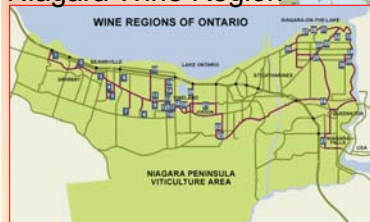# White Wines
of the Niagara Region

INTRODUCTION

The region of the Niagara Peninsula of Ontario Canada, has developed into a significant producer of varietal wines. New world winemakers are caught between the desire to produce imitations of the original examples of the varietal products and wines that express their distinctive terroir. The popularity of white wines, particularly Chardonnay, has led to its production in most of the region's 80 wineries. This research examines the sensory properties of a selection of these wines compared to international products.

Niagara Wine Region   CANADA   Niagara Falls

MATERIALS AND METHODS

As part of a larger study, sensory data on white wines of Niagara were collected during October and November of 2003. A 10 member trained descriptive analysis panel (Lawless and Heymann, 1998, Lyon et al, 2002) profiled 19 white wines, in 3 replicates, that covered 7 varietals;

Chardonnay, Riesling, Sauvignon Blanc, Vidal, Sylvaner, Gewurztraminer, Pinot Grigio,
and 6 countries of origin;

Canada (Niagara and Okanagan), France, Australia, Germany, Bulgaria and New Zealand.
110 attributes were assessed using 4 sensory modalities; aroma before stirring, aroma after stirring, flavour and taste/mouthfeel.

Training was accomplished using Compusense® Feedback Calibration (Findlay et al, 2003) and the Wine Aroma Wheel (Noble et al, 1984). Data was collected using Compusense *five* Release 4.6 (Compusense Inc., Guelph, Ontario, Canada) and analyzed using Senstools Version 3.2, OP&P, Utrecht, Netherlands.
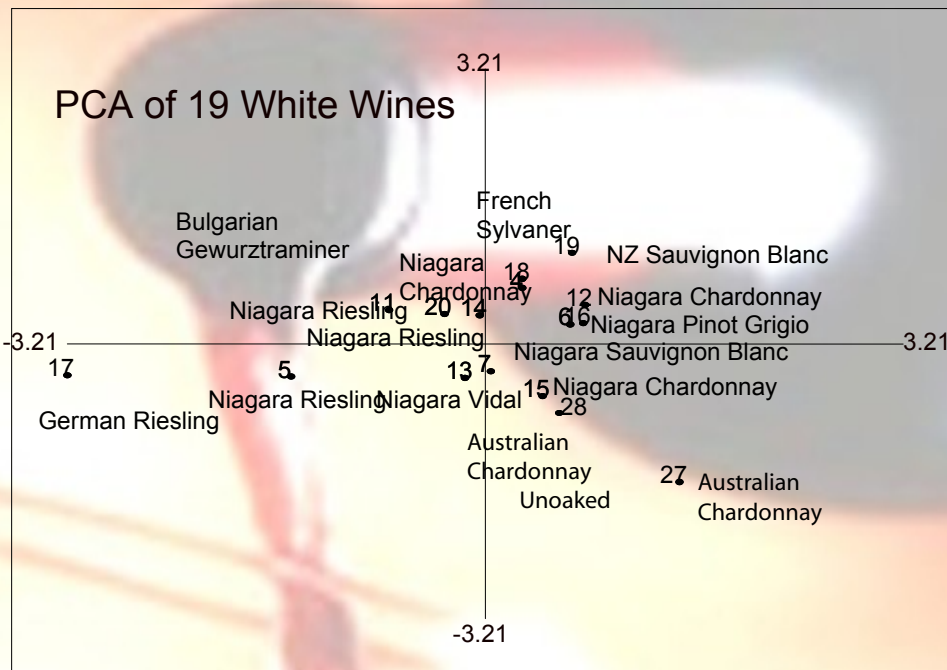
Attributes used to profile white wines. All assessments were performed using 30 ml samples served in INAO glasses at ambient temperature.

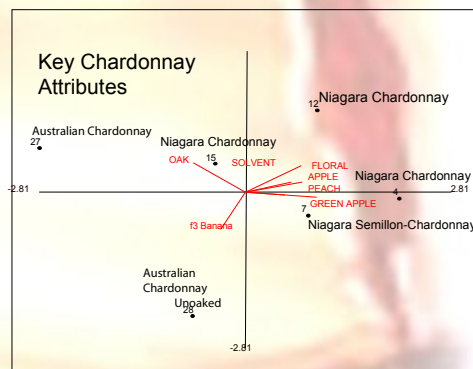P values that are highlighted are significant at an α=0.05.

Attribute	Aroma Before Stirring	Aroma After Stirring	Flavor	Attribute	Aroma Before Stirring	Aroma After Stirring	Flavor
Apple	0.2900	0.1268	0.0023	Honey	0.0691	0.0165	0.0015
Green Apple	0.0356	0.2734	0.0060	Butterscotch	0.6294	-	-
Banana	0.0932	0.0172	0.1660	Brown Sugar	0.0592	0.0668	-
Grape	0.3061	0.3535	0.0668	Vanilla	0.0018	0.0004	0.0016
Peach	0.1005	0.0066	0.0004	Alcohol	0.0320	0.0325	0.0000
Pineapple	0.0006	0.0276	0.0016	Pungent (alcohol irritation)	0.0042	0.0061	0.0000
Other Tropical Fruit	0.0001	0.0200	0.0049	Nail Polish Remover	0.4528	0.3172	0.0044
Melon	0.2085	0.1932	0.0011	Solvent	-	0.0139	-
Pear	0.0541	0.0276	0.0000	Asparagus	0.0003	0.0036	-
Lemon Zest	-	0.2509	0.1657	Black Pepper	0.0779	0.0353	-
Rose	0.0805	0.7085	0.7632	Cinnamon	0.0504	0.0016	-
Elderflower	0.0001	0.0007	0.0000	Clove	0.7267	0.1846	-

Attribute	Aroma Before Stirring	Aroma After Stirring	Flavor	Attribute	Aroma Before Stirring	Aroma After Stirring	Flavor
Butter	0.1739	0.3329	0.1685	Rotten Wood	-	0.0028	0.0032
Earthy	0.2578	0.0288	0.0000	Yeast (Bread)	0.0887	0.2089	0.4351
Horsy/Leather	0.0107	0.1867	0.0000	Vinegar	-	-	0.0001
Sulphur (burnt matches)	-	0.0001	-				Taste Mouthfeel
Sulphur (cooked vegetables)	0.0000	0.0035	0.0000	Bitter	-	-	0.0000
Turpentine/ Terpenes	0.0613	0.1918	0.2405	Sour/Acid	-	-	0.0000
Mushroom	0.1062	0.2263	0.0151	Sweet	-	-	0.0000
Musty	0.0030	0.0003	0.0000	Astringent	-	-	0.0000
Oak	0.0592	0.1629	0.0004	Mouth Burn (localized)	-	-	0.0000
Wet Wood/ Wet Sawdust	0.3874	0.4571	0.1598	Warm (global)	-	-	0.0740
Fresh Cut Wood	0.4286	0.2739	0.4403	Prickling	-	-	0.0001
Burnt Wood	0.0957	0.0043	0.0410	Smooth	-	-	0.0000

C.J. Findlay
Compusense Inc.
Guelph, Ontario, Canada
cfindlay@compusense.com

COMPUSENSE®

PCA of 19 White Wines

3.21

French
Sylvaner
NZ Sauvignon Blanc
19
18
Bulgarian
Gewurztraminer
Niagara
Chardonnay
12 Niagara Chardonnay
11 20 14
6 6 Niagara Pinot Grigio
Niagara Riesling
Niagara Riesling
-3.21
3.21
17
5
13 7
Niagara Sauvignon Blanc
15 Niagara Chardonnay
Niagara Riesling Niagara Vidal
28
German Riesling
Australian
Chardonnay
Unoaked
27 Australian
Chardonnay

-3.21

Niagara vs. Australian Chardonnay

Key Chardonnay
Attributes

12 Niagara Chardonnay

Australian Chardonnay
27
Niagara Chardonnay
-2.81
OAK 15 SOLVENT
FLORAL
APPLE Niagara Chardonnay
PEACH 4 2.81
7 GREEN APPLE
Niagara Semillon-Chardonnay
f3 Banana

Australian
Chardonnay
Unoaked
28

-2.81

Significant Attribute Differences

Australian   DIFFERENCE   Niagara

OAK
GREEN APPLE
SOLVENT
FLORAL
PEACH
BANANA
APPLE

-25 -20 -15 -10 -5 0 5 10 15
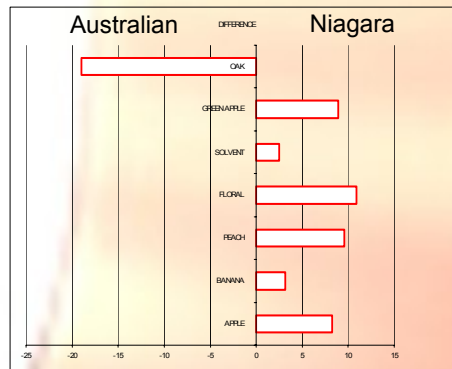
CONCLUSIONS

In general, the Niagara wines are similar to the international varietals, so there are no specific notes that appear to be associated with the terroir. However, a subset of 6 Chardonnays indicates that, compared to the Australian product, the Niagara whites have distinct notes of apple, peach, banana, floral and solvent while being lower in oak note. Principal component analysis has illustrated the multivariate sensory relationship among the products. The broad range of sensory properties of white wines makes the assignment of distinctive notes of a particular terroir a function of the examples that are chosen for research.

References	Acknowledgements
Findlay C. J., Castura, J. C., & Lesschaeve I. (2003). Feedback Calibration: A training method for descriptive panels (oral). In *The 5th Pangborn Sensory Symposium*, 20-24 July, Boston, MA. Lawless, H. T., & Heymann, H. (1998). *Sensory Evaluation of Food, Principles and Practices*. (1999). Gaithersburg, MD: Aspen Publishers, Inc. (a Chapman & Hall Food Science Book). Lyon, D. H. (2002). *Guidelines for the Selection and Training of Assessors for Descriptive Sensory Analysis. CCFRA Guideline No. 37*. Chipping Campden, Gloucestershire, UK: Campden & Chorleywood Food Research Group. Noble, A. C., Arnold, R. A., Masuda, B. M., Pecore, S. D., Schmidt, J. O., & Stern, P. M. (1984). Progress towards a standardized system of wine aroma terminology. *American Journal of Enology and Viticulture. 35*, 107-109.	