

The 2017 vintage in Bordeaux

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Although the reputation of Bordeaux and the inimitable taste of its wines are partly due to its geographical location, the 2017 vintage reminds us somewhat brutally of the risks associated with viticulture. This year will long be remembered because of the frost in late April that devastated nearly half of the potential crop. As is often the case, damage was not only important but unevenly distributed, on the one hand sparing entire appellations while, on the other hand, preventing certain estates from producing virtually any crop at all. In this context of huge heterogeneity, it would be an illusion to believe that a vintage report could describe each individual situation.

The highly unusual weather in 2017 nevertheless does not alter the five conditions governing the success of red wine vintages in Bordeaux. It is useful to restate them every year.

- (1) and (2) Relatively quick flowering and fruit-set during weather that is sufficiently warm and dry to ensure good pollination and predispose towards even ripening,
- (3) The gradual onset of water stress thanks to a warm, dry month of July in order to slow down and then put a definitive stop to vine growth no later than the beginning of véraison (colour change),
- (4) Full ripening of the various grape varieties thanks to dry and warm (but not excessively so) weather in the months of August and September,
- (5) Fine (relatively dry and medium-warm) weather during the harvest making it possible to pick the grapes in each plot at optimum ripeness without running the risk of dilution, rot, or loss of fruity aromas.

The mild weather in February and March 2017 led to early vegetative growth. The low precipitation and significant sunshine in early spring were conducive to quick vine growth – which made damage by four nights of frost in late April all the greater. The particularly warm weather in May was conducive to early, quick, and even flowering in vineyards spared by frost. Stormy periods in late June delayed the gradual appearance of water stress despite an exceptionally dry summer without excessive heat before the last week in August. The weather

worsened in early September, giving rise to fears of large-scale grey rot in the red wine varieties. Fortunately, however, an anticyclone enabled Merlot on late-ripening terroirs and the Cabernets to finish ripening under favourable conditions.

The white wine grapes ripened very early. They were able to maintain their acidity and aromatic freshness. As for sweet white wines, alternating wet and dry periods resulted in the spread of noble rot and then the fast concentration of grapes.

Although all five conditions for a great vintage were not combined in 2017, it was nevertheless possible, in plots spared by frost, to produce deeply-coloured, fruity, tasty red wines with good ageing potential. It would therefore be a mistake to overlook this vintage. While undoubtedly more heterogeneous than 2015, and much more so than 2016, 2017 produced many good wines.

Cold and dry in January, then mild and wet in February and March, bringing on early bud break

After a month of nearly springlike conditions in December 2016, low temperatures returned in January 2017. In fact, this was one of the coldest months of January in the last 25 years, as well as one of the driest, with a precipitation deficit of 78% – on top of December's deficit (Figures 1 and 2, Table I). The winter weather nevertheless did not last long, and the thermometer rose durably in February and March. These two months were mild and rainy, with temperatures from 1.5 to 3°C above average. However, there was an approximately 15% deficit of sunshine. Rainfall was comparable to the last 30 years (Figures 1 and 2, Table I), but this was not enough to make up for the lack of rain in December and January.

The first signs that growth had started up again (swelled buds) appeared in the third week of March. The average date of bud break was the 28th of March, i.e. comparable to 2016, 2014, and 2011 (Figure 4).

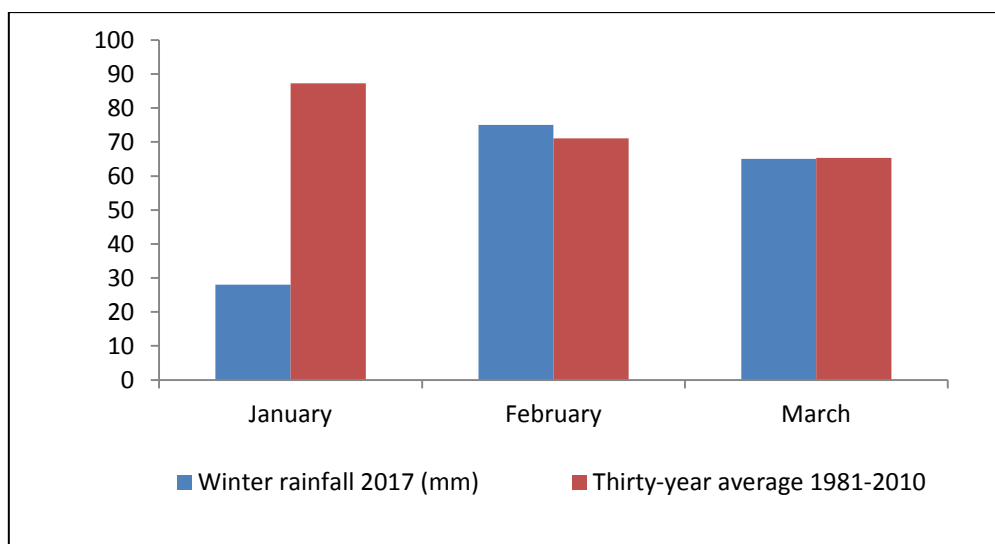


Figure 1
Cumulative winter rainfall (mm) 2017
Data from Mérignac (Météo France)

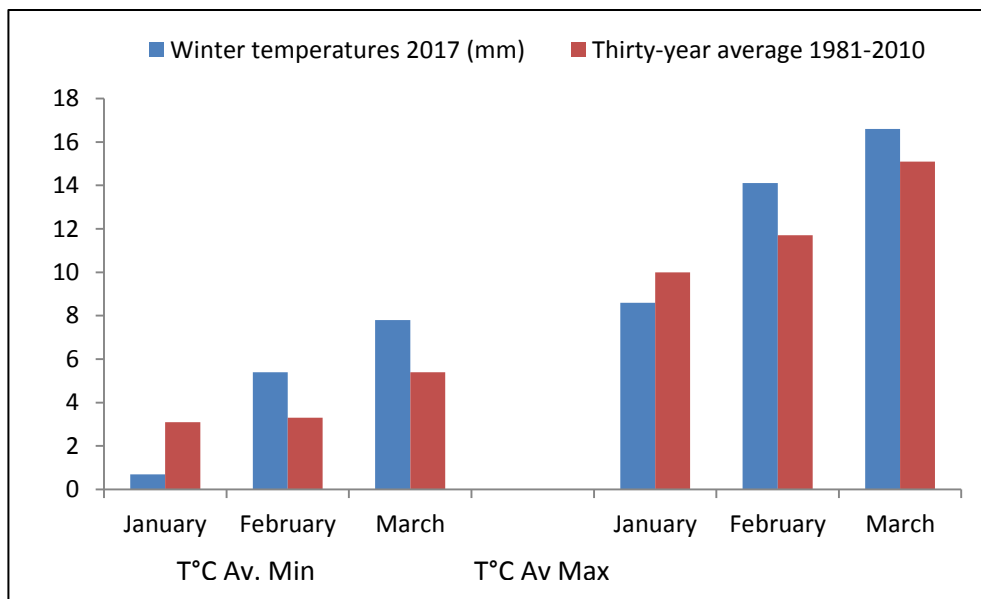


Figure 2
Minimum and maximum temperatures in winter 2017
Data from Mérignac (Météo France)

Table I
Weather data for 2017: rainfall and temperature (compared to the 1981-2010 average) and hours of sunshine (compared with the 1991-2010 average)
Data from Mérignac (Météo France)

	Hours of sunshine (h)		Precipitation (mm)		T°C average minimum (°C)		T°C. average maximum (°C)	
	2017	Average 1991-2010	2017	Average 1981-2010	2017	Average 1981-2010	2017	Average 1981-2010
January	133	95	28	87	0.7	3.1	8.6	10.0
February	102	115	75	71	5.4	3.3	14.1	11.7
March	143	170	65	65	7.8	5.4	16.6	15.1
April	279	182	22	78	6.6	7.4	19.5	17.3
May	263	217	46	80	12.7	11.0	23.7	21.2
June	262	239	137	62	16.2	14.1	27.2	24.5
July	189	249	28	50	17.1	15.8	26.4	26.9
August	263	241	30	56	16.1	15.7	28	21.7
September	174	203	72	84	12.5	12.9	22.2	24.0
October	185	147	13	93	11.5	10.4	21.2	19.4

April: a month of contrasts marked by a historic frost

April 2017 will long be remembered for the frost that took place on the 20th and 21st of April, and then again on the 27th and 28th of that month which destroyed from 30-50% of the 2017 crop in Bordeaux.

The month of April was also characterised by remarkable sunshine (97 hours more than the 30-year average), very low precipitation (-72%), and maximum temperatures 2°C higher than usual (Figure 3, Table I). Diurnal and nocturnal temperatures in the first two weeks of April were more mild than usual practically every day during that period, with spikes of 24-28°C – but these highs were still less than in 2005. Bud break started in late March, reaching the stage of 3-10 unfolded leaves after an especially strong burst of growth (nearly 10 cm for the shoots) between the second and third week of April.

Unfortunately, beginning on the 16th of April, night-time temperatures dropped significantly and stayed below the seasonal average nearly every night thereafter until the 30th. It froze on the 20th and 21st, and then again on the 27th and 28th. A sheltered thermometer recorded a temperature of -2.9°C in Pessac Léognan on the 27th. Due to the influence of the wind, temperatures dropped below -5°C in the Médoc and the centre of the Entre-Deux-Mers. The frost caused enormous damage, comparable to 1991. In certain instances not only were shoots destroyed, but also secondary buds, precluding a new start to vegetative growth. The situation was very heterogeneous. Whereas some estates lost their entire crop, others, especially in the northern Médoc, were not even touched.

Quick, early flowering thanks to a return of spring weather in the month of May

As opposed to 1991, rapidly changing weather conditions after the frost were once again conducive to growth. It was, however, necessary to wait at least two weeks to see the first meaningful signs of this.

The main features of May 2017 were abundant sunshine, less-than-usual precipitation (although there were several thunder storms), and an average temperature 2°C above the norm. There were two spikes of warm weather. One of these was particularly long, from the 24th to the 29th of May, with three days in a row above 30°C, equalling the records set in 1992 and 2001.

In vineyards spared by the frost, the first flowers appeared just after this hot spell, and mid-flowering occurred on the 30th of May, i.e. practically two weeks earlier than the previous year, but not as early as in 2011 (Figures 4 and 5, Table II). Flowering was spread over ten days during extremely favourable weather. Fruit set was also quick and even. This ended on the 8th of June in our reference vineyards.

For these vines unharmed by the frost, the first two prerequisites for a good vintage, i.e. quick even flowering and fruit set, were perfectly fulfilled. Overall maturity was beautifully uniform with little coulure.

Certain vineyards hit by frost took a long time for growth to start up again. Growth was extremely variable by the end of the month of May, depending on the degree of frost and vine vigour. The most developed side shoots had as many as 8 unfolded leaves. Clusters were

already visible at this same stage on side shoots from secondary buds in certain plots, whereas vegetation had barely started up again in others that encountered difficulties due to the frost.

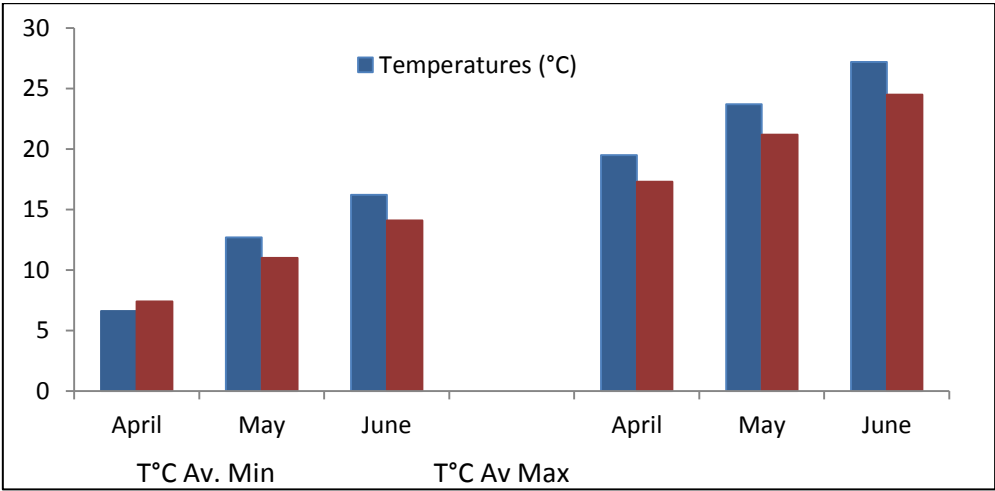


Figure 3
Average, minimum, and maximum temperatures in the months of April, May, and June 2017
Data from Mérignac (Météo France)

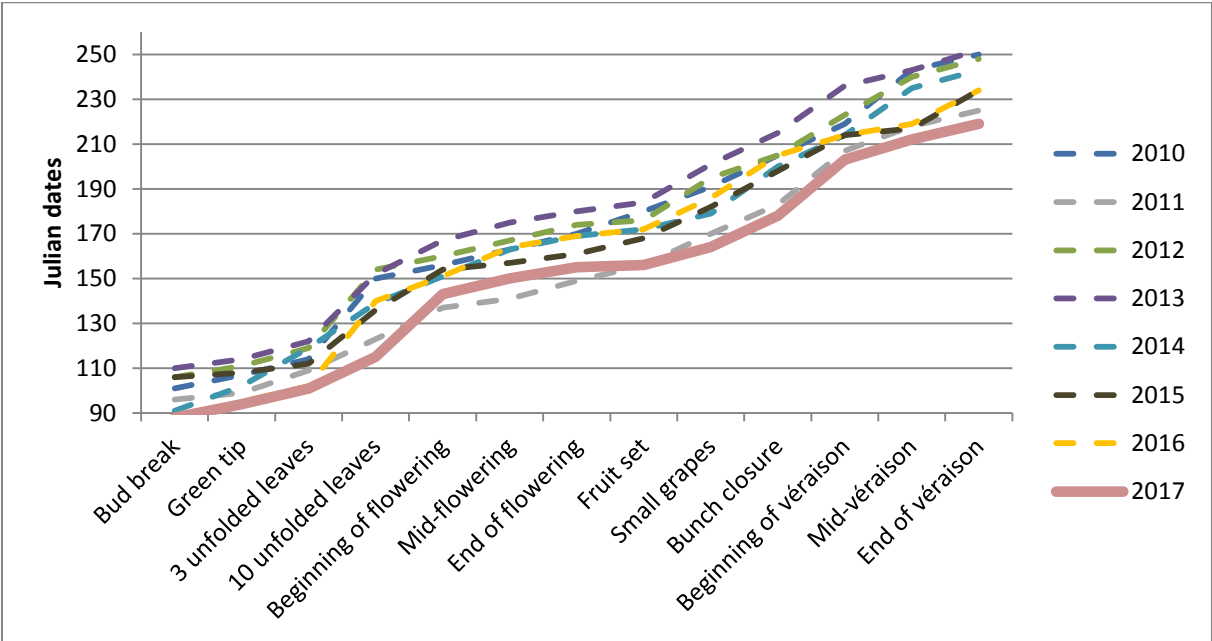


Figure 4
Development of phenological stages in 2017
compared with 2016, 2015, 2014, 2013, 2012, 2011, and 2010 (Data SRAL and ISVV)

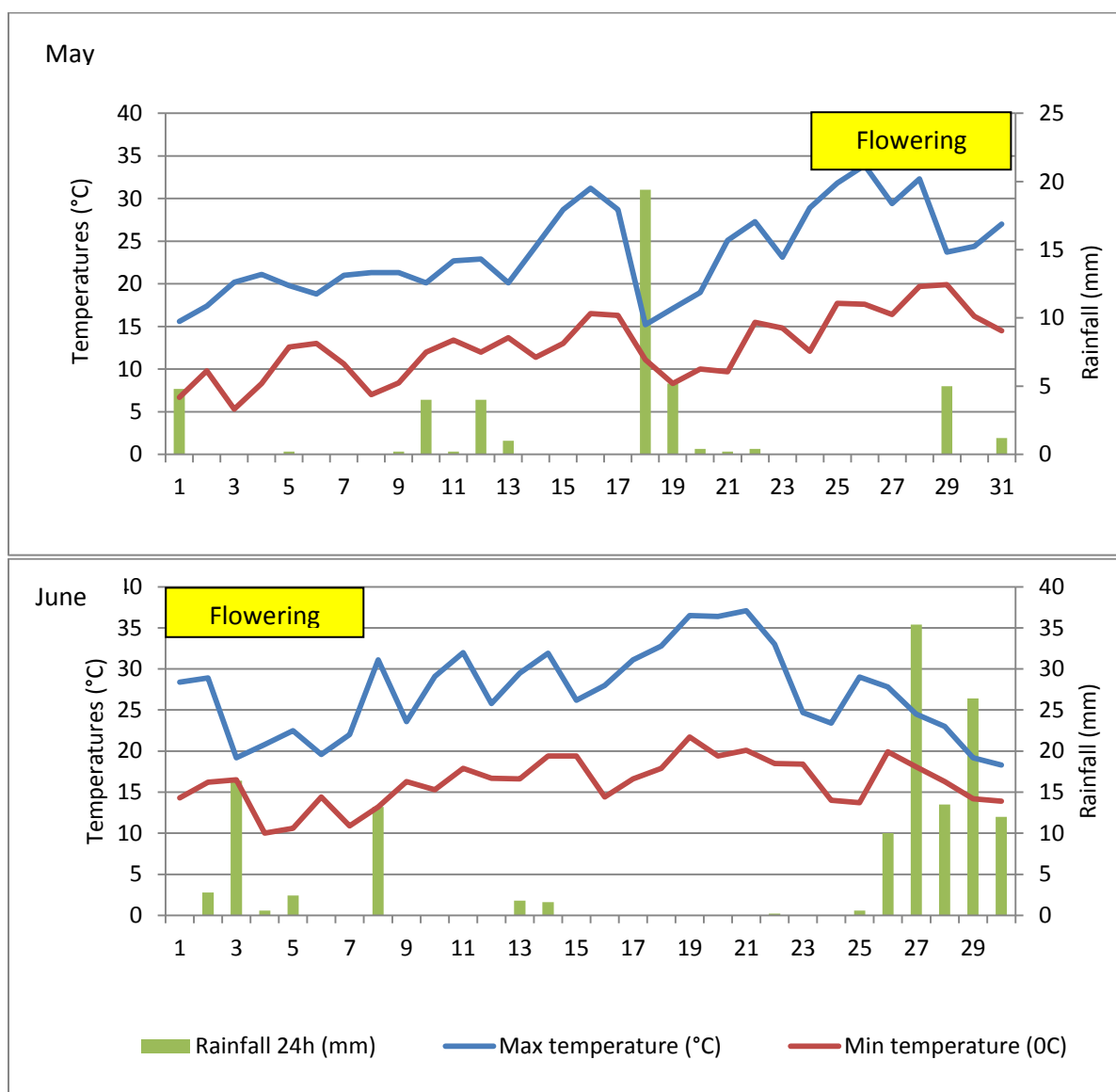


Figure 5
Daily variations in temperature and precipitation in June 2017
Data from Mérignac (Météo France)

The weather was definitely summerlike in June, with plenty of sunshine (46 hours more than usual) and very high average temperatures. In fact, June 2017 was the 3rd hottest month of June since 1959 – close to 2005, but far behind 2003. Temperatures remained high, except for the period from the 3rd to the 7th of June and the very end of the month, culminating in a heat wave from the 19th to the 22nd, with temperatures reaching over 36°C. However, rainfall was above average for the first time since the beginning of the year. This was nevertheless very heterogeneous due to occasionally violent storms at the start and the end of the month (Figure 5, Table II) which stopped water stress from occurring (Figure 6).

Vine growth as well as grape growth were extremely quick. In late June, the berries on vines that did not suffer from frost varied from pea-sized in the latest-ripening plots to closed bunches in the most early maturing ones. In those parcels hit by frost, the bunches were, on average, at the fruit set phase, but development was very uneven.

An exceptionally dry summer, but that did not enable water stress to appear sufficiently early.

The months of July and August left an impression of autumnal chilliness.

This was especially true of July, which was less sunny than a usual month of September. Average temperatures were slightly above average thanks to a few very hot days, but mostly due to markedly mild nocturnal temperatures. This narrower than usual temperature range contributed to increasing average minimum temperatures. Precipitation, on the other hand, was very limited (-54%). Despite a sizeable water deficit in winter and spring and the virtual absence of rain in July, a major rainy period in June reconstituted water reserves in the soil and delayed the arrival of water stress. The slowing down, and then total halt to vegetative growth did not take place, as hoped, before the beginning of véraison (colour change) in the second ten-day period of July (Figure 6).

In vineyards that did not suffer from the frost, colour change was spread over two weeks and mid-véraison was noted on the 30th of July (Table II), i.e. ten days earlier than usual.

Mild weather conditions without water stress were, however, favourable to vines that had suffered frost damage, which seemed on the way to catching up with vineyards that had been spared. The average stage of grape development in late July was "bunch closure". Véraison occurred two weeks later.

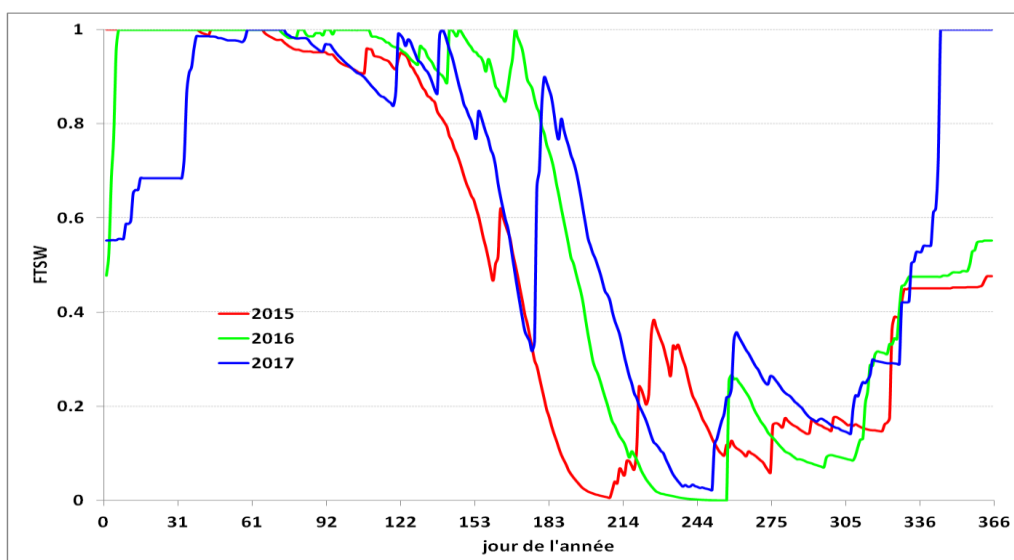


Figure 6

*Variation in the water stress index in 2017 compared to 2016 and 2015.
Data from INRA (Philippe PIERI)*

Table II

Mid-flowering and mid-véraison dates in 2017 compared to 2016, 2015, 2014, 2013, 2012, 2011, 2010, and the average of the last 10 years

Period	Mid-flowering	Mid-véraison
1996-2016	3 June	6 August
2010	9 June	9 August
2011	17 May	21 July
2012	11 June	12 August
2013	18 June	22 August
2014	7 June	13 August
2015	5 June	6 August
2016	11 June	7 August
2017	30 May	30 July

August was less overcast than July, without being clearly summerlike. Thanks to a very hot beginning and end to the month, average temperatures were above the norm, making up for two weeks of cool weather between the 5th and the 20th of August. Precipitation remained low, accompanied by a 47% deficit in sunshine compared to the monthly average. (Table I). The absence of rain gradually brought on the water stress in August, with an intensity comparable to 2016, but with a ten-day delay (Figure 6).

The stop to vegetative growth, brought on by sufficient water stress before the beginning of véraison, was instead observed after the end of véraison, i.e. too late. Therefore, the third condition for a great red wine vintage was not met, except on well-drained soils.

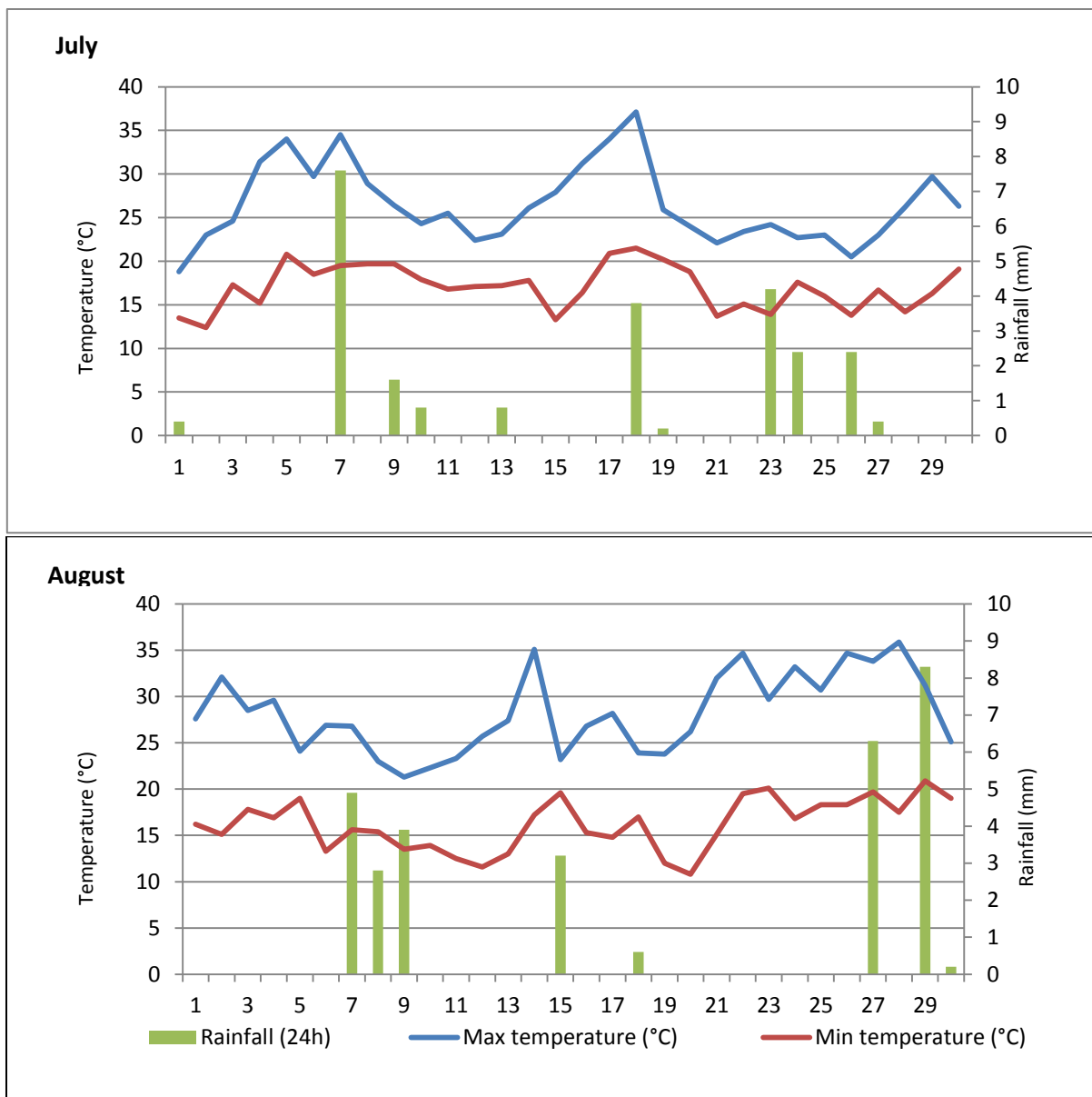


Figure 7
Daily variations in temperature and precipitation in August 2017
 Data from Mérignac (Météo France)

Rain in early September precipitated picking

The beginning of ripening occurred in the first two weeks of August during weather that was relatively cool, especially at night. This enabled colouring potential to start to develop, while limiting the degrading of aromas and acids in the grapes.

After the very hot days in late August, the weather changed brutally in early September. Repeated atmospheric disturbances until the 16th of September were accompanied by cool temperatures, accentuated by greater-than-usual cloud cover. It rained every other day on average during this period, i.e. 5-8 days more than is usual in September, with cumulative rainfall sometimes reaching 30 mm (Figure 8). While average temperatures for that month

were comparable to September 2015, the average maximum temperatures were 1- 2°C below the norm (Table II). One needs to go back to 2001 or the middle of the 1990s to find such low maximum temperatures in September. The weather was grey, cool, and rainy the first 18 days of the month and in no way typical of a late summer propitious to the complete ripening of the various red wine varieties.

The picking of grapes to make dry white wines began in Sauternes in the third week of August, a record early harvest at certain estates. The harvest was also one of the earliest of the past decade in the Graves and Pessac Léognan regions. Picking started with Sauvignon Blanc under sunny skies in late August and ended in mid-September with the latest-ripening Sémillon (Table III, Figure 9). Cool weather in mid-August was conducive to ripening, while maintaining acidity and potential fruitiness. While temperatures were higher at the end of the month, the grapes had already been picked by then, or were in the process of being picked, so their composition was not affected. Precipitation in early September caused the outbreak of grey rot in certain plots. This accelerated the harvest, but the overall condition of the grapes was very good. The balance found in the grapes was worthy of the greatest vintages, with perfectly satisfactory sugar levels, high acidity, and a very promising aromatic potential (Table IV). On the other hand, yields were markedly lower than in 2016, due in large part to the effects of the frost in April.

Table III

Harvest dates for grapes in the Graves region used to make dry white wines in 2011, 2012, 2013, 2014, 2015, 2016, and 2017

	Sauvignon Blanc	Sémillon
2011	22 - 31 August	1 - 5 September
2012	3 - 10 September	10 - 18 September
2013	10 - 22 September	21 - 25 September
2014	6 - 12 September	12 - 20 September
2015	28 August - 6 September	5 - 11 September
2016	2 - 15 September	8 - 18 September
2017	16 August – 7 September	1 - 15 September

Table IV

Composition of Sauvignon Blanc grapes from a plot with limestone soil in the Graves region in 2011, 2012, 2013, 2014, 2015, 2016, and 2017

	Potential alcohol (%)	Total acidity (g/l)	pH
2011	12.6	7.0	3.00
2012	13.2	6.7	3.20
2013	12.8	7.5	2.98
2014	12.7	8.1	3.05
2015	13.5	6.5	2.99
2016	12.8	6.2	3.07
2017	13.0	7.2	2.92

Merlot showed very worthwhile potential in late August, but suffered from the rain in early September. Picking of Merlot was therefore moved forward in some vineyards to the second ten-day period in September in order to limit the development of grey rot.

As is often stated, the month of September is decisive for the success of a vintage. This year, Merlot did not benefit from ideal ripening conditions in September except on the latest-ripening soils (limestone and clay-limestone). The fourth and fifth conditions for a great red wine vintage, i.e. a dry period without excessive heat to obtain optimum ripeness, and clement weather during the harvest were only partially met in 2017 for Merlot.

A sunny, dry Indian summer made it possible to pick ripe Cabernet Sauvignon under fine conditions

The sun finally shone throughout Bordeaux starting on the 20th of September thanks to an anticyclone. The temperature gradually rose to nearly reach the seasonal average. Warm, sunny weather starting on the 23rd of September was accompanied by above-average temperatures. This summerlike weather continued all through the month of October (Figure 8, Table II), which was the sunniest since 1974.

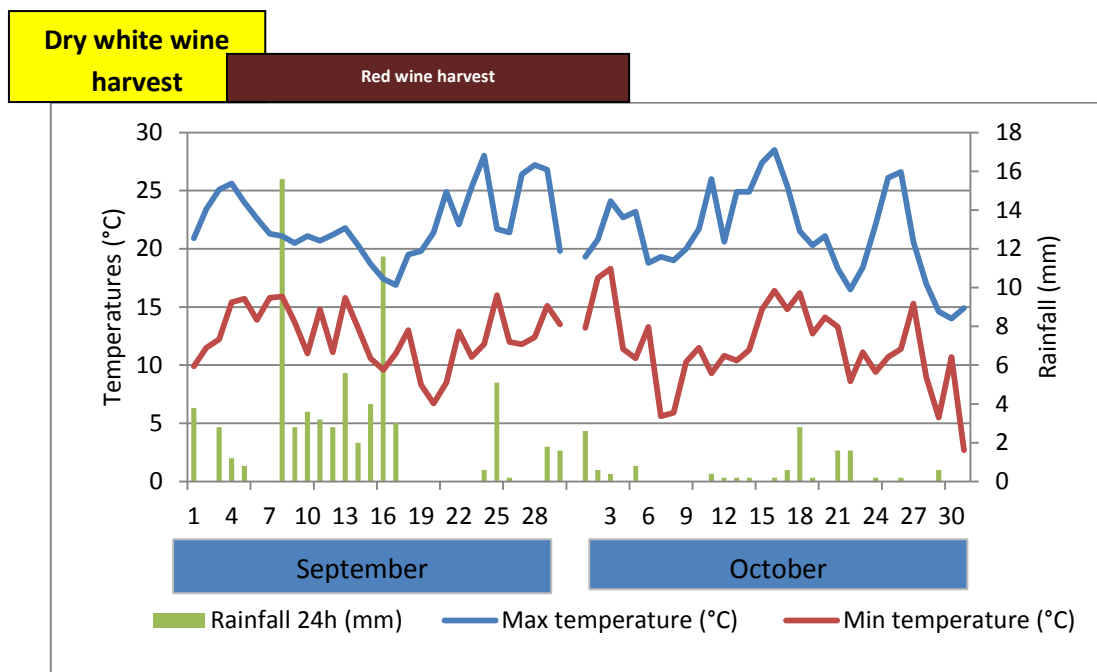


Figure 8

*Daily variations in temperature (°C) and precipitation (mm) in September and October 2017
Data from Mérignac (Météo France)*

Although precipitation in the first part of September gave rise to serious worries about Cabernet-Sauvignon, a providential Indian summer enabled the grapes to ripen. There was no

rush to pick, and the harvest finished no later than the first week of October, i.e. two weeks earlier than in 2016.

The dry period without excessive heat following the rain in early September limited the spread of grey rot and enabled Cabernet Sauvignon to continue ripening. Therefore, the fifth and final prerequisite for a good red wine vintage – fine weather during the harvest – was fulfilled for this variety in 2016.

2017, a challenging vintage with great variation

Despite the rain and a shorter-than-desired ripening period in some instances, the grapes were in rather good overall condition. This is fairly surprising in light of the unusual weather conditions. However, it must be said that the crop was inevitably heterogeneous because of uneven development due to the frost in April.

One of the chief characteristics of red wine grapes in 2017 was unquestionably their high malic acid content, combined with less tannic potential than usual (Figures 9 and 11). Although vegetative growth stopped somewhat late, ripening began well in late August and it was only a question of time before promising phenolic potential gently achieved a good level of concentration. However, rain in early September did not allow for this. The weight of the berries, their sugar level, and anthocyanin content lagged. When tasted, the grapes seemed on occasion lacklustre and diluted. Technological maturity was nevertheless satisfactory, with marked aromatic freshness, but with only moderate polyphenol potential.

Table V*Variations in grape sugar content and acidity during ripening in plots not hit by frost*

	Weight per 100 berries (g)	Sugars (g/l)	TA (g/L H ₂ SO ₄)
2017			
28/8 Merlot	140	222	3.8
Cabernet Sauvignon	121	203	5.2
11/9 Merlot	144	225	2.9
18/9 Cabernet Sauvignon	131	217	3.7
2016			
06/9 Merlot	134	203	4.1
Cabernet Sauvignon	114	187	5.4
20/9 Merlot	151	246	3.0
Cabernet Sauvignon	119	223	3.2
2013			
08/9 Merlot	118	207	5.2
Cabernet Sauvignon	100	188	6.8
30/9 Merlot	118	219	3.4
Cabernet Sauvignon	119	215	4.0
2011			
03/8 Merlot	132	186	6.7
Cabernet Sauvignon	117	171	7.9
05/9 Merlot	138	242	3.0
Cabernet Sauvignon	118	233	3.5
2010			
03/9 Merlot	120	198	4.3
Cabernet Sauvignon	101	171	6.1
20/9 Merlot	125	242	3.0
27/9 Cabernet Sauvignon	108	225	3.6

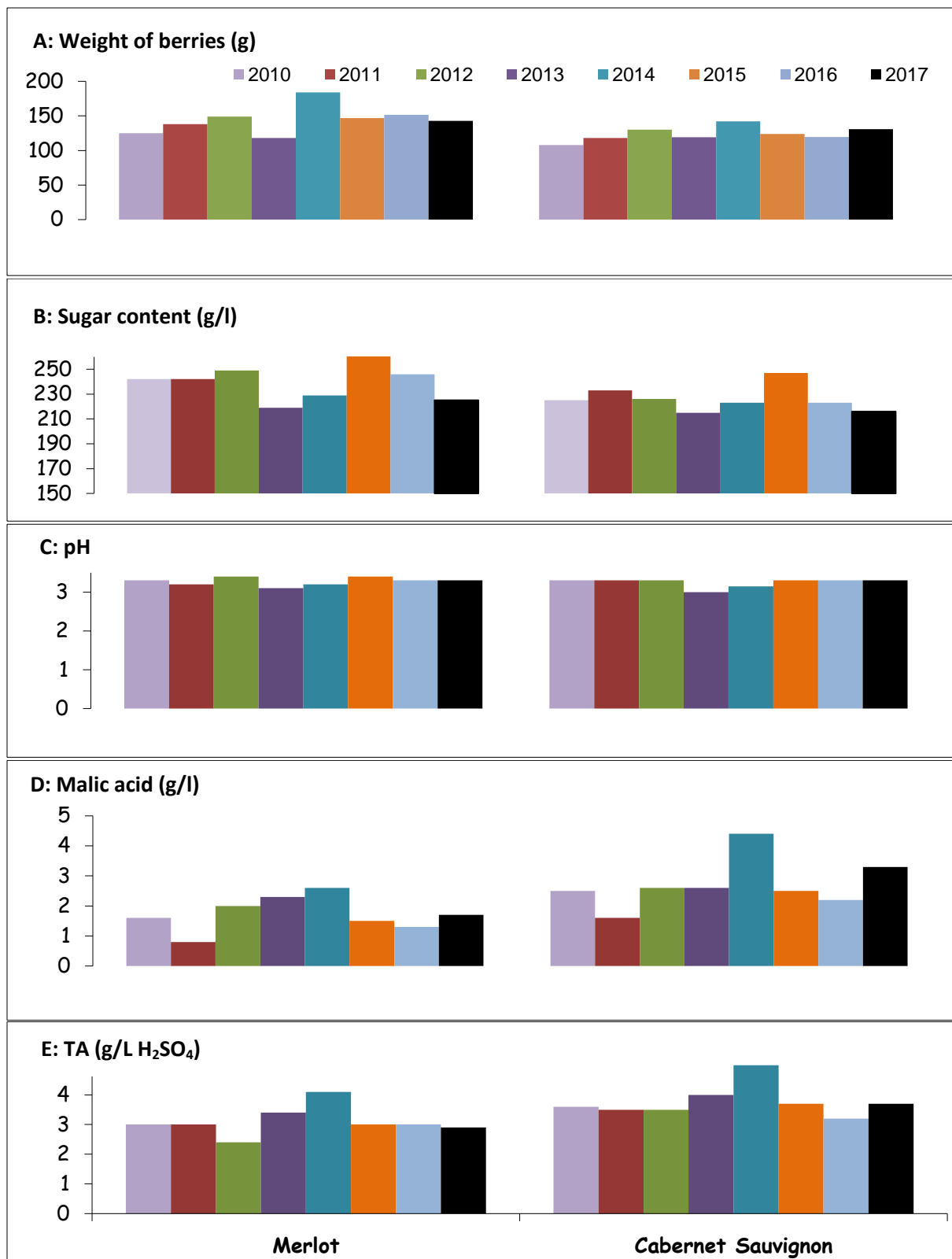


Figure 9

Analytical characteristics of berries in the 2017 vintage, compared with 2010, 2011, 2012, 2013, 2014, 2015, and 2016 of Merlot and Cabernet Sauvignon grapes in reference plots that did not suffer from frost

A: Weight in grams per 100 berries – B: Sugar content (g/L) – C: pH
 D: Malic acid (g/l) – E: Total acidity (g H₂SO₄/L)

Alternating hot days and cool nights in late August led to an accumulation of anthocyanins equivalent to 2016 (Figure 10). However, the TPC (total polyphenol content) was lower than in previous years (Figure 11) and the seeds were sometimes insufficiently ripe, which might have had an effect on the future wine's colour and stability.

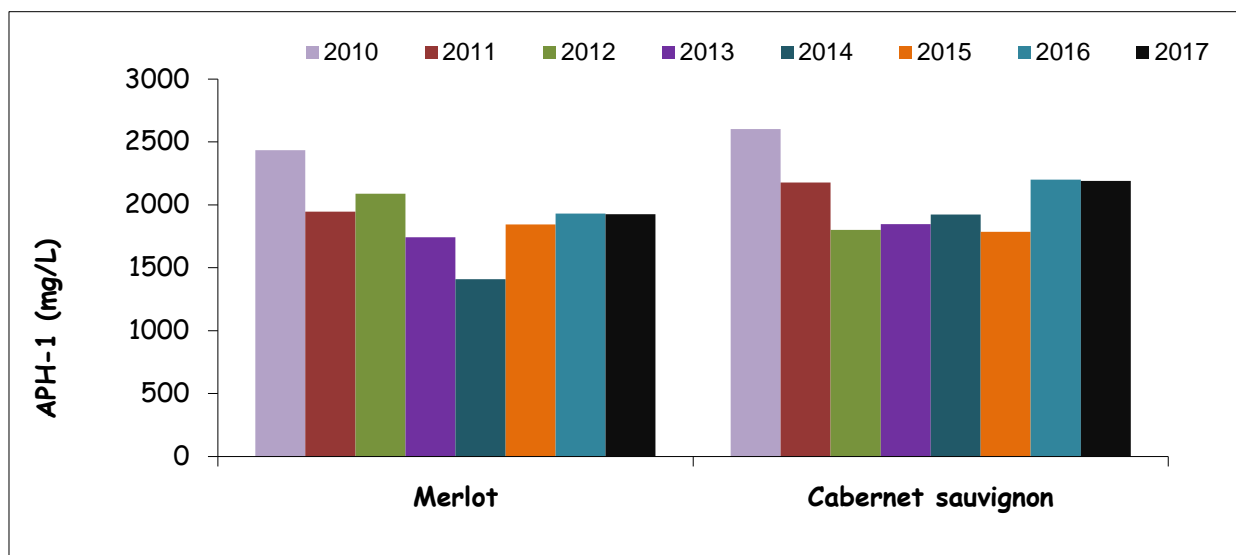


Figure 10

Total anthocyanin content (mg/L) of Merlot and Cabernet Sauvignon grapes in 2017 in reference plots unaffected by frost compared with 2010, 2011, 2012, 2013, 2014, 2015, and 2016

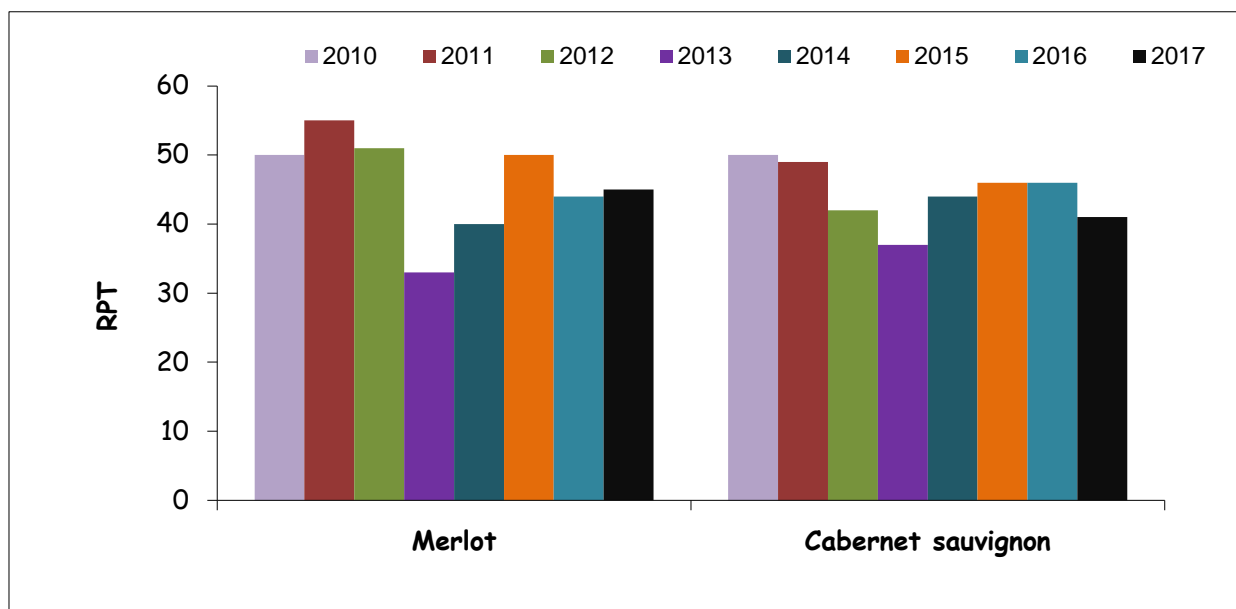


Figure 11

RPT tannic index of Merlot and Cabernet Sauvignon grapes in 2017 reference plots unaffected by frost compared with 2010, 2011, 2012, 2013, 2014, 2015, and 2016.

In vineyards that did not suffer from the frost, the warm weather in early July limited the formation of isobutylmethoxypyrazine (the molecule responsible for "green pepper" aromas in the Cabernets), which was virtually undetectable in late August. Fruity notes appeared in the berries before the rain, enabling them to acquire the finesse of ripe grapes, but without any cooked or stewed aromas.

In those vineyards hit by frost, the unevenness of ripening inevitably reflected the diverse dates that vine growth started up again afterwards. Where this happened within two weeks after the frost, the weather until late August partially made up for lateness in maturity in certain instances. In two plots that we regularly follow to evaluate ripeness, the delay in véraison was only 12 days, and the criteria for technological maturity in late August was comparable to plots undamaged by frost. On the other hand, phenolic maturity and aromatic maturity were incomplete, with a degradation of colouring potential in early September and persistent herbaceous notes up until the harvest. In those vineyards hit by frost, the taste of the grapes never really reached a satisfactory level to make good red Bordeaux.

The spread of *Botrytis cinerea* on perfectly ripe grapes is the essential condition for making good sweet white wines. On the whole, weather in August made this possible. The dry, hot weather at the end of the summer caused instances of raisining, then the rain in early September caused the fungus to spread. At the end of this two-week rainy period, there was, however, an outbreak of sour rot in some plots. The return of fine weather limited the damage, but rigorous sorting was necessary to avoid any off flavours. The harvest began the last week of September during fine weather, which avoided the risk of dilution. Even so, it was important to pick quickly because sugar levels rose quickly and it was best to avoid excessively sweet must difficult to ferment. While grapes harvested early to make dry white wines retained a high level of acidity, this was not the same for the sweet wines. Preserving freshness was one of the challenges of this naturally rich vintage.

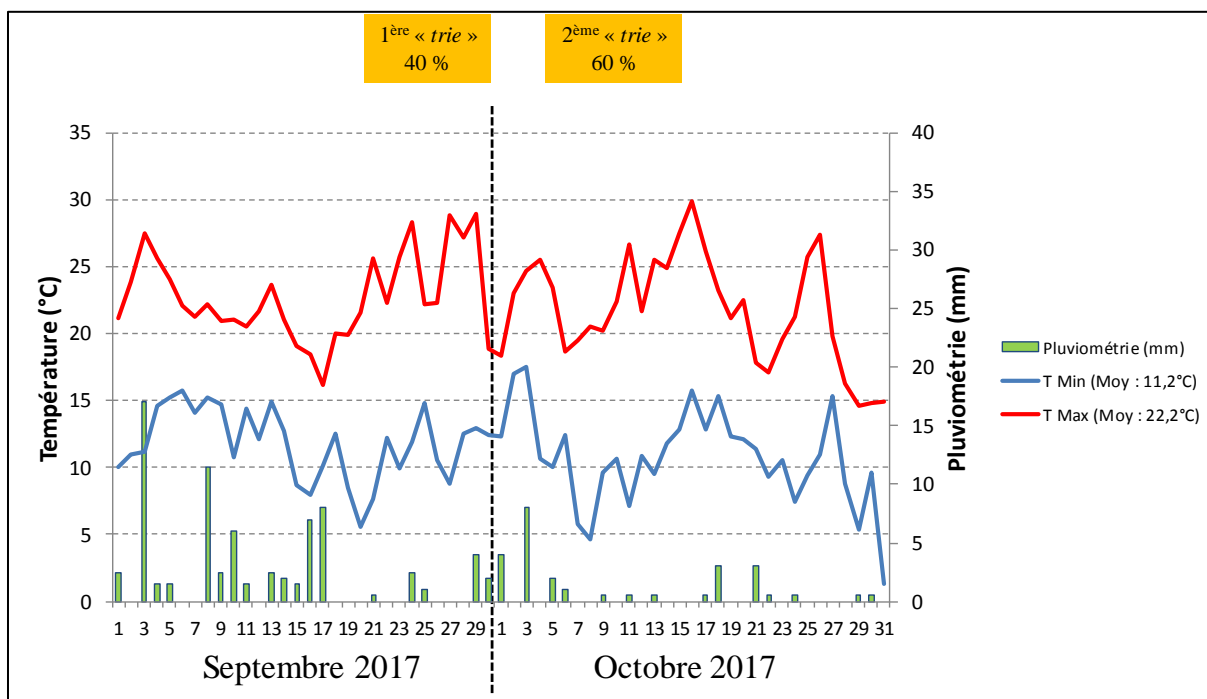


Figure 12
*Daytime temperatures and precipitation in September and October 2017 in Sauternes
 Chronology of the development of noble rot and the progression of passes (example).*

Remarkable dry white wines, successful red wines from terroirs that did not suffer frost damage, and powerful sweet white wines

The 2017 vintage is a major success for the dry white wines of Bordeaux, which are clearly superior to 2015 and 2016. The Sauvignon Blanc wines are ripe, crisp, and very aromatic with a great deal of elegance and brilliance. Sémillon wines from great terroirs, feature their characteristic richness while maintaining good freshness.

The botrytised sweet white wines display impressive richness and power. Made in a year when botrytis spread quickly and evenly, they are very pure and feature powerful aromatics. The best have retained a level of acidity that balances the sometimes high degree of concentration.

The red wine harvest was certainly more difficult in Bordeaux. As with the white wines, the terrible frost in April considerably reduced the crop, and even obliterated it in many vineyards. As for the vineyards that did not freeze, flowering and fruit set took place under very good conditions, but rain in June and variable weather in July did not stop vegetative growth as early as hoped. Rain during the first two weeks in September upset ripening and raised serious concerns about the possible massive spread of grey rot. The state of the Merlot grapes on certain terroirs, especially ones with sandy soil, led to an earlier-than-intended harvest, even though the grapes did not reach optimum ripeness. Fortunately, the

weather was beautiful starting from mid-September in a way that Bordeaux is famous for. This un hoped-for return of fine weather saved the late-ripening Merlot and Cabernet grapes.

At the beginning of ageing, the quality of 2017 red wines from vineyards spared by frost are proving to be satisfactory to very good. They are deeply-coloured and have intense fruity aromas. Although they do not have the concentration of great years, they are delicious and very attractive. However, wines made from plots that froze bear the mark of the trauma the vines experienced. Herbaceous and lacklustre, they lack body and it is unsure whether barrel ageing will improve them markedly.

Although the unevenness of the wines means that 2017 cannot be considered a great vintage, it is far from a negligible one! There are very good wines able to age well on both sides of the Garonne.