Sustainability assessment in wine grape growing

Submitted by

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Abstract

This thesis presents outcomes from a mixed methods research project in agricultural sciences. An atypical methodology for sciences was developed to avoid embedded assumptions commonly seen in sustainability investigations. Eighty-three upper echelon participants from the wine grape industry participated in 14 group discussions in five countries: Australia, Chile, New Zealand, South Africa and the United States. Quantitative measures were compared to results from qualitatively coded participant utterances using content analysis software tools. Results are presented from these group discussions, divided in three stages. Each stage had its own objective and method: (1) aimed to define sustainability through an Assisted Focus Group Method of Enquiry (AFGME), (2) produce a list of indicators for sustainability assessment through an Adapted Nominal Group Technique (ANGT) and (3) aimed to discuss the engagement process of viticultural sustainability programs through a traditional focus group approach, document and compare the most prominent sustainability assessment programs for individual organisations in viticulture worldwide.

It was found that a consensual sustainability definition prior to the establishment of assessment systems is essential. The model developed in this investigation seems to be viable for similar sustainability investigations of individual organisations. An overall sustainability definition is proposed as the continuous pursuit of equilibrium between economic, social and environmental variables and their trade-offs over time. Indicators have been used in many sustainability assessment methods, often to validate the scope of the evaluation. Disagreements over a common definition and scope for the sustainability concept have led to many distinct methods, which are not often directly comparable. Indicators should be seen as the starting point of sustainability assessments. This investigation develops indicators, within three categories: economic, environmental and social; ranked by the attributed importance given by participants. In the context of this investigation, indicators are presented as qualitative variables that in context will be quantified to fit the purpose and viewpoint of the proponents of the given assessment. To have assessments in place it is necessary to define, at the minimum: (1) the meaning of sustainability, (2) viewpoint of the assessor, (3) purpose of the assessment, (4) context, and (5) time frame.

The methodology developed is directly applicable to other agricultural assessments, contributing to decision-making processes in systems assessing sustainability of agricultural organisations, especially vineyards. The findings of this research contributed to the development of the McLaren Vale Sustainable Winegrowing Australia program. Although most research on sustainability seems to have a stronger focus on environment, environmental issues were neither the main
drivers to the conception of programs nor perceived as the most important concern of vineyards self-assessing their sustainability priorities. The environmental appeal is incontestably important and all programs have embraced it as part of their assessments. Nevertheless, successful programs have been created to increase growers’ sustainability, mainly through the direct and indirect education they promote and the overall economic benefit to their business caused by overall operations improvement. The proper study of viticulture is ultimately the study of sustainability in viticulture, as research should be driven to keep the wine industry alive, over time.
Statement of originality

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in my name, in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text. In addition, I certify that no part of this work will, in the future, be used in a submission in my name, for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and where applicable, any partner institution responsible for the joint-award of this degree.

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_______________________________  __________________
Irina Santiago-Brown               Date
Acknowledgements

A thesis is always a result of many contributions and personal support of many people. I could not have done it without these people.

I would like to start thanking my beloved husband Dudley Brown who lived my PhD with me for the last three years of our lives. We lived the joy of discovering new people, places and knowledge. Dudley accepted the challenge of moderating my focus groups, which made the design of my research feasible within my research budget. He was also there for the hard moments, especially when you challenge the notional existence of any sort of social life. I love you.

Cassandra Collins, my supervisor, turned into one of my dearest friends in Australia. Cas believed in my potential and literally insisted that I should not only apply for the PhD but for the scholarships. Cas accepted the journey of guiding me, who was proposing a totally interdisciplinary research project that would need atypical solutions and partnerships. I’ve questioned many times if I would be able to reach such challenging objectives. She was always there saying I would, with no doubt. I would never start or continue this journey if I did not have her in my life. Cas has the amazing ability to give me limits as well as the generosity to share to make the project feasible.

This research had many turns and I was lucky enough to meet my two other supervisors, Andrew Metcalfe and Cate Jerram, who made it possible to develop the
research as presented in this thesis. Andrew has a brilliant, curious and organised mind and expresses himself in an extremely gentle and simple way. I feel honoured he accepted to be part of my research team. Cate taught me how to collect and organise data in an appropriate way that saved me time and made data analysis possible. Cate is a natural connector of ideas and people who sees solutions when it seems that there is none available.

To my group of supervisors, many thanks. I could never imagine I would be able to have such interdisciplinary and complementary group working together in such a smooth way as you did. What a great and happy team!

I would like to express my gratitude to all focus group participants of the sustainability project for their generous acceptance to my invitation and time to be part of my research. We would also like to thank the organisations that hosted the focus group sessions and people involved in the grape growing industry that helped with introductions or interviews in Australia, Chile, New Zealand, South Africa and United States.

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My special thanks to the librarians at the University of Adelaide, especially the team from the Waite Campus.

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Thesis conventions

The following conventions has been adopted in this Thesis:

**Notation.** The acronyms and abbreviations used in this thesis are defined in the List of Acronyms and Abbreviations on page xiv.

**Spelling.** Australia English spelling conventions have been used, as defined in the Microsoft Office Dictionary. The word *programme* is written *program* due to its widespread usage in the sustainability literature, even though is not an Australian spelling. Also, the Chapter 2 presenting the article “What Does Sustainability Mean? Knowledge Gleaned from Applying Mixed Methods Research to Wine Grape Growing” was written using American English spelling, as it was the requirement of the journal in where it was accepted for publication.

**Typesetting.** This document was compiled using Microsoft Word 2011 for Mac. Microsoft PowerPoint for Mac 2011 and Excel for Mac 2011 were used to produce schematic diagrams, tables and other drawings.

**Referencing.** The APA 5th-full name style has been adopted for referencing using EndNote X7.
Publications


Presentations


Note: During the PhD, presentations on the McLaren Vale Sustainable Winegrowing were made in a series of occasions, slightly varying in content, according to the audience (e.g. journalists, Masters of Wine, local events and many growers events). These presentations are not in the appendices as they are very similar in content to the ones already attached.
### Acronyms and Abbreviations

<table>
<thead>
<tr>
<th>Acronym</th>
<th>Full Form</th>
</tr>
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<tbody>
<tr>
<td>AEM</td>
<td>Agricultural Environmental Management</td>
</tr>
<tr>
<td>AFGME</td>
<td>Assisted Focus Group Method of Enquiry</td>
</tr>
<tr>
<td>AII</td>
<td>Adjusted Importance Index</td>
</tr>
<tr>
<td>ANGT</td>
<td>Adapted nominal group technique</td>
</tr>
<tr>
<td>ARC</td>
<td>Agricultural Research Council</td>
</tr>
<tr>
<td>AWRI</td>
<td>Australian Wine Research Institute</td>
</tr>
<tr>
<td>BWI</td>
<td>Biodiversity and Wine Initiative</td>
</tr>
<tr>
<td>CCVT</td>
<td>Central Coast Vineyard Team</td>
</tr>
<tr>
<td>CEO</td>
<td>Chief Executive Officer</td>
</tr>
<tr>
<td>CFK</td>
<td>Cape Floral Kingdom</td>
</tr>
<tr>
<td>CSWA</td>
<td>California Sustainable Winegrowing Alliance</td>
</tr>
<tr>
<td>FIVS</td>
<td>International Federation of Wine and Spirits</td>
</tr>
<tr>
<td>GPS</td>
<td>Global Positioning System</td>
</tr>
<tr>
<td>II</td>
<td>Importance Index</td>
</tr>
<tr>
<td>IOBC</td>
<td>International Organization for Biological and Integrated Control</td>
</tr>
<tr>
<td>IPM</td>
<td>integrated pest management</td>
</tr>
<tr>
<td>IPW</td>
<td>Integrated Production of Wine</td>
</tr>
<tr>
<td>KPI</td>
<td>Key performance indicator</td>
</tr>
<tr>
<td>LISA</td>
<td>Low input sustainable agriculture)</td>
</tr>
<tr>
<td>LISW</td>
<td>Long Island Sustainable Winegrowing</td>
</tr>
<tr>
<td>LIVE</td>
<td>Low Input Viticulture and Enology</td>
</tr>
<tr>
<td>LWC</td>
<td>Lodi Winegrape Commission</td>
</tr>
<tr>
<td>MVSWGA</td>
<td>McLaren Vale Sustainable Winegrowing Australia</td>
</tr>
<tr>
<td>NA</td>
<td>Non-applicable</td>
</tr>
<tr>
<td>NGT</td>
<td>Nominal Group Technique</td>
</tr>
<tr>
<td>NO</td>
<td>No opinion (lack of)</td>
</tr>
<tr>
<td>OIV</td>
<td>International Organisation of Vine and Wine</td>
</tr>
<tr>
<td>PDCA</td>
<td>Plan-Do-Control-Act</td>
</tr>
<tr>
<td>PEAS</td>
<td>Pesticide Environmental Assessment System</td>
</tr>
<tr>
<td>PPS</td>
<td>Positive Points System</td>
</tr>
<tr>
<td>SAWIS</td>
<td>South African Wine Industry Information &amp; Systems</td>
</tr>
<tr>
<td>SIP</td>
<td>Sustainability in Practice</td>
</tr>
<tr>
<td>SWC</td>
<td>Sustainable Wine of Chile</td>
</tr>
<tr>
<td>SWNZ</td>
<td>Sustainable Winegrowing New Zealand</td>
</tr>
<tr>
<td>SWP</td>
<td>Sustainable Winegrowing Program</td>
</tr>
<tr>
<td>USDA</td>
<td>United States Department of Agriculture</td>
</tr>
<tr>
<td>WCED</td>
<td>World Commission on Environment and Development</td>
</tr>
<tr>
<td>WIETA</td>
<td>Wine and Agricultural Industry Ethical Trade Association</td>
</tr>
<tr>
<td>WO</td>
<td>Wine of Origin (from South Africa)</td>
</tr>
<tr>
<td>WOSA</td>
<td>Wines of South Africa</td>
</tr>
<tr>
<td>WPRS</td>
<td>West Palaearctic Regional Section (form IOBC)</td>
</tr>
<tr>
<td>WSB</td>
<td>Wine and Spirit Board of South Africa</td>
</tr>
</tbody>
</table>
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