

**Advanced Subsidiary GCE**

**Applied Science**

**Cells and Molecules**

**Specimen Paper/PLAN FOR AN INVESTIGATION**

**INSERT**

**Additional materials:** None

**G623/INSERT**

## **INFORMATION FOR CANDIDATES**

- The abstracts on page 2 and 3 of this insert are to give you some background that you might find helpful in planning for the Task that follows. Not all the information included will be directly relevant and you are expected to select the Information that is relevant to the task.
- This document consists of **4** pages. Any blank pages are indicated.

# How Wine is Made

Winemaking really is one of the oldest and most natural processes in the world. The yeast required to cause fermentation is naturally present on the skins of grapes and can react with the grape sugars when they are broken or crushed to produce alcohol (ethanol) and carbon dioxide (CO<sub>2</sub>). The skill of the winemaker is to harness this natural phenomenon into the production of wine suitable for general consumption.

The process of wine making varies with the different styles of wine, and here we describe the process for the most common styles.

## **Preparation**

The first step in making a decent red wine is to have the grapes perfectly ready to be picked. This means they need to be picked not only at the proper time in their life cycle, but also at the right time of day to ensure the acids and sugars are all in perfect balance. The grapes are picked either by hand, which is very selective and careful and helps prevent bruising, or are picked by machine which is less discriminate over quality and violently shakes the vine in order to loosen the grapes. The grapes are often first put into a cleaner that removes any insects and leaves. The winemaker may choose at this point to also de-stem the grapes. Although not necessary, it may well be done if the winemaker wishes to avoid a high level of tannin in the wine.

Next, the grapes are put into a machine, which gently squeezes the juice out.

## **Fermentation and Maceration**

The must is held in a stainless steel vat for crisper reds, or in oak barrels for more mellow reds. Oak is the traditional method and is still widely used, but stainless steel has the advantages of being easier to cool and easier to clean. In whichever container used, the sugars inside the grapes are turned into alcohol by yeasts. Some wineries use only the naturally occurring yeasts that are found with the grapes. Others have cultured yeasts that they use year after year. This fermentation process typically takes from 3 to 4 weeks.



### **Shiraz grape**

Shiraz and Syrah are interchangeable names for a variety of grape used in wine. In France and the United States it is normally called Syrah. Whereas in South Africa, Australia, and Canada it is most common to see it referred to as Shiraz. It was called Hermitage by wine makers in Australia as recently as the late 1980s. The similar sounding Petite Sirah is in fact a synonym for Durif, which is a different type of grape. Shiraz grapes are characterised by their deep purple colour which is reflected in the wine produced from them.

The name Shiraz comes from a city in an ancient wine making region in the south-west of Iran. Shiraz is locally known as the city of flowers, wine and poetry.

The choice whether to name a wine Shiraz or Syrah is often used by wine makers and wine marketers to highlight a difference in the character of the wine that they have made. Wines that have a ripeness and fruitiness typical of the New World wines are called "Shiraz", while wines that have the elegant and restrained qualities of Old World wines such as the Northern Rhône reds are called "Syrah". However, this rule of thumb is unevenly applied.

### **Merlot**

Merlot is an early ripening variety of wine grape used to create a popular red wine. Wine made from Merlot grapes typically have a medium body with hints of berries, plums, and currants. Merlot is often blended with the late ripening Cabernet. Cabernet has a stern flavour which combines well with the softer, fleshier Merlot. Merlots have a style that make them popular both with newcomers to red wine and with experienced wine drinkers as an accompaniment to food. It is this versatility that has helped to make Merlot is the most popular variety of red wine in the United States.

France, Italy and California are the major Merlot producing areas. It is grown on a lesser scale in Australia, Argentina, Chile, New Zealand, South Africa, Switzerland, Croatia, Slovenia, and other parts of the United States. Merlot comprises the majority of the blend in the wines of the Pomerol and Saint-Emilion regions and Bordeaux wines frequently contain at least some Merlot. One of the rarest and most famous a wines in the world, Château Pétrus is almost entirely Merlot.

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