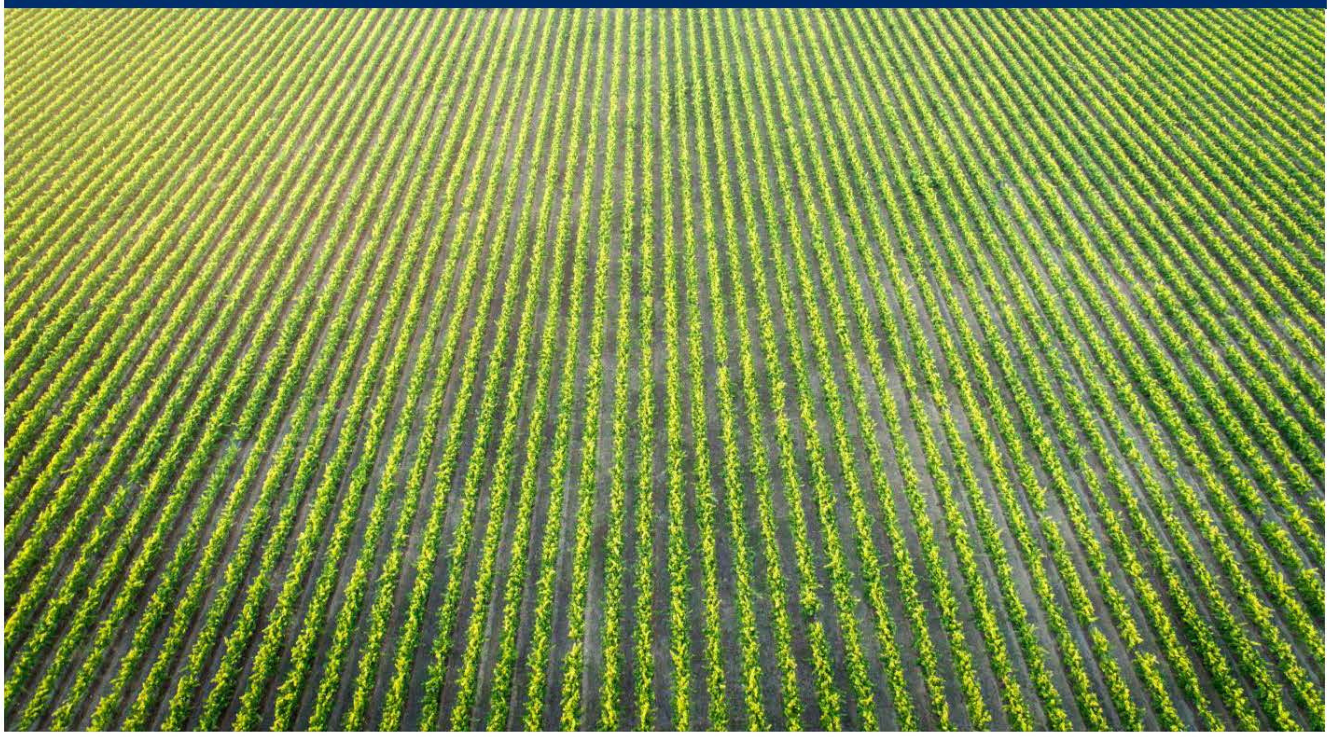
CONSIDER THE ENERGY EFFICIENCY WHEN SELECTING AND DESIGNING NEW MACHINERY AND EQUIPMENT.

AWRI

SUSTAINABLE WINEGROWING AUSTRALIA

Case study
SUSTAINABILITY

Vineyard soil remediation – The Madgetts Block case study



Background

The Madgetts Block in McLaren Vale, South Australia has been a certified vineyard member of Sustainable Winegrowing Australia since 2015. Oli Madgett, the vineyard owner, is focused on the long-term sustainability of the business and considers the environmental, social and commercial impact of all vineyard activities. This case study outlines some of the strategies used to improve soil uniformity and reduce water use across the vineyard. These actions led to improved economic sustainability through more consistent yields and higher grape quality.

Using digital tools to visualise and quantify vineyard variability

When Oli Madgett bought the 6.5-hectare vineyard in 2015, it was immediately identified that the variability in grapevine vigour across the vineyard was affecting both yield and fruit quality. Some vines were receiving too much irrigation and others were not receiving enough. This was especially evident in hot, dry conditions when the vines growing on sandier soils had insufficient canopy and the bunches shrivelled. Because the blocks were contracted to grow A and B grade fruit, it was important to remediate areas of the vineyard with underperforming vines to maximise revenue through increased yield and improved quality. Being new to grapegrowing, Madgett sought advice from the previous owners, local contractors and consultants and attended several workshops in the region to identify appropriate tools to assist him to identify problem areas in the vineyard and to gain further insight into the causes of the variability.

Updated June 2020

To visualise the vine variability across the vineyard, Madgett purchased a Normalised Difference Vegetation Index (NDVI) image of the vineyard (Figure 1). NDVI quantifies vegetation by measuring the difference between near-infrared (which vegetation strongly reflects) and red light (which vegetation absorbs). The image that was produced confirmed on-ground visual observations of variability within and across the blocks.

To better understand the underlying cause of the vine variability, Madgett engaged a contractor to develop a map of the vineyard soils using an EM38. The EM38 is a geophysical surveying instrument which, when trailed horizontally through the vineyard, can measure and map electrical conductivity in the top 30 cm of the soil. These measurements can then be used to estimate soil moisture, salinity, clay content and water-holding capacity of the soil. Areas of the vineyard with similar soil properties can then be divided into smaller management units.

Together the NDVI and EM38 soil maps have enabled the identification of low vigour areas of the vineyard, which have been targeted for remediation.

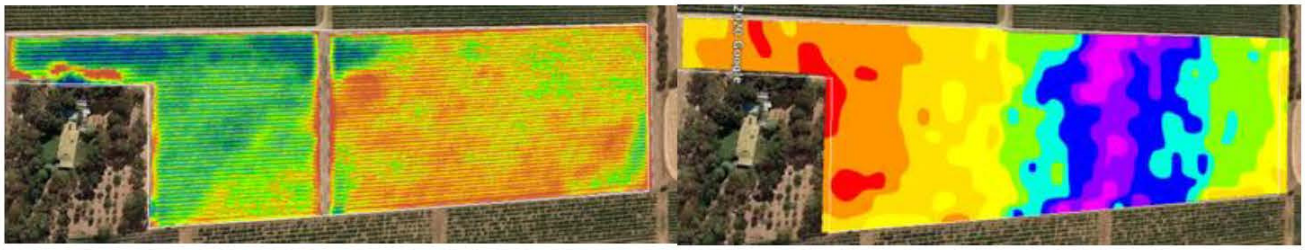


Figure 1. NDVI (left) and EM38 (right) maps showing variability across the Madgett Block in McLaren Vale, South Australia.

Soil remediation at The Madgetts Block

Madgett developed a soil management plan for the property that targeted underperforming areas identified using the NDVI and EM38 maps. Recognising that these areas could benefit from additional inputs, Madgett implemented a range of activities to remediate them including variable rate application of compost, gypsum and mulch. A cover crop was also grown over winter and spring and rolled later in the season to provide a layer of mulch over the mid-row (Figure 2).

Monitoring soil moisture

Soil moisture probes have been installed to provide information about plant available water and enable more targeted irrigation practices. The soil moisture data shows that the soil amendments have resulted in higher levels of water retention. The Sustainable Winegrowing Australia benchmarking reports show that water use at The Madgetts Block was amongst the lowest 19% of members nationally and the lowest 10% of members in McLaren Vale in 2018/19 (Figure 3).

Figure 2. A cover crop of wild oats being rolled to provide midrow mulch at The Madgetts Block

Figure 3. Ranking of The Madgetts Block's water use per hectare in 2018/19, compared to all Sustainable Winegrowing Australia member vineyards in Australia (left) and those in McLaren Vale (right) showing that The Madgetts Block was in the lowest 19% of members nationally and in the lowest 10% of members in McLaren Vale for water use (ML/ha).

The vines in the weaker areas of the vineyard have become more resilient to extreme heat due to the increased buffering capacity of the soil and, on average, block yields have increased.

Since focusing on improving the uniformity of the vineyard, an increase in yield and fruit quality has been observed and, in 2019, all blocks achieved A grade. The improvements in yield and fruit grading translated to an approximately 20% increase in revenue for the business, which has resulted in an overall economic benefit from the investment in soil remediation. The aim for the future is to continue soil remediation activities and to deliver improved yield and quality each year.

Future monitoring of soil carbon

In 2020 Madgett commenced a comprehensive regime to measure baseline soil carbon across the vineyard, with the assistance of Natural Resources Adelaide and Mt Lofty Ranges and soil and precision viticulture consultants. Soil cores were collected down to 30 cm from the mid-row and undervine areas. These will be analysed for soil organic carbon levels and will be tested again in five years to observe any changes.

The collection of aerial NDVI imagery is continuing and seen as critical to evaluating management practices and assessing change over time. It is expected that removing variability in the vineyard will support the ongoing sustainability of the business.

Acknowledgement

This case study was undertaken as part of the 'Valuing nature in viticulture' project in collaboration with the Food Agility Cooperative Research Centre, Queensland University of Technology and National Australia Bank, and with the cooperation of Oli Madgett, Proprietor, The Madgetts Block.

References and further reading

Bramley, R., Gobbett D., Hinze, C. .2009. *Next steps in Precision Viticulture – Spatial data for improved design of vineyard (re-)planting.* GWRDC Project Number: CSL 08/01. Published by CSIRO Sustainable Ecosystems.

Johnson, L. 2003. Temporal stability of an NDVI-LAI relationship in a Napa Valley vineyard. *Aust. J. Grape Wine Res.* 9: 96–101.

Contact

For further information, please contact the AWRI helpdesk.

Phone 08 8313 6600 **Fax** 08 8313 6601 **Email** helpdesk@awri.com.au

Website www.sustainablewinegrowing.com.au

Address Wine Innovation Central Building, Corner of Hartley Grove & Paratoo Rd, Urrbrae (Adelaide), SA 5064

THE MADGETTS BLOCK

foodagility