“The New Australian Standard® for Olive Oil and Olive-Pomace Oil Trade”

What is it? Why do we need it?

Leandro Ravetti

Trade Standards for Olive Oil

- To protect (untrained) consumers against confusing and/or misleading labelling practices.
- To guarantee the quality of the product throughout the chain.
- To allow honest growers and traders to have a level playing field where only pears with pears and apples with apples are compared.
- To provide government and non government agencies with a tool to control and enforce fair trade.

Trade Standards for Olive Oil

• The most widely accepted international standards for olive oils and olive-pomace oils are:

- **Codex Standard** for Olive Oils and Olive Pomace Oils - Codex Stan 33-1981 (Rev. 2-2003).
- **International Olive Council Trade Standard** Applying to Olive Oils and Olive-Pomace Oils - COI/T.15/NC Nº 3/Rev. 3 November 2008.

• Other relevant standards due to the olive oil and olive pomace oil volumes traded in those countries are:

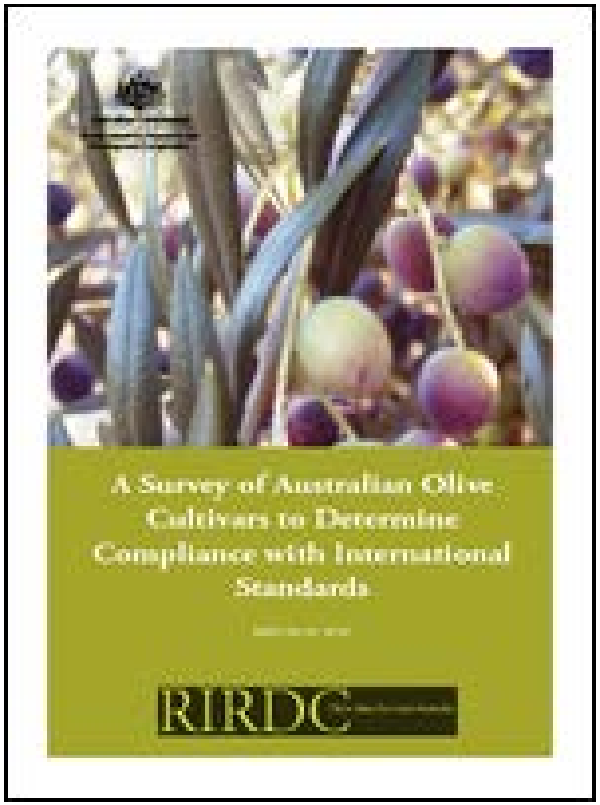
- **European Commission Regulation** (EEC) Nº 2568/91 of 11 July 1991 on the characteristics of olive oil and olive-residue oil and on the relevant methods of analysis and subsequent amendments.
- **United States Standards** for Grades of Olive Oil and Olive-Pomace Oil - Effective date October 25, 2010.

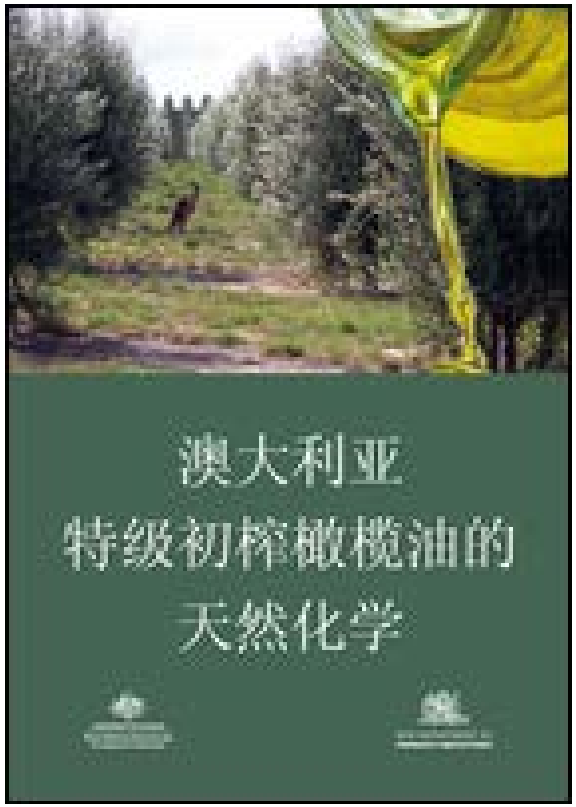
• There is **no mandatory standard in Australia for olive oil**.

Problems with International Standards

- Based on average European oils' characteristics and do not contemplate new world's olive oils.
- Do not make any reference to the shelf life of the oils and the necessity for a best before date.
- Do not detect refined olive oils utilising new technologies (e.g. Soft Column®).
- Confusing denomination of the different categories.

Authentic Australian oils being left outside





Authentic Australian oils being left outside

Summary of AORL and MOLS records for Fatty Acid Composition of Australian oils

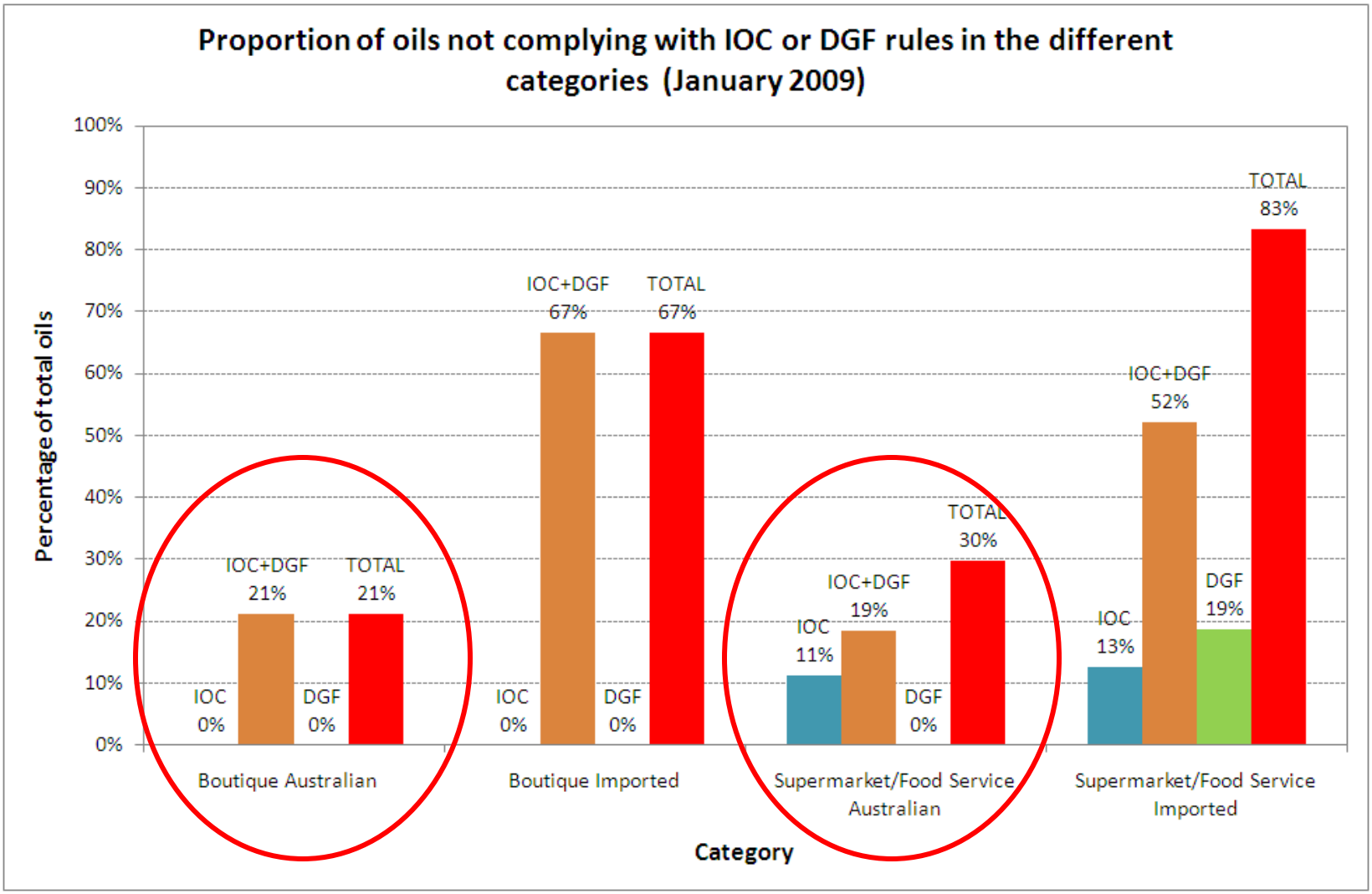
	C 14:0	C 16:0	C16:1	C 17:0	C 17:1	C 18:0	C 18:1	C 18:2	C18:3	C 20:0	C 20:1	C22:0	C 24:0
IOC LIMITS	0.0-0.05	7.5-20.0	0.3-3.5	0.0-0.3	0.0-0.3	0.5-5.0	55.0-83.0	3.5-21.0	0.0-1.0	0.0-0.6	0.0-0.4	0.0-0.2	0.0-0.2
AUSTRALIAN STANDARD LIMITS	0.0-0.05	**7.0-20.0**	0.3-3.5	0.0-0.3	**0.0-0.4**	0.5-5.0	**53.0-85.0**	**2.5-22.0**	**0.0-1.5**	0.0-0.6	**0.0-0.5**	0.0-0.2	0.0-0.2
AVERAGE	0.01	11.87	0.98	0.09	0.11	2.31	73.81	9.25	0.73	0.39	0.31	0.10	0.09
MEDIAN	0.01	11.70	0.90	0.10	0.10	2.30	74.30	9.40	0.70	0.40	0.30	0.10	0.10
STANDARD DEVIATION	0.00	1.57	0.33	0.03	0.05	0.44	3.86	2.75	0.10	0.05	0.05	0.02	0.03
MAXIMUM	0.04	20.26	3.56	0.50	0.50	5.40	84.15	23.79	1.71	0.70	0.60	0.20	0.20
MINIMUM	0.00	6.70	0.29	0.00	0.00	0.20	53.87	2.21	0.30	0.16	0.03	0.04	0.00
NUMBER OF SAMPLES	1859	1859	1859	1859	1859	1859	1859	1859	1859	1859	1859	1859	1859
PERCENTAGE OF SAMPLES BELOW PROPOSED AUS STANDARD	0.0%	0.2%	0.1%	0.0%	0.0%	0.1%	0.0%	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%
PERCENTAGE OF SAMPLES ABOVE PROPOSED AUS STANDARD	0.0%	0.1%	0.1%	0.1%	0.1%	0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.0%	0.0%
PERCENTAGE OF SAMPLES BELOW IOC STANDARD	0.0%	0.3%	0.1%	0.0%	0.0%	0.1%	**0.1%**	1.5%	0.0%	0.0%	0.0%	0.0%	0.0%
PERCENTAGE OF SAMPLES ABOVE IOC STANDARD	0.0%	0.1%	0.1%	0.1%	0.3%	0.1%	0.4%	**0.1%**	0.5%	0.1%	2.6%	0.0%	0.0%

Authentic Australian oils being left outside

Summary of AORL and MOLS records for Sterol Composition of Australian oils

	Cholesterol	Brassicasterol	Campesterol	Stigmasterol	D-7-Stigmastenol	β -Sitosterol	Total sterols	E+U	2-glyceryl monopalmitate
IOC LIMITS	0.0-0.5	0.0-0.1	0.0-4.0	< Camp.	0.0-0.5	93.0-100.0	> 1000	0.0-4.5	C16:0<=14.0 <=0.9%, <=1.1%
AUSTRALIAN STANDARD LIMITS	0.0-0.5	0.0-0.1	**0.0-4.8**	< Camp.	0.0-0.5	**92.5-100.0**	> 1000	0.0-4.5	**<=1.5%**
AVERAGE	0.18	0.02	3.81	0.71	0.26	94.08	1741.11	1.02	0.48
MEDIAN	0.15	0.03	3.80	0.63	0.20	94.07	1764.00	0.90	0.40
STANDARD DEVIATION	0.13	0.01	0.68	0.29	0.11	0.73	327.95	0.55	0.23
MAXIMUM	0.80	0.10	5.00	2.30	1.19	96.70	2862.00	5.53	1.50
MINIMUM	0.00	0.00	1.88	0.00	0.00	92.00	789.23	0.20	0.04
NUMBER OF SAMPLES	651	651	651	651	651	651	651	582	305
PERCENTAGE OF SAMPLES BELOW PROPOSED AUS STANDARD	0.0%	0.0%	0.0%	0.0%	0.0%	0.8%	1.2%	0.0%	0.0%
PERCENTAGE OF SAMPLES ABOVE PROPOSED AUS STANDARD	0.8%	0.0%	1.1%	0.0%	0.5%	0.0%	0.0%	0.3%	0.0%
PERCENTAGE OF SAMPLES BELOW IOC STANDARD	0.0%	0.0%	0.0%	0.0%	0.0%	3.5%	1.2%	0.0%	0.0%
PERCENTAGE OF SAMPLES ABOVE IOC STANDARD	0.8%	0.0%	39.0%	0.0%	0.5%	0.0%	0.0%	0.3%	3.9%

The need for a best before date



The need for a best before date

The need for a best before date

Estimated shelf life of olive oils (in days) for every 1 Rancimat® hour @ 110ºC

		Storage Temperature (in ºC)								
		24	23	22	21	20	19	18	17	16
General reference	Air	16.1	17.3	18.5	19.9	21.3	22.8	24.5	26.2	28.1
	Nitrogen	24.2	26.0	27.8	29.8	32.0	34.2	36.7	39.3	42.1
Modern Olives Trials	Air	20.2	21.6	23.2	24.8	26.6	28.5	30.6	32.7	35.1
	Nitrogen	30.2	32.4	34.7	37.2	39.9	42.8	45.8	49.1	52.6

General Reference: http://www.metrohm.com.cn/administrator/resource/upfile/Stab%20Introduction.pdf
Nitrogen Factor: http://grasasyaceites.revistas.csic.es/index.php/grasasyaceites/article/view/461/463
Modern Olives Trials: Trials conducted by MOLS in 2008 with BBE Arbequina and Picual oils at varying temperatures
Red: Standard reference for fats and oils stored under air
Green: Estimation proposed by the Australian Code of Practice

The need for a best before date

Determination of date of minimum durability

The date of minimum durability will be determined according to the result of the oil stability index method at 110ºC and 20l/min of air immediately prior to bottling. One hour of oxidative stability under the conditions above stated equals one month of shelf life.

If the oil to be bottled is not tested immediately before bottling but it has a valid oxidative test result conducted within six months of the bottling date, that result could be used after deducting the number of months between the date of the test and the date of bottling.

The need for new chemistry

The need for new chemistry

Dimeric Triglycerides in Olive oils labelled as “extra virgin”

Year	1998	1999	2000	2001	2002	2003	2004
Samples	35	135	110	132	155	63	52
Min(%)	0.01	0.01	0.01	0.01	0.01	0.01	0.01
Max (%)	0.40	0.62	0.85	0.10	0.08	0.06	0.05
Mean (%)	**0.067**	**0.045**	**0.048**	**0.028**	**0.024**	**0.015**	**0.011**

Source: Gertz, C. 2008. AOCS Annual General Meeting. Seattle, US.

The need for new chemistry

INTERNATIONAL
OLIVE
COUNCIL

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DECISION No DEC-18/96-V/2008

DETECTION OF DEODORISED OLIVE OILS IN EXTRA VIRGIN OLIVE OILS

THE COUNCIL OF MEMBERS OF THE INTERNATIONAL OLIVE COUNCIL,

Having regard to the recommendation made by the Technical Committee at its fifth meeting on the occasion of the 96th session of the Council of Members,

Whereas means are urgently needed to facilitate the detection of the fraudulent admixture of deodorised olive oil to extra virgin olive oil until the chemists define a position on the most reliable method and acceptable repeatability values;

Tests

Analysis

- Pyropheophytins (PPPs). ISO 29841:2009.
- 1,2-Diacylglycerol Content (DAGs). ISO 29822:2009.
- Fatty Acid Alkyl Esters. COI/T.20/Doc. Nº 28.

Refined and deodorised olive oils

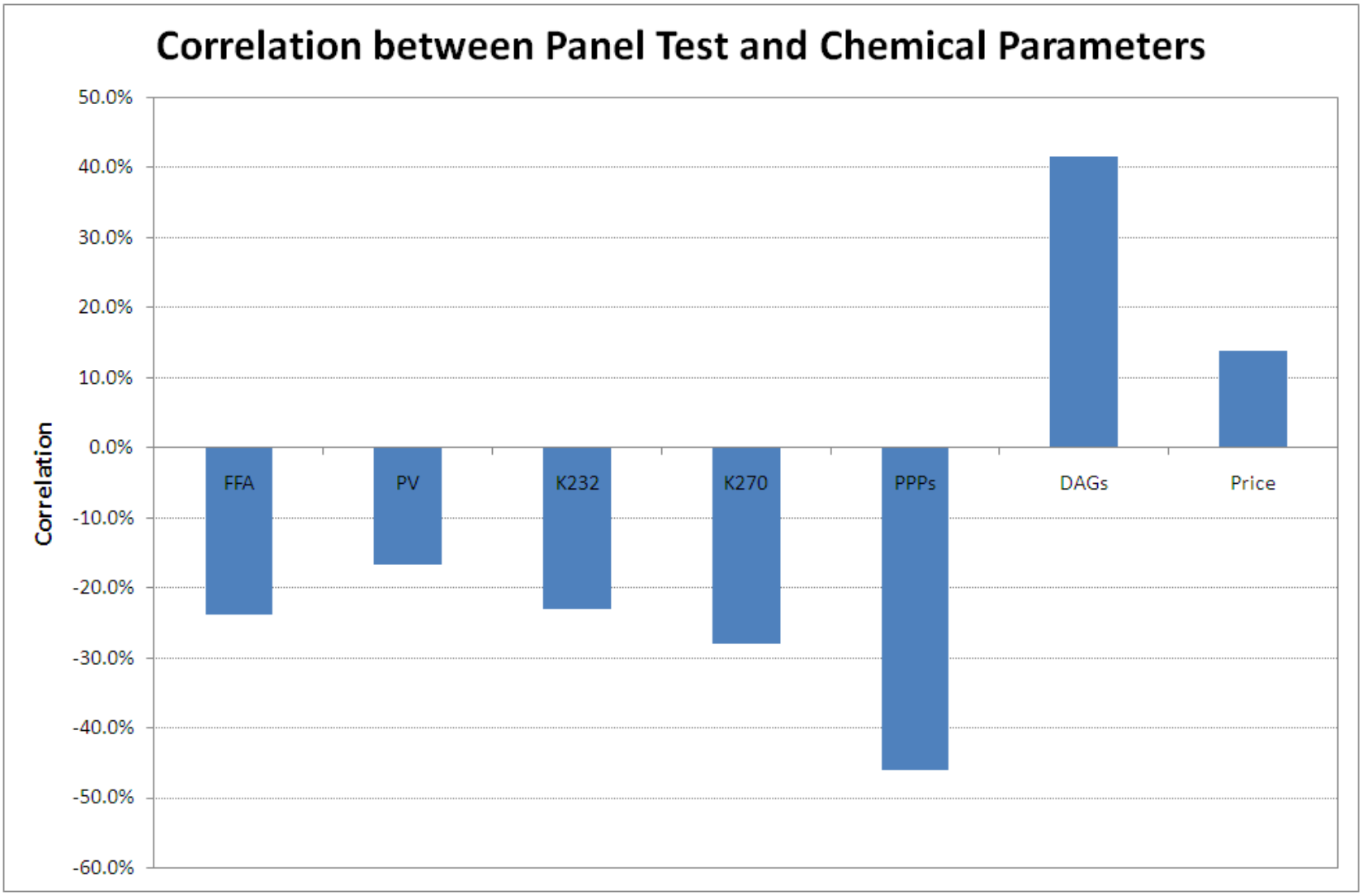
HEAT TREATMENT TRIAL

Variety BARNEA BR T20004 Jan-10

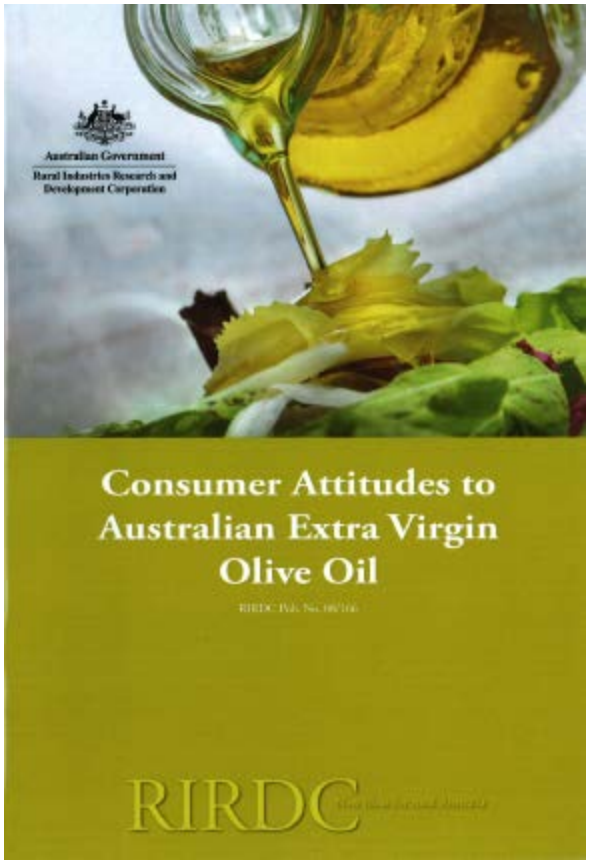
Work Order	Temp	K232	K270	DK	PPP	PPP pred	DAG	FAAE	Ratio	STIG
10/018-01	20 ºC (Control)	1.779	0.136	0.000	6.54	2.86	82.6	12.300	0.380	0.051
10/018-02	40 ºC	1.835	0.150	0.000	6.40	3.04	85.6	8.670	0.593	0.062
10/018-03	60 ºC	1.886	0.168	0.000	6.40	2.99	85.0	8.050	0.588	0.114
10/018-04	80 ºC	1.861	0.162	0.000	7.88	2.98	84.8	8.860	0.464	0.120
10/018-05	100 ºC	1.930	0.160	0.000	10.94	2.99	85.0	11.200	0.356	0.112
10/018-06	120 ºC	1.968	0.163	0.000	18.46	2.92	83.8	17.200	0.497	0.107
10/018-07	150 ºC	2.508	0.335	0.007	73.28	3.65	69.5	11.400	0.310	0.097
10/018-08	200 ºC	2.456	0.635	0.021	96.36	8.04	53.4	11.239	0.391	0.082

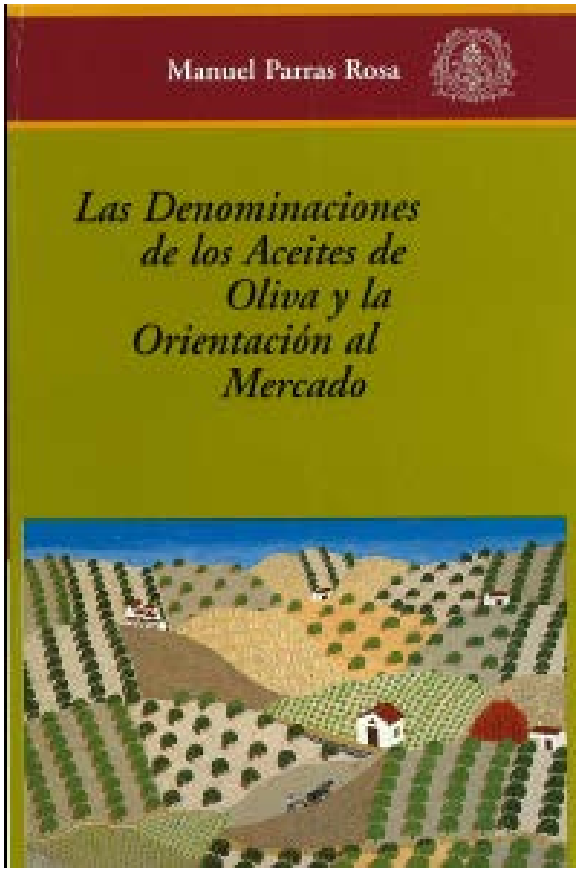
$PPP_{\%predicted}$=49,7 - 1,17*%DG + 0,0073*%DG * %DG +- 5,0 %

Correlations



The need for clearer denominations

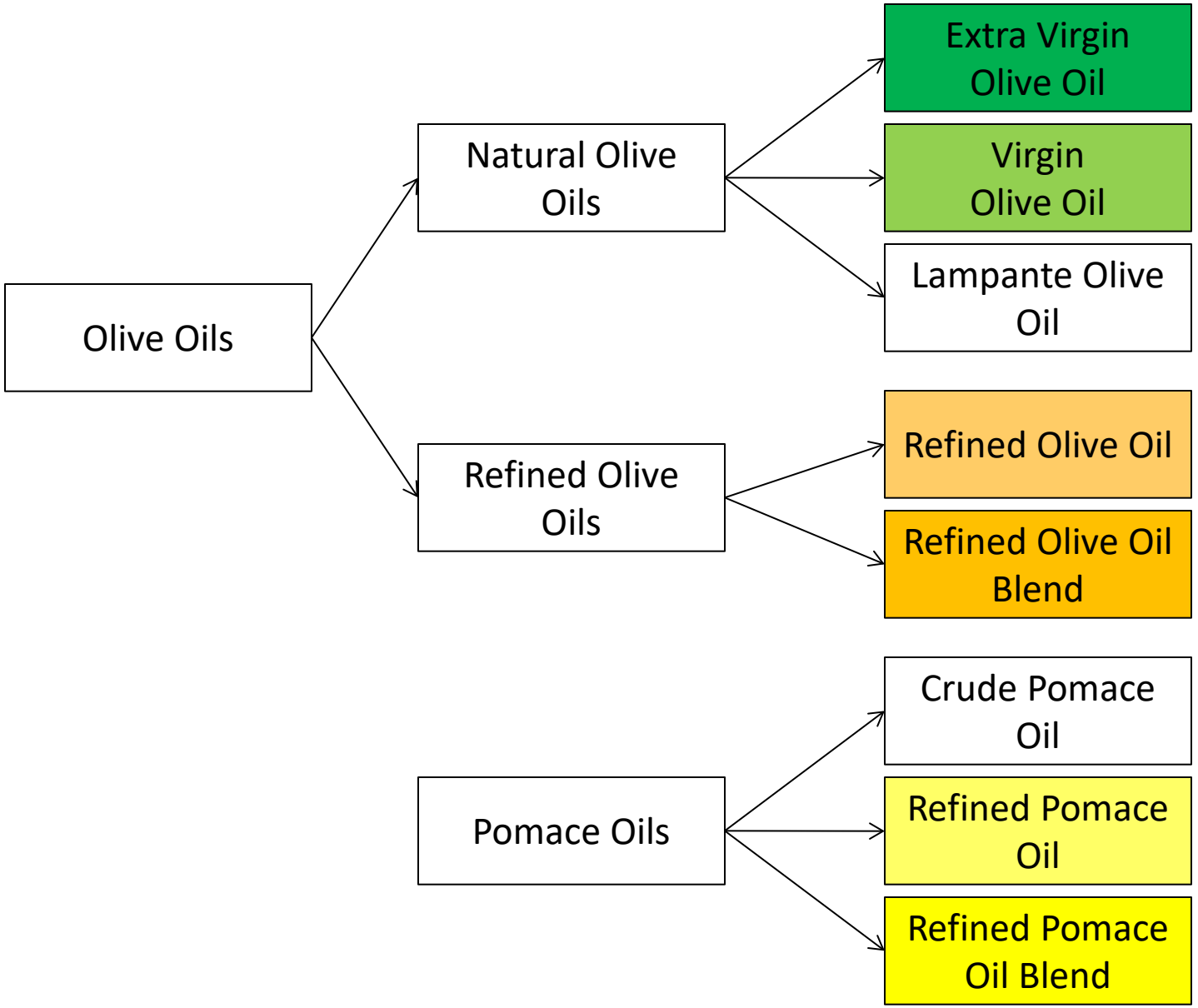




The need for clearer denominations

- Only 9% of the Australian population knew that different types of olive oil have different health benefits.
- Just 29% of the Australian population knew that EVOO was the highest quality olive oil.
- Refined vs. rectified.
- Blend vs. pure.
- Virgin vs. natural.

The need for clearer denominations



The need for clearer denominations

Where are we now?

Standard Committee

- Standards Australia.
- Department of Agriculture, Fisheries and Forestry.
- Rural Industries Research and Development Corporation.
- Industry and Investment NSW (AORL).
- Private Laboratories.
- Australian Olive Association.
- New Zealand Olive Association.
- Australian Olive Oil Association.
- Australian Customs.
- Australian National Retailers Association.
- Food and Grocery Council New Zealand.
- Consumers Federation of Australia.
- Choice (observer).
- Australian Competition and Consumer Commission (observer).
- Food Standards Australia and New Zealand (observer).

Next Steps

Achieving a scientifically based and consumer oriented Standard for all olive oils and olive-pomace oils traded in Australia

A final word about the Code of Practice