

Support for local wines in The Netherlands: opportunities for the hospitality industry

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ABSTRACT: This article reports on a research project to measure the current intrinsic competitive value of Dutch wine in comparison to wines from renowned wine countries based on a taste and olfactory evaluation, and to explore the sustainable benefits that local Dutch wine can offer and wines made from fungus-resistant grape varieties (FRG). Both factors aim to measure the unique selling point of Dutch wine and explore if adoption in The Netherlands can be strengthened in the future. A blind tasting experiment with four different tasting groups ($n = 54$) was conducted. Participants evaluated (blind) two Dutch wines (white and red), a New Zealand wine (white) and a Bordeaux blend (red), which were matched according to their flavour components and popularity in The Netherlands. The outcome of this research shows no significant difference in overall scores between groups when comparing Dutch wine to wines from renowned wine-producing countries when tasted blind. However, the Dutch white wine was significantly more likely to be purchased according to participants. Results show that the competitiveness of Dutch wine in comparison to other renowned wine regions is evident. Dutch wine has increased in quality over the last years, therefore it is more likely to be purchased now. This offers opportunities in marketing and sales to increase efforts towards a more sustainable food and beverage programme among restaurateurs in The Netherlands.

KEYWORDS: Dutch wine, food and beverage management, fungus-resistant grape varieties, local food consumption, sustainable cuisine, sustainable management practices

Introduction

Acceptance of local Dutch wine has been poor among wine consumers in The Netherlands. Consumers used to be sceptical about The Netherlands being a wine growing region (Rhee, 2019; Vis et al., 2015). This scepticism was based on a poor experience with earlier vintages, which were of inferior quality (Rhee, 2019; Vis et al., 2015). Previously it was unimaginable that Dutch wine could be of distinct quality when compared with more well-known wine regions, such as Bordeaux in France, or cool climate regions such as the Moselle in Germany. Dutch wines were often defective and the first fungus-resistant grape (FRG) varieties carried an undesirable "foxy" flavour (Pedneault & Provost, 2016). Scepticism and prejudice towards FRG varieties have led to low acceptance and adoption among restaurants (Beukers & Vette, 2015; Pedneault & Provost, 2016; Sloan et al., 2010) in support of Dutch wine in The Netherlands and thus the wine consumer.

A shift is taking place where wine regions in the world are expanding towards more northern areas, due in part to a change in climatic conditions. Well-known examples of successful cool climate wine regions are Ontario and Quebec in Canada, and Sweden, England and The Netherlands (Jones, 2019; McCoy, 2019; Oude Voshaar, 2015; Shaw, 2017). FRG varieties are now

widely planted in The Netherlands. Assumptions are made that FRG varieties are of inferior quality, even though research does not support this perception (Beukers & Vette, 2015; Borrello et al., 2021; Sloan et al., 2010). The Netherlands is producing high quality wines made from FRG, which is unique in the world of wine (Beukers & Vette, 2015), and they are also more sustainable due to the fact that fewer pesticides are necessary for their production (Oude Voshaar, 2015).

There are numerous reasons which account for the current quality of Dutch wine. The quality is increasing due to an increase in expertise among wine producers, active collaboration, maturing grape vines (Vis et al., 2015) and increasingly higher temperatures (Jones & Schultz, 2016). Clearly, these developments will improve the future quality of Dutch wines. This will strengthen a more positive perception towards Dutch wine among wine consumers, giving a higher likelihood to purchase in the future. Beverages produced nearby have the potential to play an important role in sustainability, thus adding another dimension towards a more sustainable food and beverage programme. For a number of reasons, including gastronomic and ecological, restaurants are trying to use more local products (Schulp et al., 2010). Striving for the use of local products in restaurants should be not limited to food alone. Although the number of Dutch vineyards has been on the increase since 1950, the marketing of Dutch wines, and

certainly sales of these wines in restaurants, is relatively slow. In part, this is blamed on prejudices (Chefsfriends, 2016), ranging from unsuitable climate to the use of new, fungus-resistant grape varieties (FRG), to the price. These prejudices have mainly been evident in newspapers and other media (NOS, 2016), not in academic literature. Academic research is scarce on cool climate wines and how they are being perceived in tastings. However, more cool climate areas in the world are having increased success, such as Ontario (Shaw, 2017) and England (McCoy, 2019).

Literature review

The growing quality of Dutch wines

The quality of Dutch wines has increased considerably. The panel for the examination of Dutch wines of the low countries received a record number of wines in 2020, with of fourteen gold medals (Wijnkeuring van de lage landen, 2020). There are numerous factors which are important in this overall growth. Global warming is the biggest contributor, resulting in better temperatures for grapes to ripen in The Netherlands (Jones & Schultz, 2016). Global warming is also bringing challenges for other wine regions in the world. The Rhône valley is experiencing extreme temperatures which result in considerably higher alcohol percentages during fermentation. It also decreases acidity in wines, which makes the wines likely to be more off balance. The Burgundy region is also experiencing more heat, and this warming effect leads to earlier picking of the grapes. This produces future challenges, offsetting Burgundy's uniqueness which used to be considered a cool climate area, and historically resulting in elegant pinot noirs and chardonnays (Gavrillescu et al., 2018).

Global warming also brings opportunities for cooler climate wines further north which used to be considered non-wine producing regions. For example, southern England which used to be a marginal wine region now produces high-quality sparkling chardonnay-based wines (McCoy, 2019). At the most extreme, viticulture is even possible in Sweden, where growers are now working together actively to produce quality wines (Jones & Schultz, 2016). Winemaking in The Netherlands is still young and in its development stage (Beukers & Vette, 2015) when compared to regions such as Bordeaux in France where there is have a long history of winemaking. Emphasis lies on white grape varieties which are better able to prosper and have a higher quality in cool climates. However, the share of red grape varieties is also increasing (Vis et al., 2015). The Dutch wine author Harold Hamersma is also seeing a positive transformation in the current level of quality. However, in the past, he described Dutch wine as "impure, unrefined, rough, smelly, rubbery" (Vis et al., 2015, p. 7). Wine professionals are also more actively supporting Dutch wine. Former sommelier and wine critic Edwin Raben acknowledges the high quality that Dutch wine can have. De Kleine Schorre (Pinot Gris) was greatly appreciated by Edwin Raben (Beukers & Vette, 2015). Thus, the transformation in the quality of Dutch wine is growing rapidly and it is also being acknowledged among wine professionals. Expert quality ratings are of importance to cool climate regions since these wines are largely unknown (Dressler & Kost, 2014; Schroeter et al. 2011). Undoubtedly, for The Netherlands, an increase in expert recognition is a good development for future adoption among restaurateurs and thus wine consumers.

Trends and the future for Dutch wine

In parallel with the development of local wines, microbreweries have grown rapidly and the reason for this growth is that consumers are looking more seriously towards local products (Alonso & Sakellaris, 2017). The beer market has changed dramatically over recent years in The Netherlands. Consumers are switching from mass market lager, which has seen rapid evolution since industrialisation in the twentieth century, to local craft beer. Small independent breweries are able to prosper alongside the big breweries who used to be the first choice. In the beer market, consumers are looking for "small, independent and traditional...brewers" (Elzinga et al., 2015, p. 243). Small, independent, Dutch wineries are also gaining more interest as quality is growing, and this might follow the trend of microbreweries and more local food consumption (Alonso & Sakellaris, 2017).

Cool climate regions are expanding and wine cooperatives are increasingly buying land in cool climate regions, showing the growth potential in the future (Jones & Schultz, 2016). Global warming is likely to increase in the future which is a threat to warmer regions such as the Rhône valley. Nonetheless, it creates opportunities for new plantings in areas at higher latitudes which previously were believed to be too cold to produce wines competitively and profitably (Anderson, 2017). Because of increasing temperatures, yields are also growing. Research in the Mosel area of Germany shows that an increase in temperature of 1 °C improves the overall yield of Riesling by 30% (Anderson, 2017). In this case, climate change will have a positive effect on the future of Dutch wines, making them easier to grow. Globally, viticulture in cool climate regions is increasing. The most extreme examples can be found in areas such as Quebec (Canada), which has grown from five wineries in 1985 to 71 wineries in 2017 (Jones, 2019). The vineyard area in the United Kingdom grew by 148% in the period 2004 to 2013 (Nesbitt et al., 2016), showing high growth in cool climate areas throughout the world.

Acceptance of FRG varieties

Grape varieties are a significant factor for wine consumers when choosing a wine (Stanco et al., 2020). FRG varieties are the most widely planted in The Netherlands. However, they are unknown among most wine consumers (Borrello et al., 2021), which makes adoption challenging. FRG varieties can have similar taste profiles when compared with *Vitis vinifera* grape varieties such as Carbenet Sauvignon and Pinot Gris. An example is Regent, which is a popular red FRG variety with 1 917 hectares planted in Germany, but it is also widely planted in The Netherlands. Regent can have a similar taste profile when compared with a Merlot from Bordeaux (Pierik, 2018). Other studies show the same results with the quality of FRG wines being similar to *Vitis vinifera* wines (Pedneault & Provost, 2016; Sloan et al., 2010). Research by Van Der Meer and Léville (2010, p. 150) shows that "...70–90% of consumers noted Solaris [an FRG grape]...equivalent to *Vitis vinifera* Riesling".

In terms of marketing, wines from FRG varieties are challenging. The first FRG varieties used to carry an undesirable "foxy" flavour (Pedneault & Provost, 2016). FRG varieties with an attractive flavour profile have been developed rapidly over the last few decades (Borrello et al., 2021). However, marketing efforts towards adoption of FRG varieties have been lacking (Borrello et al., 2021). Retailers and restaurateurs find it

challenging to persuade wine consumers to try an unknown wine made from FRG grape varieties. Winemakers see it as a necessity to educate the consumer about the benefits of FRG grape varieties (Sloan et al., 2010). The market for wines made from FRG varieties has not been developed (Nesselhauf et al., 2017). Market share of wines made from FRG varieties needs to be increased to retailers and in the hospitality industry (Sloan et al., 2010).

There is a belief among consumers that FRG varieties still produce lower quality wines, since the first FRG wines received bad press. This was the result of wine professionals who considered FRG varieties as inferior compared to *Vitis vinifera* grape varieties (Beukers & Vette, 2015; Sloan et al., 2010). In Germany, between 2010 and 2015, new plantings of FRG grapes increased by 40% (Pedneault & Provost, 2016). These types of grape varieties are relatively young and are still relatively unknown among consumers (Nesselhauf et al., 2017). As a result, this creates challenges in their adoption and acceptance among consumers.

The growing importance of local produce in hospitality

The importance of using local produce in the hospitality industry is growing. The hospitality industry is one of the most polluting industries. "The United Nations World Tourism Organization estimates that tourism accounts for approximately 5 per cent of global CO₂ emissions in the world, and this amount is projected to increase by 130 per cent in 2035" (Aragon-Correa et al., 2015, p. 499). Therefore, sustainability is one of the major challenges that the hospitality industry must face (Cavagnaro & Curiel, 2012).

Authentic local gastronomic experiences are increasingly being demanded by consumers (Goolaup & Mossberg, 2017). Consumers are also more interested and more willing to pay more for local products (Johnston et al., 2018), and this also provides opportunities for Dutch wines. Economic value can be gained, because local produce is increasing as a unique selling point for restaurateurs. Consumers show an increased support for restaurants that increase their marketing efforts and offerings in more sustainable consumption (Chou et al., 2020). In terms of wine, consumers are more willing to pay more for wine with characteristics of sustainable production (Schäufele & Hamm, 2017). Research by Mihailescu et al. (2021) shows that wine consumers are more willing to purchase wines with eco-certified and sustainable benefits. Wine consumers nowadays are also more willing to consume sustainable and local wine (Palmieri & Perito, 2020), and this strengthens the position of Dutch wine in the current wine market.

In environmental value, there are numerous positive aspects of incorporating Dutch wine in the hospitality industry. Dutch wine is often made from FRG varieties, which need almost no pesticides. FRG grapes are grapes which have been crossbred with *Vitis vinifera* and North American varieties such as *Vitis labrusco*, so these grapes are less sensitive to powdery mildew and grey rot. On average, in the Bordeaux region, grapes are sprayed 15 to 20 times, in The Netherlands this is only 1 to 2 times (Oude Voshaar, 2015). In The Netherlands, it is prohibited to spray copper sulphite, which is harmful for the consumer and the environment. Recently, winemakers have become aware of the need to lessen the number and amount of pesticides used in the vineyard due to harm to the soil and people close to the vineyards (Teissedre, 2020). Again, this strengthens the

sustainable side for actively supporting the incorporation of Dutch wines by restaurateurs.

Travelling to the end consumer in terms of bottle mileage is deemed to have the greatest impact on the environment (Point et al., 2012). Food miles are an important aspect in sustainable food and beverage practices (Schulp et al., 2010). A significant amount of overall greenhouse gas emissions in the wine cycle comes from transportation — in total up to 30% (Weiser et al., 2010). Often wines must travel considerable distances before reaching a restaurant. Local wines can decrease the ecological footprint, therefore they have a lot to offer in sustainability.

When it comes to social factors, local produce procurement forges connections with local farmers. Wine producers can sell their wines for better profit margins by joining cooperatives. The COVID-19 pandemic also increasingly stresses the point that the world is reaching its limits when it comes to relying on food items from overseas, and the pandemic has exposed the fragility of the global supply chain, which has stimulated deglobalisation thinking (Klomp & Oosterwaal, 2021). Outsourcing labour to lower wage countries, while subsequently importing food and other products back into our country (Aernoudt, 2020) is an outdated and polluting business model. The Netherlands produces around 1.2 million bottles a year (NOS, 2019) which can be distributed accordingly by collaboration between farmers and restaurateurs. Consumers want to be more connected to local communities and places (Klomp & Oosterwaal, 2021), which supports effective distribution in the supply chain. Most wineries in The Netherlands are small and for farmers it is challenging to gain enough revenue from producing wine. By active collaboration, farmers can obtain better profit margins for their wines, which will contribute to the social well-being of the community. From an organisational perspective, Dutch wine adds to all levels of sustainable development, thus adding considerable value for restaurateurs and wine producers, while also adding to the social, economic and environmental prosperity and sustainability of a region and its inhabitants (Cavagnaro & Curiel, 2012; Figueiredo & Franco, 2018; Lashley, 2016). Sustainability is becoming of critical importance to consumers and therefore cannot be neglected. Dutch wine contributes and supports the sustainable local food trend and this creates a unique selling point.

Purpose

The purpose of this project is twofold. The most important is to gain insight into the quality of Dutch wine in comparison to wines from popular wine regions with similar flavour profiles. As a result, the competitiveness of Dutch wine can be measured in comparison to the wines from France and New Zealand used in this study. A secondary purpose is to explore, through a literature study, the unique sustainable benefits of Dutch wine. Both taste and positive sustainable factors will lead to increased adoption among restaurateurs and wine consumers. This will have positive implications for the future prosperity of The Netherlands as a wine-growing region (Figure 1).

This study investigated how Dutch wines are experienced in a blind tasting to measure the intrinsic value that Dutch wine can offer. An experimental design without an intervention in a fully controlled setting was used to measure how the Dutch wines were being perceived among wine consumers. Currently, there is a gap in academic research about the intrinsic quality

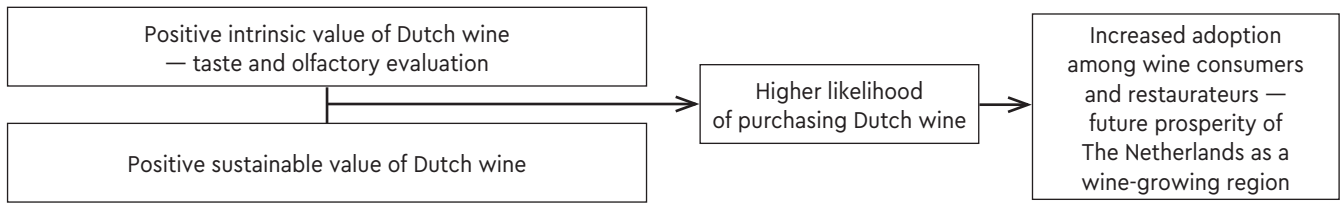


FIGURE 1: Conceptual model

that Dutch wine can offer in comparison to more well-known wines in a blind tasting setting. The aim is to fill this gap and explore if Dutch wines are competitive in comparison to more well-known wine regions. This gives restaurateurs more insight into the opportunities for actively adopting Dutch wines in their food and beverage portfolios. Educating the wine consumer will allow for wider adoption of local wines by restaurateurs. As a result, the trend towards local wine consumption will be enhanced further. Sustainability is important to consider when increasing the emphasis on local wine. The sustainable benefits of Dutch wine are not the core of this study, however, they are critical for the future adoption among restaurateurs and wine consumers. Also, the trend of incorporating local produce in the hospitality industry is becoming more evident. The sustainable benefits of Dutch wine will be answered based on the current literature. In this context, the following research questions were formulated:

- RQ1: How do Dutch wines score based on their intrinsic value when compared with renowned wines, such as from Bordeaux and New Zealand, when tasted blind?
- RQ2: How likely are Dutch wines to be purchased when compared to wines from Bordeaux and New Zealand when tasted blind?
- RQ3: How does a Dutch red wine blend made from FRG grape varieties score in comparison to a red Bordeaux blend made from *Vitis vinifera* grape varieties when tasted blind?
- RQ4: What value can Dutch wine add to a more sustainable food and beverage practice?

Method

Quantitative data was gathered by means of a tasting form which all participants received individually during blind tasting sessions. Participants were asked to fill out personal information like gender, age and consumption patterns. The second part of the tasting sheet focused on the characteristics of the wine, such as aroma, sweetness, acidity, tannin, weight and finish, which are crucial to get to an overall conclusion in deductive tasting (Jackson, 2017). The overall score, and likelihood to buy, were considered the most critical because this measures the wine consumer's acceptance of Dutch wine. A 5-point hedonic scale was used for every dimension. This type of scale is easy to use for everyone from beginner to advanced wine drinkers

(Cicchetti, 2004; Jackson, 2017). Purposive sampling was used to look for relevant tasting groups and the experience-based distinctions of beginner and advanced wine drinkers has been used in previous studies (Parr et al., 2002). The aim of this method was to create a diverse sample, which more closely represents the wine consumer population in The Netherlands. Moreover, it might show significant differences among distinct groups based on wine tasting experience. In total, four blind tastings were held at a hotel management school in The Netherlands (Table 1). The order of the tasting groups ranged from beginners to advanced. The level of experience is based on the different tasting experience as determined by the Wijnacademie [wine academy] in The Netherlands. In order, from beginner to advanced: level 1 [SDEN1], level 2 [SDEN2] and level 3 [SDEN3] (Wijnacademie, 2021). Although there is a great diversity of wine tasting experience among the sample, it cannot be generalised to the entire population of The Netherlands.

Organisation of the tasting

The wines were chosen in the price category of €12 to €16. The wines in this study were selected prior to the tasting by using content analysis (Mastroberardino et al., 2019) and the wine app Vivino (<https://www.vivino.com/NL/en/>; Kotonya et al., 2018). The wines were further selected based on the flavour profile. Both the white wine pair and the red wine pair matched according to their aroma components. Also, the quality needs to match to compare how likely Dutch wine will be consumed. In the second stage, the wines were tasted by three wine professionals as a pretest. The tasters from the pretest are accredited at the highest level by the wine academy in The Netherlands (Wijnacademie, 2021). Results from this tasting were found to be satisfactory. The wines were then discussed with the wine professionals to analyse if the wines matched. They decided that the wines matched according to the flavour profile of the content analysis and the pretest (Table 2). Obviously, the flavour components of the wines cannot exactly match, which is the main limitation of this study.

The wines used during the blind tasting sessions consisted of three cool climate wines, two from The Netherlands and one from New Zealand. France is the most popular, old world, wine country among wine consumers in The Netherlands, while New Zealand is the second most popular from all the

TABLE 1: Distribution of the tasting groups (N = 54)

	Tasting group 1 (SDEN1)	Tasting group 2 (SDEN2-3)	Tasting group 3 (SDEN2-3)	Tasting group 4 (SDEN3)
Total	21	9	15	9
Age	18	23	21	23
Male	8	4	4	6
Female	13	5	11	3

TABLE 2: Wine characteristics, aroma and flavour profile — pretest and content analysis

Wine	Producer (vintage)	Primary aroma	Secondary aroma
1	Kleine Schorre, Schouwen-Druivenland Gris (2018)	"Orange, lemon, apple, peach, pear, tropical, minerals, honey, stone"	"Banana, yeast, cream, toast"
2	Vavasour, Pinot Gris (2018)	"Melon, apple, peach, pear, tropical, Minerals, honey, stone"	"Banana, yeast, cream, toast, butter"
3	Chateau Bolaire, Bordeaux Supérieur (2016)	"Black fruit, plum, blackberry, cassis"	"Oak, vanilla, tobacco"
4	Betuws Wijndomein, Linge Rood Cuvée Signature (2017)	"Black fruit, plum, blackberry, cassis, red cherries"	"Oak, vanilla, tobacco, smoke"

new world wine regions (Wijnbeurs, 2020). The wines were also selected based on their grape varieties. Both the Dutch and the New Zealand white wines are made from classic *Vitis vinifera* grape varieties, as well as the red Bordeaux blend. In contrast, the Dutch red wine is made from FRG grape varieties. Comparisons can therefore be made between both *Vitis vinifera* grape varieties and FRG grape varieties based on their intrinsic quality (Table 3).

The tasting room was prepared before all participants arrived. Four clean glasses were numbered in order and four tasting forms were put in the middle of the table. The room had up to 22 places with a table which had a white surface equipped with white light, four clean glasses, a sink and a cup with tap water. All conditions were equal in every tasting group. The room temperature was set at 20 °C. Up to one hour was given per tasting. The wine bottles were completely covered in aluminium foil. The white wines were served at 10 °C and the red wines at 16 °C. A wine refrigerator was present in the tasting room, ensuring the consistent temperatures of the wines.

No information about the wines was provided beforehand to ensure an unbiased outcome. The wines were poured in order by the researcher and assistant once all the participants were seated. Quantities per tasting sample were kept at around 35 millilitres. The wines were tasted and assessed, all in the same order. No minors were allowed to participate in this research.

Findings

The respondents in all four tasting groups assigned an overall higher score (on a 5-point Likert scale) for the Dutch wines than the white New Zealand Pinot Gris or the red Bordeaux blend. The Dutch white wine Kleine Schorre (wine 1) scored on average

the highest overall score. Also, the Dutch red wine Betuws Wijndomein (wine 4) made from FRG grape varieties scored on average higher than the red Bordeaux blend (Chateau Bolaire — wine 3) made from *Vitis vinifera* grape varieties.

There were differences found between both wine pairs. The Dutch white wine Kleine Schorre scored significantly higher than the New Zealand white wine ($t(53) = 4.62, p < 0.001$). The Dutch red wine (Betuws Wijndomein) scored higher than the red Bordeaux (Chateau Bolaire) although the result was not statistically significant ($t(53) = 1.90, p = 0.063$) (Table 4).

Overall, the wines from The Netherlands were perceived positively by all tasting groups and even scored better than the wines from the classic wine regions. A one-way ANOVA (Kruskal–Wallis) test (Table 5) was used to explore if there were significant differences between the tasting groups based on their wine tasting experience and no significant difference was found between the overall scores of the wines among the tasting groups ($p > 0.05$). The results show that both beginner and experienced wine tasters were in agreement and scored all wines equally based on their overall quality.

The second dimension of the blind tasting experiment measures how likely the wines were to be bought based on the overall evaluation of the blind tasters. On average, all participants scored the Dutch wines the highest in likelihood to buy. The Dutch white wine Kleine Schorre was the most likely to be purchased among participants. A *t*-test was used to analyse if there were significant differences in terms of likelihood to buy among the wine tasting groups. Based on the *t*-test, the Dutch white wine scored significantly higher ($t(53) = 4.71, p < 0.001$) than the New Zealand white wine. The Dutch red wine was also significantly more likely to be bought based on the participants' evaluations ($t(53) = 2.24, p = 0.029$; Table 6).

TABLE 3: Blind tasting experiment — wine list

Wine	Producer (vintage)	Grape variety	Region and country
1	Kleine Schorre, Schouwen-Druivenland Gris (2018)	Pinot Gris and Auxerrois (classic grape varieties)	Zeeland, The Netherlands
2	Vavasour, Pinot Gris (2018)	Pinot Gris (classic grape variety)	Awatere Valley, New Zealand
3	Chateau Bolaire, Bordeaux Supérieur (2016)	Cabernet Sauvignon, Cabernet Franc, Merlot (classic grape varieties)	Bordeaux, France
4	Betuws Wijndomein, Linge Rood Cuvée Signature (2017)	Cabernet Cortis and Regent (FRG varieties)	Gelderland, The Netherlands

TABLE 4: Overall Student's *t*-test score of local wine vs foreign wine

Local wine	Foreign wine	t-value	degree of freedom	p-value
Wine 1 — Kleine Schorre (The Netherlands) overall score	Wine 2 — Vavasour (New Zealand) overall score	4.62	53.0	<0.001
Wine 4 — Betuws Wijndomein (The Netherlands) overall score	Wine 3 — Chateau Bolaire (France) overall score	1.90	53.0	0.063

TABLE 5: Overall scores for wines 1 to 4 — one-way ANOVA (Kruskal–Wallis) scores

Tasting group	Wine 1		Wine 2		Wine 3		Wine 4	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Group 1 — (SDEN 1)	3.67	0.796	3.14	0.854	3.10	0.831	3.33	0.966
Group 2 — (SDEN 2–3)	3.22	0.441	3.00	0.707	3.00	0.866	2.89	1.360
Group 3 — (SDEN 2–3)	3.80	0.414	3.00	0.655	3.07	0.704	2.93	0.884
Group 4 — (SDEN 3)	3.22	0.667	2.44	0.527	2.44	1.01	3.56	0.527
Overall mean score	3.56	0.664	2.96	0.751	2.96	0.846	3.19	0.973
Wine	χ^2	Degree of freedom	p -value	ϵ^2	χ^2	Degree of freedom	p -value	ϵ^2
Wine 1 — Kleine Schorre (The Netherlands)	7.77	3	0.051	0.1467	7.77	3	0.051	0.1467
Wine 2 — Vavasour (New Zealand)	6.44	3	0.092	0.1216	6.44	3	0.092	0.1216
Wine 3 — Chateau Bolaire (France)	2.86	3	0.431	0.0540	2.86	3	0.431	0.0540
Wine 4 — Betuws Wijndomein (The Netherlands)	3.49	3	0.322	0.0659	3.49	3	0.322	0.0659

TABLE 6: Likelihood to buy local wine vs foreign wine — Student's t -test

Local wine	Foreign wine	t -value	Degree of freedom	p -value	Cohen's d effect size
Wine 1	Wine 2	4.71	53.0	<0.001	0.641
Wine 3	Wine 4	-2.24	53.0	0.029	0.305

Results from the one-way ANOVA (Kruskal–Wallis; Table 7) show that there was a significant difference found between the groups. The Dutch white wine was significantly more likely to be bought ($p = 0.034$) when comparing between groups.

Discussion

The competitiveness of Dutch wine in comparison to the wines from renowned countries in this study are evident. The quality of Dutch wine in combination with the sustainable benefits offer a unique selling point. In this light, marketing and sales efforts should be strengthened to support wider adoption of Dutch wines in The Netherlands. The quality of Dutch wine was already evident according to the wine inspection panel for Dutch wine in the low lands (Wijnkeuring van de lage landen, 2020), however, this was not in a blind tasting setting. Findings from this research show that Dutch wine in a blind tasting setting also has high intrinsic value, which is a new insight. The white wine Kleine Schorre, Schouwen-Druivenland Gris (2018) even scored significantly higher than Vavasour (2018) during the blind tastings. The quality of Dutch wine will grow even further, with

increasing temperatures, better expertise among wine growers and the maturing of grape vines (Beukers & Vette, 2015). England and Norway are following a similar development (McCoy, 2019), which will lead to a transformation of quality wine regions moving more north in the hemisphere.

The Dutch white wine Kleine Schorre, Schouwen-Druivenland Gris was significantly more likely to be bought in comparison to the other wines. The beginner and intermediate groups in this study (groups one and three) were more likely to buy the Dutch white wine. This is in line with the research done by Hoekstra et al. (2015), which also shows that millennial wine drinkers have a higher preference for white than red wines. Results from this research also confirm the preference for white wine. However, there is another contributing factor which results in a higher preference for white wines and thus results in a higher likelihood to buy. White grape varieties are better able to prosper in cool climate vineyard areas (Shaw, 2017) and, in The Netherlands, the most complex wines are made from white grape varieties (Beukers & Vette, 2015). Therefore, white wines are, in some cases, of higher quality than red wines. Examples can also be

TABLE 7: Likelihood to buy wines 1 to 4 — one-way ANOVA (Kruskal–Wallis) scores

Tasting group	Wine 1		Wine 2		Wine 3		Wine 4	
	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation	Mean	Standard deviation
Group 1 — (SDEN 1)	3.67	1.24	2.86	1.2	2.14	1.49	2.43	1.25
Group 2 — (SDEN 2–3)	2.78	0.972	2.56	1.01	2.44	1.01	3.22	1.09
Group 3 — (SDEN 2–3)	3.73	0.883	2.67	0.816	2.67	0.816	2.33	1.23
Group 4 — (SDEN 3)	3.00	0.707	1.89	0.782	2.11	0.782	3.11	0.782
Overall mean score	3.43	1.07	2.59	1.04	2.30	1.19	2.65	1.18
Wine	χ^2	Degree of freedom	p -value	ϵ^2				
Wine 1 — Kleine Schorre (The Netherlands)	8.70	3	0.034	0.1642				
Wine 2 — Vavasour (New Zealand)	5.37	3	0.146	0.1014				
Wine 3 — Chateau Bolaire (France)	3.00	3	0.392	0.0565				
Wine 4 — Betuws Wijndomein (The Netherlands)	6.29	3	0.098	0.1186				

found in England that produces high quality chardonnay-based sparkling wines (McCoy, 2019).

Results from the blind tasting experiment confirmed the intrinsic quality of FRG varieties in comparison to *Vitis vinifera* grape varieties. The Dutch red wine from Betuws Wijn domein made from the FRG grape varieties Cabernet Cortis and Regent scored on average higher than the red Bordeaux blend from France Chateau Bolaire made from Cabernet Sauvignon, Cabernet Franc and Merlot. Results show that FRG varieties can provide the same intrinsic value when compared to wines from *Vitis vinifera* grape varieties. Similar results were found in research done by Meer and Lévitte (2010) where consumers rated (FRG) Solaris as being equivalent to (*Vitis vinifera*) Riesling. Pierik (2018) also suggests that Regent has a similar taste profile when compared with a Merlot from Bordeaux. Results from the blind tasting experiment confirm this statement. Therefore, sales and marketing efforts for FRG varieties should be increased.

In terms of sustainability, FRG varieties offer substantial benefits, however, this is unknown among wine consumers. Wine consumers hold a negative image of wines from FRG varieties and consider them lesser quality (Pedneault & Provost, 2016; Sloan et al., 2010). This is not based on fact nor on the findings of this research. The usage of pesticides on FRG grape varieties is significantly lower when compared to other wine regions who use *Vitis vinifera* varieties. This offers high value to the health-conscious and sustainable-living aware wine consumer. Wine consumers are more willing to purchase wines with sustainable benefits (Mihailescu et al., 2021) and are also more willing to consume sustainable and local wines (Palmieri & Perito, 2020). The trend towards more local food consumption is gaining considerable traction among consumers (Klomp & Oosterwaal, 2021). Therefore, Dutch wine has a unique position for further growth in the coming years. Restaurateurs can effectively increase their marketing efforts in local and sustainable Dutch wines. Active collaboration between wine growers and restaurateurs and retailers should also be stimulated, as a result, wine growers could sell their wines more easily. Profitability remains an issue among wine growers in The Netherlands, so increased stakeholder dialogue can provide benefits to both winemakers and restaurateurs because healthier profit margins can be attained.

Conclusion

The premise of this research was to analyse the competitiveness that Dutch wine has in comparison to wines from more well-known wine regions. Thus, it explored if Dutch wines can be included in a restaurant's food and beverage offerings, while also strengthening the sustainable position. Findings from this research shed new light on the competitiveness that Dutch wine has, based on their intrinsic quality and the future prospect of The Netherlands as a wine-growing region. Adoption of Dutch wine among wine consumers and offerings among restaurateurs could become more common in the near future according to the findings of this research. The main reason is due to the increasing quality of Dutch wine, which is also evident based on the findings of this study. Popular wine countries among Dutch wine consumers such as France and New Zealand could also be substituted by local Dutch wine in a food and beverage programme. The second aim of this study was to explore the sustainable benefits of increasing the adoption of local wines in The Netherlands. The benefits of

local wine consumption is gaining more importance among wine consumers and therefore this creates a unique selling point. Also, this factor can increase the future adoption of Dutch wine among wine consumers in The Netherlands.

The increasing quality of Dutch wines and their unique sustainable position are of critical importance to the future prosperity of The Netherlands being a wine-growing region. Further sales and marketing efforts can lead to a wider adoption among wine consumers in The Netherlands, given the local and sustainable food trend. Moreover, this research also shows that the prejudice towards FRG grape varieties is not based on the intrinsic quality that they can offer and that, in terms of sustainability, they are unique in the world of wine. The combination of the quality of Dutch wines and their sustainable benefits creates a unique differentiating factor and offers high value to the wine consumer.

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References

- Aernoudt, R. (2020). Coronacrisis: een uitgelezen opportuniteit? [Corona crisis: an excellent opportunity?] *Belgian Financial Forum*. <https://www.financialforum.be/doc/doc/review/2020/bfw-digitaal-editie8-2020-02-artikel-aernoudt.pdf>
- Alonso, A. D., & Sakellarios, N. (2017). The potential for craft brewing tourism development in the United States: A stakeholder view., *Tourism Recreation Research* 42(1), 96–107. <https://doi.org/10.1080/02508281.2016.1209284>
- Anderson, K. (2017). How might climate changes and preference changes affect the competitiveness of the world's wine regions? *Wine Economics and Policy*, 6, 23–27. <https://doi.org/10.1016/j.wep.2016.12.001>
- Aragon-Correa, J. A., Martín-Tapia, I., Torre-Ruiz, J. (2015). Sustainability issues and hospitality and tourism firms' strategies: Analytical review and future directions. *International Journal of Contemporary Hospitality Management*, 27(3), 498–522. <https://doi.org/10.1108/IJCHM-11-2014-0564>
- Beukers, M., & Vette, L. (2015). *Ontdek de Lekkerste Nederlandse Wijnen* [Discover the nicest Dutch wines]. Forte Uitgevers.
- Borrello, M., Cebalo, L., & Vecchio, R. (2021). Role of information in consumers' preferences for eco-sustainable genetic improvements in plant breeding. *Plos One*, 16(7), e0255130. <https://doi.org/10.1371/journal.pone.0255130>
- Cavagnaro, E., & Curiel, G. (2012). *The Three Levels of Sustainability*. Greenleaf Publishing
- Chefsfriends. (2016). *Eigenaar de Kleine Schorre over vooroordelen Nederlandse wijn*. [Owner de Kleine Schorre about the prejudice of Dutch wine] Youtube. <https://www.youtube.com/watch?v=I9QjmZmlvWo>
- Chou, S., Horng, J., Liu, C. S., Lin, J. (2020). Identifying the critical factors of customer behavior: An integration perspective of marketing strategy and components of attitudes. *Journal of Retailing and Customer Service*, 55, 102–113. <https://doi.org/10.1016/j.jretconser.2020.102113>
- Cicchetti, D. V. (2004). On designing experiments and analysing data to assess the reliability and accuracy of blind wine tastings. *Journal of Wine Research*, 15(3), 221–226. <https://doi.org/10.1080/09571260500109368>
- Dressler, M., & Kost, A. (2014). Winery reputation — do German guides provide orientation on wineries and is engagement and investment attractive for wineries? *Academy of Wine Business Research*, 8th Conference, 2 July 2014, Geisenheim, Germany.
- Elzinga, K. G., Tremblay, C. H., & Tremblay, V. J. (2015). Craft beer in the United States: history, numbers, and geography. *Journal of Wine Economics*, 10(3), 242–274. <https://doi.org/10.1017/jwe.2015.22>

- Figueiredo, V., & Franco, M. (2018). Wine cooperatives as a form of social entrepreneurship: Empirical evidence about their impact on society. *Land Use Policy*, 79, 812–821. <https://doi.org/10.1016/j.landusepol.2018.09.022>
- Gavrilescu, C., Richard, Y., Joly, D., & Bois, B. (2018). Climate zoning of the Burgundy wine-growing region. *Congreso Internacional Terroir*, 50, 01003. <https://doi.org/10.1051/e3sconf/20185001003>
- Goolap, S., & Mossberg, L. (2017). Exploring the concept of Extraordinary related to food tourists' nature-based experience. *Scandinavian Journal of Hospitality and Tourism*, 17(1), 27–43. <https://doi.org/10.1080/15022250.2016.1218150>
- Hoekstra, I., Lashley, C., & Cavagnaro, E. (2015). Generation Y's attitude towards organic wine. *Research in Hospitality Management*, 5(1), 107–113. <https://doi.org/10.1080/22243534.2015.11828334>
- Jackson, R. S. (2017). *Wine Tasting a Professional Handbook*. Elsevier.
- Johnston, N. E., Jai, T. M. C., Phelan, K. V. (2018). Branding state-level pride: Exploring values and attitudes of local food product consumption. *Journal of Foodservice Business Research*, 21(6), 659–681. <https://doi.org/10.1080/15378020.2018.1531740>
- Jones, N. K. (2019). Precipitation amounts and variability in a cool climate wine region, southern Quebec, Canada. *Journal of Wine Research*, 30(4), 322–334. <https://doi.org/10.1080/09571264.2019.1652153>
- Jones, G. V., & Schultz, H. R. (2016). Climate change and emerging cool climate wine regions. *Wine and Viticulture*, 31(6), 51–53.
- Klomp, K., & Oosterwaal, S. (2021). *Thrive — Fundamentals for a new economy*. Business Contact Publishers.
- Kotonya, N., Cristofaro, P., & Cristofaro, E. (2018). Wines and reviews: measuring and modeling the Vivino wine social network. *2018 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)*, 2018 (pp. 387–392). University College London. <https://doi.org/10.1109/ASONAM.2018.8508776>
- Lashley, C. (2016). Business ethics and sustainability. *Research in Hospitality Management*, 6(1), 1–7. <https://doi.org/10.2989/RHM.2016.6.1.1289>
- Mastroberardino, P., Calabrese, G., Cortese, F., & Petracca, M. (2019). Sustainability in the wine sector: An empirical analysis of the level of awareness and perception among the Italian consumers. *British Food Journal*, 122(8), 2497–2511.
- McCoy, E. (2019). Climate change is changing the taste of wine. *Bloomberg Businessweek*, 4634, 78. <https://www.bloomberg.com/news/articles/2019-10-22/climate-change-is-altering-the-taste-of-the-world-s-great-wines>
- Mihailescu, R., Moscovici, D., Gow, J., Ugaglia, A. A., Valenzuela, L., & Rinaldi, A. (2021). Identifying the willingness to pay for eco-certified wine by south African consumers: a comparison of biodynamic, fair trade and sustainably produced wines. *Research in Hospitality Management*, 11(3), 235–240. <https://doi.org/10.1080/22243534.2021.2005948>
- Nesbitt, A., Kemp, B., Steele, C., Lovett, A., & Dorling, S. (2016). Impact of recent climate change and weather variability on the viability of UK viticulture — combining weather and climate records with producers' perspectives. *Australian Journal of Grape and Wine Research*, 22, 324–335. <https://doi.org/10.1111/ajgw.12215>
- Nesselhauf, L., Fleuchaus, R., & Theuvsen, L. (2019). The role of environmental information for wine innovation adoption — The case of fungus resistant grape varieties. *Academy of Wine Business Research*, 10, 55–72.
- NOS. (2016). Topjaar voor Nederlandse wijn, maar het imago is nog altijd slecht [Top year for Dutch wine, but the image is still bad]. NOS [online], (25 September). <https://nos.nl/artikel/2134413-topjaar-voor-nederlandse-wijn-maar-het-imago-is-nog-altijd-slecht.html>
- NOS. (2019). Te koud, te warm en te nat: Nederlandse wijnproductie daalt 20 procent [Too cold, too warm and too wet: Dutch wine production is falling 20 per cent]. NOS [online], 3 November. <https://nos.nl/artikel/2308939-te-koud-te-warm-en-te-nat-nederlandse-wijnproductie-daalt-20-procent.html>
- Oude Voshaar, J. (2015). *Wijnbouw in Nederland, geschiedenis en toekomst. De Wijngaard*. [Viticulture in the Netherlands, history and future]. <https://wijnbouwadviesoudevoshaar.nl/wijnbouw/wp-content/uploads/2016/02/Wijnbouw-in-Nederland-geschiedenis-en-toekomst.pdf>
- Palmieri, N., & Perito, M. A. (2020). Consumers' willingness to consumer sustainable and local wine in Italy. *Italian Journal of Food Science*, 32(1), 222–232. <https://doi.org/10.14674/IJFS-1648>
- Parr, W. V., Heatherbell, D. & White, K. G. (2002). Demystifying wine expertise: olfactory threshold, perceptual skill and semantic memory in expert and novice wine judges. *Chemical Senses*, 27(8), 747–755. <https://doi.org/10.1093/chemse/27.8.747>
- Point, E., Tyedmers, P., Naugler, C. (2012). Life cycle environmental impacts of wine production and consumption in Nova Scotia, Canada. *Journal of Cleaner Production*, 27, 11–20. <https://doi.org/10.1016/j.jclepro.2011.12.035>
- Pierik, R. (2018). *Duitse en Oostenrijkse Wijnen*. U2pi BV.
- Pedneault, K., & Provost, C. (2016). Fungus resistant grape varieties as a suitable alternative for organic wine production: benefits, limits and challenges. *Scientia Horticulturae*, 208, 57–77. <https://doi.org/10.1016/j.scienta.2016.03.016>
- Rhee, A. (2019). *De niet te stuiten opmars van Nederlandse wijn* [The unstoppable rise of Dutch wine]. <https://www.ad.nl/koken-en-eten/de-niet-te-stuiten-opmars-van-nederlandse-wijn-a9d24898/>
- Schäufele, I., & Hamm, U. (2017). Consumers' perceptions, preferences and willingness-to-pay for wine with sustainability characteristics: A review. *Journal of Cleaner Production*, 147, 379–394. <https://doi.org/10.1016/j.jclepro.2017.01.118>
- Schroeter, C., Ritchie, J. L., & Rickard, B. J. (2011). Factors that influence prices for cool-climate wines: a hedonic analysis of the market for Riesling. *Journal of Agribusiness*, 29(1), 1–22.
- Schulp, J. A., Kooy, A., & Cavagnaro, E. (2010). Toward a sustainable F & B management-Work in progress. *Euro CHRIE*.
- Shaw, T. B. (2017). Climate change and the evolution of the Ontario cool climate wine regions in Canada. *Journal of Wine Research*, 28, 13–45. <https://doi.org/10.1080/09571264.2016.1238349>
- Sloan, P., Legrand, W., Krauss, K. (2010). The integration of fungus-tolerant vine cultivars in the organic wine industry: the case of German wine producers. *EnoMetrica*, 3, 37–50.
- Stanco, M., Lerro, M., & Marotta, G. (2020). Consumers' preferences for wine attributes: a best-worst scaling analysis. *Sustainability*, 12(7), 2819. <https://doi.org/10.3390/su12072819>
- Teissedre, P. L. (2020). Composition of grape and wine from resistant vines varieties. *OENO One*, 53(3), 197–203.
- Vis, G., Maljers, D., & Beurskens, S. (2015). *Wijn van Nederlandse bodem* [Wine from Dutch soil]. Terra.
- Weiser, C. R., Paster, P., Erickson, C., & Dornfeld, D. (2010). The role of transportation on the GHG emissions of wine. *Journal of Wine Research*, 21(2–3), 197–206. <https://doi.org/10.1080/09571264.2010.530111>
- Wijnacademie. (2021). *Overzicht van opleidingen van de Wijnacademie* [Overview of courses of the Wine Academy]. <https://www.wijnacademie.nl/opleidingen/overzicht-opleidingen>
- Wijnbeurs. (2020). *Onderzoek wijnverkoop Nederland* [Research wine sales in the Netherlands]. De Wijnbeurs. <https://www.wijnbeurs.nl/wijn-verkoop-nederland> {Not referred to in the text}
- Wijnkeuring van de lage landen. (2020). *Uistlag, wijnen, druiven en wijngaarden* [Result, wines, grapes and vineyards]. <https://www.linivite.nl/Wijnkeuring%20van%20de%20Lage%20Landen%202020.pdf>