Australian Government
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THE UNIVERSITY of ADELAIDE

SMALL-SCALE PRODUCTION OF SMOKE-TAINTED WINES AS A RESEARCH RESOURCE



FINAL REPORT TO WINE AUSTRALIA

Project Number: **UA 1903**

Principal Investigator: **ASSOC. PROF. PAUL GRBIN**

Research Organisation: **The University of Adelaide**

Date: **28 September 2021**

PROJECT TITLE

Small scale production of smoke tainted wines as a research resource

PROJECT TEAM

Supervisor: Paul Grbin (Associate Professor & Head Winemaker, University of Adelaide) & Kerry Wilkinson Professor of Wine Science, University of Adelaide)
Team Members: Jill Bauer, Tarrant Hansen (University of Adelaide: Winemaking & Cellar Operations)

The following smoke effected grapes from the 4 different Adelaide Hills vineyard locations were received in vintage 2020. All were processed to wine using commercial winemaking techniques. No methods where specifically employed to mitigate the smoke taint effect on the final wine.

Table 1: The batches of fruit received at the Hickinbotham Roseworthy Wine Science Laborarory.

Smoke Taint samples			
UA code	**Vineyard:Harvest:Variety:Storage**	**Fruit received (kg)**	**Volume (L)**
UAW011	V1 (Block A) Machine Harvested Chardonnay (stored in barrel)	600	225
SK82-8	V1 (Block A) Machine Harvested Chardonnay (stored in stainless steel)		82
UAW013	V1 (Block B) Hand Harvested Chardonnay	600	Blended away
UAW007	V4 Hand Harvested Chardonnay (stored in barrel)	450	225
SK82-11	V4 Hand Harvested Chardonnay (stored in stainless steel)		82
SS200-3	V1 (Block C) Machine Harvested Sauvignon Blanc	745	440
SS200-4	V1 (Block C) Hand Harvested Sauvignon Blanc	500	360
SS200-8	V3 Machine Harvested Savignon Blanc	587	400
UAR027	V3 Machine Harvested Pinot Noir (in barrel)	594	450
UAR017	V4 Hand Harvested Pinot Noir (in barrel)	491	225
SK82-15	V4 Hand Harvested Pinot Noir (in stainless steel)		82
UAR087	V3 Machine Harvested Shiraz (in barrel)	598	450

The majority of wines have been analysed by the AWRI Commercial Services for smoke taint compounds (see Tables 2 & 3)

All wines have been bottled and stored at Hickinbotham Roseworthy Wine Science Laboratory. These wines are now available a resource for research and teaching. Several samples (ranging in volume from 750 mL to 50 L) have been provided to the following researchers:

- Professor Kerry Wilkinson (University of Adelaide). For sensory and chemical analysis. RATA assessment of these wines has been undertaken. The wines will also be used in a sensory bench marking trial. Professor Wilkinson's team has also investigated a distillation approach for removal of smoke taint.
- Dr Mango Parker (AWRI) Ongoing smoke taint research
- Dr Eric Wilkes (AWRI) Used in an international smoke taint analysis project.
- Dr Richard Muhlack (University of Adelaide) Sensory assessment class for 4th year and Masters of Viticulture and Oenology students.

Table 2: Smoke Taint Analysis (Phenolic Glycosides)

Vineyard:Harvest:Variety:Storage	Methylsyringol gentiobioside	Phenol rutinoside	Cresol rutinoside	Guaiacol rutinoside	Methylguaiacol rutinoside
V1 (Block A) Machine Harvested Chardonnay (stored in barrel)	<1	2	2	2	1
V1 (Block A) Machine Harvested Chardonnay (stored in stainless steel)	<1	<1	2	2	3
V1 (Block B) Hand Harvested Chardonnay	<	<1	<1	2	2
V4 Hand Harvested Chardonnay (stored in barrel)	<1	3	7	15	21
V4 Hand Harvested Chardonnay (stored in stainless steel)	<1	11	37	57	87
V1 (Block C) Machine Harvested Sauvignon Blanc	<1	2	4	4	1
V1 (Block C) Hand Harvested Sauvignon Blanc	<1	1	3	2	<1
V3 Machine Harvested Savignon Blanc	<1	8	16	15	14
V3 Machine Harvested Pinot Noir (in barrel)	<1	4	5	5	6
V4 Hand Harvested Pinot Noir (in barrel)					
V4 Hand Harvested Pinot Noir (in stainless steel)	<1	16	22	24	34
V3 Machine Harvested Shiraz (in barrel)	<1	6	11	26	31

Table 3: Smoke Taint Analysis (Volatile Phenols

Vineyard:Harvest:Variety:Storage	4 - Methylguaiacol	Guaiacol	o-CRESOL	p-CRESOL	m-CRESOL	Syringol	Methyl Syringol	Syringol gentiobioside
V1 (Block A) Machine Harvested Chardonnay (stored in barrel)	2	4	1	3	2	3	<1	21
V1 (Block A) Machine Harvested Chardonnay (stored in stainless steel)	1	3	1	11	2	3	<1	16
V1 (Block B) Hand Harvested Chardonnay	<1	2	<1	<1	<1	<1	<1	12
V4 Hand Harvested Chardonnay (stored in barrel)	5	13	1	3	4	7	3	108
V4 Hand Harvested Chardonnay (stored in stainless steel)	3	8	1	2	2	6	1	91
V1 (Block C) Machine Harvested Sauvignon Blanc	<1	3	1	2	2	1	<1	7
V1 (Block C) Hand Harvested Sauvignon Blanc	<1	2	<1	<1	<1	<1	<1	4
V3 Machine Harvested Savignon Blanc	2	7	3	5	4	3	<1	15
V3 Machine Harvested Pinot Noir (in barrel)	12	42	8	15	14	15	4	28
V4 Hand Harvested Pinot Noir (in barrel)								
V4 Hand Harvested Pinot Noir (in stainless steel)	7	34	9	10	12	5	1	73
V3 Machine Harvested Shiraz (in barrel)	10	52	5	7	9	12	3	44