

# Winemaking in the 21st Century

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Winemakers all around the globe are experiencing many challenges these days and will do even more in the near future. The “art” of winemaking is more and more impacted by internal and external factors.

## 1. Global Wine Production and Consumption

The total global wine consumption is declining and particular in countries where wine has been part of the daily life. Health reasons, wellness activities, driving issues etc. may count for the reduction.

New wine consuming countries i.e. the Scandinavian countries or countries in the east have not been able to make up for this loss.

At the same time we can already see a dramatic increase in wine production which is not at its peak yet. New producing areas in India and China will send their products to the global market in the very near future.

The international competition is growing dramatically. In order to gain or defend a place on the shelf a wine has to fulfil the needs and demands of the consumers.

Here are two different strategies in place. On the one hand customers, who can be called experts, are looking for wines with “Typicity” or “Terroir”. This group is in the minority.

A fairly large group of wine drinkers wants more “consumer tailored” wines which are produced in a certain style and are easy to understand.

The market demand for these two different types of wines does impact modern production procedures very strongly. In addition, we also notice an extremely increasing demand in the field of consumer protection which will get even stronger in the next years. Questions of allergens, residues, traceability etc. need to be answered.

## 2. How can we produce successful Wines in the Future?

To keep up with the international competition many wine producing countries see a chance by using alternative winemaking procedures. The list of possibilities is very long:

- Must Concentration / Wine Concentration
- Chips / Staves / Extracts
- Alcohol Adjustment
- Removal of Volatile Acidity
- Acid Adjustments
- GMOs.....

In many of the international discussions the use of these new technologies is seen very critical and very often boils down to the question of “agricultural” or “industrial” wines.

While many New World wine countries are using these new techniques the traditional European countries do not. This very often leads to problems and conflicts in the international trade.

WTO has decided to reduce these trade barriers by a harmonisation of technical regulations and by implementing a mutual recognition agreement of all practices used within all member states.

The OIV (International Organisation for Vine and Wine) is the international organisation which has the competence to examine new techniques and add them to the catalogue of international enological practices before they can be implemented into domestic legislations.

Unfortunately the EU has signed some bilateral agreements which completely ignore the role of the OIV and may lead to more difficulties in the future.

In addition to all the legal issues we also have to deal with a factor, which has often been neglected in many countries => the modern consumer !

The evaluation of the consumer taste and the use of that information "to design" a product is a new but very strong approach to be successful in the market place. Sensory evaluation as a production and marketing tool has been known in many other areas but is still unfamiliar to the traditional wine producing countries. Again, the new world demonstrates that this method can be extremely helpful in gaining new markets.

### **3.What do we have to expect from "Technology"**

Very often producers believe that the use of a new technology will solve all their problems. Therefore some new techniques are evaluated in Geisenheim:

#### **a) Must Concentration**

This technology was introduced to create top wines with more body and alcohol. The discussions before the legal acceptance were highly emotional and had nothing to do with the scientific results but were linked to the "ethical" approach in winemaking.

Experiments from all around the world showed the following results:

- From a sensory point there is no difference between must concentration and the use of sugar or must concentrate.
- Must concentrations are more expensive and result in more expensive products.

#### **b) Wine Concentration**

The concentration of wine instead of must has many advantages in terms of handling, timing, best percentage of water removal, microbiological stability etc. So far the sensory results are not very convincing due to a paper taste in the treated wines.

#### **c) Chips / Staves / Extracts**

The use of Chips instead of Barriques has conquered the wine world mostly due to the price but also to the earlier release of wines into the market and the easier handling. While many countries are successfully using Chips, the EU has not legalized this for European wines. From a sensory point of view the use of Chips or Barriques can not be distinguished and statistically proven.

Concerns about an aromatisation of wine or residues coming from Chips could be eliminated by comparing analytical results of wines treated both ways.

In 2004 the OIV has finally accepted a resolution on the "Definition of Chips" which was mostly dealing with the size of Chips. 95% of the Chips should be removed by using a screen with a pore size of 2mm. This size was agreed on to avoid the use of extracts.

The use of enological Tannins with wood flavour is also prohibited.

#### **4. Are traditional Technologies better because they are “traditional”?**

Very often traditional producers but also consumers believe that traditional technologies are better because they are old, well known, well established etc.. But is this really true?

A few years ago the OIV accepted a resolution on the definition on Ice Wine to avoid fraud and to protect a special product with its old, traditional production process. By looking at the text it is easy to see that there are many obstacles to overcome each year to make such a product. From a marketing point of view this might make no sense because the steady supply is in danger. But on the other side products which are difficult to produce can be offered as rare and therefore get a better reputation and price.

As a result Cryoselection as one method of must or wine concentration is not permitted for the production of Ice Wine.

Each new technology should be seen and examined individually in order to see advantages or problems. But at the same time existing, traditional methods should be revisited to evaluate their existence in winemaking and to look for better options in particular in terms of residues.

#### **5. Current Problems and Discussions**

All the new technologies used in winemaking work very well from a technical view. Still, some of them are creating immense legal problems. Reverse Osmosis units, Spinning Cone Columns and others work by splitting must or wine into fractions. These fractions have a different analytical composition compared to the base product. The question we are facing now is: “What is a fraction of wine”?

The answer is very difficult to find. If a fraction of wine is the same as wine, then the aromatisation of wine can be legalized!

If a fraction of wine is not wine, then we have to see what law is in place? Can we split a wine into fractions, do a treatment and still call it wine after the recombination of all the components? Do we need a new definition of “wine”?

These questions have to be answered before some of the new technologies can be accepted!

There are some very interesting technologies in the pipeline waiting for approval:

##### **a) Spinning Cone Column for Alcohol Adjustment in high Alcohol Wines**

This technology is widely and successfully used in the New Wine World for top wines as well as for medium priced wines (Tax reasons). Products with alcohol levels above 13 or 14 %vol. are taken to moderate alcohol levels around 12 %vol. for quality reasons and a better consumer response.

##### **b) Removal of Volatile Acidity**

Rainy vintages or sluggish/stuck fermentations can easily lead to wines with elevated levels of volatile acidity. Particularly wines which will go into barrels might suffer from a sweet and sour impression. Products which are still within the legal limits of VA can be treated to improve the quality. Wines which have additional sensory defects can not be positively manipulated. So far, the treatment is handicapped by its costs.

### **c) Acidification by using Physical Treatments**

Many warm climate regions have the option to increase the acidity by adding one or more acids in order to establish better microbiological conditions and create a better taste.

A new approach is not to add acid but do a “self-enrichment” by removing ions with the help of Ion-Exchange-Columns or Electro-Dialysis-Units. The advantage would be, that no “artificial” components will come into the wine.

## **6.Future Trends**

Current international discussions show the major concerns and are mainly dealing with the issues of:

### **a) Sustainable Production**

In this field we see a demand for the reduction of chemical in the vineyards and during the winemaking process in order to protect the environment and to produce “cleaner wines”. This might be reached by planting more resistant varieties and maybe more time instead of chemicals in the cellar. Also, the use of physical technologies could be favourable.

### **b) Traceability**

Every consumer has the right to be informed (on demand), with what material the wine has been in contact such as fining material, hoses, pipes.... This allows to judge whether the wine can be consumed by people with allergies, vegetarians etc. and to deal with the problem of residues.

### **c) Residues**

In times of increasing efforts towards consumer protection the health of consumer but also the environment is in the centre of attention. It might lead to a wider use of physical treatments and even the “ban” of some traditional technologies such as certain finings.

Winemaking will be facing many new challenges in the near future particularly in:

- a higher demand in quality
- more competition in the global market
- additional benefits like: Health issues / Wellness / Pleasure

The consumer will tell us what path we will have to follow and what products are going to be successful in a global market.