

UPDATE ON UC DAVIS OLIVE CENTER

**Sue Langstaff
for Dan Flynn**

The information included in this presentation is property of Sue Langstaff and Applied Sensory, LLC and is for informational purposes only. It is not to be reproduced.

UCD OLIVE CENTER

- 6 years old
- Complimentary to COOC
- NOT a competitor

UCD OLIVE CENTER

- Website re-design
- <http://olivecenter.ucdavis.edu/>

UCD OLIVE CENTER

- Please use these resources
- They are there for YOU!

JUDGING OLIVE OIL SENSORY QUALITY

Sue Langstaff

Applied Sensory, LLC

Olive Oil Sensory Science

Erminio Monteleone and Susan Langstaff



WILEY Blackwell

4

Sensory Quality Control

Susan Langstaff

Applied Sensory LLC, Fairfield, CA, USA

4.1 Introduction

Flavor and changes to flavor due to the chemistry in olive oil play a major role in dictating standards and the market value of olive oil. These flavors can be amplified, diminished, or disturbed by changing the quality of the fruit, the way it was handled, the manipulation of the paste, the extraction process, and finally the cleaning and storage of the oil (Vossen, 2005). Premium quality, fresh, virgin olive oil is characterized by a fruity aroma with a bitter and pungent finish. For such oil, it is common for consumers to pay high prices.

The development of sensory quality standards for olive oil began in the 1970s to address five main issues (Mailer, 2012):

Virgin olive oil quality criteria and standard limits

Parameters		Extra Virgin	Virgin	Lampante
Chemical parameters	Free Acidity (%)	≤ 0.8	≤ 2.0	> 3.3 (IOC) > 2.0 (EC, USDA)
	Peroxide Value (meq.O ₂ /kg)	≤ 20	≤ 20	> 20 (IOC, EC) No limit (USDA)
UV absorbency	K232 nm	≤ 2.5	≤ 2.6	-----
	K270 nm	≤ 0.22	≤ 0.25	-----
	ΔK	≤ 0.01	≤ 0.01	-----
Sensory attributes (median values across panelists)	Defects	0	≤ 3.5 (IOC) ≤ 2.5 (EC, USDA)	> 6 (IOC) > 2.5 (EC, USDA)
	Fruitiness	> 0	> 0	-----

Olive oil became the first food in the world whose quality was legally determined at least in part by its sensory properties



EXTRA VIRGIN SUICIDE

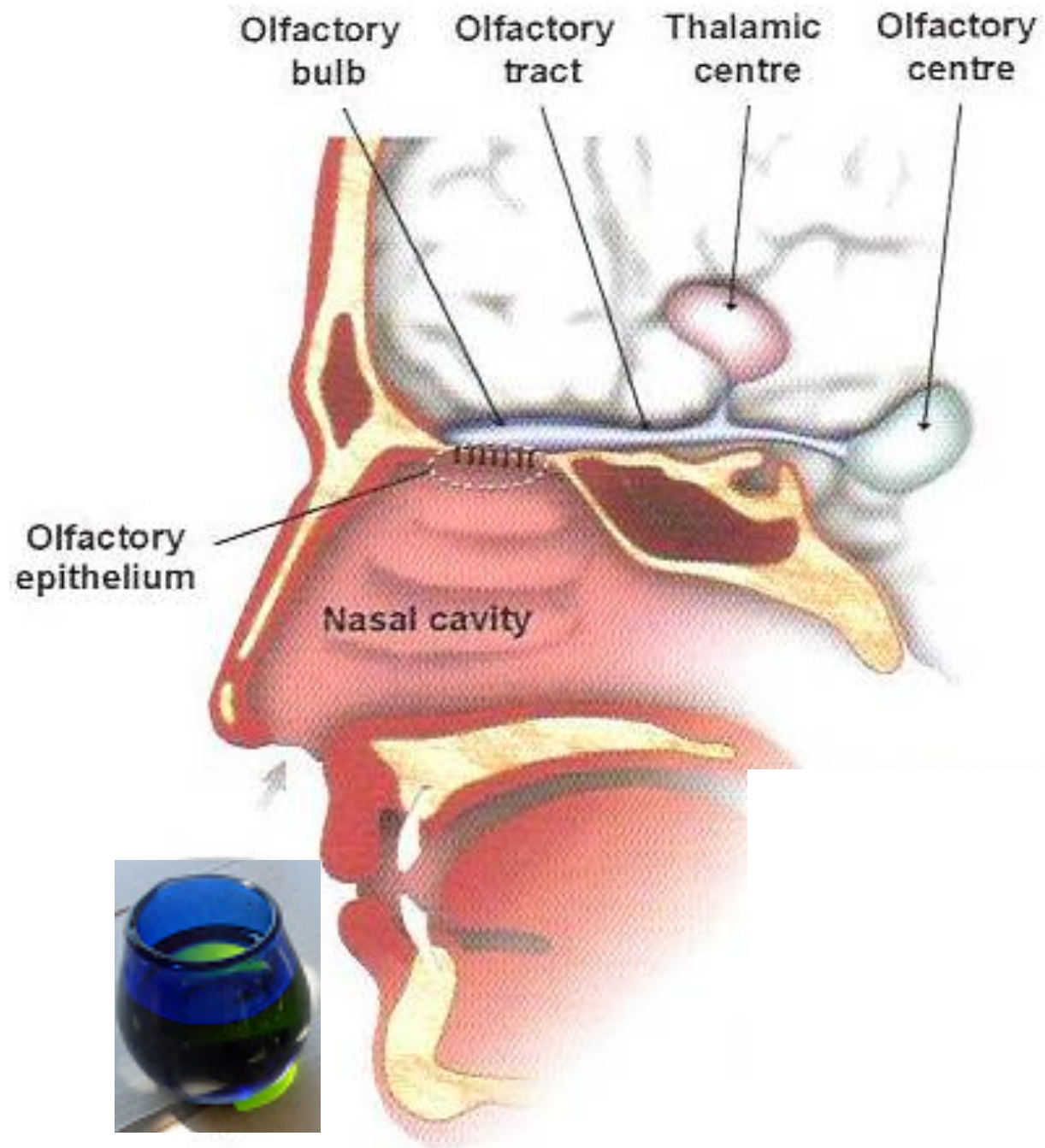
THE ADULTERATION OF ITALIAN OLIVE OIL

By Nicholas Blechman

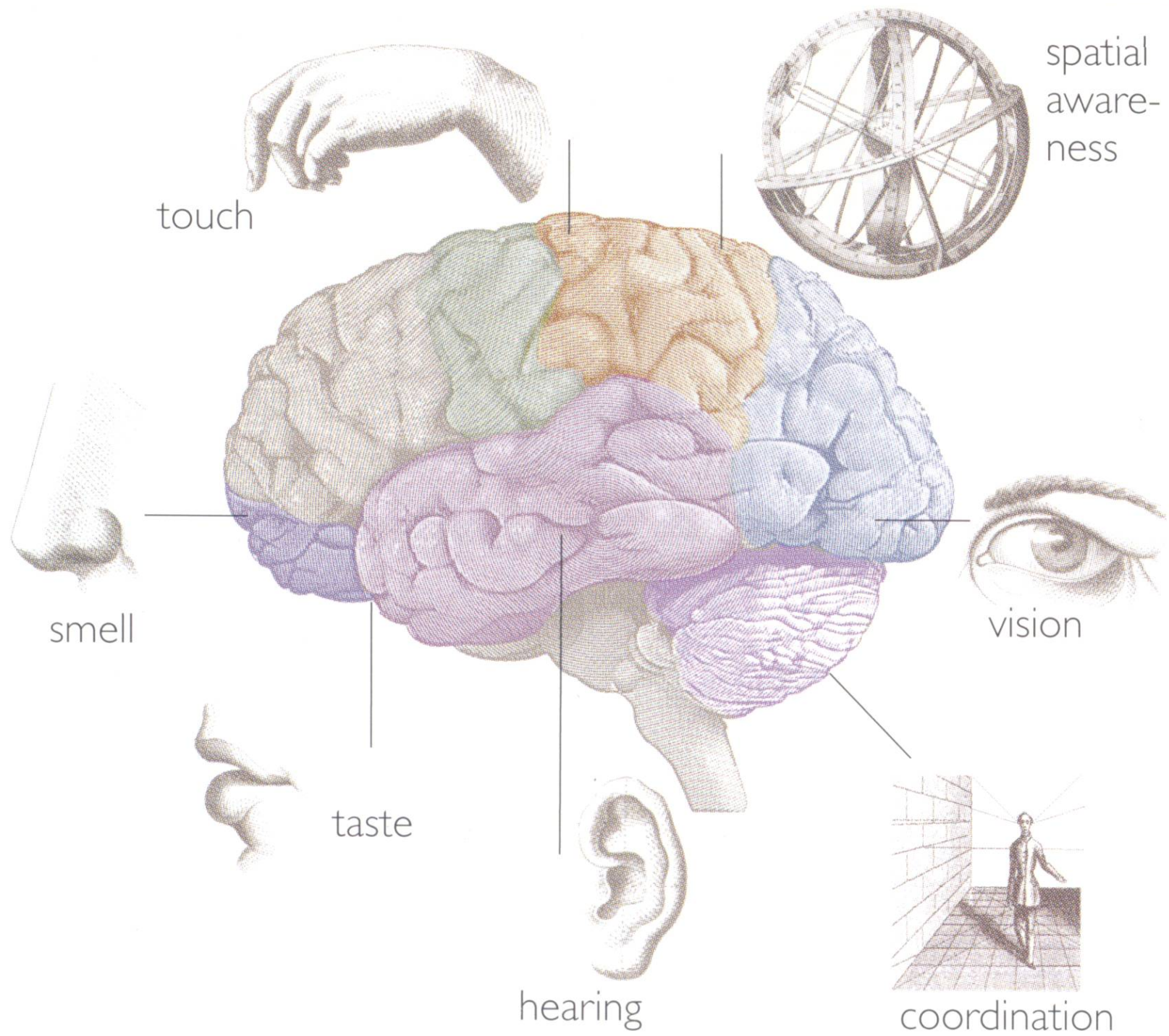


To combat fraud, a special branch of the Italian Carabinieri is trained to detect bad oil. Lab tests are easy to fake, so instead the police rely on smell.

What do you need to police
olive oil sensory quality?







OLFACTORY PATHWAYS*

BULB TRACT^{B'} → OLFACTORY CORTEX^O → ASSOC. CORTEX^P



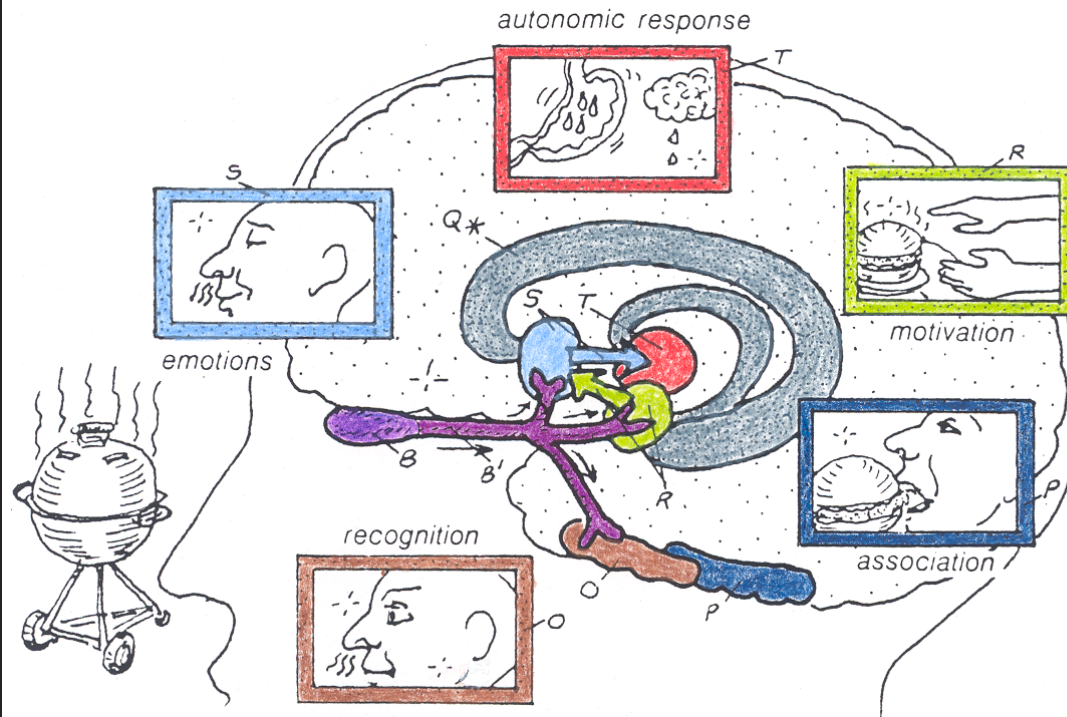
LIMBIC SYSTEM: Q*

AMYGDALA^R

SEPTUM^S

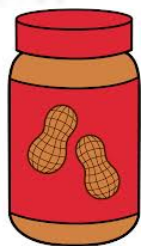
HYPOTHALAMUS^T

AMUS^T

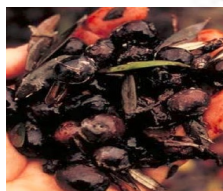


Virgin olive oil quality criteria and standard limits
SENSORY ONLY
USDA LIMITS

Parameters		Extra Virgin	Virgin	Lampante
Sensory attributes (median values across panelists)	Defects	0	≤ 2.5	> 2.5
	Fruitiness	> 0	> 0	-----



crayons



WINEY

FUSTY

MOLD

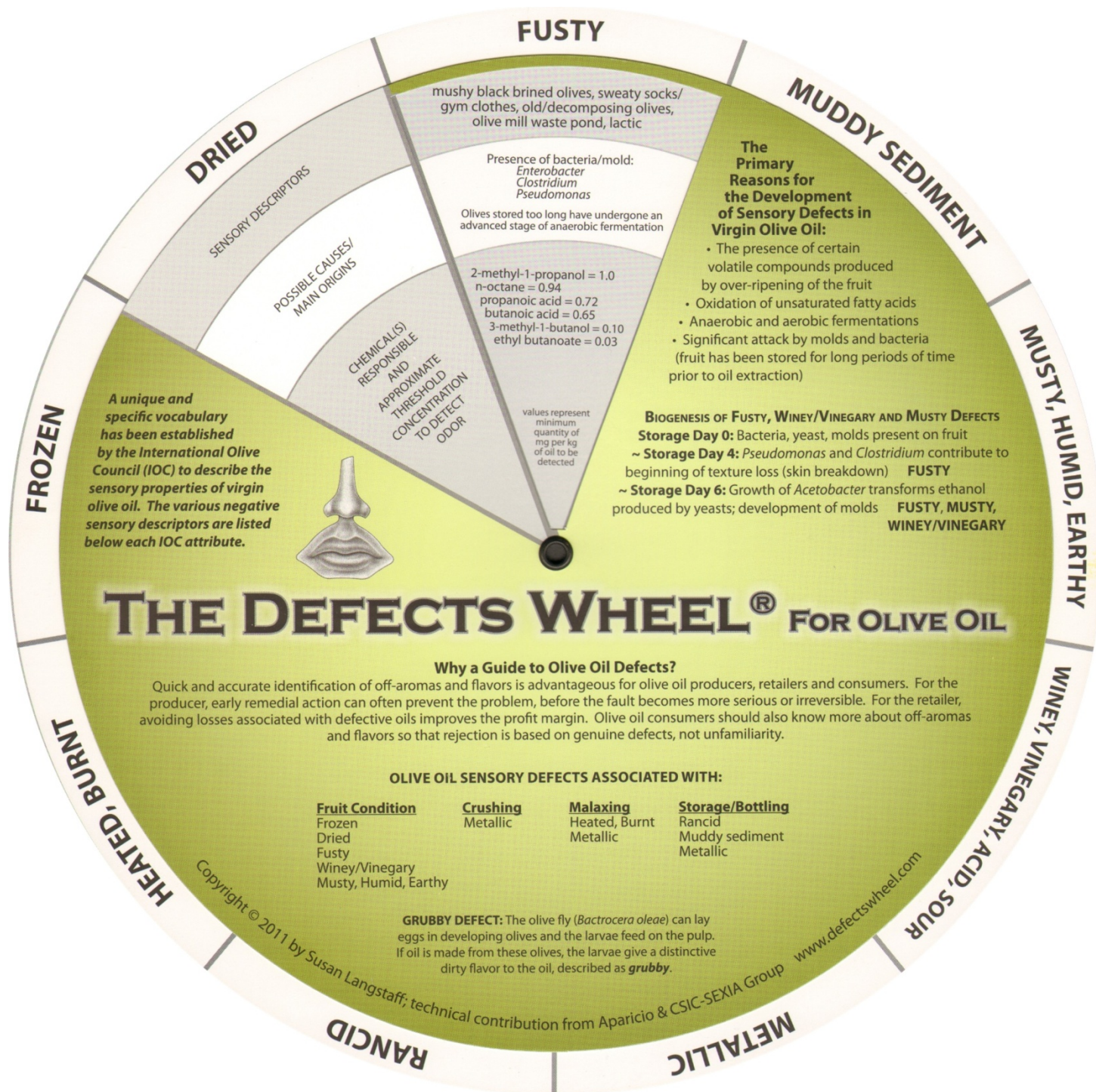
FUSTY

FROZEN

Muddy
Sediment

BURNT





PROFILE SHEET FOR VIRGIN OLIVE OIL

INTENSITY OF PERCEPTION OF DEFECTS:

Fusty/
muddy sediment

Musty-humid-
earthy

Winey-vinegary-
acid-sour

Frostbitten olives
(wet wood)

Rancid

Others (specify)

INTENSITY OF PERCEPTION OF POSITIVE ATTRIBUTES:

Fruity

greenly

ripely

Bitter

Pungent

INTENSITY SCALING

(RATING STRENGTH OF SENSATION)

GRAPHIC SCALES

Fruitiness:



REFERENCE STANDARDS

Compounds which have consistent, characteristic (representative) aromas at suitable intensities

Virgin olive oil quality criteria and standard limits

SENSORY ONLY

USDA LIMITS

Parameters		Extra Virgin	Virgin	Lampante
Sensory attributes (median values across panelists)	Defects	0	≤ 2.5	> 2.5
	Fruitiness	> 0	> 0	-----

Comparison chart

	Mean	Median
Definition:	The mean is the arithmetic average of a set of numbers, or distribution.	The median is described as the numeric value separating the higher half of a sample, a population, or a probability distribution, from the lower half.
Applicability:	The mean is used for normal distributions.	The median is generally used for skewed distributions.
Robustness:	The mean is not a robust tool since it is largely influenced by outliers.	The median is better suited for skewed distributions to derive at central tendency

Virgin olive oil quality criteria and standard limits
SENSORY ONLY
USDA LIMITS

Parameters		Extra Virgin	Virgin	Lampante
Sensory attributes (median values across panelists)	Defects	0	≤ 2.5	> 2.5
	Fruitiness	> 0	> 0	-----

**EXTRA
VIRGIN**

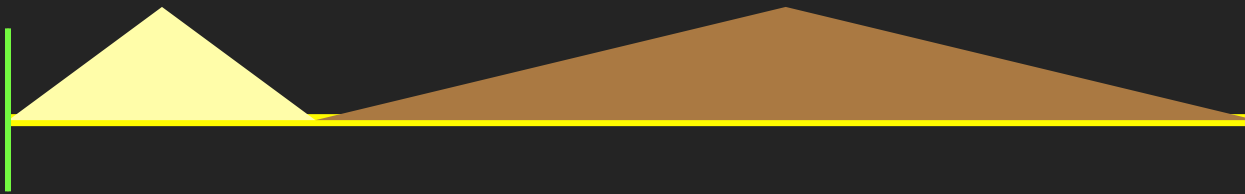
VIRGIN

LAMPANTE

0

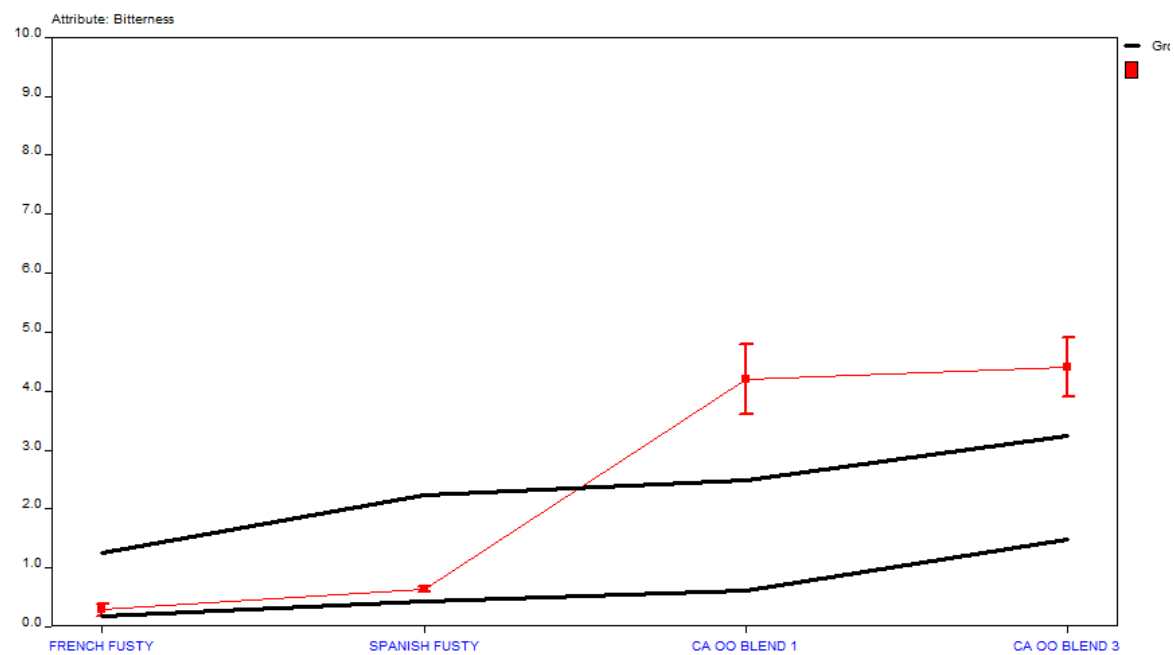
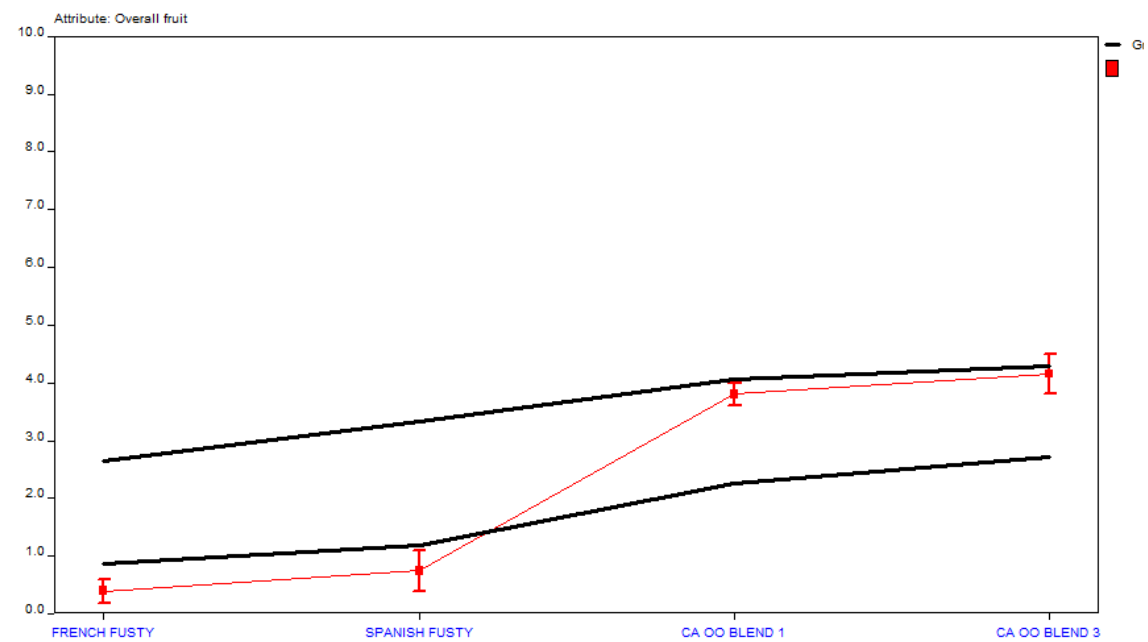
> 0 to ≤ 2.5

> 2.5

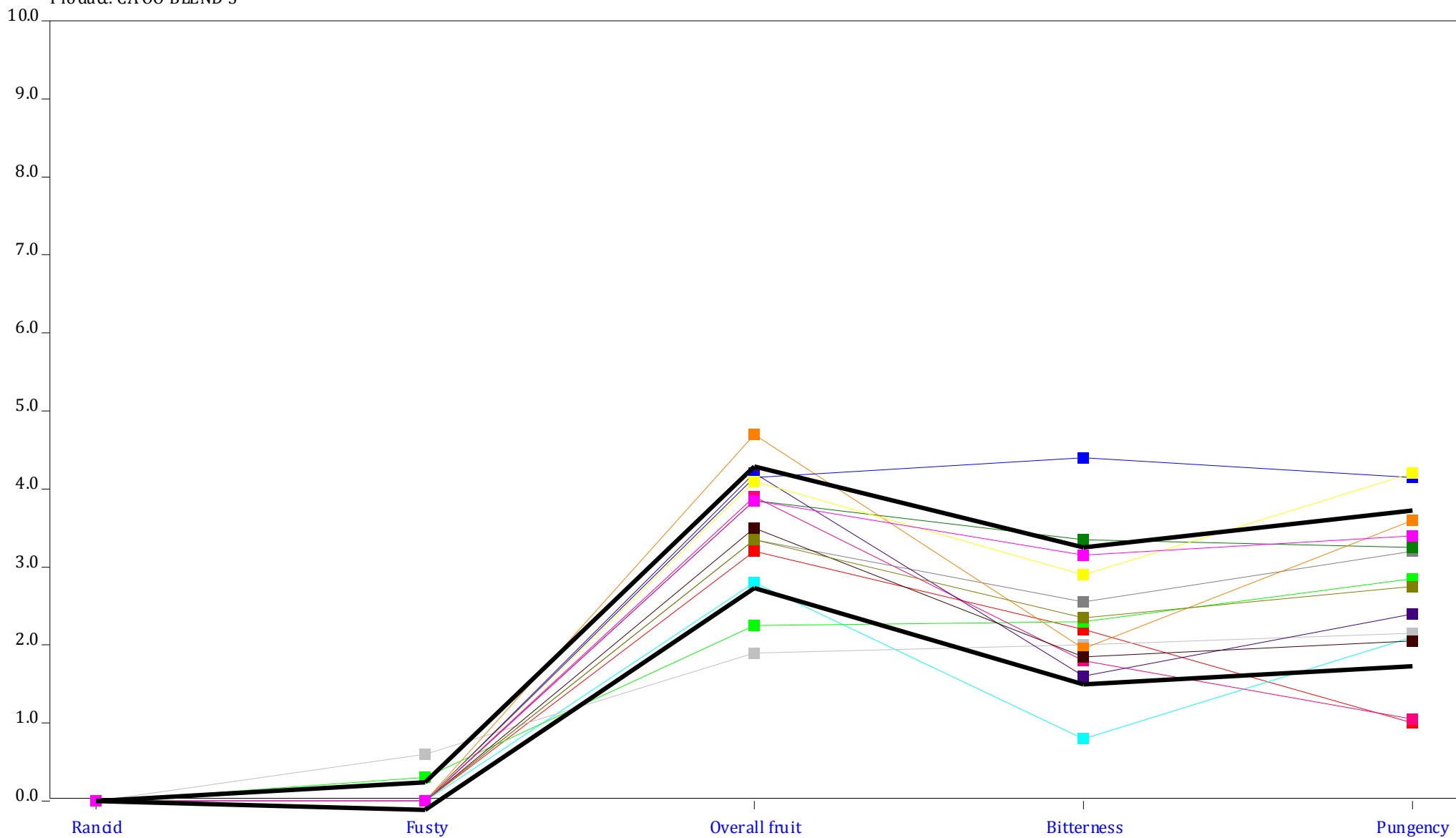


SUE'S JOB

- Analyze the sensory data and evaluate:
- individual panelist discriminating ability
 - individual panelist reproducibility
 - individual panelist agreement with the panel as a whole
 - panel discriminating ability
 - panel reproducibility



Product: CA OO BLEND 3

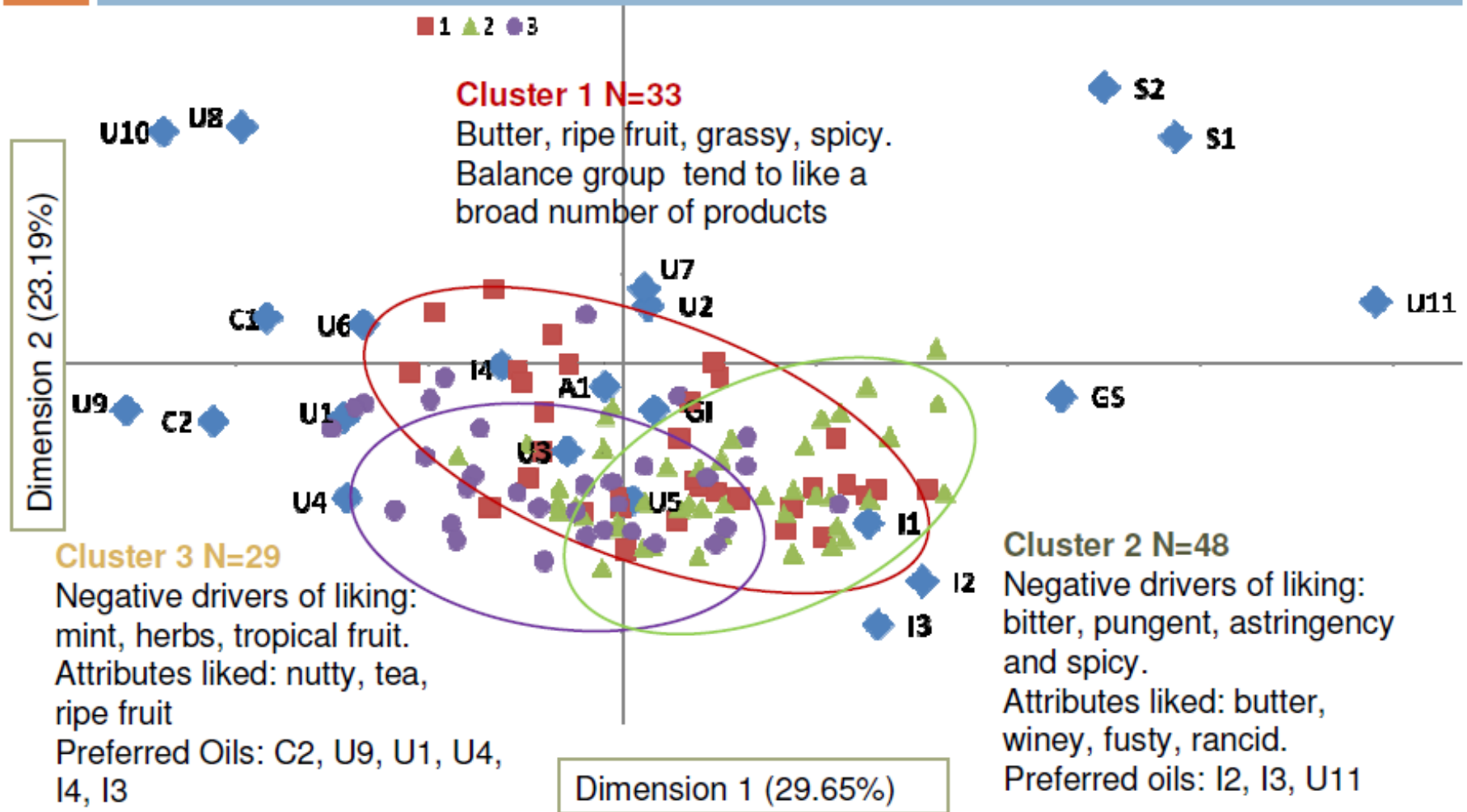


PrAcTiCE
PRACTICE
practice



**QUALITY
DETERMINED BY
EXPERTS DOES NOT
CORRELATE WITH
CONSUMER
PREFERENCES**

Three preference clusters emerged



WANT TO LEARN MORE?

Sensory Evaluation of Olive Oil Certificate Course

The Sensory Evaluation of Olive Oil will lead participants through tastings of dozens of olive oils from around the world, allowing them to become immersed in the extraordinary attributes of foreign and domestic oils, as well as the defects common to extra virgin olive oil.

WHEN: May 9 and May 10, 2014

WHERE: UC Davis

Olive Oil Sensory Science

Erminio Monteleone and Susan Langstaff



WILEY Blackwell

Olive Oil Sensory Science

Erminio Monteleone (Editor), Susan Langstaff (Editor)

ISBN: 978-1-118-33252-8

387 pages

February 2014, Wiley-Blackwell

Purchase Options

Hardcover	\$199.95	BUY
E-book ?	\$159.99	BUY

<http://www.wiley.com/WileyCDA/WileyTitle/productCd-1118332520.html>