Ontario Wine Appellation Authority
2020
Report on Sensory Evaluation Results

Introduction

As part of the VQA wine approval process, the Appellation Authority conducts a sensory evaluation of all wines submitted for certification. The sensory evaluation is intended to assess whether the wine meets the requirements set out in the VQA regulation, which include being free of obvious faults and defects and, where applicable, exhibiting the character of the stated wine category or grape variety. The evaluation is not comparable to judging at a wine competition or review by a wine critic since it does not seek to rank wines with respect to each other or identify quality rankings beyond “acceptable” or “not acceptable”.

Sensory analysis is conducted by a trained panel in a controlled setting using standardized procedures to ensure the process is fair and consistent and as objective as possible. Wineries and industry stakeholders are encouraged to familiarize themselves with the sensory process and its purpose relative to VQA certification. Tours of the testing facility when in operation are available and recommended to support a better understanding of how the sensory evaluation is conducted.

The information collected during the sensory evaluation for each wine has resulted in a database of information that can be analyzed to assess overall performance and identify common reasons for failures when seeking VQA approval.

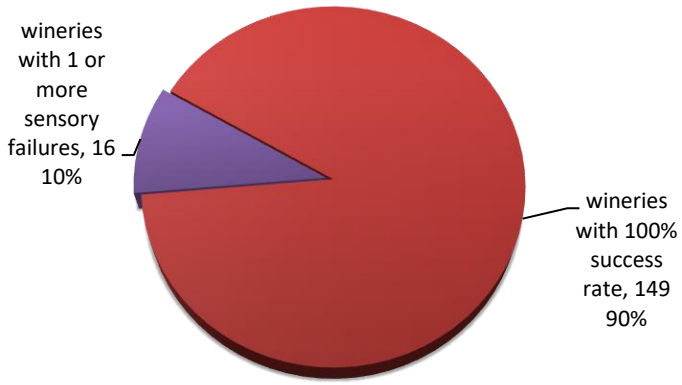
Until March 2020, the sensory analysis has been provided to the Appellation Authority by the LCBO Quality Assurance Department and we gratefully acknowledge their professionalism and skill in delivering this service. In March 2020, due to COVID-19 emergency measures, the Authority assumed the responsibility for administering the sensory panels using ad-hoc panels drawn from a smaller roster of qualified independent panelists. As a result of these procedural changes, year over year data presented in this report may not be comparable.

This report summarizes data from wine samples submitted during the 2020 calendar year. It includes information on the distribution of winery performance within the process and also on the outcomes for all wines submitted. Each winery is encouraged to review their individual performance in relation to this report so that they may benchmark their success rate against the industry as a whole.

Winery Performance Data

This data shows the distribution of performance among wineries based on the percentage of each winery's submissions that pass the sensory evaluation. There are two important components to winery performance in the sensory analysis – the final status of the wines submitted and whether re-submissions and re-tastings were required due to an initial failure. Of 165 participating wineries, 149 wineries had successful outcomes for 100% of their submissions.

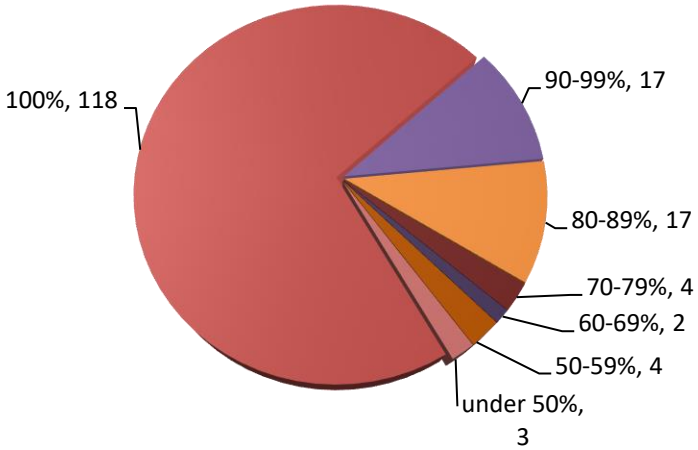
Winery performance distribution based on final status of the wine



Digging deeper into the test data to look at each individual tasting, including multiple tastings of the same wine through re-submissions, winery performance is more variable. The following chart includes every sample submitted, both initial and resubmissions, and counts each as an individual result. For any given winery, the percentage of submissions passed may be more or less meaningful depending on the number of samples submitted and the number of resubmissions processed. Percentage-based performance statistics for wineries with only a small number of submissions can be dramatically affected by a single failure.

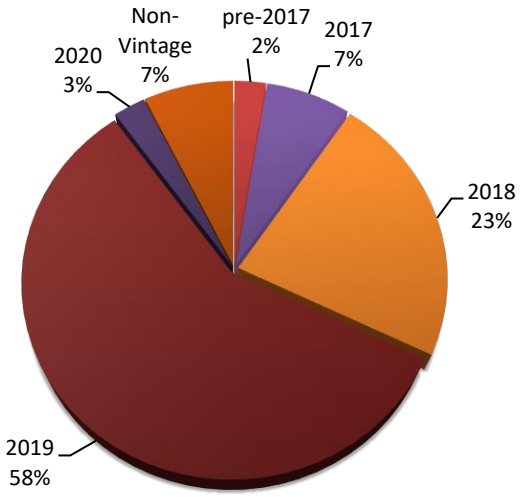
In this context, 149 wineries achieved a 100% pass rate. Ninety-three percent of participating wineries achieved an 80% raw pass rate or better.

Winery performance distribution based on samples tasted including resubmissions



Wine Performance Data

All VQA wines must pass a sensory analysis before being approved to use appellation terms. Wines are tasted and evaluated by a trained panel and must be free of obvious faults and defects and meet requirements for varietal character as set out in VQA regulations. Wines that fail the first submission may be re-submitted for two additional evaluations. Reasons are provided for each wine that fails. The following analysis of the reasons for failure is provided to identify areas where improvements could be made and to assist winemakers in managing submissions to the VQA process.



Vintage Distribution

In 2020, a total of 2255 products were submitted for VQA approval, mostly composed of 2019 vintage wines (58%) and 2018 vintage wines (23%). Of these, 57 samples were tasted a second or third time where wines were resubmitted after an initial failure. The total number of samples tasted was 2312. For the purpose of data analysis, each sample tasted is considered to be an individual sample regardless of whether it is a new sample or a resubmission. Consolidated data, eliminating duplicate tastings of the same wine, is presented only in the final chart in this document.

Samples processed

Total number of products submitted for VQA approval:	2255
Total number of samples tasted (including re-submissions):	2312
Total number of participating wineries:	165

Varietal Performance

Tasting results were reviewed for commonly used grape varieties to determine if differences in performance can be identified for particular grape varieties. For the purpose of this analysis, the wine is categorized by the grape variety declared on the label (at least 85% of the content). Only single variety, still table wines are included.

Some varieties appear to perform better than others, but care should be taken when interpreting this data since vintage conditions differ from one vintage year to another and the number of submissions for many varieties is relatively small. This data is presented for information, but it is difficult to draw any generalized conclusions.

Failures by variety – White table wines

Variety	Samples Submitted #	Samples Failed #	Samples Failed (%)
Riesling	182	16	9%
Chardonnay	265	11	4%
Pinot Gris	111	4	4%
Sauvignon Blanc	92	4	4%
Gewürztraminer	35	2	6%

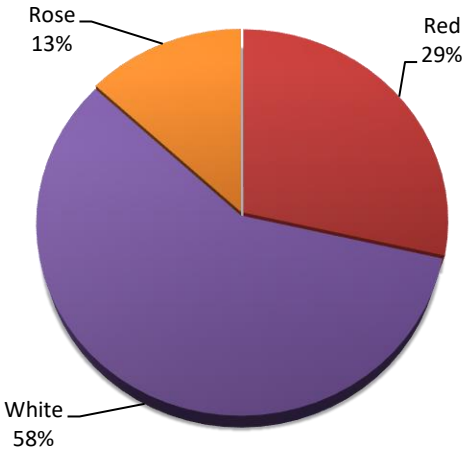
Failures by variety – Red table wines

Variety	Samples Submitted #	Samples Failed #	Samples Failed (%)
Cabernet Franc	121	6	5%
Pinot Noir	167	5	3%
Merlot	61	3	5%
Cabernet Sauvignon	55	2	4%
Baco Noir	44	1	2%

Failures by variety – Rose table wines

Variety	Samples Submitted #	Samples Failed #	Samples Failed (%)
Cabernet Franc	15	1	7%
Gamay Noir	12	1	8%

Failures proportion by wine colour category (all wine categories)



Failures for Late Harvest wines, including Icewines

Samples Submitted #	Samples Failed #	Samples Failed (%)
130	1	<1

Reasons for Failure

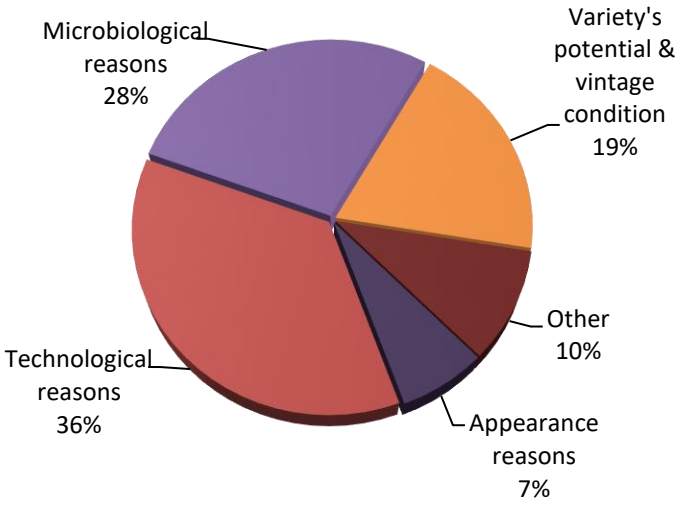
If a wine fails to pass the sensory evaluation component of the VQA approval process, specific reasons for failure are reported. While each individual wine often fails for more than one identifiable reason, an analysis of how often certain faults appear provides some insight into the main reasons for failure.

These reasons can be divided into broad categories as follows:

- Vintage potential – reasons related to vintage conditions (e.g. climatic conditions, growing season) that impact on the chemical composition of grapes and therefore sensory profile of wines
- Technological – reasons related to the chemistry and practice of winemaking
- Microbiological – reasons related to the growth of microbiological organisms in wine
- Appearance – reasons related to cloudiness or sediment, usually in unfinished or unstabilized wine
- Other – all other reasons not classified above

Although the wines covered in this analysis that did not pass are not approved and presumably not a concern to the consumer, analysing these trends may allow us to identify common weaknesses and areas for improvement in VQA wines in general. They will help wineries identify strategies to prevent failures in future and be more successful in their submissions to The Appellation Authority.

Categorization of reasons for failure (%)



About three quarters of the reasons for failure appear to be related to the winemaking process.

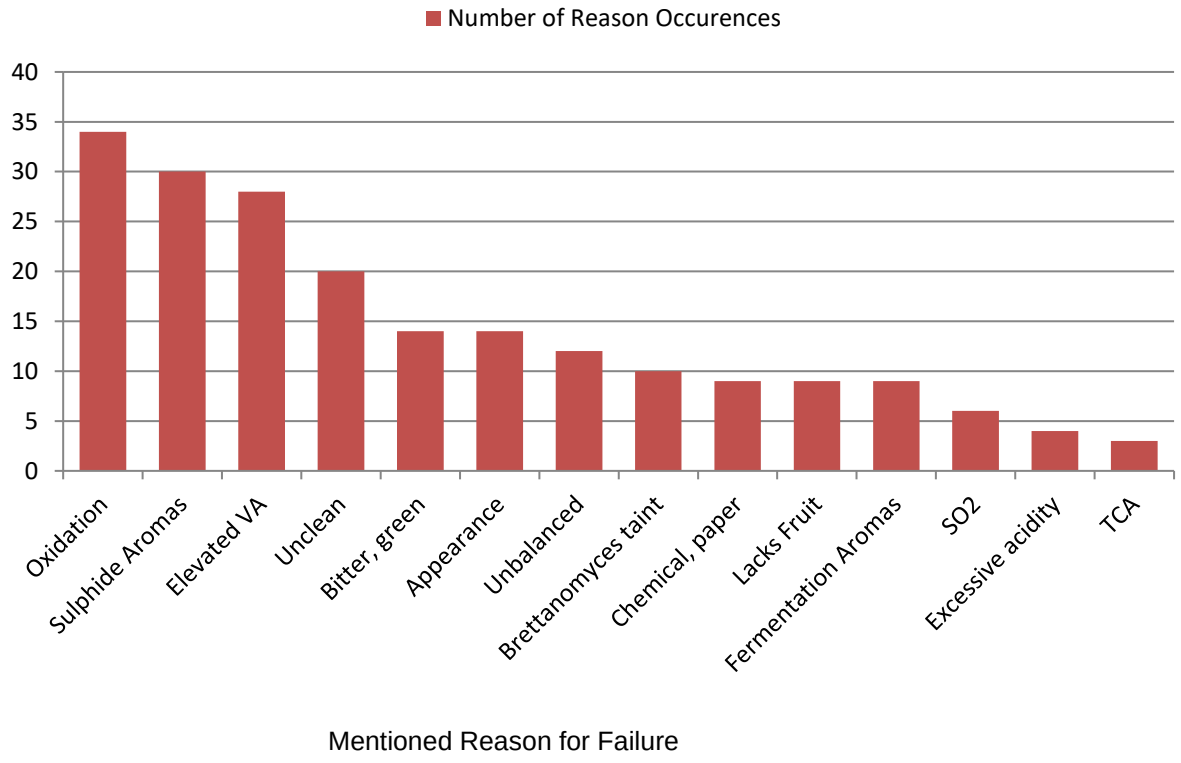
Data Interpretation

In the following charts, the number of occurrences of a specific reason for failure is the number of times this comment appeared in relation to a failing wine. In many cases, there is more than one reason recorded for a failure and individual reasons may be more or less significant for any specific wine. While the frequency of reasons provides some insight into common faults, care must be taken not to imply too much from the numbers regarding specific faults.

Any given fault may play a different – more or less prominent – role in causing the failure of a particular wine sample.

Most wines are submitted as "tank samples - ready to bottle" and some wine faults detected in the tasting process may be the result of inadequately prepared samples rather than the overall condition of the wine in the tank. Failures due to poorly prepared or not “ready to bottle” samples (noted mostly under “appearance” reasons) have been declining over the past few years but remain a preventable reason for failures. These wines are almost always cleaned up and re-submitted to gain approval.

Frequency of occurrence of reasons for failure



The most mentioned reasons for failure - characters related to oxidation, sulphides and elevated volatile acidity are consistent with previous years. The descriptor “unclean” is frequently used to describe off odours related to fermentation and often appears in conjunction with other sensory faults.

Frequency of occurrence for reasons for failure

Vintage potential:

Reason for Failure	# Occurrences
Lacks fruit	9
Unbalanced, lack of harmony	12
Bitter, green	14
Excessive acidity	4
Total	**39**

Technological:

Reason for Failure	# Occurrences
Oxidation	34
Sulphide aromas (H_2S, Me-SH)	30
Elevated SO_2	6
TCA, musty	3
Total	**73**

Microbiological:

Reason for Failure	# Occurrences
Elevated/excessive volatile acidity	28
Fermentation aromas, yeasty	9
Brettanomyces taint	10
Chemical, papery aromas	9
Total	**56**

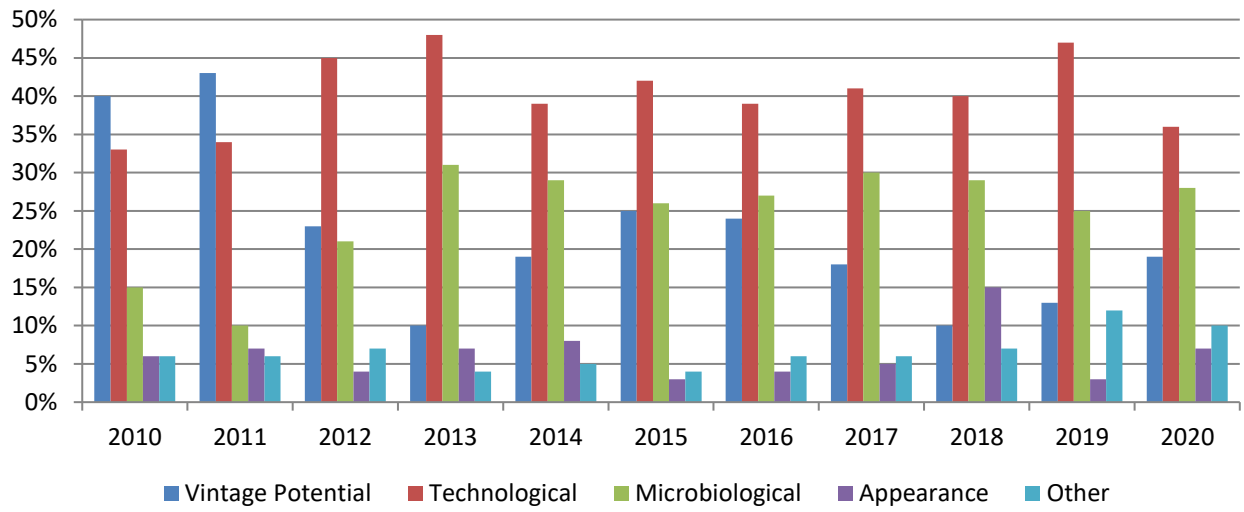
Appearance:

Reason for Failure	# Occurrences
Dull, cloudy appearance	14
Total	

Other:

Reason for Failure	# Occurrences
Unclean, post fermentation aromas	20
Total	**20**

Comparison of reasons cited for failure – 2010 to 2020



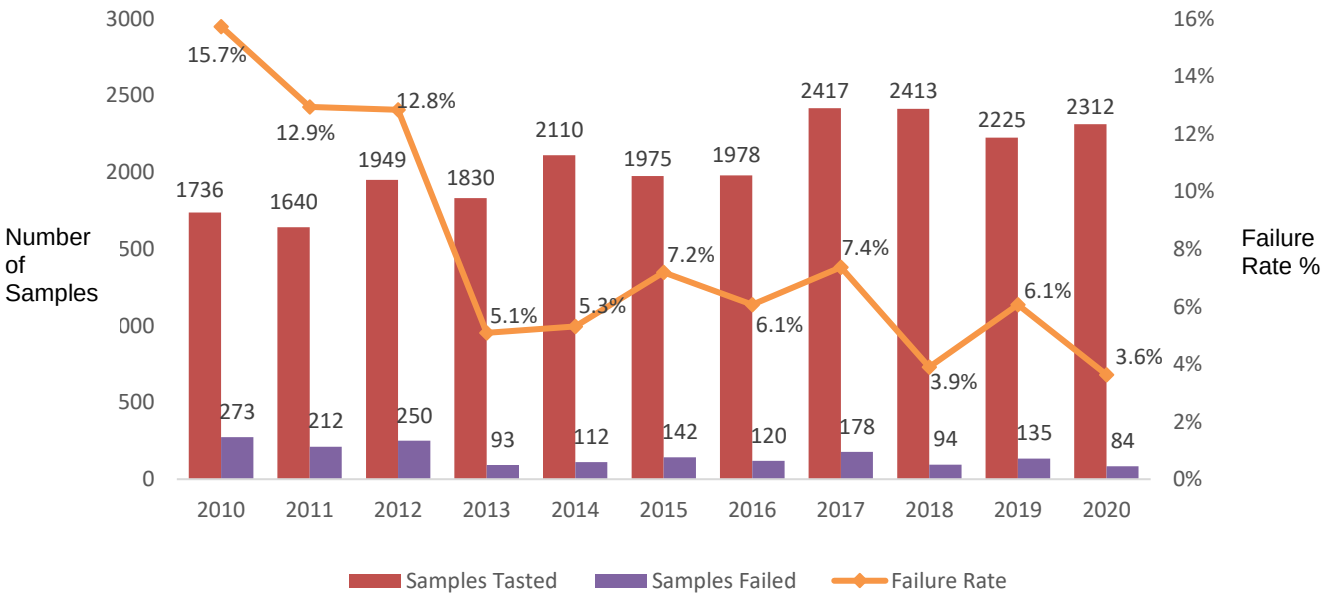
Trends in Wine Performance in Sensory Evaluation

Gross Performance

Historical data and trends are presented below but a meaningful comparison between 2020 and previous years is not possible because of process changes implemented in 2020 to address public health requirements due to the COVID-19 pandemic.

In 2020, from the total number of 2312 samples submitted for VQA approval, 84 failed the sensory evaluation at some point during the submission process, which equates to a raw failure rate of 3.6%. This is down from 2019 and consistent with the general decline in recent years.

Failure rates trends for all samples submitted for sensory evaluation



96.4 % of all samples submitted met the minimum quality level as determined through sensory evaluation testing. Note that the failure rate (%) above represents the number of samples failing sensory evaluation assessment at any point during the submission process.

Of the 3.6% samples that did not meet the quality standards, many could be improved by ensuring the samples submitted are finished, stable samples, and controlling oxidative and reductive character during the winemaking process. Targeted improvements could lead to an improved initial success rate and a reduction in resubmissions.

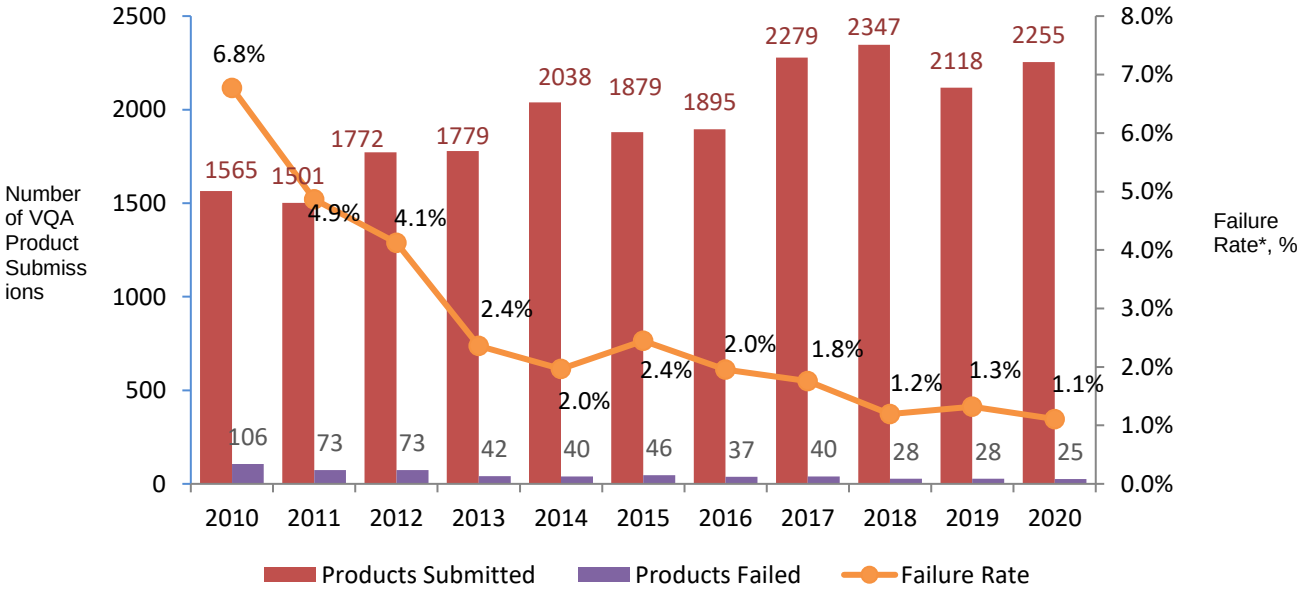
Net Performance

Of the 2255 wines submitted for assessment in 2020, 25 products ultimately failed to achieve VQA approval due to the sensory evaluation. The significant success in the resubmission process suggests that ensuring wines are finished and stable before initial submission may reduce the need for resubmissions.

Overall failure rate trends (adjusted to reflect final status of wine)

Submission Type	Samples Submitted	Samples Passed	Samples Failed	Success Rate
First time submission	2255	2178	77	96.6%
1st Resubmission	50	43	7	86%
2nd Resubmission	7	7	0	100%
Appeals	0	0	0	

The resubmission of wines after re-filtering or other adjustments that did not affect the wine content or chemical composition resulted in an adjusted failure rate is 1.1%. This is similar to 2018 and 2019 and continues the trend of low failure rates since 2013.



** Failure Rate (%) represents percentage of VQA submissions failing VQA approval due to sensory evaluation outcome.*

Analysis – Reasons for Failure

The aggregate performance for 2020 shows that improved performance achieved over the past few years is being sustained. While some variation from year to year can be expected, seven years of relatively stable high success rates suggest that both sample quality and overall wine quality are very good. Individual wineries can continue to improve their rate of success on the sensory evaluation assessment by taking preventive measures based on their own past performance and individual circumstances.

Many of the faults identified by the sensory evaluation assessment can be minimized through a quality enhancement program in the vineyard and quality assurance program in the winery. Steps could include better monitoring and control of the winemaking process, better knowledge of how the wine is developing over time, and timely corrective actions where needed.

A unique feature about the wine industry is that each winery, regardless of size, is a specialized operation with different varietal, production practices and philosophies. Therefore, each winery must establish its own quality assurance plan. Such plans are designed to help wineries assure that quality and stylistic goals are reached and maintained.

The following quality control measures are intended to aid in understanding the faults identified in this analysis and how they can be addressed. These suggestions are intended to highlight typical best practices associated with the main faults and do not constitute an exhaustive list of winery and winemaking quality control practices/program.

The main reasons for failure identified in this analysis are: sulphide aromas, oxidation, excessive volatile acidity and unbalanced aroma and flavour profile. Comments related to balance are most often linked to the overwhelming presence of an identified fault. Commonly detected faults are addressed below.

- ***Sulphides*** – this category includes hydrogen sulphide (H_2S), mercaptans and other sulphide compounds, also described as “reductive” aromas. Sulphides develop during alcoholic fermentation and yeast autolysis and their formation is dependent on the yeast strain, must concentration in nutrients favouring the development of sulphides, and lees contact.

  Process Controls:
  - Selection of yeast strains with low capacity of producing H_2S and sulphides; obtaining all the relevant technical information from the suppliers on yeast properties, nutrient requirements and fermentation control requirements.
  - Administration of nutrients (especially nitrogen sources) in must
  - Timely racking of young wines, in presence of oxygen
  - Lees management (sur-lie wines): fine and clean lees are preferred to gross/heavy lees or lees containing vegetal matter, fining materials, precipitated matter (tannins, colloids, etc.); lees stirring method, intensity, frequency and oxygen exposure (wine becomes reductive in absence of oxygen while on lees)

- Judicious use of SO_2 in the primary vinification stages: while SO_2 in must is required, large quantities contribute to the formation of hydrogen sulphide.
- Effective management of sulphur treatments in the vineyard to prevent grapes from containing elemental sulphur (which may be subsequently reduced to H_2S)
- Conducting regular sensory evaluation of wines at the end of alcoholic/malolactic fermentation, during sur-lie aging and wine development. Early detection of mercaptans can be remedied but their oxidized irreversible forms cannot be treated.

- ***Oxidation*** – wines have different susceptibility to oxidation, depending on their composition (polyphenols, oxidative enzymes, free SO_2, etc.) and level of exposure to oxygen. Oxidation should be controlled in must, young wines or maturing/ageing wines.

  Process controls:
  - Maintaining adequate free SO_2 protection during all vinification stages, from harvest to wine bottling
  - Controlling must/wine contact with sources of polyphenols: e.g. grape skins, stems, new barrels etc.
  - Controlling must/wine contact with oxygen; while some oxygen may be desirable during primary vinification stages, e.g. alcoholic fermentation, it is not desirable during later stages, e.g. wine ageing and must be tightly controlled
  - Maintaining well-filled tanks, during the wine cooling phase, when wine contracts with lower temperature
  - Conducting wine transfers at appropriate temperatures (avoid cold temperatures where wine has a much higher O_2 carrying capacity)

- ***Volatile Acidity –*** When used to describe this specific wine fault, “volatile acidity” is the result of high concentrations of acetic acid or ethyl-acetate or both. All wines contain a certain amount of acetic acid and ethyl-acetate; but it is the high concentration of either of these components that changes the sensory quality of the wine and gives it a vinegar odour.

  Both acetic acid and ethyl-acetate are fermentation by-products, hence their natural presence in wines. In a newly fermented wine, the concentration of these components is typically: 0.3-0.4 g/L acetic acid and 50-100 mg/L ethyl-acetate. At these levels, they are well below the sensory threshold.

  Elevated levels of volatile acidity can be developed in different winemaking stages as a result of microbiological activity: on grapes affected by *Botrytis cinerea* (noble or grey rot), during the must fermentation or through wine spoilage. The microorganisms capable of producing acetic acid and/or ethyl-acetate are moulds (such as *Botrytis cinerea)*, yeasts (winemaking yeast such as *Saccharomyces sp.,* or spoilage yeast such as *Candida*, *Brettanomyces sp*.) and bacteria (most commonly acetic acid bacteria such as *Acetobacter* and *Gluconobacter sp.).*

  In addition to being the result of a microbiological activity, acetic acid can also increase as wine matures and ages as a result of oxidation.

Process Controls:

- Avoid lagged or stuck fermentations as well as high temperatures during fermentation
- Good oxygen management, taking care against air uptake during racking, controlling temperatures during racking and appropriate use of SO_2 at all times
- Barrel management to exclude any "doubtful" VA barrels, especially when working with older 4th and 5th fill barrels
- Control of fruit fly contamination early and during crush
- Good hygiene practices throughout the winery, including managing and handling rotting grapes and waste from machine picking

- ***Lack of Fruit, Bitter, Unbalanced –*** wines may never attain or lose fruit aromas and flavours due to a variety of reasons which can be grouped into the following categories:
  - Grape quality - mainly influenced by the vintage year conditions or over-cropping
  - Winemaking practices that limit extraction of the grape components or do not protect the must constituents from oxidation
  - Development of wine faults that contribute to the loss of fruit or mask the fruit perception. For example, incipient oxidation or TCA contamination can strip the fruit from the wine. High levels of free SO_2 diminish fruit perception. As well, wine imbalances such as high, tart acidity; green, tannic or bitter profile may impair the sensory perception of fruit.

  Process controls:

  - Using grapes that are fully mature and cropped at levels that promote quality
  - Controlling skin maceration to enhance fruit extraction while minimizing undesirable phenolic intake
  - Utilizing controlled maceration and fermentation temperatures (in general, cool fermentations promote higher production and retention of fruity aromas)
  - Selecting appropriate yeast strains for the wine type and grape composition; obtaining all the relevant technical information from suppliers on the yeast properties and fermentation control requirements
  - Controlling oxygen intake and maintaining adequate free SO_2 protection during all vinification stages, while avoiding very high SO_2 doses
  - Use of acidity corrections and clarifying materials appropriate to the wine composition.

- ***Unclean aromas and flavours*** - can be the result of improperly controlled alcoholic and malolactic fermentation, spoilage microorganisms, inadequate wine fining and conditioning or poor hygiene in the winery.

  Note that the *"unclean"* descriptor may be used to generically describe an off-aroma/flavour that detracts from the typical and correct sensory profile of the wine when the cause cannot be specifically identified or when it is the result of a combination of factors resulting in a non-standard or off-odour/flavour.

  Process Controls:

  - Fermentation: use of adequate levels of free SO_2 in must, use of adequate yeast strains, controlled fermentation temperatures, monitoring of the fermentation development, control of malolactic fermentation (MLF), use of adequate fermenters and cap wetting procedures (red wines)

- Wine conditioning: timely wine racking, adequate levels of SO_2 in wine, control of oxygen intake, use of good quality fining materials in validated concentrations, use of adequate filtering materials and equipment, and accurate testing for wine stability
- Wine maturation and cellaring: use of sanitized equipment, properly conditioned barrels, controlled sur-lie practices, timely wine racking, and adequate levels of free SO_2 in wine
- Winery hygiene: accurate measurements, properly sanitized equipment, transport lines, work areas, and humidity control.

- ***Appearance*** – the main reasons for unacceptable wine appearance are wine conditioning and stabilization. Unfinished wines (i.e. wines that still have to undergo conditioning and/or stabilization) and undeveloped wines (wines that are too young to be processed through some stabilization steps) may develop haze and/or sediment. Adjustments to residual sugar content in the sample to resemble the final sugar content of the tank volume combined with non-sterile filtration may lead to refermentation and contribute to appearance issues. Wines submitted for VQA approval must be in a stable ready-to-bottle condition i.e. physical, physico-chemical/colloidal and microbiologically stabilized.

  Process Controls:
  - Acknowledging grape composition changes dictated by vintage conditions e.g. high concentrations of pectin or glucans (in *Botrytis* affected grapes) will affect the must/wine clarification and fining process.
  - Selecting yeast strains that produce lower concentrations of glucans and that settle well at the end of the alcoholic fermentation.
  - Controlling wine development from the primary vinification stages
  - Controlling the wine stabilization process through an adequate stabilization program tailored for the wine type, the use of adequate clarification and fining preparations (in validated concentrations), materials and equipment, and control of the wine's stability.
  - Controlling the wine filtration through the use of adequate filtration media, cycle, pressure and filtration systems throughout vinification and bottling

- ***Fermentation aromas*** – include a complex category of fermentation by-products that are inherent in any fermentation. This descriptor is used either to reflect a dominant contribution of the alcoholic or malolactic fermentation aromas typical of a newly fermented, undeveloped wine; or to reflect unclean fermentation aromas (generically described as post-fermentation aromas, most commonly sulphides) or microbial spoilage aromas (e.g. surface yeast).

  Process Controls:
  - Maintaining adequate free SO_2 protection during the primary vinification stages
  - Appropriate selection of yeast strains for the wine type and grape composition; obtaining all the relevant technical information from the suppliers on the yeast properties and fermentation control requirements
  - Controlling fermentation conditions: ensuring adequate levels of yeast nutrients are present in must in the appropriate fermentation stage, controlling the fermentation temperature, oxygen intake, bâtonnage cycle (for sur-lie wines), cap-wetting cycle (red wines)

- Controlling fermentation development to prevent lagging or stuck fermentations which favour the development of spoilage microorganisms
- Controlling wine contamination with spoilage yeast/bacteria (cellar and equipment hygiene)
- Controlling wine contact with oxygen to prevent the development of aerobic microorganisms (e.g. surface yeast, acetic bacteria) but this is ineffective on anaerobic microorganisms (e.g. *Brettanomyces*, *Lactobacillus*)
- Controlling malolactic fermentation development: controlling the end of MLF, timely wine racking and SO_2 corrections

Further Information

Further information is available from the Appellation Authority about the wine approvals process, sensory evaluation, and how faults are defined. Please login to the VQA Services website or contact the office.

The Appellation Authority periodically facilitates Winemakers Forums to encourage winemakers to share information and experience about making wine in Ontario. Notices of these forums and other professional development opportunities are posted on the VQA Services website. All winemakers are encouraged to attend and to take advantage of these and other opportunities to work together towards achieving the best quality wines that Ontario is capable of producing. The Forums will be resumed when public health measures permit.