NGWB Grant Final Report (FY21-22)

Contract Number #18-13-429 - NWGGA – Sweetness Rating

Grant Amount: \$11,970.00

Contact Information

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Issue of Interest

The Nebraska Winery and Grape Growers Association Board of Directors has determined there is a level of inconsistency within the wine industry of Nebraska for identifying wine dryness/sweetness ratings, which requires addressing.

The purpose of this project is to create a uniform sweetness rating for Nebraska wines that can be utilized by all Nebraska winemakers when classifying their wines sweetness to aid their customers when selecting a Nebraska wine to enjoy.

Approach to Problem

This issue was addressed by having participating wineries send in 10 samples of wine for testing at Lodi Labs in California. Lodi Labs provided testing of Residual Sugar (RS); pH; TA & ABV for each sample and sent individual results back to each participating winery and a blind aggregate report back to the association.

The Sweetness Rating Committee then used the aggregate information to begin developing uniform sweetness rating tables (white & red) for the submitted Nebraska wines.

Goals/Achievement of Goals

The goal of the project is to complete a uniform sweetness rating scale for whites and reds that is accepted and utilized by all Nebraska Wineries.

The ending goal of the project is for wineries to add the accepted scale to their bottle labels for easy customer use.

Results, Conclusions, Lessons Learned

As a result of completing phase I of the project the committee has confirmed that there is indeed a great level of inconsistency within the wines that were submitted, data results have further solidified the need for a uniform rating system.

The committee has provided a draft of the proposed sweetness rating tables for participating winery review in July and would like to continue perfecting the tables until a mutually agreed upon rating system is accepted for implementation.

Please see the attached document below that has been provided by Mick McDowell for a detailed report of the current project. This document has been sent to participating wineries and provides an update for the next steps of the project.

Progress Achieved According to Outcome Measures

The long-term benefit to the wine and grape industry is that more consumers will be educated on the sweetness levels of Nebraska wines. This will allow consumers to make an informed decision when selecting wines and will allow them to purchase with confidence. This will create demand for these products, ultimately selling more wine and increasing demand for grapes.

Financial Report

Sweetness Rating	Description
\$11,970.00	Grant Funding
-\$7,797.00	Lodi Labs Testing Fees (15 wineries with 138 samples @ \$56.50 each)
\$4,173.00	Current Remaining Balance

Estimated Remaining Fees:

Sweetness	Description
Rating	
\$4,173.00	Current Remaining Balance
-\$1,296.00	Estimated Cost of Wine for Roundtable Sensory Evaluation Bottle cost estimate \$18 per bottle 17 Edelweiss x 3 bottles of each = 51 bottles @ \$18 each = \$918.00 7 Frontenac x 3 bottles of each = 21 bottles @ \$18 each = \$378.00
\$2,877.00	Remaining Balance after bottle purchases

*Remaining balance is higher than anticipated because not all 25 association wineries chose to participate.

ATTACHMENT:

Nebraska Wine Industry

Sweetness Rating

Author: Mick McDowell, Miletta Vista Winery

This document is intended to provide you, a Nebraska Winemaker additional information about the Nebraska Wine Sweetness Rating (NWSR). NWSR project participants have received their test results from LODI Labs, and the NWSR committee has been working on the rating determination tables, which will be used to classifying your wine sweetness.

INTRODUCTION

There are numerous reasons for adapting a uniform standard for Nebraska Wine Sweetness Rating, the most important are customer related:

- 1) <u>the customer</u> wants to purchase wine with a sweetness level they like;
- 2) the customer is reluctant to shelf shop without knowing a wines sweetness level;
- 3) the customer will buy more wine once they trust a uniform rating system;
- 4) the Nebraska wine industry will gain in popularity with <u>the consumer</u> by

establishing a uniform rating system which more closely aligns with internationally accepted standards.

If you've taken a recent trip to the liquor store and examined the wine labels of national brands, you have found more of the leading brands identify for the consumer, the sweetness range of their wine(s). Many of the leading wineries obviously recognize the value in drawing consumers to their product through <u>sweetness preference identification</u>.

This Nebraska study, initially began with a review of the Riesling Foundation's work, which was intended to better identify wine maker preference for the Riesling produced by their cellar. The Riesling system applies to a single varietal wine. The Riesling rating utilizes pH, TA (total acidity) and R.S. (residual sugar g/liter). Riesling which is also a vinifera grape which has lower TA than most of Nebraska's hybrid wines.

What the NWGGA Board is hoping to do through this effort, is identify sweetness parameter's which are suitable for most Nebraska Cold Climate varieties, both white and red.

While some sweetness ratings just consider the grams/liter of RS, others like the Kentucky rating make some adjustment for TA. What the Nebraska project is attempting to consider is that the 3-point system utilizing pH, R.S. and TA will account for the often, high TA which hybrid grapes carry all the way from harvest through fermentation, even into the finished wine.

PHASE I

Phase I of this NWGGA lead project secured a grant from the Nebraska Grape and Wine Board (NGWB) to commercially test 10 wines per participating winery. LODI Labs of California was contracted to test submitted samples for pH, TA (total acidity), RS (residual sugar in grams/liter), and ABV (alcohol by volume), [ABV is a NLCC required label component]. The results were sent to participating wineries with a lab ID and the results for each of that winery's submissions. The information came back to each participating winery as identified below:

Lab ID	Varietal	Alcohol	рΗ	Residual Sugar	Titratable Acidity
AB43873	EDELWEISS	12.46	3.27	44.79	8.3

[Varietal identification in our sample aggregate report, will help the NWI (Nebraska Wine Industry) as we progress in sorting through classification of hybrids]

CLASSIFICATIONS

After reviewing the sweetness levels in the aggregate table, the committee members decided that five designations are most appropriate for identifying Nebraska wine sweetness's. Five sweetness levels will be identified in this Nebraska project. As your research has more than likely revealed, other rating systems, also contain the Very Sweet designation; AND whereas many consumers throughout the US enjoy and prefer very sweet wines, (including the many cross beverage consumers, ie: beer drinkers) there is demand for this fifth designation in our market.



Also, the terms Dry, Off Dry, Semil-Sweet, Sweet and Very Sweet are the committee preferred terms over those identifiers in the Riesling system. These terms are believed more common as industry descriptors.

The graphic above, is the sweetness bar that each winery will use on the back label of their bottles to identify the sweetness level in their bottle. The triangle marker can be whatever each winery chooses. Perhaps a logo or symbol common to company branding efforts becomes their sweetness marker, but the industry standard, once approved is intended to remain constant for each member using the NWSR scale. The sweetness rating can be on the mark or between marks, depending upon the R.S.

This attempt at sweetness rating "consistency", will assure the consumer that NWI is working for consistency throughout. This consistency is intended to build consumer confidence in the Nebraska wine product. It is intended to aid the consumer in selecting the wines, they are most likely to enjoy. It is also intended to build consumer loyalty across the Nebraska Wine Brand.

CLASSIFING YOUR WINE SWEETNESS

The table below contains the committee's current sweetness determination parameters, for Nebraska White Wines. This table starts by identifying grams of sugar/liter for each of the five

(5) categories.

Next the acid sugar ration offers a correlation.

Finally, the palatable effect of pH is used to reconcile the overlying selector for sweetness determination.

The table is a modification of the Riesling Sweetness Table. The Nebraska aggregate results was considered as were other rating systems which rely heavily on the g/L RS ratio. You can use this table to rate the wines you had tested in this project.

As wines may vary from year to year, so can the sweetness rating, unless your winemaker maintains quality consistency from vintage to vintage. However, if you are producing a consistent product, your sweetness rating should remain very similar. The vintage might be more palatable and enjoyable due to other factors such as flavonoids, DO or Lack of DO. However, the sweetness rating should be similar when you are consistently producing a consumer favorite.

Nebras	Nebraska Uniform Wine Sweetness Rating - White Wines				
g/L RS	Rating Description	Sugar Acid Ratio	g/liter R.S.	pН	Shift Due to pH
0-9.9	1 - Dry	<1.0	<0.00 to 1	3.1 to 3.29	Dry
				= or >3.3	Off- Dry
	1.5	<u>></u> 2.0	1-9.9	3.5 or >	Semi-Sweet
10.0 to 18	2 - Off-Dry	> 2. to 4.0	10-11	3.1 to 3.29	Off-Dry
	2.5		11.1 to 13.9	= or > 3.3	Semi-Sweet
10.0 to 19.9	2.75		13.91 to 18	< or = 2.9	Dry
19 to 50	3 - Semi-Sweet	>4.0 to 5.5	19 to 25.99	3.1 to 3.2	Semi-Sweet
	3-Jan		26 to 50	= or > 3.3	Sweet
20 to 40.0				< or = 2.9	Off Dry
50 to 69.9	4 - Sweet	> 5.5 to 7.0	51-70	<u>></u> 3.3	Sweet
	4.5		71-120	2.81 to 3.2	Semi-Sweet
40.1 to 59.9				<u><</u> 2.8	Off Dry
<u>></u> 70	5 - Very Sweet	<u>></u> 7.0	121-130	3.0 or >	Sweet
<u>></u> 60	5.5	<u>></u> 10.0	131-140	< or = 2.9	Semi-Sweet
	6.0	> 12	141>	< or = 2.8	Off- Dry

[I will use Edelweiss as my primary example in this article, as this is a widely produced grape, often labeled by varietal name, but a wine that much like Riesling will vary in sweetness, from label to label. Thus, lending to consumer confusion as to which Edelweiss they prefer, primarily because of differences in sweetness levels.]

Below are most, if not all the Edelweiss wine sample results the association received in the aggregate list from LODI labs. The association only knows the identity of each wine by the Sample ID.

The ratio for each wine was calculated dividing the RS by TA;

The pH is a major factor which contributes to mouth feel of a wine. pH is the final rating determinant. In the end, the pH is the factor that can shift the wine's rating designation

In the table above color coding was used which corresponds to a rating category. The table below uses the same color classifications for the parameters. Each factor in the table below,

can receive a different category designation as you will witness through the different colors for each of the components. This is a preliminary table and a work in progress but has been presented to participants in order to help you begin understanding the methodology applied and the work we hope to complete before summers end and in time for use with the 2022 vintage.

The final rating in this example is still being analyzed by the committee. The committee is also working toward identifying and hiring a consultant to assist us in the finalization of the NWSR (Nebraska Wine Sweetness Rating).

A consultant will help our industry fine tune the parameters, but the following offers you a method of classifying the wine sweetness for the wines tested thus far. We are in the process of gathering some of the tested wines for tasting for the purposes of: 1) the committee to verify many of our desk top assumptions and 2) to use the adjusted table and the wines at a winemaker's roundtable July 12th at Miletta Vista Winery, 10:00 a.m., as long as that works for several people's schedule.

Sample	SO	NWSR			
ID	Variety	RS	Ratio	pН	Rating
AB44976	EDELWEISS	3.55	0.4	3.03	Dry
AB44790	EDELWEISS	32.51	3.7	3.29	Off Dry
AB43844	EDELWEISS	38.26	3.8	3.34	Semi-Sweet
AB45169	EDELWEISS	40.35	4.4	3.30	Semi-Sweet
AB43843	EDELWEISS	39.02	4.6	3.33	Sweet
AB44798	EDELWEISS	49.79	5.0	3.30	Sweet
AB44582	EDELWEISS	50.1	5.1	3.23	Semi-Sweet
AB43873	EDELWEISS	44.79	5.4	3.27	Semi-Sweet
AB44832	EDELWEISS	32.91	5.7	3.67	Sweet
AB43858	EDELWEISS	59.18	6.2	3.18	Semi-Sweet
AB44623	EDELWEISS	28.27	6.6	4.01	Sweet
AB44788	EDELWEISS	66.34	7.1	3.30	Sweet
AB43861	EDELWEISS	71.62	7.5	3.16	Very Sweet
AB44799	EDELWEISS	98.06	9.4	3.22	Very Sweet
AB44792	EDELWEISS	81.1	9.4	3.26	Very Sweet
AB43875	EDELWEISS	94.65	11.7	3.21	Very Sweet
AB44622	EDELWEISS	55.49	12.3	4.00	Very Sweet

An observation regarding the pH range noted in the finished wines analyzed as submitted; pH for white wines should for the most part range between 3.20 and 3.30. Once a pH reaches 4.0 the stability of that wine is extremely low. Shelf life is likely to be shortened and oxidation is likely to be noticed within months or weeks of bottling, especially if Dissolved Oxygen, (DO) has not been mitigated.

RED WINE TABLE

Of course, red wines, (for various reasons) look to finish themselves with a completely different pH range than we shoot for in white wines. Generally, a winemaker will attempt to finish their Red wines with a pH of 3.50 to 3.75, which is considerably higher than noted in the table above for White wines. As a result, the committee has been working on a rating table to identify and address the parameters that we expect for Nebraska dry to very sweet red wines.

Nebrask	a Uniform W	ine Swee	etness R	ating - R	ed Wines
g/L RS	Description	Sugar Acid Ratio	g/liter R.S.	pН	Shift Due to pH
0-9.9	1-3	<1.0	<0.00 to 1	<u><</u> 3.55	Dry
DRY	3-6	1 <u>></u> 2 <u><</u>		3.56 to 3.69	Off Dry
	6-9.9	<u>></u> 2.0	1-9.9	3.7 or >	Semi-Sweet
Off-Drv	10-12	> 2 to 4.0		< 3.55	Off-Drv
	10 12	21.00 110			
10.0 to 19.9	12-16			3.56 to 3.69	Semi-Sweet
	16-19.9			3.7 or >	Dry
Semi-Sweet	20-29.9	>4.0 to 5.5	19-25	<u><</u> 3.55	Off-Dry
20 to 49.9	30-44			3.56 to 3.69	Semi Sweet
	44.1-49.9		26-50	3.7 or >	Sweet
	<u>.</u>	4			
51 to 120	4-Sweet	>4.0 to 5.5	51-70	<u><</u> 3.55	Semi-Sweet
	3.5		71-120	3.56 to 3.69	Sweet
				3.7 or >	Very Sweet
		-	-		
Very Sweet	120-140	<u>></u> 7.0	121-130	<u><</u> 3.55	Semi-Sweet
121>	140-160	<u>></u> 10.0	131-140	3.56 to 3.69	Sweet
	<u>></u> 160	> 12	141>	3.7 or >	Very Sweet

Science Sci

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Below are most, if not all the Frontenac wine sample results the association received in the aggregate list from LODI labs. The association only knows the identity of each wine by the Sample ID.

Sample		NWSR			
ID	Variety	RS	Ratio	рН	Rating
AB44781	Frontenac	0.2	0.0	3.47	Dry
AB44783	Frontenac	37.19	3.9	3.49	Off Dry
AB44536	Frontenac	0.13	0.0	3.65	Off Dry
AB44537	Frontenac	0.72	0.1	3.55	Dry
AB44787	Frontenac	58.16	7.9	3.48	Semi-Sweet
AB44538	Frontenac	71.21	12.9	4.02	Very Sweet
AB44581	Frontenac	33.04	4.9	3.56	Sweet

Generally, a winemaker will attempt to finish their Red wines with a pH of 3.50 to 3.75, although it is not unusual to have red wines slightly higher.

Once a pH is above 3.80 the chances of oxidation and spoil increase especially if the wine is sweet and has not be mitigated for D.O. Shelf life is likely to be shortened and oxidation is likely to be noticed within months of bottling.