

# **The 2005 vintage in Bordeaux**

**Laurence GENY\*, Benjamin BOIS\*\*\*, Bernard DONECHE\* and Denis DUBOURDIEU\***

With contributions from:

**Philippe DARRIET\*, Cédric SAUCIER\*, Elisa MARGUERIT\*\*\*, Kees VAN LEEUWEN\*\*\*, Jean Pascal GOUTOULY\*\*, Sylvain BERTRAND\***

\* Faculty of Enology, Bordeaux 2 University,

\*\*National Agricultural Research Institute,

\*\*\*National Agricultural Engineering School

## **Bordeaux Institute of Vineyard and Wine Sciences**

2005 will be remembered as an extremely high-quality vintage in Bordeaux. The weather was exceptionally dry from winter on through to a fine spring, a hot, sunny summer (without excessive heat), and into autumn.

Starting in early June, a water deficit contributed to restricting vegetative growth of the vines, thus avoiding excessive transpiration from the leaves. As a result, the vines made economical use of water in the soil and, with a few exceptions, resisted the drought reasonably well.

Furthermore, this summer water deficit stopped vine growth a few days before colour change in most of the Bordeaux vineyards. 2005 provides a perfect illustration of the basic principle of quality viticulture: the grapes are good if the vines stop their annual vegetative growth naturally and permanently just before colour change, i.e. around late July in Bordeaux. On vineyard soils in Bordeaux, this growth stops naturally just as the grapes start ripening in relatively dry summers. However, when spring and summer are wet, the vines continue to produce new shoots throughout the ripening season, wasting the nutrition produced by photosynthesis. This means that the grapes remain acid, with low sugar levels, little colouring matter, and a more herbaceous than fruity character. In such instances, only the driest soils avoid producing a poor vintage.

In 2005, the grapes ripened quite early in all Bordeaux appellations. The dry, sunny weather in September and October precluded any risk of grey rot, so there was no need to hurry picking. The grapes were very sweet, with good acidity, fruity aromas, and, in the case of red grape varieties, particularly deep colour.

This vintage was unusually successful for all grape varieties on both the left and right banks. Furthermore, the white wines were just as excellent. In Bordeaux, it is relatively unusual to have a vintage that is equally good for dry white, red, and great sweet white wines. After very hot summers, the red wines are good, but the dry white wines often lack fruit and freshness, while an excessively dry or damp early autumn is not propitious for botrytised wines. In 2005, the weather was favourable to all three main types of Bordeaux wine.

Yields were unusually high in 2004. Production was much more moderate in 2005. The early water deficit resulted in very small grapes, particularly in Cabernet Sauvignon on gravelly soils. Although the Sauvignon Blanc vines remained very healthy, yields were much lower than average. However, Sémillon production was much less affected by the weather than other grape varieties (which explains the unusually plentiful harvest in Sauternes and Barsac).

**Budbreak took place at the normal time, in early April, after a dry, rather cold winter.**

Winter rainfall was clearly insufficient throughout the Bordeaux vineyards (Table I), with a shortfall of 30 to 50 %, depending on the area. The Haut-Médoc and Blaye regions received relatively higher rainfall than the northern Médoc and Pessac-Leognan.

While the lack of winter rainfall was responsible for a low levels in the water table, this had less of an impact on the vines: water reserves in the soil were close to saturation in March and there was only a slight deficit in the water balance. Low temperatures in February prevented bud break from taking place in March, as it does after mild winters. The first buds opened in early April, slightly earlier than in 2004.

**Table I:**  
*Accumulated winter rainfall (in mm) over the past 15 years\**

<b>Accumulated winter rainfall (in mm)</b>			
<b>1990-1991</b>	415	<b>1998-1999</b>	515
<b>1991-1992</b>	368	<b>1999-2000</b>	534
<b>1992-1993</b>	365	<b>2000-2001</b>	1001
<b>1993-1994</b>	526	<b>2001-2002</b>	311
<b>1994-1995</b>	620	<b>2002-2003</b>	594
<b>1995-1996</b>	629	<b>2003-2004</b>	636
<b>1996-1997</b>	417	<b>2004-2005</b>	362
<b>1997-1998</b>	660	<b>Normal (1971-2000)</b>	497

*\* although the rainfall shortage during the 2004-2005 winter was quite severe, it was not unusual. There have been three other very dry winters since 1990: 1991-1992, 1992-1993, and 2001-2002. The difference in 2005 was that the drought continued until the end of the summer.*

**Following a damp month of April, except in the Médoc, dry, sunny weather in May resulted in rapid, even flowering in late May and early June.**

Generous April rainfall (80-120 mm) replenished the soil's water supply in vineyard areas south and east of Bordeaux. The water shortage in the Médoc continued, with 50% less rainfall than usual. High temperatures at the end of the month encouraged vine growth.

May was dry and very sunny, with above-normal temperatures, especially during the last ten days of the month (19°C, compared to 17°C for the period 1971-2000).

Vegetative growth was accelerated by very high temperatures in late May and throughout the month of June (5°C above average for the last ten days in June).

Flowering started during the last week in May under good conditions: low rainfall and sunny weather. It took place rapidly and evenly for all the various grape varieties and in all vineyard areas, with just the right amount of shot berries to improve aeration in the grape bunches. In red wine grape control vineyards, peak flowering was estimated at May 28th for Merlot and June 2nd for Cabernet Sauvignon, giving a mean of May 30th, or just 3 days earlier than the mean date over the past ten years (Table II).

**Table II:**  
*Comparison of the dates for peak flowering and peak colour change in 2005 with the mean of the last 10 years*

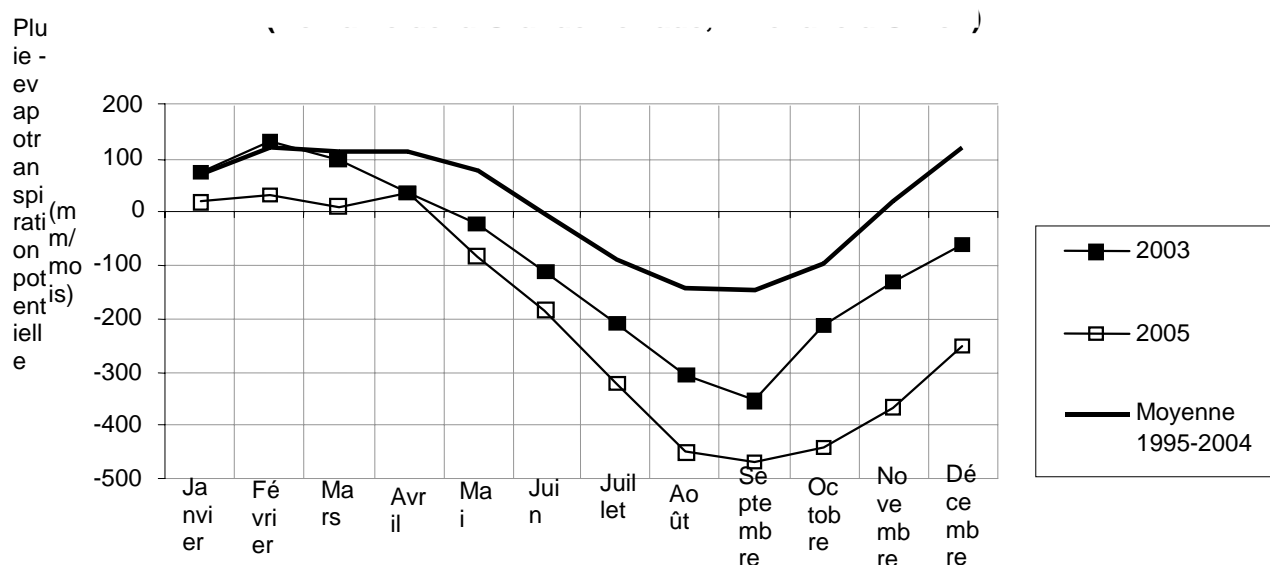
<b>Period</b>	<b>Peak flowering</b>	<b>Peak colour change</b>
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1995-2004	June 2nd	August 12th
2005	May 30th	August 3rd

### The vines adapted to prolonged summer drought conditions.

The drought became increasingly severe in June across the entire southern part of the Gironde department. This restricted the uptake of nutrient solution in young grapes and stunted their growth. However, the Médoc had more significant rainfall in June, partially compensating for the deficit accumulated over the preceding months. Hail storms caused some damage to leaves and grapes in the Entre-Deux-Mers.

The key feature of summer 2005 was a much more severe water deficit than those of the previous 10 years (figure 1, Table III). There was also a deficit at the beginning of fruit-set in 2002, but this was offset by summer rainfall. In 2005, however, July and August rainfall only amounted to 45 and 30 % of normal figures, and more plentiful sunshine led to an evaporation demand almost as high as in 2003. Vegetative growth of the vines was restricted by a significant water deficit as early as May. This early adaptation by the vines economised water reserves in the soil. This means that, although the water deficit was intense in 2005, dropped leaves and blocked ripening were much rarer than in summer 2003, when water stress was sudden and extreme.



**Figure 1 :**

*Climatic water balance in 2003 and 2005 compared to the mean of the past 20 years\*  
(Domaine de la Grande Ferrade, Villenave d'Ornon)*

*\*The climatic water balance is the difference between precipitation received by the soil and the water released into the atmosphere by direct evaporation from the soil and vine transpiration if the soil is completely saturated with water. It indicates the intensity of the water deficit suffered by the vines.*

**Table III:**

*Climatic and agro-climatic indicators for the 2005 vintage compared to those of the decade 1995-2004, calculated from data collected at Domaine de la Grande Ferrade (INRA – Villenave d'Ornon).*

	January	February	March	April	May
<b>Potential evapotranspiration* (mm)</b>	26	34	67	90	134
<b>Rainfall (mm)</b>	45	47	46	114	20
<b>Average rainfall (mm) 1995-2004</b>	95	79	60	89	81
<b>Average temperatures (°C)</b>	6.7	4.9	9.9	13.1	17.2
<b>Average temperatures (°C) 1995-2004</b>	7.3	8.3	11	12.8	16.8
<b>Sum of temperatures (°C)</b>	8	10	90	193	416

	June	July	August	September	October
<b>Potential evapotranspiration (mm)</b>	161	163	145	83	51
<b>Rainfall (mm)</b>	58	24	16	67	75
<b>Average rainfall (mm) 1995-2004</b>	57	57	72	84	98
<b>Average temperatures (°C)</b>	22.2	22.4	21.5	18.7	16.9
<b>Average temperatures (°C) 1995-2004</b>	20.1	21.4	22.4	18.4	15.4
<b>Sum of temperatures (°C)</b>	783	1169	1525	1787	2001

*\*Potential evapotranspiration corresponds to the quantity of water that would be released into the atmosphere if the soil were saturated with water.*

July temperatures were slightly higher than average with extremely hot weather in the middle and at the end of the month (Table III). Water stress reduced cell multiplication, so grapes were small. Hail storms affected a few vineyards on the 27th, causing severe, localized damage to leaves and grapes. Luckily, thanks to the general lack of humidity, hail did not lead to the development of grey rot on affected grapes.

### **Colour change was early and took place rapidly and evenly.**

On our control plots, peak colour change was estimated at August 2nd for Merlot and August 5th for Cabernet Sauvignon, i.e. 9 days earlier than the mean for the previous decade, but 3 to 6 days earlier than in 2003 (Table II).

*Véraison*, or colour change in 2005, like flowering, was quick and even. It started on July 24th in the earliest plots and reached the last vineyards by August 12th.

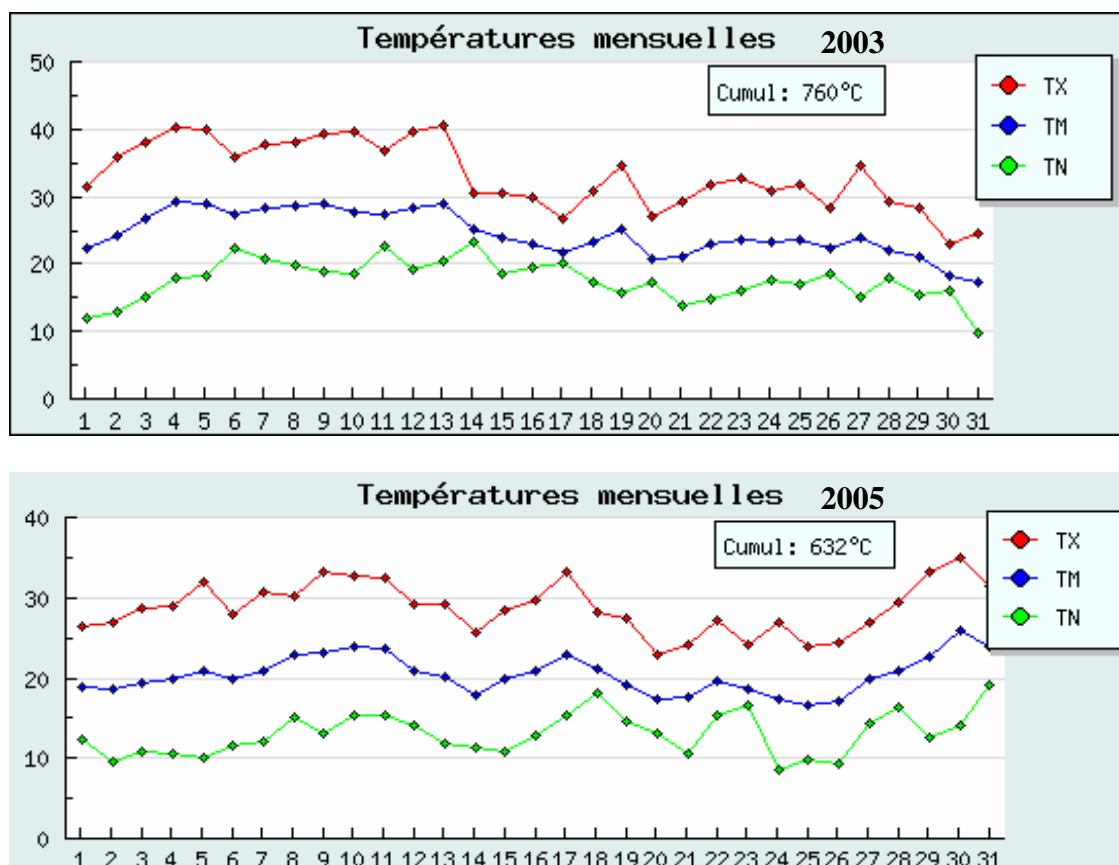
## August was dry and windy, but not excessively hot.

The drought conditions reached their high point in August (Figure 2, Table III). All vines were affected, including ones on soil with considerable water reserves: the grapes remained small and the early halt to vegetative growth promoted good ripening. However, some leaf drop as well as temporarily blocked ripening were observed on gravel soils, particularly among young vines. In Villenave d'Ornon, it only rained on four days in August, and accumulated precipitation was less than 20 mm in northern areas (Médoc and Blaye).

By the end of the month, the sum of the mean daily temperatures (base: 10°C) was 1,525°C.d, i.e. 20% above average, as the near-normal August temperatures were added to the high cumulative total of the previous months.

However, temperatures in summer 2005 were much more moderate than in 2003. July and August were windy, with almost constant north-west winds, high (but not excessive) temperatures, and cool nights. Figure 2 shows a comparison of maximum, mean, and minimum temperatures at the same weather station (Cadillac-sur-Garonne) in August 2003 and 2005. The total accumulated temperature figures are striking: 760°C in 2003 with six maxima of 40°C compared to 632°C in 2005 with only two maxima of 35°C towards the end of the month and around fifteen nights with minima in the vicinity of 10°C.

### Monthly Temperatures



**Figure 2:**  
*Mean (TM), maximum (TX), and minimum (TN) temperatures  
in August 2003 and 2005  
(Cadillac-sur-Garonne weather station)*

This dry weather without excessive heat was ideal for producing not only grapes with lots of sugar and colour - typical characteristics of hot-climate regions – but also, and above all, sufficient acidity, fresh fruitiness, and smooth tannins to provide the inimitable finesse of fine red Bordeaux.

The moderate summer heat was also responsible for the richness, freshness, and remarkable fruitiness of the white wines.

### **All the red and white grapes ripened fully.**

A little rain fell just before the harvest (Table III). Vegetative growth restarted briefly, after 30 mm of rain in the first ten days in September.

The first Sauvignon Blanc grapes from the earliest-ripening plots in Pessac-Léognan were picked starting on August 25th, although the harvest began in a widespread way during the first week in September. The grapes were remarkably fruity, with very high sugar levels, satisfactory acidity, and amazingly low pH in light of the summer weather.

Sunny weather continued from the 10th to the end of September and picking of grapes used to make dry white wines was finished around the 20th. The white wine grapes were remarkably healthy and the red wine grapes finished ripening under excellent conditions. Merlot was harvested from mid-September to mid-October and the Cabernets from late-September to late-October, throughout Bordeaux. Sunshine in September and October put a stop to the development of botrytis.

Thanks to these fine weather conditions, the red wine grapes had low levels of malic acid (with under 1 g/l in some Merlot), which is always a sign of potentially fine wine. Although acidity levels in the must were sometimes rather low (Table IV), particularly for Merlot, pH levels were satisfactory due to the restricted imports of anions and cations during the early stages in grape development. However, in some cases, it was necessary to acidify the must and a special authorisation was issued for this purpose, covering all AOC wines in the Gironde.

The fine state of the leaf canopy and moderate temperatures led to good sugar concentration, with levels similar to those in 2000 (Table IV). However, some Merlot had very high sugar content, especially when overripe.

**Table IV:**  
*Grape balance at harvest time in recent vintages*

*Values correspond to the mean of the last samples taken from the vineyard prior to harvest (M:Merlot, CS: Cabernet Sauvignon)*

	Weight of 100 grapes		Sugars (g/l)		Total Acidity (g/L H <sub>2</sub> SO <sub>4</sub> )	
	M	CS	M	CS	M	CS
2000	173	147	245	220	3,5	3,8
2001	182	143	225	202	3,5	4,5
2003	145	118	238	222	2,5	3,3
2004	165	136	223	201	3,4	4,2
<b>2005</b>	<b>124</b>	<b>112</b>	<b>244</b>	<b>222</b>	<b>2,9</b>	<b>4,2</b>

Fine late-summer weather and, in particular, the good night-day temperature difference promoted the accumulation of anthocyanins (Table V). Similarly, dry weather during the middle ten days of September led to optimum phenolic maturity, with very intense colour,

that was relatively ease to extract. Grapes in almost all vineyard areas reached phenolic maturity without any loss of freshness or fruit.

**Table V:**  
*Phenolic analysis (Glories method) of the grapes in our control vineyard in the last sample before the harvest*

	<b>A1 (mg/l)</b>	<b>PAE (%)</b>	<b>RPT</b>
<b>Médoc</b>			
Merlot	1721	52	47
Cabernet Sauvignon	2292	59	46
<b>Gravel</b>			
Merlot	2177	59	55
Cabernet Sauvignon	2765	40	47
<b>Libourne area</b>			
Merlot	1921	55	72
Cabernet Sauvignon	2428	50	68
<b>Entre Deux Mers</b>			
Merlot	1850	54	70
Cabernet Sauvignon	2137	50	54
<b>Right bank</b>			
Merlot	1971	58	66
Cabernet Sauvignon	2142	49	60

*A1: Anthocyanin potential of the grapes*  
*PAE: Extractibility of anthocyanins*  
*RPT: Total phenolic content of the grapes*

### **Alcoholic and malolactic fermentation of red wines was sometimes difficult.**

Great vintages are not always the easiest for winemakers. 2005 is a good example of these problems. All the red wine grape varieties had unusually high sugar levels for Bordeaux. As there was no risk of grey rot, picking could be delayed until the grapes were fully ripe, even reaching varying degrees of over-ripeness in some vineyards.

Harvesting dates have never varied as much within the same appellation as they did in 2005, depending on the estate and the winemaker's preferred style. There were over two weeks between the earliest and latest harvest of a particular grape variety within the same area.

In some instances, it was difficult to complete alcoholic fermentation because the grapes had such high natural sugar levels and were sometimes overripe, with insufficiently available nitrogen. The widespread drought, exacerbated by grassing in certain vineyards, was certainly responsible for the poor fermentability of some grapes in 2005. Ensuring that fermentation was completed rapidly required excellent control of winemaking processes. Fortunately, Bordeaux winemakers were largely up to the challenge.

In some cases, malolactic fermentation was also slow to start and was not completed in some batches until spring.

The 2005 red wines are very deeply-coloured, bursting with much fresher fruit than in 2003, and have powerful tannins, but no astringency. The most successful wines are remarkably full-bodied, with good tannic backbone and amazing softness.

**The dry white wines are very successful, but fermentation was also difficult in some cases.**

This was especially true with Sauvignon Blanc. The main cause was the outstandingly high sugar levels in the grapes. The dry white wines are very concentrated, powerful, flavourful, and full-bodied, with citrus and tropical fruit aromas, resulting in depth without excessive heaviness.

**The Sauternes vineyards were affected by very pure Botrytis, producing a large, outstandingly rich vintage.**

*Botrytis cinerea* started developing in the sweet white wine vineyards of Bordeaux in early September, when the plentiful crop already had high sugar levels. Quality was very high, even from the first wave of picking. Short periods of rain fostered widespread development of botrytis, so the second and third waves of picking accounted for most of the harvest.

Although sugar levels were very high, there were no particular fermentation problems.

The wines, especially in Sauternes and Barsac, are very clean and rich, with all the fruit, botrytised character, and smoothness of the best vintages.