

INVESTIGATING THE DIFFUSION AND ADOPTION OF ORGANIC AND BIODYNAMIC WINEMAKING IN THE WESTERN CAPE

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AUTHOR'S DECLARATION

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ABSTRACT

Sustainable development has become a constant concern, especially in the agricultural sector. Pesticides and herbicides were introduced in South Africa in the late 1970s and early 1980s and quickly became the agricultural norm. Undesirable consequences such as soil-erosion, dwindling soil fertility, water pollution, human exposure to toxins and ecosystem poisoning followed. In the twenty-first century the environmental deterioration caused by these agricultural chemicals gave the incentive for a second green revolution and a growing environmental consciousness that promotes innovations, waste reduction and eco-friendlier practices. Current extraordinary circumstances such as the changing climate and COVID-19 also contribute to fuelling the health revolution demanding healthier and ‘greener’ alternative agricultural products and innovations. The innovation in this study was organic and biodynamic (O/Bio) winemaking. O/Bio winemaking has lesser impacts on the environment with higher levels of soil vitality and micro- and macro-organisms present. The innovation adoption also supplied a unique selling proposition and market differentiation which works in favour of the five wine farms as the O/Bio produce market in South Africa is emerging.

In this study the diffusion of innovation (DoI) theory by Rogers (2003) was used as an analytical tool to identify and understand the adoption and diffusion of O/Bio winemaking practices in the Western Cape. Six case studies were compiled from qualitative interviews conducted, three certified organic and three biodynamic (two Demeter certified). In-depth interviews were also conducted with professionals from the organic agriculture and the wine industry. Application of the DoI theory showed that O/Bio winemaking in the Western Cape is still in its infancy, with all the participants placed in the first quarter of the bell-shaped innovation curve. Findings that motivate or discourage adoption and diffusion of the innovations were also analysed.

The six participants overall deemed their O/Bio adoption and conversion as very successful and have growing wine markets nationally and internationally. Despite identified barriers, perceived and/or real risks and limitations like dwindling crop yields and no governmental support, the reported conversions were generally regarded as being worth the pain and labour. Active internal support among O/Bio wine farmers was found but available education on O/Bio agricultural methods and winemaking was deemed inadequate. The greatest hindrance to the adoption and conversion process of O/Bio winemaking in the Western Cape was the third-body certification costs. The six case studies met EU and USDA organic standards, thus they reaped the export advantages. O/Bio winemaking was found to be not necessarily cheaper than conventional winemaking as money saved by O/Bio wine farmers not buying biocides eventually evens out. This is because of organic and/or biodynamic certification costs; the emerging South African organic produce market; and O/Bio wines are in a higher premium price class because of the unavoidable lower crop yields. Five of the six participants

stated that the benefits of O/Bio winemaking outweighed the unavoidable smaller crops. Avenues for future studies include research on wine farmers in South Africa planning to convert to O/Bio winemaking, in-conversion O/Bio farms and farms who aborted the adoption of the innovation.

Keywords and phrases: organic agriculture; biodynamic agriculture; diffusion of innovation; agricultural innovation; sustainability; winemaking; premium wine; certification; organic conversion; biodynamic conversion

OPSOMMING

Volhoubare ontwikkeling het 'n konstante bekommernis geword veral in die landbou sektor. In die laat 1970's en vroeë 1980's was plaagdoders en onkruidodders bekendgestel in Suid Afrika en het spoedig 'n landbou norm geword. Ongewenste gevolge soos gronderosie, kwynende grond gesondheid, waterbesoedeling, menslike blootstelling aan gifstowwe en ekosisteem vergiftiging het begin plaasvind. In die 21ste eeu het die agteruitgang van die omgewing, wat veroorsaak is deur die toevoeg van chemiese produkte, die motivering vir 'n tweede groen revolusie geword. Daar is 'n toename in omgewingsbewustheid wat innovering, afvalstof-vermindering en ekovriendelike praktyke, aanmoedig. Ongewone omstandighede soos klimaatsverandering en COVID-19 vuur ook die gesondheidsrevolusie aan deur aan te dring op gesonder, 'groener' alternatiewe produkte. Die innovasie in die studie is die organiese en biodinamiese (O/Bio) wynmaak proses. Die proses het minder impak op die omgewing met hoër vlakke van grond gesondheid waar makro- en mikroörganismes voorkom. Aanneming van die innovasie verskaf ook 'n unieke verkoop proposisie en mark differensiasie wat gunstig werk in die vyf wynplase soos die opkomende O/Bio produkmark in Suid Afrika groei.

In die studie is die diffusie van innovasies (DoI) teorie deur Rogers (2003) gebruik as 'n analitiese maatstaf om die aanneming en diffusie te identifiseer en verstaan. Ses gevallestudies, drie organies gesertifiseerde wynplase en drie biodinamies plase (waarvan twee Demeter-gesertifiseer is), is d.m.v. kwalitatiewe navorsing deur onderhoude, saamgestel. Onderhoude was ook gevoer met professionele persone van die organiese landbou sektor asook van die wynbou industrie. Die DoI teorie het bewys dat O/Bio wynmaak prosesse in die Wes-Kaap nog jonk is, met al die deelnemers geplaas in die eerste kwart van die klokvormige kurwe. Bevindings wat die aanneming en diffusie van die innovasie motiveer of ontmoedig, is ook geanaliseer. Die ses deelnemers het algeheel hul O/Bio aanneming en aanpassing geag as baie suksesvol en hul nasionale- en internasionale markte toon groei.

Ten spyte van geïdentifiseerde struikelblokke, waargenome en/of regte risiko's en beperkings soos kwynende krop opbrengste en geen staatsondersteuning nie, is die aanpassing oor die algemeen beskou as die moeite werd. Dit is gevind dat daar aktiewe interne ondersteuning tussen die O/Bio wynboere is, maar dat daar ver tekort skiet aan inligting en opvoeding oor dié boerdery metodes en wynmaak prosesse. Die grootste belemmering van die veranderingsproses van O/Bio wynmaak in die Wes-Kaap, is die derde party sertifiseringskoste. Die ses gevalle studies met EU en USDA organiese standaarde het baie baat gevind met die uitvoer voordele. Daar is ook bevind dat O/Bio wynmaak nie noodwendig goedkoper is as konvensionele wynmaak nie. Geld wat gespaar word deur O/Bio wynboere wat nie addisionele stowwe koop nie, plat wel uiteindelik af. Dit is as gevolg van organiese en/ of biodinamiese sertifiseringskoste en die opkomende organiese produkmark. O/Bio

wyne val in 'n hoër premium prysklas as gevolg van laer oes opbrengste. Vyf van die ses deelnemende plaas verteenwoordigers het genoem dat die voordele van O/Bio wynmaak swaarder weeg as die onvermydelike kleiner oeste. Toekomstige studies kan insluit die navorsing van wynplase in Suid Afrika wat organiese en biodinamiese omskakeling beplan, wynplase besig met O/Bio omskakeling en plase wat die aanneming van die innovasie nie meer ondersteun nie.

Kernwoorde en sleutelfrases:

Organies landbou; biodinamiese landbou; organiese wynmaak; biodinamiese wynmaak; volhoubare ontwikkeling; innovasie; diffusie van innovasies teorie; landbou innovasie, klimaatsverandering

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In the highlands and the heartaches
You're neither more or less incline
I would search and stop at nothing
You're just not that hard to find
how high would I climb mountains
if the mountains are where You hide
how far I'd scale the valleys
if You graced the other side
how long have I chased rivers
from lowly seas to where they rise
against the rush of grace descending
from the source of its supply
from the gravest of all valleys
come the pastures we call grace
a mighty river flowing upwards
from a deep but empty grave

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ABBREVIATIONS AND ACRONYMS

AgriSETA	Agricultural Sector Education and Training Authority
AIN	Asia Import News
ARC	Agricultural Research Council
BDAASA	Biodynamic Agriculture Association of Southern Africa
BOWSA	Biodynamic Organic Wines South Africa
BWI	Biodiversity & Wine Initiative
CC	Conservation Champion
DEIC	Dutch East India Company
DoI	diffusion of innovations
DAFF	Department of Agriculture, Forestry and Fisheries
DEA	Department of Environmental Affairs
DRDLR	Department of Rural Development and Land Reform
EC	European Commission
EMS	environmental management system
EPA	economic partnership agreement
EU	European Union
GDP	gross domestic product
GMO	genetically modified organism
GRIT	Hangzhou Gelu Certification Company
IBDA	International Biodynamic Association
IFOAM	International Federation of Organic Agricultural Movements
IPW	Integrated Production of Wine
ISO	International Organization for Standardization
IWSC	International Wine and Spirit Competition
JAS	Japanese Agricultural Standard for the Production of Organic Foodstuffs
KWV	Koöperatieve Wijnbouwers Vereniging
MCC	Methode Cap Classique
MW	Master of Wine
NGO	non-governmental organization
NOP	National Organic Program
O/Bio	organic and biodynamic
OMP	organic management plan
OSP	Organic Systems Plan
OVP	Old Vine Project
PGS	participatory guarantee system
SADC	Southern African Development Community
SAOSO	South African Organic Sector Organization
SWSA	Sustainable Wines South Africa
USDA	United States Department of Agriculture
WIETA	Wine and Agricultural Ethical Trade Association
WOSA	Wines of South Africa
WSB	Wine and Spirit Board

WWF-SA

World Wide Fund for Nature South Africa

CHAPTER 1 STUDY AIMS AND RESEARCH PROCEDURES

1.1 INTRODUCTION

After the Second World War, world food security was a serious concern intensified by sudden population growth, the baby boomer generation. This caused significant pressure on global agriculture to produce higher yields in shorter times (Hall 2003). Seizing this opportunity, pharmaceutical companies increased their production of fertilizers, growth hormones, pesticides and herbicides to boost crop yields (Naidoo & Buckley 2003; Quinn et al. 2011; Reddy 2017). Thus, the first green revolution was born in the 1960s as high-yield varieties, artificial fertilizers, pesticides, advanced machinery and improved irrigation were increasingly introduced into agriculture in developing countries to achieve large increases in crop production (Hall 2003; International Federation of Organic Agriculture Movements 2013; Soustre-Gacougnolle et al. 2018). The new and promising biocides were introduced and quickly became the agricultural norm in South Africa in the late 1970s and early 1980s (SAWIS 2019b; Van Zyl 2020, Pers com). Unfortunately, soil-erosion, dwindling soil fertility, water pollution, human exposure to toxins and ecosystem poisoning accompanied the farming practices (Naidoo & Buckley 2003; WWF-SA 2010). In the twenty-first century the palpable environmental deterioration caused by these agricultural chemicals gave the incentive for a second green revolution with a societal awakening of an environmental consciousness that promotes the growth of innovations, waste reduction and eco-friendlier practices. This awakening has spread globally but, being country-dependent, it has developed to worrying degrees (Çakir, Yildiz & Karataş 2018; Naidoo & Buckley 2003; Padel 2001; SAWIS 2019b).

Innovations are born of a seeking for beneficial solutions to problems or for better alternatives to current options. External factors and pressures are the main motivators for the generation of innovations (Joseph 2020; Rogers 2003). The difference between an invention and an innovation is that an invention is a new product, process or idea that has not previously existed whereas an innovation can be a development from an invention. Thus an innovation does not need to be new (Merriam-Webster 2019). One can see the invention as the first very basic telephone which revolutionized communication, whereas a smartphone is an innovation, which has the essence of its ancestor and predecessors, although it provides many more advantages for the user (adopter). This applies to organic and biodynamic (O/Bio) winemaking practices because winemaking (the invention) is not a new process, but it has led to some these serious problems so that the alternative processes of O/Bio winemaking has been developed (the innovation).

The wine industry is no stranger to innovation (Joseph 2020). Smaller innovations like canned wine is currently being fast adopted as the cans provide many benefits compared to heavy breakable glass

bottles or (the often discredited) bag-in-box wine. Moreover, the screwcap is a now industry staple used by almost every cellar (Joseph 2020). In this research the innovation studied is O/Bio winemaking. In light of the widening environmental consciousness, the alleged changing climate and the globalizing of the wine industry, winemakers are now increasingly focusing on the production of biodynamic and organic wines (Castellini, Mauracher & Troiano 2017; Meissner et al. 2019). Instead of going the conventional route of adapting and applying eco-friendlier and cost-saving technological innovations, many winegrowers are adopting and implementing O/Bio methods (Çakir, Yildiz & Karataş 2018; Institut National de la Recherche Agronomique 2015; SAWIS 2020). This return to the basic principles of winemaking can be regarded as risky or ill-considered as it seems to be the opposite of technological and agricultural growth-focused developments. This contradictory statement calls for investigation to show that O/Bio winemaking does have healthy prospects, particularly in the Western Cape wine region.

To help understand and analyse the adoption of conversion to and diffusion of an innovation the diffusion of innovation (DoI) theory has often been employed. The theory, proposed by Everett Rogers in 1962, explains how new innovations are diffused and adopted over time in a society. Rogers' fourth and current version is used in this study (Rogers 2003). This holds that an innovation is adopted over a period of time by five different groups of people, all mainly characterized by their time of and attitude towards the adoption of said innovation. Thus, diffusion of an innovation will take place in society or a community as the innovation is either adopted or rejected over time by individuals of those entities. Diffusion is described here as the process by which individuals in a society or decision-making companies or authorities adopt and add new methods or products or replace old methods or products with new ones (Hall 2003). DoI takes many societal and environmental aspects into account, such as the availability of knowledge and information on the innovation as well as access to technology, skills or the equipment needed. DoI theory is the analytical tool used in this study to identify and understand the adoption and diffusion of O/Bio winemaking practices in the Western Cape.

1.2 PROBLEM FORMULATION AND SOCIAL RELEVANCE

Sustainable development has become a constant concern, especially in the agricultural sector (Mirela & Dejan 2014; Soustre-Gacougnolle et al. 2018; Vereijken, Van Gelder & Baars 1997). Inevitable climatic and societal changes lead to an imperative need for greater understanding of adaptations to and problem-solving related to these changes. The prices of fuel, electricity, synthetic fertilizers, herbicides, pesticides and water in South Africa fluctuate and increase frequently (WWF-SA 2010). This has led to conventional farmers to rely on cheaper agricultural production alternatives, such as genetically modified (GM) seeds. Historically, the largest expenditures by South African farmers are

for livestock feed, fuel and fertilizer. The significantly high cost of fertilizer is the result of growing global demand and rising oil and shipping prices. A few very established corporate companies control local fertilizer production in and imports into South Africa. In 2009 Sasol was found to be in collusion in the fertilizer industry, causing a backlash from farmers' representatives and trade unions which resulted in Sasol being fined ZAR250million (WWF-SA 2010). Agricultural innovations and alternative ideas are actively encouraged as many of the current practices are unsustainable for the foreseeable future. This is crucially relevant in the South African winegrowing community as the 2019 harvest was the lowest since 2005 and the number of vine-covered hectares and volume of wine production have both been decreasing over the past 12 years (SAWIS 2019a; Vinpro 2019b).

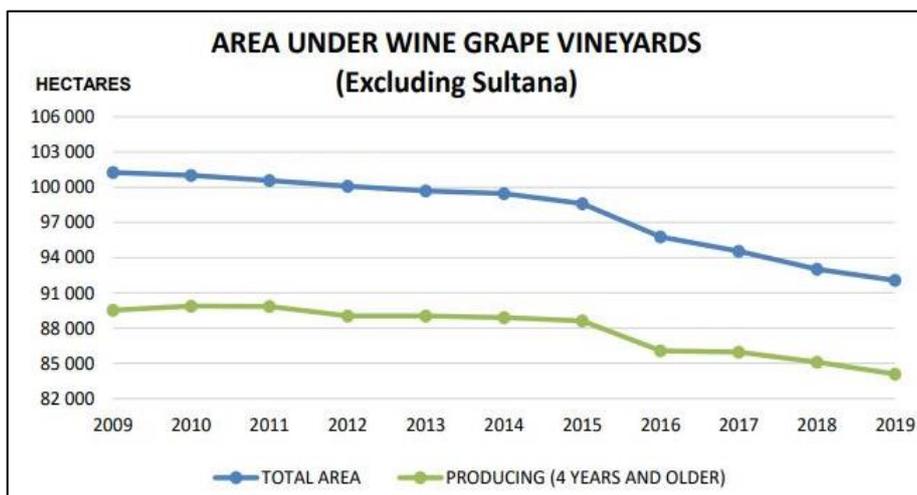
The total area covered by wine grape vineyards decreased by 9192 hectares between 2009 and 2019 (see Table 1.1 and Figure 1.1) This decline is expected to continue mainly because farmers are uprooting vines and reusing the ground for other, feasibly more profitable, crops and business endeavours. Given these alarming rates of loss, it is predicted that South Africa will lose more than 55% of its current vineyards in less than 30 years (Kruger 2020). Wine and wine-related enterprises and operations (wine routes, wine tourism, wine exports) add approximately ZAR36 billion to the country's gross domestic product (GDP) and directly employed some 290 000 South Africans in 2018 and 300 000 in 2019 (WOSA 2018; WOSA 2019; Vinpro 2019). It is glaringly imperative that the wine industry will remain successful by adapting to current and coming changes.

YEAR	HECTARES			
	PLANTED	UPROOTED	* CORRECTIONS	TOTAL STATUS
2009	3 011	3 690	627	101 259
2010	3 171	4 022	609	101 017
2011	3 335	4 072	289	100 568
2012	3 041	4 261	750	100 099
2013	2 786	3 376	180	99 689
2014	2 717	3 992	1 059	99 472
2015	2 399	4 091	814	98 594
2016	2 056	5 599	725	95 775
2017	1 178	3 876	1 467	94 545
2018	1 500	4 011	987	93 021
2019	1 901	3 447	592	92 067

* As a result of re-counting of vines as well as plantings and uprootings of previous years which were not previously taken into account.

Source: SAWIS (2019: 9)

Table 1.1 Total hectareage of grapevines planted and uprooted in South Africa, 2009 to 2019



Source: SAWIS (2019: 9)

Figure 1.1 South African land area under wine grape vines

In 2018 South African wines (including fortified wine and sparkling wine) had international sales totalling €663 million (OIV 2019) and an 18% share in the South African alcoholic beverage market (SAWIS 2019a). Although there has been an increase in the production of quality wines (Jones et al. 2005; Pienaar and Boonzaaier 2018), overall decreases in quantity and sales have been prevalent. The numbers of private and producer wine cellars have decreased since 2008 with a loss of 36 private and 11 producer cellars in 10 years (SAWIS 2019a). Wine consumption in South Africa has been decreasing as shown by a 4.1% drop between 2017 and 2018 and wine exports declined by 6.3% (OIV 2019). The prolonged (2014-2017) drought in the Western Cape caused South Africa's major wine producing areas are constantly fighting an uphill battle with the lingering effects still seen in the 2019 harvest with its uneven bunches carrying smaller berries (Vinpro 2019). Erratic changes in weather have led to inconsistent growth and unpredictable bud break. Crop losses have been exacerbated by recurring rain showers that have increased the instances of diseases such as downy mildew.

Not only do regional practices and climate change influence on the environmental and economic health of South Africa's wine production, international conflicts and developments also have local impacts. In 2018 South Africa exported a volume of 50.7% domestically produced wine to countries like the USA and China with a value of ZAR9.1 bn (Vinpro 2019). An example of a trade relationship that could have been adversely influenced by international politics is the economic partnership agreement (EPA) with the European Union (EU) established by the Southern African Development Community (SADC) of which South Africa is a member. Under this agreement 113 million litres can be exported duty free to the United Kingdom (UK) and with increases of one million litres each year (Vinpro 2019a). Current political situations, like BREXIT, have raised fears that South African wine exports could be unfortunately affected, as the UK is South Africa's main wine importer. Luckily,

this has not happened, as South Africa is listed as one of the UK's Most Favoured Nations since March 2019 and will continue to enjoy a zero percent tariff duty when exporting wine to the UK, regardless of political circumstances.

During the past decade there has been an “upsurge of interest” (Croce & Perri 2010: 3) and increased demand for O/Bio produce and wines. According to Croce & Perri (2010) this is a direct result of a growing environmental consciousness and people choosing better quality products that have lesser environmental impacts. With Millennials becoming a significant demographic in the work force, their demand for better quality and more niche products has increased (Croce & Perri 2010; Kriel 2019; Sollohub 2019). This has been reflected in global trends of increased demand for craft gins, beers and ciders, healthier drink options and more environment-friendly wines (Kriel 2019). The latter two options are naturally driving the demand for and subsequent growth of the organic and biodynamic wine market as well as an increase in the number of producers.

1.3 AIM AND OBJECTIVES

The overall aim of this study is to analyse and discuss the diffusion and adoption of O/Bio winemaking in the Western Cape by applying the Rogers (2003) theory of diffusion of innovations. Five objectives will be pursued, namely

Objectives:

1. Undertake a literature search to produce a review of relevant information on the topic of the diffusion of O/Bio winemaking.
2. Compile a profile of innovators in O/Bio wine farming in the Western Cape according to the DoI theory.
3. Uncover the reasons why winegrowers convert to O/Bio winemaking by the case studies.
4. Investigate the development of O/Bio winemaking in the Western Cape.
5. Evaluate the biodynamic and organic accreditation process.

1.4 STUDY AREA

“This Cape is the most stately thing and the fairest of cape we saw in the whole circumference of the earth” Sir Francis Drake in 1580

The first wine grape harvest in the Western Cape happened on 2 February 1659, seven years after Jan van Riebeeck arrived in the Cape of Good Hope (Clarke 2020). Planting vines and making wine was not a priority of the *Vereenigde Oost-Indische Compagnie* (VOC), yet Van Riebeeck convinced the Company Directors that wine would prevent scurvy which was rife among the sailors. Winemaking has been prevalent in the Western Cape ever since where it has also survived plagues of leafroll and Phylloxera (James 2013).

The post-1994 exposure to the international wine market after the lifting of apartheid-induced boycotts led to the realization that the established vines, generational knowledge and favourable climate provide South African winemaking great potential (James 2013; Clarke 2020). South African wines are assuming greater confidence in their identity by encapsulating their distinctive terroir and developing their full potential in an ever-changing and expanding market (Clarke 2020). The premiumization (Clarke 2020) of South African wines is currently their premier prospect as these wines are known to be affordable and easy drinking. Eighty percent of South African vineyards are comprised from eight varieties, of which five are of French origin (Clarke 2020). The Western Cape has 95% of South Africa's wine grapevines on 92 067ha (SAWIS 2020; WWF-SA 2020). Grape harvesting occurs in the region's warmest months, January to March, with May to August devoted to pruning during the rainy winter season (James 2013). South Africa has semi-arid to semi-tropical regions, with regular droughts that mark it as a "water-poor country" (Quinn et al. 2011: 50). The Western Cape has a Mediterranean-type climate with hot, dry summers and cool, wet winters. South Africa presently has 26 certified O/Bio wine farms, with 96% of them in the Western Cape (BOWSA 2020). The location of this study's six participating farms is shown in Figure 1.2. The different administrative regions can be seen in green. The farms are located in the regions of Stellenbosch (Reyeneke and Laibach), Paarl (Avondale, Bloublommetjieskloof and Jacques Germanier) and Tulbagh (Waverley Hills). The participating farms are all located in the Cape Winelands composed of the Cape Winelands District Municipality, which is a renowned wine tourism destination (Explore Sideways 2018; WOSA 2019).

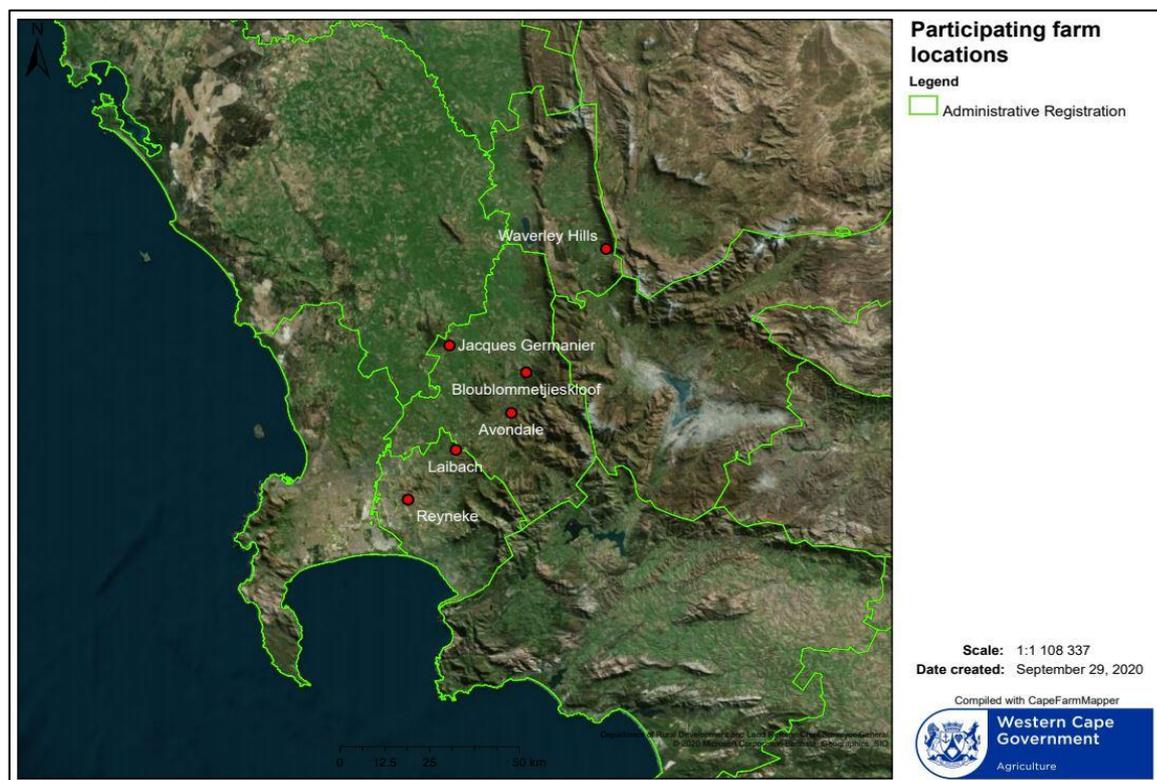


Figure 1.2 The study area and the participating farms

1.5 RESEARCH DESIGN AND METHODS

A qualitative research method was followed in this study through the use of in-depth interviews aided by a questionnaire (Appendix A). Ethical clearance was obtained for the study by the REC: Social, Behavioural and Education Research (SBER). As many interviews were done as possible with certified organic and biodynamic farms according to the Biodynamic and Organic Wines of South Africa (BOWSA) list. Criteria for selection was that the farm is organically certified by a third-body certifier discussed in Chapter 2. People of interest at the qualifying wine farms will be winemakers or viticulturists, as they are regarded as the most knowledgeable about the overall workings and status of the vineyards and cellar, thus will be able to answer the most questions. Research institutes and industry professionals that will be contacted and hopefully interviewed include: Biodynamic and Organic Wines of South Africa (BOWSA), Wines of South Africa (WOSA) and South African Wine Industry Information and Systems (SAWIS).

Six farms, three certified organic and three biodynamic (two Demeter certified), partook in the study. As equal as possible representation for both methods was a priority. All relevant farms were contacted via telephone (and email if necessary) and a level of data saturation was identified after the sixth interview. Saunders et al. (2018) defines saturation as an adequacy of data collected (thus saturated) shown by a repetition of answers in multiple cases. Personal interviews were preferred as visual cues and body language could be judged better, indicating when the participant maybe wants to elaborate, is visibly uncomfortable or indifferent towards a topic or question in the interview. All the answers from participants are taken as the truth and no questions were denied or refused. The interviews recordings will be transcribed (Appendix B) and organized according to four sections namely the farm; conversion; certification; and the industry and sales. These categories were used to help spot differences, consistencies and exceptional findings. The theory of diffusion was applied to determine the adopter status of each farm according to the five innovation adopter groups, as well as to gauge the overall adopter status in the Western Cape. Relevant literature was consulted throughout to provide background information, findings of previous studies and industry statistics.

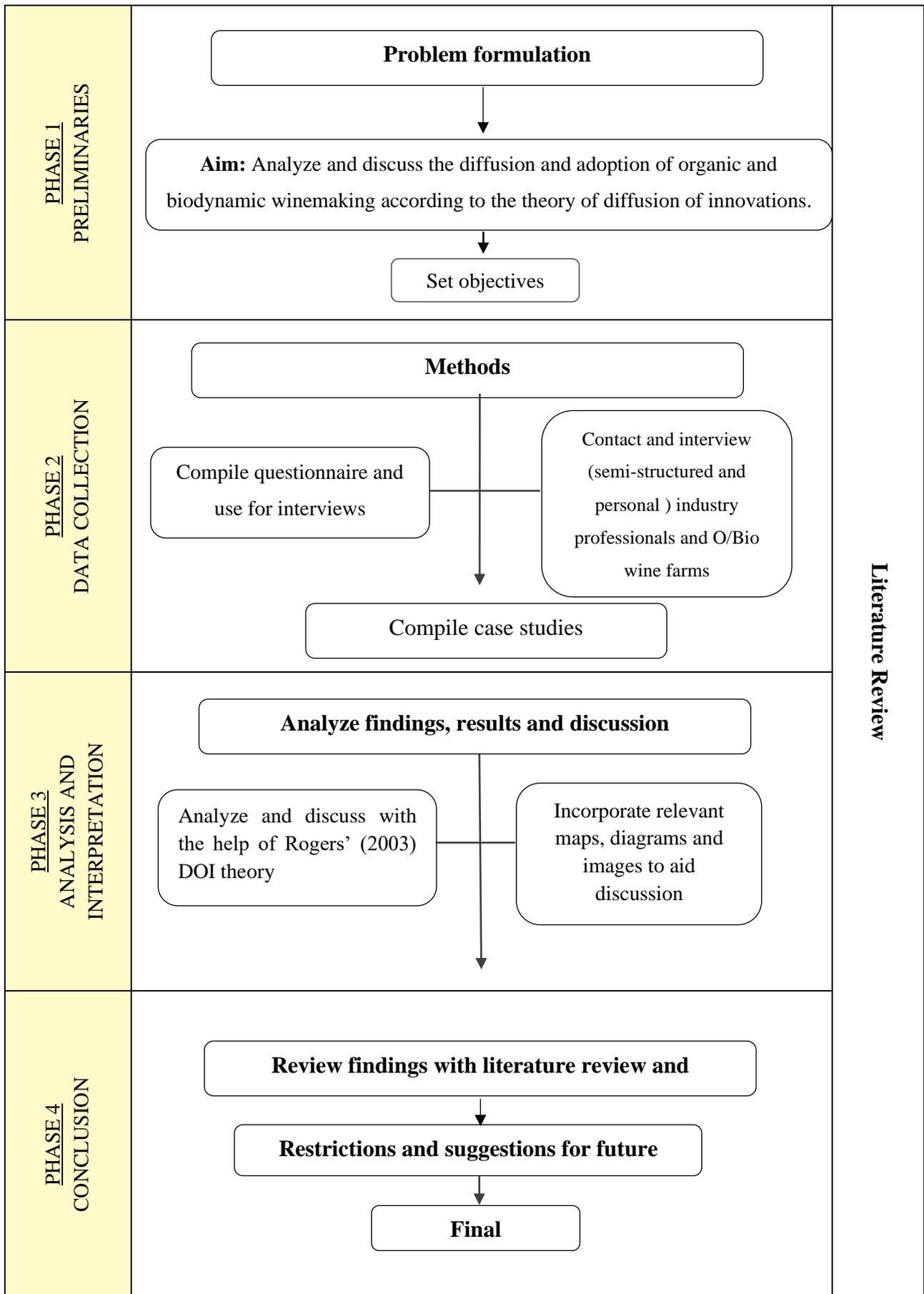


Figure 1.3 Research design

CHAPTER 2 LITERATURE REVIEW

“The economics of the [the South African wine] industry is demanding innovation” (Clarke 2020:2)

2.1 INTRODUCTION

The many definitions of environmental innovations all mention the necessary change the innovation will bring to existing processes or markets. Among the variety of definitions, the Organization for Economic Cooperation and Development (OECD) (in Salvadó et al. 2012:35) has an acceptable definition for this study:

Eco-innovation is generally the same as other types of innovation but with two important distinctions: 1) Eco-innovation represents innovation that results in a reduction of environmental impact, whether such an effect is intended or not; 2) The scope of eco-innovation may go beyond the conventional organizational boundaries of the innovating organization and involve broader social arrangements that trigger changes in existing socio-cultural norms and institutional structures.

According to this definition both organic agriculture and biodynamic (O/Bio) agriculture share many similarities with other environmental innovations. According to Padel (2001) a significant innovation has a rapid developing market and high chance of economic gain while changing socio-cultural and agricultural norms and lessening environmental burdens.

This literature review covers various academic works and essential information sources related to environmental innovations, conventional, organic and biodynamic agriculture and winemaking. The theory of the diffusion of innovations by Rogers (2003) is explained and the different types of adopters and adoption factors are examined. Other relevant components that relate to the study such as certification bodies, the influence of wine tourism, greenwashing and conversion to O/Bio farming are taken from the literature and considered. Extensive studies have been done between 1982-2018 which incorporates the DoI theory to agricultural innovations, for example, Dan, Osterheider & Raupp 2018; Dasgupta 1989; Drape et al. 2013; Goldberger 2008; Parra-Lopez, De-Haro-Giménez & Calatrava-Requena 2007 and Mirela & Dejan 2014.

2.2 DIFFUSION OF INNOVATION

In the Rogers (2003) theory of the diffusion of innovations (DoI), the adoption of new innovations and practices are believed to be investigated, accepted or rejected by people in an open society over the lifespan of the innovation or practice. The communication of new ideas, via interpersonal relationships or the media is the driving force of the diffusion process. Social change is regarded in the theory as a prime consequence of the natural movement of ideas.

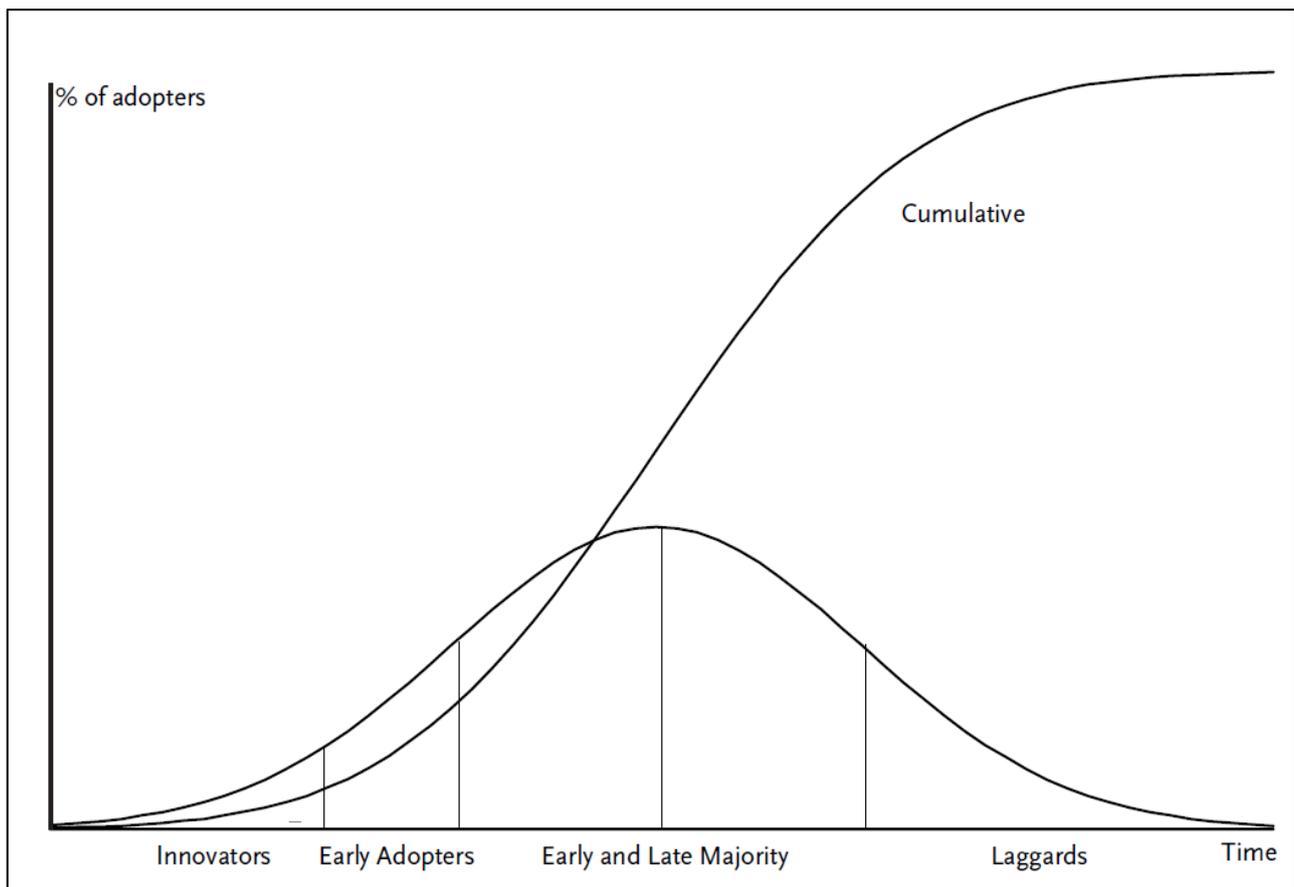
When individuals have adopted an innovation, the adoptions can be plotted cumulatively on a graph over time to give an S-curve. Although not all innovation adoption rates result in the tell-tale

cumulative curve because some adoptions occur over much longer periods of time. A relatively steep S-curve means the innovation was adopted by many individuals in quick succession whereas a slow adoption rate produces an S-curve that is more elongated and less steep. One can thus assume that the steeper the S-curve, the easier, less complex or more desirable the innovation was for the adopters, or that the innovation was a popular trend that arose and died relatively quickly. Usually, many years pass between the innovation becoming available to society and it being widely adopted (Rogers 2003).

In the innovation-decision process, potential adopters will move through five stages before adopting and applying the innovation to their situation (Rogers 2003). These stages are: 1) gathering knowledge and an understanding of the innovation; 2) forming an attitude towards and being persuaded of its abilities; 3) deciding and preparing to adopt or reject the innovation; 4) implementation of the innovation and finally 5) confirmation and re-enforcement of the innovation. At any time in the staged process a potential adopter can abort and reject the innovation. Discontinuance can also take place as the adopter aborts or rejects the innovation after it has been implemented.

To counteract the uncertainty connected with adopting an innovation, an increase in knowledge about and experience with it is necessary. This knowledge acquisition is done objectively during the first stage of the innovation-decision process without the potential adopter forming an attitude or opinion based on this knowledge. After stage two (persuasion) this acquired knowledge becomes integral to the decision to adopt or abort during stage three. This knowledge and data are applied by the individual adopter to his or her situation while considering the various advantages and disadvantages. The importance of communication is paramount because most of this knowledge is acquired from peers and through interpersonal relationships, which are influenced by the various peers' experiences and subjective opinions (Rogers 2003). In this study the peers and interpersonal relationships can be regarded as wine farmers who practice organic or conventional farming, industry professionals or other individuals with specialized knowledge or interest. According to Rogers (2003) such communication is crucially important for diffusing an innovation in a Third-World country. Once the innovation is past the first 20 percent of the society (past the innovator and early adopter groups), it has reached the heart of the diffusion and often cannot be stopped from diffusing further into society and moving to the subsequent groups (Padel 2001; Rogers 2003).

The various adopters are categorized in five groups, namely innovators; early adopters; early majority; late majority; and laggards. They are classified according to the relative time (from the initial adoption of the innovators in the social system) it took them to adopt the innovation. This is illustrated in Figure 2.1 as the typical tell-tale bell curve of the innovation-diffusion model.



Source: Adapted from Padel (2001)

Figure 2.1 The distribution of adopters in an ideal diffusion of an innovation

In the first stage of the model are the innovators and the early adopters. Members of both groups are markedly experimental, and they accept a high degree of uncertainty in their adoption decisions. The innovators comprise 2.5% of the society and have very limited knowledge regarding the venture they are pursuing. As the pioneers in the adoption of the relevant innovation, the innovators are constantly under scrutiny, viewed with scepticism and expected to justify and defend their new methods, ideas and approaches. Hall (2003) points out that because of this communal exclusion and questioning, the few innovators band together, form a strong bond and create a reliable information-sharing network. Early adopters follow in the footsteps of the innovators, whose example they follow and from whose mistakes they learn. Some 13.5% of the adopting society make up of early adopters. Because there is only a small number of innovators, the previously acquired experience and knowledge available to early adopters are limited. At this early stage in the model, unpredictability, limited knowledge and little to no structures are rife.

The early majority and late majority make up the main and greater part of the society of adopters, so manifesting as the arch in the bell curve. Ideally, they make up a combined 68% of the adopters, each sub-group constituting 34% of the cohort. The early majority play an integral part in the diffusion of the innovation as they are the main link of communication before the innovation reaches its full

diffusion rate. They create an important interconnectedness. They are regarded as the willing adopters who deliberate the plan but are definitely not the innovation leaders. The late majority will only adopt once the innovation is well established in the social network. Their adoption decision is motivated by peer pressure and the proven effectiveness of the innovation.

The later adopters (early majority, late majority, laggards) are more likely to listen to advice and consult early adopters, mostly to evade the possible pitfalls and obstacles experienced by the latter mentioned (Padel 2001). It may also be true that the early adopters have learned and gathered knowledge from the innovators and thus have a good collection of their own and pioneering knowledge and information. Later adopters (early and late majority, laggards) can thus also save time by consulting earlier adopters (innovators and early adopters), specifically about these two groups' knowledge regarding their obstacles or challenges.

The last group of adopters, which comprises 16% of the society, are the laggards who either adopt the innovation after it has reached its diffusion and adoption peaks and is well implemented and tested in society or they are those who will never adopt the innovation (Rogers 2003). Compared to innovators, laggards have opposite characteristics like scepticism, lower socio-economic status and reluctant attitudes. The laggards are also the group that consists of the most adopters who have discontinued the innovation method or product for various reasons, mainly dissatisfaction. Tradition and proven methods of old are the mainstay of laggard philosophy. Rogers (2003) holds that laggards are usually in precarious economic positions, so that the innovation has to be proven to be effective in financial gain before they will take the risk and adopt.

The ecological, economic, socio-political and institutional environment factors to be considered when looking at the adoption of innovations by any agricultural society are not simplistic and easily analysed (Vereijken, van Gelder and Baars 1997). Clearly the diffusion of innovations (DoI) theory of Rogers (2003) is an appropriate helpful tool for examining and understanding the complexities of the adoption and diffusion of multifaceted sibling innovations like organic and biodynamic winemaking. In order to understand organic and biodynamic winemaking, one first has to look at conventional winemaking and viticulture.

2.3 CONVENTIONAL WINE AND VITICULTURE

Agriculture remains a foundation for many vital aspects in society, as it has either direct or indirect influences on economic, social, cultural and ecological conditions (Sacchelli et al. 2017). Viticulture is no exception as it is a significant agricultural sector in countries like Italy, France and Spain and in total adds €31.8 billion to the global economy with international conventional winemaking constituting 90% of the approximate 8 million hectares of vineyard around the globe (Soustre-

Gacougnolle et al. 2018). Vineyards under organic and biodynamic certified account for only 9% and 1% respectively to the world's total.

Wine grapes are most commonly derived from the *Vitis vinifera* vine which is believed to have originated in ancient Mesopotamian landscape, called the Fertile Crescent, approximately 10 000 years ago (Goode 2014; Robinson & Harding 2015). There are 1368 different grape varieties that stem from *Vitis vinifera*, some being original or 'pure' cultivars, others originating from the crossbreeding of two or more parent cultivars (Robinson, Harding & Vouillamoz 2013).

Chemicals like pesticides, herbicides and fertilizers have become increasingly popular in modern times (Naidoo & Buckley 2003; WWF-SA 2010). These chemical-based substances are used to eradicate harmful pathogens and pests to decrease the amount of labour necessary, to improve soil quality and to increase yields (Dabrowski 2015; Robinson & Harding 2015). Pesticides have detrimental effects on all biotic and abiotic life present on a farm. Their use also heightens the risk of leaching, runoff and spray drift that may cross-contaminate other biomes (Naidoo & Buckley 2003). Grapevines require significantly lower amounts of nutrients compared to other crops, yet mineral and nitrate leaching, erosion and denitrification (reduction of nitrates) led to major nutrient loss (Nendel & Kersebaum 2004; Proffitt & Campbell-Clause 2012). The pressure placed on South African farmers to use pesticides to meet national and international agricultural production demand and standards without the adequate support and tools, is detrimental to the health of farmers, their families, workers and surrounding communities (Rother, Hall & London 2008).

A presence of healthy microflora and multiple micro-organisms in vineyard soil is necessary for vines to root deeply and add to the overall unique terroir manifested in the subsequent wines (Waldin 2004; Meissner et al. 2019). As chemicals, fertilizers and pesticides are added to the vineyard, the topsoil hardens and becomes more impenetrable to water and topsoil nutrients (Ingels 1998; Robinson & Harding 2015; Reyneke 2020, Pers com). Crucial fungi, like mycorrhiza which act as mediators between the vine roots and the soil, are depleted which leads to poor chemical transfer between the soil and roots. As a consequence, the smothered deep roots are retracted shallower and energy is invested in growing the roots sideways, thus losing many deepsoil microflora, micro- and macronutrients which all add to the terroir characteristics of the wine. The shallower roots also compete for nutrients with perennial plants or cereals used for cover crops (Ingels 1998). A popular biodynamic preparation (Preparation 500 in Appendix C) is used to stimulate microbes that reside on the vine roots and to promote plant cell growth (Giannattasio et al. 2013; Meissner et al. 2019).

Vineyard cover crops are usually cereals and grasses like wheat, barley and rye, legumes, or other perennial plants like dandelion and grass species. Grasses are a popular cover crop in Mediterranean

climates as they go into a state of dormancy in the dry summers, thus requiring less water and fewer nutrients (Meissner et al. 2019, Skinkis 2019).

One of the most useful actions of cover crops are binding or fixing atmospheric nitrogen and nitrates in the soil (Gaskell et al. 2011). As plant growth commences, nitrates (a common soil-nitrogen) are released into the ground and leaches from the soil with water and seasonal rains and can go through denitrification where nitrates change into nitrous oxide which is emitted by the soil into the atmosphere so adding to greenhouse gasses (Gaskell et al. 2011). This is where cover crops, specifically legumes, are used to bind atmospheric nitrogen to the soil so enriching the ground and lowering the release of damaging agricultural gasses into the atmosphere. Gaskell et al. (2011) points out that 0.4 ha of leguminous cover crops can absorb 90.7 kg of nitrogen and retain it for many years. Cover crops also enable easier access to vines for labour and they suppress vine vigour (high vegetative growth in the vine) by acting as competitors for water and nutrients. This competitive environment releases abscisic acid which compels the vines to use more energy for grape development (reproduction) than vegetative growth (Goode 2014). This reduction of vegetative growth is beneficial because less compact grape structures and reduced canopy density result in less fungal infections and help to curb the spreading of diseases (Meissner et al. 2019). By allowing the cover crops to grow for longer periods to establish deeper, stronger roots to form greater bigger above-ground biodiversity and stronger erosion control as well as improving mulch production, water filtration and weed suppression (Cohen 2018; Meissner et al. 2019).

Cover crops can also be a more desirable habitat than vines are for certain pests like infamous virus vectors, mealy bugs, as shown in biodynamic vineyards (Waldin 2004). Vineyard blocks of Pinotage that were free of virus-carrying mealy bugs have been reported to have healthy cover crops of clover. Inspection of the clover roots found mealy bugs but only on the roots. Removal or destruction of the clover caused the mealy bugs to move up to the vines and become a disease-carrying pest. Thus a clover cover crop between vines can keep free of mealy-bugs. This runs counter to conventional viticultural thinking and practice as clover is customarily killed by inorganic chemicals like pesticides (Ingels 1998; Waldin 2004).

As micro-organisms break down organic residue in the soil, a process of humification takes place (White 2015). This humification produces humus, a dense collection of decomposed carbon- and nutrient- rich sublayer soil which retains water, balances the soil pH-level and acts as habitat and food source for micro-organisms (White 2015, Laarman 2014). When cover crops are rolled seasonally or annually (this is farmer dependent) they add to the raw organic matter that makes up humus. Tillage of interrow ground is used to control weeds, maintain water and enhance moisture absorption (Warner 2006; Faber, Wachter & Zaller 2017). Yet tillage can also be detrimental to

overall health of soil and humus by exposing too much of the soil, thereby subjecting the fragile carbon-based micro-life to oxygen which oxidizes (burns) micro-organisms (Laarman 2014). The effects of tractor tillage have been shown by Lotter (2015) with maize crops. Once conventional tillage was stopped and off-season cover crops were used, soil erosion was reduced by 90%. Organic and biodynamic farms practice hand tillage which does increase labour costs and hours spent in vineyards, but it does cause less tractor traffic and soil compression as well as minimizing possible soil erosion (Delport 2020, Pers com; Grieve 2020, Pers com; Reyneke 2020, Pers com; Van Zyl, Pers com 2020).

A four-year study various impacts of conventional, organic and biodynamic practices produce evidence in favour of biodynamics (Meissner et al. 2019). The study specifically assessed the effects of conventional, organic and biodynamic winemaking on soil quality, earthworm abundance and selected microfauna and microflora presence and health. Other factors they investigated were grapevine reproductive development, vegetative growth, grape yield, wood composition and fungal susceptibility. Grape yields were consistently higher in the vineyard managed under conventional winemaking practices, whereas the organic and biodynamic grape yields were 10% to 25% lower. The study did however show that organic and biodynamic practices cultivate a grapevine morphology that produces more high-quality grapes, increases soil quality and wine quality as well as overall grapevine development. The presence and health of earthworms were significantly higher in the organic (45% increase) and biodynamic (94% increase) plots which indicated favourable soil fertility and enzyme activity. Meissner et al. (2019) also found that the vineyards following biodynamic practices have lower vegetative growth and increased soil fertility than those under organic management. O/Bio winemaking as an alternative for conventional winemaking is a complex subject with many different elements.

2.4 ORGANIC WINE AND VITICULTURE

Organic wine is derived from an organic vineyard that have no exposure to synthetic or chemical additives and the farms follow the best environmental procedures according to the applicable regulations and standards (Raath 2001; European Commission 2007). Italy and France, the world's two largest wine producers, are shifting increasingly to organic and biodynamic wine production (Cagnina, Cicero & Osti 2018, Lesković 2020, Pers com). SAWIS (2019b) recently predicted that by 2022 Europe will consume 78% of the world's organic wine. Organic wines had no good reputation, not only in South Africa but also internationally until little over a decade ago. At a farm participating in this study, four group members once refused to taste the organic wine, simply because it is organic. Lesković (2020, Pers com) concurred with this situation, stating he has conversed with patrons who (incorrectly) deemed organic and biodynamic wines to be of lesser quality owing to their having less

synthetic input. Recently an American wine agent remarked despairingly to an organic wine farmer that organic wine was the equivalent of the Special Olympic Games compared to conventional wine being the authentic Olympic Games. Another belittling comment was that no-one wanted the 'special' wine of the organic and biodynamic wine industry. A sudden and positive change in perception, starting in the mid-2000s, caused international demand for organic and biodynamic wines to escalate rapidly.

Regarding this shift, BOWSA (2020) has warned that being nearly organic is not organic. Overall organic agriculture aims to ensure and promote healthy crops and harvests using methods that are as naturally close to existing ecological systems as possible (International Federation of Organic Agriculture Movements 2013). This desire will be aided by keeping a sustainable and healthy balance between ecosystems, people and the crops. French vineyard biochemists and microbiologists have found that organic and biodynamic methods are beneficial to the terroir as shown by micro-organisms having multiplied (in some cases even re-introduced) in nutrient-poor soil (Bouruignon in Waldin 2004).

Although a range of definitions exist for organic agriculture, they centre on sustainability and biodiversity, the absence of synthetic additives or genetically modified organisms (GMOs) and the value of soil health (Hall 2003; Robinson & Harding 2015). Examples of inorganic additives are fertilizers, herbicides, pesticides and fungicides which do not meet the required criteria for organic as prescribed by strict regulations (Jansen van Vuuren 2018). These additives have even been regarded as 'lifeless' (Waldin 2014) in an agricultural system that is otherwise centred on growth and vitality. Organically-treated soils have been found to be more biodiverse and fertile than conventionally-treated soils (Smith & Barguín 2007; Vereijken, Van Gelder & Baars 1997). This endorses the making of organic practices a credible alternative method to conventional winemaking that will feasibly result in healthy crops and higher customer satisfaction (Strayer 2015).

The most common additive is sulphur dioxide (closely related to sulphites) an antimicrobial substance occurring naturally in wines at very low concentrations (10 mg/l) but which can be added manually up to 100 mg/l for red wine and 150 mg/l for white and rosé wines (Buranyi 2018; Krzywoszynska 2012; European Commission 2011). Wines containing more than 10 mg/l of sulphites are required to carry the warning '*Contains sulphites*' on the label, thus no wine is indeed 100% sulphite free. The non-addition of sulphur dioxide and popular sulphites in the winemaking process might arguably lead to more natural wine, but it certainly does not mean that the wine is organic as other inorganic additives might be added (European Commission 2012). The main role of sulphur in winemaking is to prevent bacterial deterioration and oxidation of the wine, thus expanding its shelf life and granting more control over the fermentation process (Demeter 2019). Sulphites are

even compared to penicillin (Buranyi 2018) and coincidentally they also possess allergenic properties which caused an overall decrease in the amounts used in the early 20th century (Robinson & Harding 2015).

Organic viticultural practices have a preference to using permanent cover crops (whereas in conventional viticulture there is a tendency to rotate cover crops). The former carries benefits such as deeper rooting and more porous soil that promotes the presence of macro-organisms like earthworms (Meissner et al. 2019). Popular organic cover crops are legumes, herbs and grass (International Federation of Organic Agriculture Movements 2013). These crops are rolled annually to allow flowering which in turn promotes macrofaunal diversity, soil moisture conservation and slower breaking down of organic material (nutrient mineralization) (Meissner et al. 2019).

A two-year conversion period is necessary before a farm can be certified as fully organic if it was previously functioning as a conventional farm. A fundamental mistake made by organic wine farmers is their trying to fully convert every aspect of their farm at the same time (Warner 2006). In most of these cases the farmers were overwhelmed by the extra costs and time commitments that led to a struggling to convert successfully. The initial year of conversion will be more expensive than a whole year of conventional grape growing and winemaking (Strayer 2015). Consecutive years lead to a decrease in the cost of operating an organic farm to finally reach a cost plateau after a few years that matches the cost of conventional winemaking. The practical suggestion is to start organic conversion by a section and by a few hectares so that progress can be monitored over time by the health of the grapes and soil. Taking operation costs and time into consideration this suggestion can be considered a luxurious option.

All farms certified as organic and biodynamic are required to prevent spray drift from neighbouring farms to the best of their abilities. These sprays can contain pesticides and fungicides which are not permissible on biodynamic farms nor their produce (White 2015; Demeter 2019). Buffer zones such as trees and hedges are recommended to be used between biodynamic-certified and conventional farms. Buffer zones differ in size according to location, farm size and the type of production on neighbouring farms and they must have a minimum width of 50 feet (15.25 m) (Demeter 2014; Organic Farming Research Foundation 2017). Certifying bodies have the authority to do risk analyses on farms and request action plans if the results of spray-drift mitigation are substandard. If an area producing organic crops is suspected of being affected by spray-drift, a certifying body may request a laboratory analysis of the produce. All costs associated with such tests are for the farmers account (Demeter 2019). If prohibited substances or spray residue and/or leakage are found on a certified organic farm, the farm is liable to losing its certification for up to three years (Demeter 2019).

2.4.1 Organic certifying bodies

South Africa does not have its own organic or biodynamic standards thus certifying bodies use the two most predominant and market-accepted organic-related rules and regulations, namely those written by the European Union (EU) and the National Organic Program (NOP) of the United States Department of Agriculture (USDA) (Grieve 2020, Pers com; Setati et al. 2012). Delport (2020, Pers com) described certifying bodies as the ‘police’ that make sure that EU and/or USDA standards and regulations are met or any other organic-related regulations of countries having different standards. All the certification procedures have some differences, with some requiring payment earlier or inspections to be performed later in the certifying steps. The certifying bodies have nothing to do with formulating the rules, regulations or standards. Organic certification has to be renewed annually.

The main certifying bodies operating in South Africa are EcoCert, Lacon, Control Union Certifications and Certification of Environmental Standards (CERES) as specified in Table 2.1. Each one is based in Western Europe with a representative branch in South Africa. All these certifying bodies use the all-encompassing international standards and regulations written by the EU as their benchmark for organic quality and accreditation. As an executive branch of the EU the European Commission (EC) has made specific annexes and amendments to the regulations. To obtain organic certification a wine farm and cellar must satisfactorily meet the criteria set by these regulations which will then be audited and certified by a certifying body. The crucial regulation is (EC) no. 834/2007 of 28 June 2007 which sets out the requirements of organic processed food production, preparation and distribution.

Certifier	Location	Organic certified wine farms in the Western Cape	European Union regulations and standards	USDA regulations and standards
EcoCert	France	11	Yes	Yes
Lacon	Germany	2	Yes	Yes
Control Union	Netherlands	9	Yes	Yes
Certification of Environmental Standards (CERES)	Germany	3	Yes	Yes

Table 2.1 The four main organic certifiers of organic farming in South Africa

Certificates declaring a farm as organic clearly indicate that the farm’s systems and produce have met the criteria equal to that of (at a minimum) regulation (EC) no. 834/2007 and that it may use the EU organic logo (USDA 2020). Another regulation implemented by certifiers is (EC) no. 889/2008, which is specifically relevant to countries outside the EU, although this regulation is not examined by all certifiers in South Africa who may apply other standards from outside the EU, like those in the

National Organic Program (NOP) of the United States Department of Agriculture (USDA). The US-EU Organic Equivalency Arrangement was implemented on 1 June 2012 to ensure the same standard of quality control measures, regulations, certification requirements and labelling was accordant and equal on both continents but limited to products of EU and US origin. Thus, some farms in South Africa that are certified according to the official USDA standards and regulations will not be regarded as equally certified to their EU-certified organic peers because their products are not of EU or US origin (USDA, 2020). By proxy, this agreement forces South African organic farms to undergo both EU and USDA certification so that fortuitously they can be accredited simultaneously by certain certification bodies present in South Africa (Lilje, 2020 Pers com).

When labelling organic certified products, all processed organic products in packaging or bottles require the Euro-leaf organic logo (see Figure 2.2) with the International Organization for Standardization (ISO) code for the country of origin of a raw product and the certifying body code (discussed in detail in Section 2.7). This guarantees the final production of products and their distribution meet the requirements of (EC) no. 834/2007 and contain a minimum of 95% organic materials. On South African organic wines, *Non-EU agriculture* will be added (European Commission n.d (b)) as seen in Figure 2.2



Source: Author's own (2020)

Figure 2.2 Euro Leaf logo and Control Union logo

EU organic regulations have been amended by the European Commission on 14 June 2018 and will be applied 1 January 2021. No major regulation changes will take place although the changes will include stricter precautionary measures, easier application for certification by smaller farms and simplified production rules (International Federation of Organic Agriculture Movements 2020).

2.4.2 Control Union

Control Union is a global certifier based in the Netherlands, engaged in certifying according to the requirements of 13 different international programmes regarding the regulations and standards of organic agriculture. Control Union certification process is deemed to be as cost effective while

maintaining rigorous inspection, evaluation and certification procedures. Wine bottles from certified Control Union wineries display (see Figure 2.2) the Control Union logo paired with the EU Organic logo captioned with ZA-BIO-149.

2.4.3 EcoCert

To be certified by EcoCert, the client first compiles an Organic Systems Plan (OSP) for which EcoCert provides a quote. After 80% of the payment is received by EcoCert the OSP is updated and approved. Costs are size- and production-dependent (this is discussed further in Chapter 4). Inspection is done and followed by a report on the findings. The findings of the inspection and updated OSP have to coincide otherwise the certification process is terminated. Once any non-compliances is rectified and the remaining 20% payment is confirmed, the certificate of conformity is issued and considered valid for 12 months (EcoCert n.d.). Figure 2.3 is an example of the EcoCert logo on an organic wine label.



Source: Author's own (2020)

Figure 2.3 EcoCert logo on the Waverley Hills label

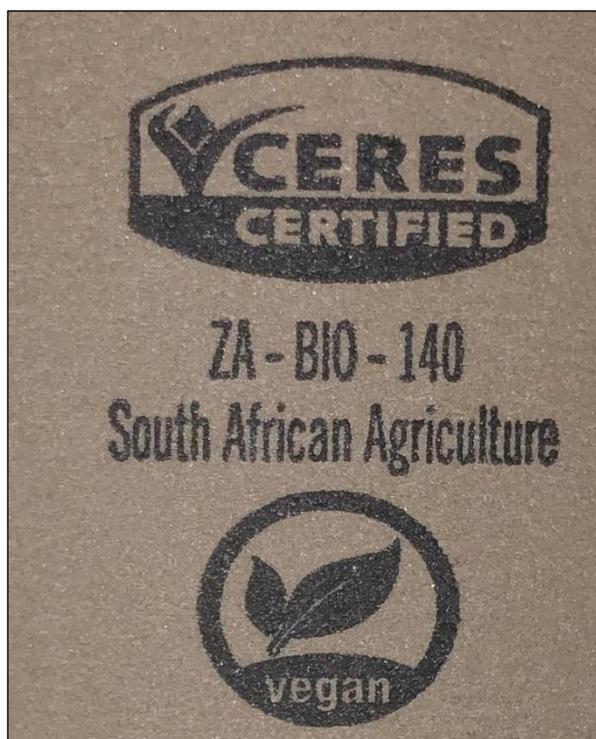
2.4.4 Lacon

The certification process at Lacon begins with an enquiry by the organization for which basic information about the farm or winery has to be submitted. Cost estimates are made and if accepted, registration is required for which a contract drafted and must be signed. Submission of a full project plan is followed by an audit and a subsequent inspection report. The necessary corrective actions are made at this stage which lead to certification if the applicant is found compliant with all the regulations. Certification has to be renewed yearly and is subject an announced inspection as well as possible unannounced inspections throughout the year. Lacon describe their price system for certification as a “reasonable fee structure” and they ensure that all aspects of the organic product are thoroughly inspected, from cultivation to customer distribution (Lacon Institute 2020).

2.4.5 Certification of Environmental Standards (CERES)

CERES certifies according to the EU, USDA regulations as well as the Japanese Agricultural Standard for the Production of Organic Foodstuffs (JAS) (Certification of Environmental Standards 2018). Certification has to be renewed annually and products in conversion at the time of the

inspection is not allowed to use the CERES logo until they are successfully certified as organic, seen in Figure 2.4.



Source: Author's own (2020)

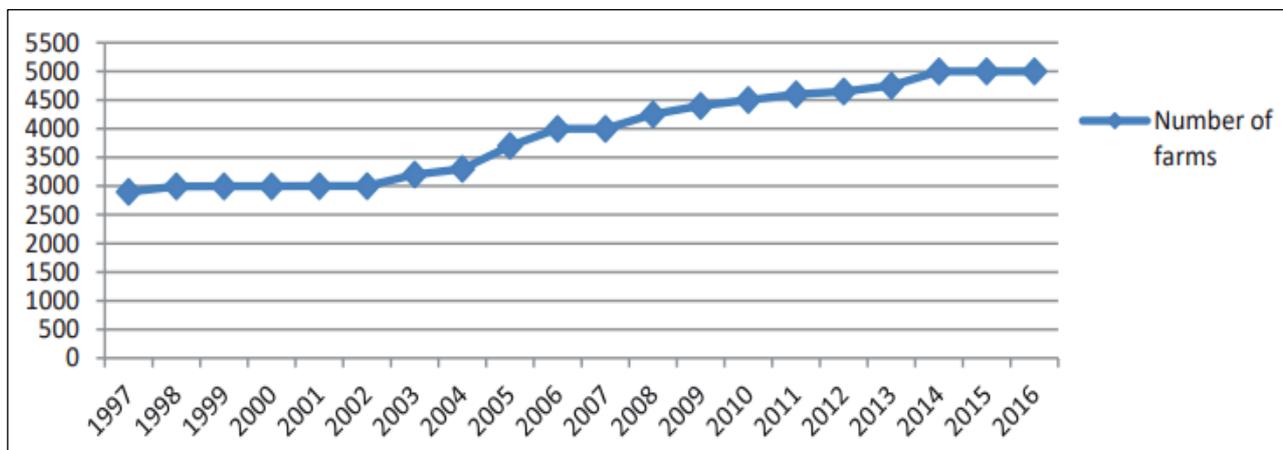
Figure 2.4 CERES logo on the Reyneke label

The certification process begins with CERES responding with a compilation of relevant information. If the formal application is accepted, a flat fee is calculated according to a daily rate and farm size. The auditor's travelling and accommodation expenses are included in the fee. A contract with the quote has to be countersigned by CERES if accepted by the applicant. Pre-payment of a specific amount is required and a package of relevant CERES policies, standards, inspection programme(s) and an organic management plan template (OMP) is provided (Certification of Environmental Standards 2018). The OMP is similar to the OSP of EcoCert but CERES opts to request it later in the process and give the farm chance to take corrective actions before a scheduled inspection. After inspection a report is sent to CERES headquarters to be evaluated and a final invoice is sent to the farm. The certification decision is disclosed within four to six weeks. Biodynamic winemakers also go through rigorous biodynamic-specific certification processes while having to be organically certified.

2.5 BIODYNAMIC WINE AND VITICULTURE

Biodynamic winemaking is the brainchild of Austrian philosopher Rudolf Steiner in 1924 which he describes in his eight-part lecture named *The Agriculture Course* (BDAASA 2020; Demeter 2019; SAWIS 2019b); Steiner 2004). *Bio* refers to the biological aspects (plant, animals, insects and

humans), whereas *dynamics* represents the cosmos, astrology and natural elements involved in the agricultural practice. The fundament of biodynamics is that a farm becomes a self-sustaining ecosystem with the biological diversity and health being as little influenced by human intervention and inorganic substances as possible (Cohen 2018; Strayer 2015).



Source: SAWIS (2019)

Figure 2.5 Demeter-certified biodynamic wine farms worldwide

The primary biodynamic wine-producing countries are France, Italy and Spain. Figure 2.5 illustrates the gradual growth of Demeter-certified biodynamic wine farms globally. Compared to conventional and organic wine farms, the small number of biodynamic wine farms emphasizes just what a niche-within-a-niche market biodynamic winegrowing really is.

The prime requirement for being biodynamic is being fully organic (BOWSA 2020; Waldin 2004). Biodynamic agriculture has been regarded as the “extreme evolution of organic agriculture” (Castellini, Mauracher & Troiano 2017: 2). The main differences between organic and biodynamic winemaking are the required use of holistic preparations, less mechanical intervention in the vineyard and the respective views on farm symbiosis. Nevertheless, as in organic viticulture, no synthetic or inorganic substances are allowed as additives (BOWSA 2020; Castellini, Mauracher & Troiano 2017; Demeter 2020). Together with a strict set of rules and regulations, biodynamic winemaking and grape cultivation require more labour and attention to detail in the vineyards than in conventional and organic winemaking (Waldin 2004).

Biodynamics is regarded as an anthroposophical theory, with humans, animals, plants and the cosmos each playing a vital part in a natural symphony working together to produce as beneficial relationships as possible (BDAASA 2020; Demeter 2019). Some proponents of biodynamics regard being organic as not enough to truly produce eco-friendly commodities (Cohen 2018; Lilje 2020, Pers com). Observation, intention and discernment are essential when attempting biodynamic methods. Biodynamics involves the incorporation of physical material with immaterial cosmic and

universal forces with the goal of reaching natural harmony and balance within the closed organic system of the farm. Living materials (manure, flowers, oak bark) become ‘deceased’ and buried (by human intervention) in alignment with nonphysical elements (seasons and astrological arrangements) to aid and supplement the renewal, growth and production of other living materials (the grapevines). The cyclic process entails the growth, development and harvesting of wine grapes and the reusing and/or recycling of materials found on the farm premises to help the next harvest grow. Thus, the input needed for production originates from the farm itself (Meissner et al. 2019).

Planting and harvesting are preferably done according to the biodynamic calendar, although this is not compulsory. It is understandable that these methods and concepts may seem a bit farfetched and unorthodox, especially to farmers in the Western Cape where farming communities often have a more conservative leaning (Lilje 2020, Pers com; Steenkamp 2020, Pers com). Accordingly, Steenkamp (2020, Pers com) remarked that:

As far as the astrology goes that’s not even the main part of biodynamics, it just happens to be how they express themselves and talk about it. A lot of it has got to do with soil fertility, looking at your biome, how your animals benefit the land and other things that can be backed up by science and biology. But they don’t always explain or express it that way.

The holistic preparations used by biodynamic farmers include only natural ingredients mixed and prepared in very specific ways so that each ingredient individually adds to the health and vitality of the vineyard and the farm overall. The preparations act as humus producers, compost, organic insecticides and fungicides as well as adding nutrients like calcium. There are eight such preparations, numbers 500 to 508 (BOWSA 2020) that use some of the components shown in Figure 2.6. (Details regarding the contents of the preparations are given in Appendix C) Meissner et al.’s (2019) study on biodynamic preparations and conversions found that biodynamic preparations do have positive effects on vineyard and vine conditions, but they advise that more research is necessary about the preparations themselves.



Source: Reyneke Wines (2020, s.p.)

Figure 2.6 Elements used in biodynamic preparations

A fundamental difference between biodynamic and conventional winemaking lie in the respective responses towards external factors that influence vineyards. In modern conventional winemaking there are factors that affect the vines like pests, rot, weather, soil difference and soil nutrients to name a few. Thus, the farmer will meticulously respond to a factor to lessen any adverse effects the factor may hold. For example, if pests are present, pesticides are used to remove or to lessen the negative effects of the pests. As Tippetts (2012) states, there is no trial and error as one scenario has a set of possible reactions. Whereas with biodynamic practices, a balance is sought by using the constituents of the preparations to strengthen the vines' natural defence mechanisms, so avoiding crisis management in the form of external (often in the case of conventional wine farms, inorganic) inputs. Higher levels of immunity genes, lower berry compactness and less fungal infections are evident in vines that are biodynamically managed compared to conventionally managed vines (Meissner et al. 2019; Soustre-Gacougnolle et al. 2018).

As in organic viticulture, cover crops are used and encouraged. In biodynamic viticulture. These cover crops of grasses, legumes or wheats are also rolled biannually or annually to be used as mulch when mixed with compost. The more microbial life in the soil the more is the release of macronutrients in deep soil (Waldin 2004). As with organic wines, sulphites occur naturally in the biodynamic wine and up to 100 parts per million are allowed in the latter wines, whereas in organic wine there is instances that sulphites content must be limited to as low as possible (Strayer 2015).

Although both viticulture and viniculture are connected to all the processes happening in the vineyard and cellar (Castellini, Mauracher & Troiano 2017) biodynamic winemaking focuses solely on what is happening during the cultivation phases in the vineyards. Thus, the processes of vinification that take place in the cellars are not directly influenced by biodynamic agricultural practices and preparations (Texier 2013). The indirect biodynamic influences in the winemaking process are in the precautions taken in accordance with the official organic regulations (either USDA or EU-originated) to ensure no chemical and inorganic contamination.

The soil effects of biodynamics are not as semi-instantaneous as those of conventional fertilizers and additives, thus supporting Meissner et al.'s (2019) call for thorough, long-term research on biodynamics. Despite unconventional nature of biodynamics and the criticism it receives, the producers of biodynamic wines believe that the attention to detail and the meeting of natural balances achieve wines that are more complex, sophisticated and interest appealing than their conventional counterparts (Tippetts 2012).

All of the biodynamic standards set up by the International Standards Committee of Demeter have to be complied with for licensing as a biodynamic farm. The International Standards Committee is re-

elected every three years by global Demeter members, namely the Members Assembly. The latest standards were passed by the Members Assembly in 2018 (Demeter 2019). If alterations need to be made or omissions rectified a member or licensee is at the liberty to write an explanation and justification for submission to the Members Assembly. A majority vote of the Members Assembly will decide on official changes to standards. Should a standard regarding labelling be altered, current labels are allowed to be used for a maximum of three years, if approved by Demeter (Demeter 2019).

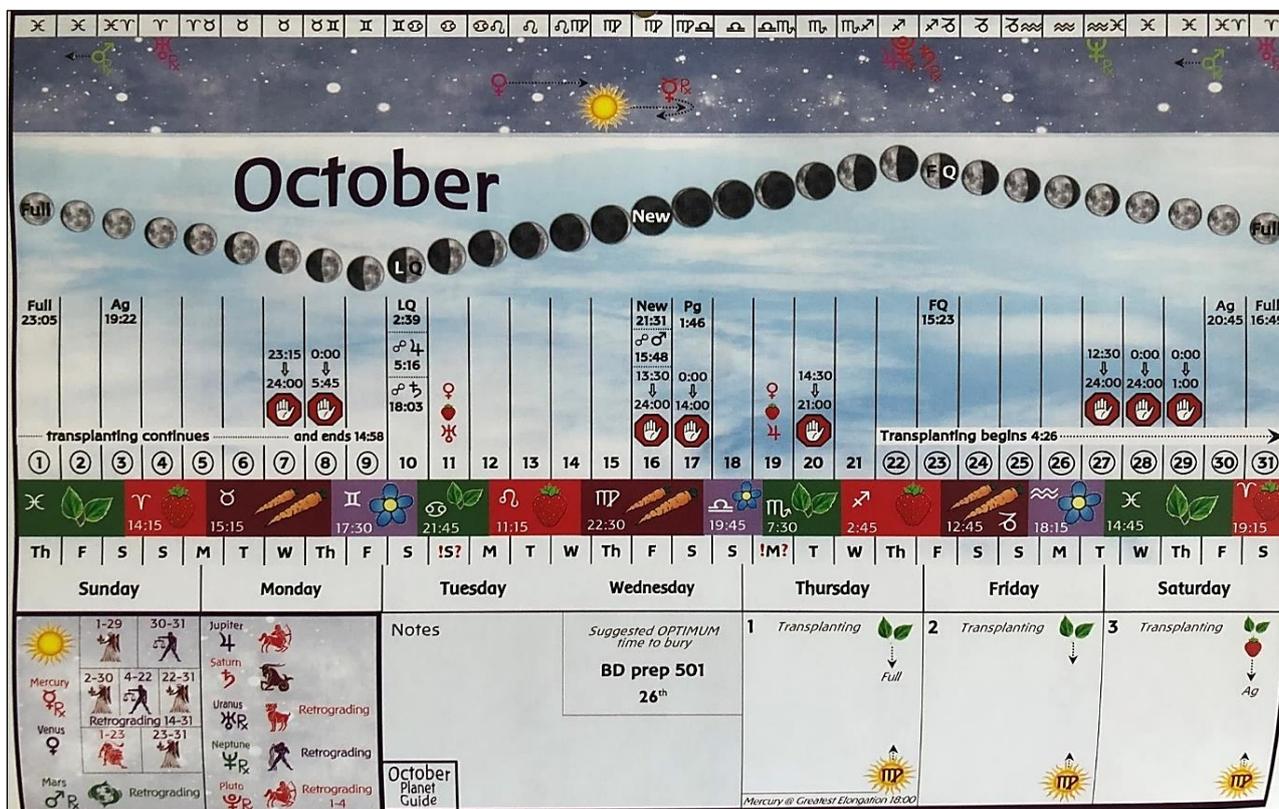
Demeter acknowledges that owing to geographical and ecological differences, a farming method used on one farm may not necessarily be suitable for another farm. Adaptations to or exemption from standards due to cultural, economic and geographical aspects of the location (of the licensee or member organization) can be done in a timely manner if the proper protocol (mentioned previously) is followed. Countrywide exemptions to standards can be requested by a country's biodynamic certifying body given valid justification. Other factors to be considered standard adaptation or exemption are the capability and capacity of the farmer. Responsibility, respect and sustainability of ecology is the cornerstone of all biodynamic practices (Demeter 2019). Licensees are also encouraged to consider and evaluate their indirect contribution to pollution and their use of non-renewable resources when contributing produce to the global supply chain.

Biodynamic farms are required to have crops as well as animals that will support the self-sustaining ecosystem by producing fresh manure to nourish the soil and be used for specific preparations in biodynamics (Demeter 2020; Setati et al. 2012). Cows are ideal for manure production, as their manure has a good moisture balance. Pigs and sheep manure can also be used but cow manure is ideal because of its pH level and horse manure will be more suited to colder climates (Waldin 2004). A minimum of 10% of the farmland has to be quarantined for a biome other than that of the agricultural biome to ensure ecological diversity (Demeter 2020). Thus, a certified biodynamic farm will have a small acreage of forest, local foliage, riparian corridor or wetland present on its grounds. In the understanding that farms adapt to their regional ecological context, this segregated section will usually contain native plants, insects and smaller animals.

Regarding cleanliness and pest control, Demeter requires that hygienic and preventative measures be prioritized and optimized to curb pathogenic or pest outbreaks in the production areas (Demeter 2019). Natural mitigations are usually set-in place do increase in airflow, enhance light penetration, promote botanical species diversity and cultivate predatory insect habitats, all of which are intended to have positive impacts on the vines production areas and cellar. Biocontrol of vineyard pests such as snails or mealy bugs is encouraged in the form of ducks, ladybirds, wasps or chickens (Setati et al. 2012). This alternative way of pest control with avian species also adds to the overall fertility and health of the soil by way of their manure.

2.5.1 The Biodynamic Agricultural Association of Southern Africa and the biodynamic calendar

Associations like BDAASA work towards clarifying these complex concepts and educating biodynamic farmers by providing reading material, workshops, training seminars and a South African-based biodynamic calendar. An example of the South African biodynamic calendar is given in Figure 2.7. Johan Reyneke of Reyneke Wines, owner of this particular calendar, declared that it was important to try to follow the calendar as closely as possible although it is not always possible to follow it to the tee (Reyneke 2020, Pers com). The calendar was originally compiled for BDAASA but it recognizes Demeter as the only benchmark for true biodynamic agriculture. The calendar has to be bought and ordered from BDAASA as either a hardcopy (ZAR250) or electronically (ZAR180), with members receiving 30% discount (BDAASA 2020). More extracts from the calendar are shown in Appendix D.



Source: Author’s own (2020)

Figure 2.7 A South African biodynamic planting calendar for October

2.5.2 Biodynamic certifying bodies

Demeter (aptly named after the Greek goddess of fertility) is the world’s official certifying body of biodynamic farms and having been established in 1924 it is the oldest organic association in the world. As the official certifying body, Demeter checks quality and standards by ensuring the right preparations and methods are followed and all standards are met (Demeter 2019).

The International Standards of Demeter are an official set of strict rules, policies, regulations and criteria needed to be adhered to in order to secure Demeter-grade biodynamic practices based on the methods and practices fashioned by Rudolph Steiner (Demeter 2020; SAWIS 2019b). Demeter regards the USDA NOP regulations as well as EU organic regulations (EC) 834/2007 and (EC) 889/2008 as adequate for the certification of organic practices (Strayer 2015). The International Standards of Demeter are approved by the commissioners of the Members Assembly and authorized by the International Biodynamic Association (IBDA) which owns the rights to Demeter trademark. In South Africa, the representing member is BDAASA and the licensees are the individual farms with biodynamic accreditation. To ensure that BDAASA complies with Demeter's standards, the Accreditation Council (elected by the Members Assembly) follows a specific accreditation programme and conducts an internal evaluation.

Demeter functions to ensure quality control and provide guidelines and they especially regard a sustainable, healthy ecosystem as a critically important asset (International Biodynamic Association 2018). Comprehensive and transparent information regarding certification, procedures and information shared between a certifying body and a licensee is imperative (Demeter 2019). If a farm produces conventional and/or organic produce and products as well as biodynamic produce and products, strict separation protocols have to be followed and ensured by the certifying body. If standards are not met, it is the responsibility of the certifying body to communicate rectifying procedures as well as implement an appeal or complaint procedure. Offending licensees have an allotted time to rectify their actions or risk losing their certification.

Certification dues include registration fees, royalties, soil tests, inspector fees and membership fees (discussed in more detail in Chapter 4). Because of the strict regulations and initial financial payments (mentioned earlier regarding organic wine), long procedures and time required for inspection, many wineries follow the rules, preparations and requirements of biodynamics but operate only as organic and sustainable. They do not therefore get the official Demeter certification and cannot use the Demeter biodynamic logo (Demeter 2019).

As with organic winemaking, South Africa has an older mindset as articulated by Kurt Ammann of the Rozendal wine estate: "Biodynamics is easier in South Africa than in Europe in terms of climate, but harder in terms of human consciousness" (Ammann in Waldin 2004: 481). According to Waldin (2004), some winemaking areas in Europe are having a difficult time converting to biodynamics because the established wineries are steadfastly holding onto conventional methods of winemaking. Lesković (2020, Pers com) through personal experience and research, nevertheless found that many top wine-producing countries in Europe, like France, have easily adopted organic and biodynamic winemaking. South Africa has a younger wine industry, thus making the conversion easier as some

conventional methods are not as well established as in the older wineries in Europe, although other obstacles such as certification, an uber-niche market and greenwashing may inhibit conversion and full adoption.

2.6 GREENWASHING

Greenwashing is a complex phenomenon conceived in the 1980s and it is characterized as being without a solid definition and having many subjective views (Ohmart 2008). Two widely used and fitting definitions for greenwashing include are: “The positive green communication by companies without positive environmental performance” (Bowen 2014: 3) and “Disinformation disseminated by an organization to present an environmentally responsible public image” (Oxford Dictionaries 2020: s.p.). This section delves into the different aspects and challenges faced by sustainable, organic and biodynamic wine producers in this market as well as the use of relevant labelling.

Because customer preferences for wine are changing and leaning heavily towards sustainable, organic and biodynamic wines (SAWIS 2019b), the market is adapting and providing the oversaturated and “hyper-competitive trading environment” (Gilinsky, Newton & Vega 2016: 39) with innovations and eco-products (Agence Bio 2019; Bonn, Cronin & Cho 2016; McCoy 2019; Netwerk24 2020). Emerging markets in countries like Russia and China have been tipping the scale as the new mass importers while demand for Old World wines has been decreasing since the beginning of the 21st century. Although sustainable, organic and biodynamic wines are a relatively young market niche, consumer trust and perception of their environmental efforts play a critical role in the long-term market success (Bonn, Cronin & Cho 2016; Doney & Cannon 1997; Ohmart 2008; Quinton & Harridge-March 2008). With a differentiated and unique product perceived as innovative and higher quality by the customer, wineries raise their product’s prices to a premium class which the customer willingly pays (Bonn, Cronin & Cho 2016; Hill & Jones 2012; Park 2017). One the one hand, eco-friendly symbolism and branding can be an honest portrayal of sustainable and environmental-consciousness operations, that aim to preserve their environments while achieving market differentiation. But on the other hand, greenwashing can take place in the form of a misleading smokescreen of eco-symbolism and buzzwords to obtain all the financial and social benefits without the active installment or execution of sustainable and environment-friendly practices.

Sustainability has emerged as a priority topic in the wine industry over the last decade (Santini, Cavicchi & Casini 2013; Wilcox 2020). Winemakers want to produce and prioritize sustainable and environmental-friendly products and processes for two reasons (Gilinsky, Newton & Vega 2016; Sarkis 2001). First, they want to ensure and preserve the sustainability and good health of the environment in and around their vines to protect it for future generations. Second, they aspire to differentiating their product and finding an advantage in the market by capturing customers’ interest

and trust, thus their patronage. When wineries produce organic or biodynamic wines for the retail market, they inherently promise the customer that their product was produced with environmental welfare in mind and in compliance with the relevant standards and regulations (Bonn, Cronin & Cho 2016). Bonn, Cronin & Cho (2016) submit that the more relevant information a prospective customer receives about the environmental-friendly wine (be it sustainable, organic or biodynamic) and its specialized supply chain, the more likely they will trust and buy said product. When customers trust the producer, they feel that they will more likely get the product they desire and as advertised (Quinton & Harridge-March 2008; Wilcox 2020). This involves trust developed between consumers and certifying bodies, although not to the same degree of producers.

Pressures from external stakeholders, such as regulatory agencies, customers and investors, can lessen because winemakers can confirm their eco-friendly or organic and/or biodynamic status on their product with proper certification and labels. Sustainable wines do not require certification and are not subject to the strict regulations and rules of organic and biodynamic winemaking. Thus, it is up to the wine producers' discretion to what degree they impose environmental and ethical sustainability in their wineries. Consumers easily misinterpreted sustainable and green wines for certified organic or biodynamic wines (Wilcox 2020). As Borg (2013) implores, this gap of understanding and knowledge is where greenwashing can easily happen. Consumer-friendly labelling and symbols include the use of non-technical phrases and sustainability buzzwords, usually accompanied by a symbol that relates to the environment, for example a bird, leaf, tree or other element found in nature.

Communication between wine producers and their customers via product marketing and labelling needs to be constantly re-evaluated and improved, especially regarding what is being done (or not being done) in the vineyards (Berge in Wilcox 2020). Much of this communication will happen in retailing, where customers are most exposed to the wine industry's supply chain (Bonn, Cronin & Cho 2016). A new dimension has been added to greenwashing in the wine industry where the social media has become more prominent (SAWIS 2019b). It has opened up communication and information sharing between producer and consumer, thus enabling wineries to convey their sustainability, environmentalism and certification in a favourable light, without consumers necessarily fact-checking said attributes. Heuck (in Wilcox 2020) contends that certification by legitimate certifying bodies is not only extremely important for a farm's environmental management system (EMS), but for its customer relations and marketing too. This is because terms like sustainability, natural, eco- and going green are subjective for customer's and they can cause confusion and misunderstanding, whereas certification is objective and reliable. A prominent hurdle

for the winery is how to communicate its certification and what it means in an understandable and enticing way for customers.

When helpful tools, like an EMS, are effectively incorporated into a business through its compliance with certification regulations and standards, sustainability practices will contribute to overall performance (Delmas 2001; Gilinsky, Newton & Vega 2016). EMSs are widely used in the South African wine industry and regarded as helpful (SAWIS 2019a). Along with implementing the necessary tools and structural reforms, information and the spreading of knowledge are of paramount importance to the success of the sustainability endeavours of a wine farm. This dissemination of information and learning is most potent when done through workshops, lectures and open, effective communication channels (Santini, Cavicchi & Casini 2013). The effectiveness of these tools was demonstrated in the trailblazing success of the Lodi region in California which boasts of being one of the most sustainable and eco-friendly wine-producing regions in the world (Ohmart 2008; Santini, Cavicchi & Casini 2013).

Sustainability is a multifaceted subject comprising three main principles: ecology (sustaining and preserving the natural resources and environment while producing within its carrying capacity); economy (improving efficiency and streamlining processes); and ethics (aiding in the welfare of employees and the surrounding community) (Gilinsky, Newton & Vega 2016; Ohmart 2008). As the sustainable, organic and biodynamic wine industry is becoming more pronounced and the consumers more knowledgeable (albeit sceptical or confused), the question of how ethically sustainable the wine is produced is becoming more persistent (SAWIS 2019a). This is especially relevant among the younger generation of consumers of sustainable wine (Agence Bio 2019; Park 2017). The ethical branch of sustainability can be easily forgotten or overlooked by consumers because it is not so prominent in their own lives as are other branches, the environment or the economy. This is wanting according to SAWIS (2019) as all the aspects of sustainability should be seen as equally important and treated as such by producers.

Park (2017) has identified three types of consumers in Spain regarding sustainable, organic and biodynamic wines. The majority (46%) are unaware of precisely what these aforementioned wines are and they are mostly unaware of the wines' existence. The second group (36%) are wine consumers who are aware of and understand the basic principles associated with these wines, yet they do not prefer to buy them. This preference is based on factors including higher price, personal perception, perceived taste and/or winery status. The remaining 19% are wine consumers aware of and fundamentally knowledgeable about sustainable, organic and biodynamic wines and who had purchased such wines in the preceding three months. Park (2017) concluded that sustainable, organic and biodynamic wine producers should not concentrate their marketing on the majority group who

are not aware of these niche-market wines. Rather they should target and convince consumers who are already aware of these types of wines, thus skipping the hurdle of having to introduce prospective, yet unknowledgeable customers to a new market.

Marketing and informative promotions (either at the wine farm itself or through wine distributors), as well as bottle labelling, should not go into tedious detail about complex sustainability, organic or biodynamic practices. This overload of information can overwhelm, confuse and distract a consumer from making a purchase, especially at a higher price than for conventional wines (Ohmart 2008; Park 2017). Yet, Ekstrand & Nilsson (2011) argue that when marketing with environmental and ethical sustainability as a goal, vague statements and a generalized pointing out sustainability efforts should also be avoided. Park (2017) suggested that producers of sustainable and organic wine should concentrate their labelling and marketing on showcasing legitimate certification and distinctiveness along with conveying a simple yet accurate message of their sustainability practices, environmental consciousness and ethical concern. This advice is in essence by Park (2017) supporting customer understanding, enhancing organizational visibility and avoiding greenwashing. Customers' choices influenced by how sustainable they perceive a wine farm's production, packaging and retailing to be (Bonn, Cronin & Cho 2016; SAWIS 2019a). Thus, not segregating sustainability to the sector of grape production and vineyard management. A rising plastic-free, carbon-neutral wine wholesaler in France, EthicDrinks, regards supply chain and production transparency to be of paramount importance to customers (Kevany 2019). This transparency will aid in building trust and hopefully resolve consumers concerns and questions regarding production sustainability.

The systematic growth of a business should be a supplementary goal to sustainability and transparency. This is necessary if a business aims to effectively compete in the industry as the sustainability market is expanding (Agense Bio 2019; Wilcox 2020). The challenge Gilinsky, Newton & Vega (2016) see is how a business will accurately assess whether the profitability of the growth over time exceeds that of the initial costs. Time is the decisive factor in contributing to the answer thus advocating for studies to be done over longer periods (Stegner 2000). A good sustainability marketing programme should centre on all aspects of the wine supply chain (Ohmart 2008). Exposure to, education about and interaction with (by cellar and vineyard tours) the production of sustainable, organic and biodynamic relevant wines should lead to increased trust by consumers (Bonn, Cronin & Cho 2016).

Santini, Cavicchi & Casini (2013) have loosely categorized wineries that implement sustainability on their non-verbal communication with customers and their marketing strategy into three classes namely devoted, unexploiters and opportunists. Devoted wineries seem to be reaping all the benefits associated with being sustainable, significantly that of green marketing and clout. Yet their marketing

strategy, prominent symbolism and labelling are set on a foundation of substantial and bona fide sustainability practices and measures, ranging in the three branches (environmental, ethical and economic) described by Gilinsky, Newton & Vega (2016). Santini, Cavicchi & Casini (2013) noted that the success of these wine producers' sustainability efforts and marketing were found in their upfront and understandable product-to-customer communication, employee training and education and the effective communication and understanding between all sectors in the winery.

The unexploiters (also described as laggards) inform no one, including their clients, of their adoption of sustainability practices. This robs them of many benefits of green marketing and the sustainability pitch usually delivered to customers in the main form of symbolism, logos and buzzwords. When comparing this approach to that of the devoted wine farms, the question is raised why the unexploiters choose to not show their sustainability orientation? A possible explanation supported by SAWIS (2019) is that they choose to not be associated with the potentially confusing terminology, niche market and strict standards and regulations imposed on other wine farms (if they are not obligated to show organic or biodynamic certification). In clear distinction to the unexploiters are the opportunists who enthusiastically highlight whatever sustainability practices they carry out, no matter how trivial. According to Bowen's (2014) definitions of greenwashing, wine farms in the opportunist category can easily be regarded as guilty of greenwashing. Opportunists seek the green market clout typically exploited by the devoted wineries.

Organic and biodynamic winemakers employ the ecological, economic and ethical principles of sustainable agriculture, but the degree of incorporation depends on the adopting wine producer. How and to what degree they market and display their subsequent sustainability to the consumer and industry differentiate them as devoted, opportunists or unexploiters, thus also the level of greenwashing they employ.

2.6.1 Labelling

Although not necessarily greenwashing by definition, green and sustainability-related labelling, accolades, logos and certification can all easily contribute to wine consumers' confusion and distraction. Colourful logos, labels and certification stamps are added to the regular bottle label, along with the mandatory information prescribed by Regulations of the Liquor Products Act, namely ml, alcohol per volume, health warning and origin (WOSA 2020) All other logos and seals are voluntary except those of organic and biodynamic certifiers. These items are illustrated and discussed in this section. Accolades and stickers pertaining to awards won by wines are usually displayed on the wine bottles to grab buyers' attention and inform them about an exceptional ratings or awards wines have received. Examples of the accolades and stickers for the 2013 Shiraz Mourvèdre Viognier (SMV) blend of Waverley Hills Organic Wines are shown in Figure 2.8.



Source: Waverley Hills (2020: s.p.)

Figure 2.8 Accolade stickers used on wine bottles

A logo widely used in the South African wine industry is that of *Euro Leaf* introduced in July of 2010 to replace the arguably misleading and slightly convoluted previous label, the latter shown on the left of Figure 2.9. As a combination of the EU flag with a green leaf, symbolizing nature, the EU wished to simply yet effectively convey the message that the product complies with EU organic regulations (European Commission n.d. (a); European Commission n.d. (b); *The Independent* 2010). The label is unsuccessful in its goal, when a consumer is unfamiliar with the fundamental image of the EU flag and does not understand what the leaf represents. The message the label is trying to communicate regarding the product gets lost.



Source: European Commissions (n.d.(a): 4)

Figure 2.9 European Union organic logos

2.6.2 South African labels

Other labels and certifying stamps used on South African sustainable, organic or biodynamic wines can be deemed successful in communicating bona fide sustainability and environmental (and ethical) consciousness and efforts to the consumer. Three logos are discussed briefly here, each focusing respectively on a different branch of sustainability as proposed by Gilinsky, Newton & Vega (2016), that is economic, environmental and ethical. The most influential certification label of the three is that of the Sustainable Wines South Africa (SWSA). SWSA was formed as an alliance between

Wines of South Africa (WOSA), the Wine and Spirit Board (WSB) and the Integrated Production of Wine (IPW) scheme (WOSA 2020). This certification declares the legitimacy of the origin of the wine, its variety and vintage as stated by the producer on the label. This specific label is applied to the neck of each WSB-certified wine in South Africa although it does not have any more applicability to organic and biodynamic wines than it does to conventional wines. If a wine producer chooses not to certify with the new SWSA sustainability label (shown on the left in Figure 2.10) they are obliged to use the standard IPW label (seen on the right in Figure 2.10). The essential certification information (serial and identification numbers) communicated on the SWSA label is more relevant to producers and wholesalers whereas the buzzwords (sustainability, integrity and certified) and resource portal (website) aim to inform consumers.



Source: Author's own (2020)

Figure 2.10 SWSA and IPW labels

With more than 90% of South African wines certified under the SWSA, a new branch was formed to allocate limited resources to leaders in the sustainability field. The scheme was originally called the Biodiversity and Wine Initiative (BWI) spearheaded in 2004 by the World Wide Fund for Nature South Africa (WWF-SA) and complied with the Integrated Production of Wine (IPW) (Bridgman 2009; WOSA 2020). The initiative was renamed Conservation Champions (CC) in 2015 and examples of its labels are shown in Figure 2.11. As with the SWSA certification, the WWF-SA label makes use of sustainability buzzwords and provides the official website. Currently, there are 38 Western Cape wine farms and wineries recognized as CCs, with three of them certified organic, namely Spier, Waverley Hills Organic Wines and Waterkloof Wines (WWF-SA 2018). Kotze (in Bridgman 2009) has explained that the sugarbird and protea symbolism successfully communicate the accent on the conservation of Cape fynbos and its associated winelands. The requirements to become a CC is a minimum 70% score of an IPW audit; exceptional sustainability practices in biodiversity, water and energy; a signed environmental management plan; and a landowner agreement (WWF-SA 2018).



Source: WWF-SA (2020: s.p.)

Figure 2.11 Labels of Conservation Champions in 2020

A major benefit of the accolade, according to WWF-SA (2018), is market differentiation and customer trust, both of which could boost sales. The conviction is that the logo helps consumers recognize, support and buy the wines of winemakers who have active and legitimate sustainability and environmentally conscious practices in place. These practices can to varying degrees be “exceptional conservation” (WWF-SA 2018: s.p.) but not defined in detail and development but have all been deemed successful and pertinent by the WWF as stated in their latest criteria. Thus, according to Bonn, Cronin and Cho (2016) and Park (2017), when consumers are more familiar and trust the organization, the chances of patronage are greater and the possibility of consumer-perceived greenwashing is reduced. Waverley Hills Organic Wines is the only farm that participated in this study that was found to be part of the group. As the first organic wine farm, they were introduced in 2006 (WWF-SA 2018). When asked what impact the change from BWI to CC had on Waverley Hills, Delpont (2020, Pers com) answered rather nonchalantly that it’s all about marketing. When the campaign was the BWI it fell under WOSA and currently it falls under the WWF. This change did not have much effect, advantageous or not, on Waverley Hills but it may have caused some loss in marketing potential (Delpont 2020, Pers com).

Other noteworthy labels that add to sustainability-related consumer informing are those of the Wine and Agricultural Ethical Trade Association (WIETA) and Fairtrade International (the Fairtrade Label South Africa amalgamated with the international office in 2017). South Africa is currently Fairtrade International’s premier wine-producing country (SAWIS 2019a). Examples of WIETA and Fairtrade’s certification labels can be seen in Figure 2.12. Both certifying bodies pay special attention to improving and ensuring health and safety standards and ethical treatment of all workers on the associated wine farms and producers (SAWIS 2019; WIETA 2019). The representation of people in their labelling testifies to their focus on the ethical and fair treatment of the workforce, WIETA’s

emblem is more informative and industry specific than that of Fairtrade, but this is understandable as Fairtrade International does not only work with the wine industry.



Source: WOSA (2020: s.p.)

Figure 2.12 Fairtrade labels

2.7 OLD VINE PROJECT AND CERTIFIED HERITAGE VINEYARDS

The Old Vine Project (OVP) was founded by viticulturist Rosa Kruger in 2016, following 14 years of research about and searching for South Africa's old vines (Kruger 2020). The project aims to preserve South Africa's old vines because they add adventurous character and complexity to a wine, so naturally old vines are to be revered in the top wine-producing countries. OVP also established the Heritage Vineyards seal shown on the bottlenecks of certified old vine wines. This seal is shown in Figure 2.13, together with Reyneke's Heritage Vineyard plaque which is on displayed at the entrance to the farm's tasting area. Eight of the 26 certified biodynamic wine farms house certified old vines (Certified Heritage Vineyards 2020).



Source: Author's own (2020)

Figure 2.13 Bottleneck label for old vine wines

A spotlight is also placed on caring for young vines and considering alternatives to uprooting vines. The project is based on statistics counted by SAWIS and funded by entrepreneur and billionaire Johann Rupert (Fridjhon 2020). The OVP regards any grapevine older than 35 years as an old vine. The project also aims to increase the market value of South African wine grapes by emphasizing the quality of older vine yields, thus also reducing the need for vine uprooting. In association with the University of Cape Town's Graduate School of Business, Kruger (in Fridjhon 2020) found that, considering all input costs and other factors, wine made from old vines adds approximately ZAR100 value to one bottle of wine. Thus, at the currently rate of ZAR12 000 per ton for grapes, old vine grapes will fetch ZAR60 000 per ton on the market. This increase will be extremely beneficial to the industry, especially for the export market.

2.8 CONVERSION TO ORGANIC AND BIODYNAMIC

In this everchanging environment, organic and biodynamic agriculture is a derivative of making and encouraging an easier path for nature to adapt to a less predictable and stable climate (Krzywoszynska 2012). Yet, adoption and conversion to biodynamic and organic winemaking are not as straightforward as other innovation-adoption, say the telephone-to-smartphone process. This is because the principles and cornerstones of these methods challenge the conventional and traditional beliefs and practices of common and modern agriculture (Castellini, Mauracher and Troiano 2017). A comparative study of organic and conventional olive farming in Andalusia, Spain, found that organic farming bested conventional farming on the economic, environmental, technological and socio-cultural criteria (Parra-Lopez, De-Haro-Giménez & Calatrava-Requena 2007). Organic agricultural practices proved to be more valuable and a viable alternative to olive farming. Yet these positive outcomes did not come without a price and risk.

Conversion to organic farming overthrows the whole of a farm's system, not only one segment or operation (Padel 2001). It has been shown that farms find it easier to experiment with small sectioned-off blocks and gradually add more organic and homeopathic techniques. This can of course produce inconclusive results as a farm is regarded as a whole entity with interconnecting systems (Vereijken, Van Gelder & Baars 1997). The majority of biodynamic wineries are small-scale, family-owned businesses, which is not the case with organic wineries which are usually larger in scale (Castellini, Mauracher & Troiano 2017). Nonetheless, the option to adopt an innovation does not involve a lackadaisical decision. As organic and biodynamic winemaking are extremely complex, the diffusion of the innovation is a very slow process which can span over many years (Djokoto, Owusu & Awunyo-Vitor 2016; Drape et al. 2013; Mirela & Dejan 2014). Therefore Demeter (2019) recommends the compiling of a conversion plan as a guideline containing biodynamic aims, standards, regulations and practical steps which can be approved by the chosen certifying body (but

will not be binding). This plan will also detail how to minimize the existing environmental contaminants like possible spray drift from neighbouring farms or pollutants from nearby heavy traffic. To obtain Demeter certification, the whole conversion process of the farm needs to be completed within five years. Nonetheless there are many encouraging factors for conversion.

2.8.1 Factors encouraging possible conversion

Converting to organic farming and winemaking is initially costly but with a rapidly growing market (Bonn, Cronin & Cho 2016; Checkers 2018; Delmas & Lessem 2015) and healing reputation (Cohen 2018; Delmas, Gergaud & Lim 2016), organic conversion can lead to increased economic gain. Farmers are adopting and converting to organic agricultural practices based on a range of motives and aims, the most notable being environmental reasons and financial gain (Padel 2001). In the initial phases of organic agriculture and adoption, the main reasons of the pioneers for adopting and converting were their ethical, philosophical and ideological beliefs (Hall 2003; Padel 2001). As the innovation takes hold and the results become more concrete, other reasons for adoption and conversion become more prominent. These real results are increased sustainability and use of eco-friendly methods, as well as financial gain. Other outcomes are long-term cost savings, job-creation, elitism, social and communal contribution and an overall increase in farm 'health' and self-sustainability. Advocates for natural wine believe that conventional and modern winemaking traps and limits wine to artificially made standards and expectations (Buranyi 2018; Vereijken, Van Gelder & Baars 1997).

The financial implications of biodynamic and organic winemaking depend on many factors, the main factors being vineyard size, vine density, climatic conditions and the subsequent quality of the grape and wine. Compared to conventional winemaking, biodynamic and organic winemaking has the opportunity to spend less money on weed and pest control, as well as fertilizers and nutritional supplements. This is thanks to the 'reuse and recycle' nature of biodynamic and organic winemaking, where produce and existing material on the premises is reused as compost and for pest and weed control. These materials do not have to be bought. Nevertheless, the cost of growing organic wine grapes is 10% to 15% higher than for conventional growing of wine grapes when considering the essential processes in the vineyard. Biodynamic grape growing is even more expensive with costs ranging 20% to 35% higher than for conventional grape growing along with a 20% to 30% lower yield per acre of the former type (Delmas & Grant 2014). The operational and production costs inside the winery and cellar are approximately the same for conventional, organic and biodynamic winemaking. The main costs are for the barrels, storage, bottling, labelling, labour, marketing, sales and basic overheads (Delmas & Grant 2014).

In contrast to Delmas & Grant's (2014) findings, Johan Reyneke of Reyneke Wines reported in a recorded interview (Tekweni 2016) that an initial costly investment is needed, but the subsequent costs are dramatically lower than those of a conventional winery. An experiment at Reyneke Wines comparing vineyards with added effective micro-organisms (a sustainable inoculant used by organic and conventional wineries) with vineyards treated with a staple biodynamic method called Preparation 500 (as seen in Appendix C). Reyneke (in Tekweni 2016) stated that both methods did very well and produced favourable results compared to a control vineyard, but the real distinction was their pricing. The effective microorganisms' cost a total of ZAR30 000, whereas only approximately ZAR300 was spent on the biodynamic preparation and application (Tekweni 2016). Reyneke (in Tekweni 2016) claimed that the positive results and increased farm health eclipsed any pre-existing conventional scientific paradigm and scepticism. Challenging factors may also hinder possible adoption and conversion.

2.8.2 Factors hindering possible conversion

On looking past industry criticism and fault-finding from outside, there are obstacles to conversion that originate within the winery and farm. A prominent obstacle for farms desiring to or currently converting to organic farming are the perceived and/or real risks (Padel 2001). These risks include financial loss, crop reduction, reduced crop quality, total crop failure, revenue reduction, increased labour costs and jeopardization of reputations. Eventually the lower the risk, the easier adoption can take place. Together with the risks of adopting, other complications may arise that can hinder and even discourage adoption and conversion. A few examples given by Waldin (2004) are; certification constraints and fees; communal and land-lord or landowner objections; difficulties obtaining a grant, loan or insurance; agricultural community-driven ostracization and isolation; and animals requiring supplemental feed in semi-arid and arid climates.

Sustainable agricultural techniques and approaches are important not only for global and local food safety, but also for increasing an active job-creating role in the community (Schmidhuber & Tubiello, 2007). Organic and biodynamic winemaking are extensively labour intensive, forcing the use of skilled labour as well as a more focused hands-on approach (Smith & Bargaín 2007). When applying and maintaining methods like cover crops, knowledgeable and skilful management is necessary (Meissner et al. 2019). Regarding biodynamic winemaking, mechanical and technological appliances and machinery are avoided and replaced by the most basic agricultural tools and animals. Negro, Hannan and Fassiotto (2015) found that French biodynamic winemakers and farmers reported that their workload has increased by approximately 30% because of the more intensive labour requirements, planning and very specific application times required for biodynamic wine grape farming.

Developed countries have a greater emphasis on sustainability and being increasingly environmental-friendly. Thus, organic and sustainable agricultural practices are being better exposed to the public eye naturally for having a bigger market and growing interest. Organic and biodynamic wine consumption has increased significantly in the past decade (Castellini, Mauracher & Troiano 2017). There has been increased production of O/Bio wines from main producing countries like France and Italy, as well as increasing demand by large-scale importers such as the USA, China and Japan (Stolz & Schmidt 2008). Hoffman (in Waldin 2004) found that wine farmers experienced the jump from conventional to biodynamic or organic to biodynamic much less intimidating once they had understood the natural and holistic benefits better. The more complex an innovation seems (regardless if it is or not) the slower adoption will happen (Padel 2001)

2.9 ORGANIC AND BIODYNAMIC WINE TOURISM

Wine tourism is regarded as a niche sector (Cagnina, Cicero & Osti 2018), thus organic and biodynamic wine tourism can be regarded as even more exclusive. Wine-specific events and festivals are beneficial ways for organic and biodynamic winemakers to display and communicate what makes their wines different from conventional wines (Cagnina, Cicero & Osti 2018). Wine festivals, such as the Stellenbosch Wine Festival or the Tops at Spar Wine Show in Cape Town, are held with many conventional, organic and biodynamic winemakers and other artisanal liquors producers in attendance. According to Top Wines SA (2020), the Western Cape would have hosted 68% of South Africa's wine-focused festivals between January 2020 and December 2020, the majority of which was cancelled due to COVID-19. Wine farms in the Western Cape also host annual harvest festivals, usually on their own premises. These events are ideal opportunities for producers of organic and biodynamic wines to expose the festivalgoers to their wines and communicate with them. Specialized tours of organic and biodynamic wineries are also arranged in the Western Cape. Explore Sideways is a private luxury tour agency offering 15 different wine tours, among which is their 'Sustainable and organic wines tour' (Explore Sideways 2018). This full-day private tour visits three farms, two of which Reyneke and Avondale, participated in this study. The third farm, Joostenberg, is a certified organic wine farm (BOWSA 2020). Organic and biodynamic winemaking is described on the tour webpage as "South Africa's latest revolution in winemaking" (Explore Sideways 2018, s.p.). Croatian PhD student Matija Lesković, owner of Basewent Wines (a private Stellenbosch wine masterclass) stated that people are opening up to organic and biodynamic wines in South Africa (Lesković 2020, Pers com).

The business was established at the start of 2020, yet all proceedings were halted as COVID-19 lockdown commenced in March 2020. Organic and biodynamic wines are included in their tasting selection. Basewent's customers consist approximately 50% of South Africans (especially people

from Gauteng) with the remaining customers come from the UK, USA and Northern European countries. Organic and biodynamic wines are better known and have a bigger market in these countries compared to South Africa (Lesković 2020, Pers com; Reyneke 2020, Pers com; SAWIS 2019b).

2.10 CONCLUSION

Organic and biodynamic winemaking is practiced predominantly in European countries but there is a growing number and an emerging market in South Africa (Lesković 2020, Pers com; Pretorius 2020; SAWIS 2019b), thus resulting in a variety of studies that are very location specific. It is clear this is a hinderance to research as so much of wine and its production is connected to geography, climate and soil (making up the main components of terroir). Little literature was found that is based on research done on South African organic and biodynamic agriculture, especially wine grape vines. Thus, this study aims to add to the research available in a South African context with the help of case studies provided in Chapter 3. Timely statistics, relevant information, tables and figures are used in conjunction with various studies to grant an adequate backbone on which the study can be built.

CHAPTER 3 CASE STUDIES

3.1 INTRODUCTION

This chapter reports on six case studies of organic and biodynamic wine farms in the Western Cape. In July 2020, South Africa had 21 certified organic wine farms and two being Demeter-certified biodynamic wine farms (BOWSA 2020). Since October 2020, the Western Cape has been the location of 25 of the country's 26 certified organic wine farms (increased by five farms since July 2020) with two farms being additionally Demeter-certified biodynamic wine farms.

The situation regarding biodynamic wine farms in South Africa is peculiar as it is practiced by an extremely small group of farmers and required an alternative approach in this research. Because, at the time of the study, there were only two Demeter-certified biodynamic wine farms in South Africa, the owners of both were approached to be interviewed for the study. Only one replied. The need for information about and purposeful conversations with owners of this niche segment of viticulture and winemaking led to a wider search for any Demeter-certified biodynamic farm and any other biodynamic wine farms that are organic certified even if they are not Demeter-certified. Thus, the scarcity of available biodynamic farms resulted in the inclusion of Bloublommetjieskloof (a fully Demeter-certified farm owned by the Chairperson of BDAASA) and Avondale (a fully organic certified wine farm using full biodynamic methods on all of the vines) in this study. The reasons why Avondale chose to forgo Demeter biodynamic certification are explained in Chapter 4.

The required primary information about the participating farms was acquired through interviews with farm owners and winemakers. All the interviewees answered all the questions fully except two who preferred to answer certain questions in a minimalistic way without any further explanation or commentary. Interviews were also conducted with Annalize Steenkamp, owner of Breaking Ground Organics, one of two organic-certified seedling and seed distributors in South Africa and Matija Lesković, proprietor of Basewent Wines.

3.2 CASE STUDIES OF ORGANIC WINE FARMS

Representative of all six case-studied farms were regarded as suitably qualified to answer questions and give opinions on organic winemaking and viticulture by virtue of their farms being validly certified by legitimate third-party certifying bodies in South Africa and in compliance with EU and USDA NOP regulations.

South Africa's best wine grape harvest in the past century was in 1974 when exceptional yields and quality were recorded (Van Zyl 2020, Pers com). It is believed to be the result of the vineyards not being exposed to any pesticides, herbicides or other synthetic chemicals. The biocides had previously been systematically degrading the soil and making the vines dependent on them. These synthetic

chemicals are equivalent to humans only eating junk food that over time degrades health and leads to reliance on them (Steenkamp 2020, Pers com). Reyneke (2020, Pers com) pointed out that current demand for organic wines exceeds supply, despite record harvests. This provides hope that organic winemaking will be increasingly adopted in the future.

3.2.1 Waverley Hills

“It opens a lot of doors for your wines.” (Delpont 2020, Pers com)

Waverley Hills Organic Wine Estate is based at Wolseley between Tulbagh and Ceres where it is visibly secluded from other wine farms and buildings. The interview was conducted with the resident (since 2008) winemaker Johan Delpont. The surrounding area (as seen in Figure 3.1) consists mainly of the Witzenberg’s foothills, covered with fynbos on water-saving limestone and yellow clay preserved in partnership with the CapeNature Stewarding Nature programme (Delpont 2020, Pers com; Waverley Hills 2020).

3.2.1.1 The property

The farm of 140 ha with 30 ha under vine (BOWSA 2020), has no animals except the random wild cat and birds of prey, as well as a few olive trees which are used to produce olives in brine. The olive trees are not organic and they are separated from the vines. The olive trees were organic until 2016 but are now sprayed with conventional biocides. The farm mitigates herbicide spray drift and cross-contamination from the olive trees to the vines simply by applying the herbicide meticulously on wind-still days and hoping for the best (Delpont 2020, Pers com). The main reason why the olive trees are no longer organic is that the weeds under and around the trees were using too much water assigned to the trees. Delpont (2020, Pers com) reported that “On an organic farm, your biggest challenge is weed control.” It was also contended that olive farming was economically impractical because olives could not be cultivated to their optimal potential under organic regulations and guidelines.



Source: Waverley Hills (2020: s.p.)

Figure 3.1 The Waverley Hills setting

Upon the first impression, the farm and vineyards are very neat and meticulously laid out, reminiscent of the top conventional wine farms around Stellenbosch and Franschhoek. The award-winning organic wines, significant exports (Delpont 2020, Pers com) and 100% organic vines, Waverley Hills is testimony to pro-organic wine farms being able to compare favourably with prestigious conventional wine farms in all aspects. The isolated location is favourable for viticulture. The chances of diseases spreading and spray drift directly from other farms are slim and the open space around the farm allows for good wind ventilation of the vines so decreasing the probability of moulds and sicknesses (Delpont 2020, Pers com).

The farm's wine-tasting area and restaurant with their wooden and leather furnishings lit by a prominent fireplace, are complemented by the surrounding fynbos. A short informal, yet informative (anonymous) conversation was had with a tasting-room employee who had worked there for many years. It was explained that the tasting room and restaurant were usually full and bustling, especially with (foreign) tourists doing day trips by buss. Over the years there had also been an increase in curious South Africans from all over the Western Cape who generally purchased a bottle or six of the farm's organic wine. The tasting room also experienced many recurring South African customers (Anonymous 2020, Pers com). Delpont (2020, pers com) conjectured that the gradual increase in visitors has necessarily because of the farm's organic methods of wine production, rather the whole experience on the farm and the outing to the secluded location.

3.2.1.2 World's best organic wine

In 2018 Waverley Hills won a quality award for the best organic wine in the world for their 2013 Shiraz Mourvedre Viognier (SMV) blend at the International Wine & Spirit Competition (IWSC). A bottle of the wine and the award documentation and labels are shown in Figure 3.2.



Source: Waverley Hills (n.d: s.p.)

Figure 3.2 The world's best organic wine in 2018

Eight other awards for this vintage were won in 2018, six gold, one ‘four stars’ and one platinum. Accolades and prizes have also been received for other vintages, the most recent being a score of 98/100 at the tenth anniversary of the Grand International Organic Wine Awards in Germany in 2019. The Top Gold accolade was awarded to the SMV 2014, so endorsing the fact that only Southern hemisphere red and white wines received scores above 95 out of 100. The 2017 Shiraz and 2018 Chardonnay were awarded gold and silver ratings respectively (Waverley Hills 2020).

3.2.1.3 Organic conversion and certification experience

Waverley Hills has been an organic farm since its establishment in 1990 and the conversion period was its first three years. The first wine vat was filled in 2004 and the first wine sold in 2008. The farm is organically certified by EcoCert and, according to Delport (2020, Pers com), Waverley Hills have a positive relationship with them and is familiar with the whole process which runs smoothly each year. The conversion was implemented all at once and since the farm has been organic since its establishment the conversion costs were regarded as normal running costs. Although, in Delport’s (2020, Pers com) opinion, there is not a big difference between the cost of conventional and organic production, there are significant certification costs when the organic conversion is complete.

3.2.2 Laibach

“For me, wine is about textures, tannins and layers, the same with food. It can look great but if the flavour, textures and layers are not there, it’s bland and boring. It needs an x-factor and that is what organics are giving our wines.” (Van Zyl 2020, Pers com)

Laibach Organic Wines was established as a conventional wine farm by Friedrich Laibach in 1994 (Laibach Organic Wines 2020). Organic conversion began in 2000 after Dr Petra Laibach-Kühner, a top cancer researcher from Germany and Friedrich’s daughter, came to South Africa after having done extensive, but unpublished, research on herbicides and pesticides linked to the development of cancer cells in humans (Van Zyl 2020, Pers com). The interview was conducted with the winemaker and cellar master, Francois van Zyl.

3.2.2.1 Location and property

Laibach is located in the midst of the Greater Simonsig wine area on the R44 where it is almost fully surrounded by the conventional wine farms Warwick, Marklew and Lievland. With a view of Table Mountain, are Laibach’s modern cellar, an outstretched viewing deck and Laibach Lodge. The farm has no animals and it is self-proclaimed to be focused more on organic grape and wine production than on ecological conservation and sustainability, that is: “Sustainability is not keeping proteas or small animals alive on a farm, it’s cash flow and profit” (Van Zyl 2020, Pers com). The respondent explains that to conserve the surrounding nature and biome needs finances which are derived mainly from the farm’s wine, not from intricate gardens or the number of endangered plants conserved. This

may seem harsh compared to the ecocentric and compassionate views of some of the other participants (especially the biodynamic farms), but Van Zyl (2020, Pers com) is correct in saying that without money no wine farm, organic or not, can survive because at heart a wine farm is a business.

The neighbour-surrounded location of Laibach raised the question of biocide spray drift and how it is mitigated and avoided at Laibach. Van Zyl (2020, Pers com) shared the sentiment of Delpont of Waverley Hills, but here from a non-sprayer's perspective. He stated that one cannot entirely fight it, only hope that the surrounding farms spray on wind-still days, especially on the larger conventional farms situated south of Laibach, like Kanonkop. Luckily, Van Zyl is a good friend of Kanonkop's winemaker, Abrie Beeslaar, resulting in good communication and pre-emptive warning of planned sprays. Nevertheless, it has unfortunately happened that spray has reached Laibach's vineyard and tested positive for biocides, although it is not possible to determine exactly where the spray came from, only the general direction. Re-testing of leaves and positive results closer to important seasons like harvest cause those grapes to be sold separately as conventional, as they are regarded to be contaminated (Van Zyl 2020, Pers com).

An eco-friendly method of pest and disease detection and initial 'distraction' is seen in the form of roses planted at the ends of rows of vines at Laibach (Figure 3.3). Although this photography was sourced from the Reyneke Wines (2020) Dropbox (graciously shared to aid the study) the principle and the method are the same on both farms. The roses are more vulnerable to pests and diseases thus showing the telltale signs of pests or diseases earlier than the vines do so that treatment can be done to prevent further spread.



Source: Reyneke Wines (2020: s.p.)

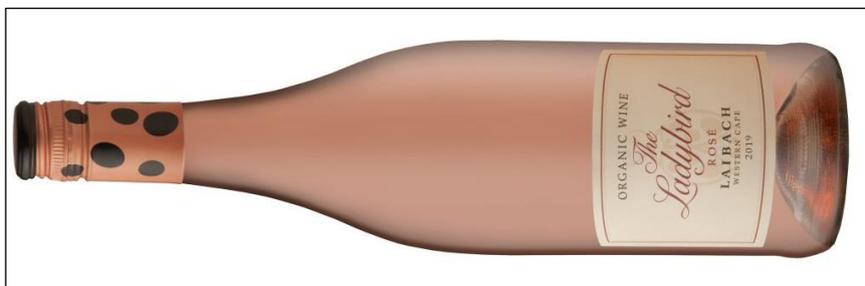
Figure 3.3 Roses to detect pests and diseases

3.2.2.2 Achievements, exports and the Ladybird wine

With a warm, dark-wooded interior, the cellar and tasting area have an inviting timeless and stately style while paying homage to Laibach's French-inspired wines and German heritage. After receiving the Koöperatieve Wijnbouwers Vereniging's (KWV) viticultural student of the year prize and training as a winemaker, Van Zyl graduated from Elsenburg Agricultural Training Institute in

Stellenbosch in 1999. He then travelled widely and took part in many harvests around the world, from Spain and France to Serbia, where he gained invaluable knowledge of and experience in winemaking. According to Van Zyl (2020, Pers com), the knowledge and skills of a good organic winemaker are obtained 10% through literature and lectures and the remaining 90% through experience and a ‘gut feeling’ that comes with time.

Laibach’s primary market is local with 80% in South Africa and the remainder is exported to the UK and Europe, especially Belgium. The latest addition to their wine awards is five stars and the Natural Sweet Wine of the Year for the 2020 vintage of Laibach Classic Natural Sweet. Two wines, a 2016 red blend and 2017 white blend of their flagship brand, Ladybird, won gold at the Asia Import News (AIN) wine awards (Asia Import News 2020). Ladybird is Laibach’s most popular wine, to the extent that Van Zyl (2020, Pers com) boasted that the Ladybird brand is better known than Laibach itself. A bottle of a Ladybird rosé is illustrated in Figure 3.4.



Source: Laibach Organic Wines (2020: s.p.)

Figure 3.4 Laibach’s Ladybird wine

In 2004, the first 3000 bottles of Ladybird constituted 2% of the farm’s wine production, but this has grown exponentially since then. Currently, Ladybird wines make up 95% of Laibach’s wine production with a white blend, sauvignon blanc, Chenin blanc, red blend, Methode Cap Classique (MCC) and rosé vintages on offer (Van Zyl 2020, Pers com). Van Zyl emphasized the importance of knowing one’s market and customers. Some 75% of Ladybird’s buyers are women and Van Zyl ascribes this to the label, the name and the organic status of the wine. He reported that Ladybird did not sell on golf course in England because it is a male-dominated domain, but it sold very well in supermarkets where the majority of women buy wine. This concurs with Grainger’s (2009) contention that in the UK, women feel less intimidated, better informed and more inclined to buy wine from supermarkets where the wine is “de-snobbed” (Grainger’s 2009: 129).

3.2.2.3 Organic conversion and certification experience

Laibach’s organic conversion started as a 6-ha experiment and the conversion was deemed very successful. The reasons given by Van Zyl (2002, Pers com) for the successful conversion are zero crop losses, prominent market differentiation and outstanding quality wines. The only adversity that

accompanied conversion was the load of added administration, which took all three years of conversion to master. Regarding the costs associated with organic certification, Van Zyl (2020, Pers com) reckoned that they are quickly recoverable if the wine is of a good quality and sells well. The risk is justified on the condition of profitable sales. If an organic wine business only sells grapes in bulk other wineries and cellars, they will lose and the risk will not be worth the associated costs (Van Zyl 2020, Pers com). At Laibach, the costs of organic farming are lower than those if they had chosen to farm conventionally, but the lower yields and smaller harvests significantly decrease that gap. Accordingly, Van Zyl (2020, Pers com) commented that the decreased cost of organic farming should not be seen as a driving factor to convert.

Laibach is certified with EcoCert as organic and Van Zyl (2020, Pers com) deems the EU and USDA standards to be good, although some regulations do not, in Van Zyl's opinion, make sense. The certification process is 'nerve-wracking' because human error in the inspection process or in the copious volumes of administration can easily lead to transgressions or non-conformities. Thus, Van Zyl (2020, Pers com) considered the certification process to be 95% credible.

3.2.3 Jacques Germanier

“It is not just green farming, it is putting back and giving back to the earth as we are taking” (Marais 2020, Pers com).

Jacques Germanier is based on Sonop wine farm outside Paarl and it is named after its founder, a Swiss wine expert who passed away in 2017. Jaco Marais, the resident winemaker, explained that the founder was fully convinced of organic winemaking and pursued his passion for it, despite negative criticism and advice about it given by consultants. The farm produces exceptional wines, mainly destined for export, with 26 awards (none less than bronze) between 2014 and 2019, of which 16 are gold divided between nine different varietals (see Figure 3.5).



Source: Jacques Germanier (2018: s.p.)

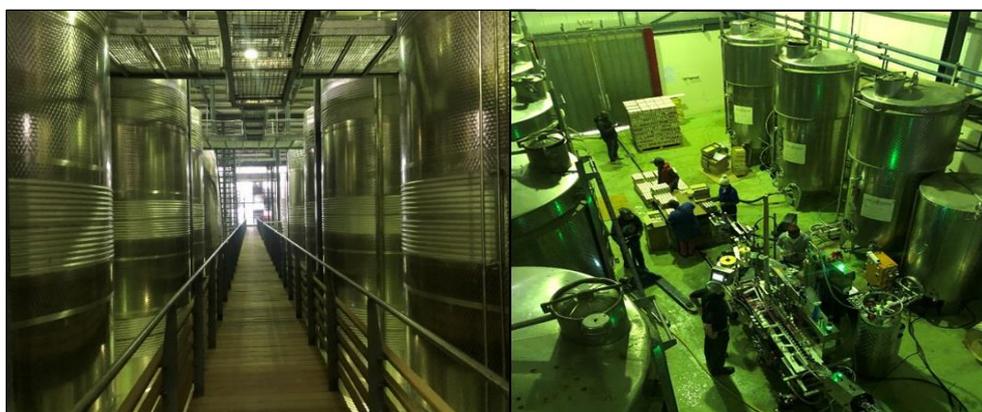
Figure 3.5 Jacques Germanier's award-winning white blend

3.2.3.1 Location and property

The farm is situated less than 17 km from the centre of Wellington and 18 km outside of Paarl at the south-easterly foot of the Paardeberg. It has 75 ha under vines and 100% of these vines are organic and considered to be mature vines as they are 20 to 22 years old (Marais 2020, Pers com). The older

vines naturally produce a lower yield which Marais (2020, Pers com) recons is not to be ideal when one is growing grapes organically with characteristically decreased yields. Surprisingly, the farm does not have a tasting area or lounge as commonly found on wine farms. Marais (2020, Pers com) explained they do not actually cater for visitors as ‘almost all’ of their wines are exported. The farm does however own a guest house (currently closed due to COVID-19) and a function area for about 80 people. The farm has no animals except the winemaker’s dogs.

Jacques Germanier was the only wine farm in the study that provided cellar services to other organic wineries. All processes after grapes have been harvested and cleaned can happen in Germanier’s hired cellar. There are crushing facilities, 4.3 million litres of tanks and labelling equipment available in Jacques Germanier’s modern cellar. On the day of the interview, Stellar Organic Wines’ wines (also a certified organic wine farm in the Western Cape) made use of their services and were busy ‘bottling’ wine in cans.



Source: Author’s own (2020)

Figure 3.6 Jacques Germanier’s extensive and well-equipped organic wine cellar

3.2.3.2 Organic conversion and certification experience

The farm’s organic conversion was deemed to have been successful with processes being implemented all at once. Organic farming started when the vineyard was established so that the grapes produced in the standard first three years, were not sold as organic as the operation was waiting for certification from Control Union. Marais (2020, Pers com) stated Control Union was chosen as their organic certifier because the certification is according to EU and USDA standards, and Control Union is a reputable company. Since 2018, Jacques Germanier has also been organic certified by the Chinese Hangzhou Gelu Certification Company (GRIT). (GRIT is discussed in Chapter 4). Conversion to these standards was not necessary as they are very much the same as the EU and USDA regulations, with a few sulphur exemptions (Marais 2020, Pers com). When discussing hesitancy to convert to O/Bio winemaking, Marais (2020, Pers com) did not confirm that the farm’s founder was hesitant, but he did opine that people in the industry are very hesitant to convert. He

explained that given the ongoing drought, countrywide economic struggles and a pandemic on top of it all, farmers would be even more hesitant. He knows conventional farmers who think that Jacques Germanier is “mad” for being organic (Marais 2020, Pers com).

Other than a few instances of cross-contaminated leaves and soil because of spray drift from neighbouring farms, no big problems or inconveniences have happened during certification. (Spray drift occurrences and related actions are discussed in Chapter 4). The main consensus of this part of the interview was that Marais (2020, Pers com) deems certification necessary, thorough and very helpful overall, although the certification costs are extremely high.

3.3 CASE STUDIES OF BIODYNAMIC FARMS

These biodynamic farmers have a contagious enthusiasm rooted in their synergistic and holistic views, almost as if they are deriving energy from the interconnected and buzzing atmosphere on their own respective farms. The recurring focus on stewardship and adding to nature, and not controlling it, was a main difference found between the interviewees of the organic-only wine farms and those of the biodynamic farms. Although wine cannot be made without some sort of additives, growing of vines does not need to be detrimental to the soil health (Lesković 2020, Pers com). When organic and biodynamic winegrowers do add certification-allowed additives like sulphur and copper, the additives must be organic and made to protect the vines with the least effect on soil health.

Reyneke (2020, Pers com) from Reyneke Wines, Grieve (2020, Pers com) from Avondale and Lilje (2020, Pers com) from Bloublommetjieskloof all expressed the similar sentiment when asked if they would recommend biodynamic agriculture to conventional and organic farmers: yes, but only if they were open to it. The consensus was that people will not readily accept something so ‘strange’ if it is “pushed down their throats” (Reyneke 2020, Pers com) The interviews confirmed that, overall, biodynamic products need more recognition and exposure in South Africa as they are top-shelf quality products exported to demanding and meticulous customers in countries like Norway, Denmark, Germany and Switzerland (Lilje 2020, Pers com). Steenkamp (2020 Pers com) commented that in certain European countries the Demeter trademark may even be as well-known as Coca-Cola.

3.3.1 Reyneke Wines

“It’s bound to show in your farming style what you believe in” (Reyneke 2020, Pers com).

Reyneke Wines was established near Stellenbosch in 1988 by Johan Reyneke. All 57 ha of the vines are organic and biodynamic on 12- ha farm called Uitzigt which dates from 1863 (Reyneke Wines 2020).

3.3.1.1 The property

On the farm one is surrounded by vibrant nature. During visits the farm was exceptionally busy and full of life, both human and animal. The farm complex's foyer works as an intimate tasting and reception area which showcases the humble beginnings and history of the farm by the furniture and awards and the display of ancient rock tools found on the farm over the years.

3.3.1.2 Necessity for animals and insects

The farm boasts 57 Nguni cows (see Figure 3.7), 22 sheep, 50 chickens and a multitude of ducks. All these animals are crucial to the health of the present organic systems by supplying crucial components (horns, manure, etc.) for the biodynamic preparations and contributing to the emblematic self-sufficiency of a quintessential biodynamic farm. The chickens also act as cost-effective pest predators.



Source: Author's own (2020)

Figure 3.7 Nguni calves among the vines on Reyneke Wines farm

The health and prosperity of this biodynamic wine grape farm relies on every section of the closed, interconnected system to contribute and play the role they are positioned for by the farmer, Ishaan Lilje. "You cannot be self-sufficient on a plant farm without animals present" was Reyneke's (2020, Pers com) conviction so that nature is encouraged to be nature on the farm. Natural cellar waste in the form of grape skins, seeds, lees and stems is fed to the cows and their manure is added to compost heaps ready to be added to a multitude of the available biodynamic preparations (see Appendix C). Some naturally occurring wildlife like porcupines, wildcats, guinea fowl, birds of prey and hares are present and left to their own devices. This farm had the most animals present, wild and domesticated, of all the case-studied farms.

Cover crops were changed with time as experience was the best teacher regarding soil health, according to Reyneke (2020, Pers com). After years of oats and 'korog' (wheat and rye mix) as cover crops, a sudden massive yield drop led to an investigation as to why, as everything else seemed fine. The compost mixture was equal to one wheelbarrow cow manure and 30 wheelbarrows of organic matter (other natural waste like grape skins) which seemed adequate. Upon deeper investigation, it was found the plethora of crop grasses saturated the soil with carbon but did not bind the available nitrogen to the soil. This led to a gradually increasing vine equilibrium and the diminishing grape yields (eight ton per ha to three ton per ha). Two urgent changes were set into place. Firstly, the compost composition changed to a more diverse selection they are currently using and secondly, the cover crops were changed. They are currently legumes, vetch and clover, all predominantly nitrogen binders (Gaskell, et al. 2011). One of the main goals as described in the literature review, of these specific cover crops are to bind nitrogen in the soil and prevent denitrification, thus bringing the vines back into equilibrium.

3.3.1.3 Building (from) the ground up

Reyneke explained that because of South Africa's harsh weather and old soil, humus levels are very low so that one of the farm's priorities is the increasing of the level of humus in their vineyards. Humus is the compilation of organic matter in its last stage of decomposition which adds vital minerals and nutrients to the soil (Laarman 2014; White 2015). In 2000 Reyneke Wines initiated an action to increase the existing humus levels (0.5%) in specific vineyards by introducing grazing animals and cover crops. At the time of the interview, the humus levels in those vineyards measured 4.3% which is higher than the humus levels of successful French vineyards. Tilling of the soil is carefully done by hand to ensure that not too much of the humus is exposed to oxygen.

In order to get a more scientific understanding about how biodynamics was influencing the biodiversity in the vines, Reyneke worked closely with the University of Stellenbosch to test the changes in the micro- and macro-life present. A study by Setati et al. (2012) evaluated the microbial diversity of grapes harvested from conventional, organic and biodynamic vineyards. It was found that the biodynamic farm (Reyneke Wines) had the largest microbial diversity, thus the widest micro-biodiversity, of all the farms studied. Setati et al. (2012) also mention that the findings concurred with studies done on other biodynamically-managed crops. "You get stability out of diversity!" was Reyneke's (2020, Pers com) smiling retort when elaborating that the more diverse and covered an ecosystem is, the more stable and thriving it will be. Over the years many researchers have looked at the biodiversity of his vineyards, with Reyneke being most surprised with researchers finding from 40% to 900% increase in biodiversity in different sectors of the vines since the farm's organic and

biodynamic conversion. Life is the end-all-be-all of this wine farm as it is clearly present everywhere, from the vines to the air, to under the spongy dark soil that sinks with each step on it.

3.3.1.4 Organic conversion and certification experience

Of all the studied farms, Reyneke Wines had the worst experiences in the conversion to organic and biodynamic. Even before conversion, Reyneke could not get a loan from any bank as the endeavour was deemed too risky. Vineyard consultants advised them not to pursue conversion as did experts from the University of Stellenbosch. Reyneke lamented that every possible problem that could be encountered did happen in the first six months of conversion, including pests, diseases, droughts and crop losses. In hindsight, it would have been beneficial to start and practice biodynamic methods and practices on a small scale, so minimizing the effects of the inevitable errors that accompany a new (and risky) endeavour. Reyneke (2020, Pers com) deems the farm's organic and biodynamic conversion to be very successful and cited the example of a 40 ha block converted in 2015 which has not experienced any decrease in crop yield over the past five years. Information and knowledge are essential to the conversion process, but Reyneke (2020, Pers com) maintains that the vital aspects are an understanding of the vines' needs and experience that comes with time.

The conversion procedures started in 2000 and organic and biodynamic certification was awarded in 2006 (Reyneke 2020, Pers com). Their organic certifying body is CERES and they are also Demeter certified. The wines do not carry a Demeter logo on the labels as Reyneke regards the logo royalty fee (1.6% of the farm's annual turnover) to be unnecessarily expensive (see Chapter 4). The conversion was not motivated by a desire for certification because Reyneke wanted people to buy the wines because of their merits and quality (Reyneke 2020, Pers com). But the past decade has seen changes, so much so that Reyneke (and the other participating farms) regard certification as having good points and therefore encourage customers to buy certified organic and biodynamic wines to avoid greenwashing and misleading products.

The 2017 Reyneke Chenin Blanc is appraised an exceptional wine that is as natural as modern South African wine can com. Figure 3.8 shows the 2019 vintage Chenin Blanc. The grapes were harvested from a certified Old Vine and processed without any fining, filtering or sulphur dioxide (the most common component added to wines). Of the three batches, two were added to wooden vats and one to a clay amphora, much like the Georgian *qvevri* used by Avondale. According to Reyneke (2020, Pers com) the clay allows the wine to ferment more naturally and 'breath' in the process, while adding its own natural subtle elements to the wine. This wine is among four varietal wines and two blends for which Reyneke Wines received 57 awards for vintages from 2014 to 2018, with none of them with a score under 90 out of 100 or four out of five stars (Reyneke Wines 2020).



Source: Reyneke Wines (2020)

Figure 3.8 The acclaimed Chenin Blanc of Reyneke Wines

According to Reyneke (2020, Pers com) the clay allows the wine to ferment more naturally and ‘breath’ in the process, while adding its own natural subtle elements to the wine. This wine is among four varietal wines and two blends for which Reyneke Wines received 57 awards for vintages from 2014 to 2018, with none of them with a score under 90 out of 100 or four out of five stars (Reyneke Wines 2020).

3.3.2 Avondale

“The biggest benefit for us as wine producers is the character you get into the wine at the end of the day... We have clients who drink our wine and keep coming back and they say it’s difficult to go back to any other wine because it is so unique” (Grieve 2020, Pers com)

The original farm dates to 1693 and Avondale was established in 1996. Johnathan Grieve, proprietor and winemaker at Avondale, mentioned the farm was a conventional wine farm and presumably used chemicals on the vines since the late 1970s. The vines were converted to organic and biodynamic methods in 2001 and 2002 and all vines are currently organic and biodynamic (Grieve 2020, Pers com).

3.3.2.1 Location and property

Avondale is situated about five kilometres from Paarl at the foot of the Klein Drakenstein Mountains. The farm is 300 ha large with 70 ha under vines and the remaining land is left untouched or used as pastures or covered by buildings such as the cellar and restaurant. Avondale’s foyer is adorned with a grand piano and fine antique furniture which added to the warm stately feel of the interconnected foyer, delicatessen, tasting area, cellar and restaurant. Avondale was the largest of case-studied farms and deemed best equipped for visitors.

Because animals play an integral role on biodynamic farms, they have a visible presence on the farm. A small herd of black Angus cattle, chickens and ducks call Avondale home, the cattle providing many components of the biodynamic preparations and the ducks and chickens mainly acting as cost-effective pest control. Ladybugs, predatory wasps and birds of prey are also encouraged for overall vine and farm health. Cover crops consist of a wide variety of legumes, cereals and lucern in a range of mixes containing mustard and tillage radish. Nitrogen binders are always present to fill their

essential roles (as described in Chapter 2) while ensuring year-round coverage. Grieve (2020, Pers com) excitedly described how, since successfully converting to organic and biodynamic methods, life on the farm has improved significantly with swarms of beneficial ladybugs and over 200 species of birds, even present at the height of the 2014-2017 drought. Their wines concentrate on quality over quantity with prices ranging from premium to above and all wines prime for aging. The Avondale La Luna (Figure 3.9) scored 90 out of 100 and won three gold awards in the 2019 Gilbert and Gaillard International Wine Challenge and four more wines were awarded 90+ points out of a possible 100 (Grieve 2019).



Source: Avondale (2017; s.p.)

Figure 3.9 Avondale’s La Luna, three-time gold winner

Avondale was the first wine farm in South Africa to use the ancient *qvevri* for winemaking (see Figure 3.10). These clay vessels are the traditional ‘vat’ derived from Georgia and are more than 8000 years old (Avondale 2017; Shtaltovna & Feuer 2019). This method was awarded Intangible Cultural Heritage by UNESCO in 2013 and is a big booster of Georgian wine exports (to 53 countries and growing) as people seek its unusual and unique character and genesis story (Shtaltovna & Feuer 2019). Avondale uses these egg-shaped vessels to increase breathability and minerality during wine fermentation. This was echoed by Reyneke (2020, Pers com) who explained that the wine is encouraged to “live more” in the clay amphora. This is because there is more oxygen available and the *qvevri* do not get as cold as the stainless-steel tanks usually used in cellars.



Source: Avondale (2017; s.p.)

Figure 3.10 Avondale’s pre-buried *qvevri* pots

3.3.2.2 Organic conversion and certification experience

Organic and biodynamic conversion on Avondale ended in 2005 and was considered to be very successful and no crop was ever lost. The main problem Grieve (2020, Pers com) foresaw in the conversion process, but which never happened at Avondale, was having the wrong people at the helm in the conversion project, be it for organic or biodynamic conversion. Because a farmer needs to be proactive with both methods, constantly active in the system and interpreting the needs of the vines from the start of conversion, the wrong or inadequate human capital was regarded as the obvious disadvantage of being organic and/or biodynamic. “You need someone with a passion and deep understanding, you don’t need someone who does substitute farming and substitutes chemicals with other chemicals, then you’ve lost the plot and you’re going to pick up headaches” was Grieve’s (2020, Pers com) sincere sentiment regarding this.

Organic certification on Avondale is curated by Control Union. It was chosen as the third-party certifier owing to their experience, good reputation and their certifying according to USDA and EU standards. The certification process was seen to be not infallible but regarded as adequate as a substitute for local non-existent standards and strict enough, especially regarding the EU standards. The cost structure of organic certification was regarded as being straightforward and the standards and regulations as understandable. Full biodynamic methods and practices and applied on Avondale. The farm is not Demeter-certified and solely on the turnover fees required by Demeter to use their name, on top of the inspection fees. Grieve (2020, Pers com) contends that it does not make any business sense and doubts whether someone will be more inclined to buy Avondale’s wine simply because it is Demeter certified. This situation is discussed further in Chapter 4 along with other aspects of certification confusion.

3.3.3 Bloublommetjieskloof

“You’re trying to create a farm organism, a holistic system which is something that is ‘more than the sum of the parts.’” (Lilje 2020, Pers com).

Bloublommetjieskloof is a fully Demeter-certified 38 ha biodynamic farm situated near Wellington with a wide variety of produce and animals, but no vineyards. Bloublommetjieskloof was included in the study because it is the first and oldest biodynamic farm in the country. Wendy Lilje, the proprietor and sole farmer of Bloublommetjieskloof, was interviewed.

3.3.2.1 Location and property

Bloublommetjieskloof is situated five kilometres from Wellington in a lush valley, surrounded by several conventional vegetable and wine farms. The farm’s quaint name is derived from the small blue perennial flowers which is of the genus *Scilla* (related to bluebell flowers) growing in the area. A narrow, winding gravel road leads one to the rustic farm buildings surrounded by lively ducks,

dogs, cattle and chickens. Seen subjectively, Bloublommetjieskloof and Reyneke Wines were the most traditional ‘farms’ of six studied farms, with animals, smells and farm activities contributing an authentic farm atmosphere. The buildings identify with different sectors of the farm like a shop, storage and dairy production area. Lilje (2020, Pers com) mentioned that all the buildings where biodynamic products are made have to be registered and certified organic and biodynamic. They are inspected annually according to third-body certifiers, in this case Demeter. Cover crops are used mainly as extra feed for the cattle.

3.3.2.2 Historical significance and trailblazing

Bloublommetjieskloof is the only Demeter-certified general farm in the Western Cape along with two Demeter-certified wine farms, Reyneke Wines and Elgin. The current owner and farmer stated her operations took over in 2000 and soon ensured that Bloublommetjieskloof received full organic and Demeter certification in 2005. It was founded by Jean Malherbe “about 50 years ago” (Lilje 2020, Pers com) who was a female pioneer in the farming district of Wellington where she specialized in the then very controversial and bizarre methodology and practices of biodynamics. The farm was managed fully as organic and biodynamic but was not certified, most likely due to the absence of third-party certifying bodies in South Africa at the time and because of the semi-secluded valley location of Bloublommetjieskloof farm.

3.3.2.3 Produce and products

Commodities produced on the farm include cheeses, fruit, vegetables, meat, health and hygiene products, as displayed in Figure 3.11a. Bloublommetjieskloof also sells prepared biodynamic Preparations no. 501 to 508 (see Figure 3.11b) (Lilje, Pers com 2020). Reyneke (2020, Pers com) who knew Malherbe personally and credits her as a principal source of his initial knowledge about biodynamics, tells of Malherbe supplying flowers to many Woolworths stores in South Africa many years ago. The stores did not know she was producing the flowers organically and biodynamically for their customers who return often to purchase the quality flowers (Reyneke 2020, Pers com). This speaks volumes of the quality of the farm’s products as Woolworths is known, even in the 1980s, for aligning themselves with suppliers based on factors such as “quality, ingredient origin, health and environment” (Mabaya et al. 2011: 131). All Bloublommetjieskloof’s products are in environment-friendly packaging and plastic-free. This coincides with Rudolf Steiner’s anthroposophical philosophy biodynamic farming is based which prioritizes a reconnection with natural forces and breaking away from materialism (Lilje 2020, Pers com).



Source: Bloublommetjieskloof biodynamic farm (2020: s.p.)

Figure 3.11 Wendy Lilje with preparation 501 and other farm products

3.3.2.4 Organic conversion and certification experience

As the farm's conversion to organic and biodynamic methods happened more than 50 years ago and 30 years prior to Lilje's ownership, little is known of the farm and Malherbe's initial experience. What is known is that Malherbe studied biodynamic farming in England, came back to South Africa and immediately started conversion on the farm. This conversion took place all at once. This can be regarded as easier than modern organic conversion, as she was not fixed on getting certified and consequently did not have to follow the exact and meticulous regulations of third-body certifiers. It can also be presumed that because of the strained mid-apartheid period in South Africa when international certification companies and information were not widely available for a woman alone on a farm in a valley outside Wellington. Malherbe was an outcast criticised by the agricultural community. Lilje has experienced a few basic debates but no ostracization such as Malherbe. Lilje (2020, Pers com) credits this to changing times and a new South Africa in which people are getting more exposure to different ways of thinking and farming.

After attending university Lilje worked at Pharma Natura, a pharmaceutical company producing health supplements and homeopathic medicines with brands like Vitaforce, Bettaway and Herbaforce, to name a few. Lilje did not specifically study biodynamic farming but attended many workshops, training sessions and lectures at BDAASA. When Lilje took over Bloublommetjieskloof in 2000, she and Malherbe worked to receive biodynamic Demeter certification, which they found rather effortless as they have been farming biodynamically for many years. Initial costs of organic and biodynamic conversion could also not be estimated as the numbers and statistics got lost over time. Despite challenges and limitations, the dedication to and passion for biodynamic farming at Bloublommetjieskloof is clear.

3.4 CONCLUSION

Character, quality and authenticity are the main objectives of these case studied organic and biodynamic farms, although these seem to be the overall targets for most wine farms aiming to make quality wines. Thus, these farms pay attention to their unique selling point that their wines are bona fide organically (and some biodynamically) certified and produced. Consumer views about organic and biodynamic wines seem to change favourably which presents opportunities to be seized and exploited by the participating farms and others of their ilk. Findings reported in this chapter will be dealt with in greater detail in the following chapter.

CHAPTER 4 FINDINGS AND PERSPECTIVES

4.1 INTRODUCTION

In this chapter themes, findings and perspectives emanating from the interviews are discussed as they relate to the conversion process. The significance of realigning with nature, conversion experiences and wine exports are considered to determine the farmers' perceptions of their farm conversion successes and how they. Difficulties and barriers such as certification costs, a lack of available education and information as well as non-existent governmental support are covered.

4.2 RESETTling NATURE: “On the ground, in the ground, in the sky, literally everywhere...”

A dominant theme that emerged in the interviews was the marked increases in the micro- and macrolife present on the farms. The comment made by Reyneke (2020, Pers com) quoted above aptly describes where these improvements occurred. This is noteworthy that they happened on organic farms which follow the prescribed standards, rules, regulations and advice of their respective third body-certifiers. The likelihood of similar increases in micro- and macro-life on non-certified organic farms was not investigated. The study was granted the opportunity by the proprietor to explore on and experience the inner workings of Reyneke Wines' farms. A prominent feature was the vitality in the vineyards and in the soft, porous soil. Sticking one's hand in the biodynamically prepared soil gives a handful of damp dark soil, compost, worms and beetles. In the sky an array of birds was present from hawks to sparrows and on the ground guineafowl, lizards and a shy hare that avoided the Nguni herd grazing between the vines.

At another biodynamic farm, Grieve (2020, Pers com) described the change in Avondale's ecosystem as a 'resurrection' of the soil. When establishing Avondale with his family in 1996, Grieve expected natural life to be abundant, on a farm in such a prime location. He was later shocked by the realisation that there was almost no natural and beneficial life present anywhere on the farm, indicating its lacklustre health and waning ecosystem. As described in Section 3.3.2, Grieve (2020, Pers com) also mentioned that life is returning to Avondale in all aspects, from birds to bugs, which together promote the health of the vineyards in their own way.

On the three organic farms, Jacques Germanier, Waverly Hills and Laibach, increases in life since converting has been experienced, but not to the extent reported for Avondale and Reyneke. At Jacques Germanier they aim to place back into the soil that which was taken out by their vines, so that the restored minerals, nutrients and life will eventually result in vibrant organic wines ready for export. But at Bloublommetjieskloof, Avondale and Reyneke, this is a debated topic that the efforts will not work and that they just constitute substitute farming, that is the practice of a farmer taking

from the earth and replacing what was taken out with a weaker, albeit organically approved, chemical or additive. The philosophy on the three farms is that biodynamics involves more than just additives as it actually aids and builds with nature, not just substitutes what is taken away.

4.2.1 Tackling climate change with humus and fynbos

Organic and biodynamic agriculture have developed on the fundamental pillar of a healthy and/or environment and ecosystem. The interviewees on four farms stated that managing vines organically and/or biodynamically lessens the effects of climate change, but they were unsure to what extent this happens. Marais (2020, Pers com) wished that he had the confirmatory statistics and studies but, in their absence, he was confident that his organic methods and use of fewer biocides is better for the environment than in the case of conventional wine farms.

Grieve (2020, Pers com) of Avondale mentioned that he was aware of many sources, ranging from TedTalks to university studies about the positive impacts of biodynamics and organics on climate change. When a vineyard is correctly managed with organic and biodynamic methods the soil can even aid in reversing climate change by using the correct cover crops and humus. The humus acts as a strong carbon binder that filters excess carbon from the atmosphere and legume cover crops bind nitrogen (Gaskell et al. 2011). At Reyneke Wines and Avondale high importance and emphasis is given to humus production in the ground. Both farms experienced very successful conversion and their primary markets (estimated 80%) for organic produce is Northern Europe.

The humus is an active and beneficial concoction that brings vitality and life to soil. Lesković (2020, Pers com) made the interesting comparison that the soil humus is like human gut bacteria. If the gut bacteria are not alive and healthy, nutrients, vitamins and minerals will not be absorbed adequately. The person (the vine) will still be alive, but not as healthy and radiant as he or she should be. Multivitamins and medications are taken to sort out a health problem for which nature has the remedy. In the case of a farm the ‘multivitamins’ are biocides and fertilizers and the ‘nutrients’ the all-encompassing terroir. When humus is alive and healthy, the terroir and minerals ‘absorb’ more easily by the vine, so increasing the long-term vineyard health and the terroir is subsequently present in quality wines (Lesković 2020, Pers com). Reyneke (2020, Pers com) explained that the wine should show the terroir and character of its home soil and not be the product of “gymnastics in the cellar.”

Sections of natural fynbos have been left intact on Reyneke Wines, Waverley Hills and Avondale specifically to enhance the ecosystem and aid the development of biodiversity. These pockets, corridors and valleys attract natural predators and insects back into the ecosystem, given that viticulture is an aggressive form of agriculture that strips many natural characteristics from the

formed area. Organic vineyard management is less aggressive than conventional management, but it can quickly turn into substitute farming (Reyneke 2020, Pers com) if incorrectly managed. Lilje (2020, Pers com) ventured to call organic winemaking just another form of greenwashing as it is still ‘materialistic farming’ with a modus operandi based on production. Biodynamic agriculture and winemaking have the least negative environmental impacts of the three winemaking methods and they also have the most macro-and micro biodiversity in their vineyards (Waldin 2004; Meissner et al. 2019).

4.2.2 Mitigating spray drift

The individual instances of spray drift and how the farms reacted to it were discussed earlier in Section 3.2. Spray drift was named as a problem experienced on all the farms, except Bloublommetjieskloof. There was agreement that there is no guaranteed way to stop or fully prevent spray drift (Van Zyl 2020, Pers com). Spray drift mitigation on the farms took the form of hedgerows and grown trees between neighbouring farms and communication with neighbours about when they planned to spray and when the best time was for all to do so. The communication between the farmers is a short and basic information-sharing conversation and it is not regarded as camaraderie or partnership as discussed later. An example of hedgerows can be seen in Figure 4.1, which illustrates the proximity of the plum and naartjie farm (orange and brown) neighbouring Jacques Germanier (enclosed in white border) as a spray drift buffer zone. An important dividing hedgerow is shown in red which is the main physical barrier between Jacques Germanier’s organic grape vines and the herbicides and pesticides used on the neighbouring farm’s plums and naartjies. Figure 4.1 shows the location of the buffer zones and Figure 4.2 shows a vertical and horizontal view of the same hedgerow buffer zone. The hedgerows consist of native fynbos or a variety of trees indigenous to the Western Cape, thus the aesthetic of the landscape is not disrupted by vegetation that seems out of place, while conserving a piece of the vulnerable fynbos biome, shown in the right side of Figure 4.2.



Figure 4.1 Different perspectives of the main hedgerow on Jacques Germanier farm

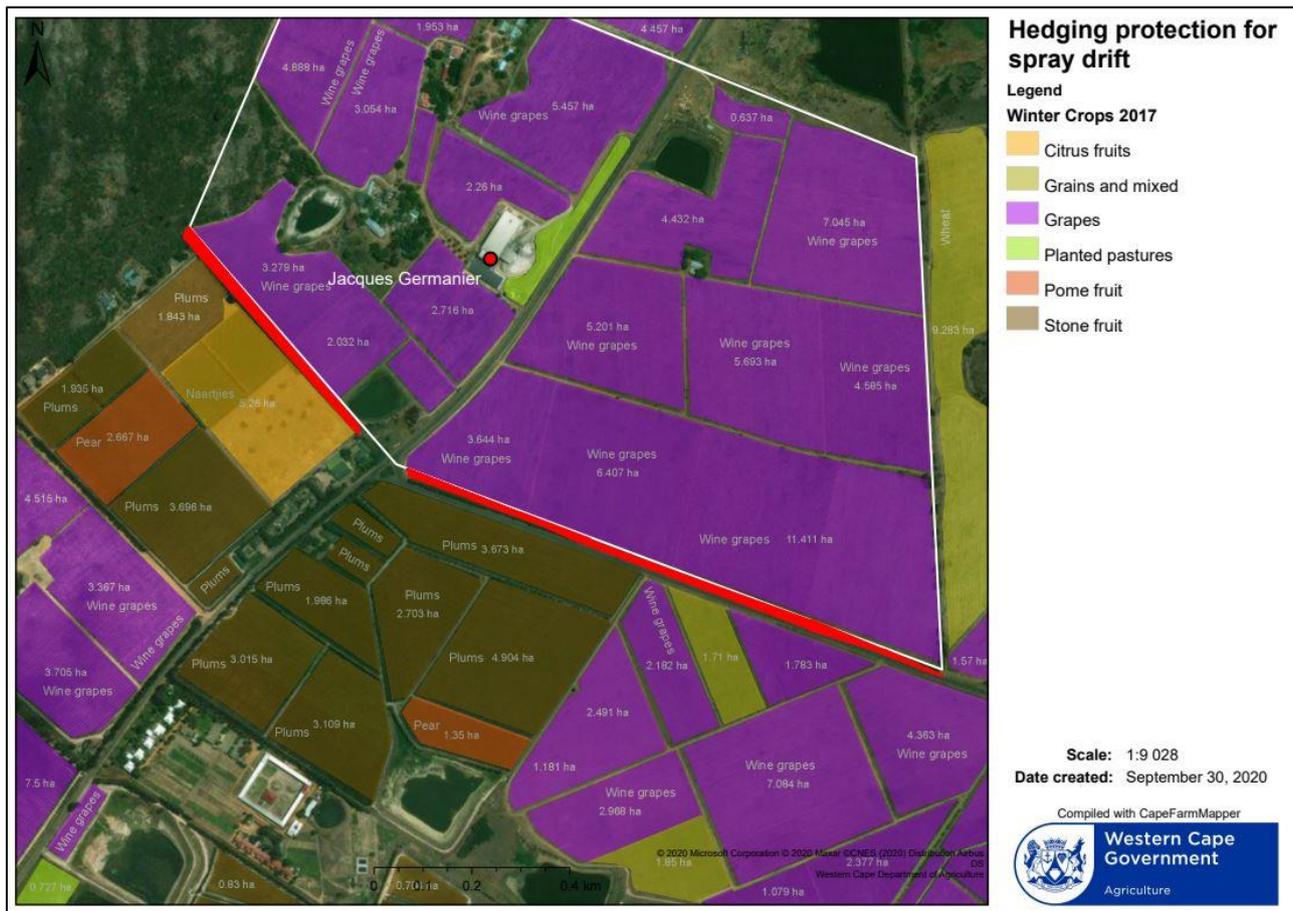


Figure 4.2 Main hedging in red used to mitigate spray drift on Jacques Germanier farm

4.2.3 Added labour and attention to detail: “You can’t be a ‘bakkie-boer’ and farm organically”

Although organic and biodynamic winemaking is known to be more labour-intensive than conventional winemaking (Negro, Hannan & Fassiotto 2015; Waldin 2004), it transpired that none of the farms significantly added to their personnel since starting conversion. The respondents on two farms indicated there was a ‘very high risk’ of increased labour, two others noted a ‘high risk’ and two claimed there was ‘somewhat’ and ‘little’ risk. The explanation for the ‘very high’ and ‘high’ risk answers (Reyneke, Laibach, Jacques Germanier and Bloublommetjieskloof) was that very few additional people were hired since conversion and that they were responsible for organic-specific tasks. Selective hand tillage and weed control were identified as the main reasons for employing more labour, but as Delport (2020, Pers com) explained they were usually seasonal workers. At biodynamic farms labour by hand is prioritized and preferred over machinery and mechanized procedures. At Avondale, although they are not Demeter-certified, Grieve (2020, Pers com) remarked that biodynamics is more labour-intensive than conventional or organic winemaking and that attention to detail is vital. Consequently, at Avondale hand labour and hand tilling are preferred. Van Zyl (2020, Pers com) aptly expressed this as: “You can’t be a ‘bakkie-boer’ and farm organically.

It's intense and needs attention to detail, [as a winemaker] you're not having normal holidays." Hand tilling even requires more labour to reduce weeds (Warner 2006; Grieve 2020, Pers com; Van Zyl 2020, Pers com). Waverley Hills and Reyneke are selling their 'in-conversion' grapes to other farms for conventional winemaking purposes because these grapes are not allowed to be used for organic wine yet. Both mention this is a temporary solution to the extra grapes and will use them for themselves once the three-year conversion period is over (Delpont 2020, Pers com; Reyneke 2020, Pers com). The remaining three wine farms (excluding Bloublommetjieskloof) do not sell any grapes to other farms.

4.3 PERCEIVED SUCCESS OF CONVERSION

The participants of all the farms regarded their conversion to be either successful or very successful (Figure 4.3). This is a clear indication of the prospect for growth in the organic and biodynamic winemaking industry in the Western Cape given that misinformation about conversion, a lack of knowledge about and support for it, as well as ignorance, all contribute to delaying innovation adoption by hesitant conventional farmers.

Steenkamp (2020, Pers com) and Lesković (2020, Pers com) are two wine industry professionals who are not winemakers nor do they work on a wine farm, directly but they possess knowledge about and experience in the industry. According to them the main reasons why conventional farmers are hesitant to convert to any kind of organic or biodynamic agriculture are misinformation, ignorance and misconceptions about conversion processes. Even Delpont (2020, Pers com) noted that in his experience conversion is made out far more complicated than it is. Often conversion is not even considered because of an overemphasis on the costs associated with conversion or there is misinformation about the difficulty level and skill required for conversion.

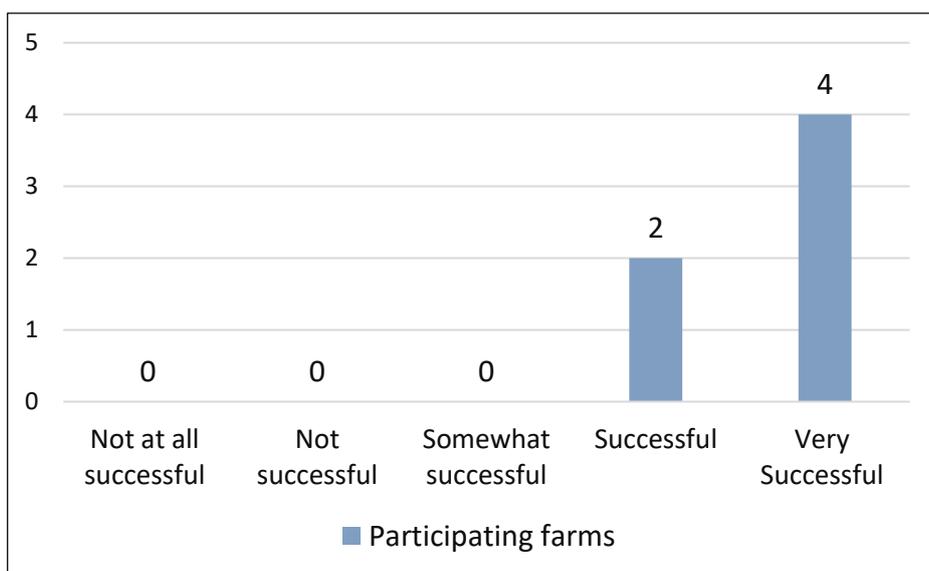


Figure 4.3 Success of conversion attempts according to the interviewed participants

Two cases where conversion was deemed successful were Jacques Germanier and Bloublommetjieskloof. Marais (2020, Pers com) of Jacques Germanier gave the reasons why he did not regard conversion as very successful as the yields being so exceptionally low and spray drift cross-contamination occurring a few times during the conversion years, so causing even more yield reductions. The low yields during conversion were expected but paired with contaminated grapes the financial losses and expenditure were even greater than expected. Certification and the associated expenses were not seen as a hindrance at Jacques Germanier as they were expected as part of the 'nitty-gritty' (Marais 2020, Pers com). Thus, in comparison to the other participating farms, where the certification costs were regarded as a hindrance and too high, the yield losses and extra expenditure during the conversion of Jacques Germanier must have been significant, yet conversion was still regarded as being successful. The other farm where conversion was deemed successful is Bloublommetjieskloof. The explanation given was that it was not overly challenging because it gradually happened over longer than the certifier-prescribed three years. According to Lilje (2020, Pers com) the farm was simultaneously certified as organic and biodynamic without the conversion period because it had already met the criteria.

4.3.1 Experience as key to successful conversion

The interviewees on four farms that stated their conversions were very successful are Reyneke Wines, Avondale, Waverly Hills and Laibach. Careful following of certifier instructions, managing weeds successfully and having an eye for detail are the keys to organic wine success according to Delport (2020, Pers com), winemaker of the world's best organic wine in 2018. Conversion on Waverley Hills was quite easy as the vines had been planted as organic, although weeds and certifying costs were seen as problems. All the wine farm participating reported unfavourable experiences they had had during conversion such as lower yields and incidents of spray drift, but none to the degree experienced on Reyneke Wines:

“When I started it was a nightmare. Everything in South Africa that could possibly be in the vine was there, in a quarter hectare. Pests, plagues, disease everything I got within the first six months.” (Reyneke 2020, Pers com)

Despite the hardships, pests and diseases experienced on Reyneke's farm during conversion to organic and biodynamic, the process was regarded to be very successful. In 2015, 40 ha of vines were converted with no significant dip in crop yield. Over the following years, the farm's converted area expanded gradually by 20 ha at a time until the current total of 120 ha was reached. Reyneke (2020, Pers com) credits the smooth-running conversion process to their knowledge and experience accumulated over 20 years. This evidence supports Warner's (2006) assertion that it is better to convert gradually as done by three of the farms, namely Reyneke Wines, Laibach and Avondale, two of which are biodynamic. Two common denominators exist in these three farms. Their farm

conversions are seen as very successful and the most of their knowledge comes from hands-on experience, which is “crucial” (Van Zyl 2020, Pers com). All three representatives of these farms have experienced conversion and worked with organic (and biodynamic for Avondale and Reyneke Wines) methods for over a decade each. Van Zyl has been part of Laibach for more than 20 years where he started conversion in 2008; Reyneke grew up on the farm and started conversion around 1997; and Grieve at Avondale managed their conversion in 2000. It is unsurprising that all the time spent, and experience gained in organic and biodynamic winemaking contributed to the three winefarmers’ self-proclaimed very successful conversion.

In his bestselling novel, *Outliers: The story of success*, Malcolm Gladwell postulated the ‘10 000-hour rule’, according to which 10 000 hours, the equivalent of 10 years’ exercising a skill or ability for 20 hours a week, is the “magic number of greatness” (Gladwell 2008: 41). This number is based on research on how long it took experts in a variety of fields to reach mastery of their chosen skill, ability or talent. The experts ranged from athletes, musicians, chess players and fiction-writers to master criminals. According to Howe (in Gladwell 2008) even Mozart did not write his own piece of music that is regarded as original and a masterpiece until he was 21, yet he has been composing since the age of six, being a child prodigy. As this number is based on such a variety of experts using their bodies (like athletes) or their minds (like writers or master criminals) it is deemed adequate that organic and biodynamic farmers (having to be so hands-on and proactive in the vineyard) fall under the same category. Thus, having a 40-hour workweek and spending an estimated half of that time in the vines and cellar will lead to organic or biodynamic winemaking mastery in 10 years. Yet time is a big ingredient to success, but it is not the only ingredient. “We pretend that success is exclusively a matter of individual merit” (Gladwell 2008, 67) but the success of these farms and their representatives is aided by their natural feel and talent. Van Zyl (2020, Pers com) stated it well, explaining that knowledge and information are adding a maximum 10% to your success, the rest is experience mixed with skill and a “feel for it”.

As all three of the ‘very successful’ participants have more than 10 years’ experience and practice in their niche field and emphasize hands-on experience, it can be derived they are currently busy with winemaking mastery. As a timely support to this statement, in the first week of September 2020, Johan Reyneke was awarded best grower in South Africa by the renowned Master of Wine (MW) Tim Atkin in his highly anticipated 2020 South Africa Report (Gibson 2020).

4.3.2 Hesitancy to convert

When a decision is made to convert to organic or biodynamic methods, the level of hesitancy of the managerial team in charge of the adoption is crucial. Many external factors, like market fluctuations, demand, inflation and pandemics can play decisive roles in causing hesitancy to convert. But as Van

Zyl (2020, Pers com) of Laibach averted, conversion and the subsequent product is doomed to fail if one does not believe in one's (and the team's) abilities.

A hesitancy to convert can stem from misconceptions and misinformation many conventional wine grape farmers and winemakers have about organic winemaking and to a greater degree, about biodynamic winemaking (Marais 2020, Pers com). This sentiment is shared by Steenkamp (2020, Pers com) of Breaking Ground Organics, who specializes in the cultivation of organic agricultural seedlings. She maintains that “airy-fairy, wishy-washy” misconceptions about organics are prevalent in many sectors of agriculture. The fact that crop yields will drop drastically during conversion years easily scares off many from adopting the organic innovation and converting to them. But the converse of this is not always realized: the quality of the vineyards and crops are more likely to increase, the soil will be healthier and money otherwise used for biocides and chemical fertilizers can be used for training valuable assets like certification.

Of the six participating farms on only two, Reyneke Wines and Jacques Germanier, was there hesitancy to convert. The struggle to get a bank loan and increased instances of diseases and pests in the initial stages of conversion did not make Reyneke (2020, Pers com) any less hesitant about the conversion process. Yet he mentioned the saving grace in these testing stages was keeping the conversion area limited to a small number of vines, like a quarter of a hectare and testing what worked best through trial and error. Jean Malherbe of Bloublommetjieskloof mentored Reyneke and helped with her own biodynamic experience and knowledge, so that a bank eventually granted him a small loan which was increased as conversion succeeded on more hectares over time.

Marais (2020, Pers com) was not present during the conversion period at Jacques Germanier and could not speak for those who were the decision-makers at the time and their hesitancy. He did, however, share feelings of personal hesitancy to convert to organics or biodynamics as a winemaker. He claims that the likelihood of an awaiting and unavoidable massive decrease in yield during conversion is enough to make any farmer hesitant. Furthermore, the prevailing and increasingly frequent adverse conditions like a water scarcity or the unpredictable effects of a pandemic add to doubt and hesitancy.

Participants for the remaining four farms (Waverley Hills, Laibach, Bloublommetjieskloof and Avondale) admitted that they were not hesitant to convert to organics or biodynamics. Only Grieve (2020, Pers com) of Avondale and Van Zyl (2020, Pers com) of Laibach were present and part of the decision-making team (as winemakers) during their respective farms' conversion. Avondale's conversion started in 2001 and was implemented gradually and initiated on only 25% of the farm. The conversion to organic and biodynamic on Avondale was built on the cornerstone of finding a

balance between nature and human intervention in the vines. They believe that the presence of pests and diseases is a retaliation of Mother Nature when humans cause an imbalance in the vines through biocides and excessive manual intervention like overtilling. Even if there was no scientific explanation how organic and biodynamic practices were having such positive effects on the vines, Grieve (2020, Pers com) regarded it as unnecessary to search for a scientific explanation as the results were evidence enough.

Perceived historical evidence of the superiority of organic wine superiority in South Africa and France is the prime reason why Van Zyl (2020, pers com) was not hesitant to convert to organic methods. He insisted that some of South Africa's best wines (regarding quality and aging) to this day originate from the early 1970s before the surge in the use of biocides and chemicals in the late 1970s. The same pertains to wines of Bordeaux and Burgundy in France. Other reasons for a hesitancy to convert are the trust Van Zyl (2020, Pers com) has in his team's abilities as well as the medical research on biocides and cancer done by Laibach's owner and namesake, Dr. Petra Laibach-Kühner.

At Waverley Hills, the conversion started immediately as the vines were planted as organic seedlings. Regarding hesitancy to convert, Delport (2020, Pers com) said that is not. He believes the bigger and more established farms will be less hesitant to convert as they already have their customer bases and markets. In comparison, smaller wine farms may be more hesitant to convert because they have more to lose and are not as established as their competitors. As the better-known wine farms have customer bases familiar with and having more trust in the brands, one can conjecture that the customers will be more willing to try said brand if they became organic or biodynamic than an unknown O/Bio wine brand (Bonn, Cronin & Cho 2016).

An unorthodox path to certification was followed at Bloublommetjieskloof as it was founded by Malherbe about 50 years ago. It was farmed using organic and biodynamic methods without any recognition or certification as organic or biodynamic. Certification was obtained by Malherbe's successor, Wendy Lilje, in 2000 so that the conversion never went according to a general three-year plan as the others did. Concerning hesitancy to convert to biodynamics, Lilje (2020, Pers com) was adamant that she would not hesitate for a second. Nonetheless, real or perceived risks of conversion might deter others of conversion.

4.4 RISK PERCEPTION

The perceived and/or real risks of innovation adoption are critical factors that may hinder or motivate adoption and subsequent conversion (Padel 2001). Five of the primary risks associated with organic and biodynamic conversion were discussed during the interviews and the interviewees were asked to score each one on a fine-point Likert scale (see Section 2, Questions 5.1-5.5 in Appendix A). The

five risks were chosen according to their being regarded as the major domains of a wine farm that can be impacted by conversion according to Padel (2001), namely failed crops, financial loss, reduced quality, increased labour and damage to reputation. The feedback from the participants is illustrated displayed graphically in Figures 4.4 (a) to (e).

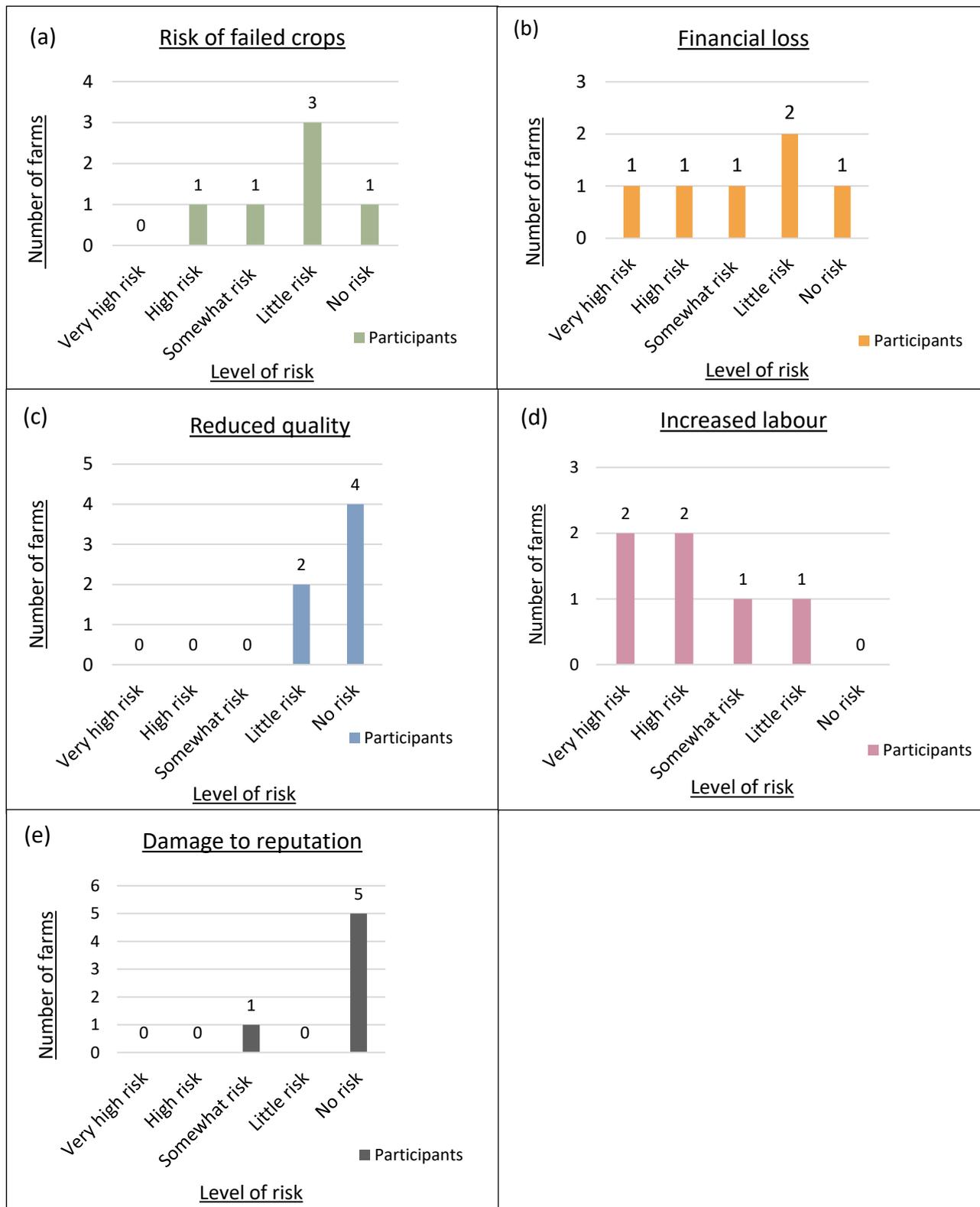


Figure 4.4 (a) to (e) Perceived and/or real risks of conversion to organic and biodynamic wine farming

Failed crops were highlighted by Delport (2020, Pers com) as not being a real risk but that it rather be regarded as lower crops. Such lower crops caused by conversion was mentioned and voluntarily expounded by all the participants, with Marais (2020, Pers com) adding the most information according to his own experience. According to him the primary changes accompanying conversion were in his own words: “The only changes over time were smaller yields” (Marais 2020, Pers com), whereas the other participants mentioned size, labour and improved biodiversity.

4.5 Labelling and increased sales

Regarding the role of organic and biodynamic labelling on increasing wine sales (Croce & Perri 2010; Delmas & Lessem 2015), four of the six respondents insisted it is a location specific affair. According to Lesković (2020, Pers com), South Africans are not as familiar with organic and biodynamic wines due to their relatively novelty in South Africa compared to Europe. With his experience in the European, South American and South African wine industries, he found many South African customers see organic and biodynamic wines as inferior and a lesser product only because they are made with fewer chemicals and intervention. Thus, the consumers Lesković (2020, Pers com) is describing here deem the wine’s quality based on the types of chemicals added, which indicates a high level of misunderstanding and ignorance.

When asked whether he thought that organic and biodynamic labelling increases sales, Lesković (2020, Pers com) explained that it is a country-specific, not just a continent-specific situation. In Scandinavian countries organic and biodynamic labels on products are preferred, especially for wine (also confirmed by Reyneke [2020, Pers com]) but in neighbouring countries like France, it is not the norm despite some of the best French wine farms being certified as organic or biodynamic. Lesković (2020, Pers com) mentioned that some of the current best wine chateaus in France are biodynamic certified but that they do not exploit it as a unique selling point, as if it is just another part of the winemaking process. In contrast in South Africa O/Bio wines are still very new and unknown to the majority of consumers, so much so that Lesković would not place ‘organic’ or ‘biodynamic’ on a front label of a South African wine. He opts for placing it on the back, so if customers read the back label they have the opportunity to learn more about O/Bio methods without being confronted by these possibly unknown words and phrases as when they examine the wines on store shelves. Delport (2020, Pers com), Steenkamp (2020, Pers com) and Lesković (2020, Pers com) attribute this scepticism directly to the customer not knowing organic or biodynamic wines. Yet Reyneke (2020, Pers com), Marais (2020, Pers com) and Grieve (2020, Pers com) are all confident that the attitudes and outlooks of South African customers are becoming more favourable towards organic and biodynamic wines as the industry develops and grows. An increase in customer curiosity and acquisition of new customers was also mentioned by Reyneke (2020, Pers com).

4.5.1 The South African consumer

Five of the six participants answered a definitive yes to the question whether organic and biodynamic winemaking will become more popular among South African wine makers. Van Zyl (2020, Pers com) of Laibach doubted that more winegrowers would adopt O/Bio winemaking solely because the price of the wine would have to be increased to make it be as profitable as conventional winemaking for the first few years. To make a good profit during the conversion period the wine would have to be sold at ZAR400 to ZAR500 per bottle which Van Zyl (2020, Pers com) believes would not sell in South Africa currently. He expanded that if a farm has an established brand and customer base, then O/Bio winemaking could become more popular and more easily adopted among large conventional wine farms. This statement is taken up in Section 5.3 about why the smaller, less established farms find it easier to adopt the innovation of organic and biodynamic winemaking methods.

The factors respondents mentioned as influences on organic and biodynamic wine sales are illustrated in Figure 4.5. Although it was believed that the quality of the organic or biodynamic wines influences sales positively, people must first buy the wine to experience its good quality. The fact that market demand was mentioned by four farms emphasize the importance of knowing one's target market and aiming to respond to the demand.

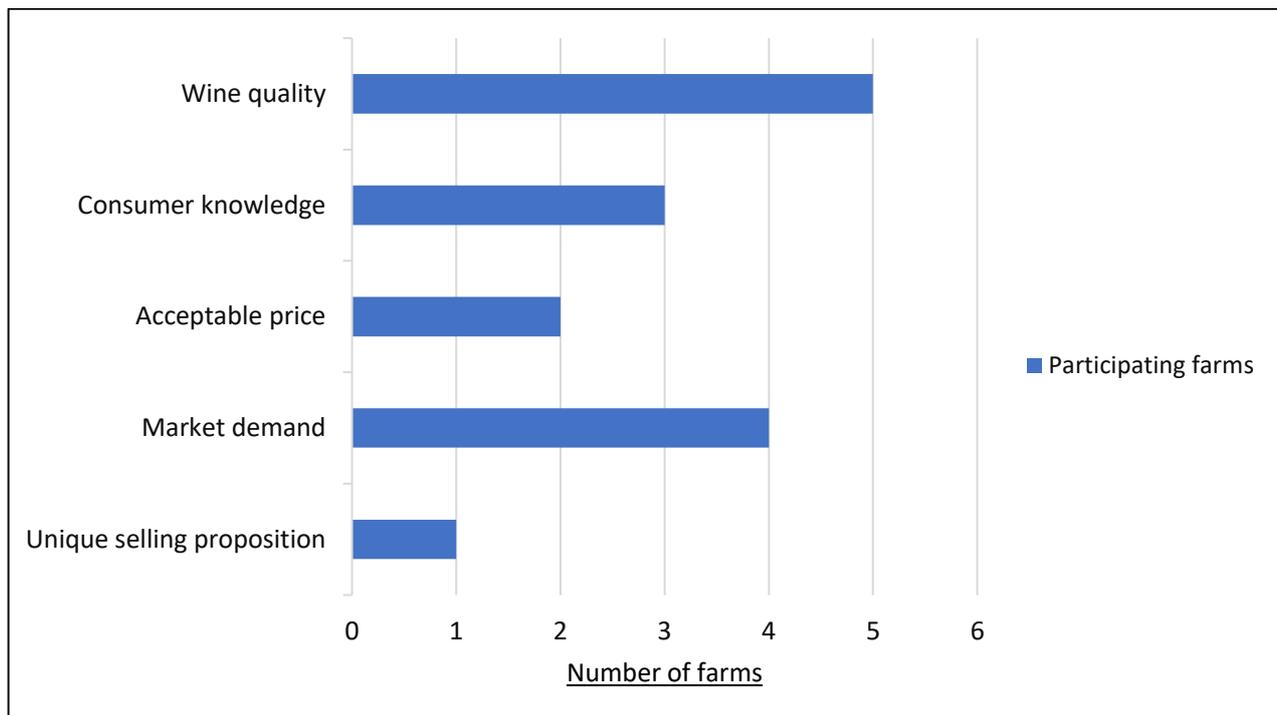


Figure 4.5 Factors affecting the sales of organic and biodynamic wine

Steenkamp (2020, Pers com) pointed out that even organic produce can be of very bad quality, not because the organic methods or additives were not working properly, but because the farmers are ignorant and/or unskilled. In her experience people who have had unpleasant or disappointing

experiences with organic produce and write it off to the organic methods. This has also been prevalent in the wine industry, where customers have a disappointing experience with organic wines and avoid it in the future, thus damaging the reputation and credibility of the organic (and in the end also biodynamic) wine industry (Reyneke 2020, Pers com; Delpont 2020, Pers com). Nonetheless, all the participating farms have growing brands, award-winning wines and returning customers so that it can confidently be assumed they have not been the objects of damaging consumer behaviour. The first-hand (and hopefully unbiased) experience for the author with the select wines (ranging from entry to premium level) of all five participating wine farms was one of exceptional quality.

The organic produce industry in South Africa is emerging and growing steadily, especially when it is influenced by external circumstances like COVID-19 that remind people of their morality and health (Steenkamp 2020, Pers com). Yet the increase in sales of farm-to-table organic produce sales and organic food box collection are not necessarily mirrored to any such a significant degree in the South African wine industry. Lesković (2020, Pers com) envisages that it will take a while for South Africans to really accept and even appreciate organic and biodynamic wines made in their own country. This will become more apparent with better education of more South African wine consumers. Whereas the export market for South African organic and biodynamic wines is growing significantly with the demand from Europe bearing more apparent given that South Africa has the ideal climate and enough space for organic and biodynamic winemaking (Lesković 2020, Pers com).

4.6 IS EXPORT KING?

Export is regarded as the frontier the South African wine industry (Lesković 2020, Pers com); Steenkamp (2020, Pers com). All the participating wine farms (excluding Bloublommetjieskloof) do export wine with half of them farms having their primary markets in countries of developed world. As regards primary and secondary markets, Reyneke Wines, Jacques Germanier and Avondale all have primary markets in Northern Europe, specifically Scandinavia, Norway, Finland and Denmark. Reyneke Wines and Avondale have their secondary markets in South Africa primarily Gauteng and the Western Cape. Jacques Germanier's wines are not selling locally at all: "not because we don't want to" but because the very high premium price of their wines discourages sales in South Africa (Marais 2020, Pers com). Their primary export market is China which is responsible for 40% of their bottled wine exports. The percentage was significantly higher before the COVID-19 pandemic curbed their exports. Lilje (2020, Pers com) at Bloublommetjieskloof said that overall exporting is an intricate and difficult process, especially by South African farmers as they (organic farmers in all types of agriculture) are not supported by the government. This is discussed later in this chapter.

The primary market of Waverley Hills, Bloublommetjieskloof and Laibach is South Africa with secondary markets in Europe, specifically Switzerland, Germany, Denmark and Belgium.

Bloublommetjieskloof's products do not include wine, but only other Demeter-certified products. It is fitting to mention Bloublommetjieskloof here owing to their being the premier Demeter-certified goods supplier in South Africa and because it is owned and run by BDAASA's chairperson.

Comments by the participants about export relationships with the emerging wine market in China (Stolz & Schmidt 2008) spotlighted the interest in and potential of gaining Chinese organic certification. Only one participating farm, Jacques Germanier, concentrated on China which was their primary market before COVID-19 dampened wine exports. Very little of Laibach's wine is exported to China and their current organic certifying body, EcoCert, is not accepted in China. Currently, they intend to soon apply for certification by Chinese-accepted certifiers (Van Wyk 2020, Pers com).

Marais (2020, Pers com) mentioned that the Chinese organic certifying regulations are lenient with respect to added sulphur, but they are very strict about every other aspect of certification. Chinese certification is spearheaded by the Hangzhou Gelu Certification Company (GRIT) which ensures that the exclusive Chinese regulations, GB/T19630-2011, are met. Following inspection and the granting of certification this is guaranteed by a certificate (Figure 4.6) and the displaying of an oval sticker on the bottleneck (GRIT 2020). Marais (2020 Pers com) explained that the inspection is more time consuming and expensive than those of any of the other certifying bodies, regardless if it involves USDA or EU standards. This is because the Chinese inspector is flown in from China, accommodated and entertained for multiple days at the farm's expense. Moreover, there is a formidable language barrier between the South African farm personnel and the Chinese inspector. Marais (2020 Pers com) said that they had been warned by visiting wine agents that they can have 'whatever' other organic certification they wish, but if the wine is not specifically certified under the Chinese regulations, China will not import it.



Source: Author's own (2020)

Figure 4.6 Hangzhou Gelu Certification Company (GRIT) organic certification

According to SAWIS (2020) the value of South African wine exported to China has fallen by 26% since 2018 and stand at ZAR339 million in 2019. The costly and exclusive nature of the Chinese organic wine certification, which is a strict requirement for exporting, may be an added reason why South African wine exports have decreased over the past two years.

4.7 MISCOMMUNICATION IN CERTIFYING ORGANIC WINE

The regulations and standards of the National Organic Program of the USDA differ slightly from the EU regulations and standards, particularly regarding small allowable additives in organic vineyards (Delpont 2020, Pers com; Van Zyl 2020, Pers com). But because of the so-called ‘US-EU Organic Equivalency Arrangement’ this does not affect products of EU or US origin, but does affect South African products bound for export. Reyneke (2020, Pers com) explains this anomaly below as:

In South Africa you are tested and certified by the exact same person on the same EU standards by the same EU institution, but America and Canada won’t accept it. Because South Africa doesn’t have the same trade agreements with the USA and Canada, we have to be certified twice!

When referring to the EU and USDA organic regulations and standards, four of the six participants specifically mentioned their confusion regarding the nature of the regulations and some minor differences. Phrases such as “quite complicated” (Lilje 2020, Pers com), “I question as to why” (Delpont 2020, pers com), “doesn’t make sense” (van Zyl 2020, Pers com) and “anomalies” (Grieve 2020, Pers com) are used in their answers.

When asked what objections to or problems with the certification process (Section 2, Question 2 in appended questionnaire) they had, five of the six respondents gave answers ranging from too high certification costs, massive amounts of administration to inconsistencies of standards. Certification cost was given the most mentions. An inconstancy highlighted by Van Zyl (2020, Pers com) of Laibach was the “unnecessary” lifting of allowed sulphur levels in organic wines which he believes would open up the standards to more and more chemicals when the priority should be to avoid chemicals. Discrepancies between the certifying bodies relating to fees, standards, audit frequencies and certification validity may cause prospective adopters to feel overwhelmed or misinformed, so reducing the rate of conversion, thus also delaying full adoption.

There is an underlying theme of confusion and miscommunication relating to certification and the standards, costs and inspections associated with it. The issues discussed above can lead to nonconformities, frustration on the farms and failure to comply with rules and regulations set out by the certification bodies, which can ultimately lead to loss of certification or failure to reapply for certification. These misunderstandings and confusion were not reported by the interviewees on the three biodynamic farms concerning the additional certification giant, Demeter.

Bloublommetjieskloof and Reyneke Wines are both Demeter-certified but Reyneke does not use the Demeter logo on their wines. Upon investigation it was found that permission to use the Demeter logo comes with an additional ‘royalty fee’. This is one percent of total annual turnover if one only sells locally and 1.6% if exporting products (Lilje 2020, Pers com). This royalty fee is in addition to the inspection fee of an estimated ZAR45 000 per year which is subject to annual increases (Lilje 2020, Pers com).

Words like ‘organic’ and ‘biodynamic’ have been removed from the products of Reyneke Wines due to adverse experiences. Their ‘normal labelled’ Sauvignon Blanc did not sell at all on a USA organic wines list, yet it sold very well on a conventional wine list despite it being exactly the same wine. But that was years ago explained Reyneke (2020, Pers com). The USA recently encouraged Reyneke to put ‘organic’ and/or ‘biodynamic’ on their wine labels again. Reyneke (2020, Pers com) is very optimistic about South Africans soon catching on with organic and biodynamic wines, as the USA did. A day before our scheduled interview, Reyneke has recently enquired about and appealed Demeter’s logo fee and is cautiously optimistic he will receive a favourable reply. Grieve (2020, Pers Com) of Avondale also mentioned they are discussing lowering the royalty fees with Demeter. Transparency is evident on this participating farm as certification documents are readily available on their website (Grieve 2020, Pers com). Respondents reported that Bloublommetjieskloof pays the additional royalty fee and they believe the Demeter logo is important as many tourists in Cape Town (where their primary market lies) are familiar with it and ask for it, thus boosting sales (Lilje 2020, Pers com).

Avondale is not certified with Demeter and the costs associated with certification were given as the reason. Grieve (2020, Pers com) confirmed that they were also in communication with Demeter about the royalty fee and that he was confident that they would consider certification if the fee was reduced. Avondale’s respondent admitted to considering Demeter certification “every few years”, including 2005, 2009, 2012 and more recently but not as to yet apply (Grieve 2020; Pers com) to apply. It was stated that, unlike organic certification, Demeter certification has additional costs (royalty fee) which were deemed as being the deal-breaker. EU and USDA organic certification was regarded as adequate as these two standards are accepted in “pretty much every market” (Grieve 2020, Pers com). If Demeter was a bigger and more well-known brand in South Africa and the royalty fee was reduced, it might be reconsidered. From an informed buyer’s point of view, Lesković (2020, Pers com) considers organic and biodynamic certification to be more impactful and important on the market in terms of export opportunities and less so with the everyday customer.

Breaking Ground Organics is organically certified by EcoCert and Steenkamp (2020, Pers com) conceded the problem lies not as much in a certifying body or its standards, but more in the absence

of governmental support or accountability. This inevitably leads to more greenwashing in the industry. Although some EU and USDA standards are not relevant to or do not fit to South Africa because we have different climates and available organic additives, Steenkamp (2020, Pers com) described the certification process as “gruelling, intensive and thorough.” Certification procedures adds up to several different layers with one element specifically highlighted by all the participants: certification costs. A local alternative called participatory guarantee system (PGS) aims to sidestep the barrier of certification costs while producing some sort of organic certification and support for small-scale organic farmers.

4.7.1 The Participatory Guarantee System (PGS)

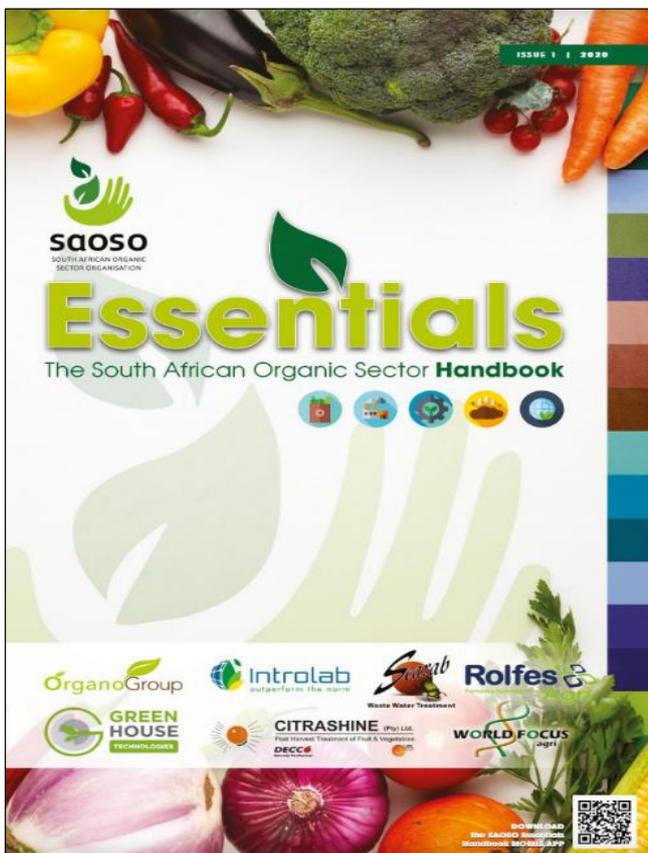
The topic of the PGS was raised by Lilje (2020, Pers com) at Bloublommetjieskloof was not mentioned at any of the other farms. The PGS is a voluntary quality control and quasi-certification system that enables people usually farmers with their farms in close proximity to one another, to set up their own selected organic standards and regulations (South African Organic Sector Organization 2020). Certification is awarded after a peer-review ‘audit’ has been done and the participants give the unanimous vote of approval to the farm under inspection. The PGS in South Africa is beneficial as it is very cost-friendly, gives transparency to customers and enables small businesses to have some sort of organic standards and certification. Participation is democratic and participants pledge to conform and uphold the standards and quality of the PGS, all sign the certificate and all are held accountable. Recurring non-conformities result in the perpetrator bearing the consequences chosen by peers in the system. Lilje (2020, Pers com) approves of the PGS system overall but said that there is always room for improvement and that it is not a replacement for internationally recognized standards upheld by third-body certifiers.

BDAASA currently is spearheading a biodynamic PGS which is hoped to encourage more farms to convert to biodynamics as more knowledge-sharing opportunities will be created through interaction. It is a nationwide endeavour and aims to spread biodynamic products and principles as well as to boost the local economy. BDAASA will be accredited by Demeter but the PGS will be BDAASA’s own local-only certification (Lilje 2020, Pers com). The strict and expensive certification of Demeter may also be a daunting proposition or even be unavailable to smaller farms due to a lack of resources like finances, but the PGS aims to be an alternative. A PGS organic certification is better than no certification according to Steenkamp (2020, Pers com).

The South African Organic Sector Organization (SAOSO) is a new South African non-profit organization working to build legislation and regulations to encourage, support and grow the organic agricultural sector at grass-roots level in the country (SAOSO 2020). SAOSO does this by having quarterly meetings with the Department of Agriculture, Forestry and Fisheries (DAFF), the

Department of Rural Development and Land Reform (DRDLR) the Department of Environmental Affairs (DEA), the Agricultural Research Council (ARC) and AgriSETA (South African Organic Sector Organization 2020). Advocacy, education and policy building are the main themes of these meetings, with the additional aim of obtaining national budget allocation for small-scale organic farmers. SAOSO is partnered with PGS South Africa to provide PGS opportunities nationwide for different sectors in South African agriculture (SAOSO 2020).

An informative organic agricultural newsletter and magazine was launched by SAOSO in 2019 and an in-depth how-to handbook on organic growing was unveiled in February 2020 (see Figure 4.7). The handbook contains numerous helpful articles and information, contacts, organic businesses and guidelines. The fact that these thorough information resources are increasing in number and availability (the magazines and handbook are available for free online) are evidence of a steadily growing agricultural sector in South Africa.



Source: SAOSO (2020: s.p.)

Figure 4.7 The SAOSO organic sector handbook

Problems inherent to the PGS can arise as it is trust-based and participants can be biased, corrupt or unnecessarily stringent. The PGS has been tried multiple times in the South African agricultural sector but failure occurs as standards are lowered and accountability lost (Lilje 2020, Pers com). The standards usually start high but as farms do not make the cut, the community lowers the standard to

get them certified, an occurrence Lilje (2020, Pers com) calls ridiculous. The new BDAASA biodynamic PGS aims to cultivate a culture of accountability and responsibility with the freedom to certify each other's farms in the community. Lilje (2020, Pers com) hopes to be able to call it a success within the next ten years.

The PGS is regarded as a valid localized way of practicing, maintaining and gaining knowledge on organic agriculture at a small scale but it is understandable that the remaining five organic certified wine farms did not mention or even consider it. Steenkamp (2020, Pers com) claimed there is value in a PGS but has a preference for third-body certification as there is more accountability and one is placed into a niche market without any greenwashing of one's company or product. The PGS is a low-cost alternative to the third-body certifiers mentioned in the study, who's high certification costs were mentioned by interviewees multiple times.

4.7.2 Unappealing costs

The respondents maintained that certification costs made up the bulk of the conversion costs as costs like overheads and salaries did not change significantly on any of the farms during or after conversion. During the first few years of conversion a farm may lose some money due to the reduced crop yield but Delpont (2020, Pers com) and Van Zyl (2020, Pers com) contend that if the farm produces quality wine and has a market, the costs will even out over time. Regarding the costs of organic conversion (Section 2, Question 16 in the questionnaire) Delpont (2020, Pers com) commented that they are acceptable and understandable except the certifying costs where the whole process and audit of the certification cost 'a significant amount'. One can only imagine how much more significant it will be if biodynamic certification is added, even if it is done by one certifying body. Lacon Institute (2020) an organic certification company claims that their fees are 'reasonable'.

A further promising note is that all the participating interviewee stated that the initial costs are justified by the results of conversion. All five also agreed that the organic and biodynamic wine market is growing and demanding products at such a rate that the initial conversion costs will be recovered in due time. Reyneke (2020, Per com) believes that the days of production-driven agriculture are gone and that agriculture is currently market-driven. Bloublommetjieskloof's respondent gave a contrasting answer that it all depends on what one regards as justification. If the reward for the associated risks and costs of biodynamic conversion is financial gain, one will be left disappointed and poorer. This is because biodynamic products in South Africa are not very popular yet and mainly sell well in Cape Town where more tourists buy Demeter products. But if the reward is seen as a palpable increase in product quality and added life to the farm ecosystem, the conversion costs are definitely worth the risk (Lilje 2020, Pers com).

4.8 MORE ROADBLOCKS AND BARRIERS THAN HELP AND SUPPORT

On a recent business trip to the Netherlands with BDAASA, Lilje (2020, Pers com) in conversation with European biodynamic farmers, found that Norwegians do not pay a cent for their organic and biodynamic certification. This was affirmed by Grieve (2020, Pers com) and Reyneke (2020, Pers com) who mentioned that the US and EU countries receive, at the very least, governmental subsidies whereas in South Africa there are no financial incentives or support of any kind. During the interviews the question whether governmental support and subsidies exist was met with an exhausted sigh or a sarcastic scoff followed by the unanimous answer of 'no'. It was potently clear that all six participants were not at all positive about the topic. The interviewees on the three biodynamic farms all vented what can only be described as frustrated enthusiasm and they gave explanations of the situations they find themselves in regarding the government. All three mentioned the same topic; there are more roadblocks and barriers than help and support (Grieve 2020, Pers com; Reyneke 2020, Pers com; Lilje 2020, Pers com). BDAASA has witnessed several farms that start biodynamic conversion but aborted it after a while, solely because there is so little support and information available. The responsibility of educating, training and guiding new biodynamic farmers was taken up solely by BDAASA. This is a disadvantageous because BDAASA has limited funds and human resources to spread the biodynamics message throughout the country. Demeter is not directly participating in South African farmers' education or training (Lilje 2020, Pers com). South Africa also has no biodynamic consultant who can be sent to prospective biodynamic farms to help in any way.

The respondents at Reyneke Wines and Avondale believe that incentives should exist because both organic and biodynamic agriculture provide more job opportunities than conventional farming because the farms are very labour-intensive ways of farming. "If the government wants more jobs, healthier people and environment, then they should help us..." was Reyneke's (2020, Pers com) sentiment. Grieve (2020, Pers com) reckoned that very little value is placed on farming as a whole in South Africa, which flies in the face of the unemployment and hunger issues plaguing the country.

Even with little to no support from the government, other challenges are present. In an in-depth analysis of farming trends and statistics in South Africa, the WWF-SA (2010) found that there is also a multitude of other factors working against South African farmers. These include the high-impact external stressors (like oil prices and exchange rates); limited natural resources and soil; low market predictability; competition from cheaper subsidized imports; and high rates of farm murders. The respondents on the three organic only wine farms all replied with short telling answers, which contrasted with their previous thorough answers. The overall demeanour of all six participants was slight negativity and bordered on pessimistic as the topic of governmental support was discussed.

4.9 SUPPORT AMONG WINE FARMS IN SOUTH AFRICA

Emphasis has been put on the interconnectedness of people in the wine industry, with all five wine farm respondents saying there is camaraderie among organic and biodynamic farmers. This mutual trust and friendship were characterized by informal communication via WhatsApp groups, phone calls and emails, as well as random on-farm get-togethers where help, suggestions, stories and sometimes even machinery is traded. This is a positive signal for increased success in the adoption of organic and biodynamic winemaking as newcomers will not be alone. The earlier result of a sudden increase in the number of certified wine farms (five new organic-certified farms between July and October 2020) shows that adoption and conversion are gaining traction. The interviewee at Bloublommetjieskloof claimed that there is no real camaraderie in the biodynamic and organic agricultural sector of South Africa and that this disadvantages them and it underlines the concern that the proposed PGS system will not succeed because it is based on open communication (Lilje 2020, Pers com).

Five of the participants were aware of support organizations and clubs like BOWSA, with BDAASA being the most mentioned and three (Reyneke, Avondale and Bloublommetjieskloof) claimed current membership which is voluntary. No interest was shown by the other participants. Van Zyl (2020, Pers com) at Laibach, is aware of “some organic association of South Africa” but is not a member as he prefers to keep to himself. At Bloublommetjieskloof, the only no-wine farm, it was stated that people in the agricultural industry keep to themselves and are not open to camaraderie in essence, shooting themselves in the foot.

Reyneke (2020, Pers com) and Delpont (2020, Pers com) both mention there is no need to keep trade secrets or treat your industry peers as competition as the market is expanding so much. This statement was supported at Jacques Germanier when asked about comradeship in the industry (section four, question eight). Marais (2020, Pers com) elaborated that they are all “stuck in the same boat” and in his experience, others in the industry (outside this study) are very keen to help and give suggestions. Overall, there is a positive vein of sharing and helping running through the majority of the organic and biodynamic farms in the Western Cape, which is very good for further innovation diffusion.

The individuality of organic wines, the farms and the winemakers should be cherished and in the organic wine industry this is not that hard to come by or establish (Van Zyl 2020, Pers com). The market is growing with a steep trajectory but presently certified organic and biodynamic wine farms are few and far between with only eighteen organic farms and two Demeter-certified biodynamic farms (BOWSA 2020). Thus, standing out overtly spotlighting an individualistic narrative will be easier to accomplish than in the conventional wine market. An investigation of the websites of the

six participating farms showed a clear story-telling narrative used as a major method in marketing (Grieve 2020, Pers com). In these virtual stories emphasis is placed on loving nature, animals and the vines, family values, character, environmental consciousness and the overriding message of quality over quantity. News, awards and informative blog posts are prevalent but expected. Support among the O/Bio farms is beneficial for information-sharing and conversion yet disadvantages and difficulties were also prevalent.

4.10 IDENTIFIED DISADVANTAGES AND DIFFICULTIES

The outstanding feature in all six case studies was certification costs and the prices connected to it. All the participants showed varying degrees of dismay when talking about the certification costs and they all insisted that the costs are unnecessarily high. This can be seen as a major limitation and barrier to conversion for a prospective organic or biodynamic farmer who cannot afford the costs.

The sharing of information about organic and especially biodynamic methods and usage from active farmers to conventional farmers is a current limitation. Steenkamp (2020, Pers com) explained that one can easily be overwhelmed and even be lost in translation when talking to current organic and biodynamic farmers. There is a lack of biological jargon, which by proxy results in a conventional farmer being inclined to believe it is not 'scientific' enough. This leads to scepticism in the scientific and biologic roots of organic and biodynamic methods, even if there is proof like high-quality products, healthier vines and soil, increase biodiversity on the farm. This was found especially in the South African wine farm case study done by Setati et al. (2012) described in Chapter 3.3.1.

4.10.1 Limited educational resources and information

The need for more educational resources, information, literature and workshops and training was stressed by the interviewees at Jacques Germanier, Bloublommetjieskloof and Avondale. Steenkamp (2020, Pers com) and Lesković (2020, Pers com) also fervently agreed that more education and resources are needed in South Africa about organic and biodynamic agriculture and winemaking. Both shared their experience of the limited exposure they had had to organics and biodynamics while doing their studies, Steenkamp at Elsenburg and Lesković in Croatia and Stellenbosch. Grieve (2020, Pers com) commented on the lack of organic and biodynamics in tertiary education courses is a severe problem in South Africa. The last time he checked, Elsenburg had two days on fundamental organic agriculture in a two-year course, with nothing about biodynamic agriculture. Regarding organic and biodynamic practices, principles and general information, a total of fewer than 200 words are devoted to these topics on the official websites of Integrated Production of Wine (IPW), Sustainable Wines South Africa (SWSA) and Wines of South Africa (WOSA). This is worrisome as these organizations are main information gateways for the South African wine industry. Major difficulties experienced

in the adoption process were a lack of knowledge and understanding, as well as their pursuing conversion at too great a scale, too fast (Reyneke 2020, Pers com).

Van Zyl (2020, Pers com) recalled the case of a very popular wine farm in the Stellenbosch wine region that tried (in 2008) to convert to organic winemaking while relying on limited knowledge. Moreover, the timing was bad as there was severe water scarcity and a global recession. Said wine farm initiated organic conversion all at once and unfortunately lost most of their crop yield, thus also a substantial volume of income-generating wine. The losses prompted the farm to abort conversion and it is still, in 2020, a conventional wine farm. According to Van Zyl (2020, Pers com) the losses could have been mitigated with the right knowledge and people which could have subsequently led to the farm continuing with conversion.

4.10.2 Lack of communication

According to Grieve (2020, Pers com) the perceived lack of scientific explanation of organic and, especially in biodynamic, winemaking does not discount these methods for resulting in an evident above-average product. Oversimplification of organic and biodynamic methods can also happen when the right jargon or explanations are not used by those practicing in their communication with others. Because biodynamics is not as hard science as organic agriculture, it is seen more as a philosophy and lifestyle by those who practice it (Lilje 2020, Pers com; Reyneke 2020, Pers com).

When the interviewees of the three participating biodynamic farms described their experiences with people who had misconceptions about or lack of correct knowledge about biodynamics, the experiences and conversations were lacklustre. Lilje (2020, Pers com) remarked that many conventional, or even organic; farmers contact her regarding information about biodynamics and show genuine interest. But after explaining the principles of biodynamics to them, she is usually met with blank faces and far-off stares, especially when the star constellations and the biodynamic calendar are mentioned. Even very liberal conventional farmers and other organic farmers show dwindling interest when the unorthodox methods of biodynamics are explained, despite the additives making good scientific sense (Steenkamp 2020, Pers com). She also observed that most biodynamic farmers get their education, information and support from Europe and when they have to explain biodynamics to someone who knows nothing about it, the exponents usually start with the points of higher knowledge and create a wide gap in communication and understanding.

In the initial stages of the study and interviews, it was found that the biodynamic farmers lean more to a free-thinking, holistic and borderline mystic approach to agriculture. This was also experienced by Steenkamp (2020, Pers com) who described biodynamic farmers in her experience as a “different crowd” who are not the usually conservative, traditional farmers found in South Africa. Her statement

does not aim to debase or belittle biodynamic methods or those practicing it but simply shows where there can be possible debate and doubt regarding biodynamic practices. “In my opinion a lot of people think it’s a whole ‘airy-fairy’ thing because with the biodynamic farms they don’t explain themselves well” declared Steenkamp (2020, Pers com) but she immediately followed the expressed opinion with the assertion that she has learned much from Reyneke about his methods and approach to organics and biodynamics. Clearly organic and biodynamic winemaking will require more representation on major platforms like those of IPW, SWSA and WOSA. Given the speed with which associations, schemes and organizations are banding together and disbanding, and legislation and regulations changing, it is quite likely that potential and current organic and biodynamic wine farmers may feel disjointed.

4.11 CONCLUSION

A range of issues regarding the conversion and adoption of organic and biodynamic wine farming on six farms have been discussed in this chapter. The main findings about five wine farms are summarised in Table 4.1. These issues coincide with those specified by Waldin (2004) as reported in Section 2.8.2. Despite identified barriers and limitations like dwindling crop yields and no governmental support, the reported conversions were generally regarded as being worth the pain and labour as evidenced by the high levels of perceived success and a steadily growing market. Experience plays a central role in successful O/Bio winemaking but it is not a single recipe to be followed and one size does not fit all. Most of the findings demonstrated positive attitudes towards and increased adoption of the innovation of O/Bio winemaking.

Certification costs are the greatest but inevitable hindrance to the adoption and conversion process and have to be incurred for a wine farm to be certified and reap the export benefits of meeting EU and USDA organic standards. Organic and biodynamic winemaking was found to be not necessarily cheaper than conventional winemaking because the South African market is still emerging and the lower crop yields require a higher premium wine price which in turn evens out with the money saved on not buying pesticides, herbicides or fertilizers. The explanations, insights and perspectives gained from the interviewed participants are used in Chapter 5 in the application of Rogers’ (2003) diffusion of innovations theory to the adoption of O/Bio winemaking in the Western Cape.

Farm	Environmental conservation	Labelling and increased sales	View on inner industry support and camaraderie	Government support	Certification costs	Spray drift and cross-contamination	Reduced crop yields
Reyneke Wines	Priority: overall farm health most important; houses animals too	Yes, market and location dependent. Lacking in South Africa, serious problems with greenwashing	Informal but helpful	Serious problem, has many opinions on why it is vital.	Greatest hindrance; the lack of South African standards is a major issue.	Yes, uses hedgerows and trees and favourable wind direction. Experienced significant losses.	Serious problem
Waverly Hills	Priority: part of the WWF-SA Conservation Champions	Unsure, consumer education needed	Informal and lacking in numbers	Serious problem	Greatest hindrance accompanied by administration.	Not significantly because of isolation but relies on favourable wind direction.	Serious problem
Laibach	Not necessarily a priority, focus on vines	No, organic wine in South Africa has a bad reputation. Brand name more influential	Chooses to not participate, views communication as lacking.	Serious problem	Greater hindrance accompanied by administration.	Yes, relies on communication between farms and favourable wind direction.	Serious problem
Jacques Germanier	Not necessarily a priority, focus on vines	Yes, believes organic label increases sales but has a serious problem with greenwashing.	Yes, eager to help one another.	Serious problem	Greatest hindrance accompanied by administration.	Yes, uses hedgerows and trees and favourable wind direction. Experienced significant losses.	Serious problem
Avondale	Priority: overall farm health most important; houses animals too	Yes, but market and location-dependent. Big problem with greenwashing.	Chooses to not participate, believes it could be better.	Serious problem for all South African farms with subsequent obstacles	Greatest hindrance accompanied by Demeter's extra costs.	Not significantly	Serious problem

Table 4.1 Summary of main issues identified by O/Bio winegrowers regarding conversion to and adoption of O/Bio farming

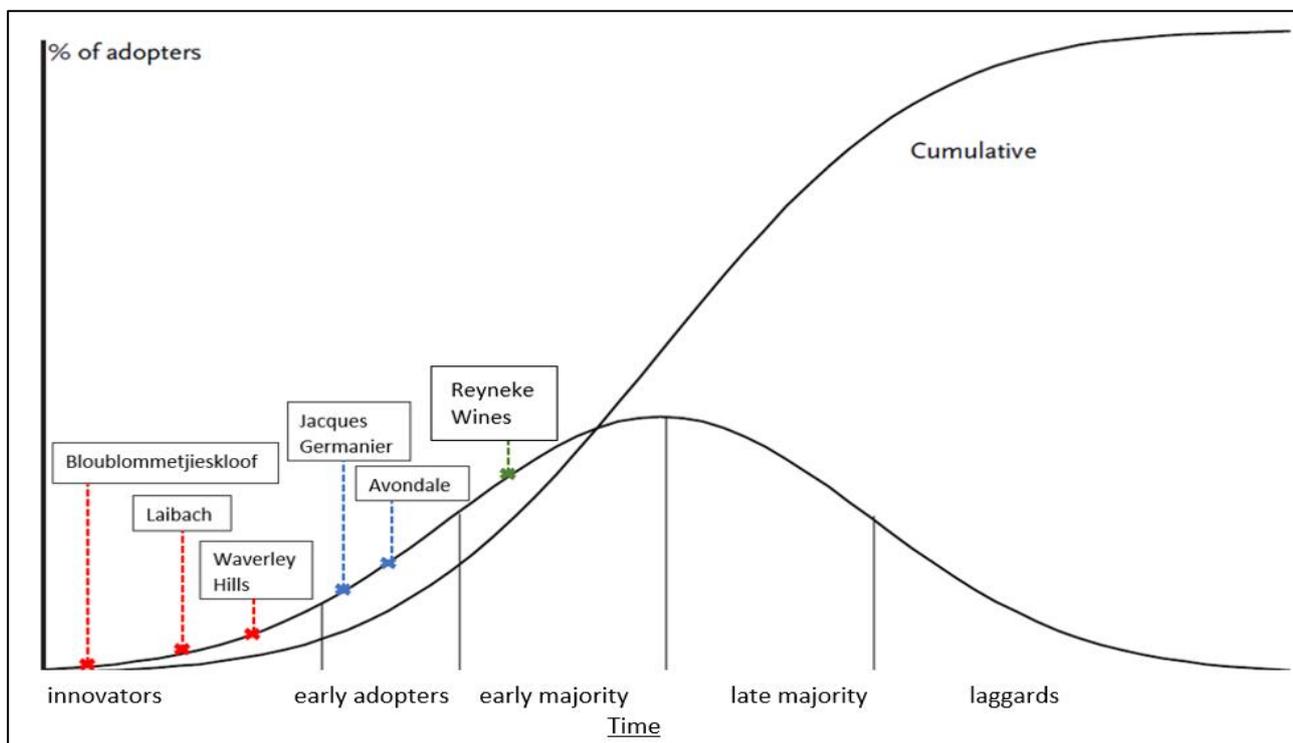
CHAPTER 5 APPLYING DIFFUSION OF INNOVATION THEORY

5.1 INTRODUCTION

The diffusion of innovations (DoI) theory of Rogers (2003) is a useful and an insightful tool for analysing the different aspects and complexities associated with the adoption and diffusion of agricultural innovations (Parra-Lopez, De-Haro-Giménez & Calatrava-Requena 2007). The empirical findings of the case studies reported in Chapter 4 regarding what factors motivate or demotivate or even hinder the adoption of an innovation (organic and biodynamic winemaking) are revisited and used in this chapter to explain and understand the process. The adoption curve proposed in DoI theory is used to plot the progress of adoption as perceived by the participants. Their placements, reasoning and motivators are also further discussed.

5.2 DIFFUSION THEORY APPLIED

After given a short explanation of diffusion of innovations (DoI) theory and shown how it is illustrated by a normal distribution or bell-shaped curve, the participants were asked where they would plot their farm on the graph. As evident in Figure 5.1 all participants positioned their farms conversion in the first half of the diagram during the initial phases of innovation adoption.



Source: Adapted from Padel (2001)

Figure 5.1 Position of the case-studied wine farms on the innovation adoption curve

If the adoption of an innovation happens in a relatively short period by many people, the S-curve showing the cumulative total of adopters will be steeper, which is the case in this study. Rogers (2003) posited that when the S-curve is steep it can, on the other hand indicate that the innovation

was a fast-growing trend that quickly grew in popularity but will fade as the novelty wears off. On the other hand, it can be evidence of an easier and less complex adoption with more innovators and early adopters in quick succession. In this study the innovation adoption rate represents the latter situation. The monthly growth of certified organic and biodynamic wine farms indicates an enthusiastic adoption and rapid diffusion of the innovation. This is impressive given that conversion is a costly and time-consuming process. But it still has to be determined whether the new adopters' conversion was a success. An innovation can be aborted at any juncture of its lifespan (Padel 2001). Thus, if a farm started conversion in 2020 it can still be aborted in 2024 even if the conversion period was successful. The perceived successes of conversion discussed earlier (Section 4.3) indicated that the innovation adoption and conversion were regarded to be highly successful by all six participants who have implemented the innovation over the past decade.

Given time and more participants, the diagram will become more complete and more accurately reflect the adoption of the innovation by the late majority and the laggards. Although organic and biodynamic winemaking have been present in South Africa since the 1970s (Lilje 2020, Pers com; Van Zyl 2020, Pers com), predominantly in the Western Cape which is the winemaking capital, it was quite unheard of, had no market significance and those that practiced it during that period were criticized and ostracized by wine industry peers.

5.2.1 The innovators

Bloublommetjieskloof, Laibach and Waverly Hills were placed by the participants in the first 2.5% of adopters as innovators. According to Rogers (2003) they are the first promoters of the innovation, the most educated about the innovation and those willing to pay the most as regards cost of the conversion and the upkeep of the innovation once conversion is done. Both Hall (2003) and Padel (2001) notes that innovators are motivated by ethical, philosophical and ideological beliefs. As there are no peers who have gone through adoption before them, the innovators need to seek information and knowledge on their own in a variety of places. Any troubleshooting with the innovation is the hardest for the innovators, as they usually do not have adequate references for their specific circumstance like the climate and their social and economic situations. This was mentioned by Lilje (2020, Pers com) because in South Africa there are only three certified biodynamic farms, so when faced with a challenge or trouble, Lilje turns to Demeter resources and European examples which do not consider South Africa's climate, limited resource availability or economic situation.

Along with the early adopters, the innovators accept a high degree of uncertainty and have little information and peer-related experience of innovation adoption and conversion. The self-placement in Figure 5.1 seems to be most accurate for Bloublommetjieskloof as organic and biodynamic farming was initiated by Jean Malherbe in the Western Cape and Bloublommetjieskloof is the

country's oldest biodynamic (thus also organic) farm. This situation is one of a textbook innovator; the risk of conversion was high; there was no real existing market at the time; Malherbe was very well educated regarding the methods (based on information she gained in Europe); and she experienced unjust ostracization and outspoken criticism in her community. The adopters at Laibach and Waverley Hills also fit well in the innovators profile as they were not hesitant in adoption, were very educated and they acknowledged that the risk of adoption was high but believed the market would grow and the risk will eventually be rewarded (Delpont 2020, Pers com; Van Zyl 2020, Pers com). They showcased the evidential optimistic and adamant attitude of innovators.

5.2.2 The early adopters

Jacques Germanier and Avondale were placed as early adopters (among the first 13.5% of theoretical adopters) as they did more research about organic (and for Avondale, biodynamic) methods and certification before adopting (Grieve 2020, Pers com; Grieve 2020, Pers com). According to Rogers (2003) the early adopters form the opinions of the public about an innovation as they are still regarded as trailblazers, but they have already done their research on the resources and experiences available. Hence, they are informed and have had the opportunity to learn helpful tips and about potential pitfalls from the innovators who display their successes to the public. This was not necessarily the case with Jacques Germanier or Avondale because both are secluded farms with both representatives preferring to keep to themselves and choosing to gain information and knowledge from own experience, limited literature and the Internet (Grieve 2020, Pers com; Marais 2020, Pers com). Their behaviour might be ascribed to information gathering and knowledge sharing being much easier in the current era than in the early 1960s when Rogers formed the DoI theory. Direct interpersonal sharing of experiences and knowledge among innovators and early adopters in the same country has become less necessary in the twenty-first century.

5.2.3 The early majority

The early majority comprises 34% of the adopter population. At this stage in the bell graph, the innovation became mainstream and competition began, followed by profitability. The early majority desire to adopt the innovation while it is still new, but they wait until the innovators and early adopters 'trial-ran' it, have gained experience and completed most of the troubleshooting. Only one farm, Reyneke Wines, was placed in this group. In the future, more farms may adopt the innovation and join the early majority as the innovation becomes normalized and information more widely available.

Reyneke Wines is an outlier in the first half of the early majority and signals that countries in Europe are the innovators that trailblazed organic and biodynamic winemaking. Reyneke Wines can, however, be positioned with the innovators as they are one of the first certified organic and biodynamic wine farms to successfully hold a place in the market, not only in South Africa but

internationally too. Reyneke (2020, Pers com) revealed that when conversion started it was highly experimental and he sought out multiple sources of information and help, ranging from literature to international visitors versed in organics and biodynamics. This experimental nature and an inquisitive mind are not characteristic of the early majority, rather that of the innovators. The Reyneke innovation-adoption process was not motivated by a prospective gap in a niche market or the formation of a unique selling proposition, rather by creating an eco-centric system based on symbiosis and philosophy. Thus, by adopting a high risk (lower yields, possible financial loss) innovation with primary motives other than financial gain, Reyneke fits better as an innovator or, at the least, at the front of the early adopters.

Communication and idea spreading are driving forces of the DoI behind Rogers' theory. Although communication can be either interpersonal or via mass media, in this study communication was found to be solely at an interpersonal level among organic and biodynamic farms. This can be risky, as the information shared may be tainted by peers' experiences and be biased. As Marais (2020, Pers com) commented, in his experience conventional wine farmers disregard organic winemakers and they prefer to keep to themselves and with their favoured methods. This was echoed by Steenkamp (2020, Pers com) who had experience of conventional farmers contemptuously dismissing organic and biodynamic agriculture, calling it a fad. Communication as a driving force among innovative wine farmers is vitally important as currently there is a lack of adequate information and knowledge about organic and biodynamic winemaking in South Africa.

Adoption and conversion will become easier for future adopters if there are communication and information pathways, and sharing opportunities with the earlier adopters, namely the innovators and the earlier adopters (Rogers 2003). It is also beneficial for all five wine farmers to ensure that there is camaraderie, and that information is freely shared. At Reyneke Wines, Waverley Hills and Jacques Germanier, get-togethers happen at least once a year (with other organic and biodynamic winemakers and wine farmers on a chosen farm) where information, tips and news are shared among one another. "We don't have to keep trade secrets from each other or compete as the market is expanding so much" was Reyneke's (2020, Pers com) expressed conviction. Delpont (2020, Pers com) echoed that there is no need to keep secrets from each other or even regard each other as a competitor. Even during the certification process is there a gaining of information and knowledge from helpful third body certifying auditors who share suggestions, recommendations and tips with farmers (Marais 2020, Pers com). Although the interviewees reported a lack of education possibilities, available literature and workshops, ample information can be acquired through interpersonal communication and connections which, according to Rogers (2003) are the most important and potent ways to diffuse knowledge about innovations and adoptions.

5.2.4 The late majority and the laggards

With the late majority (34% of adopters), the innovation became the status quo, as it is in Northern Europe, where it is out of the ordinary to see conventional wines (Lesković 2020, Pers com). The innovation at this point diffuses into society on its own, without innovators or early adopters promoting it. The late majority is responsive to peer pressure and waits for an innovation to be very well tested. Hence the larger, more established wine farms for example those of Distell, might reside in this adopter group as they prefer to not adopt the innovation in its (current) emerging years.

Laggards (the final 16%) will not even consider innovation adoption until the innovation has proven itself financially successful for many years (Rogers 2003). Seeing that organic and biodynamic winemaking is still regarded as a young innovation with an emerging market in South Africa (Lesković 2020, Pers com; Pretorius 2020), conventional winemakers, who are laggards, may wait many more years for it to prove its success in their opinions. It may never reach their perceived level of financial success, thus they will never consider adoption and conversion. The laggard's main philosophy is rooted in tradition and proven methods that in their eyes led to success. Yet as Lilje (2020, Pers com) contends, success can be subjective and is not always seen by everyone as financial profit.

5.3 INNOVATION ADOPTION

The rate of adoption of an innovation is influenced by five attributes of the adoption process which usually follow in the following chronological order: knowledge gathering and understanding; attitude formation; preparing for adoption or rejection; implementation and conversion; and confirmation (Padel 2001). When looking at these attributes, the adoption of O/Bio winemaking in this study did not follow the above-mentioned pathway exactly as described by Padel (2001). The participants gained their knowledge while implementing conversion and then formed an attitude based on their experience and outcome of the conversion, which they regarded as positive (thereby giving a reason why they did not abort the adoption of the innovation). This deviation from the prescribed pathway is not a negative occurrence because on all the participating farms O/Bio winemaking will continue and all experienced successful conversions. Recall the example of by the popular conventional wine farm cited by Van Zyl (2020, Pers com) in Section 4.9.1 where the innovation (organic winemaking) was adopted and implemented with little to no knowledge or understanding, subsequently leading to innovation abortion, confirmation and attitude formation (believed to be negative as they lost significant amounts of money).

A perceived risk of innovation adoption according to Padel (2001) and Rogers (2003) is an increase in labour, thus the increase of expenditure. Although organic and, especially, biodynamic winemaking is known for being labour intensive (Waldin 2004; Reyneke 2020, Pers com; Van Zyl

2020, Pers com). The case studies revealed that there is a real chance of increased labour while converting and when conversion is successful, yet it is only few people added mainly for seasonal work (Delpont 2020, Pers com; Lilje 2020, Pers com). The added labour is not permanent and expenditure on the added staff fluctuates according to seasonal necessities.

Easily adoptable innovations are described by Rogers (2003) as obviously advantageous, involve little to no risk and they allow for on-site experiments. As knowledge and correct information are so important for adoption, the lack of information resources in South Africa on the O/Bio innovation can make the advantages seem less obvious. It is easy for a normal person in a third world country to see the obvious advantages of a cell phone as a desired innovation (internet connection, instant communication, etc.) but for a conventional wine grape farmer may find it more difficult to see the advantages of organic and biodynamic winemaking (niche market, healthier soils, etc.). Marais (2020, Pers com) reinforced this comparison in his revelation that the conventional wine farmers he has talked to about organics thought that he is 'mad' for farming organically. On the subject of converting to organics and biodynamics, Grieve (2020, Pers com) remarked that "We would be idiots not to do it these days." The advantages of conversion were highly emphasised by the participants, the main disadvantage and hindrance being certification costs. Thus, according to these criteria we can assume that the innovation was adopted easily by the majority of participants, albeit that adoption did not happen without challenges (Delpont 2020, Pers com; Marais 2020, Pers com; Reyneke 2020, Pers com).

After the adoption of the innovation and successful conversion it transpired that the most significant changes on the farms were more advantageous than detrimental to the farm's overall success. It is noteworthy that the payment of costs (certification or otherwise) was not mentioned by the participants in their answers regarding the most significant changes on the farm (see Section 2, Question 3 in Annex B). Maybe this is because the costs of conversion (and certification costs) were mentioned often at other times during the interviews. Four notable changes were identified namely increased administration; smaller yields; increased soil health and vitality; and an increase in wildlife and birdlife on the premises. The increase in administration was mentioned by two respondents who regarded it more as a time-consuming nuisance than a significant disadvantage. The smaller yields were regarded as a well-deserved sacrifice for going organic or biodynamic which can be gained back with good sales. The importance of humus and soil vitality is unmeasurable (see Section 4.2) as the vine's crop success is directly connected to the soil's health and living micro-organisms. This is especially important in fully self-sustaining biodynamic vineyards. The increase in animal- and birdlife is a testimony of a healthy environment and the effort towards human agricultural intervention to be in equilibrium with nature.

Reyneke (2020, Pers com) explained that even organic winemaking has aggression towards nature and the environment so that it is a good indicator when the formerly present animals want to return to the farmland. These animals are small wildlife like hares, guineafowl and antelope which are naturally hesitant to inhabit areas disturbed by human activity. The significant increase in birdlife at Avondale was even more advantageous as the farm drew more visitors who came specifically for birdwatching. Avondale now even hosts an annual birdwatching event where enthusiasts saw more than 200 bird species at the height of the 2014-2015 drought on the 300 ha farm.

Good soil vitality and health seem to be the all-encompassing answer to many perceived and real risks associated the adoption of this innovation. If the soil is healthy, the vines will be healthy, the yield will be acceptable and the quality of grapes good (Waldin 2004). Maintaining soil health is also regarded as insurance for future risks and challenging external factors. Healthy soil and humus levels are good ways to mitigate drought and water shortages, as the soil and humus withhold adequate moisture and check soil erosion, along with the chosen cover crop. Grieve (2020, Pers com) avers that soil health and vitality will, in the long run, the biodynamic farmer in the best position between conventional, organic and biodynamic farmers as the climate changes and challenges become more prevalent.

5.4 FACTORS THAT MOTIVATE ADOPTION AND DIFFUSION

Adoption of organic and biodynamic wine farming happens more easily when the perceived or real risk is deemed low (Padel 2001) and according to the literature the greatest risk associated with conversion is complete crop failure (Padel 2001; Lampkin 1993; Waldin 2004). However, in the interviews 67% of the participants regarded crop failure as being of 'little risk' or less. Although lower crop yields were mentioned by all the participants, five regarded it as part and parcel of organics and biodynamics, stating the benefits outweighed the smaller crops. Thus, crop failure can be seen as a perceived risk that could hinder adoption in the Western Cape. The available and correct information about an innovation that debunks its perceived risk and explains its real risks, is vital to the successful adoption of an innovation. When farmers understand more about an innovation adoption will happen quite easily (Padel 2001). This confirms the need for reliable information, relevant literature workshops and lectures on O/Bio winemaking, for farmers in the Western Cape and elsewhere in South Africa too.

5.4.1 A growing market

The economic value of conversion to organic has increased over time, especially in countries with a growing market (Bonn, Cronin & Cho 2016; Delmas & Lessem 2015; Padel 2001). With five of the six participants and Steenkamp (2020, Pers com) and Lesković (2020, Pers com) all agreeing the South African organic wine market will continue to grow, the economic value of the conversion rate

is predicted to increase in South Africa. The country's winemakers are producing its best quality wines ever according to Atkin's 2020 Harvest Report (Gibson 2020). With more awards and recognition from wine influential and importers, the conventional South African wine industry will hopefully be complemented by a flourishing organic and biodynamic winemaking niche industry too.

Padel (2001) has concluded that the motives for conversion to organic farming are diverse, but two, financial gain and environmental sustainability, are paramount. In this study these two motives were not found to be mutually exclusive on any of the farms, as they all had a vein of environmentalism running through their operations, although more pronounced on some farms. Of course, making a profit is important to keep a farm running because in essence it is a business. Van Zyl (2020, Pers com) of Laibach observed that other than certification costs, "I believe it's a bit cheaper to farm organic than conventional." He added that conditionally you should know your market and make a quality product, otherwise the lower crop yields might cause financial loss and the costs will be equal to (or maybe even more) than conventional winemaking.

Environmentalism is clearly prioritized at Reyneke Wines, Avondale and Bloublommetjieskloof, all these also being biodynamic. That is quite likely because the quality of the product is dependent on the success of the enclosed biodynamic system with its specific preparations (International Biodynamic Association 2018). All of the participants mentioned the growing market was a reason for conversion, as the organic and biodynamic products give them a unique selling prospect and a place in a niche market.

5.4.2 Internal camaraderie and support

Interpersonal connections and communication are vital to the success and diffusion of an innovation. Delpont (2020, Pers com) observed that there are not many support groups or organizations available to help the new and small organic and biodynamic winemaking industry in South Africa, especially the producer. The three organic-only participants all knew about biodynamics but their knowledge about it was self-proclaimed to be very limited. The recognition of and demands for organic and biodynamic wine are growing rapidly in South Africa (Steenkamp 2020, Pers com; Pretorius 2020; Reyneke 2020, Pers com). One can deduce that new organizations and groups will form naturally as the number of O/Bio winemakers increase. "It's not a fly-by-night thing, it's not going away easily" was Delpont's (2020, Pers com) conviction which he supported by pointing out statistics on the wine industry in which organic wine is the only sector that is continuously growing and gaining more traction in local and international markets. Given Waverley Hill's outstanding reputation for producing world-class wines, such a confident statement cannot be easily dismissed. When asked if he thought that organic and biodynamic winemaking would become more popular among wine farmers in South Africa, Delpont (202, Pers com) unwaveringly answered "Yes, definitely". Such

answers are encouraging for South Africa's organic wine sector as Waverley Hills's primary market is South African so in Delpont's experience he is not only talking about the international wine market, but a situation closer to home.

5.4.3 Smaller vs bigger farms

On this subject Delpont (2020, Pers com) believes that smaller conventional farms will be more hesitant to convert to organic or biodynamic methods as they do not have the large and established customer bases some of their competitors who might also consider conversion. This is reasonable as customers are more willing to try something new and unknown to them (organic or biodynamic wines) if they are familiar with and trust the producer of said new product (Bonn, Cronin & Cho 2016). Yet, the small volumes and lesser-known brands of the smaller farms might work to their advantage and even be a motivator for adopting an innovation. In their study of the adoption of organic cocoa bean farming in Ghana, Djokoto, Owusu & Awunyo-Vitor (2016) found that smaller households were more likely to adopt the new organic methods and technologies. Andy Khubani, the billionaire founder and CEO of Telebrands and IdeaVillage, recently asserted that "Today more than ever the small guy has a huge advantage." (Khubani 2020, n.p.). He explained that presently the most important traits of a business are the speed at which it adopts a desired innovation, fulfils the changing demands of the customers and disseminates information timeously. Thus, the larger the company or business, the more bureaucratic it becomes with increasing layers of employees and departments, making innovation adoption, information dissemination and demand fulfilment strenuous tasks filled with time-consuming administration and multi-management. This can be applied to the rudimentary setting of an agricultural household in Ghana, where bigger households with older generations (who are part of the family farm's decision-making), preferred to farm conventionally as they were taught, thus hindering innovation adoption (Djokoto, Owusu & Awunyo-Vitor 2016).

Whereas the smaller the business, the faster customer's needs can be fulfilled by adopting the desired innovation and producing the in-demand product. Even if the large business has more resources, there are more firewalls present leading to a delay and possible demotivators in innovation adoption. The smaller businesses are nimbler and have many ways of obtaining lacking resources if they are needed through different loans or even crowdfunding. Khubani (2020) claims that the smaller businesses (like a smaller, family-owned wine farm) will have an easier time adopting an innovation (like organic or biodynamics) than a larger, more well-known business, like a very established and well-known wine farm. The EU also aims to make certification more accessible to smaller farms with the regulation update in January 2021 (International Federation of Organic Agriculture Movements 2020).

5.4.4 Favourable climate and environment

The Western Cape is a wine-growing region with a Mediterranean climate, that is favourable for cultivars like Chenin Blanc and Sauvignon Blanc which produce robust, vibrant wines. Lesković (2020, Pers com) maintained that the Western Cape's climate and associated weather is beneficial to organic winemaking, even ideal for biodynamic winemaking. This is because when it rains the wind is usually blowing and this decreases the chance of blights like mildew and fungi. This was highlighted in the interviews as a benefit of farming in remote locations where there are fewer geographical obstructions like mountains and better ventilation (Delpont 2020, Pers com; Marais 2020, Pers com). Wine farmers in the Western Cape do not have to contend (to the degree that human intervention is needed to save crops) with heavy snow, black frost or extreme hail as in some top wine-producing countries in Europe (James 2013). The mild spring and hot summer seasons also benefit bud development and fruit formation and the coastal winds aid vineyard humidity.

5.5 FACTORS THAT INHIBIT AND DEMOTIVATE ADOPTION AND DIFFUSION

According to Rogers (2003) more is known about why innovations succeed than why they fail. This is probably because researchers have a proclivity for studying innovations that are exciting and fast-diffusing, compared to slower-diffusing innovations that are likely to be less exciting. Organic and biodynamic winemaking is a more slowly adopted innovation which is complex, only relevant to a small group of people (compared to the innovation of social media for example) and takes years to be regarded as a success. The certification process itself usually takes three years just to get the innovation up and running. Therefore the first vintage has to be made and sold to see if the innovation meets its crucial criteria: financial profitability and brisk sales, which should then lead to further diffusion.

When examining the adoption and diffusion of a methods to promote sustainable agricultural development, like organic and biodynamic winemaking, one must consider the many layers of human factors that influence it either directly or indirectly. WWF-SA (2018) identifies the major factors as the economy, educational institutions, technology, financing, and present and available skills. As a Third World country, South Africa is struggling in most (if not all) of these indispensable anthropocentric sectors. When they do not function correctly or competently, they act as barriers and hindrances to sustainable development and a greener society. Accordingly, they will also be hindrances, demotivators and barriers to the adoption and subsequent diffusion of the innovation of organic and biodynamic winemaking.

Some of the restrictions and limitations affecting organic agriculture generally are listed by Lotter (2015) as: limited access to organic additives and organic manure; inability to access more land; inability to buy said additives or manure; insufficient compost; and time restrictions like the duration

of conversion time and time before return on investment. As biodynamics uses organics as a cornerstone, these restrictions and limitations with the exception of the possible lack of organic manure and compost also apply to biodynamic agricultural methods. The exception applies because a proper biodynamic farm supplies its own compost and manure from the resident cows, pigs and sheep. If there is not enough feed for the animals due to a shortage or drought, the lack of manure and compost will become a problem of a biodynamic farm's. No matter if the farm is organic or biodynamic, disadvantages, difficulties and restrictions are to be expected. Three factors that inhibit the adoption of organic and biodynamic wine farming are briefly discussed next.

5.5.1 Non-existent government support

There was a deplorable lack of government support for organic and biodynamic farms, not only in the viticultural industry but in the agricultural industry overall (Grieve 2020, Pers com; Steenkamp 2020, Pers com). PGSs like that of SAOSO, have been established to support knowledge sharing and information dissemination of organic agriculture. But SAOSO it is a young non-profit and grass-roots initiative that lacks reach and financial resources. BDAASA's PGS has observed focuses on the development of biodynamic agriculture, however as Lilje (2020, Pers com) has observed, only time will tell if it will be a successful endeavour.

According to Padel (2001), in countries where there is limited support and funding (as with South Africa), conversion to organic agriculture can even be regarded as an 'economic penalty' because of the high cost of conversion and possible financial losses when the conversion is complete. In this context, Delmas and Grant (2014) reported that biodynamic wine grape growing can cost 20% to 35% more than conventional wine grape growing. Even if a conversion is successful it often happens that the long time it takes leads to management having to be taken over. In the past five years handovers to new management at Bloublommetjieskloof have failed which led to financial difficulties and decreased production (Lilje 2020, Pers com). Frustration, loss of interest and financial instability are the main reasons for the failing of the handovers.

5.5.2 Limited information and knowledge

The acceptance of an innovation that uses unorthodox, even peculiar methods is more likely to happen when there is proof it is effective (Aeberhard & Rist 2008). Acceptance makes adoption more likely than when not accepted. Steenkamp (2020, Pers com) observed that in South Africa the organic vegetable industry concentrates on European information and studies as well as the adoption of their practices and methods. The South African organic market, acting as an early adopter in its own right, has looked very much to Europe for agricultural innovations given that Europe is the leader in organic agriculture and imports of organic produce (Grieve 2020, Pers com; Lilje 2020, Pers com; Reyneke 2020, Pers com; SAWIS 2019; Steenkamp 2020, Pers com). Yet this testifies of organic and

biodynamic winemaking's effectiveness, is in the context of Europe, not of South Africa. Thus, a South African prospective adopter will gain more from communication and gaining information from a South African organic or biodynamic winemaker.

In conversation with Lilje (2020, Pers com), who is an active and certified biodynamic farmer, and with Steenkamp (2020, Pers com), who is not an active or certified biodynamic participant, they expressed the same sentiment, namely that biodynamic farmers do not always express themselves adequately to uninformed people. As explained earlier (Section 4.9.2) because biodynamic farmers look to Demeter and Europe for information and biodynamic practices, they often explain biodynamic principles with European points of reference. The younger generation of winemakers and viticulturists are travelling and experiencing grape harvests and gaining knowledge around the globe (James 2013). This can be problematic in Steenkamp's (2020, Pers com) view because as South Africans are not yet really open to and informed about organic or biodynamic agriculture so that dialogue involving intricate and developed unorthodox information may not be beneficial to conventional farmers interested in O/Bio winemaking. Word-of-mouth reports about an innovation from peers are, in some instances, more important than written examples and experiences by others about the same innovation.

5.5.3 Patience as a virtue

All six participants mentioned the importance and value of experience which is usually only gained one time. When considering all the different elements, methods and components of organic and biodynamic winemaking, each one requiring time to be used and mastered, the combined time taken may seem too long for prospective adopters. It may take four years before one can see and measure the true effects of biodynamic winemaking practices (Waldin 2004). At both Avondale and Reyneke Wines, the return of wildlife, birdlife and improved soil vitality was seen gradually over the years since conversion. Van Zyl (2020, Pers com) explained once vineyard soil had biocides added and becomes compacted, the health and vitality will decrease and cannot be upheld for the following 50 to 60 years. Thus, a farmer trying to convert a conventional vineyard to organic and biodynamic methods might struggle as the soil is depleted and compacted. The tough conversion process (see Section 4.3.1) together with the undesirable soil circumstances can then prolong the time till one sees improvement in the vines and soil.

As found by Djokoto, Owusu & Awunyo-Vitor (2016) and Mirela and Dejan (2014), organic agricultural adoption takes many years and involves a variety of components each one taking time to work optimally in the complex system. For example, Lotter (2015) explained that the integration of legumes, a staple cover crop with many roles in organic and biodynamic vineyards, may take many years to be effective. Leguminous cover crops are one segment of organic and biodynamic farming

and it is a very fundamental segment at that. When realizing that cover crops are a small piece of the organic puzzle and which take up a disproportionate amount of time to be integrated, organic and biodynamic conversion may seem too lengthy of a process for prospective adopters. Eventually, demotivation or even termination of the conversion process can happen simply because getting everything working adequately may take too long.

The age of an adopter can also influence adoption (Djokoto, Owusu & Awunyo-Vitor 2016; Rogers 2003). As older vineyard owners and winemakers prefer to stick to tradition, what they know and what they have been taught (of which in the South African tertiary education system is very little about organic and biodynamic agriculture) they may be hesitant to adopt an innovation they are not very familiar with. As these owners, winemakers and members of the decision-making teams get older, they retire and move out of the industry and those replacing them have very different views. Millennials (those born between 1981 and 1996) are currently the fastest-growing cohort in the workforce (Sollohub 2019). Millennials are known for their impatience which was cultivated in their fast-paced, instantaneous life of the twenty-first century. Together with this impatience and coming of age during one of the deepest global recessions, millennials became very picky and were found to change jobs three times more than any previous generation (Sollohub 2019). Thus, when millennial winemakers or vineyard managers are in the decision-making team spearheading adoption and conversion, their patience might run out with the slow nature of organic and biodynamic winemaking, leading to them aborting the innovation. There are many pitfalls (like spray drift contamination and drought) in organic and biodynamic winemaking, but if managed correctly, a rebound is possible, and damage can be mitigated. Yet it might be hard for a Millennial adopter to endure these challenges which are especially prevalent in the first three conversion years. Additionally, innovation adoption might be discouraged by Millennial peers in the industry who have had bad experiences and chosen to abort the innovation and conversion.

5.6 COVID-19 AND OTHER TRAUMATIC EVENTS: IS THE RISK TOO HIGH?

Vineyards are exposed to a multiplicity of natural hazards like drought, frost, extreme heat, hail, storm winds, plagues of pests as well as viral and bacterial diseases (Townsend & Hellman 2014). Together with this plethora of direct natural treats, the indirect consequences of these hazards can also damage the wine farm and overall wine industry. Between April and July 2020, the South African wine industry lost ZAR4,5 billion in revenue and more than 18 000 new cases of unemployment as a consequence of the nation-wide alcohol ban in response to COVID-19 (Rossouw in Bizcommunity 2020). Everyone has been affected by the pandemic, but smaller, family-owned wine farms are more vulnerable to financial losses and other problems. The majority of organic and biodynamic wine farms are small and family owned (Waldin 2004; Castellini, Mauracher & Troiano

2017; Rossouw in Bizcommunity 2020) and do not have as established markets and brands as the larger, better known conventional farms. These smaller farms are usually less known, struggle more to export and have smaller markets and consumer bases (Reyneke 2020, Pers com; Van Zyl 2020, Pers com). Going on what Rossouw (in Bizcommunity 2020) stressed about the smaller family-owned farms being more vulnerable to market disasters (like a national alcohol ban) caused by calamities like a recession or pandemic, possible adopters may be deterred from converting to organics and biodynamics. Furthermore, given that 4.1% of wine grapevines in South Africa are old vines (Fridjhon 2020; SAWIS 2020) which produce lower-than-normal yields, converting amid these threats guarantees lower crop yields. Hence, when adding external crises like a pandemic restricting alcohol sale and a fully-fledged ongoing drought, it is understandable that people will be more hesitant to convert (Marais 2020, Pers com).

This current pandemic is a sudden global catastrophe compared to that of the Great Depression of the 1930s (SAWIS 2020). It happened unexpectedly and has become a global problem in less than a year, certainly not an annual fluctuation of the market or a passing trend. Everyone in the industry was unprepared and is being impacted, causing a shared tightening of the belt and worry regarding the future of the market post-COVID-19. As Marais (2020, Pers com) argued, people will be hesitant overall to convert during a drought or pandemic but if they are adamant and want to do it, they will wait it out and adopt the innovation and convert when they think the time is right. Reyneke (2020, Pers com) shared the sentiment: if someone is very passionate about it and sees the opportunities in it (organic winemaking), he or she will do it now matter when or what.

If prospective adopters do their initial research and knowledge acquisition as Padel (2001) recommends, they will learn that their yield (thus their profit) will be lower in the first few years, as repeatedly mentioned by the participants. Even if prospective adopters do decide to adopt organic or biodynamic winemaking in a pandemic, drought or recession (and wish to be certified) by the time their three-year conversion period is over, circumstances might have changed. These catastrophes may even increase the chances of adoption according to Pretorius (2020), given the demand for organic products and organic wine is growing because of the societal 'health and nutrition' awakening.

This change in consumer behaviour and global production shift can also happen directly in response to a health-related disaster like a pandemic or safety-related disaster like a terrorist attack. An example of this is the drastic change in national counterterrorism security in the USA after the 9/11 attacks (Pretorius 2020). Domestic counterterrorism expenditures in the USA pre-11 September 2001 were an estimated US\$25 billion per year. Immediately after the attacks, a drastic change happened in security demand and customer reaction in the aviation industry, causing counterterrorism

expenditure to rise over the next decade to US\$100 billion (Mueller & Stewart 2014). Given her experiences in the industry, Steenkamp (2020, Pers com) is adamant that there is very little risk in converting to organic agriculture, especially in light of current circumstances with people more open to and demanding for more organic, high-nutrition foods.

5.7 CONCLUSION

In this chapter the main factors that motivate innovation adoption and thus also diffusion, were identified as the growing market, customer demand, South Africa's favourable climate and healthy internal communication among peers. The identified demotivating factors were the lack of government support, limited information and knowledge as well as the relative long time necessary for successful organic and biodynamic conversion. It was established that adoption is viable in the Western Cape as the motivating factors are more significant and financially relevant than the demotivating factors.

Three farms, Bloublommetjieskloof, Laibach and Waverley Hills were classed as the innovators in the innovation diffusion model. Avondale and Jacques Germanier were assigned to the early adopters group, which accords with the study findings. Reyneke Wines were placed in the first half of the early majority although the study deems them to fit better with the innovators as Reyneke is a biodynamic pioneer, not only the Western Cape, but also in South Africa. None of the participating farms are part of the late majority, nor is one a laggard the innovation is diffusing slowly as it is complex and an enormous change to a wine grape farm, as well as being a relatively young innovation in South Africa.

CHAPTER 6 CONCLUSION

6.1 INTRODUCTION

By applying the Rogers' (2003) diffusion of innovations theory, the adoption of O/Bio winemaking in the Western Cape was found to be increasing, amidst some discouraging factors and hinderances. Other possible promoting and hindering factors were further discussed in Section 6.2.2. Six farms, of which three were certified organic and three biodynamic, were case studied. Each farm's location, relevant wine-related awards, conversion experience and certification were discussed. The case studies and eight interviews uncovered that O/Bio winemaking in the Western Cape has factors that encourage adoption and conversion, the premier factor being a growing national and international market. It was concluded through the eight interviews (three organic farms, three biodynamic farms and two specialized industry professionals), that the national and international market growth and consumer demand for organic and biodynamic wines will increase in the future and not fade as a popular socio-agricultural trend. The innovation will make more money once premier markets are more developed. It was found through the interviews in this study that premier markets are available and developed in Northern Europe and the United Kingdom, as half of the participants' primary market is exporting to countries like Sweden, Denmark, Switzerland, Norway, Germany and England.

The study's findings were categorized into six categories and discussed in-depth over eight sections (4.2-4.8). The categories included; the significant increase in farm life and vitality, perceived success of organic (or biodynamic) conversion, conversion risk perception and hesitancy, international vs national exports and sales; certification impediments and unappealing costs and the lack of governmental support and available organic and biodynamic education. This study's objectives were set out to be met in Chapters 2, 3, 4 and 5. The five objectives consisted of; undertaking a literature review of relevant information; compiling an innovator profile according to the DoI theory; uncovering reasons for O/Bio conversion by means of case studies; investigate the development of O/Bio winemaking in the Western Cape; and evaluating the accreditation process.

The literature review provided an overview of necessary information and relevant studies but found the relevant studies in a South African context to be lacking. The case-studied farms were found to be residing within the innovators, early adopters and early majority groups, with half of the farms identified as innovators. This is a positive indication for future growth and adoption as they are the trailblazers for those farms who are still hesitant to convert. A multitude of reasons for conversion was found and all case studies deemed their conversion successful, worth the risk and the reasons for conversion as legitimate. A need for South African organic standards and regulations was identified, as the third-body certifying was very costly for farmers and written without considering South

African elements (differing climate, challenging economy and organic additive availability). Certification costs were the prime complaint from the participating farms, but certification is crucial for export markets and greenwashing prevention. More participants are necessary for an increased conclusive and thorough study, which can hopefully be done in the future as all participants believe organic and biodynamic winemaking will gain more traction and diffuse among wine farms in the Western Cape.

6.2 CONSTRAINTS AND RECOMMENDATIONS: “The proof of the pudding is in the eating.”

A variety of constraints were identified in the study through the case studies, with the most significant being that South Africa does not have its own bona fide organic or biodynamic standards and regulations that are internationally recognized or accepted. The lengthy three-year organic conversion period, the annual audits and subsequent certifications come at extensive costs, which were identified as the biggest adversities by all six participants. Other constraints identified, as well as recommendations are described below.

6.2.1 Home-grown standards and regulations

The newly established South African Organic Sector Organization (SAOSO) is a grass-roots non-governmental organization (NGO) supplying organic certification to small-scale farmers in South Africa based on the organic standards and regulations set out by the International Federation of Organic Agricultural Movements (IFOAM) (SAOSO 2020). The organization is a promising start to South Africa forming its own internationally recognized organic standards and regulations and gaining a foothold for influencing organic agricultural policy by the South African government (SAOSO 2020). Unfortunately, this may take many years and it will never be as popular or widely accepted as the established, thorough and all-encompassing EU and USDA standards and regulations currently being used and accepted by importers globally. The only exception of importers not accepting the EU or USDA organic certification is China that only accepts their organic certification done by the Hangzhou Gelu Certification Company (GRIT).

The emergence of systems such as the participatory guarantee system (PGS) driven by the Biodynamic Association of Southern Africa (BDAASA) according to Demeter standards and SAOSO's PGS is an indication that the field is growing and the need for systematic standardization and regulations are trying to be met. SAOSO's PGS is currently striving to gain more recognition by working with the Department of Agriculture, Forestry and Fisheries (DAFF), the Department of Land Development and Land Reform (DLDLR), the Department of Environmental Affairs (DEA), the Agricultural Research Council (ARC) and AgriSETA (South African Organic Sector Organization 2020). This will ensure less partiality among members, internal corruption and bias as well as any

inadmissible lowering of peer-set standards. Although government support for these PGSs is lacking and their success is still to be determined, the general opinion on the systems is that they are better than no certification at all.

6.2.2 Changing study circumstances

The adoption of and conversion to organic and biodynamic winemaking are complex and time-consuming processes governed by many different factors. These internal and external factors play an important role as promoters or hinderances, to the success of organic and biodynamic winemaking. The study identified ten internal factors, namely establishment of wine brand; weather a farm was previously conventional; farm size; the financial state of the farm; vine age; history of vine diseases and infestations; adopters personal view on organic or biodynamics; motives for conversion (purely environmental vs financial gain), adopter's risks and hesitancy and health status of the soil (humus content). The external factors (but not limited there were): governmental support or lack thereof; health of export markets; export certification requirements; inflation; local demand for the product; lack of customer knowledge; global crises (pandemics and political strife); and climate change. External factors are prone to sudden change, as seen with the consequences of COVID-19, thus intensifying the arduous task of keeping research relevant and up to date regarding the hindrances to and motivators for adopting organic and biodynamic winemaking.

6.2.3 Limited availability of research on South African agriculture

The literature review revealed that there is limited information, research findings and peer-reviewed studies available on organic and biodynamic winemaking in the South African context. Given that winemaking is particularly location specific and that terroir plays a vital role in a wine's characteristics, consulted studies done on organic and biodynamic winemaking outside South Africa only aided this study to a limited extent because the climatic, socio-economic and winemaking contexts varied per location. The literature that informed this study relates to namely Ghana, Kenya, Spain, Italy, France and the USA. The most relevant works used were those of Djokoto, Owusu, & Awunyo-Vitor (2016), Gilinsky, Newton & Vega (2016), Krzywoszynska (2012), Meissner et al. (2019) Parra-Lopez, De-Haro-Giménez and Calatrava-Requena (2007), Sacchelli et al. (2017) and Soustre-Gacougnolle et al. (2018). Setati et al.'s (2012) study in South Africa on the diversity of micro-organisms in conventional, organic and biodynamic vineyards was informative and relevant, with results that favour biodynamic methods. These findings coincide with the opinions exposed by three of the six interviewed farmers and two industry professionals regarding the proficiency and growing potential of biodynamic winemaking in the Western Cape and elsewhere South Africa

6.2.4 Encouraging exposure and education

As the South African market for organic and biodynamic wines is emerging, education about and

exposure to the product and its differentiating factors (certification either as organic or biodynamic) should be priorities for the respective farms because misinformation and misconceptions were found to be rife among laypersons and conventional winefarmers. Educational possibilities, especially at formal tertiary education level, information and resources should be made more available to conventional farmers who might consider conversion.

Organic and biodynamic certified wines should aim to gain more exposure and shelf space in supermarkets, where people are more inclined to buy wine as it feels less intimidating, thus making buyers more inclined to experiment and buy organic or biodynamic wines if available in settings with which the customers are familiar and comfortable enough to purchase the unfamiliar products. This also applies to wine festivals where many potential buyers are exposed to the novelty. The layperson can be exposed to, communicated with and educated about the wines quite informally at such events. Fundamental aspects can be covered like what it means if a wine is organic and/or biodynamic, what differentiates the wine from conventional wine, how to identify certification and why certification is important. Such sharing is hoped to make buyers more aware of greenwashing in the industry, so avoiding them from supporting pseudo-organic and biodynamic wines that damage the reputation of bona fide organic and biodynamic wines producers. Should the transparency provided by the farm representatives be recognized and appreciated by prospective buyers, their trust and patronage will be won.

6.2.5 Opening of communication channels

Current levels of communication between organic and biodynamic wine farms are limited and informal (WhatsApp groups and friendly get-togethers). The formation of support groups of industry peers might encourage prospective adopters to accept the innovation when they feel more reassured that they are not the first to experiment with the adoption and conversion. Open communication channels might encourage more information sharing and troubleshooting support are present but limited. A surprising finding was that there are farmers and winemakers who prefer not to communicate or socialize with their organic and biodynamic peers, although they do not regard this as a disadvantage but see communication and interaction with peers as a decided advantage along with not regarding the peers as competition. Increased adoption of the innovation may happen when the certification process is made more easily understandable in light of many conventional winemakers and farmers having misconceptions about certification, as well as the risks and costs that keep them from adopting the innovation.

6.3 AVENUES FOR FUTURE STUDY

Research is needed on wine farms where there is active planning to convert to organic or biodynamic methods and those where conversion is steadily taking place. Their motives, risks, conversion plans,

chosen third-body certifier and adopter profiles can further on understanding of adopters and help educate farmers to make conversion more reliable and safer endeavours for adopters.

It is also necessary to study cases of adopters have chosen to abort conversion. Topics like why the innovation was aborted, the circumstances and motives that caused abortion and at what stage in the conversion period the decision was made must be examined. The findings should help to find ways to overcome the identified hindrances and problems, thereby facilitating future adoptions of innovations. Because an innovation can be aborted at any time in its life span. Thus, farms that aborted the innovation even after successful conversion can also be investigated. The diffusion of innovations theory can be applied in future studies to calibrate and better understand the trajectory and diffusion of organic and biodynamic winemaking when all of the adopter classes are present. In this study the late majority and laggards were not present among the participants given that the innovation is still novel in South Africa, even though it has a relatively long history in the country.

The innovation of organic and biodynamic winemaking is a steadily growing and adopted innovation in the Western Cape, as seen by the sudden increase in wine farms currently converting. The new 2021 EU organic regulations also aim to make certification more available to smaller farms which is promising for prospective some smaller South African adopters. The adoption of the innovation and subsequent conversion by the six participants was overall deemed as very successful and the market is growing increasingly nationally and internationally. The study found the adoption and diffusion of organic and biodynamic winemaking in the Western Cape as very young and still trying to establish its emerging market in South Africa while having a healthy export relationship especially with Northern Europe. Regarding climate change, the participants believed their methods had less impact to varying degrees. Organic and biodynamic agriculture is used to give nature a path of less resistance and encourage natural defences against the ever-changing climate.

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PERSONAL COMMUNICATIONS

Anonymous 2020. Wolseley. Interview on 29 June 2020 about tasting room visitors to Waverly Hills.

Delport J 2020. Waverley Hills winemaker. Wolseley. Interview on 29 June 2020 about organic and biodynamic winemaking.

Grieve J 2020. Avondale proprietor and winemaker. Interview on 10 July 2020 about organic and biodynamic winemaking.

Lesković M 2020. Basewent wines proprietor. Interview on 3 September 2020 about organic and biodynamic wine market and his personal experience in the industry.

Lilje W 2020. Bloublommetjieskloof proprietor and BDAASA chairman. Interview on 6 July 2020 about organic and biodynamic agriculture, BDAASA and Demeter.

Marais J 2020. Jacques Germanier winemaker. Interview on 9 July 2020 about organic and biodynamic winemaking.

Reyneke J 2020. Reyneke Wines proprietor and viticulturist. Stellenbosch. Interview on 26 June 2020 about organic and biodynamic winemaking.

Steenkamp A 2020. Breaking Ground Organics proprietor. Interview on 24 August 2020 about organic and biodynamic produce market and her personal experience in the industry.

Van Zyl F 2020. Laibach Organic Wines winemaker and cellar master. Interview on 9 July 2020 about organic and biodynamic winemaking.

APPENDIX A: QUESTIONNAIRE

Section 1: The farm

- 1) Total size of the farm (ha)?
- 2) Was the farm a conventional farm before organic/biodynamic (O/Bio) conversion?
- 3) How much of the farm is dedicated to O/Bio vines?
- 4) Does this farm have other crops or animals?
 - a. If yes, please elaborate
 - b. Do these additional crops/animals aid your O/Bio vineyard directly?
- 5) Does this farm supply winemaking grapes to other wineries or farms?
- 6) Do you use cover crops in the vineyards and why or why not?
 - a. If yes, is this cover crop specifically added to aid your O/Bio vines?

Section 2: Conversion

- 1) Reasons for converting to O/Bio winemaking?
- 2) To what degree do you deem this farm's conversion successful?
 - a. very successful / successful / somewhat successful / not successful / not at all successful
 - b. please explain your answer:
- 3) What have been the most significant changes?
- 4) In your opinion, what is the...
 - a. biggest benefit of being O/Bio?
 - b. biggest disadvantage of being O/Bio?
- 5) To what extent would you regard O/Bio conversion as a risk? (perceived possibilities of failed crops, financial loss, reduced quality, increased labour, reputation damage, etc.)
 - a. very high risk / high risk / somewhat risk / little risk / no risk
- 6) Were you hesitant to convert to O/Bio?
 - a. If yes, why?
 - b. If no, why not?
- 7) What do you regard as the biggest risk when converting to O/Bio?
- 8) Was conversion gradually implemented in sectioned blocks of the farm or all at once?
- 9) Where did you get information regarding O/Bio winemaking and conversion?
- 10) Do you or any other personnel have previous experience in O/Bio winemaking?
- 11) Do you think more information, literature or manuals are needed?
- 12) Has the farm added labour since converting?
 - a. Do you see this as an advantage or a disadvantage?
- 13) Are there governmental incentives for conversion to O/Bio?
- 14) Do you think converting to O/Bio is a valid way to lessen climate change/carbon footprint?
- 15) What were the estimated initial costs of this farm's conversion?
- 16) What is your opinion of the initial costs connected to converting a farm to O/Bio winemaking?
- 17) Do you think the initial costs are justified by the results of conversion? (Is the risk worth the reward?)

Section 3: Certification

- 1) How long was the farm in conversion before getting O/Bio certified?
- 2) Do you have any objections or problems with the certification process?
- 3) Do you think the certification process is 100% credible?

- 4) Why did you decide on the farm's chosen certification body?
- 5) (*if organic*) what is your opinion on the organic regulations and standards you are certified under (EU/USDA)?
- 6) (*if biodynamic*) what is your opinion regarding Demeter's regulations and standards?

Section 4: Industry and sales

- 1) Where are your primary and secondary markets?
- 2) Have your sales (wholesale and online) increased since converting to O/Bio?
- 3) Do you believe O/Bio labeling on wine increases sales?
- 4) Do you think current situations (for example COVID-19/economics/climate change) influence O/Bio wine sales?
- 5) (*if applicable*) Have visitor numbers (Tastings/tours) increase since converting to O/Bio winemaking?
- 6) Do you see O/Bio winemaking becoming more popular for wine farms in South Africa?
- 7) Do/have you experience(d) ridicule, rejection or exclusion from the conventional wine farm community?
- 8) Is there comradery between this farm and other O/Bio wine farms?
- 9) Are there existing clubs/fraternities/support organizations between O/Bio winemakers in South Africa?
 - a. If yes, are you a member?
 - b. If no, why not?
- 10) Would you recommend organic or biodynamic winemaking to a conventional industry peer and why or why not?

APPENDIX B: TRANSCRIBED INTERVIEWS

1. Waverly Hills

Interview with Johan Delport, winemaker at Waverley Hills Wines (original translated from Afrikaans to English by Monique Douglas)

Section 1: the farm

1) Total size of the farm (ha)?

140 ha

2) Was the farm a conventional farm before organic/biodynamic (O/Bio) conversion?

No, the vines were planted as organic from the beginning. In 1990, then the first wine vat was made in 2004, and the first wine was made in 2008. It was our grapes, but the wine was made on another farm.

3) How much of the farm is dedicated to O/Bio vines? (percentage)

100%

4) Does this farm have other crops or animals?

Yes

a. If yes, please elaborate

Yes, we have olive trees, but they are not 100% organic. About three to four years ago they were organic, but we took them out of the organic certification. But no animals, just a little bit of wildlife like a hawk or a caracal.

b. Do these additional crops/animals aid your O/Bio vineyard directly? If yes, please explain how.

No not really

c. Why did you make the olive trees conventional?

Biggest reason is the weed control. On an organic farm your biggest challenge is weed control and they used a lot of the trees' water. It was difficult for us to farm the olives optimally while they were organic, so it didn't make sense economically to continue that way.

d. I there any chance that the chemical sprays like herbicides and pesticides used on the olive trees can drift to your organic vines?

We have that risk, but we plan and mitigate that risk as best as possible. We firstly ensure it's a wind-still day and double check that the wind direction is away from the vines.

5) Does this farm supply winemaking grapes to other wineries or farms?

Yes, at the moment we do.

a. Are those farms also organic?

One of the farms we supply organic grapes to is organic yes, but we also supply organic grapes to a conventional wine cellar who uses the grapes for conventional wines.

6) Do you use cover crops in the vineyards and why or why not?

a. If yes, is this cover crop specifically added to aid your O/Bio vines?

Yes, and they are specifically chosen and planned with organics in mind.

b. There are big pieces of open land on the farm with no vines or olive trees on them, only fynbos. Is there a reason behind that?

No, it's just open field left untouched.

c. So, it's not part of your organic regulations?

No, it is totally apart from the organic certification requirements. We have it as part of the Cape Nature's Stewarding Nature program. In it we're not allowed to develop those pieces of field.

d. Do you think that change from the BWI to Conservation Champions had any impact on Waverly Hills?

Look, so it's actually all just marketing. When it was the BWI it fell under WOSA but now it falls under the WWF. To be honest with you I think we lost a bit of marketing potential for the fact that it's not under WOSA.

Section 2: Conversion

1) Reasons for converting to O/Bio winemaking?

Look it is defiantly a growing market segment, so I think that is the main reason many farm is converting, not only for organic wine but the market for organic products are grown significantly in the past few years. It's not a fly by night thing, it's not going away easily. If you look at the statistics, your organic wine segment in the market is the only wine sales sector that is continuously growing and growing fast. So yes, mainly its economic reasons because there are opportunities and markets available and more markets are opening up to organic wines. Look there is naturally a marketing angle connected to this, the fact that you can offer a buyer organic wine does have its advertising appeal and you have significant market differentiation.

2) To what degree do you deem this farm's conversion successful?

a. very successful / successful / somewhat successful / not successful / not at all successful

b. please explain your answer:

People make it more complicated than it actually is. They think it's too challenging or going to cost too much then they don't even think about it or consider it. If you focus on it and set up correctly it's not that hard to do. Where we are situated also makes it easier because we're quite isolated and a constant wind is blowing so it keeps diseases away. Like I said your biggest challenge is weed control. We lay shade netting underneath the vines so it blocks the sun so the weeds cannot grow. It's a long process to get them laid down and pinned but it works for us.

3) What have been the most significant changes (during the conversion process)?

The soil improving.

4) In your opinion, what is the...

a. biggest benefit of being organic/biodynamic?

Firstly, environmentally it's much more beneficial for everyone and secondly you have significant market differentiation and more opportunities for your organic wines.

b. biggest disadvantage of being organic/biodynamic?

Other than weed control, the first thing that comes to mind is the certifying costs. It costs a lot to get certified and that's why many wine farms follow organic or biodynamic practices, but they're not certified because it costs too much for them. You also have many barriers to entry as you have so many rules and regulations you have to follow. To export you need a massive amount of documentation that you are really organic and many more rules. I believe it's the wrong way around, the guys farming conventionally need a harder time to export. But now they are making it harder for organic farmers to export with all the added costs and administration.

5) To what extent would you regard O/Bio conversion as a risk? (perceived possibilities of failed crops, financial loss, reduced quality, increased labour, reputation damage, etc.)

a. very high risk / high risk / somewhat risk / little risk / no risk

5.1 failed crops

It's not really failed crops, but defiantly very lower crop yields for about the first two years. That's because the vine is struggling but is busy to adapt. I'll say it's about "somewhat risk" of lower crops, but not necessarily failed crops.

5.2 financial loss

Yes, in the beginning. The risk is high for that but it kind of evens out over time.

5.3 reduced quality

No risk at all if you farm correctly and make wine the right way.

5.4 increased labour

It's not really that significant and not always a bad thing so little risk. With the weed control there will be a bit more labour necessary.

5.5 reputation damage

It's really twofold, as the others might have told you with some people the perception that organic wine is not as good but on the other side there are consumers and markets demanding organic wines. So, you will lose some buyers or buyer's perception, but on the other hand you will gain others demanding it. So, no there is actually no risk.

6) Were you hesitant to convert to O/Bio?

a. If yes, why?

b. If no, why not?

No not really, I started at the farm in 2008 when conversion was already underway. I think some of the bigger guys are less hesitant as they have established themselves in the market. Their risk is lower, and they know there is a demand for it. But for a smaller, private farm it will be much riskier as it's all or nothing.

7) What do you regard as the biggest risk when converting to O/Bio?

I'll say the biggest is the additional costs and the lower crop yields.

8) Was conversion gradually implemented in sectioned blocks of the farm or all at once?

All at once.

9) Where did you get information regarding O/Bio winemaking and conversion?

I learned as I went along wherever I can. Before I worked here, I was a consultant on an organic farm. Well you actually get your set of rules and allowed products from EcoCert and you follow that.

10) Do you or any other personnel have previous experience in O/Bio winemaking?

Our farm manager has experience in organic grape farming, but not specifically winemaking.

11) Do you think more information, literature or manuals are needed?

In my personal opinion, no. There is enough available online and when you look around and ask around a bit you will find all you need. There are many well established winemakers that can help answer some of your questions.

12) Has the farm added labour since converting? (how many were employed in the past and how many are employed now?)

No not really.

a. Do you see this as an advantage or a disadvantage? (please explain)

Neither really as we sometimes need more labour to help with the shade netting for weed control and other times it's just the normal amount of staff. But the extra help is an advantage when it's needed.

13) Are there governmental incentives for conversion to O/Bio?

None at this time

14) Do you think converting to O/Bio is a valid way to lessen climate change/carbon footprint?

Being organic doesn't really lessen your carbon footprint. In reality it grows your footprint a bit on an organic wine farm. That's because tractor traffic is higher because our allowed vineyard additives are not that strong, so they need to be applied in the vineyard multiple times. Whereas in a conventional farm the additives are much stronger and only needs to be applied once to do an effective job. With climate change I think it makes a difference, but I'm not sure how much.

15) What were the estimated initial costs of this farm's conversion and in which year did this take place?

As we've been organic since the beginning there was no real conversion costs, it was all just costs and those connected to conversion weren't really differentiated but the certifying costs. In my opinion there isn't really a big difference between the running costs of a conventional vs organic farm. The costs in the different allowed additives (conventional vs organic) isn't really that different but I can't speak for biodynamic winemaking.

16) What is your opinion of the initial costs connected to converting a farm to O/Bio winemaking?

I think it's all understandable and acceptable except the certification costs. The audit and whole process costs a significant amount.

17) Do you think the initial costs are justified by the results of conversion? (Is the risk worth the reward?)

Umm, it depends on what markets you had before conversion and what markets are you aiming for after conversion. It's a hard question to give a direct answer for. If you only have your established markets when converting its very risky, but if you are open to and have new organic-orientated markets available, then the reward will be worth the risk.

Section 3: Certification

1) How long was the farm in conversion before getting O/Bio certified?

It's been certified since the beginning.

2) Do you have any objections or problems with the certification process? (explain)

No not really, it runs quite smoothly each year. It takes about a day and a half. We have a good relationship with the certifiers and know each other's' setup well. It would be much easier if there was one standard set of rules and regulations globally. People make it more complicated than it is. If you focus and your furnished for it, it's not that hard. I mean our area here at Waverly Hills also makes the whole process a bit easier as we are quite isolated, and the wind is almost constantly blowing. So, the wind really helps keeping sicknesses at bay. I'll say your biggest challenge is weed control. The past few years we place shading nets below our vines which blocks the sun so the weeds can't grow. It's the only thing we're using specifically for weeds and it's a hard and long process as it needs to be placed there by hand.

3) Do you think the certification process is 100% credible? (explain)

Yes, I think so, the process is. The farms getting certified can sometimes be questionable because you can be sneaky and hide things from them if you really want.

4) Why did you decide on the farm's chosen certification body (EcoCert)?

Over the years we've been with three, EcoCert being third and there being many reasons why we left the other two. One mainly being that they changed some things we didn't agree with or didn't prefer. They are the biggest organic certifying institution in the world and almost all of France is organically certified with them, so we liked their experience.

5) (If organic) what is your opinion on the organic regulations and standards you are certified under (EU/USDA)?

There are a few rule I question as to, for example, why certain products are allowed and others not. But those are very few exceptions that make you wonder why, but otherwise I agree overall.

6) (If biodynamic) what is your opinion regarding Demeter's regulations and standards?

N/A

a. Have you considered biodynamic winemaking?

No not really. We have talked about it here and there but my personal opinion of it is its hocus-pocus. I don't see how it can make a significant difference to a product. I personally haven't looked into it; I see it as another marketing agent.

Section 4: Industry and sales

1) Where are your primary and secondary markets?

Local in South Africa is our main market and secondly exports to smaller UK countries and places like Switzerland, Germany and Denmark. Very little in China, their market is not that established in organic wine yet. The EU countries I mentioned have a much more established organic market and demand because they are more familiar with it. We have a very little bit exporting to America, there is definitely an organic market, but they are trickier to export to as each State has their own rules and regulations. To export to America, you also have to have very big volumes and that's not a priority for us. EcoCert (Waverly Hill's organic certifier) don't make the regulations, they're kind of just the police that makes sure everybody follows the set regulations. The regulations in America and Europe differ, where some of the regulations are established by the EU and America's by the USDA. There are differences between the regulations and rules, for example you're allowed to use something small additionally in the vineyards which is allowed by the EU but not by the USDA. So, it's very confusing, because now you have to figure out what products are allowed by both and it limits you to what market you can export to.

2) Have your sales (wholesale and online) increased since converting to O/Bio?

Let me put it this way, the increase in our wine sales are because of the quality and people who taste it the first time like it and are usually returning customers. It doesn't help you make organic wine and it's bad, he's not going to buy it again, no matter what you put on the label! The bottom line of winemaking is it should taste nice so that it will sell more in the future.

3) Do you believe organic/biodynamic labeling on wine increases sales?

I don't really know; I think how the people are being informed about organic wine has an influence. But I don't think people really understand it yet. They don't always understand the truth behind organic wines and what's the difference. Also, with certification and the logo on the label, you have to explain to them. But I think for your everyday wine-drinker and overall consumer, they don't 100% understand the difference yet. For them wine is wine, but it really helps when you talk to wine agents or sellers, where you can explain it to them, and they inherently understand it better than the end consumer. It's the perception that it cannot be that good as conventional wine.

4) What factors influence your O/Bio wine sales?

Internationally people are more informed of organics and healthy living and its growing in South Africa, so that and the exceptional quality of the wine as previously mentioned.

5) (If applicable) Have visitor numbers (tastings/tours) increased since converting to organic/biodynamic?

Not really specifically for organics, its more for the whole experience specifically connected to the farm itself. Things like the restaurant, the atmosphere in the cellar and making an outing of it into our secluded environment gradually attracted more people.

6) Do you see O/Bio winemaking becoming more popular for wine farms in South Africa? (explain)

Yes defiantly. I'm dead sure about that.

7) Do/have you experience(d) ridicule, rejection or exclusion from the conventional wine farm community?

No not at all.

8) Is there comradery between this farm and other O/Bio wine farms?

Yes defiantly.

9) Are there existing clubs/fraternities/support organizations between O/Bio winemakers in South Africa?

Yes, but not just as organic wine farmers but wine farmers overall. I think it's also a case of organic winemaking being still young and small in South Africa that we don't really make our own groups yet.

a. If yes, are you a member?

No not that I know of. It's not really a formal club or organization, but we happily share information, we don't see each other as competition you have to beat and keep all your trade secrets from.

b. If you are not a member, why not

N/A

10) Would you recommend organic or biodynamic winemaking to a conventional industry peer and why or why not?

Yes, I will. I have very limited knowledge on biodynamic winemaking and farming, but I don't think I'll recommend that.

2. Laibach

Interview with Francois van Zyl, winemaker and cellar master of Laibach Organic Wines, original translated from Afrikaans to English by Monique Douglas

Section 1: the farm

1) Total size of the farm (ha)?

42ha

2) Was the farm a conventional farm before organic/biodynamic (O/Bio) conversion?

Yes, we started in 2000 with 6ha as an experiment because our owner [Dr Petra Laibach-Kühner] was the top cancer researcher in Germany at the time. She did big experiments on the effects of herbicides and pesticides on cancer development and her results were never published. So she brought with her the idea of organic winemaking when establishing Laibach. People thought we were crazy, and it'll be done in two or three years and there's no way you can farm organically. 2002 was a terrible year, we had a lot of mildew and it turned out that our organic 6ha were healthier than the rest we farmed organically. Also, because we use ladybugs to help control mealybug infestations, that organic block also basically didn't have any mealybug. That made us realise there is more benefits than we realised because if you keep spraying then eventually the plants build immunity to it. Look if you spray systemic stuff it actually protects the plant from the inside, it gets soaked up into the *zileem* of the vine. Where we spray just a bit of zinc and copper, which is allowed, it's just a contact spray, meaning it doesn't get absorbed, it can be washed off. So that's how vineyard management was in the 1970's.

3) How much of the farm is dedicated to O/Bio vines? (percentage)

100%

4) Does this farm have other crops or animals?

Nothing else, just vines.

a. If yes, please elaborate

b. Do these additional crops/animals aid your O/Bio vineyard directly? If yes, please explain how.

N/A

5) Does this farm supply winemaking grapes to other wineries or farms?

No, nothing.

6) Do you use cover crops in the vineyards and why or why not?

Fennel, yarrow, wild mustard, legumes and natural grasses. The old people always used to plant roses to indicate a coming infection or plague on the vines.

a. If yes, is this cover crop specifically added to aid your O/Bio vines?

With the fennel we found it attracted ladybird, which we use to our advantage, so we especially have those at the ends of the vines. Then we also have natural legumes and wild mustard to put some nitrogen back. So, as you know with organics the whole idea is to use nature to control nature. We're also very aware and afraid of spray drift, especially from Kanonkop's side. We get tested for it and sometimes a leaf sample of ours doesn't make the cut because of it and we have to get re-tested.

b. How do you fight the spray drift?

There is no real fighting it, it's all a matter of how the wind blows. If it's really a big problem and it getting close to a very important season like harvest and the leaf sample still shows positive for spray drift, then we are forced to bring in those blocks as something else because then it's contaminated too much.

Section 2: Conversion

1) Reasons for converting to O/Bio winemaking?

I think the real reason is the medical evidence and experiments done. We also try our best to be ahead of the competition and be as innovative and forward thinking as possible. We do everything different from all our neighbours, that's how we're different and it comes back to the creativity and style of winemaking. Thing is if you use these commercial and conventional chemicals and additives, you're making what I call hospital wine; every hospital in the world smells the same, so what are you going to do to your wine that will make it smell different?

2) To what degree do you deem this farm's conversion successful?

a. very successful / successful / somewhat successful / not successful / not at all successful

b. please explain your answer:

We didn't really have any losses; the wine was of great quality and we differentiated ourselves from 99% of wine farms in SA? What more can you want?

3) What have been the most significant changes (during the conversion process)?

To get all the chemicals out, especially the yeasts. The admin was a disaster, that was a massive change and adaptation. As I said it took about 3 years to get it where we want it. We always try to go back like to the early 1980 and 1970s, we try and go upstream.

4) In your opinion, what is the...**a. biggest benefit of being organic/biodynamic?**

Quality in your wine and the quality of your grounds. You're not stuck with hospital grounds where everything is dead. You can pull out a piece of weed, where on conventional grounds the earth is so hard and compacted it's going to be borderline impossible to uphold the health of that ground for the next 50 to 60 years. If you take a golf course, sometimes there is a layer under the grass where the water just doesn't want to penetrate because of sprays and compaction, that's not healthy. With the terroir of the wines, you know the slope, the ground, elevation, rainfall etc. the more of those things you can keep healthy and use to your advantage the better. But at Laibach we don't use irrigation, we still have vines with 1.5 to 2-meter-deep roots. Where the roots don't go that deep for the guy that irrigates, because the roots don't need to go that deep to get water. You need the vines to go deep and get the nutrients and uniqueness of the location. Then does he really use the terroir to its full potential, can he really say his wine is unique and shows it's growing location? It's like having a handbrake in a rowboat, it's not going to help. For me wine is about textures, tannins and layers, the same with food. It can look great but if the flavour, textures and layers are not there it's bland and boring. It needs an x-factor, and that is what organics are giving our wines.

b. biggest disadvantage of being organic/biodynamic?

I'll say the profitability, the fact that consistencies with yields fluctuate. We don't lose grapes to sickness. Many people think they can't do organic because if mealybug or downy mildew comes, they'll be destroyed. Our climate is good enough that with the proper knowledge and attention you'll manage just fine. The fact is that the berries become much smaller and so the bunches as well, so that's the biggest challenge.

5) To what extent would you regard O/Bio conversion as a risk? (perceived possibilities of failed crops, financial loss, reduced quality, increased labour, reputation damage, etc.)**a. very high risk / high risk / somewhat risk / little risk / no risk****5.1 failed crops**

Little risk.

5.2 financial loss

Also little risk because many times you'll make up for any losses in marketing.

5.3 reduced quality

No risk at all, quality will be better.

5.4 increased labour

High risk as we still do tillage with our hands. That gets time consuming and needs many hands but it's not that bad.

5.5 reputation damage

No risk. You're afraid of that risk if you're a guy that has little trust in his own ability, and who's looking for an excuse. You can't be a "bakkie-boer" and farm organically. It's intense and needs attention to detail, you're not having normal holidays.

6) Were you hesitant to convert to O/Bio?

No, not at all.

a. If yes, why?

b. If no, why not?

We all believed in our own abilities. Look it's in the late 1970's that pesticides and herbicides started. 1974 was the best harvest of the last century in this country. None of those wines we're done with these chemicals or even influenced by them. Why are those wines still some of the best there is and why did they age so well? The same with burgundy and Bordeaux, their wines from that time is still their best.

7) What do you regard as the biggest risk when converting to O/Bio?

That your yields can get just too low. Some other organic farms I know have a yield of a ton per hectare, where it should be 6 or 8 tons. Then you have to get R400 to R500 per bottle, and unfortunately South Africa's image is not that good that people are jumping to get bottles at those prices. It comes back to sustainability, sustainability is not keeping proteas or small animals alive on a farm, it's cashflow and profit. Without money nothing of this is possible. You can have the most beautiful gardens, animals and proteas on your farm but behind the scenes you're spraying your vineyards and grapes with chemicals!

8) Was conversion gradually implemented in sectioned blocks of the farm or all at once?

We started small with the 6ha to get more knowledge and slowly but surely built up every few years. Until 2008 or 2009 when everything was organic and certified. It's really important to do it gradually. Like in 2002 (a famous Stellenbosch wine farm) decided to convert everything one shot, it was an exceptionally hard year and they lost almost all of their crop. I think they also didn't have enough experience, which is crucial.

9) Where did you get information regarding O/Bio winemaking and conversion?

I harvested in Rioja, Spain in 2001 and I travel a lot and taste many wine everywhere. Every year I try and visit another wine region and try their wines. I read up as much as I can. I learned a lot in Bordeaux, but I appreciate the smaller places where they're more hands-on. But all these places change over time, they get more sophisticated and with the times. There's still places I really want to go.

a. You studied at Elsenburg, does Elsenburg have any courses regarding organic or biodynamic winemaking?

I don't know of now, but then they surely didn't. I graduated in 1999.

10) Do you or any other personnel have previous experience in O/Bio winemaking?

No, I've also ever had an assistant or the likes.

11) Do you think more information, literature or manuals are needed?

I think there is some needed but at the end of the day that's 5% to 10% of your knowledge, the rest is experience and time. It's more a gut feeling than just learning.

12) Has the farm added labour since converting? (how many were employed in the past and how many are employed now?)

No, we work for Germans so everything is very productive. When I started here, we did 120 000 bottles with I think 14 permanent staff. Now we do 300 000 bottles with 12 permanent staff. I've been here the shortest of management, which is 20 years, the other two have been here for 22 and 26 years. Some workers have been here longer than I have. Not really either. You work hard, you'll do six people's jobs but we're productive and it works. But you can do everything at once, work in the cellar, the tasting room and so forth.

a. Do you see this as an advantage or a disadvantage? (please explain)

Advantage, the less people you have the better.

13) Are there governmental incentives for conversion to O/Bio?

Nothing. No exemptions, no credits from IPW, nothing.

14) Do you think converting to O/Bio is a valid way to lessen climate change/carbon footprint?

No not really, it's all the same actually.

15) What were the estimated initial costs of this farm's conversion and in which year did this take place?

Because we took it piece by piece over the years, I can't really say.

16) What is your opinion of the initial costs connected to converting a farm to O/Bio winemaking?

Well in the beginning you paid 10% to 15% more in the first few years. Then things even out and I believe it's a bit cheaper to farm organic than conventional. But then again, your production falls so much you have to farm cheaper.

17) Do you think the initial costs are justified by the results of conversion? (Is the risk worth the reward?)

As I said if you can sell the wine and make it quality, then you're justifying it fast. But if you're just a farmer and you've just converted; it's not going to be worth it. If you sell your grapes to the corporation, they're not going to give you more because it's organic, so you'll lose.

Section 3: Certification

1) How long was the farm in conversion before getting O/Bio certified?

We started in 2000, first wine was made in 2003 because of the conversion period then the first wine was released 2004 which was the Ladybird blend. With conversion, we worked with about 6ha per year. Some years a bit more or a bit less.

2) Do you have any objections or problems with the certification process? (explain)

There are many different bodies and I don't know if they always speak the same language to each other. I know at the beginning there was a bit of a problem, not really for us, with your American NOP standards and EU standards not really being the same. You're allowed to use ammonia for one but not the other. What's also a bit sad, they're opening up to more and more chemicals that are "suitable" but they are still chemicals. They also heightened sulphur levels which I think is unnecessary.

3) Do you think the certification process is 100% credible? (explain)

It is always a nerve-wrecking story, especially if you don't like admin. I'll say it's 95% credible. If you're an auditor, if you really want to you can fail anybody. I'm sorry it just is that way. I also think the guys that do organic and conventional auditing, there something can easily go wrong, as in mis-checked.

4) Why did you decide on the farm's chosen certification body [EcoCert]?

They are the third or fourth body we've been with. The first certifying body, SGS, closed then I can't remember with who else but yes, we settled on EcoCert.

5) (If organic) what is your opinion on the organic regulations and standards you are certified under (EU/USDA)?

Some e of them don't make sense but overall they are good.

6) (If biodynamic) what is your opinion regarding Demeter's regulations and standards?

N/A

Section 4: Industry and sales**1) Where are your primary and secondary markets?**

Local is our biggest at 80% and 20% exports to Europe, but the biggest Belgium. Almost nothing in America. EcoCert organic certification is not accepted in China, we're getting audited in the very near future by someone else that's accepted in China.

2) Have your sales (wholesale and online) increased since converting to O/Bio?

The Ladybird brand grew massively from nothing. When we started in 2004 the first 3 000 bottles, it was about 1% to 2% of production where it's 95% of production currently. Women also buy a lot more organic wines than men. 75% of wine are bought by women and I believe they have a good association with organics and ladybugs themselves. In England Ladybird didn't sell well on golf courses, because it's a male dominated area, whereas grocery stores are not.

3) Do you believe organic/biodynamic labelling on wine increases sales?

Some will say yes some will say no. It comes back to there being so few organic wines in South Africa and the first few being horrible wines, it gave the name a knock. We have to fight against

the masses. If we took “organic” off the label of Ladybird, I don’t think our sales will fall by 50%. If it falls it will fall just a little.

4) What factors influence your O/Bio wine sales?

Price is very important as well as brand awareness.

5) (If applicable) Have visitor numbers (Tastings/tours) increased since converting to organic/biodynamic?

No, we’re not big on visitors, we only sell wine without the extra stuff.

6) Do you see O/Bio winemaking becoming more popular for wine farms in South Africa? (explain)

I doubt it. If you have your own brand yes, but the normal wine farmers? No sorry it won’t be profitable for them. If your yield falls, which it will, you’ll have to ask two to three times more for your wines. Look there are also many farm telling you they are organic but they are definitely not. The greenwashing is everywhere.

7) Do/have you experience(d) ridicule, rejection or exclusion from the conventional wine farm community?

No, I also don’t really mix with other winemakers, I prefer playing golf. I have two or three close wine industry friends but that is more like guys I studied with or Abrie from Kanonkop and the likes and none of them have ever said anything about organics. No one has ever really said anything to me about us being organic or anything like that. I also think if people are ridiculing us, it is out of jealousy.

8) Is there comradery between this farm and other O/Bio wine farms?

No so much as there should be, I think. We see each other every now and again, but the communication can definitely be better. What the guys are telling you, you always have to take with a pinch of salt.

9) Are there existing clubs/fraternities/support organizations between O/Bio winemakers in South Africa?

No and not that I know of, except some organic association of SA.

a. If yes, are you a member?

b. If you are not a member, why not?

I want to keep my identity, only I have to know what goes on here and how I make wine. It's what differentiates me and the wine, it's the x-factor.

10) Would you recommend organic or biodynamic winemaking to a conventional industry peer and why or why not?

Only if it can increase his profitability. It doesn't help you get the guy on board and his income falls 20%, you don't want to do that. It's going to be a short friendship.

3. Jacques Germanier

Interview with Jaco Marais, winemaker at Jacques Germanier. Original translated from Afrikaans to English by Monique Douglas.

Section 1: The farm

1) Total size of the farm (ha)?

120ha

2) Was the farm a conventional farm before organic/biodynamic (O/Bio) conversion?

No, it's always been organic. The vines are about 20 to 22 years old and the cellar was built in 2004.

3) How much of the farm is dedicated to O/Bio vines? (percentage)

All 100% of 75ha is used.

4) Does this farm have other crops or animals?

No, only my own dogs.

a. If yes, please elaborate

b. Do these additional crops/animals aid your O/Bio vineyard directly? If yes, please explain how.

N/A

5) Does this farm supply winemaking grapes to other wineries or farms?

No, but we do buy some additional organic grapes from a farm in Klawer.

a. I read on your website you supply “cellar services”, what does that entail?

Maybe you've heard of Stellar Organic Wines? Ok so their winemaker is not on his own, he brings his grapes and we supply him with all the services given in a cellar. At the moment he's busy “bottling” some organic wine in new cans. I'll go show you when we're done with the interview.

6) Do you use cover crops in the vineyards and why or why not?

Legumes and *korog*. *Korog* is a mix between wheat and rye.

a. If yes, is this cover crop specifically added to aid your O/Bio vines?

Well with organics, you have to put back into the ground and their nitrogen binders. It is not just green farming, it is putting back and giving back to the earth as we are taking. So those two are specifically for nitrogen and weed control. One big thing about organic is you can really struggle with weeds. It can also be more expensive because you have to till the ground much more and even use weed eaters.

Section 2: Conversion

1) Reasons for converting to O/Bio winemaking?

That's actually a really good question. Our owner passed away in 2017, he was Swiss and I'm not sure if it was a philosophical persuasion or an opportunity he saw in the market, but no one could persuade him to go conventional. Our yields are low, our profits are low, consultants came to us saying we can't make money on 2/3 ton per hectare. He didn't want to know about any of that, he was really adamant and set to be fully organic.

2) To what degree do you deem this farm's conversion successful?

a. very successful / successful / somewhat successful / not successful / not at all successful

b. please explain your answer:

I'll say not very successful now because our yields are so low. But we're lucky in this area, the wind is constantly blowing so we don't really struggle with sicknesses. If there wasn't any wind and we had sicknesses, I'll say it wasn't very successful. But touch wood it's successful.

c. Does this wind help or hinder you with spray drift?

Ironic that you ask about it, we just had a whole block of Shiraz where pesticides we picked up. It came from a neighbouring farm that grows plums. It is actually the wind that blew the wrong way around that caused that drift.

d. What do you do with those grapes that you have to keep separate?

We have to keep those grapes totally separate from everything else, they needed to be transported, pressed and kept in separate areas from the uncontaminated organic grapes. If we're working with them, we can only focus on them and can't do anything else with the other grapes. Everything needs to be sterilized afterwards. It's a big ordeal, but the certifiers found the pesticide traces only on leaves and ground samples. So, they came and tested the wine and found it was totally pesticide free, so that was very good.

e. How do you mitigate spray drift?

You have to keep a certain distance, between an organic and conventional farm. I believe it is 500m but I'm speaking under correction. The auditor also suggested a wind breaker in the form of a tree lane. But if you plant a tree now, it's going to take years before it will actually do something to the wind.

3) What have been the most significant changes (during the conversion process)?

I'll say the only changes over time was smaller yields, especially as the vines grow older. There hasn't been a change to the quality of the wines, the premises also haven't really changed.

4) In your opinion, what is the...

a. biggest benefit of being organic/biodynamic?

Well you can get all nostalgic now and say many heartfelt things. The ground IS healthier, there are definitely more good bugs present, there is more life. I feel that makes life overall easier for the vines, especially to get their nutrients from the ground and set deep roots. I won't specifically

say it makes the quality better but you're not just taking out but putting back, which helps and makes you feel good.

b. biggest disadvantage of being organic/biodynamic?

Costs. It's really expensive because we're getting two to three ton per hectare where you at least need above eight ton to make a profit. But if you have the market the costs cancel out because your wine will be selling.

5) To what extent would you regard O/Bio conversion as a risk? (perceived possibilities of failed crops, financial loss, reduced quality, increased labour, reputation damage, etc.)

a. very high risk / high risk / somewhat risk / little risk / no risk

5.1 failed crops

High. We only spray copper and sulphur, no synthetic chemicals and that limits you for if a sickness or bug plague comes. This year we lost a whole block of Chardonnay, it just suddenly got some mould and gone was the whole block for the year. That was about 4ha so it was at least not too big a loss.

5.2 financial loss

Depends if you have the market or not, because you'll never sell wine at a loss. At the moment we're safe with our market but I'll say it's somewhat risky.

5.3 reduced quality

Little risk if nothing really goes wrong. Like with that one block it was a risk but with the rest it really was not.

5.4 increased labour

Very high risk.

5.5 reputation damage

I believe that will come if your wine isn't any good. If you're going organic it should actually do your reputation good, I think there is somewhat risk involved.

6) Were you hesitant to convert to O/Bio?

Well I can't say for our founder but I'll say people in the industry is.

a. If yes, why?

The industry is already struggling, we have a water scarcity and now this pandemic. Then knowing on top of that you'll be getting half the yield you are getting now; it will make people more hesitant to convert. I know many people who are very sceptical about going organic. The people who I've talked to who are conventional think we're mad for being organic and that they will never consider it. I think many people are or say they will be, but they're not certified.

b. If no, why not?

N/A

7) What do you regard as the biggest risk when converting to O/Bio?

I won't even call it a risk it's a fact, your yield is going to drop drastically so you're going to lose money in the beginning.

8) Was conversion gradually implemented in sectioned blocks of the farm or all at once?

As far as I can remember it was all at once.

9) Where did you get information regarding O/Bio winemaking and conversion?

Internet, friends, books, practical experience, conventional reps sharing with us what they see other farms are doing and from others in the industry.

10) Do you or any other personnel have previous experience in O/Bio winemaking?

No

11) Do you think more information, literature or manuals are needed?

Yes definitely. Especially, I don't want to call it a "wake up call", but to inform conventional farmers that they don't have to be so scared or sceptical about organic farming. Education and understanding are necessary.

12) Has the farm added labour since converting? (how many were employed in the past and how many are employed now?)

Yes, not permanent people but seasonal and casual workers.

a. Do you see this as an advantage or a disadvantage? (please explain)

Cost-wise a disadvantage but it needs to be done.

13) Are there governmental incentives for conversion to O/Bio?

No nothing.

14) Do you think converting to O/Bio is a valid way to lessen climate change/carbon footprint?

I want to say yes but I don't have the scientific research and evidence to back it at the moment. With lessening climate change, I don't see how it has any influence. The sprays don't really go into the atmosphere but it may be. So I'll say no for now. The tractors are driving less because they're not ploughing or tilling so that may help but I don't think to a significant level.

15) What were the estimated initial costs of this farm's conversion and in which year did this take place?

Unfortunately, no one here can say that as the vineyard is so old and has been organic since the start. Some of the oldest vines we have are 22 years old so I'll say around the late 1990s.

16) What is your opinion of the initial costs connected to converting a farm to O/Bio winemaking?

Your cost will always pull back to yield per hectare. Two ton per hectare is actually nothing. The certification costs are expected, it's part of the nitty-gritty things. Costs in the cellar will

decrease when you're organic but that's very little. The extra people you get in will cost you more so it all evens out somewhere.

17) Do you think the initial costs are justified by the results of conversion? (Is the risk worth the reward?)

Yes, but I don't want to make an exception of us because our vines are very old which make the yields naturally lower. Let me put it this way; there are a lot of tenders in Sweden, Norway, Switzerland, America... all those places specify that being certified organic will be an advantage to you, they have markets just for organic. It's justified at certain levels but at others not.

Section 3: Certification

1) How long was the farm in conversion before getting O/Bio certified?

It's usually three to four years but I cannot say definitely how long.

2) Do you have any objections or problems with the certification process? (explain)

I do, but they are all personal opinions. It's a massive amount of admin and I hate admin. They actually help us; they are not difficult or anything. They come with suggestions and recommendations. Obviously, there will always be a few nonconformities and they give us about 2 months to fix them. The auditors come from Holland and we have to fly them in specially.

3) Do you think the certification process is 100% credible? (explain)

Yes, I believe it's 100%. They are on every point. They check my whole cellar top to bottom and check all the invoices. They literally come with a shovel and collect ground and leaf monsters to go analyse and they come unannounced so we can't hide anything or change anything even if we tried. It's a very hectic three to four days. That's why we get so frustrated and almost mad at others saying they are organic but not certified.

4) Why did you decide on the farm's chosen certification body [Control Union]?

They are according to the National Organic Program of America and the EU standards and they are quite big.

5) (*If organic*) what is your opinion on the organic regulations and standards you are certified under (EU/USDA)?

They are strict but not unreasonable. For the past three years we have also been certified with people in China, but they are quite demanding in the sense that you have to fly them out, pay their accommodation and you have to entertain them while they're here.

a) Do the Chinese regulations differ from that of the NOP or EU?

You won't believe me but the only difference is they don't mind at all how much sulphur you add to your wine, which was very strange to me. They are just a bit more lenient with the added sulphur. We're now allowed to export to them but only with their specific organic label. Wine

agents from there told us you can have whatever organic certification, but if you don't have, they're specific certification and sticker on the bottle neck they won't allow it.

6) (If biodynamic) what is your opinion regarding Demeter's regulations and standards?

N/A

Section 4: Industry and sales

1) Where are your primary and secondary markets?

Sweden at 20% and China at 40% will be our primary for bottled wine and Switzerland for bulk wines. China was our real primary market before this whole virus. We're not at all local, not that we don't want to be it's just hard pricewise because all our wines are premium priced. Finland and Denmark will be our second. America buys random pallets every now and then, but North-Europe predominantly.

2) Have your sales (wholesale and online) increased since converting to O/Bio?

No, it stayed the same over the years. If there is a change it's all according to the overall wine industry.

3) Do you believe organic/biodynamic labelling on wine increases sales?

I hope so! Like I said there is a growing inclination to organic and "greener" products, but greenwashing is big here. They're sales also go up. It's a big issue for us because anyone can say on their labels, they are organic, but they're not certified. They the buyer is just going to see the term "organic" and buy it while trusting them, meanwhile, they're lying. It hurts the market but it's not illegal. We go through all the pain, the audits and it's us who pay the massive amounts of money. But because the industry is having a very tough period its hard to say definitely but I think so.

4) What factors influence your O/Bio wine sales?

I'll say the health consciousness that's really becoming popular but unfortunately on the bad end, our production costs are high so our prices have to be high. It's tough times now so people are looking more at prices.

5) (If applicable) Have visitor numbers (tastings/tours) increased since converting to organic/biodynamic?

We're not open to the public or have a tasting area, we're very far away from many people and focus on exports.

6) Do you see O/Bio winemaking becoming more popular for wine farms in South Africa? (explain)

Yes, I'm hearing more people talking about it and finding more to read about it. But its more the farmers who are sceptical, because I'm hearing and talking to more and more people and

customers who are preferring organic wines. Even my wife says she feels better the next morning after only drinking organic. I know what is put into conventional wines and you don't even want to know what's in that stuff and how bad it can be. It's legal but everything but healthy.

7) Do/have you experience(d) ridicule, rejection or exclusion from the conventional wine farm community?

Umm no not at all.

8) Is there comradery between this farm and other O/Bio wine farms?

Yes, we're fast to get on a phone with one-another and help each other or ask for suggestions or help. We communicate very easily and eager to help because all of us are stuck on the same boat.

9) Are there existing clubs/fraternities/support organizations between O/Bio winemakers in South Africa?

No organic specifically that I'm aware of.

a. If yes, are you a member?

b. If you are not a member, why not?

N/A

10) Would you recommend organic or biodynamic winemaking to a conventional industry peer and why or why not?

Yes if he has the market available for it, like if he has the right connections.

4. Reyneke Wines

Interview with Johan Reyneke, proprietor and viticulturist of Reyneke Wines. Original interview translated from Afrikaans by Monique Douglas.

Section 1: The farm

1) Total size of the farm (ha) and ha under vine?

It's constantly growing. We started with 11ha and standing on 120ha at the moment. 57ha is under vine.

2) How much of the farm is dedicated to organic/biodynamic (O/Bio) vines? (in percentage)

100% of the vines.

3) Does this farm have other crops or animals?

a. If yes, please elaborate

b. Do these additional crops/animals aid your O/Bio vineyard directly? If yes, please explain how.

Yes, 57 Nguni's [one calf was born during the interview], 22 sheep, 50 chickens. All are critical to uphold the fruitfulness of the ground. Then we also have some wildlife like hares, guinea fowl, wildcats and predatory birds.

4) Does this farm supply winemaking grapes to other wineries or farms?

Temporarily yes, but it's not our long-term strategy plan. To be honest we don't have enough grapes for our current market demand. But when we buy a new piece of conventional vineyard it goes through a 3-year conversion period in which we are not allowed to label it as O/Bio wine. Thus, we are constantly searching for new buyers for those "in-conversion" grapes. Once that land is certified we use it for our own wines.

5) Do you use cover crops in the vineyards and why or why not?

Yes, the beginning you have to understand we're farming with two things here: in the short-term vineyard and in the long-term ground. In the short term it's mutually exclusive of each other, yet in nature there's never naked ground, everything lives together and works in harmony even the rocks have life on them. For ground to be truly living, it needs to be filled with plants. Farmers want to eradicate competition so that's an O/Bio farmers' dilemma. Should they remove plants for the vines' sake or try and work with it? in this area of the country we have some of the oldest ground there is. Thus, the humus levels are very low. The ground is much more withered and eroded than those in Europe for example because of our conditions. 2% to 3% of the ground in a French vineyard will be humus whereas in SA it will be 0.5%-0.7%. If you can build the humus levels as high as 5 then the fortitude and resistance of the plants in it will grow to about 300%! So, building the ground organically will make farming organically

for you easier in the long run because the vineyard is more resilient to pests, drought, plagues etc. But the catch is the choice to build humus and ground or vines. And I chose to do both. We analyzed which cover crops will give the vines the most organic matter and decided on grains and grasses like oats and *korog* [mix of wheat and rye]. It worked for three to five years then we had a sudden massive drop in grape yield. It fell from six- to eight-ton ha to about two or three ton per ha. One piece of nitrogen will be added to 30 pieces of carbon. In our case it's one wheelbarrow of cow manure and 30 wheelbarrows of grape and organic matter (lees, shells and seeds). That's good compost. Yet because the grains and grasses were only carbon suppliers and not nitrogen binders, the whole ground and vine equilibrium was out and not enough nitrogen. To combat this, we changed two things. We bought in animas for their manure and we changed our cover crops to vetch, legumes and clovers. We're still busy in the process as we had a record harvest last year, this year we're trying to build the ground again. Sections we started with in 1999/2000 had a humus level of 0.5% and now it's at 4.3%.

a. If yes, is this cover crop specifically added to aid your O/Bio vines?

Yes, they help the animals present and bind the nitrogen in the ground.

6) Does the farm struggle with spray drift?

a. If yes, how do you mitigate it?

Yes, we've had to give up grapes before because of spray drift. We tray and plan with neighboring farms so that they spray when the wind is not blowing. We also plant hedgerows between our farm and theirs.

Section 2: Conversion

1) Reasons for converting to O/Bio winemaking?

The reasons have changed over time. I studied law and very much liked philosophy, which led me to philosophical "deep ecologists". About a hundred years ago there were two anthropocentric viewpoints of the environment, a lighter (can be likened to "stewarding of nature" mentioned in the Bible) and heavier one (humans are strong, in control, and we can do with nature as we please). The was also an eco-centric one, which sees humans just as a small part of nature, being part of the bigger equilibrium. With this knowledge comes obligation and it's bound to show in your farming style what you believe in. Another reason was that SA was a very conservative place and I became a farm worker for some pocket money. When you're a worker you're told what to do and working on many conventional farms in this area, I was told many times to spray pesticides or herbicides. Even with protective clothing and such thing it was unpleasant as it burned my skin or even caused a small cough. So, my experience with chemicals were not positive, added with thinking and reading about these viewpoints were my

main reasons for conversion. I live here as well; I have a wife and two daughters who love the farm and I know spraying season trekkers run every two weeks spraying poison which I can even smell when mountain biking. I want to have my loved ones in a healthy and safe environment, even educating our neighbors for free, trying to spread the idea of this healthy living. The market shows demand as well. In the beginning we didn't disclose the O/Bio winemaking because there was a negative connotation made with it. In America and SA and a few other countries, if we placed our wines under "organic", no-one wanted to buy it. It was seen as an inferior product. Their experience of organic wines was not good in regards to quality. In 2006 things started to change, especially in Scandinavia, Norway, Sweden and Denmark. Today it's a global wave. It's about risk mitigation and control. In martial arts I was taught: "You train easy and fight hard, or train hard and fight easy". It's the same with this type of farming. It was easier for me to farm conventionally than organically its less risky. Organic is harder, riskier and needs more pro-action but that's all in the farm. Overseas the playing fields aren't even as you have to really pay (either stock or money) to get into the market. As a smaller farm I couldn't compete with the bigger guys with deeper pockets and more established names. But I was organic and biodynamic which they were not, and that gave me a gap in the market. I took the risk out of the market and already mitigated it in the vineyard. I farmed harder but sold easier. Risk depends on your viewpoint. On the farm it's a risk but defiantly not in the market.

Lastly, I've found this is more than a business, it's a place of opportunity for people and nature to grow. Best advice I was given is surround yourself with those better at things than you are otherwise you limit the business to your own knowledge and skills. People ask a lot regarding the science behind biodynamics because it comes forth as almost spiritual and new age. There is also a new/old school outlook within biodynamics, but you can get a scientific explanation as to why these things work. Yet the most interesting for me was the results. The proof of the pudding is in the eating. Because biodynamics was so controversial and made out as lacking in a scientific foundation, I wanted to let the results be scientifically tested thoroughly. So, we worked with different department of the University [of Stellenbosch] to test the ground, vines and organic biodiversity present. One thing that stands out the most is the significant excess of organic life on our farm. In some sections 30% to 40% more life, in other areas up to a 900% increase in life, on the ground, in the ground, in the sky, literally everywhere. There is really a bigger diversity of life present, different in size and type. The most important was the balance within that biodiverse system, like a perfectly sectioned pie chart. You get stability out of diversity! The more diverse the ecosystem, the more stable it will be, as in natural areas like Jonkershoek because that's how nature works. It's a wonderful thing and that's why I keep doing

it. That's why the reasons change making certain things a bigger driving force for me. It's a privilege to live here, don't overestimate yourself and if you're lucky enough to be in charge of a place like this, try to run it so that people and things there flourish. Those days it was not cool [to convert to organics]. 99.9% of people discouraged me to do it, the University, the banks, friends, neighbors. Many people say farmers don't want to use poison; they have to. When I converted, I had massive struggles with pests and weeds. It was a total reeducation.

2) To what degree do you deem this farm's conversion successful?

a. very successful / successful / somewhat successful / not successful / not at all successful

b. please explain your answer:

Now it's very successful, after 20 years. When I started it was a nightmare. Everything in SA that could possibly be in the vine were there, in a quarter ha. Pests, plagues, disease everything I got within the first six months. But you just need to know how to handle it. It's knowledge from books and conversations and such but it's also understanding through experience. But now everything is running smoothly. In 2015 we started converting a new block [from conventional] of 40ha and the conversion went so smoothly we didn't even see a dip in the grape yield.

3) What have been the most significant changes (during the conversion process)?

More life. You see it everywhere, the ground is soft and spongy, there's earthworms in it and there's birds and plants present that I've never seen before. More animals like bokkies, rabbits and porcupines. The people also say it's in the wine, the wine has changed and increased tremendously in quality since the conversion. Asking people who knows our wine for years say there is a new vitality in it, some say it's like a tension and a liveliness that wasn't there before [the conversion].

4) In your opinion, what is the...

a. biggest benefit of being organic/biodynamic?

The added life like I described.

b. biggest disadvantage of being organic/biodynamic?

Certifying costs! The first thing is SA doesn't have its own Organic standards, so we have to get people from overseas in to certify us. We earn Rands but pay for certification in Euro. The second thing is we don't totally have the same trade agreements as they do in Europe. Between Europe and America there's trade agreements that if you're organic in Europe then America and Canada accept it as well. In SA you're tested and certified by the exact same person on the same EU standards by the same EU institution, but America and Canada won't accept it. Because SA doesn't have the same agreements with the USA and Canada, we have to be certified twice! Greenwashing is a massive problem as well! There are massive amounts of people out there that

say they're organic, but they just don't want to be certified. I believe many of them are organic but can't afford it. Yet there are some who just say it for marketing reasons. I believe that when certifying costs are accessible for more people, it will improve. Greenwashing damages your faith in humanity.

5) To what extent would you regard O/Bio conversion as a risk? (perceived possibilities of failed crops, financial loss, reduced quality, increased labour, reputation damage, etc.)

a. very high risk / high risk / somewhat risk / little risk / no risk

5.1 failed crops

Little risk

5.2 financial loss

Little risk

5.3 reduced quality

No risk

5.4 increased labour

Very high risk

5.5 reputation damage

No risk, in fact the opposite.

For all of these it the answer will depend on which angle you are approaching it from. Going from organic to biodynamic, the biggest risk is not using herbicides or pesticides, certain ones which can be used if you're organic. There's a difference between organic bio-neglect and organic bio-design. Organic bio-neglect is removing herbicides/pesticides and getting certified, but your vineyard totally withers away as everything (pests/weeds) takes over. That happened in our farm until I realized when you take away one system you have to replace it with another. To understand and correctly implement that system is where the risk lies. Otherwise I see no other risks! It was interesting and fun to convert and going to biodynamics even made me more money as I was saving on organic fertilizers because I used my own cow manure.

With all these things it stays the same. If you don't know what you're doing, the risk is very high, you will lose money and crops, you can damage your reputation or reduce the quality. People know it's risky then they rather opt to use poisons [pesticides and herbicides]. If you know how to do the alternative the risk is very low. In fact, after a long period of time, years even the risk gets lower and it gets easier and easier because the humus levels are growing, the vineyard gets easier to manage. The same philosophy of control and spraying a conventional winemaker has, is also going to be present in the wine cellar and winemaking process. So everything will be cleaned with sulfur and they build everything up as they want it. A specific

yeast will be added to a specific cultivar to get specific results to form a profile. Other chemicals are added to the wine to control the pH, act as preservative and restrict unwanted odors and flavors and then it gets filtered very aggressively. With O/Bio the farmer is standing back and let nature do its work, but the farmer does not neglect but design. Instead of trying to make the wine, we let it almost form itself. The French say it's about terroir driven rather than gymnastics in the wine cellar. You're not making Coke according to a recipe. The wine should be an expression of the place it came from. The ground, rainfall, sun, wind, altitude and slope all have an impact. Why would you want to control and dominate it? Then you're actually just making another artificial product. An O/Bio farmer recognizes a wild yeast growing on their vines because they are not spraying, but rather than remove it, they will give it a chance. I'm not putting my Sauvignon Blanc into stainless steel tanks and taking all the oxygen out; I'm going to treat the wild yeast with care and put it rather into clay pots or wooden vats or barrels. Something that allows the wine to breath and that's not too cold, so that that wild yeast can do a beneficial job in the winemaking. There are other ways to tick the boxes, like a more holistic way. But it's still a food grade product so everything will be done the proper way and in sterile and hygienic environment. Less becomes more, you make the right conditions and stand back.

6) Were you hesitant to convert to O/Bio?

a. If yes, why?

b. If no, why not?

Yes, very. Everyone told me I was making a massive mistake, it's a massive risk, you'll lose your farm etc. I was extremely scared to do it, but two things happened. I met an old lady [Jean Malherbe] in Wellington who farmed organic and biodynamic and she didn't do vines but taught me what she did with her vegetables and flowers. She helped me. Secondly the bank manager realized I was determined to do it but was going to have to pay. So, they limited the money till I got my game right. I started with a quarter of a ha, experimented and messed it up and did everything and figured out the problems. We didn't really think of organic certification because we wanted people to buy it based on the wine's merits, not it's organic certification. But these days things have changed, and people thin organic wine is cool.

7) What do you regard as the biggest risk when converting to O/Bio?

A lack of knowledge and a lack of understanding. I think to mitigate that best they should start on a small scale. It won't take long and when they get it right, they can move to a bigger scale. They need to realize that it's not a one size fits all. Every farm is unique so it doesn't help they exactly copy what I do, they need to figure that part out themselves and that can take some time.

8) Was conversion gradually implemented in sectioned blocks of the farm or all at once?

Once I figured everything out in a quarter of a ha, we went to 20ha, from 20ha to 40ha (in 2007), from 40ha to 80ha (in 2015) and 80ha to 120ha. We started conversion in 2000 and 2006 started certification

9) Where did you get information regarding O/Bio winemaking and conversion?

It was very difficult. The person that helped me the most was Jean Malherbe from Bloublommetjieskloof, who I mentioned before. In that time, she supplied veggies and flowers for Woolworths, who didn't even know she was organic they simply bought it on the quality of her produce. She was extremely good at it. That time in SA there wasn't much help, so I reached out to Germany who was really active in it [organics and biodynamics] already. I worked with a lecturer at Geisenheim University over the phone and faxes and he came over in a holiday and helped me. But yes and no, learned a lot of valuable things from him but I realized organics in Germany is different than organics in SA. It's about the ground and the weather/climate. So, I had to tweak some things there. I read a lot of books and used the internet and a student studying Organics and Biodynamics at Geisenheim worked with me on the farm for a year. Then things turned very interesting, we got an importer in Germany who told us our wines were too expensive and I told him I can't make it cheaper because of our specific and challenging conditions. He told me he understands but if there's ever a gap I should contact him immediately. Then the consumer started changing and turning to sustainable products. Then the farmers and winemakers started coming and doing organics. We became part of study groups, shared information and built good relationships with those people. That helped everybody a lot. We started sharing our struggles and learned a lot from each other. Something I think unique to O/Bio is happening now where the demand for organic wine is bigger than the supply is, so we aren't fighting for our place in the market between each other. Actually, we're searching for more organic grapes and wine.

The certification body, process and standards also helped a lot. There are negative things like the inspection and admin, but the inspectors can help you with certain things or recommend talking to someone who can help you.

10) Do you or any other personnel have previous experience in O/Bio winemaking?

Yes defiantly. Ishaan Ilje [Reyneke's farmer] runs the vineyards at the moment, he grew up on an O/Bio farm and worked on Biodynamic farms in Germany. Yes, it's very important.

11) Do you think more information, literature or manuals are needed?

Yes and no. Those things are priceless but you're making a mistake if you think that's all you need. As I said it's the difference between knowledge (internet etc.) and understanding (practical experience). A lot of the nuances and details are missed if you haven't done it yourself. The most important is keeping it small scale till you get the hang of it, but otherwise it's really not a

difficult thing. If you think about it for the past 6000 years we've been farming and for less than the last 100 to 50 years we've become so reliant and almost addicted to chemical farming. But it wasn't necessary for the other years before it and it's not necessary now. People will say we don't have enough food in the world, but I don't buy that. Your production will dip, but only in the transition phase. It's like removing heroin from an addict, yes there's going to be struggles once they go cold-turkey but will come out better than they were as addicts. It's also a distribution problem, not necessarily a production problem.

12) Has the farm added labour since converting? (how many were employed in the past and how many are employed now?)

Yes, but also not really, we're a small, close-knit team. But we got in a handful of extra guys.

a. Do you see this as an advantage or a disadvantage? (please explain)

It was mostly for weed control and animal husbandry, so an advantage. Especially with the young vines, some things need to be done by hand. In the older vines it's different, there I can farm more with the ground than with the vines themselves. But there we do have machines. All the systems that have to be linked in a synergistic fashion in Biodynamics, needs a very hands on approach. It's defiantly not a bad thing, I'll say it's quite an advantage because unemployment is high. I think if more people farmed organically there would be more employment opportunities.

13) Are there governmental incentives for conversion to O/Bio?

Nothing. And that is horrible, because we produce more job opportunities, we produce less carbon, protect biodiversity and we produce a product which is healthier for people. You would think that people who desire to do that would be supported. It costs us more money and admin to farm this way and I know in Europe it's not like that. They get tax incentives and governmental subsidies and that's where we should be heading. If the government wants more jobs, healthier people and environment, then they should help us and help more people to do it.

14) Do you think converting to O/Bio is a valid way to lessen climate change/carbon footprint?

It looks at the debate of land caring vs. land sparing. Someone told me he can see I love nature, but if I farmed conventionally, I would get eight ton per ha vs. six ton per ha. So, he asked why I don't farm smaller (like 110ha) conventionally and give the remaining ten ha over totally to nature and the wild. Rather than farming all 120ha O/Bio and getting the same amount crop yields? Because O/Bio wine farming is aggressive but not as aggressive as conventional farming. It's a valid question he asked but I don't think it's necessary for a few reasons. We found that on our farm we farmed organic and had enough crop yield, so we didn't have to put the whole farm under vine. So, we still maintained pockets of fynbos and wildlife corridors (not that organic farming restricted us from doing that). Our certifiers insist on it for mitigating spray

drift and possible cross-contamination. It also helps maintain our biodiversity. I found out that a bigger culprit adding to climate change is agriculture, way above a lack of wilderness area. So, giving more land to nature and making it wild, will have a smaller impact than getting people to farm better [more sustainable]. Once again, I think it's a binary way of thinking, it doesn't have to be either or you can farm organically and protect pockets of wilderness.

15) What were the estimated initial costs of this farm's conversion and in which year did this take place?

In the beginning, especially when I didn't know what I was doing, it cost me about 20% to 30% more than normal farming. Either because of additional costs or loss in crop yields. These days it's most probably the other way around. It costs a conventional farm R50 000 to R60 000 per hectare and it costs us about R40 000 to R45 000 per ha. The reason is we have a very tight control over our input and production costs. Agriculture is owned by a few multinational corporations, like Bayer who took over Monsanto. They don't care about Rands, they want Dollars, Euros or Swiss Francs. A third world farmer doesn't pay in his own currency, he pays in theirs. So even if inflation falls, Roundup [popular herbicide owned by Monsanto, now part of Bayer] can rise with 20%. When you're O/Bio, you won't be affected by that because you're not dependent on Roundup or other chemicals like it. We build our own compost heaps with help from our cows, so we don't even pay for that.

16) What is your opinion of the initial costs connected to converting a farm to O/Bio winemaking?

If you get your stuff [O/Bio farming] right, it's going to be cheaper to farm O/Bio. But when you're starting, there will be a dip in everything for about two to three years which isn't too long.

17) Do you think the initial costs are justified by the results of conversion? (Is the risk worth the reward?)

Without a doubt. It's a no-brainer. I'll even go further and say the days of production-driven agriculture is gone. These days it's market-driven, doesn't help farmers grow stuff people don't want. The market is increasingly demanding sustainable, healthier products.

Section 3: Certification

1) Was the farm established as conventional or did O/Bio conversion instantly start with establishment?

Established as conventional in 1989.

a. How long was the farm a conventional farm before starting conversion?

For about 10 to 11 years. Established as conventional in 1989.

2) How long was the farm in conversion before getting O/Bio certified?

We started in 2000 and got certified in 2006. There is usually a three-year conversion period, but we did six. You're not allowed to name it as O/Bio until this period is done.

a. Was that certification for both organic and biodynamic?

Yes, they looked at both and we got full certification for both at once.

3) Do you have any objections or problems with the certification process? (please explain)

The certifying costs again. Maybe an agricultural advisor, like in conventional farming, would be great to help teach people exactly what to do. So, costs and help.

4) Do you think the certification process is 100% credible? (please explain)

I don't think anything is 100% credible. There's nothing on Earth that's 100% unproblematic, but it's like democracy. It's not unproblematic but at the moment it's the best we have. They [certifiers] are extremely strict, they test everything. They check our ground, leaves, and wine. They talk to the workers and check every single building and book we have. They also come unannounced. You can cheat any system, but I think it's very comprehensive and hard to cheat. I know what it takes to get that organic sticker, it gives me confidence in the product. If someone cheats, it's just a matter of time until they get caught.

5) Why did you decide on the farm's chosen certification body [CERES and Demeter]?

CERES's inspectors are equipped to certify EU [Europe], NOP [USA] and Demeter [Biodynamic] standards and regulations. Their German as well so they're strict and do things very diligently.

6) (If organic) what is your opinion on the organic regulations and standards you are certified under (EU/USDA)?

It's strict but good.

7) (If biodynamic) what is your opinion regarding Demeter's regulations and standards?

Demeter is also strict, but they ask 1.6% on turnover to use their logo or the word "biodynamic" on your label. That's way too expensive. The certification is very expensive, and I can understand in places like Germany Demeter is a very strong trademark so people will be willing to pay more for a Demeter product there. But I sell my wine everywhere and most people haven't even heard of Demeter. That 1.6% is problematic to me. Our top biodynamic certified wines don't even have the word "biodynamic" on the label because contractually if I want to say that I have to pay Demeter that 1.6%. In my opinion that's wrong and I have written to them multiple times regarding this.

Section 4: Industry and sales

1) Where are your primary and secondary markets?

Primary will be places like Scandinavia and Norway, mostly North European countries. Exports are about 70% to 75%. Secondary will be locally.

2) Have your sales (wholesale and online) increased since converting to O/Bio?

Not significantly. People come back for the quality but it's still quite new in SA.

3) Do you believe organic/biodynamic labeling on wine increases sales?

In SA and America, we removed any reference to organics or biodynamics on our wines. If it was listed as a normal Sauvignon Blanc it sold quickly but under "organic wine" on the same list it didn't sell. But that has changed, in the last three years America has asked us to label it as O/Bio again. In SA it's also changing, but at the moment it's mostly people who know their wine. The educating process still needs to trickle down to the mass consumer in SA, but it will happen. The association of "organic wine" with good hasn't happen in SA yet.

4) What factors influence your O/Bio wine sales?

There are arguments that current situations like COVID is showing us we can't continue as we did in the past and that the market is changing and wanting more sustainable things.

5) (If applicable) Have visitor numbers (tastings/tours) increased since converting to organic/biodynamic?

Yes. I think people are getting more curious about it and we keep gaining returning customers.

6) Do you see O/Bio winemaking becoming more popular for wine farms in South Africa? (explain)

Yes, we've seen a massive growth trajectory even if it's still a small sector in the industry.

7) Do/have you experience(d) ridicule, rejection or exclusion from the conventional wine farm community?

Yes, very bad in the beginning. Once at a talk about biodynamic wines with some of the best from SA and France present. Those guys had 95+ points on their wines. One very important and influential wine expert present then commented that biodynamic wine is the bad wine you leave closest to the cellar door if a worker wants to steal some wine. No, I got a few knocks over time. From Facebook to industry experts telling me we're going to mess up the whole industry. But today it all changed and none of that happened.

8) Is there comradery between this farm and other O/Bio wine farms?

Totally. We share and look at each other's machinery and processes. Then we get together every now and again and walk on a farm and just discuss and help each other. We don't have to keep trade secrets from each other or compete as the market is expanding so much.

9) Are there existing clubs/fraternities/support organizations between O/Bio winemakers in South Africa?

a. If yes, are you a member?

b. If no, why not?

Yes, but it's very informal. More like a WhatsApp group and getting together on a farm every now and then. There are also more formal organizations like The Biodynamic Agricultural Association of Southern Africa. But for me specifically the guys working together and sharing ideas work the best to make it easier for all of us.

10) Would you recommend organic or biodynamic winemaking to a conventional industry peer and why or why not?

Yes, defiantly. Not push it down his throat but recommend. You have to realize I'm passionate about this story, but there is a fine line between being passionate about something and thinking you or the thing is better than others. Passion is a good thing but a "holier than thou" attitude is bad, it puts people off.

5. Avondale

Interview with Jonathan Grieve, proprietor and winemaker of Avondale

Section 1: the farm

1) Total size of the farm (ha)?

Total farm is 300ha, 70ha under vineyard and some pastures.

2) Was the farm a conventional farm before organic/biodynamic (O/Bio) conversion?

Yes, it's an old farm dating back since 1693 and have vineyards for a long time. We bought the farm in 1996 and at that stage it was a chemically managed farm and I presume they farmed chemically on it since the 1970s. We converted in about 2001/2002.

3) How much of the farm is dedicated to O/Bio vines? (percentage)

100% organic and biodynamic

4) Does this farm have other crops or animals?

a. If yes, please elaborate

Yes, mostly cattle, a small herd of black angus and ducks and chickens as well.

b. Do these additional crops/animals aid your O/Bio vineyard directly? If yes, please explain how.

Well the cattle are a crucial part of the biodynamics as you know. The ducks and chickens are used as a cost-effective way of pest control. We also encourage birds of prey, ladybugs and a certain predatory wasp.

5) Does this farm supply winemaking grapes to other wineries or farms?

No

6) Do you use cover crops in the vineyards and why or why not?

Yes, how much time do you have? We have about ten different mixes. Least diverse is about a mixture of four different cover crops and the most diverse is about a mixture of 20. Always have legumes, generally have cereals and a fair amount of mustard and tillage radish. But I use from legumes from clovers to *lucern* are the most important, as nitrogen binders. We do summer and winter; we always want cover on the ground. If we do till, we do minimum till so we don't expose the soil too much.

Section 2: Conversion

1) Reasons for converting to O/Bio winemaking?

We came from a couple of different sides. I trained to be an artist and got practical experience on the farm where I learned to farm chemically and I have a very inquisitive mind and if someone tells me to spray something, I'll ask them why first. One big thing that kept happening

in the pesticide and herbicide reps will keep calling and I'll ask them why it works and they can't answer me. Ultimately, we'll get into a rhythm that when you spray something it will work and after three months another problem pops up. And I knew there had to be something better. After we had a very wet winter and we had mealybug, which you control with very harsh chemicals, and we couldn't go in with it. I did some research and found guys controlling mealybug infestations with natural predators. We got them in and basically had 100% control rate in one season in a vineyard that I wrote off the year before. There I realised that it's possible and it made us look at what's best for the farm, it was actually never meant to be organic or biodynamic. Coupled to that is the actual quality of the wine, if I want to produce a really unique and quality-driven product and I'm killing off the environment and adding all these crutches in essence to my production methodology, what type of wines am I making? It's awesome to evaluate that and the product we are putting back into the environment. In those early years we were very much making wines in a modern style, award-orientated, almost like a recipe. Lots of flavour bombs, like yeast and oak and we won lots of awards with it. The lightbulb moment was when we went to a tasting at a Veritas wine tasting with all the gold wines and we had three wines there. My father, myself and my winemaker at that stage went and tasted the wines and went to dinner afterward, sitting there almost depressed. We started chatting about what's wrong and we realised none of us enjoyed those wines we tasted. None of them you can sit down and drink a glass or a bottle and open another one. All those wines were flavour bombs but you can't enjoy them with friends. Yes, they have all these stickers but is that really what we only wanted? Thus, the two came together and we created wines that have a personality, that have character, a true sense of origin. Ultimately that motivated us to go even more into the organic route. Those days being organic or biodynamic it was like a swear word. If you told people your wine was organic, they didn't want to taste it. So it wasn't market-related from an organic standpoint. These days it's completely different. People are looking for it, it's definitely a unique selling proposition, its changed completely. But those years it was different, from a traditional sense. It was market-driven from the aspect of what we wanted to put on the table. Never mind polluting etc. etc., we're not putting a whole lot of crutches into place to produce something in the world that in essence, you're watering down what is yours. Everything we're doing is highlighting what is ours and we're producing a unique product. We've been doing full biodynamic since 2004/2005 so it's been a while.

2) To what degree do you deem this farm's conversion successful?

- a. very successful/successful/somewhat successful/not successful/ not at all successful**
- b. please explain your answer:**

It was a very difficult question to answer. I think it was a very successful conversion. You know it is what we are, we've never had a disaster or things that haven't worked. I believe there is things I would have liked to work better but I've never lost a crop or things like that, I often say to people when I do lectures or things like that, your biggest challenge is if your CEO wants to go organic and they don't get the right jockey for the job, who believes in biodynamics and organics, it's teed up to be a disaster and bound to fail. It's my baby as I did the conversion, it has a good chance at working. But if you just get someone in, it's not going to work. You need someone with a passion and deep understanding, you don't need someone who does substitute farming and substitutes chemicals with other chemicals, then you've lost the plot and you're going to pick up headaches.

3) What have been the most significant changes (during the conversion process)?

I'll tell you a short story about this. I grew up in Durbanville on a smallholding with beautiful gardens and a wide variety of birdlife. So when we came here to a farm there is going to be so much nature and life and we got here and it was very quiet. Then we realised it's so quiet because there is literally no life here, no birds nothing. It's phenomenal to see where we are now and the nature and life that's back. We get an annual bird club coming in to check the birdlife and even in the height of the drought we had over 200 species of birds on the farm. You can feel it in the energy of the place, even the soil is more alive. I think that's the biggest change by far. We literally have swarms of ladybugs which is shocking but so good.

4) In your opinion, what is the...

a. biggest benefit of being organic/biodynamic?

I want to use the cliché of being sustainable but the biggest benefit for us as wine producers is the character you get into the wine at the end of the day. And that's awesome because we have the theory of why we wanted to go there and then the result. I mean we have clients who drink our wine and keep coming back and they say it's difficult to go back to any other wine because it is so unique. It has a huge amount of elegance and we're putting out a product into the market and that needs to be unique. There are many other benefits but this is the biggest.

b. biggest disadvantage of being organic/biodynamic?

Umm it's probably that it's much more time-consuming and it's more, I don't really see it as a disadvantage' but it's much more hands on. It's not a spray program you can give to somebody and say go for it, it's much more learning, seeing and interpreting what the vineyards and soil is telling you and then react to that. You're not reactive but need to be proactive to make sure you don't get diseases and that the vines are thriving. That's what I mean by time, time in the vineyard and in the system. It's not a separate system, you are engaged in it. So I'll say it's human capital.

- 5) **To what extent would you regard O/Bio conversion as a risk? (perceived possibilities of failed crops, financial loss, reduced quality, increased labour, reputation damage, etc.)**
- a. **very high risk / high risk / somewhat risk / little risk / no risk**

5.1 failed crops

No risk. I honestly don't see it any different to a chemical farm. I've been doing it for a while and we haven't had a failed crop. You need to do things, the same you need to do as in chemical control, it's just different ways of doing it and different perspective and specifically getting the vibrancy and the energy in your soils and environment going properly but I don't think the risk is high. But you need to be doing it properly. If you're not doing it properly the risk is very high. But in our environment and with us I don't see it as a risk.

5.2 financial loss

Well it's the same, if you don't have a crop you have financial loss. If you have crops then there is almost no risk of financial loss. Those two are very interrelated in farming. So yea little to no risk if you know what you're doing.

5.3 reduced quality

No risk

5.4 increased labour

Uhm yes potential, a bit more labour so somewhat. Once again to a degree its qualified. You know if I compare myself to another top-end producer and I compare myself to their vineyards and what they got through I think it's fairly comparable. Maybe I've got a little bit more but overall its more labour intensive but not extreme.

5.5) reputation damage

No. But in the early 2000 if you told someone you farmed organically; they'll look at you rather oddly. We were some of the first farms to use cover crops and there were farmers stopping next to the road coming to look at it, asking what we were doing. Now it's acceptable and quite normal, but people still herbicide everything dead which I don't really understand but at least they're trying something.

- 6) **Were you hesitant to convert to O/Bio?**

No

a. **If yes, why?**

- b. **If no, why not?**

Umm, it just made sense. I can't explain it more than that, it just fits together. And you see the results. There are certain things in life you need to believe in and that you need to see the evidence in front of you and you need don't necessarily have a scientific explanation for it and you know it's right because ultimately mother nature knows what she's doing. If you realise that and not think you're bigger than mother nature then you're well on the right route. Its where the disasters come in conventional farming as well as organic, when the farmer feels they know better than nature. That's where your imbalances come in , a lot of your diseases and plagues. Its nature's way to balance out what we mess up.

7) What do you regard as the biggest risk when converting to O/Bio?

Ultimately the biggest risk is personal. I mentioned previously about having the right "jockeys" in the field so to me that's the biggest risk; is having someone who doesn't believe in what they're doing. You know they're doing it because of a salary and because they have to do it, then you have a high risk of something happening that shouldn't be happening and ultimately not being applied as it should be applied. Of course there is risk in viticulture, downy mildew and the sorts but those are things you can do something about, they are mitigated risks. To me the biggest is people.

8) Was conversion gradually implemented in sectioned blocks of the farm or all at once?

We did 25% to start off with and flew pretty quickly from there onwards, over the period of three years.

9) Where did you get information regarding O/Bio winemaking and conversion?

All different places, ranging from google to the farm and nature itself. If you have an inquisitive mind, you'll find the information.

10) Do you or any other personnel have previous experience in O/Bio winemaking?

No, pretty much all from me but most of my staff have been here for many years. My winemaker has been here for 17 years.

11) Do you think more information, literature or manuals are needed?

Definitely. In tertiary education there is virtually no formal education on organic, never mind biodynamic. The last time I checked there was two days of brief organics in a two-year course at Elsenburg. Two days in a two-year course? I mean come on, that's ridiculous. When you're actually dealing with nature it's very important. I understand to a degree why it's not happening because the people funding it are all chemical companies, but it's definitely necessary.

12) Has the farm added labour since converting? (how many were employed in the past and how many are employed now?)

No I don't think so.

a. Do you see this as an advantage or a disadvantage? (please explain)

Look labour in farming is your biggest input so its most definitely not a disadvantage that we haven't added, therefore it's an advantage that we haven't added because our costs show it. At the same time we're a family run and owned estate so not just my family but the community's families; we want to make sure that the workforce is stable, looked after and that their workforce is secure. That doesn't mean that I need to add to it though.

13) Are there governmental incentives for conversion to O/Bio?

Nothing, I don't know of any incentive to farm full stop, never mind organic farming. If anything I think it's the other way around, there are many obstacles for agriculture in South Africa. Mostly driving from housing and labour, but also very little subsidies and support etc. etc. that comes through. And honestly, I can't help but think there is little value put on farming as a whole. It contributes so much basic job creation and there just seems to be more roadblocks and challenges put in place as opposed to less and less. That's not just organic but overall farming.

14) Do you think converting to O/Bio is a valid way to lessen climate change/carbon footprint?

Definitely, there are many different research papers, articles and TedTalks and so on about the effects on climate change and specifically if you farmed correctly, about reversing climate change. If you can build up your humus in your soil and binding that carbon into an active stable source of carbon in your soil you can literally reverse climate change out of it. So there is lots of info on that. I've said of how I talk to different group from Stellenbosch students to Elsenburg students to other farmers etc and invariably when it comes to questions people always ask how is it going to affect climate change and how's climate change going to affect you? My answer is always straightforward; I'm going to be in a better position than the chemical farmer because I've got more humus, I've got more active ingredient in my soil. I've got a cover crop that's protecting the soil from the environment and soil evaporation, form erosion etc. creating home for the microbes and the likes. There are no two minds that it will help. And in the big drought of a couple of years ago it bore true, we were getting the best crops I've ever had in 25 years plus, where the industry norm was 40 to 50% even more than that. The proof is in the pudding, as the more you get that system going the more vibrant and resilient it will be.

15) What were the estimated initial costs of this farm's conversion and in which year did this take place?

Early 2000, like 2001 or 2002. It wasn't more expensive to start farming this way; in certain instances, it was cheaper. Of course, you've got your certification costs and that's an additional cost but it wasn't remarkably more expensive.

16) What is your opinion of the initial costs connected to converting a farm to O/Bio winemaking?

Our systems are focused on balancing our soils and getting them up to scratch, it depends on how empty your pantry is and if you have a very imbalanced soil then you have to get it balanced which will add to the costs. But is that really different if you are farming chemically? I don't believe so, I think you should be doing it anyway. But from an ongoing cost perspective as I said our use of ducks are a great example. We use them to control snails on the farm, they're more effective we have a whole system we work with. Our snail control costs are roughly a third of what chemicals for it will cost and there is no detrimental side to it. So were having an open mind to finding a natural solution for it and the will to actually implement it and get it into your system.

17) Do you think the initial costs are justified by the results of conversion? (Is the risk worth the reward?)

Definitely yes.

Section 3: Certification

1) How long was the farm in conversion before getting O/Bio certified?

Three years.

2) Do you have any objections or problems with the certification process? (explain)

Well from a Demeter perspective the cost. When you really start looking at most of these bodies because we don't have a certification standard in South Africa and you need to get it certified according to an international standard like the USDA or EU. It adds additional costs, so it's getting that process through. It's like any certification, the costs and admin add up. I guess it's the cost of doing business the other issue is that all these standards are EU or USDA-based which means its international currencies. In the EU or US you actually get subsidised from the government as a farmer and they don't worry about exchange rates so it adds multiple layers to this whole process and costs. Other than the key benefit of what it does to your farm and your product, there is no incentive to do it. There is no rebait, there is nothing encouraging a farmer to go that way, which is sad, because if it was happening it would be amazing to see what end result that could have on a global standing perspective and an environmental perspective. We could get caught up in talking about business for a long time and what the government could do to help but we don't have that time.

3) Do you think the certification process is 100% credible? (explain)

Yes, I do, especially for the EU standards and so on, especially in SA and outside the Eu, they are pretty strict about what happens and what doesn't. It's not infallible, but it's not bad.

4) Why did you decide on the farm's chosen certification body [Control Union]?

I've been with them since we started so it's been quite a while. If I remember correctly, at that stage they were some of the few certifiers in SA that do EU and USDA standards and their prices are pretty good so we stuck with them. But the main reason is that they could do both standards we were looking for, international based with the reputation that goes with it.

a. Are you Demeter certified?

No, costs. We've looked at it back in 2005, 2009, 2012. Every few years we look at their certification. The biggest issue is we are certified EU and USDA organic, in essence we do a lot of exports and pretty much every market accepts those standards. Your certification costs for organic is straightforward. You have an annual inspection cost and all the works that go with it. Your Demeter certification cost is a flat inspection rate and then what you have to pay them as well! The other issue is they charge you a percentage of your turnover, between 1.5 and 2%. Not of your profit, of your total turnover you have to give above everything else. If it included the inspection cost, I'll look at it but it doesn't make sense, not businesswise, not the premium, nothing; it just doesn't make sense. So we are talking to get them to potentially waiver the royalty fee, or whatever you call it. If they agree to that we could consider it.

Do you think if Demeter was bigger in SA, you'll consider it?

I guess if it ultimately was bigger and it was a draw. Look we sell 20% in SA, 80% export so Demeter is bigger overseas. Is it going to make someone buy my wine because it's Demeter tailored, I have my doubts. So it definitely doesn't compensate for the fee they charge. So once again if they waiver that fee maybe, but at the moment it's not there. Ultimately wine growing and production in this day and age is a challenge in its own right. Giving 1% or 2% of your turnover to someone for what, what value have you added? So that's our standpoint as I said I'm not against it at all, it's just a simple cost perspective.

5) (If organic) what is your opinion on the organic regulations and standards you are certified under (EU/USDA)?

So it depends what you look at. On the wine side there is certain anomalies in EU and USDA standards with sulphur and what you can call organic and what you can't. So it's a starting pace, for me it's not organic standards and certification is a need because you're telling the market you have external validation on what you're actually doing. It's not greenwashing because there is a hell of a lot of that so I do think it's important to have certification but at the same time the standard is not the be all or end all, we go way further than the standard, it's simply a guideline. It tells you what you can't use but the reality of the matter is if you're skating a very narrow line in regard to what you can't you vs what you can they you're actually thinking on a conventional mindset and you're not looking what happening on the farm. Then you're doing substitute farming, you're doing it for the wrong reasons.

6) (If biodynamic) what is your opinion regarding Demeter's regulations and standards?

N/A

Section 4: Industry and sales**1) Where are your primary and secondary markets?**

We export to 16 different markets around the world, from US, Canada, Brazil, into Europe and some into the Far East. Our major markets will be in Europe, Scandinavia specifically is our no 1 market. There is a great affinity for South African wine in Europe, so secondly will be a variety of EU countries and then we have a fair amount of success in Canada as well. US is a bit more of a challenge.

2) Have your sales (wholesale and online) increased since converting to O/Bio?

It's a difficult question to answer in the perspective of COVID-19 because one we haven't been able to sell any wine for a while and secondly at the same time people are much more willing and happy and almost demanding to buy online so short term it's a bit different but over time it will become more and more important to do it. But at the same time with our wines, it's a top-end product and we focus a lot on other experiences and food like food and wine pairings and the like and I don't see that changing at all. Ultimately wine is a lifestyle type of thing, it's part of food and wine and socialising

3) Do you believe organic/biodynamic labelling on wine increases sales?

In certain markets definitely, there is no two ways about it. In SA I think it's starting to definitely but in Scandinavia and Sweden for example, they're huge on organics. Every product is marketed as such and the interesting thing there is it's a monopoly-based system so four or five people decide what the country drinks in essence. The market was actually pushing back and saying they want organics, in 2016 or 2015 they wanted to have 20% of their products listed as organic by 2020 and I think they ended up having that in the first year, or the first 18 months. It was just drawn through and they just couldn't get enough. It's also the external certification saying look here this is actually organic, it's not greenwashing.

4) What factors influence your O/Bio wine sales?

That's a loaded question. Of course, the fact that we're organic and biodynamic it's a huge unique selling proposition, it does influence more in certain markets. On the other side as I said we didn't go this way to be organic and biodynamic, we would be idiots not to do it these days. But if you look at our wines, we're not punting the fact that we are organic, it's who we are it's integral to our DNA but ultimately our product is to a large degree about storytelling and people buy into it, they assimilate with it, it's they're product in essence. And that all contributes hugely. Storytelling is what wine is about.

5) (If applicable) Have visitor numbers (Tastings/tours) increased since converting to organic/biodynamic?

Yes definitely they have increased over the years. We don't get busloads and busloads, were very much about that personal client experience and telling our stories and giving the guests an experience.

6) Do you see O/Bio winemaking becoming more popular for wine farms in South Africa? (explain)

I do on one side and I think it's purely because the market demands it, I don't necessarily think it's because the farmer wants it to go that way. As well also said earlier, they aren't taught about it. It will be and is driven by demand. The naysayers said it's one of these phases, well it's not a phase and it's still around many years later and still growing and growing. I don't see that changing, I actually think it's going to become more and more the norm. It's going to come to a point where it is expected in certain things. So I definitely think it will grow but it shouldn't grow because the product is getting a premium, and I don't necessarily believe a product is getting a premium or the premium it deserves to get, But it's going to grow because the client demands it.

7) Do/have you experience(d) ridicule, rejection or exclusion from the conventional wine farm community?

No nit really but I've never been deterred by what other people think so to be fair. I'm really not interested in that; I can't really comment on it. I can say that we time to time tender to airline business and at one stage we did a very well-known Eastern airline and they requested the samples and sent everything over and the wine taster got there, saw it was organic and refused to taste it. He didn't even taste it, it was ridiculous. Two years after that same buyer and the same airline sent out a specifically organic tender, that's how quickly everything changed. So that's the only time I've ever been excluded because of it before, that's ignorance for you. From time to time we send in samples, that was a global tender.

8) Is there comradery between this farm and other O/Bio wine farms?

Yes, I think so, there is a bit of collaboration from time to time. There is only a hand full of people doing it. We're all so busy and running around in this day and age so it could definitely be better, but there is.

9) Are there existing clubs/fraternities/support organizations between O/Bio winemakers in South Africa?

Yes

a. If yes, are you a member?

I mean we have one or two groups I think, specifically the Biodynamic Association. I'm not a big organizational person so once again I like being on the farm doing what I love doing and I most definitely don't mind sharing it but I need to get on with it.

b. If you are not a member, why not?

10) Would you recommend organic or biodynamic winemaking to a conventional industry peer and why or why not?

Of course, but if it's qualified. If the person has no interest in it, I'm not there to convince them to do it. If they just want to make mass-market wine with no character and very generic... you need to do it for the right reason and your goal needs to fit into that. But of course I'm a great advocate for organic and biodynamic viticulture but once again to each their own, if they don't believe in it, they don't believe in it.

6. Bloublommetjieskloof

Interview with Wendy Lilje, owner and farmer at Bloublommetjieskloof Biodynamic Farm, Wellington and Chairperson of the Biodynamic Agricultural Association of South Africa

Section 1: The farm

1) Total size of the farm (ha)?

38ha. Started as a biodynamic farm by a lady called Jean Malherbe. I don't know the exact year, but it was about fifty years ago. It was the first biodynamic farm in this country, so it has been going for a long time. I took over 20 years ago. Jean died about six years ago and is buried on the farm. She was living on the farm when I took over.

2) How much of the farm is dedicated to organic/biodynamic (O/Bio) vines? (percentage)

0%, we're not a vineyard, unfortunately.

3) Does this farm have other crops or animals?

a. If yes, please elaborate

It's a thoroughly mixed farm. It's got everything except wine, but in very small amounts. Fruit like plums, apricots, guavas, figs, quince, blackberries, oranges, lemons, vegetables and olives. Horses, cows, pigs, chickens and of course dogs.

b. Do these additional crops/animals aid your O/Bio vineyard directly? If yes, please explain how.

The cows do with the compost, but they all do in a way because we use animal parts when making the preparations as you know. The pigs and chickens as well, just not the horses directly but indirectly yes.

4) Bloublommetjieskloof have school outings and educational fieldtrips available. Is this specifically aimed to educate the children on biodynamic farming?

Yes absolutely, that's the purpose of the programs. The kids come in and join every aspect of the farm, so they work hands-on for three days. The kids really do enjoy it.

5) Does this farm supply winemaking grapes to other wineries or farms?

We sell biodynamic preparations but no grapes.

6) Do you use cover crops in the vineyards and why or why not?

Yes

a. If yes, is this cover crop specifically added to aid your O/Bio vines?

We also use it as feed for the animals as we don't have a vineyard. We have some grains and legumes sown in the fields as cover crops but its multipurposed as they feed the animals as well.

Section 2: Conversion

1) Reasons for converting to O/Bio winemaking?

Well umm Jean's father was a natural healer so she kind of came from that aspect, before she started farming, she actually went to England to study Biodynamic farming, there is actually a degree you can do in biodynamics there. Then she came back and was actually looking for a farm to start and found this area. So, it's also a personal belief system, so maybe that's your whole answer. Because Johan (of Reyneke Wines) is doing it as well because he's convinced of the philosophy and believes in the whole system of Biodynamic farming as well and that that is the way to go forward. And that was my reason as well. But I have to say that's not always the case with Biodynamic farms. You do have and I know a few, but won't name them, who do biodynamics just because they get a premium for their wines. It's especially rife in the organic winemaking. With organic you can do it but with biodynamics it just doesn't fit. There are many people who do it and you just can't stop it. It's like a contradiction in a way

2) To what degree do you deem this farm's conversion successful?

a. very successful / successful / somewhat successful / not successful / not at all

b. please explain your answer:

Ok so that's actually a very difficult question. When I went for certification, there is a conversion period. When you apply and haven't been biodynamic you have to go through that period and get organic, and the same with Demeter. When I applied for certification, I didn't need organic, it was immediately biodynamic because Jean and I have been farming biodynamic all those years beforehand. We had the history so I'm not quite sure how to correctly answer that. You're trying to create a farm organism, a holistic system which is something that is "more than the sum of the parts". Everything is in place but you're creating something totally new with a life of its own. The life also depends on having everything in place. It will change each year between very successful and somewhat successful, so I'll say successful.

3) What have been the most significant changes (during the conversion process)?

Changes in the farm the last 20 years were that Jean (Malherbe) wasn't fully biodynamic. When I took over 20 years ago, I immediately got the farm Demeter certified. Thing changed in terms of what was being produced. She did a lot of vegetables; I don't do vegetables... I brought in the soap and cleaning products where she didn't do that. Because both of us had the same vision, where we both were into biodynamics and the whole idea behind biodynamics is that it's self-sustainable, you have to have a mixed farm. So, I think it pretty much stayed the same as we both had the same objective and kept the farm mixed. So just a few things changed and that was mainly things I was able to do vs what she was able to do. Major change happened two or three years ago. It was a combination of financial difficulties and me getting tired and older and wanting to hand over and needing to find a way. That didn't happen and some things didn't work out, so

what's happened as a result of those attempts to hand over was that production went down completely, just to enough for me to be able to handle it on my own.

4) In your opinion, what is the...

a. biggest benefit of being organic/biodynamic?

Wow now I can talk for more than two hours! Because it's not just a farming method, there's personal growth involved, it's a way of life, it's a philosophy and because you take on the task of creating a biodynamic farm you are actually aligning yourself with cosmic evolution and just what's going on here. So, you take on that exceptional responsibility and it's also really exciting. I'll say that's the benefit. It is also a massive privilege that you've been allowed to do this.

b. biggest disadvantage of being organic/biodynamic?

The biggest disadvantage is that we're in this country. Is so bloody difficult and I'll tell you why. Number one: there is no labelling law in this country, so anybody can claim to be organic or biodynamic. This puts us at a huge disadvantage because we pay a huge amount for Demeter certification plus, we have to uphold the standards. We want to uphold the standards. So, you have people next door who are using conventional stuff on their farm and yet they sell their products as biodynamic or organic. So that's the big difficulty. I've gotten that many times, where a farm isn't dishonest about their labeling, they just don't know the difference and the truth. They think their organic but they're not organic and they don't even realize it. Then also as a result of there being no laws and no control on labelling here, there is also no demand for organic farm inputs because everybody is just using conventional farm inputs anyway. If I have a difficult year and don't have enough hay for my animals there is no way I can go to buy hay, because there isn't anywhere where I can get it. So, the conditions in this country are incredibly difficult for biodynamic farming.

5) To what extent would you regard O/Bio conversion as a risk? (perceived possibilities of failed crops, financial loss, reduced quality, increased labour, reputation damage, etc.)

a. very high risk / high risk / somewhat risk / little risk / no risk

5.1 failed crops

Little risk.

5.2 financial loss

Very high risk. It's huge, there's no way you make money. I think the wine industry is different, I don't know what Reyneke says. There is still a possibility to make some money there. I can speak for all biodynamic farms producing for the local market, you make a loss. They all have to do other things for an income, like having school groups or cottages on the farms. The biodynamic association have been trying for years to grow the local market to help the farmers and that's why I know about those difficulties. We're just now launching a local Participatory

Guarantee System, which is a different way of certification. With normal certification an inspector comes and checks everything, saying yes you have your certification or not. PGS is different where a group of farms work together, and they check each other. At the end of that they get together and decide who gets certified and who needs to improve. They do the inspection themselves, everybody at one farm at a time. With Demeter certification its controlled by Demeter International, they will come and accredit us but we [Biodynamic Association] do our own certification. That means we bypass all the costs. The idea is that it's only for local markets, not exports, to boost the local market and economy. It just started and it's nationwide, but it seems all the biodynamic farms are in the Western Cape.

5.2.1) Do you think the chances of dishonesty, exploitation, corruption or any situations of the sorts are bigger in the Participatory Guarantee System?

So many PGS's have been tried in SA, especially in agriculture. What's happened unfortunately, PGS in the organic world you would have a whole lot of farms who try to be certified organic, but they don't make the grade, so they lower the standard, which is ridiculous. Kind of like a sore loser, so they start a PGS. So PGS has a bad name. This is why we are trying our best to keep the Demeter-PGS separate and to do the whole marketing drive from the beginning, because we have Demeter International behind us. The goal is to be open, transparent and absolutely insist on the current standards. The system will anyway be checked by Demeter International annually, not the actual farms but the whole system itself.

5.2.2) So is there no room for error then?

No actually there is, but the difference is, and this comes with a philosophical point of view which fits with the anthroposophical viewpoint much more than third-party certification, because it's the idea of freedom with responsibility. Demeter gives us the freedom to certify ourselves, but they also give us 100% responsibility to uphold the standards. And that's what's leading us. And somehow when you have the freedom and you carry the responsibility; you are somehow more careful and considerate than when third-party certifiers are involved. It's much different than some stranger walking around for a few hours ticking off some things he sees but he doesn't see everything because he hasn't been here the whole time. Also, the idea that the farms are visiting each other every month, so they see everything as the seasons change. With third-party certification I can show you hundreds of farms that are not really organic, but they are certified. In any system it doesn't really work but with the PGS we are hoping to uplift the standard of biodynamics farms. Coe talk to me in ten years again and see if it worked!

5.3 reduced quality

Ok so I have two answers. First of all, with a biodynamic product you have a product that (we're talking food now, not wine) you have something that nourishes your body as well as your soul.

You're becoming connected to the cosmic world through the product consumption because of what's inside the product. When we're producing biodynamic food, we are not taking out anything and it's growing in tandem and harmony with everything like the cosmos and even the spiritual world if I can use that word. So, it has that "more" in it than just the vitamins, minerals and carbohydrates that you can measure. So, from that point of view, any product that is produced properly biodynamically will have a higher quality. However, the problem in this country, because biodynamic farming is such a damn struggle, you know you struggle financially, you don't have any support and the seasons are more difficult here, the product is influenced but not in a significant way! Physically the product might just look a bit different and not as good as conventional products, and many consumers only go on looks. The everyday consumer doesn't always know. I know my own customers. On a biodynamic farm you have some customers who will always buy your products, no matter what they look like or the packaging, because they know the biodynamic standard of quality. But unfortunately, on the open market people don't understand and just look at it. So, unfortunately, there's two answers there regarding quality. I suppose it's very different for wine, because of the bottles and labels.

5.4 increased labour

High. You need more labour but then again... Look from the philosophical view point of view and the Demeter regulations, you should prioritize hand labour over mechanics and mechanizing your farm. It's also the social question that comes into play about employment. So yes, the risk of increased labour when going biodynamic is high.

5.5 reputation damage

It depends. There is not such a big leap from going organic to biodynamic, if you were properly organic. No risk at all. I think it will be considered quite brave. The financial change is also not so huge. The big change is when going from conventional to biodynamic, because then you first have to go organic, then the risk is very high!

6) Were you hesitant to convert to O/Bio?

No

a. If yes, why?

I wouldn't hesitate for a second. Because I think organic farming is a greenwash, it's just another form of materialistic farming again, because there's really nothing to it. All you're doing is taking away the chemicals and it's all just to do with the Earth and production. Whereas biodynamic farming is more. As we said, there is a lot more, it makes more sense, there is a more meaning.

b. If no, why not?

N/A

7) What do you regard as the biggest risk when converting to O/Bio?

I suppose the biggest risk is that you don't make it financially and you end up shutting down. So yes, finances.

8) Was conversion gradually implemented in sectioned blocks of the farm or all at once?

She [Jean Malherbe] did the whole farm at once.

9) Where did you get information regarding O/Bio winemaking and conversion?

I sort of picked it up over time, I didn't do a course or degree in it. I did lots of little courses and workshops over time, like those workshops and lectures given by the Biodynamic Association. They also have training. So that's been happening over the years. A lot of it I learned at the company [Pharma Natura] I worked for after University, but the most I learned practically, learn as you do and by making mistakes.

10) Do you or any other personnel have previous experience in O/Bio winemaking?

Only me.

11) Do you think more information, literature or manuals are needed?

Oh yes! Talking to you as the Chairperson of the biodynamic association, we have had times where conventional farms have heard of biodynamics and consider trying it. Then they come to us, but we don't have the right number of manuals and literature. We don't always know how to help them, there are no consultants in this country, nobody we can send them to. The only thing we can do is get them to attend our workshops and that. So, there is a lot more that's needed. I do happen often that people try it for a while and then leave it because of a lack of support and info. They are also too hasty and don't always know when to expect results.

12) Has the farm added labour since converting? (how many were employed in the past and how many are employed now?)

So, at the moment it's only me. About a year ago I did an experiment to see if I can run this farm all on my own and I'm still trying. I have a driver who does deliveries but otherwise it's just me.

a. Do you see this as an advantage or a disadvantage? (please explain)

Bit of a disadvantage as it's starting to get a bit much. But I believe it's an advantage on the wine farms maybe.

13) Are there governmental incentives for conversion to O/Bio?

Zip, absolutely nothing. And you know I am also part of the Biodynamic Association and I was sent to the Netherlands for a Demeter conference a year ago. There I was talking to the people from the other countries and I mean Europe, where the economy is so good.... I was talking to people from Norway and they don't pay a cent for their organic and biodynamic certification! It's all paid for by their government, it's all free! We're sitting here paying huge, huge amounts

and our economy struggling so much. It's like everything is against us. It's a real struggle. The exports are also hard, it all holds us back at all times.

14) Do you think converting to O/Bio is a valid way to lessen climate change/carbon footprint?

For sure. Absolutely, much more so than organic farming.

15) What were the estimated initial costs of this farm's conversion and in which year did this take place?

That I can't say as Jean went through it all about 50 years ago.

16) What is your opinion of the initial costs connected to converting a farm to O/Bio winemaking?

I can't talk for any wine farms, but from organic to biodynamic is tiny additional conversion costs because you'll only need to pay for the preparations which you can get almost everything off of the farm itself. You are allowed to make the preparations and apply them with machines which can also cost you more. But a conventional farm would have those machines anyway. The big cost is your own personal development. You'll have to prepare yourself for a massive financial setback when converting from conventional to biodynamic, but not to such dramatic extent with organics. There is also fear you have to fight, fight the urge to spray yields or start panicking when the yield is lower. Then you do something drastic. That's also going to cost you money in the end.

17) Do you think the initial costs are justified by the results of conversion? (Is the risk worth the reward?)

Depends what you define reward as. If your reward is money, then it's not. But if your reward is quality and the fact that you're doing something for the world etc. etc. then 100% worth it. Maybe on a wine farm the reward can be both (money and quality) because you're getting so much more for Demeter wines. Even for other things in Europe, things like veggies and fruit, the demand is incredible. You'll hear stories of top restaurants only wanting Demeter produce. Some even Michelin-star.

Section 3: Certification

1) How long was the farm in conversion before getting O/Bio certified?

I took over in 2000 and got certified in 2005. Jean [Malherbe] was not certified.

2) Do you have any objections or problems with the certification process? (explain)

My only problem is that it's way too expensive. The way it's done is ok for what it's doing. But people always complain it's a money-making business and corrupt. I don't think it's either; I just think it costs too much. It should be government subsidized.

a. Wendy can you please explain in detail the certification costs?

Ok so Demeter won't even look at you until you are organic certified. So, Demeter has double certification. We are fortunate here in SA that the person who does the organic certification has been approved by Demeter to do the Biodynamic certification as well, so we have one inspector. He comes and does both inspections at the same time. It's still too expensive but reduces the costs a bit. The inspection takes one day here, and I've heard two days at Reyneke [Wines]. The cost is also dependent on how many departments you have on your farm. Processing, dairy, preserves will add to the costs. My costs were very high compared to my turnover because I have so many little departments. If I was just a wine farm the turnover-certification ration will be lower. My cost here was R45 000 for organic only. Elgin [Wines] paid R36 000 and Reyneke in the region of R45 000 to R50 000. So those numbers change all the time but it's an idea. That's just the inspection. Here comes the thing. Demeter charges a trademark fee, then if you want to use the Demeter logo on your product you have to pay a percentage of your turnover sales. The local sales are so low they are less than the minimum here. So, I pay the minimum license and logo fee which is 150 Euros per year. So actually, very little goes to Demeter, most of it goes to the organic certification which drives me up the wall cause I'll rather Demeter have the money because they actually do something. But of course, with the wine farms it's much more because they mainly do exports which have massive turnovers. It's like between 70% and 80%. The little Demeter boards on the farm and so you're allowed to use freely when certified by them.

3) Do you think the certification process is 100% credible? (explain)

Yes, to a degree, I think they do a good job of it.

4) Why did you decide on the farm's chosen certification body?

Demeter are the only biodynamic certifiers.

5) (If organic) what is your opinion on the organic regulations and standards you are certified under (EU/USDA)?

They're quite complicated.

6) (If biodynamic) what is your opinion regarding Demeter's regulations and standards?

I think they're too low. When we looked at this whole PGS thing, they even said to us we can change the standards if we want to, as long as the minimum is the same. So, you can make them make them stricter

or adapt them to your own conditions. There are a few places where I would have much stricter controls than Demeter. But I don't think they are too high. They're also complicated but I think that also has to do with the exporting to EU countries etc. and the EU being so bureaucratic. But Demeter says we can simplify them and make them easier to read and understand. It's interesting

you know; I believe these are the types of things that should be forced on the conventional farmers. Organic should be normal!

Section 4: Industry and sales

1) Where are your primary and secondary markets?

Primary is local sales in South Africa. The fresh stuff is just the Cape Town area, but the rest is SA. Then I do small amounts of exports to European countries. No Australia or America or those palaces.

2) Have your sales (wholesale and online) increased since converting to O/Bio?

No online sales but we do supply retail, but my whole business is geared to wholesale. I spent a lot of time dropping off boxes of fruit and veg to houses since people don't want to buy retail. It's hard to say because we've always been biodynamic.

3) Do you believe organic/biodynamic labeling on wine increases sales?

In Cape Town it does but not in SA. In CT its well-known because the tourists know it, ask for it and buy it. With organic labelling I think it increases sales, but among the privileged class and not the masses.

4) What factors influence your O/Bio wine sales?

The Demeter logo I'll say. You see there is biodynamic and Demeter, so the people going for Demeter know Demeter and in SA that's not the case, not yet I hope. If you see biodynamic wine and they're not certified with Demeter, you'll be a bit skeptical about it because you know the facts now.

5) (If applicable) Have visitor numbers (tastings/tours) increased since converting to organic/biodynamic?

N/A

6) Do you see O/Bio winemaking becoming more popular for wine farms in South Africa? (explain)

I would like to and it's what we're working for with the Biodynamic Association and PGS. So, weather it actually happens is something different because we've been struggling for a long time now. I joined the Association about 6 years ago and my task was to grow Demeter farms in SA, and since then they've become less. I don't believe it's something I'm doing but I can't say for sure it'll grow but we really hope so.

7) Do/have you experience(d) ridicule, rejection or exclusion from the conventional wine farm community?

So, I must tell you about Jean. When she came here 50 years ago, she's a female farmer on her own in a very conservative Afrikaans community and then she's doing things like stuffing cow

horns with manure and burying them. So, she had a tough time, she was totally outcasted and had a very tough time. I didn't, when I took over many things in the country have changed. I mean there is a little bit of, it's not ridiculing but more kind of an argument, especially when it comes the constellations etc.

8) Is there comradery between this farm and other O/Bio wine farms?

No, and this is something we really want to address with the PGS, because there you have to work together! You have to develop a type of comradery. And I think that's a very South African thing, people sticking their own. It's strange because they're shooting themselves in the foot. That's why I also worry that the PGS is going to work or not.

9) Are there existing clubs/fraternities/support organizations between O/Bio winemakers in South Africa?

Yes

a. If yes, are you a member?

I'm the chairperson of the Biodynamic Association of South Africa, and it's the only sort of its kind.

b. If you are not a member, why not?

N/A

10) Would you recommend organic or biodynamic winemaking to a conventional industry peer and why or why not?

No, the jump is just too big for a conventional farmer. I've been in contact with conventional farms who've heard of biodynamics or the sprays and preparations. Then they buy the sprays and preps, but it doesn't work because they're using it like a conventional product. Then you try and explain to them why and they just get a glazed look in their eyes. It's just too big of a change, so I'll never do that [recommend it]. There is an idea in the whole anthroposophy and philosophy of biodynamics, and Steiner himself said this, that you wait for people to ask the question, you don't go out and try and convert people.

APPENDIX C: BIODYNMAIC PREPARATIONS

The preparations are divided into sprays applied directly to the vineyard and soil or manure and compost additives (Waldin 2004). Six of the eight preparations include a step of burying.

Preparation 500 A hollowed-out bull horn filled with cow manure is buried until the following spring. Once exhumed, the manure is mixed with water and sprayed over the vineyard to increase the overall soil fertility, nutrients and health.

Preparation 501 - Ground quartz or silica is buried in a hollowed-out bull horn and buried in the summer until the following fall season. In the spring it is mixed with water and sprayed over crops to aid in photosynthesis in the vineyard.

Preparation 502 - Yarrow or milfoil flowers which are dried and sewn into a stag's bladder which is then hung to dry for the duration of the summer. The following winter the bladder is buried, exhumed by spring and the contents are to be incorporated into the compost pile destined for the vineyard. It influences the potassium and sulphur intake of the vines, which are two vital minerals needed in grape production.

Preparation 503 - Bovine intestines are stuffed with chamomile flowers, which is then buried over the winter season, exhumed in spring and added to the abovementioned compost pile. It increases the calcium and potassium content of the compost.

Preparation 504 - Stinging nettles are buried with peat moss for a full winter season and then added to the compost pile increase the iron content of the compost and fight grapevine diseases and increase calcium intake.

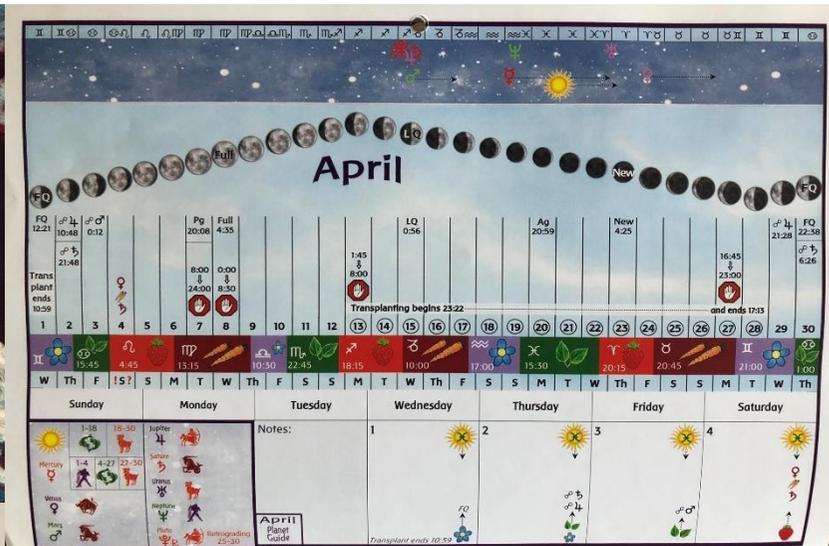
Preparation 505 - Chopped oak bark is pressed inside an animal skull and buried for autumn and winter where it will be exposed to rainwater. The skull contents will be added to the compost pile.

Preparation 506 - Dandelion flowers are pressed into a bovine mesentery and buried in winter until the following spring. The contents are then added to the compost.

Preparation 507 - Valerian flowers juices added to the compost. The dilution is to influence the phosphoric content of the compost.

Preparation 508 - Horsetail "tea" used to reduce fungal growth.

APPENDIX D: EXTRACTS OF THE 2020 SOUTH AFRICAN BIODYNAMIC CALENDAR



THE MOON

Phases

- New** → **FQ**: Plant sap is at rest & even though emphasis is on underground activity, planting during this time produces smaller plants. Fell timber
- New** → **Full**: Plant sap awakening, growth slow & steady
- Full** → **Full**: Plant sap maximum output, germination at peak ; Sow seeds 48hrs before FM; Apply liquid manures 48hrs before Full ; Watch out for insects; Use BD Prep 504; Look out for Moon opposite Saturn (♄ ♀) & Moon opposite Jupiter (♃ ♀); The Full Moon influence allows good absorption of liquid manures..
- Full** → **LQ**: Plant sap settling, roots gathering strength
- LQ** → **New**: Restful period, chore & weeding time

Perigee & Apogee Perigee (closest) & Apogee (further) indicates the Moon's position from Earth.
Perigee : Avoid sowing seeds, tendency towards fungus growth and insect attack. **Apogee**: Sowing seeds will produce small plants & tends to create bolting in vegetables. Good time for POTATOES.

Transplanting - Descending Moon ROOTS are more vital
 Transplanting; Replanting; Pruning fruit trees in appropriate season on fruit day / flowering trees on flower days; Manuring the soil / Compost / BD preps; Hedge cutting; Spray BD#500 in the afternoon (autumn/early Spring); Root harvests on an Earth/Root day; Reporting

Sowing - Ascending Moon Upper PLANT is more vital
 Good for Sowing SEEDS in appropriate Constellation; Cuttings; Graftings; Cutting Xmas trees; Mowing the lawn; Spray BD#501 at early growth in appropriate constellation; All other harvests : fruits, flowers, vegies, bd plants, medicinal plants, fodder, field crops

Oppositions
 Oppositions are generally considered favourable to life processes. The Moon in opposition to Saturn is especially favourable. The balancing effect of these two planetary influences, encourages vigorous and healthy development of plants sown or planted at this time.

- ♃ ♀ Opposite Mars
- ♃ ♀ Opposite Jupiter
- ♄ ♀ Opposite Saturn

Plant Parts The different constellations generate certain favourable conditions to the plants which the Moon will focus as it passes in front of these fixed stars. The effects are shown in the following ways.

The plant has 4 major members with an emphasis on one i.e. fruits, roots, flowers, leaves
These parts correspond to one of the elements:

- Fire - Fruit & Seeds
- Earth - Roots
- Air - Flowers
- Water - Leaves & Stem

Whatever one wants to cultivate on the plant one does so whilst the Moon is passing in front of a Constellation favouring the corresponding element. The LUNAR movements are the primary features.

EXAMPLE
 Roses, other flowers - sow, transplant, report, cultivate on a FLOWER day
 Carrots - main part of the carrot is the ROOT so ROOT day are called upon
 Lettuce, lawns - LEAF days for garden considerations
 Pumpkins, peas, grains, cereals - FRUIT days for sowing, transplanting etc
 The influences of the particular Constellation are brought into the soil through working with the soil, also by the spraying of Horn Silica Preparation. The germinating seed also receives these influences, so if it is desired to promote certain influences one cultivates and sows the seed during its favourable constellation period.

Flowers Beet greens, cabbage, celery, lettuce, dill, rocket, kale, spinach, swiss chard, watercress, grass, ivy...everything to do with the LEAVES and STEMS

Leaves & Stems Apple, Apricot, Avocado, Banana, Blackberry, Blackcurrant, Blueberry, Cantaloupe, Currant, Cherry, Coconut, Cranberry, Date, Elderberry, Fig, Goji berry, Gooseberry, Grape Raisin, Grapefruit, Guava, Juniper berry, Kiwi fruit, Kumquat, Lemon, Lime, Loquat, Lychee, Mango, Melon, Cantaloupe, Watermelon, Mulberry, Nectarine, Olive, Orange, Blood Orange, Clementine, Mandarin, Tangerine, Papaya, Passionfruit, Peach, Pear, Persimmon, Plum/prune (dried plum), Pineapple, Pumpkin, Pomegranate, Quince, Raspberry, Redcurrant, Strawberry, Squash, Tomato

Fruit & Seeds Apple, Apricot, Avocado, Banana, Blackberry, Blackcurrant, Blueberry, Cantaloupe, Currant, Cherry, Coconut, Cranberry, Date, Elderberry, Fig, Goji berry, Gooseberry, Grape Raisin, Grapefruit, Guava, Juniper berry, Kiwi fruit, Kumquat, Lemon, Lime, Loquat, Lychee, Mango, Melon, Cantaloupe, Watermelon, Mulberry, Nectarine, Olive, Orange, Blood Orange, Clementine, Mandarin, Tangerine, Papaya, Passionfruit, Peach, Pear, Persimmon, Plum/prune (dried plum), Pineapple, Pumpkin, Pomegranate, Quince, Raspberry, Redcurrant, Strawberry, Squash, Tomato

Roots Yams, beets, parsnips, turnips, rutabagas, carrots, yuca, kohlrabi, onions, garlic, celery root (or celeriac), horseradish, daikon, turmeric, jicama, Jerusalem artichokes, radishes, and ginger are all considered roots

