

## **PROGRAMME: OPTIMAL GRAPE COMPOSITION TO REACH SPECIFIC WINE OBJECTIVES**

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### **WINETECH DEFINES A RESEARCH PROGRAMME AS:**

A number of projects with common goals that either encompass strategic benefits for the industry and/or address industry needs/problems.

### **INTRODUCTION**

This programme endeavours to obtain a strategic advantage for the South African wine industry by grouping together the research projects that have optimal ripening as common objective, thus pooling together a critical mass of knowledge that collectively can contribute to the effective solution of this industry related problem. Results found under this programme would contribute to the further development of the diverse South African terroirs, and in so doing, enhance the international competitive ability of the country's wines.

This programme focuses on the quantitative and qualitative development of the various grape components and the use thereof as singular or compound indexes by which to determine the optimal ripening periods for the various product categories. Research done in this programme will address the influence of soil, climate and other cultivation practices, and in so doing, inevitably correspond to other Winetech programmes.

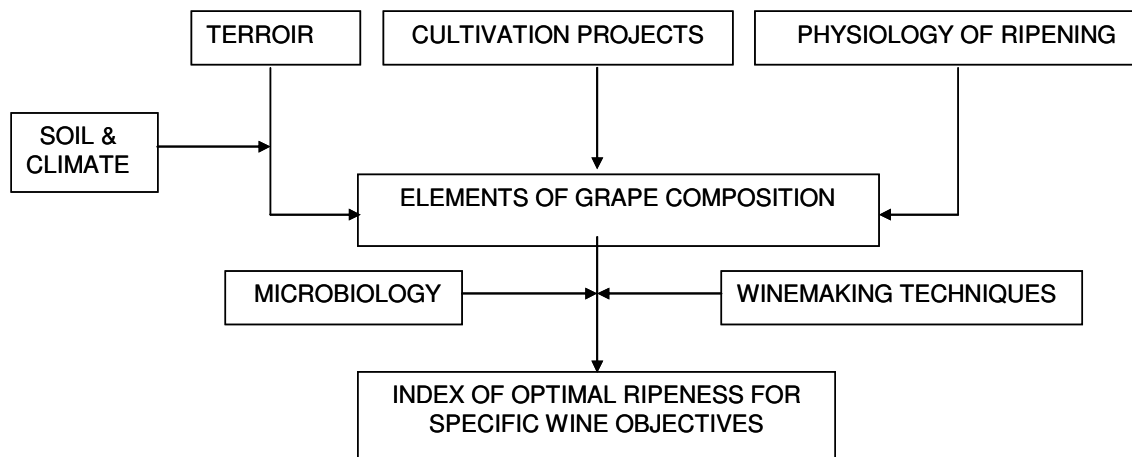
This programme will at all times protect the intellectual independence of the participating researchers as well as the individual advantage that might occur during research.

### **OBJECTIVES OF THE PROGRAMME**

1. To ensure environmental sustainability in all applicable research projects by being sensitive to optimal usage of available water and soil. At the same time focus is placed on climatic change and measures to combat the effects thereof and/or encouraging practices through which these effects can be softened.
2. To eliminate, where possible, unnecessary overlapping of manpower and apparatus and therefore increase the affordability of the different research projects in this field. This would ensure that maximum information is generated via the existing infra structure.

3. To enhance the scientific character of the research approach to the various projects by developing the best research protocol for each individual project.
4. To monitor and use all components of grape composition (sugar, acid, pH, phenols, aroma, etc.) to compile an index of optimal ripeness for the different cultivars that can be used together with vineyard conditions to determine the appropriate harvesting point per wine style.
5. To establish and sustain a pool of knowledge and expertise so as to ensure international recognition as world leaders in the area of optimal ripening.
6. To identify gaps in existing levels of knowledge to be used as basis for future research projects or to make adjustments to existing projects.
7. To establish optimum production levels for specific wine categories and price points taking into account the grape growing environment.
8. To depict these results in such a way that it would reflect the ideal vineyard in which optimal grape composition is controlled, and therewith make practical recommendations for vineyard design.

### **CURRENT STRUCTURE OF THIS PROGRAMME**



**PROF EBEN ARCHER**  
**PROGRAMME COORDINATOR**  
**2011**

The following projects are currently classified under this programme:

### COMPLETED PROJECTS

COMMITTEE	PROJECT / PROJECT LEADER	PROJECT TITLE	BEGIN DATE	END DATE
Grape composition - Cultivation	WW 12/23 – K Hunter	Determination of optimal grape and wine quality of Shiraz/99 Richter as affected by microclimate and seasonal variation in leaf and berry metabolism.	2002	2005
Grape composition – Cultivation	Distell 1 – M Lambrechts	Developing parameters to determine optimum ripeness in Cabernet Sauvignon grapes.	2002	2006
Grape composition – Vinification techniques	WW 08/25 – O Augustyn	The determination of the phenol composition of South African red grapes and wines and the application to produce optimum quality wines	2002	2007
Phenol composition - Microbiology	WW 10/14 – O Augustyn	The role of micro-organisms in the formation of bitterness in wines.	2002	2005
Phenol composition – Vinification techniques	2700/28 – L Joubert	Evaluation of the antioxidant potential of the major South African red and white wine types.	1998	2004
Grape composition – Vinification techniques	WW 08/19 – J Marais	Investigation into the effect of winemaking techniques on Pinotage wine style and quality and the development of procedures that will produce optimum quality wines.	1997	2006
Grape composition - Vinification techniques	WW 08/22 – J Marais	Investigation into the effect of viticultural and oenological factors on Chenin blanc wine quality and the development of techniques that will produce optimum quality wines.	2001	2006
Grape composition- Cultivation	WW 12/22 – K Hunter	Potential evaluation of different climatic regions for vine cultivation by using temperature ranges for key physiological processes.	2001	2004
Grape composition- Cultivation	WW-AS1 – A Strever	An investigation into optimum yield/vigour balance of Cabernet Sauvignon and Shiraz in the Stellenbosch winegrowing area: crop load, vine vigour and ripeness level effects on grape and wine composition	2006	2009
Grape composition- Vinification techniques	WW10/19 – N Jolly	Preliminary survey of glucose:fructose ratios in grape must from the Western Cape wine growing region	2006	2008
Grape composition- Vinification techniques	WW-KB1 – K Bindon	Secondary metabolism as a determinant of grape and wine quality	2006	2008
Grape composition- Vinification techniques	WW-WDT 06/02 – W du Toit	Characterizing different red grape cultivar clones in terms of certain wine parameters	2006	2008
Cultivation	WW 12/25 – K Hunter	Relationship between Syrah, water content and biochemical berry development	2006	2009
Cultivation	KB03 – A Oberholster	Impact of grapevine vigour on aroma precursors in <i>Vitis vinifera</i> cv. Merlot	2007	2009
Cultivation	WW. AD 09/01 - A Deloire	Evaluation of berry ripening by correlating berry pigment evolution and wine aromatic profiles with the Dyostem® viticultural tool	2009	2009
Vinification technology	WQC1 – L Ellis	Grape classification systems: Development of a bonus-based approach towards equitable remuneration for quality grapes	2008	2010
Vinification technology	KB02 – P Myburgh	Impact of sunlight and temperature on flavonoids of Cabernet Sauvignon grapes and wines at different maturity levels	2008	2010
Vinification technology	WW-WdT09/02 W du Toit	Correlating anthocyanins and tannins in grapes in wine	2009	2010
Vinification technology	WW08/32 F v Jaarsveld	Improvement of stability of port wine colour	2009	2010

**BUDGET 2011**

COMMITTEE	PROJECT / PROJECT LEADER	PROJECT TITLE	BEGIN DATE	END DATE
Cultivation	WW 12/20 – K Hunter	Effect of row direction on the physiological, viticultural and oenological performance of Shiraz/R110.	2001	2012
Cultivation	WW 12/26 – K Hunter	Effect of in-row vine spacing under high soil potential conditions on grapevine performance	2008	2016
Cultivation	WW12/12 – D van Schalkwyk	Impak van alternatiewe snoeimetodes (hand, meganies, minimum) op drag, druif- en wyngehalte en die fisiologie van die wingerdstok	2009	2014
Cultivation	WW-IS 10/03 A Deloire	Influence of rootstocks development and functioning on berry growth and ripening of Pinotage ( <i>Vitis vinifera</i> L.).	2010	2012
Cultivation	WW-CH 10/01 A Deloire	Influence of light and temperature at the vine and bunch level on growth and ripening of Sauvignon blanc ( <i>Vitis vinifera</i> L.) berries	2010	2013
Vinification technology	WW 08/29 P Minnaar	Determination of the optimal ripeness of South African red grapes in terms of their phenol composition	2008	2011
Vinification technology	Distell2 M Lambrechts	Tannins – their measurement and role as grape and wine quality indicators	2008	2012
Vinification technology	WW AO 10/01 A Oberholster	Investigation of the formation of polymeric phenols and pigments in Pinotage wine during bottle aging and the subsequent influence on the mouth-feel properties	2010	2012
Vinification technology	WW EW 10/02 E Witbooi	Berry tannin structure and phenolics evolution in cv. Cabernet Sauvignon ( <i>Vitis vinifera</i> L.): effect of irrigation and canopy management	2010	2013
Vinification technology	IWBT W 10/01 H Nieuwoudt	Investigating the correlation between chemical, sensory and consumer preferences of selected South African wines: Implementation of novel software	2010	2012
Vinification technology	WW WdT 10/03 W du Toit	Methods to improve Sauvignon blanc wine quality and diversity in South Africa	2010	2012
Vinification technology	WW WdT 11/01 W Du Toit	Assessing volatile thiol concentration in South African Sauvignon blanc wines	2011	2012
<b>TOTAL</b>				

## **PROGRAMME COMMITTEE**

Prof. E Archer (Programme Coordinator)  
Prof. JJ Hunter  
Dr K du Plessis  
Dr P Myburgh  
Mr P Minnaar  
Mr A Strever  
Dr W du Toit  
Mr G Baumgarten  
Mr F de Villiers  
Mr F Viljoen  
Mr C van Graan  
Prof. A Deloire  
Mr C Theron  
Mr JH Booysen (EM: Winetech)  
Mr E le Roux (Chair: Viticulture Committee)  
Me I Waller (Chair: Oenology committee)  
Dr. E Hoffman (Chair: Soil Science Committee)  
Prof. P van Rensburg (Chair: Vinification Technology committee)  
Prof. M Lambrechts (Chair: Microbiology committee)  
Prof. J Burger (Chair: Vine Virus Programme Committee)  
Prof. F Bauer (Chair: Biotechnology Programme Committee)  
Mr W Botha (Chair: Viticulture & Oenology Forum)

## **MODUS OPERANDI OF PROGRAM**

Members of the program will all assemble annually during October to discuss the previous season's operations and to identify possible changes that have to be made to them. During this meeting the following points should be addressed:

Progress made with research.

1. Problems encountered with the gathering of data during the recent season.
2. Identification of deficiencies in data sets.
3. Procedure protocol for the coming season.
4. Protection of Individual proprietary rights.
5. Results of notification protocol for the local industry.
6. Monitor scientific merit, relevance for industry and possible research areas not addressed in current programme.