



# Winetech

Wine Industry Network of Expertise and Technology  
Netwerk van Kundigheid en Tegnologie vir die Wynbedryf

## ANNUAL REPORT 2016



## OUTLINE

Winetech's strategic intent is to provide strategic leadership and guidance to the Research, Development and Innovation (RDI) portfolio of the SA Wine Industry by prioritising, funding and transferring relevant, innovative and solution driven research.

Winetech continuously review its RDI portfolio by involving leaders from industry, business and academic institutions. This is a pro-active approach in order to keep up with the rapidly changing advances in the technological and scientific environment.

Winetech's RDI portfolio consists of fundamental, applied and blue skies research across three main groups: Viticulture, Oenology and Knowledge Transfer.

Winetech strongly aligns with the newly developed WISE Strategy and continuously evaluate research projects against the specific WISE objectives.

Winetech addressed transformation in the statutory levy environment as requested by the NAMC. The statutory levy requires that at least 20 percent of funds should be spent on transformation. The technical training of farm and cellar assistants was also a high priority.

The income from the 2016 R&D levy was ±R3 m more than the income generated in 2015, which could be attributed to the increase in the levy and an increase in wine sales in the local market. This ensured that Winetech could fulfil all its financial

obligations and this will further enable Winetech to fund more critically needed research in order to strengthen the competitiveness of the South African wine industry.

Since 2000 the number of articles published in Winetech Technical, doubled. In the 16 years, 880 articles were published.

The 13th edition of the Winetech Technical Yearbook is available in an electronic version, which ease local and international distribution and also save costs.

Winetech received funding to the value of R5 million (incl. VAT) from DST, for the Wine Industry Innovation Funding Collaboration, a project that currently funds seven individual research projects that strives to increase the local and international competitiveness and sustainability of the SA Wine Industry.

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## **ANNEXURE A**

# WINETECH COUNCIL MEMBERS 2016

Prof M Lambrechts	Chairperson
Mr E Wolf	Chairperson Viticulture Committee
Prof P van Rensburg	Acting Chairperson Oenology Committee
Mr L Thomas	Chairperson Training Committee
Mr J Truter	Chairperson Technology Transfer Committee
Dr T Theron	Vice-Chairperson / SU
Prof B Ndimba	ARC
Dr Z Dyosi	NRF (THRIP)
Mr C Conradie	VinPro (Cellars)
Mr K Moore	SALBA
Mr A Smuts	VinPro (Producers)
Mr IG Davids	NAFU
Mr G Martin	Executive Manager

## WINETECH MANAGEMENT

Mr G Martin	Executive Manager
Ms P Andrag	Manager
Mr JH Booysen	Technical Advisor
Ms K O'Kennedy	Technology Transfer: Oenology
Dr A Oelofse	Research & Development Manager (Since 1 June 2016)

# ABBREVIATIONS

AJEV	American Journal of Enology and Viticulture
ARC	Agricultural Research Council
BAWSI	Black Association of the Agricultural Sector
CASIDRA	Cape Agency for Sustainable Integrated Development in Rural Areas
CIAT	Cape Institute for Agricultural Training
COMEX	Executive Committee (OIV)
CPUT	Cape Peninsula University of Technology
CREST	Centre for Research on Evaluation, Science and Technology
CST	Scientific & Technical Committee
DAFF	Department of Agriculture, Forestry and Fisheries
DoA	Department of Agriculture
DOI	Digital object identifier
DST	Department of Science and Technology
dti	Department of Trade and Industry
DVO	Department of Viticulture and Oenology
HR	Human Resource
IF	Impact Factor
IGWS	Institute for Grape & Wine Sciences
IWBT	Institute for Wine Biotechnology
JCR	Journal Citation Reports
LONT	Loodskomitee Opleiding, Navorsing & Tegnologie-oordrag
NAFU	National African Famers Union
NAMC	National Agricultural Marketing Council
NARF	National Agricultural Research Forum
NQF	National Qualifications Framework
NRF	National Research Foundation
OJS	Open Journal System
OIV	International Wine Office
PYDA	Pinotage Youth Development Academy
RDI	Research, Development & Innovation
SAJEV	South African Journal of Enology and Viticulture
SALBA	South African Liquor Brand Owners Association
SASEV	South African Society for Enology and Viticulture
SAWIS	South African Wine Industry Information and Services
SIF	Sector Innovation Fund
SETA	Sector Education and Training Authority
SU	Stellenbosch University
THRIP	Technology and Human Resource for Industry Programme
TIA	Technology Innovation Agency
VinPro Coop Ltd.	Cape Wine Producers Association
WCARF	Western Cape Agricultural Research Forum
WCDoA	Western Cape Department of Agriculture
WINETECH	Wine Industry Network of Expertise and Technology
WISE	Wine Industry Strategic Exercise
WIVCRT	Wine Industry Value Chain Round Table
WOSA	Wines of South Africa
WSB	Wine and Spirit Board
WTSA	Wine Training South Africa

1. STRUCTURE

2. PERSONNEL

3. MEETINGS





## 1 STRUCTURE

Winetech is an association and the members are the members of SALBA, VinPro, NAFU and BAWSI.

The Winetech Council is responsible for the effective management and operational functioning of Winetech in conjunction with Winetech management.



## 2 PERSONNEL

Winetech's personnel consists of four permanent employees: an Executive Manager, a Research and Development Manager, a Manager, and an Administrative Officer, and two part-time employees, a Technical Advisor and a Technology Transfer Coordinator: Oenology. The Research and Development Manager was appointed in June 2016.

The financial and human resource services have been contracted out to SAWIS, and the service of keeping minutes during some specialist meetings is contracted out on an *ad hoc* basis. Winetech also makes use of an independent external auditor to support Winetech's Audit Committee. Winetech's Executive Committee serves as the remuneration committee.



## 3 MEETINGS

There are different specialist committees within the Winetech structure responsible for the effective functioning thereof, and meetings are held throughout the year. Three council meetings and two audit committee meetings were held in 2016. The specialist committees held meetings in March, June and September 2016.

A number of meetings with the following bodies connected to the SA wine industry took place throughout the year: Wineland Magazine, VinPro, SASEV, AgriSETA, NAMC, NARF, ARC, SU, LONT, DST, THRIP, dti, WCARF, CPUT, PYDA, CASIDRA, WISE Task Team, SAWIS, WOSA, IGWS, DAFF, WIVCRT and the Regional Innovation Network.

## 4. RESEARCH PROJECTS





## 4 RESEARCH PROJECTS

In order to achieve the best and most cost-effective results, Winetech strives to undertake research and development only by the most competent persons and institutions. Research partners for 2016 were:

- ARC Infruitec / Nietvoorbij
- ARC Plant Protection Research Institute
- Institute for Wine Biotechnology, SU
- Department of Viticulture and Oenology, SU
- Universities Cape Town and Pretoria
- Private individuals.

Winetech funded 85 projects at these institutions, in comparison to 77 in 2015, partially or completely. This includes seven DST funded projects.

Figure 1 shows the number of projects funded in 2000, 2004, 2008, 2012, 2015 and 2016.

A comprehensive list of Winetech-funded projects during 2016 is available in Annexure A.

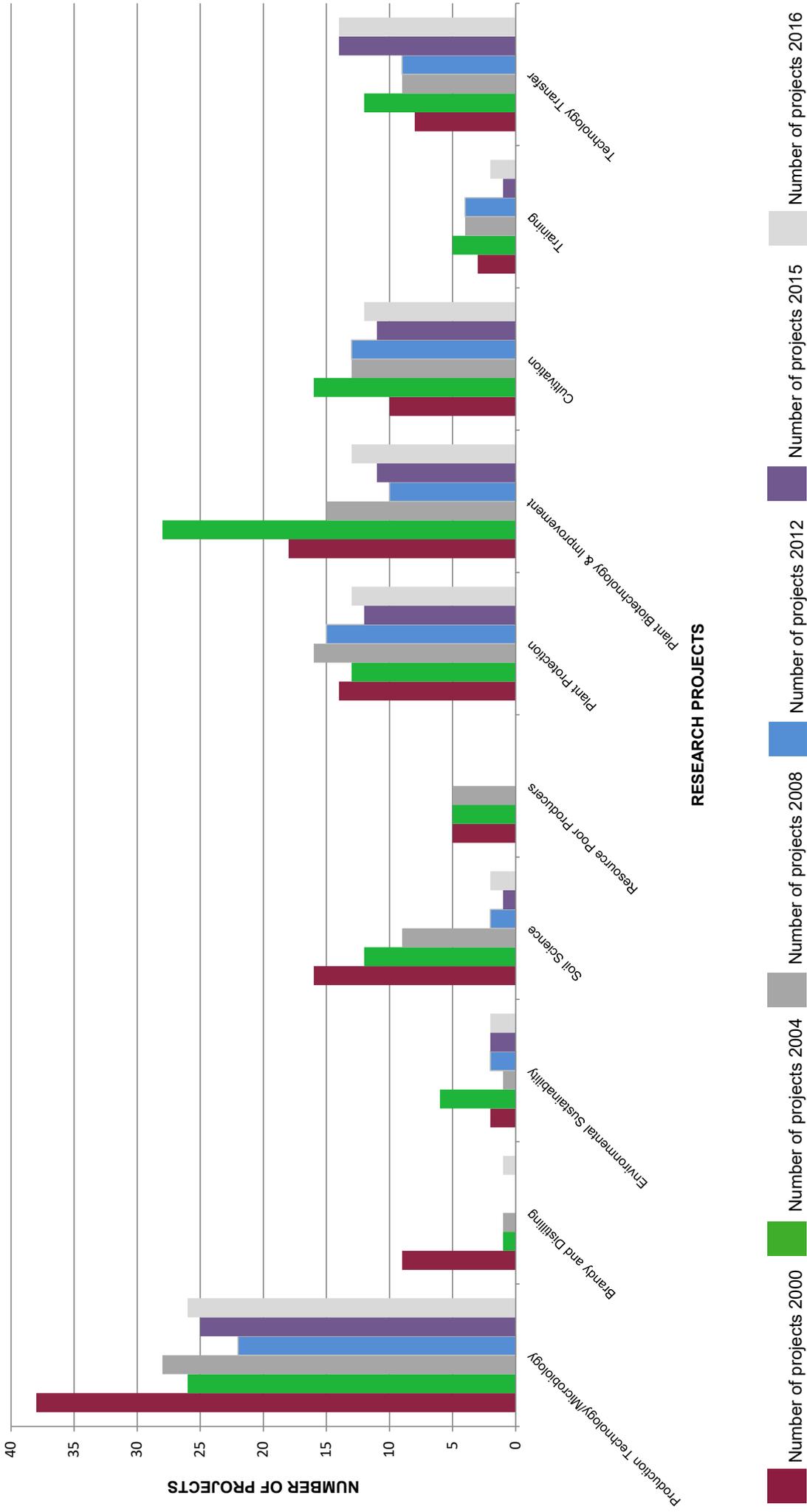
During 2016, 49 concept proposals, 54 new project proposals, 76 progress reports and 21 final reports were discussed (certain concept / new project applications as well as progress reports were discussed / evaluated by more than one committee).

Please refer to the following figures as well:

Figure 2 shows a comparison of the expenses in Rand for the different disciplines for 2000, 2004, 2008, 2012, 2015 and 2016.

Figure 3 shows the distribution of funds among the different research institutions for 2000, 2004, 2008, 2012, 2015 and 2016.

**NUMBER OF PROJECTS PER TECHNICAL COMMITTEE**



**Figure 1: The number of projects funded in 2000, 2004, 2008, 2012, 2015 and 2016**

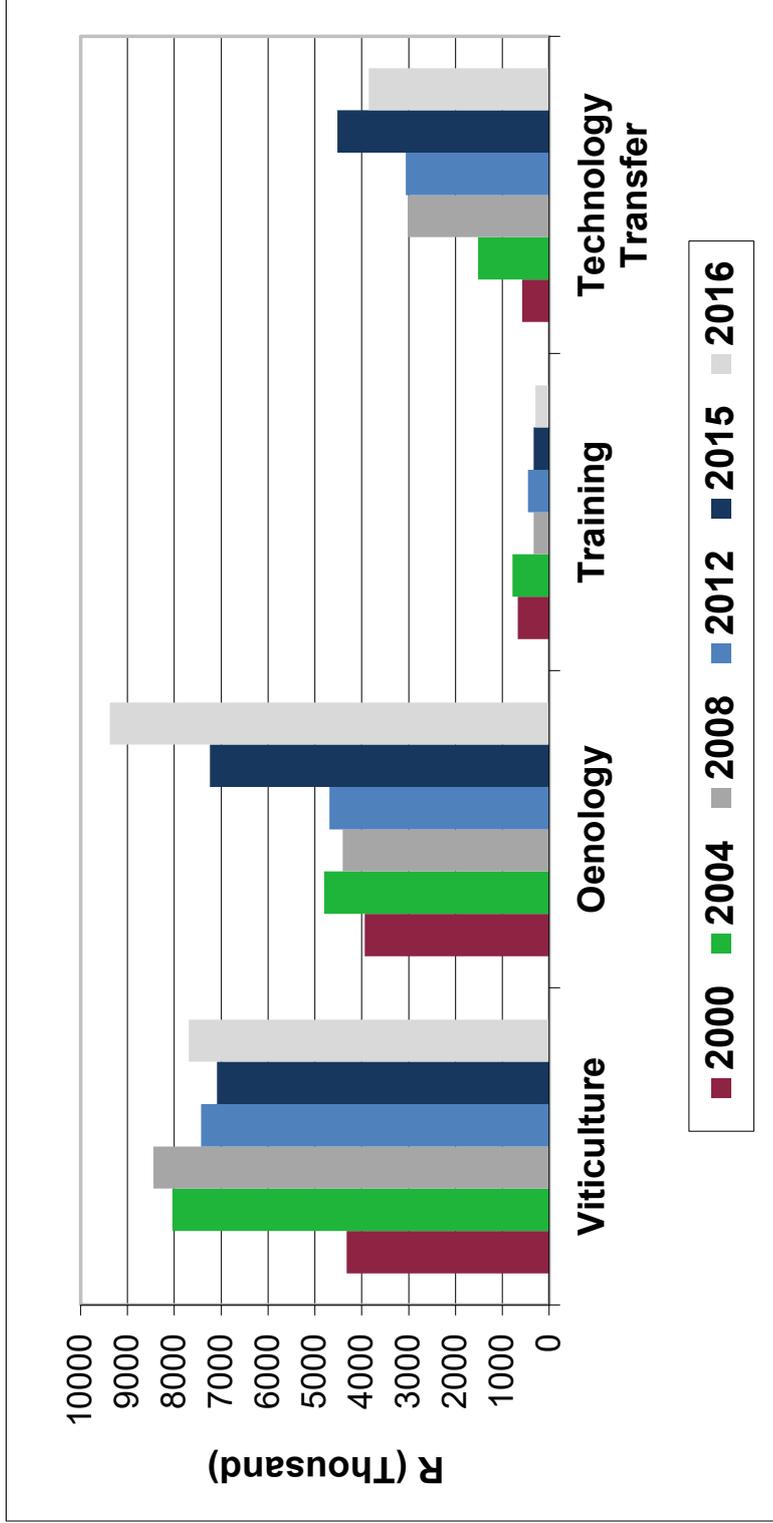


Figure 2 shows the distribution of funds among the different research institutions for 2000, 2004, 2008, 2012, 2015 and 2016.

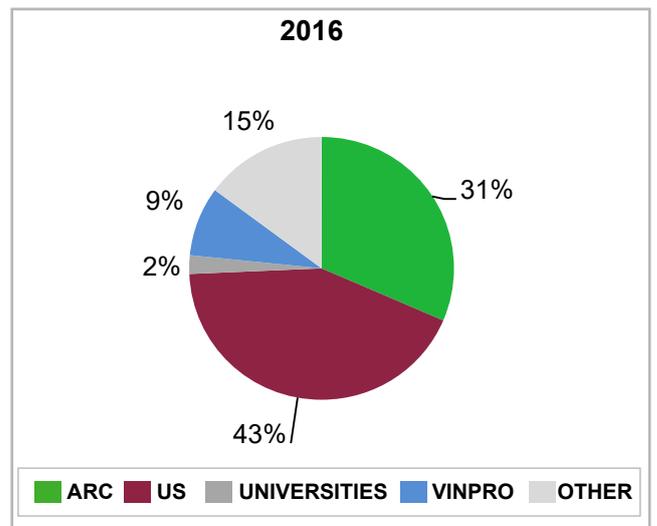
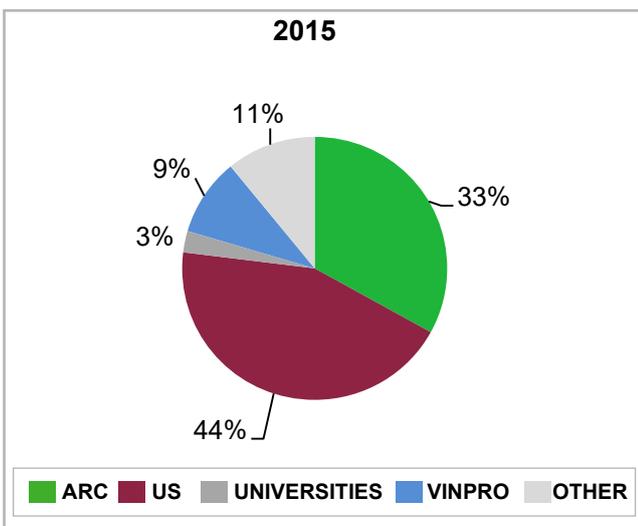
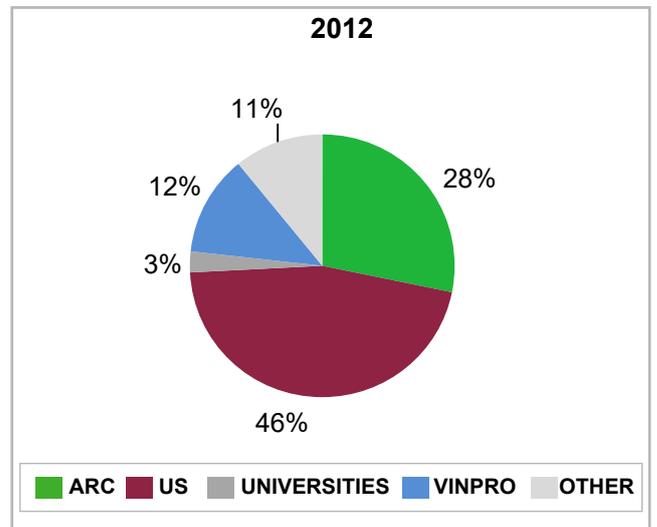
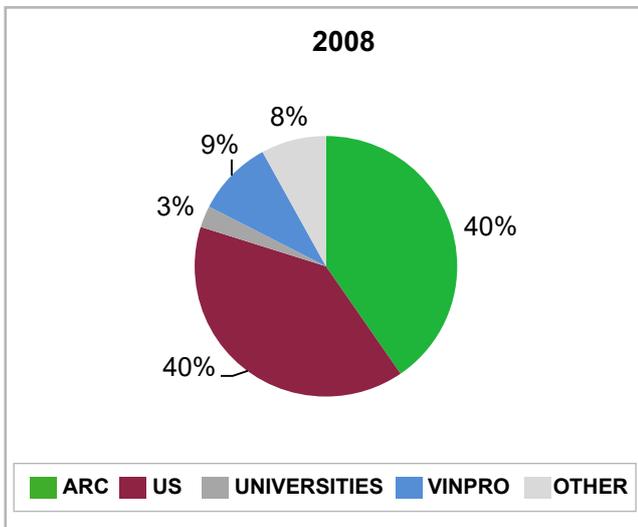
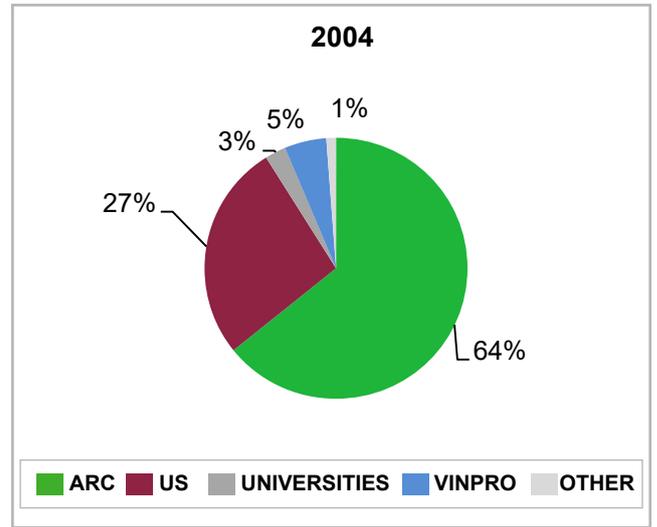
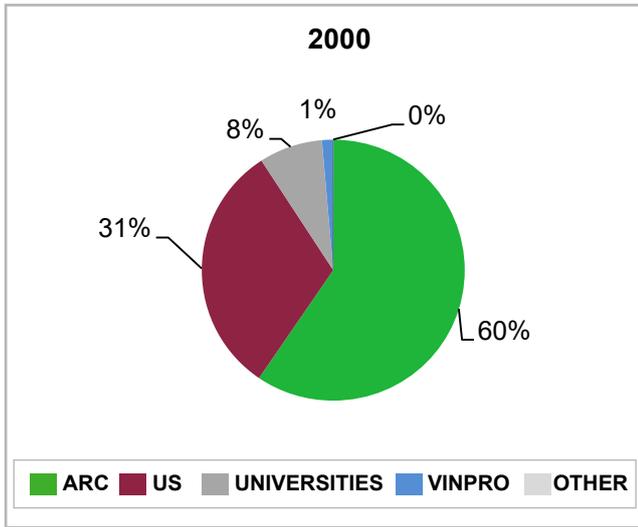
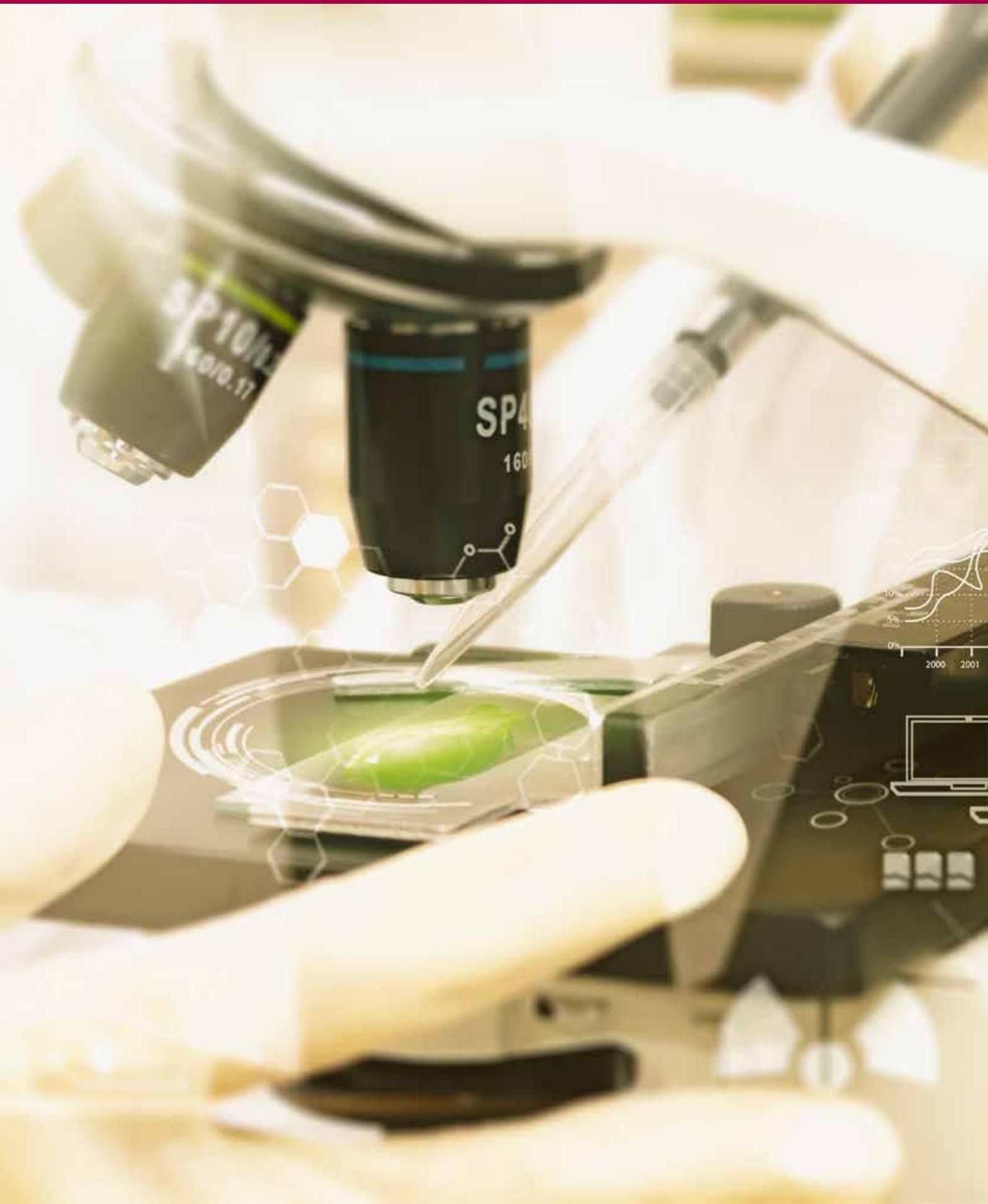


Figure 3: The distribution of the number of research projects among the different disciplines for 2000, 2004, 2008, 2012, 2015 and 2016.

## 5. RESEARCH, KNOWLEDGE TRANSFER AND TRAINING PROGRAMMES





## 5 RESEARCH, KNOWLEDGE TRANSFER AND TRAINING PROGRAMMES

### 5.1. Knowledge Transfer Programme

#### 5.1.1 Knowledge Transfer: District Programme (Winetech/VinPro)

The District programme mainly aims to maintain the official technology transfer structures in each region:

- The transfer of viticultural research results to producers and viticulturists
- To transfer general information to producers
- To identify research needs on regional level
- To compile information and knowledge, and share it with the region through study group meetings
- Visits to previously disadvantaged individuals, farms and wineries
- Updating of the fertilizer guide

Producer meetings were held in cooperation with VinPro in the following regions: Stellenbosch, Paarl / Wellington / Franschhoek, Swartland, Robertson, Breedekloof / Worcester, Little Karoo, Olifantsriver and Orange River.

In 2016, 646 producers attended the producers' meetings in comparison to 679 producers in 2015.

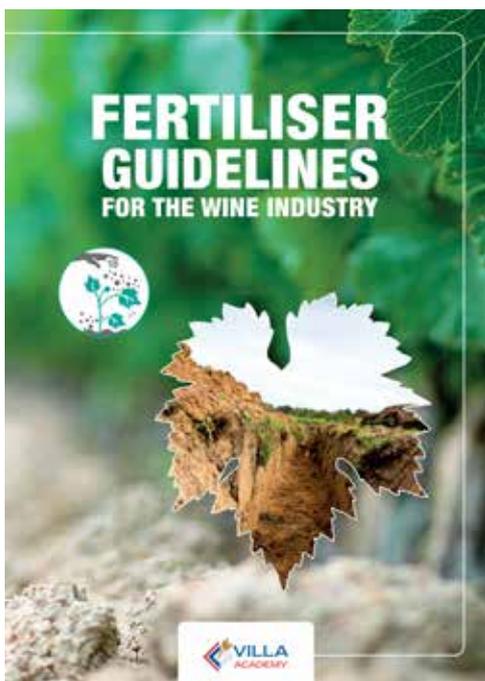
At the May/June Information days, the following matters were discussed:

- Various viticultural topics;
- Alternative trellis systems;
- Soil sustainability and management;
- Practice guidelines for managing vineyards during drought conditions;
- Rootstock choice and pruning;
- Nitrogen fertilization.

A roadshow took place in September in all the districts, where the updated fertiliser guidelines for the wine industry were launched.

In 2016, 20 vineyard study group meetings were held, and 211 attended the study groups.

## Updating of fertiliser guide:



The project commenced in 2014. The aim of the project was to update the Fertiliser Manual that was first published in 1994 and to include the latest information on vineyard fertilisation.

Experienced soil scientists and former researchers with many years of knowledge and experience on the subject were approached and contracted to share their information, knowledge and experience. A printed booklet, “Fertiliser for the Wine Industry / Bemestingsriglyne vir die Wynbedryf”, was launched in 2016, and since then 1,000 Afrikaans and 500 English copies were distributed to mainly viticulturists, producers, chemical agents and students at Stellenbosch University, CPUT and Elsenburg.

### 5.1.2 Production Plan on farm level (Winetech/VinPro)

The Production Plan project is executed by VinPro and funded by Winetech and the NAMC.

The Production Plan project is a computerised financial analysis programme, which was designed to determine the profitability of wine grape production. The information to determine the profitability was obtained from producers who belong to study groups.

For the 2016 production plan, 235 farming units took part. During the 48 study group gatherings, 510 producers and industry role-players were reached, where economic information was transferred to support long-term sustainability of wine grape production.

The current and historical results for the different wine regions can be obtained from VinPro.

### 5.1.3 Knowledge Transfer: Oenology

Karien O’Kennedy was appointed in August 2014 to coordinate oenology technology (knowledge) transfer for Winetech. 50% of Karien’s time is seconded to the Institute for Grape and Wine Sciences (IGWS), Stellenbosch University, for the same role. For the IGWS Karien developed a website, a monthly e-mail campaign, a bi-annual newspaper, a Facebook page and various support documents for cultivar groups’ seminars. These support documents, as well as presentations created for the cultivar group days, have mostly been about Winetech-funded projects.

Karien’s main office is situated in the Department of Viticulture and Oenology where she engages in regular talks / meetings with researchers with regards to their Winetech-funded projects, as well as their science communication activities on these projects. Karien also engages with industry on an ad hoc basis in the form of personal visits, phone calls, study groups and think tanks.

Karien serves on two Winetech committees: Technology Transfer as well as Oenology/Microbiology. She plays a valuable role in the selection of projects for funding, and the communication of new projects accepted, as well as final reports received, to industry.

During 2016 Karien submitted a PhD project proposal: *Wine Scientists and winemakers as two communities: Bridging the gap through boundary spanning activities* to CREST at Stellenbosch University. The proposal has been accepted and the project commenced in 2017. The thesis will form an important base of the future knowledge transfer strategy for Winetech.

### 5.1.4 Task teams/Roadshows/Workshops

#### 5.1.4.1 Obtaining International Expertise

Winetech contributed financially to two international experts who delivered papers at the SASEV conference in August 2016.

The main theme of the conference was Traditional vs. Alternative cultivation of wine. The three-day conference was attended by 249 representatives from the South African wine industry. 42 lectures were given over the three days.

Prof Kerry Wilkinson was a keynote presenter and gave a talk on “Understanding and addressing the impact of vineyard exposure to bushfire smoke”. She is currently an Associate Professor in Oenology at the University of Adelaide’s School of Agriculture, Food and Wine in Australia. In a session on wine preparation, she also gave a talk on “Factors affecting green aroma compounds in *Vitis vinifera* L. Merlot fruit and wine”.

Prof Marc Fuchs from Cornell University, Geneva, New York is an Associate Professor at the Plant Pathology Biology Section of Cornell University. He is also the Senior Editor of the Journal of Plant Pathology and Associate Editor of Transgenic Research. Prof Fuchs was also a keynote presenter and gave a talk on “Red blotch-associated virus and Pinot gris-associated virus, two emerging viruses unknown to the South African grape and wine industry: Remaining strategically vigilant”. He also gave a second talk on red blotch-associated virus, “Biology and ecology of grapevine red blotch-associated virus and grapevine Pinot gris virus”.

Prof Wilkinson and Fuchs were also available for interaction with industry. Prof Wilkinson attended a meeting with wine makers and had a group session on the effect of smoke taint on wine at Stellenbosch University. Prof Fuchs had meetings at ARC Infruitec-Nietvoorbij, Plant Protection and Stellenbosch University, Department of Genetics. He also visited Vititec’s Mr Tobie Oosthuizen in Paarl.

## 5.1.5 Publications

### 5.1.5.1 South African Journal of Enology and Viticulture (SAJEV)

The *SASEV Journal* is partially funded by Winetech as part of the Technology Transfer Programme and publishes full-length research papers, research notes and review papers on topics in viticulture, oenology, soil science, entomology, plant pathology, microbiology, virology and biotechnology. Ten (out of 23) scientific publications resulting from research projects funded by Winetech were published in the two volumes of the *SASEV Journal* of 2016.

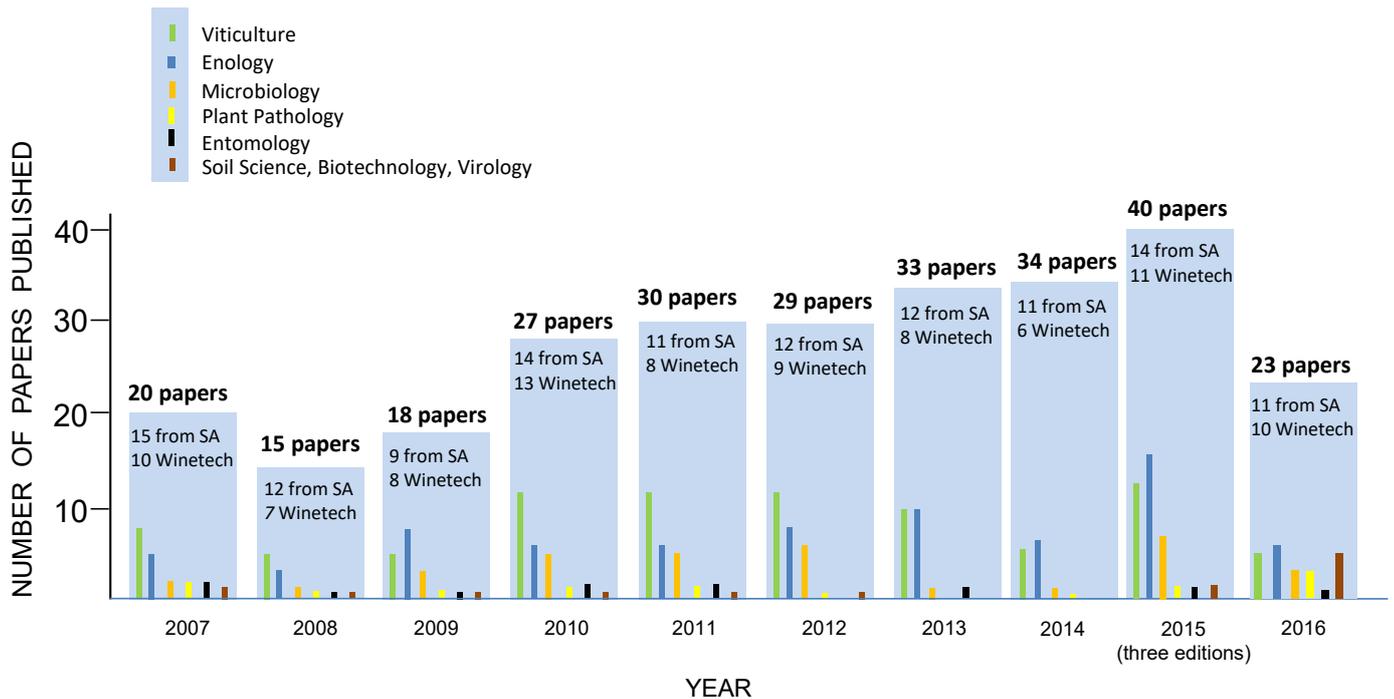


Figure 4: Number of papers published in SAJEV over the last 10 years (i.e. since the journal received its first impact factor of 0.219 in 2007), distribution of the different research fields per annum, annual contribution by South African scientists, and the number of research papers published with acknowledgement to Winetech.

Since June 2016, all manuscripts have been submitted online: onto the Open Journal System (OJS) / SUNJournals platform (<http://www.journals.ac.za/index.php/sajev>), hosted by Stellenbosch University. Each manuscript receives a digital object identifier (DOI) number and is accessible through the internet. The immediate availability of articles on the internet should increase the impact factor of the Journal.

The impact factor of SAJEV decreased from 0.932 in 2013 to 0.548 in 2014 (based on statistics received in June 2015). The same downward trend over this period was reported for American Journal of Enology and Viticulture (AJEV) and Australian Journal of Grape and Wine Research (Aust J Grape Wine Res). The drop in impact factor may be ascribed to the many new journals entering the scientific arena and the increasing number of journals that now also offer open access publication. Furthermore, a number of excellent papers in viticulture and oenology have recently been published in journals focusing on research topics in food, plant, soil, plant pathology and entomology.

The impact factor of SAJEV increased from 0.548 in 2014 to 0.922 in 2015 (based on statistics received in July 2016). A similar increase in impact factor was recorded for AJEV and the Aust J Grape Wine Res.

The Impact Factor (IF) is calculated by dividing the number of citations in the JCR (journal citation reports) year by the total number of articles published in the two previous years. An IF of 1.0 means that, on average the articles published one or two years ago have been cited only once. The 5-year Impact Factor (the average number of times articles in the past five years have been cited) for SAJEV increased from 0.920 in 2014 to 1.220 in 2015. The Article Influence Score, which is an indication of the impact papers have on science, is calculated by dividing the Eigenfactor® score of a journal by the percentage of all articles recorded in the Journal Citation Reports (JCR) of the same journal. For SAJEV it increased from 0.257 in 2014 to 0.306 in 2015 (based on the latest figures received in July 2016). The Citing Half-life of papers published in SAJEV is 9.7. This means that 50% of all papers cited by SAJEV were published in SAJEV between March/April 2006 and December 2015 (inclusive). Papers with a longer Citing Half-life are considered more important. These are usually review papers.

#### 5.1.5.2 Technical Yearbook: Winetech

The decision was taken to produce the book in an interactive pdf format for ease of distribution, including international distribution. The cost in the production of the document was shared with the Institute for Grape and Wine Sciences (IGWS).

The book is available on the Winetech and IGWS websites, as well as the WineLand Magazine app.



### 5.1.5.3 Winetech Tegnies (Technical) in WineLand

In 2016, 82 popular articles, resulting from projects funded by Winetech as well as other topics relevant to the industry, were published in Winetech Technical. In 2016, the most articles were published since 2000. From 2000 to 2016, 880 articles were published in the Winetech Technical.

- In the 2016 print additions of WineLand, most articles still appear in Afrikaans without references and in English on the website with references. A significant cost, time and frustration go into the translation of articles not supplied in both languages by authors. A decision was taken to not translate Oenology articles into Afrikaans anymore, if they have been supplied in English.
- All contributing authors to Winetech Technical have received updated guidelines for publishing that will be strictly enforced in the future in order to make articles more easily accessible.
- Karien and Lucinda Heyns published summaries of all new projects that commenced in 2016, as well as summaries of final reports received by researchers.
- Karien published one popular article during 2016: Allergenic residues in wine – a storm in a tea cup?

### 5.1.5.4 Winetech Scan

The **Winetech Scan** newsletter database was migrated to Mailchimp, a free e-mail platform. Karien O’Kennedy became the overall responsible person for managing the Scan. Lucinda Heyns (IGWS) was contracted to provide viticultural entries for the Scan on a monthly basis. The IGWS database of approximately 500 winemakers was added to the Winetech Scan database. Currently the Scan has 1640 recipients; the lowest open rate for 2016 was 235 people and highest was 414 people. The average open rate is therefore around 20%, which is considered successful in terms of e-mail campaigns.

### 5.1.5.5 Websites

#### Winetech Website

The Winetech website was updated on a regular basis during 2016 and contains links to all Winetech-funded projects since 1999. The website is scheduled for an upgrade in 2017 to incorporate Winetech’s new strategic position.

#### Winetech Facebook

The **Winetech Facebook page** receives contributions from Karien O’Kennedy and Lucinda Heyns, and Charl Theron is also contracted to make contributions. The page currently has 666 likes.

### 5.1.5.6 Technology Transfer Database

Winetech, in conjunction with the SAWIS Industry Library, compiled a Winetech research database. The database consists of all Winetech-funded research projects since 1999. Information about the projects is available at no cost on the SAWIS website, namely [www.sawis.co.za](http://www.sawis.co.za). Full text final reports are also available. The database is updated every year.

## 5.2 TRAINING PROGRAMME

### 5.2.1 Curriculum Development / Training support / Professional Services

Winetech supports the training of post-graduate students at universities by funding research projects, which form the basis of their theses. Subject experts at universities provide professional services to Winetech by acting as co-ordinators of specific research programmes.

### 5.2.2 Leadership development

Winetech continued with the leadership development programme for learners in the SA Wine Industry. Altogether 14 students participated in the skills programme.

Matric was preferable, but not a prerequisite for admission. It was nevertheless a prerequisite that each student would have an assigned, willing coach/mentor and they furthermore had to complete an applicable work session beforehand, as well as attend interim sessions with the project leaders.

The generic management qualification (SAQA #57712; NQF 4) served as a guideline in conjunction with material from Sims Khula Training and was presented as a skills programme across 6 modules.

Modules offered:

- Meeting Management
- Business Writing Skills
- HR Management
- Negotiation and Presentation Skills
- HIV / AIDS in the Workplace
- Customer Service

### 5.2.3 Appropriation of Bursaries

In total 14 students (three honours, eight masters and three doctoral) graduated in 2016 with theses based on Winetech-funded projects. The students that graduated are as follows:

#### FROM STELLENBOSCH UNIVERSITY:

##### BSc Hons

Snyman C: An integrated approach to study the impacts of climate change on berry composition

Petrovic G: The impact of nutrients on aroma production by *S.cerevisiae*, non-Saccharomyces yeasts and lactic acid bacteria in mixed fermentations

## **Institute for Wine Biotechnology**

### **MSc**

Crouse R: The sensory characterisation of old-vine Chenin blanc wines: an exploratory study of the dimensions of quality

Lombard J: The impact of South African strains of *Wickerhamomyces anomala* and *Kazachstania aerobia* on wine fermentation kinetics and aroma production

Morgan H: Investigating the effect of leaf removal on the grape-associated microbiome through culture-dependent and –independent approaches

Pretorius N: Evaluation of citrate metabolism in *Oenococcus oeni* and *Lactobacillus plantarum*

## **Department of Viticulture and Oenology**

### **MSc Agric**

Smith B: Investigating the nutritional requirements of the wine spoilage yeast *Brettanomyces bruxellensis*

Van der Vyfer L: Table grape yield, quality and return fertility as affected by plant bio-regulator treatments for thinning and berry sizing

Allesandri A: An assessment of the extent and causes of contamination of SA wines with persistent organic pollutants

## **Faculty of Natural Science**

### **Department of Earth Science**

#### **PhD**

Mulidzi AR: The effect of winery wastewater irrigation on the properties of selected soils from the South African wine region

## **FROM THE UNIVERSITY OF CAPE TOWN:**

### **Hatter Institute**

#### **Hons**

Zukiswa Jiki: The role of sphingosine kinase in dietary melatonin-induced cardioprotection

## **FROM THE UNIVERSITY OF PRETORIA:**

### **Entomology**

#### **MSc**

La Grange JL: Olfactory responses of the leafhopper vector, *Mgenia fuscovaria* (Stal) (Hemiptera: Cicadellidae), to volatiles from aster yellows phytoplasma-infected and uninfected grapevine (*Vitis vinifera* L.)

#### 5.2.4 Knowledge Transfer to new Entrants: Eksteenskuil and Realeboga communities

Comprehensive Agricultural Support of the Eksteenskuil community and Realeboga in the Northern Cape with knowledge transfer and training in viticulture practices continued during 2016.

The expansion of grapevine plantings at Eksteenskuil necessitates ongoing training and technology transfer in this community.

The pruning skills of the farmers and their workers have improved considerably, with the result that many of the farmers now develop and prune their vines correctly. However, most of those who have wine grapes still prefer cane pruning but now also have the knowledge to develop these vines correctly for better sunlight penetration in the canopies and yield improvement.

#### 5.2.5 Cellar Worker Educational Programme

Winetech study groups and the SA Cellar Worker Programme have an integrated approach to ensure better service delivery and transfer of knowledge to the largest group of cellar workers possible.

The number of cellar workers increased from 290 to 369 in 2016; the total number of cellar workers that participated in the study groups since 2009 amounts to 1 428. In total 157 cellar workers across all districts attended all four study group sessions in 2016 and 33 of them scored an average of more than 80%.



## 6. REPRESENTATION ON BODIES

### 7. NATIONAL AGRICULTURAL MARKETING COUNCIL (NAMC)





## 6 REPRESENTATION ON BODIES

Winetech represents the wine industry on the following bodies:

- Board Member: Agricultural Research Council
- Vine Improvement Association (Chair of the Technical Committee and Board Member)
- Wine and Spirit Board (Demarcation)
- Wine Industry Information Committee (SAWIS)
- Commissions I (Viticulture), II (Oenology), III (Law and Economy) and CST of the OIV
- National Agricultural Research Forum (NARF)
- SASEV Board
- Steering committee of the Fruit and Wine Confronting Climate Changes initiative
- Advisory Committee for Agricultural Programmes of CPUT
- Western Cape Agricultural Research Forum (WCARF)
- Extension & Advisory Services Work Group board Member CASIDRA
- Board Member Wine Training South Africa (WTSA)
- DST/SIF Wine Industry Steering Committee
- Research, Development Innovation Workgroup of the Wine Industry Value Chain Round Table (WIVCRT)



## 7 NATIONAL AGRICULTURAL MARKETING COUNCIL (NAMC)

An amount of R29 555 241 was collected by SAWIS during 2016 as statutory research levies in comparison to the R26 528 384 collected in 2015 (See Table 1).

### 7.1 TRANSFORMATION COMMITTEE

The Transformation Committee approved Winetech's transformation business plan for the 2016 financial year.

Based on the NAMC's guidelines for transformation, Winetech's transformation activities/expenditure for 2016 amount to 18,7 % of the statutory funds.

**TABLE 1**

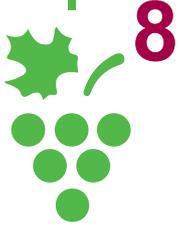
**SOURCES OF WINETECH RESEARCH FUNDS (2000, 2004, 2008, 2012, 2015, 2016)**

<b>SUMMARY OF WINETECH FUNDING/LEVERAGE</b>										
<b>YEARS</b>	<b>ACTUAL RECEIVED</b>					<b>LEVERAGE(non-Winotech income)</b>				<b>TOTAL WINETECH + LEVERAGE</b>
	<b>STAT. LEVY</b>	<b>BUSCO</b>		<b>Other</b>	<b>TOTAL ACTUAL FUNDS (received)</b>	<b>THRIP</b>		<b>ARC</b>	<b>TOTAL LEVERAGE</b>	
		<b>Longterm Agreement</b>	<b>Actual</b>			<b>Budget</b>	<b>Actual</b>			
2000	8,164,006	3,684,210	3,684,210		11,848,216	2,346,949	2,346,949	4,832,273	7,179,222	19,027,438
2004	12,010,995	5,531,447	5,531,447	1 500,000	18,042,442	4,469,172	4,469,172	9,235,082	13,704,254	31,746,696
2008	18,383,040	8,500,000	0	2 1,900,000	20,283,040	6,446,274	3,411,326	6,141,870	9,553,196	29,836,236
2012	22,132,041	0	0	3 264,964	22,397,005	7,138,761	5,816,488	5,210,216	11,026,704	33,423,709
2015	26,528,384	0	0	4 4,533,130	31,061,514	7,037,513	4,303,606	6,901,767	11,205,373	42,266,887
2016	29,555,241	0	0	5 5,043,121	34,598,362	0	0	5,751,008	5,751,008	40,349,370
<b>Total from 1999-2016</b>	<b>294,890,155</b>	<b>60,114,166</b>	<b>37,928,992</b>	<b>16,628,242</b>	<b>349,447,388</b>	<b>94,378,078</b>	<b>76,443,523</b>	<b>119,699,131</b>	<b>196,142,654</b>	<b>545,590,042</b>

1 Western Cape Department of Agriculture  
 2 Department of Science and Technology (R1 750 000) + VinPro (R150 000)  
 3 AgriSETA (R100 000) + WCESA (R60 000) + NAMC (R80 000) + Yeast Royalties (R24 963)  
 4 AgriSETA (R282 629) + NAMC (R80 000) + Yeast Royalties (R32 575) + Villa Academy (R100 000) + IGWS (R941 912) + DST (3 096 014)  
 5 AgriSETA (R285 583) + NAMC (R80 000) + Yeast Royalties (R43 084) + IGWS (R1 040 886) + DST (R3 593 566)

8. INTERNATIONAL WINE OFFICE (OIV)
9. TECHNOLOGY AND HUMAN RESOURCES FOR INDUSTRY PROGRAMME (THRIP)
10. WINETECH INCOME AND FUNDS GENERATED, BASED ON WINETECH FUNDS





## **8 INTERNATIONAL WINE OFFICE (OIV)**

Winetech financially supports the attendance of two representatives. Winetech's Technical Advisor attends the Commission I, *Ad hoc* Groups, CST and COMEX meetings, while an industry representative attends some meetings of Commission II (specifically the Microbiology Expert Group). SAWIS financially supports the attendance of a person to attend Commission IV. Unfortunately government representation, as leader of the South African Delegation, is not on a regular basis.

OIV press releases are published in Winetech Technical on a regular basis, and the daily OIV news is distributed to approximately 125 industry members.



## **9 TECHNOLOGY AND HUMAN RESOURCES FOR INDUSTRY PROGRAMME (THRIP)**

A representative of THRIP serves on Winetech's Council.

The dti took over the administration of THRIP and the guidelines were changed dramatically. A significant change is that the industry applies for and receives the funding, after which it can be distributed to research partners.

The first call for funding opened on the 18th of December 2015 and applicants could apply for funding until the 29th of February 2016. Winetech's application for THRIP funding was unsuccessful for this call. There were no further calls for funding in 2016.

A letter was drafted by NARF to the dti to highlight the significant value of THRIP funding to various agricultural industries.



## **10 WINETECH INCOME AND FUNDS GENERATED, BASED ON WINETECH FUNDS**

Table 1 reflects Winetech's income from the various sources. The R&D levy is the primary source of income, and it has increased by  $\pm 11\%$  from 2015.

Other sources of income for 2016 amounted to R5 043 121 which resulted in a total income of R40.3 m.

Due to the regulatory changes in the THRIP funding programme, Winetech received no funding from the dti in 2016. The net result of this was that total R&D funding decreased by  $\pm 5\%$  from 2015 to 2016.

## 10.1 DST / SIF PROJECT FUNDING

The Wine Industry Innovation Funding Collaboration is made up of seven projects, each with specific objectives. The overall objective is to increase the local and international competitiveness and sustainability of the SA wine industry.

### **Project 1: An integrated approach to study the impacts of climate change on berry composition**

Grapevine is considered to be the most economically important fruit crop worldwide. However, it has been proposed that one of the greatest challenges facing the grape and wine industries during this century, will be maintaining high quality sustainable grape production in a changing environment. This challenge will require a deeper understanding of grape biology, and the impacts of various factors in the vineyard environment. The objectives in the project are to study the influence of the quantity and quality of light on berry metabolism and cell wall structure throughout the berry development in highly characterised (model) vineyards. The study will make use of state-of-the-art technologies to study and interpret the impacts of changing environmental factors on grapevine biology, organ development, and berry quality in vineyards, following a grapevine “field-omics” approach. Ultimately the proposed work will provide a deep understanding of how a grapevine functions in interaction with its complex and changing environment.

### **Project 2: Multi-cultural wine quality perception profiling**

The aim of the study is to gain a better understanding of multi-cultural SA consumers’ perceptions of wine and its enjoyment of wine in general, but also with specific focus on Chenin blanc wine. Insights will be gained into the barriers or risks that consumers perceive in Chenin blanc purchase decision making, with focus on Chenin, and which prevent greater enjoyment and consumption of the cultivar’s different style categories. This should result in an improved flow of information from the SA Chenin blanc industry to the consumer, to ultimately lead to greater consumer enjoyment and consumption of Chenin blanc wine.

### **Project 3: Development of a multi-gene risk score to determine individual cut-off limits for safe drinking habits**

The aim of the study is the development of novel pre-screen and treatment algorithms for genetic testing aimed at characterizing treatable chronic disease subtypes. This includes evaluating the role of genetic factors of a modifier of the relationship between alcohol intake and chronic disease risk.

### **Project 4: Establishing oxygen specifications for wine bottling**

The main objectives of this study are to elucidate key compounds influenced by wine oxidation and their effect on the sensory composition of the wine.

### **Project 5: Project 5: The impact of nutrients on aroma production by *S.Cerevisiae*, non-*Saccharomyces* yeasts and lactic acid bacteria in mixed fermentations**

Many different microbial species, referred to as the wine microbiome, contribute to the final aromatic features and therefore quality of wine. The contribution of individual species depends on the metabolic activities of each species and on its ecological performance within the wine microbial ecosystem, i.e. the interactions with other species. The nutrients that are present within the grape juice serve as precursors for the production of most of the wine sensory impact compounds.

Our current understanding of (i) the dynamics of the microbial ecosystem and (ii) the impact of nutrients on flavour and aroma compound production is very limited. Understanding these dynamics would provide the

wine industry with new tools to better predict and modulate the flavour and aroma, and therefore control the process in such ways as to enhance the quality of wine. This project will make a significant contribution to achieving such better controls over the wine making process.

The project has been fully initiated: Students have been appointed, and all projects are within or ahead of the initial time frame. Initial data are already providing relevant information regarding appropriate management of fermentations in industry.

### **Project 6: Investigation into the efficacy of *Trichoderma* SPP. colonisation of grapevine nursery plants**

The aim of the study is to understanding the efficacy of root colonisation, control of black foot pathogens and host defence activation of rootstocks in evaluating the use of *Trichoderma* spp. in nurseries and new vineyards.

### **Project 7: Climate analysis, remote / proximal sensing and GIS data central to SA vineyards of the future**

The aim of the study is to integrate data sources, in specific climate data and other GIS/remote sensing product layers, at different scales to compliment phenology, canopy growth, ripening and yield development monitoring at a vineyard scale.



## 11. WINETECH OPERATIONAL REVIEW PROCESS





## 11 WINETECH OPERATIONAL REVIEW PROCESS

Winetech has developed an updated Research, Development and Innovation Strategy that will be implemented from 2017 to 2019. The following Game Changers were identified and will be implemented over the next three years.

### i) Winetech will become much **SMARTER**

- Winetech team should interact with researchers and thought leaders (local and international) to gain better insights on breakthroughs in the research world
- Winetech should draft clear and well informed problem statements across the entire wine industry value chain
- Problem statements can then be provided to the research fraternity in order to present research proposals for solutions
- Winetech will encourage a collaborative multi-disciplinary approach between researchers to solve industry problems

### ii) Winetech will include the voice of **RADICAL ROLE PLAYERS** that experiment with novel and disruptive technologies and ideas

- Winetech team will interact more frequently with key industry role-players to gain better insights on concerns, issues, as well as possible solutions in the wine industry
- Winetech will visit all the wine regions on a regular basis and interact meaningfully with key industry role-players

### iii) Winetech will **COMMUNICATE EFFECTIVELY** to the internal and external environment

- Winetech will construct an effective communication plan that will ensure that all internal as well as external stakeholders are informed on our activities and research outputs
- Winetech will develop its brand through effective marketing activities

### iv) Winetech will **COMMISSION FLAGSHIP RESEARCH** projects that deliver impact

- Winetech will over time have far fewer research projects and will drive towards flagship projects that deliver high impact across the entire value chain
- Winetech's research theme approach is a first step in this regard and will be applied more vigorously in the next three years

### v) Winetech will experiment with **CROWDSOURCING**

- Innovation is a key priority for Winetech and we will make use of innovative approaches to find solutions for industry problems and concerns
- Winetech will invest some funds in crowdsourcing activities

vi) **Winetech will focus strongly on THINK TANKS to deliver a broader research context**

- Winetech will make use of three different think tanks to articulate the broader RDI agenda

In the recent think tank session the following three questions that Winetech staff should ask were highlighted:

1. What are the one or two things we could do collectively for high impact?
2. How do we, through research, help the industry achieve financial sustainability? Alternatively, what research will make that contribution?
3. How do we get radical innovation into the industry?

vii) **Winetech will address research projects across the triple bottom-line, with special focus on projects that will deliver ECONOMIC & SOCIAL BENEFIT**

- Winetech will ensure that research projects address the triple bottom-line more effectively
- Winetech will engage rigorously with various stakeholders and thought leaders to achieve this goal

vii) **Winetech will address research projects across the triple bottom-line, with special focus on projects that will deliver ECONOMIC & SOCIAL BENEFIT**

- Winetech will ensure that research projects address the triple bottom-line more effectively
- Winetech will engage rigorously with various stakeholders and thought leaders to achieve this goal

viii) **Winetech will develop an effective AUTOMATED ONLINE SYSTEM for monitoring and evaluation that provides rapid access to critical information and knowledge**

ix) **Winetech will develop an EFFECTIVE COMPANY CULTURE, with clearly defined roles and responsibilities**

- Winetech will invest in activities that will build our team spirit and culture
- Each Winetech employee will understand his/her role and will be responsible to make sure the outputs are achieved

x) **Winetech will drive and implement the LEARNING AND DEVELOPMENT STRATEGY for the SA Wine Industry**

Winetech will appoint an L&D Manager that will drive the implementation of the L&D Strategy

**xi) Winetech TERMS AND CONDITIONS should be strongly implemented across research projects**

- Winetech will review its current Terms and Conditions which will be communicated with all researchers in the system
- Terms and conditions need to be adhered to by all researchers who receive research funding from Winetech, and they will be evaluated annually in line with progress reports.



# 12. FINANCIAL STATEMENTS





## 12 FINANCIAL STATEMENTS

According to the audited financial statements for the year ending 31 December 2014 and 2015 and the preliminary unaudited figures for 2016, the Income, Expenses and Net Surplus for the various years are as follows:

	2014	2015	2016 <sup>1</sup>
	R	R	R
<b>Income</b>			
Levy	24 182 455	26 528 384	29 555 241
Other	496 222	1 192 870	1 170 666
Project: AgriSETA	500 000	282 629	285 584
Project: DST	0	3 096 014	3 593 567
	<b>25 178 677</b>	<b>31 099 897</b>	<b>34 605 058</b>
<b>Expenses (Research)</b>			
Viticulture	7 265 402	7 093 238	7 696 296
Oenology	9 307 275	7 238 591	9 380 749
Human capital development	466 221	332 925	290 750
Technology transfer	4 245 443	4 520 383	3 854 590
Other operating expenses	4 827 953	5 371 847	6 007 677
Transformation	0	2 802 392	0
Project: AgriSETA	500 000	282 629	285 584
Project: DST	0	3 096 014	3 593 566
Funds from operating activities	-1 433 617	361 878	3 495 846
Interest received	497 808	617 223	958 028
Net (deficit)/surplus for the year	-935 809	979 101	4 453 874
<b>Accumulated surplus</b>			
Balance at the beginning of year	11 944 874	11 009 065	11 988 166
Net (deficit)/surplus for the year	-935 809	979 101	4 453 874
Equity at the end of the year	<b>11 009 065</b>	<b>11 988 166</b>	<b>16 442 040</b>

<sup>1</sup> Preliminary Unaudited figures

**G MARTIN**  
**EXECUTIVE MANAGER: WINETECH**

# ANNEXURE A

## PROJECTS FUNDED BY WINETECH DURING 2016

### **A OENOLOGY**

Production Technology & Microbiology  
Environmental Sustainability

### **B VITICULTURE**

Soil Science  
Plant Protection  
Plant Biotechnology & Improvement  
Cultivation

### **C TECHNOLOGY TRANSFER**

### **D HUMAN CAPITAL DEVELOPMENT**

## A OENOLOGY

### PRODUCTION TECHNOLOGY & MICROBIOLOGY

PROJECT NUMBER	PROJECT TITLE
WW 08/36	Effect of grape temperature on the phenolic extraction and quality of Cap Classique made using whole bunch pressing (F van Jaarsveld)
WW 10/26	Effect of yeast contact time on the flavour profile and quality of Méthode Cap Classique (N Jolly)
WW 10/24	Alternative use of wine grapes: Utilisation of non- <i>Saccharomyces</i> yeast for the production of balsamic-styled vinegar (N Jolly)
WW 10/27	Production of low alcohol wines by non- <i>Saccharomyces</i> yeast (N Jolly)
100560	Pinking of wine – methods for the detection of causative agents and pre-/ post-pinking treatments (F v Jaarsveld)
WW WdT 13/01	Establishing a practical database on colour, tannins and anthocyanins levels in SA red wines (W du Toit)
WW WdT 15/01	Establishing oxygen specifications for bottling (W du Toit/ C Coetzee)
WW WdT 15/02	Establishing advanced chromatographic tannin analysis techniques for assessing the influence of different winemaking procedures on tannins in red wines (AJ de Villiers)
IWBT BI 13/01	Wine matrix: Unravelling the chemical matrix responsibility for wine flavor and aroma (F Bauer)
IWBT BI 14/01	Sensor-based Vineyards: Understanding multivariate variability within vineyards and their putative causes. Working towards better sampling designs and instrumentation for crop assessment (M Vivier)
IWBT W 13/02	Rapid descriptive sensory methods for wine evaluation: special focus on investigating the effects of vinification techniques on Chenin blanc wine sensory attributes (H Nieuwoudt)
IWBT P 14/02	Grapevine terpene products: linking quality associated flavour and aroma compounds in grapes and wine (P Young)
IWBT P 14/03	Rapid methods for tracking biopolymer turnover during wine fermentation: improving wine process technology (J Moore)
IWBT P 14/04	Constructing and deconstructing the wine grape cell wall (J Moore)
IWBT W 14/01	Investigating the impact of acid proteases on wine quality (B Divol)
WW ASB 15-01	Chemical evaluation and sensory relevance of thiols in SA wine: Chenin Blanc and selected red cultivars (A Buica)
IWBT W 15-01	Multi-cultural wine quality perception profiling (H Nieuwoudt)
UCT SL 12/01	Protective compounds in South African red wines (S le Cour/ L Opie)
N09/08/224-2014	Implementation of a genomic healthcare strategy that incorporates the effect of moderate alcohol consumption on iron metabolism and inflammation (M Kotze)
N09/08/225-2015	Development of a multi-gene risk score to determine individual cut-off limits for safe drinking habits (D van Velden)

N07/09/203	The role of the Mediterranean-type diet with moderate wine consumption on disability status in multiple sclerosis (MS) patients screened for vascular risk factors (S v Rensburg/ M Kotze)
N09/08/225/2015	Development of a multi-gene risk score to determine individual cut-off limits for safe drinking habits (D van Velden)
101648	Effect of yeast and lactic acid bacteria on volatile compounds associated with smoke taint (H du Plessis)
WW WdT 16/01	Managing thiols in South African white wines (W du Toit)
WW ASB 16-01	Determining levels of volatile compounds associated with smoke taint in South African commercial and experimental wine by chemical analysis and sensory evaluation (A Buica)
WW ASB 16-02	Status of yeast assimilable nitrogen (YAN) in South African grape musts. Impact of cultivar and area (A Buica)
WW ASB 16-03	Development and implementation of GC-MS/MS method for the determination of volatile sulphur compounds (VSC) related to off-flavours in wine (A Buica)
IWBT Y 16-1	The impact of nutrients on aroma production by <i>S. cerevisiae</i> , non-Saccharomyces yeasts and lactic acid bacteria in mixed fermentations (D Rossouw /H Musarurwa/ N Jolly)
IWBT Y 16-2	Exploring and exploiting the unique South African vineyard microbial diversity for sustainable enology (E Setati/ B Divol/ D Rossouw)
	Potstill Brandy category renaming research (C Reade-Jahn)

## ENVIRONMENTAL SUSTAINABILITY

PROJECT NUMBER	PROJECT TITLE
100556	Evaluation of selected grass and broadleaf crops suitable for fodder as interception crops where winery wastewater is re-used for irrigation (J Fourie)
101650	Use of winery wastewater as a resource for irrigation of vineyards in different environments (C Howell)

## B VITICULTURE

### SOIL SCIENCE

PROJECT NUMBER	PROJECT TITLE
US-SS-EL	The effect of different scion/rootstock combinations on grapevine water status (E Lategan)
AS-DVO-08	Grapevine cation and anion transfer: a perspective from the soil to wine chemical and sensory properties (A Strever)

## PLANT PROTECTION

PROJECT NUMBER	PROJECT TITLE
05/06	Mass culturing of mass mealybug (K Achiano)
WW 06/43	Investigation into the cause of poor budburst and dying of single spurs in Sauvignon blanc and Cabernet Sauvignon (F Halleen)
WW 06/44	Determination of the resistance/susceptibility of grapevine rootstocks towards grapevine trunk disease pathogens (F Halleen)
WW 05/22	Survival and virus transmission ability of grapevine mealybug on grapevine root remnants in soil (E Allsopp)
WW 05/23	Biology of the Aster Yellows vector Mgenia fuscovaria (E Allsopp)
100559	Foliar application of entomopathogenic nematodes for the control of vine mealybug ( <i>Planococcus ficus</i> ) in vineyards (N Stokwe)
UP KK 03	Manipulation of insect vector behaviour by Aster yellows phytoplasma: potential for vector control (K Kruger)
US PP LM 02/2012	Quantification of soil borne pathogens in grapevine nurseries (L Mostert)
PPN 01	Ring nematodes ( <i>Criconemoides xenoplax</i> ), distribution, characterization and culture methods (A Malan)
101640	The occurrence and control of <i>Phomopsis</i> species causing "streepvlek" symptoms and dieback in Western Cape vineyards (F Halleen)
FFly Africa 2016	Protocol to determine the value of crop losses in wine grapes due to fruit fly damage (N Baard)
US ENT 16-A1	Using biological control (fungi and nematodes) against two sporadic pests in vineyards and orchards (P Addison)
US PP LM 16-04	Investigation into the efficacy of <i>Trichoderma</i> spp. colonization of grapevine nursery plants (L Mostert)

## PLANT BIOTECHNOLOGY & IMPROVEMENT

PROJECT NUMBER	PROJECT TITLE
PPRI 11/19	Improved virus detection and identification for the Wine Grape Certification scheme (G Pietersen)
PPRI 13/31	Detection of grapevine leaf roll associated viruses on rootstocks (G Pietersen)
11728	Optimisation of grapevine leafroll detection by sentinel canes (G Pietersen)
11729	Construction of cDNA clones of the genetic variants of grapevines virus A and grapevine virus B associated with, respectively, Shiraz disease and corky bark disease, to confirm the aetiologies of these diseases (D Goszczynski)
07/15	Maintenance of the virus collection (R Carstens)
WW 14/15	Breeding wine grapes resistant to powdery and downy mildew (P Burger)

100558/GenUS 15/3	Molecular detection of Crown Gall in grapevine nurseries and vineyards of SA (W Langenhoven/ J Burger)
IWBT 2015-1	Interpreting the grapevine-environment interaction (M Vivier)
IWBT P 14-01	High-throughput evaluation of novel grapevine material for important traits (M Vivier)
GenUS 15/02	Establishment of an NGS-based alternative for hardwood indexing for grapevine diseases – Grapevine stem pitting disease (H Maree)
IWBT P 16/01	Towards protecting grapevine using natural bioprotectants (J Moore)
GenUs 16/01	Identification of factors conferring virus resistance in grapevine cultivars (J Burger)
GenUS 16/02	Investigating the “recovery phenotype” phenomenon in AY-infected grapevines (J Burger)
101649	Evaluation of induced mutation methods to increase the genetic variability of Pinotage (P Burger)

## CULTIVATION

PROJECT NUMBER	PROJECT TITLE
12/26	Effect of in-row vine spacing under high soil potential conditions on grapevine performance (K Hunter)
17/01	Maintenance and extension of the Viticulture genepool (D van Schalkwyk)
WW HT 14-01	WW HT 14-01 Impact of climate change factors on physiological and vegetative growth parameters of young grafted grapevines (H Theron)
WW ET 15-01	The impact of grape berry ripeness level on berry and wine composition and potential wine style of <i>Vitis vinifera</i> L cv. Pinotage (E Terblanche)
AS DVO 05	Optimising productivity in vineyards and potential effects on grape and wine composition for a specific production goal (A Strever)
AS DVO 06	Integrating climate and GIS modelling as key factors in determining cultivar suitability and adaption to a specific environment (A Strever)
AS DVO 07	Near-real-time characterization of vines for more efficient vineyard management (A Strever)
WW ASB 14/01	Effects of nitrogen foliar fertilizer on berry composition and wine aroma (cv Chenin blanc and Sauvignon blanc, <i>V. vinifera</i> L.) (A Buica)
AS DVO 09	Climate analysis, remote/proximal sensing and GIS central to SA vineyards of the future (A Strever)
IWBT 16-01	Wine production as a system: Integration and data mining (M Vivier)
RS Yield 2016	Objective wine grape crop estimation model using actual spatial and production data sets (C Jarman)

## C TECHNOLOGY TRANSFER

<b>PROJECT NUMBER</b>	<b>PROJECT TITLE</b>
TO-PPlan	Production plan on farm level (A van Zyl)
SASEV-Journal	SASEV Journal: Sponsorship, outlay, printing (L Dicks)
SASEV-Congress	International expertise: SASEV Activities (D Malherbe)
SAJEV 2016	SASEV Prize: Best article (D Malherbe)
Winetech Tech	Winetech Technical (A Andrag)
WW 18/34	Comprehensive agricultural support for the Eksteenskuil and Releaboga farmers with on-farm training and technology transfer, with the primary focus on Viti-and Viniculture trials in order to succeed with viticulture (D van Schalkwyk)
US Log01	Wine Supply Chain Survey and Benchmarking (J van Eeden)
Vinofino 01-2015	Technology Transfer (Oenology) to producers and cellars workers attending Winetech study groups (C Theron)
CCC 3	Confronting climate change – phase 3 (A Blignaut)
BIB 01	Trilingual online wine dictionary
TO-JVZ-Soil	Preparation of vineyard soils in South Africa: A Synopsis of 50 years of research information (J van Zyl)
Wineland 01	Winetech technical yearbook – (A Andrag/ K O`Kennedy)
TO-SProg-2016	Technology Transfer/ Regional Information days (F Viljoen)
To-WPE-2016	Technology Transfer: Viticultural practices evaluation (F Viljoen)

## D HUMAN CAPITAL DEVELOPMENT

<b>PROJECT NUMBER</b>	<b>PROJECT TITLE / PROJECT LEADER</b>
	Programme and Committee Management



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