The 2019 vintage in Bordeaux

Professor Laurence GENY and Dr. Axel MARCHAL

*Institute of Vine and Wine Sciences of
Bordeaux University, Oenological Research Unit*

in conjunction with
V. LAVIGNE *, E. GUITTARD*, N. DANEDE*, A. BARSACQ*, L. RIQUIER*, A.
RABOT*, and Ph. PIERI**

Institute of Vine and Wine Sciences of Bordeaux University, Oenological Research Unit
** Institute of Vine and Wine Sciences of Bordeaux University, UMR 1789 Functional
Ecophysiology and Genomics of the Vine, INRA (the French National Institute of Agricultural
Research)*

The memory that people retain of a vintage depends, for the most part, on the sensations experienced when tasting the resulting wines over the years. The context surrounding a particular vintage can nevertheless have a significant role to play. Since late 2019, the Covid-19 virus has spread across the world, forcing most of us to change our daily routines to combat its development. This pandemic, which entailed the suspension of the "en primeur" presentation this year, will undoubtedly remain associated with this vintage. However, the efforts of winegrowers, who have once again worked hard all year round to make the most of their terroirs, should not be forgotten. The quality of Bordeaux wines produced in 2019 should still live up to the expectations of wine buyers and observers from around the world.

Before looking into the weather conditions responsible for the specific characteristics of wines from the 2019 vintage, it is important to bear in mind, as usual, the five prerequisites to produce a great red Bordeaux.
1) and 2) Relatively quick and even 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 *véraison* (colour change).
4) Completely ripe grapes thanks to optimum photosynthesis in the leaves up until the harvest, without any noteworthy resumption of vegetative growth
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 start to the year led to early bud break, although vegetative growth was slowed down by poor weather in April and May. Flowering took place in early June under a spell of cool, wet weather, and was uneven in certain vineyards. The first prerequisite was only partially satisfied, with isolated incidences of *coulure* (shot berries) and especially *millerandage* (abnormal fruit set) observed. From mid-June onwards, very hot, dry weather set in. Despite the high temperatures, the water accumulated in the soil during spring meant vine growth was not stunted and fruit-set took place in ideal conditions. The month of July was dry overall,

although precipitation varied significantly from one area to the next, due to localised rainstorms. These variations, coupled with the diversity of the soils, led to vegetative growth ending at different times, often later than hoped. While *véraison* was sometimes spaced out, sunny conditions in August, with alternating periods of hot and cool weather, favoured the beginning of the ripening stage. The first half of September was particularly hot and dry, which led to fears of water stress, although rainfall from the 20th of September onwards helped the Merlot grapes ripen completely. The Cabernets were harvested almost without interruption, in perfect condition. As in 2018, the fourth and fifth prerequisites were therefore entirely satisfied in 2019. While the weather and human choices led to variations from one vineyard to the next, the summer and early autumn of 2019 ensured high-quality Bordeaux red wines.

The grapes used to make dry white wines were harvested relatively early, which helped prevent excessive water stress. Sweet and acidic with wonderful aromatic potential, they were picked in perfect condition.

Superb weather in August and September, while ideal for ripening red grapes, delayed the onset of *Botrytis cinerea*. Early outbreaks of sour rot had to be carefully controlled to guarantee the purity of the harvested grapes. Rainfall in late September favoured the development of noble rot in perfectly ripe grapes, whose concentration rapidly increased. The majority of the grapes were harvested in several days, just before mid-October. Once again, considerable efforts were undertaken by winegrowers to ensure the production of pure and aromatic sweet white wines, albeit in low quantities.

A very dry winter, milder than average (except for January), leading to early bud break

Unlike the start of 2018, which was marked by abundant rainfall, the first three months of 2019 were characterised by surprisingly mild weather and very low precipitation (Figure 1, Table I).

The year started off relatively cool, with grey weather in January, and close-to-average rainfall.

In contrast, February and March were much milder than usual, with daytime temperatures over 4°C above average in February and 1°C above average in March (Figure 2). These temperatures were accompanied by exceptionally sunny conditions; with 181 hours of sunshine, February 2019 was the sunniest in the Aquitaine region since the first automated readings in 1991. Likewise, March was 35% sunnier than usual. These conditions evidently contributed to the water deficit, which reached -70% (Figure 3).

For the above reasons, vegetative growth started in late March, i.e. approximately one week earlier than the previous year. During this period, phenological development was relatively even from one area to the next in reference plots.
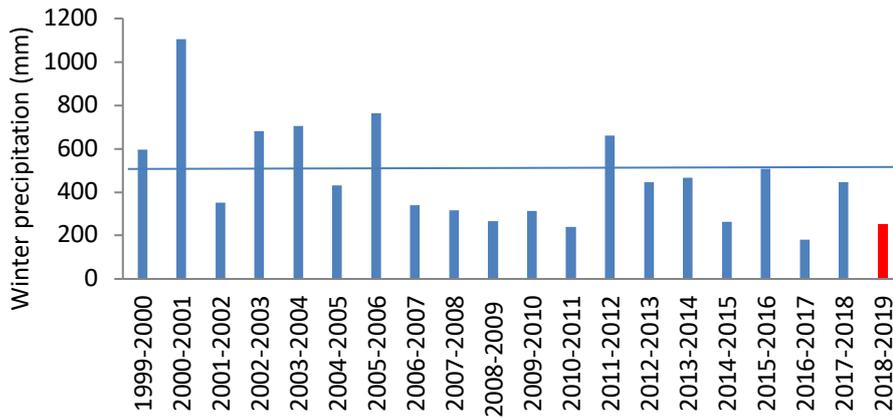
Figure 1
Cumulative rainfall from December 2018 to March 2019 compared to the 20 previous winters.
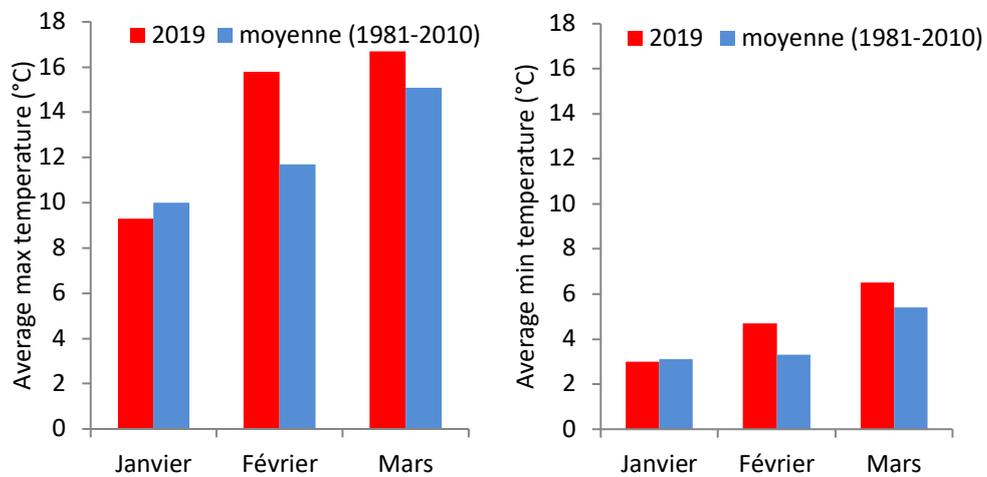*Data from Mérignac (Météo France)*

Figure 2
Average maximum and minimum temperatures in the winter of 2019, compared to 1981-2010
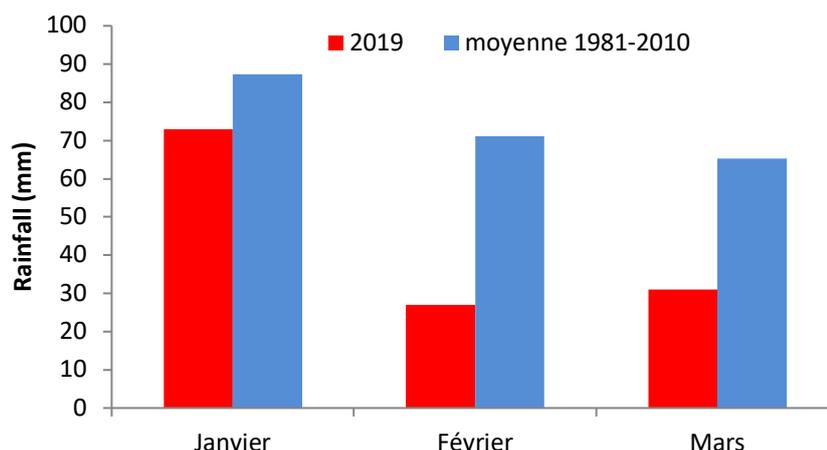*Data from Mérignac (Météo France)*

Figure 3
Cumulative winter rainfall (mm) in 2019,
compared to 1981-2010
Data from Mérignac (Météo France)

Table I
Weather data for 2019, rainfall and temperature (compared to the 1981-2010 average) and
hours of sunshine (compared to the 1991-2010 average).
Data from Mérignac (Météo France)

	Sunshine (hours)		Rainfall (mm)		Average minimum temp. (°C)		Average maximum temp. (°C)	
	2019	Average 1991-2010	**2019**	Average 1981-2010	**2019**	Average 1981-2010	**2019**	Average 1981-2010
January	**76**	96	**73**	87	3	3.1	**9.3**	10.0
February	**181**	115	**27**	71	4.7	3.3	**15.8**	11.7
March	**214**	170	**31**	65	6.5	5.4	**16.7**	15.1
April	**160**	182	**91**	78	8.1	7.4	**17.9**	17.3
May	**217**	217	**51**	80	9.6	11.0	**20.2**	21.2
June	**235**	239	**85**	62	14.6	14.1	**25.5**	24.5
July	**319**	249	**42**	50	17.9	15.8	**30**	26.9
August	**268**	241	**33**	56	16.5	15.7	**28.4**	21.7
September	**222**	203	**69**	84	14.1	12.9	**25.5**	24.0
October	**116**	147	**99**	93	12.6	10.4	**20.7**	19.4

An unsettled month of April with frequent spring showers

While the first buds began to develop in late March, boding well for a quick start to the growing season, relatively cool, dull weather in the first two weeks of April slowed down growth. During the first half of the month, night-time temperatures were cooler than usual, varying between 1 and 8°C (compared to 5 to 7°C on average). Frost once again struck many vineyards in Gironde during the night of the 12th of April. The cool weather continued into the day, often resulting in daytime highs between 10 and 16°C, (compared to the 16-17°C average), and accompanied by frequent rainfall. In this context, vine growth slowed down. While bud break had started relatively even, disparities appeared between vine plots.

From the 15th of April onwards, the weather became more springlike. The vines started to grow again, with phenological development comparable to the 10-year average (Figure 5).

The last week of April was rainy, with temperatures 2 to 4°C below the seasonal average. Although vine growth once again slowed down, the leaf canopy continued to develop, as did flower clusters.

May and early June were particularly cool and rainy, raising fears over flowering

As in 2018, weather conditions in spring 2019 were likely to lower yields.

May was rather cool, marked by heavy rainstorms, although accumulated rainfall did not exceed the monthly average (Table I). Since the early 1990s, May has often been a warm month, except for 2013, when the average maximum temperature was 3 to 5°C lower than usual. This year, despite the temperature deficit being limited to 1 or 2°C, May 2019 ranked among the fourth coldest over the past 30 years.

For the above reasons, vegetative growth slowed down considerably during the first 20 days of May, yet, quite surprisingly, flower clusters continued to develop.
The weather gradually improved in the last 3 days of the month, with summerlike conditions recorded on the 31st of May, conducive to the growth of the leaf canopy.

The fine weather was, unfortunately, short-lived. The first 3 weeks of June were cool, with frequent rainstorms. During this period, cool and unsettled weather arrived in the Aquitaine region from the ocean. On the 5th of June, temperatures failed to exceed 16 to 17°C near the coast, while the average for this time of year is 22 to 24°C. Record daytime lows for the month were observed, with 14.2°C recorded in the Entre-Deux-Mers (the coldest since 1978). Rainfall was 37% higher than average, with over 20 mm of precipitation in a single day on numerous occasions, while the first buds started to bloom.

Flowering began early June, in rather cool and wet weather conditions, leading to fears of *coulure* and *millerandage*. However, except for less vigorous vines or those whose growth began particularly late, flowering was relatively quick, completed in under two weeks in our reference plots. As in 2018, the average flowering date was the 4th of June, close to the 20-year average (Table II).

From the 23rd of June onwards, summer weather set in and warm air from Africa blew over the Aquitaine region. The warm weather increased day-by-day, resulting in a near-heatwave between the 25th and 29th, with temperatures exceeding 35°C on the 26th and 27th of

June. These summer temperatures and water reserves in the soil stimulated vine growth, and the grapes developed quickly.

At this stage, the first prerequisite for a great vintage, i.e. quick, even flowering, with little **coulure***, was not perfectly fulfilled.* Dull weather in early June and slow vine growth in May were partly responsible for the uneven development of the grapes in the more sensitive plots.
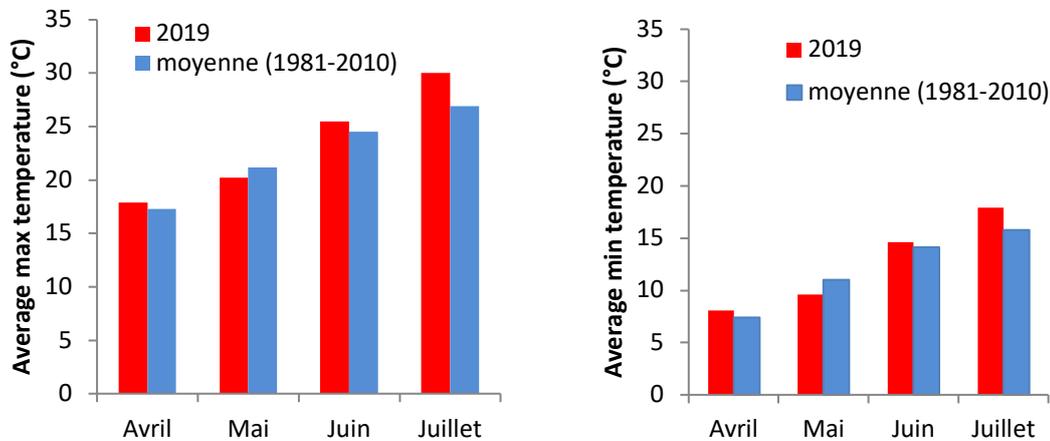

Figure 4
Average maximum and minimum temperatures in the months of April, May, June and July 2019, compared to 1981-2010
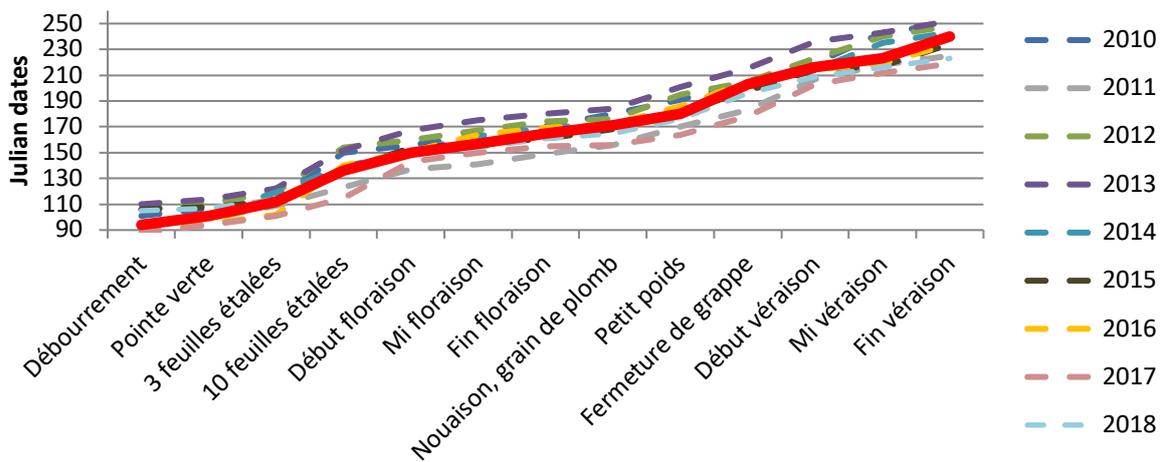*Data from Mérignac (Météo France)*

Figure 5
Phenological development in 2019 compared with 2018, 2017, 2016, 2015, 2014, 2013, 2012, 2011 and 2010 *(Data from SRAL and ISVV)*
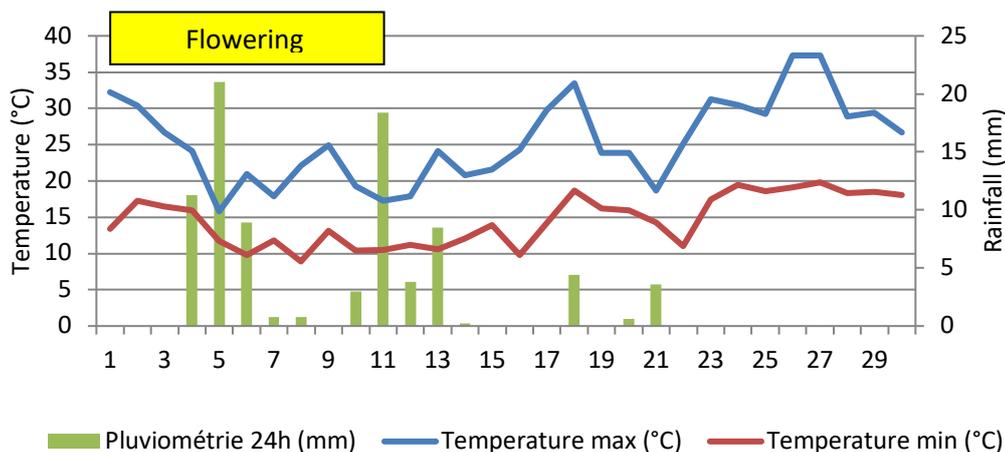
Figure 6
Daily variations in temperature and precipitation in June 2019
Data from Mérignac (Météo France)

An exceptionally hot summer with uneven rainfall, limiting significant early water stress but delaying the beginning of the ripening stage

The hot weather in late June returned on several occasions in July. Maximum temperatures were much higher than usual, with 17 days above 30°C and 5 days above 35°C (Figure 7). The intense heat was accompanied by exceptional sunshine. July 2019 was one of the three sunniest July's of the past 30 years.
Despite the extreme temperatures, water reserves in the soil enabled the grapes to grow quickly. Bunch closure took place mid-July, with no significant slowdown in vine growth.
The second prerequisite for a perfect red wine vintage -no rainfall after fruit set- was mostly satisfied.

July was also marked, in some regions, by two storms (on the 16th and 26th of July), resulting in heavy localised rainfall. Cumulative precipitation varied significantly from one region to the next (less than 40 mm in the northern Médoc and over 100 mm in Sauternes), leading to very uneven physiological development (Table III). However, in late July, vegetative growth was very vigorous thanks to the absence of water stress, while *véraison* gradually began.

August was, on the whole, a hot month, despite a cool rainy spell on the 10th and 11th, during *véraison* (Table II). Despite the sometimes tenacious cool air from the ocean and a few spells of unsettled weather, August was very sunny overall. These conditions did not, however, create sufficient water stress to halt vegetative growth before the beginning of *véraison*.
Consequently, *véraison*, which started in early August, was slow to set in. Depending on the area, type of soil, topography, and vine vigour, *véraison* was uneven and lasted until the last week of the month in the most vigorous plots. Winegrowers had to wait until mid-August to see water stress comparable to 2016 (Figure 10).

The third prerequisite for a great red vintage was best met on the most well-drained soils and in regions spared from July storms. However, for most vineyards, water stress was not sufficient before the beginning of véraison *to enable even ripening of the grapes.*

Table II

Mid-flowering and mid-*véraison* dates in 2019 compared to the 10-year average and the mean over the last 20 years

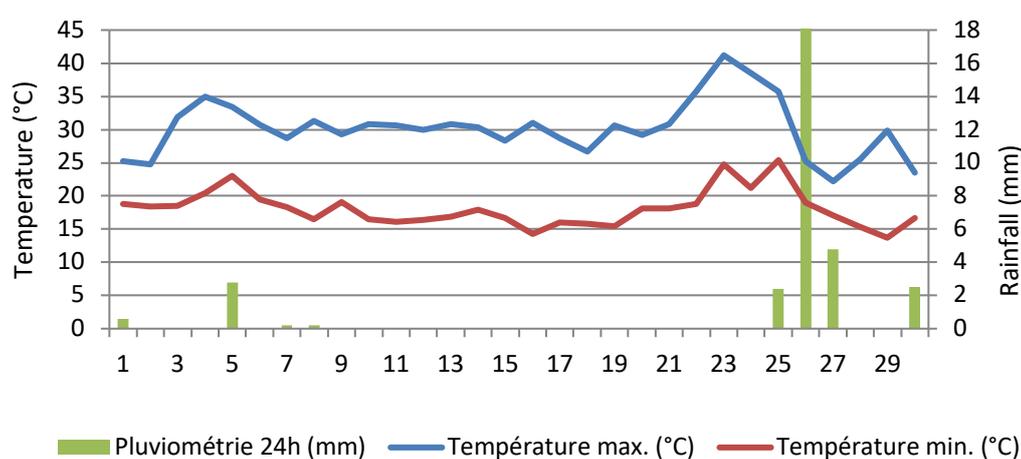| Period	Mid-flowering	Mid-*véraison*
1998-2018	3 June	6 August
2010	9 June	9 August
2011	17 May	21 July
2012	11 June	12 August
2013	18 June	22 August
2014	7 June	13 August
2015	5 June	6 August
2016	11 June	7 August
2017	30 May	30 July
2018	3 June	4 August
2019	**4 June**	**9 August**

Figure 7
Daily variations in temperature and precipitation in July 2019
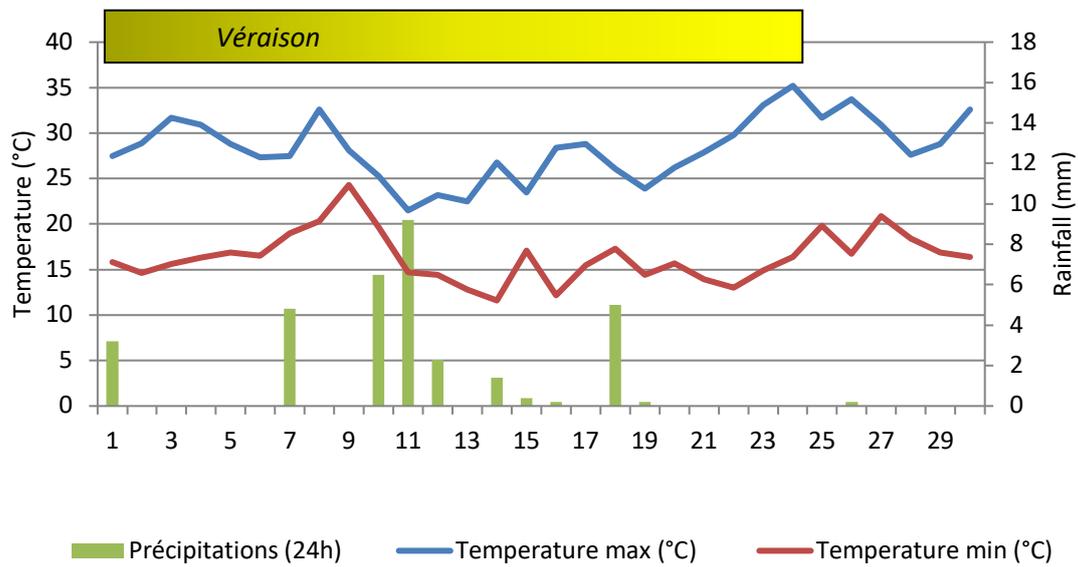*Data from Mérignac (Météo France)*

Figure 8
Daily variations in temperature and precipitation in August 2019
Data from Mérignac (Météo France)

Table III
Breakdown of summer rainfall (in mm) by region (*source: Demeter*)

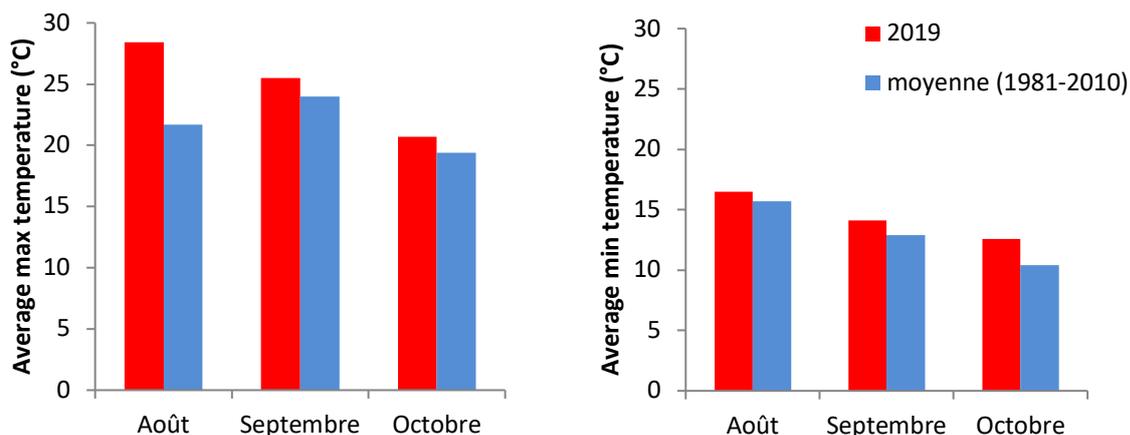| Town	June	July	August	Total, summer 2019
Saint-Ciers-sur-Gironde	145	55	41	241
Pauillac	124	31	42	197
Cussac-Fort-Médoc	148	41	44	232
Libourne	89	51	36	176
Sauternes	92	116	47	254
Seasonal averages Mérignac (1959-2017)	*59*	*50*	*55*	*164*

Figure 9
Average maximum and minimum temperatures in the months of April, September and
October 2018, compared to 1981-2010
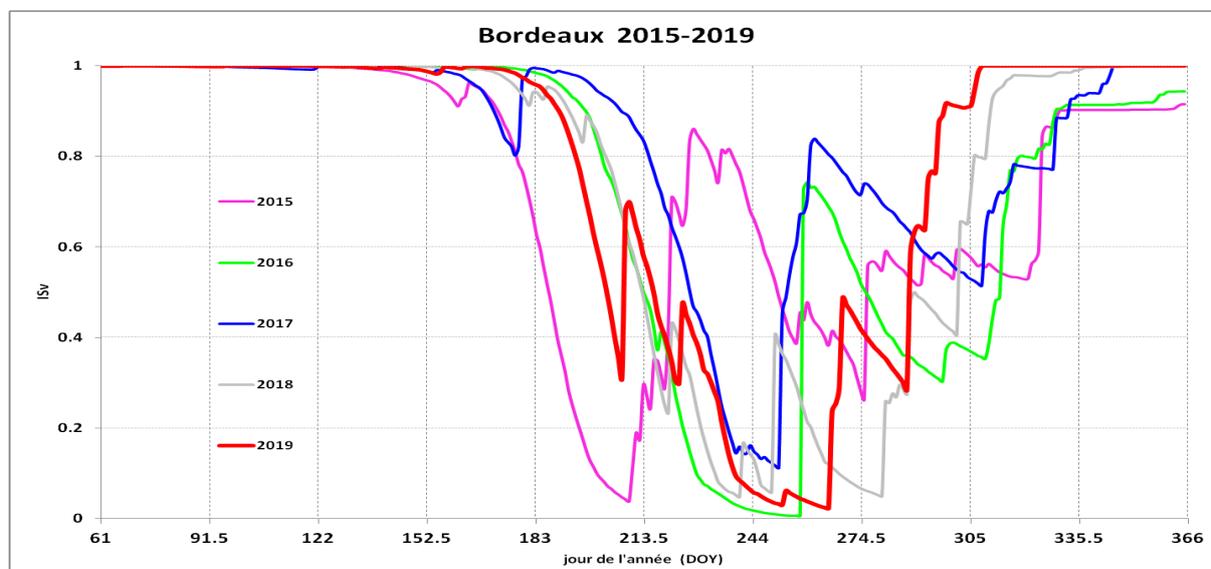*Data from Mérignac (Météo France)*

Figure 10
Variation in the water stress index in 2019 compared to
2015, 2016, 2017 and 2018
Data from INRA (Philippe PIERI)

A dry, hot and sunny month of September, which made up for slow *véraison*

After a relatively cool start to the month, a wonderful Indian summer set in from the 11th to the 20th of September, marked by hot daytime and cool night-time temperatures and the absence of significant water stress (Figure 11). The red grapes gradually developed good colour and tannin, characteristic of a great vintage.

During the first 19 days of the month, rainfall was relatively low and isolated. Cumulative precipitation was 69 mm, i.e. 20% lower than average, although higher than in September 2018 and 2014. During the last ten days of September, rainfall became more frequent and widespread, although not occurring on a daily basis. This limited water stress on the most well-drained soils and the later-ripening grape varieties were able to reach full maturity without shrivelling.

These conditions were particularly conducive to slow ripening. They also made it possible to wait patiently for the best time to pick, without the risk of grey rot, during the first ten days of September.

For the above reasons, the dry white wine harvest began with the Sauvignon Blanc grapes in Sauternes on the 26th of August, several days later than in 2018 (Table IV).

In the Graves and Pessac-Léognan region, picking also started with Sauvignon Blanc in late August. The first Sémillon grapes were harvested from the beginning of the second week of September until around the 23rd (Table IV), i.e. just before another spell of rainy weather, which could have damaged otherwise perfectly healthy grapes. Furthermore, yields were very satisfactory in most vineyards.

Despite an exceptionally hot summer that was sometimes incompatible with the greatest dry white vintages, the absence of early and excessive water stress produced perfectly balanced, aromatic grapes with good acidity and not overly high sugar levels. Their composition is ideal for producing wines with outstanding ageing potential.

Table IV
Harvest dates for dry white wine grapes in the Graves region in 2013, 2014, 2015, 2016, 2017, 2018 and 2019

	Sauvignon Blanc	Sémillon
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
2018	23 August - 10 September	5 - 15 September
2019	**26 August - 19 September**	**6 - 23 September**

Table V

Composition of Sauvignon Blanc grapes from a plot with limestone soil in the Graves region in 2013, 2014, 2015, 2016, 2017, 2018 and 2019

	Potential alcohol (%)	Total acidity (g/L)	pH
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
2018	13.8	6.8	3.10
2019	**13.7**	**5.1**	**3.19**

Thanks to fine weather between the 10th and 20th of September, the most early-ripening Merlots reached maturity mid-September. The first bunches were picked during the week of the 16th, then most estates followed during the week of the 25th after a short rainy spell.

The Merlot grapes, picked 8 to 10 days later than in 2018, did not ripen particularly early this year, despite the summer heat (Figure 11). The grapes' organoleptic profile was greatly influenced by the chosen harvest date, i.e. before or after the rainy spell during the second half of September.

Nevertheless, sugar levels in Merlot were very high overall compared to 2018, while total acidity was slightly higher (Table VI, Figures 12, 13, 14). The pH of the must was often rather low, and varied significantly from one estate to the next. The skins remained thick later this year and gradually developed a high anthocyanin content during ripening, thus providing a very good level of colour compounds. However, rainfall in August and early September slowed down the ripening of grape seeds, which were subsequently unable to reach the ripeness obtained in 2018 (Figure 15).

Table VI
Variations in sugar content and acidity during ripening in reference plots

	Weight per 100 berries (g)	Sugars (g/L)	TA (g/L H_2SO_4)
2019			
26/8 Merlot	**119**	**199**	**4.7**
Cabernet Sauvignon	**99**	**177**	**7**
16/9 Merlot	**127**	**244**	**2.7**
30/9 Cabernet Sauvignon	**105**	**233**	**3.3**
2018			
27/8 Merlot	142	214	3.3
Cabernet Sauvignon	116	193	4.9
10/9 Merlot	143	233	2.5
24/9 Cabernet Sauvignon	126	230	2.8
2017			
28/8 Merlot	140	222	3.8
Cabernet Sauvignon	121	203	5.2
11/9 Merlot	144	225	3.0
18/9 Cabernet Sauvignon	131	217	3.2
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
2010			
3/9 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

Late August and September are often decisive for the success of a vintage. Merlot grapes benefited from ideal weather conditions to achieve optimal ripeness. The fourth and fifth prerequisites for a great red wine vintage, i.e. a dry period without excessive heat and clement weather during the harvest, were perfectly met in 2019 for Merlot.

The later-ripening varieties were harvested immediately after the Merlot grapes

The Cabernets were picked without delay after the Merlots. In early October, 2 out of the 6 reference plots were harvested just after the rainy spell during the third week of September.

Picking became widespread during the first ten days of October under ideal conditions; daytime temperatures reached around 20°C, with plenty of sunshine, little rainfall, and gentle southwesterly winds, enabling the vine to dry in just a few hours (Figure 11).

The grapes were smaller than the previous year, although just as sweet, more acidic and deeply-coloured with richer tannins (Figures 12, 13, 14, Table VI). Despite taking a while to reveal their intrinsic fruitiness, probably due to uneven ripening, the grapes' aromatic intensity was nevertheless remarkable, featuring complex notes of fresh red fruit. The colouring of the seeds significantly improved right at the end of ripening, although they were much less dehydrated compared to 2018.
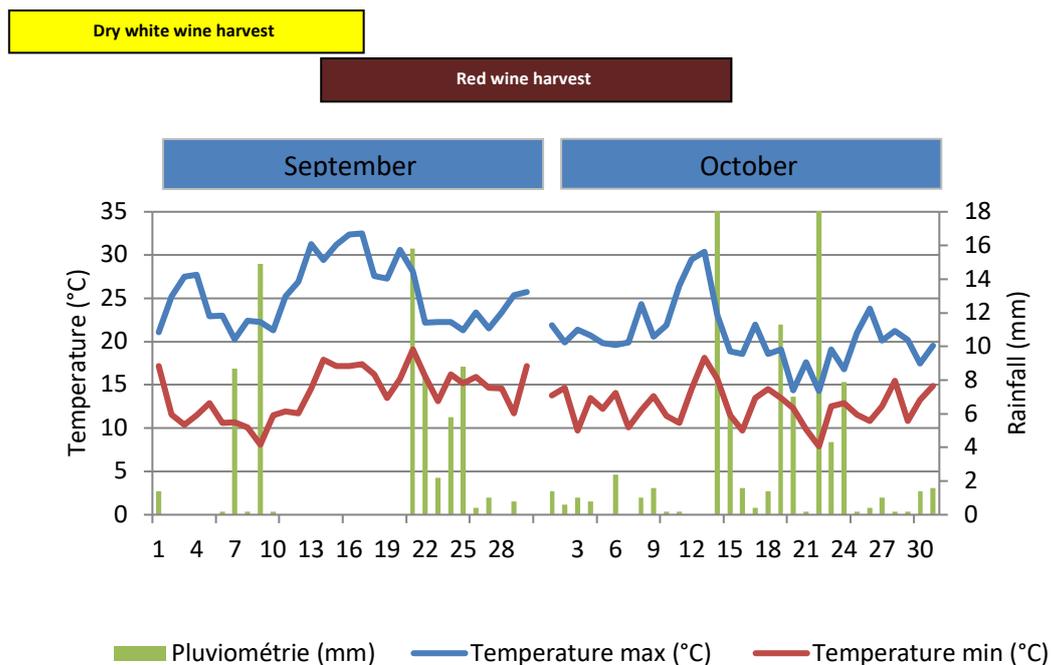

Figure 11
Daily variations in temperature (°C) and precipitation (mm) in September and October 2019
Data from Mérignac (Météo France)

As was the case for Merlot, the late summer weather and a few showers in September enabled Cabernet Sauvignon to continue ripening, meaning the fifth and final prerequisite for a great red wine vintage was consequently fulfilled.
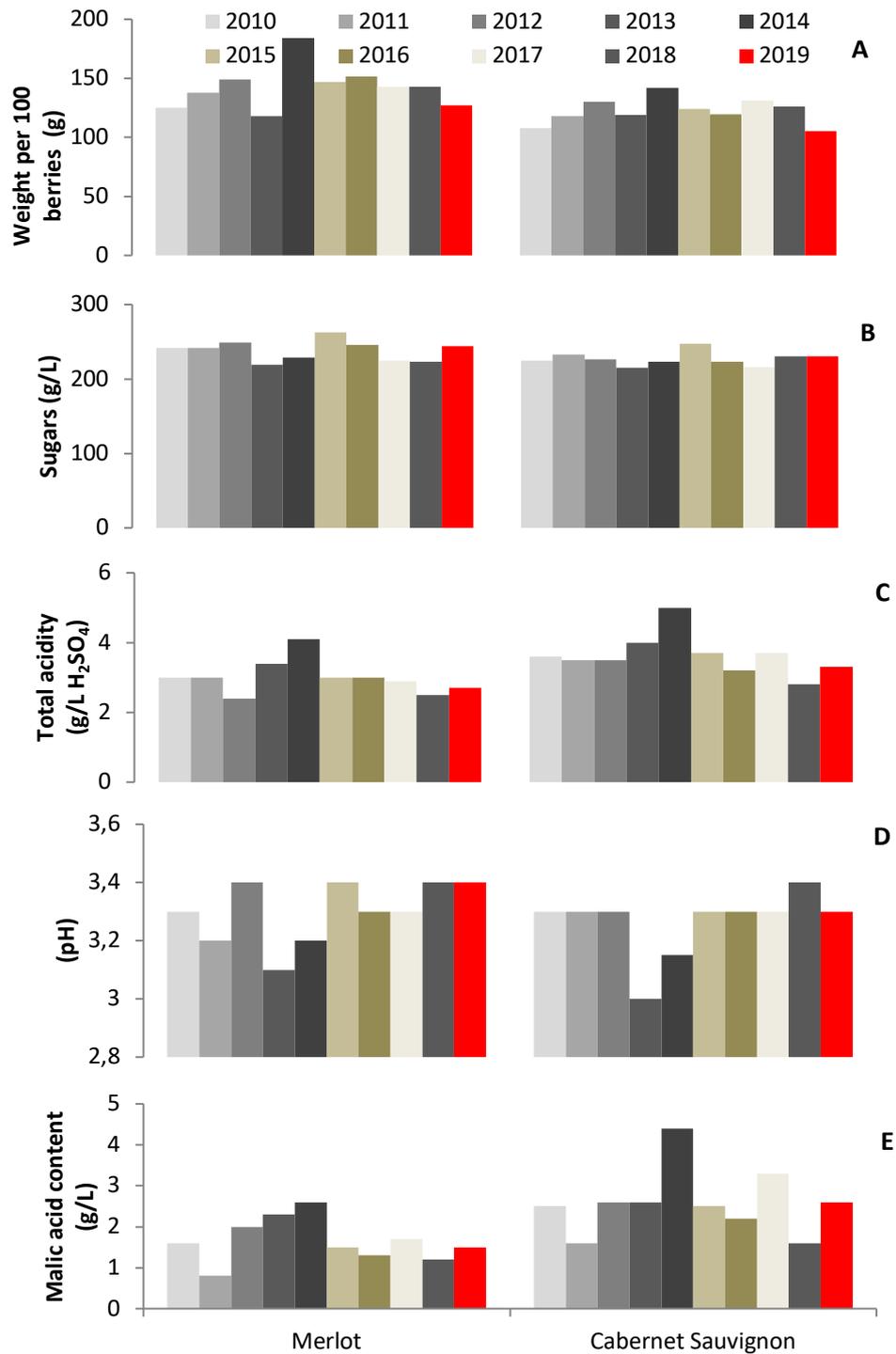
Figure 12

Analytical characteristics of berries in the 2019 vintage compared with the 9 previous vintages for Merlot and Cabernet Sauvignon grapes in various reference plots

A: Weight in grams per 100 berries – B: Sugar content (g/L) – C: Total acidity (g/L H_2SO_4)
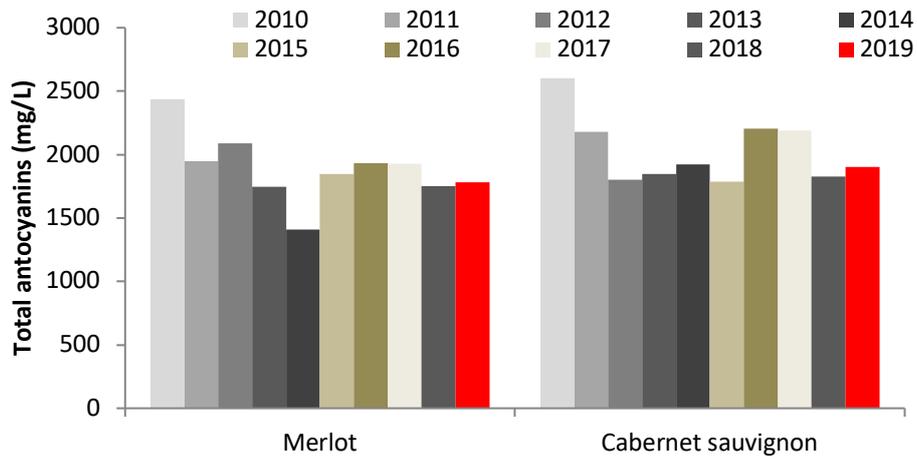
D: pH - E: Malic acid content (g/L)

Figure 13

Total anthocyanin content (mg/L) in Merlot and Cabernet Sauvignon berries in 2019, compared with the 9 previous vintages for Merlot and Cabernet Sauvignon grapes in various reference plots.
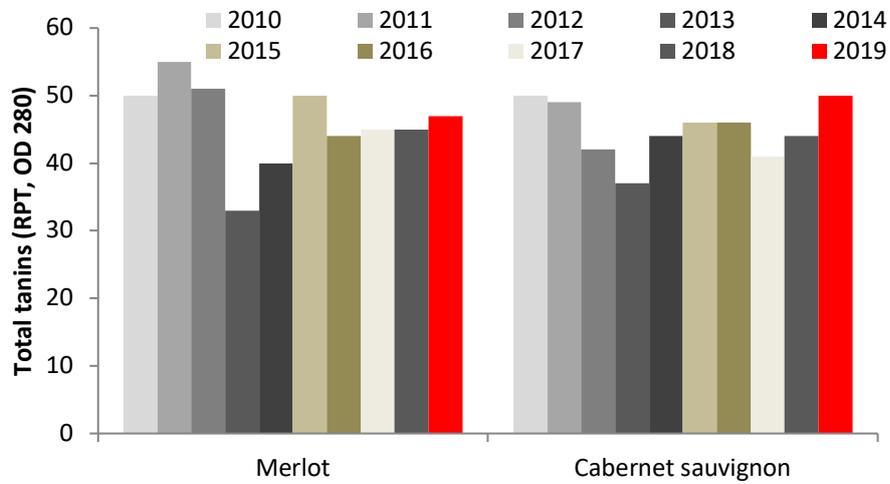

Figure 14

RPT tannic index of Merlot and Cabernet Sauvignon grapes in 2019, compared with the 9 previous vintages in various reference plots.
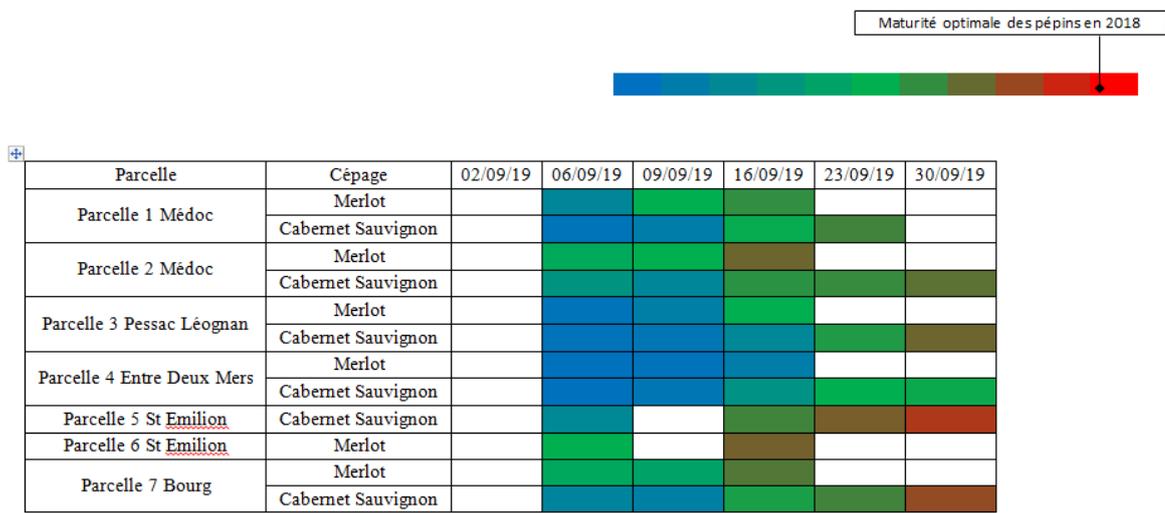
Parcelle	Cépage	02/09/19	06/09/19	09/09/19	16/09/19	23/09/19	30/09/19
Parcelle 1 Médoc	Merlot						
	Cabernet Sauvignon						
Parcelle 2 Médoc	Merlot						
	Cabernet Sauvignon						
Parcelle 3 Pessac Léognan	Merlot						
	Cabernet Sauvignon						
Parcelle 4 Entre Deux Mers	Merlot						
	Cabernet Sauvignon						
Parcelle 5 St Emilion	Cabernet Sauvignon						
Parcelle 6 St Emilion	Merlot						
Parcelle 7 Bourg	Merlot						
	Cabernet Sauvignon						

Figure 15

SCANPEP ripening index for Merlot and Cabernet Sauvignon seeds in 2019

The redder the indicator, the greater the degree of ripeness

The development of *Botrytis cinerea* was capricious; slow to set in then very quick to concentrate the grapes.

Rainfall in Sauternes during summer 2019 was significantly higher compared to the rest of the Bordeaux wine region (Table II), with a storm in late July bringing up to 100 mm of precipitation. The grape skins weakened by the rainstorm and the extreme heat in late August were conducive to the appearance of sour rot in plots grown on the deepest soils in early September, and, at the same time, the onset of *passerillage* (raisining) in plots sensitive to water stress. However, a "cleaning-up" pass in the majority of estates eliminated the damaged grapes, enabling winegrowers to wait patiently for the spread of noble rot.

Botrytis cinerea thus gradually developed in the perfectly ripe grapes left on the vine, following mid-September rainfall. The return to high pressure conditions during the first half of October was propitious to the particularly rapid concentration of the berries. Winegrowers had to pick very quickly, in order to harvest most of the 2019 vintage before the rain came back.

The best part of the Sauternes crop was picked between the 10th and 14th of October (Figure 16). The final pass took place between the 18th and 23rd of October, yielding lower-quality, diluted grapes due to the recent spell of wet weather. The grapes left on the vines after this pass could not be used to produce sweet white wines. Yields in the Sauternes region were, therefore, very low overall in 2019.
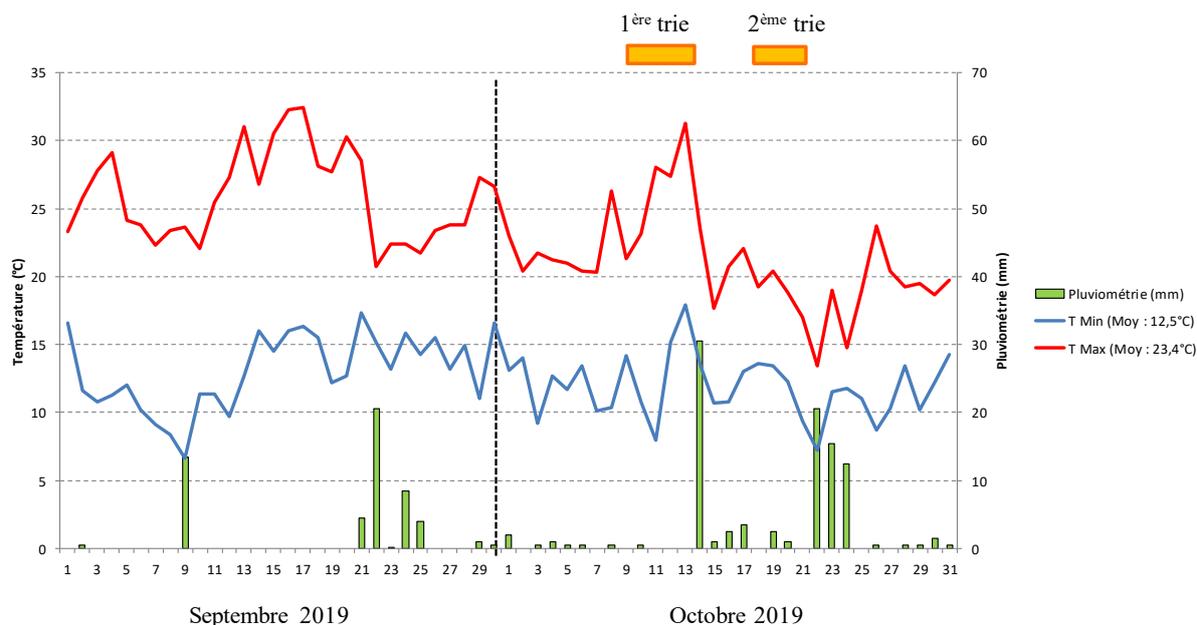
Figure 16
Daytime temperatures and precipitation in September and October 2019 in Sauternes
Chronology of the development of noble rot and the progression of passes (example).

Remarkable dry white wines and very successful, expressive, soft and delicious red wines

The 2019 vintage produced dazzling dry white wines. Their aromas are intense and attractive, dominated by grapefruit, mango, and lemon notes, characteristic of ripe Sauvignon Blanc. The wine is fresh on the palate, with Sémillon contributing a smooth, full-bodied texture, culminating in hints of tropical fruit on the finish. A great year for dry white wines!

The wines of Sauternes, made from a drastic selection of grapes, are perfectly precise and aromatic. They are fresh, well-balanced, delicious and in no way heavy on the palate. The aftertaste is equally refreshing and flavoursome.

The quality of Bordeaux red wines looks promising once again in 2019. In light of the variations among estates, the reasons of which are described above, it is not simply a matter of stating general truths. Judging the relative performance of grape varieties and appellations, which is very common practice in this early stage, requires looking at in close detail.

As in 2018, the Merlots appear to be a great success. They are expressive wines, marked by cherry, blackberry and fresh plum aromas. Smooth on the palate, they already reveal melt-in-the-mouth tannins. Rainfall in late September were often welcomed by winegrowers, making it possible to reach phenolic and aromatic ripeness. It is also worth noting that this vintage reflects the growing trend to produce grapes with increased sugar levels. In most cases, the excellent balance of flavours does not seem to have been affected by the resulting higher alcohol content, although particular care and attention was required when completing alcoholic fermentation. This observation should lead to a reflection on the influence of vineyard

operations and their adaptation to climate change. Furthermore, the generally higher acidity, compared to the 2018 vintage, results in a more classic style of wine.

Particularly sensitive to drought, Petit Verdot sometimes suffered from excessive water stress on the most well-drained soils. Certain batches have lost their usual charm.

Meanwhile, the Cabernets, which benefited from favourable conditions at the end of the season, were picked in good condition, at peak ripeness. While they may lack the concentration of outstanding vintages throughout the region, they are nevertheless bursting with fruitiness, accompanied by a fine tannic structure. Once again, the finest deep gravel terroirs produced outstanding results.