European Commission

JRC MARS Bulletin Vol. 28 No 5

Period covered: 1 April until 10 May 2020
Issued: 18 May 2020

JRC MARS Bulletin
Crop monitoring in Europe
May 2020

Reduced yield expectations at EU level

Positive outlook in Mediterranean region and northern Europe

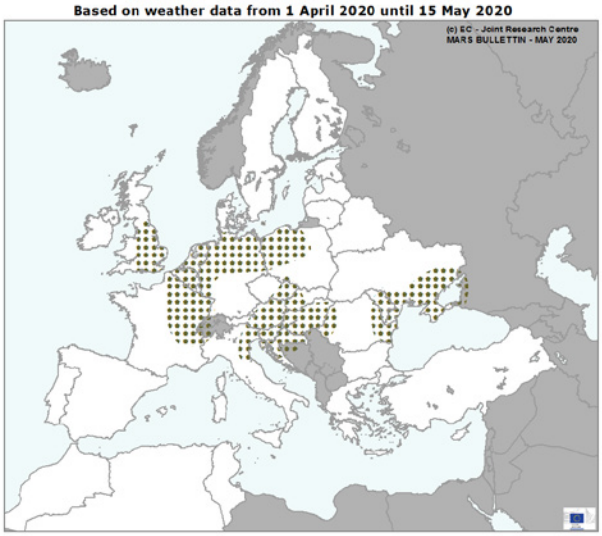
At EU level, the yield forecasts for almost all crops were revised downwards; most markedly so for rapeseed, winter barley and winter wheat. In the case of spring barley, downward revisions of the yield forecasts in most countries were offset by an upward revision in Spain. For summer crops, the season just started and most of the yield forecasts reported at country level are still based on historical trends or average values.

In large parts of western and central Europe, weather conditions were similar to those reported in the April bulletin: predominantly above-average temperatures, high radiation levels and insufficient precipitation to replenish soil moisture levels for the growth of winter and early-planted spring crops. In eastern Romania and western Ukraine, crops are stunted and present signs of wilting and early leaf senescence.

For late-planted spring and summer crops, the concerns raised in the April bulletin for these regions were mitigated. However, emerging crops often present poor stands due to the preceding dry conditions, and in addition these crops will require more rain to adequately sustain growth.

Favourable conditions prevailed in northern Europe, the Atlantic region and in western and eastern Mediterranean countries.

AREAS OF CONCERN - CROPS
Based on weather data from 1 April 2020 until 15 May 2020



Negative impact

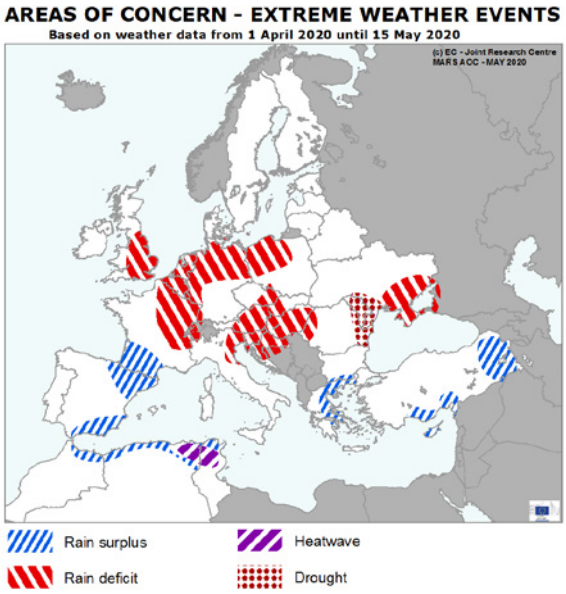
Crop	Yield (t/ha)				
	Avg 5yrs	April bulletin	MARS 2020 forecasts	% diff 20/5yrs	% diff April
Total cereals	5.60	5.44	**5.39**	– 3.7	– 0.9
Total wheat	5.54	5.65	**5.50**	– 0.6	– 2.7
Soft wheat	5.77	5.87	**5.72**	– 0.9	– 2.6
Durum wheat	3.49	3.43	**3.38**	– 2.9	– 1.5
Total barley	4.78	4.86	**4.72**	– 1.1	– 2.9
Spring barley	4.02	4.03	**4.05**	+ 0.8	+ 0.5
Winter barley	5.75	5.92	**5.63**	– 2.0	– 4.9
Grain maize	7.58	8.04	**7.94**	+ 4.8	– 1.2
Rye	3.75	3.92	**3.90**	+ 4.0	– 0.5
Triticale	4.04	4.18	**4.15**	+ 2.7	– 0.7
Rape and turnip rape	3.08	3.14	**2.95**	– 4.4	– 6.1
Potato	32.5	34.2	**33.9**	+ 4.6	– 0.8
Sugar beet	74.7	75.9	**75.4**	+ 0.9	– 0.7
Sunflower	2.25	2.39	**2.34**	+ 4.4	– 2.1

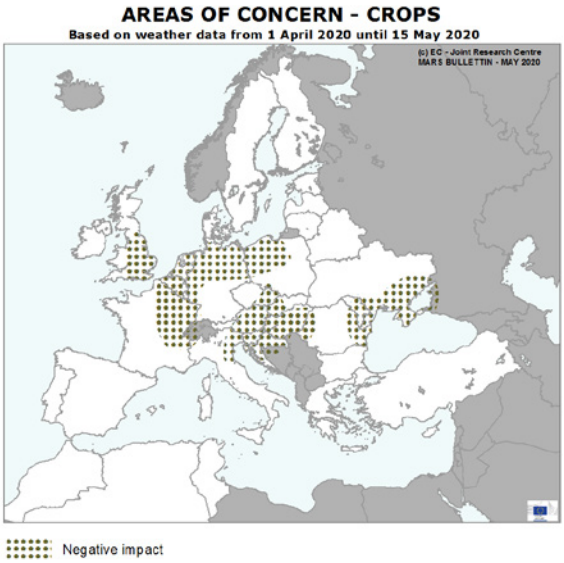
Issued: 15 May 2020.

Joint Research Centre

1. Agrometeorological overview

1.1. Areas of concern





Large parts of western and central Europe experienced persistent precipitation deficits. In eastern France, the eastern United Kingdom, the Benelux countries, the northern half of Germany and western Poland, along with southern Czechia, western Slovakia, Austria, eastern Italy, Slovenia, Hungary and Croatia, weather conditions were similar to those reported in the April bulletin: low precipitation, high radiation levels and predominantly above-average temperatures. Some rainfall did take place (up to 60 mm in eastern France; generally less than 30 mm in the other aforementioned regions), but mostly in the last 10 days of the review period. In general the precipitation amount was insufficient to replenish or sustain favourable soil moisture levels for the growth of winter and early-planted spring crops (see dedicated sowing paragraphs in the April issue of the bulletin). As a consequence, crop biomass accumulation slowed, with actual crop conditions generally worse than in 2019. Moreover, in most of these regions, little or no rain is forecast in the coming days, as winter cereals are approaching the sensitive flowering stage. In the case of rapeseed, the conditions of water stress already experienced partially coincided with the flowering and/or early grain filling stage.

In eastern Romania and western Ukraine, the condition of crops worsened due to the ongoing drought and crops are generally stunted and present signs of wilting and early leaf senescence.

For the sowing and emergence of late-planted spring crops and summer crops (see sowing paragraphs of this bulletin) in these regions, the concerns raised in the April bulletin were mitigated. The limited amount of rainfall since the end of April was sufficient to facilitate the progress of sowing and to allow for emergence (see section on sowing conditions); however, emerging crops often present uneven or patchy stands due to the preceding dry conditions, and in addition these crops will require more rainfall to adequately sustain growth.

A favourable rainfall surplus is observed in western and eastern Mediterranean countries. In the Maghreb region, rainfall occurred too late in the season to be beneficial for winter crop grain filling, while unusually high temperatures in Tunisia impacted the grain filling of winter crops.

NB: Just after the review period, a marked cold-air intrusion caused night frosts, mainly in Germany, the United Kingdom and the Benelux countries. Depending on the local climate conditions, frost damage is possible for summer crops, flowering rapeseed, permanent crops and vineyards.

1.2. Meteorological review (1 April to 10 May 2020)

Warmer-than-usual conditions were observed in most of France and in north-eastern Spain, with daily mean temperature anomalies (with respect to the long-term average (LTA)).

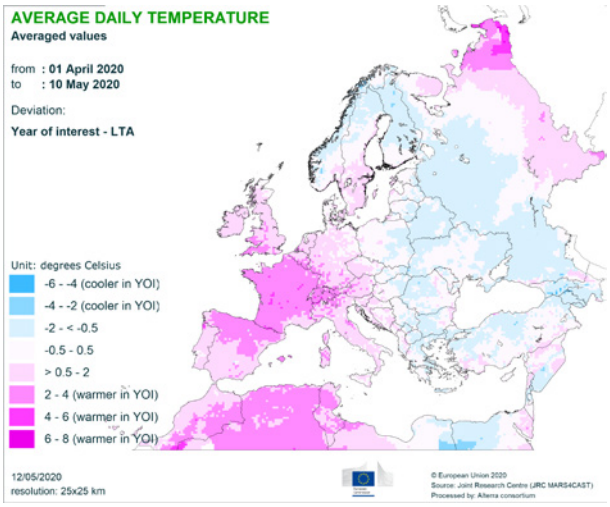
Slightly warmer-than-usual conditions were observed across western and central Europe, the western Mediterranean region and southern Sweden. Daily mean temperatures reached up to 2 °C above the LTA. For over 7 days, the daily maximum temperatures were above 25 °C in large areas of southern and eastern Spain, the Po Valley (Italy) and the Balkans.

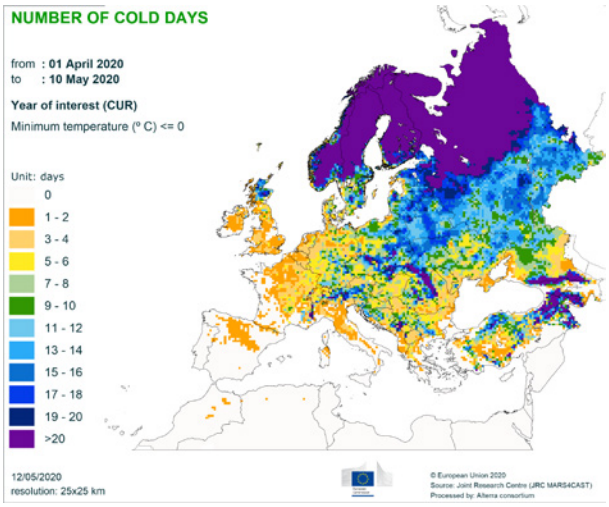
Slightly colder conditions than usual occurred in large regions of eastern Europe, the Mediterranean, Finland, Norway and northern Sweden. The observed daily mean temperature anomalies did not exceed 2 °C below the LTA. These areas received 11 to 15 cold days, with daily minimum temperatures of below 0 °C.

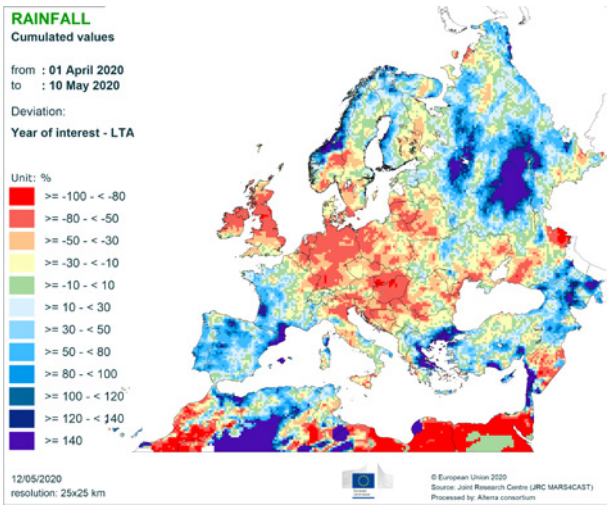
Wetter-than-usual conditions were reported in Spain and France, and in large regions of Greece, Turkey, central-northern Norway, Finland and European Russia. In most of France and Spain, cumulated precipitation was 50 % to 80 % higher than the LTA during the review period. Anomalies of 40 % above the LTA were recorded in the other aforementioned areas.

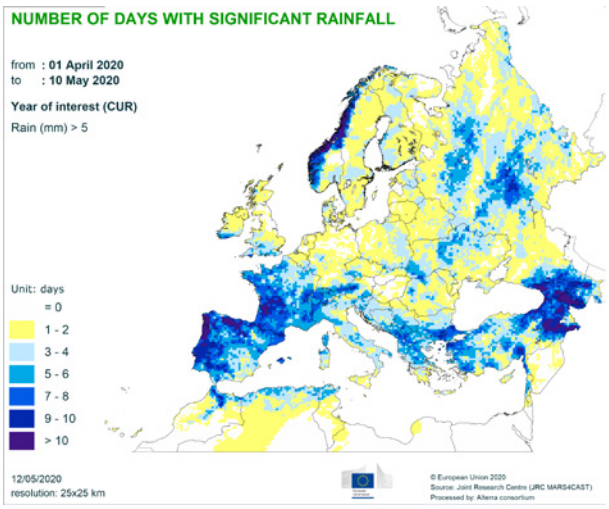
Drier-than-usual conditions were recorded across a wide belt of central Europe: from Germany and Poland to Czechia, Slovakia and Austria, and further south in the Po Valley region of northern Italy, as well as in Slovenia, Croatia and Hungary. The United Kingdom, Ireland and southern Norway were also drier than usual. Furthermore, dry conditions prevailed locally in eastern European areas, such as Lithuania, western Belarus, eastern Romania and southern Ukraine. In all of these regions, cumulated precipitation mainly ranged between 80 % and 50 % below the LTA during the review period.

Focusing on a longer temporal perspective, since February a 3-month precipitation deficit has affected Hungary, Croatia, Slovenia and the Po Valley region of Italy, along with southern Russia and Ukraine. Over the past 2 months, the deficit has extended to a larger region across Europe, including Ireland, the United Kingdom, the Benelux countries, Germany, western and southern Poland, Slovakia, Austria and eastern Ukraine. In contrast, the water supply from rainfall has been favourable in recent months for the Iberian Peninsula, south-western France and Greece.









1.3. Weather forecast (15 to 21 May 2020)

Weather conditions during the forecast period will be mainly determined by an almost stationary pattern characterised by a cut-off cyclonic system in the western Mediterranean and two troughs over the Atlantic and northern European Russia.

Warmer-than-usual conditions are predicted for south-eastern Europe and the eastern Mediterranean, with daily mean temperatures of over 4 °C warmer than the LTA and up to 8 °C above the LTA in Greece and Turkey. In these areas, several days with daily maximum temperatures of above 30 °C are expected. Warmer conditions than usual are also forecast for southern Italy, as well as across some areas of western Europe: Portugal, the United Kingdom and Ireland are expected to see daily mean temperature anomalies of between 2 °C and 4 °C.

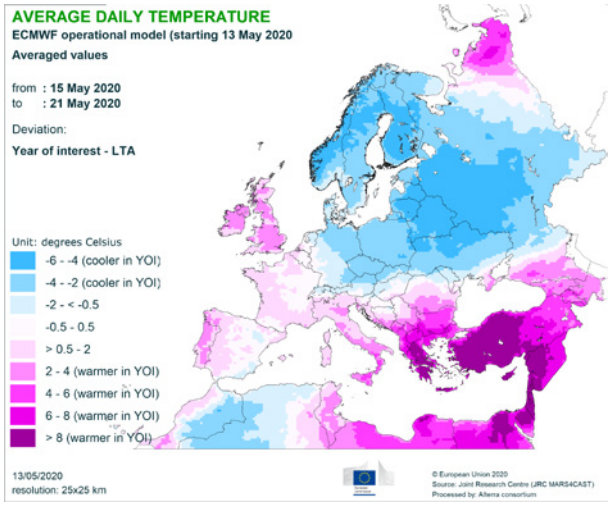
Colder-than-usual conditions are forecast across central, eastern and northern Europe, as well as in European Russia. Daily mean temperatures will stay around 2 °C to 4 °C below the LTA. In a large region across eastern Europe and Russia, as well as in Finland, central-northern Norway and northern Sweden, the anomalies will be more pronounced, and are expected to be around 4 °C and 6 °C below the LTA.

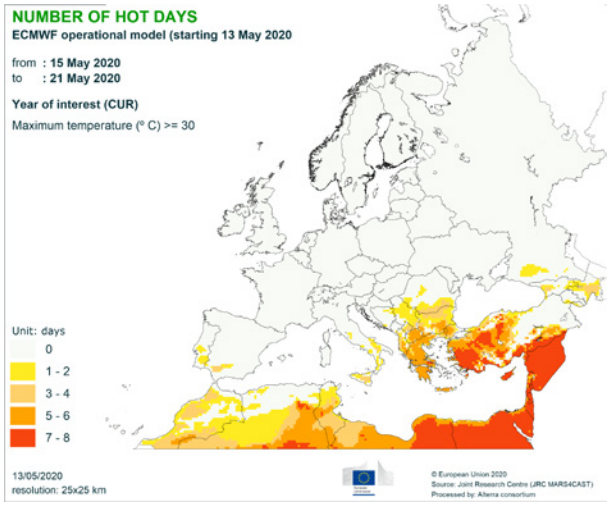
Accordingly, during the forecast period, temperature accumulation is expected to be average in western Europe and south of the Alps, while it is forecast to be slightly above average for the United Kingdom and Ireland and will remain below average in central-eastern and northern Europe. The temperature accumulation in south-eastern Europe is expected to be significantly above average.

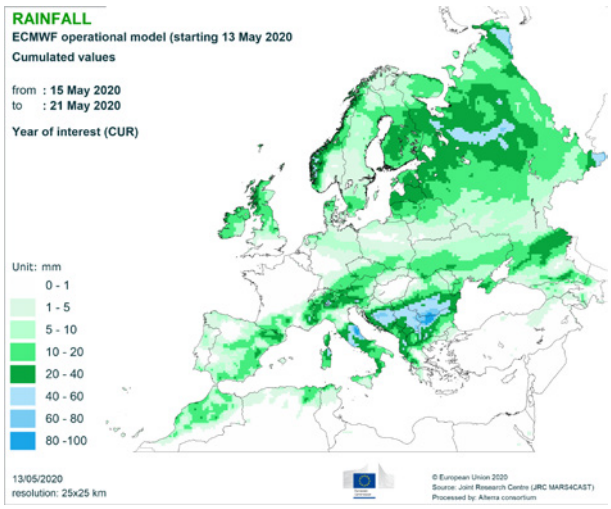
Dry conditions with less than 5 mm of accumulated precipitation are expected in a wide belt spreading from Portugal and western Spain over most of France, the Benelux countries, Germany and Poland, into southern Belarus, northern Ukraine and western Russia. Hungary, Slovakia, Turkey and most of Greece are also expected to remain dry.

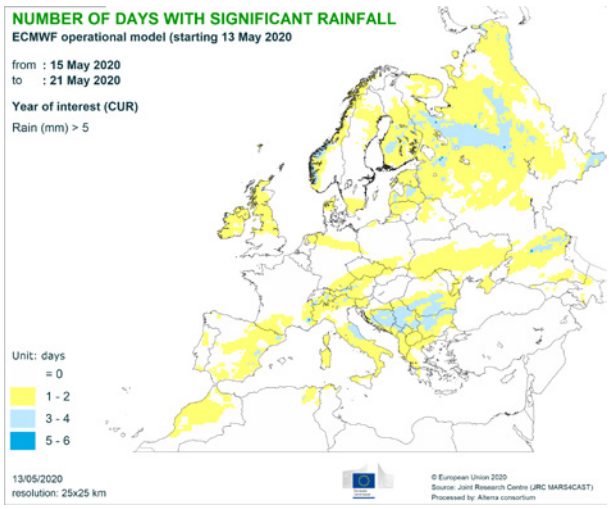
Wet conditions with accumulated precipitation of between **40 mm and 80 mm** (locally, 100 mm) are forecast in central Italy and south-eastern Europe, while around the Pyrenees, the Alpine regions, the Baltics and Finland, up to 40 mm of precipitation is expected.

The **long-range weather forecast** for May, June and July strongly suggests that warmer conditions than usual will be experienced in most of Europe, and are also very likely in the central Mediterranean and in south-eastern Europe. These warmer conditions will likely go together with drier conditions than usual for south-eastern Europe.



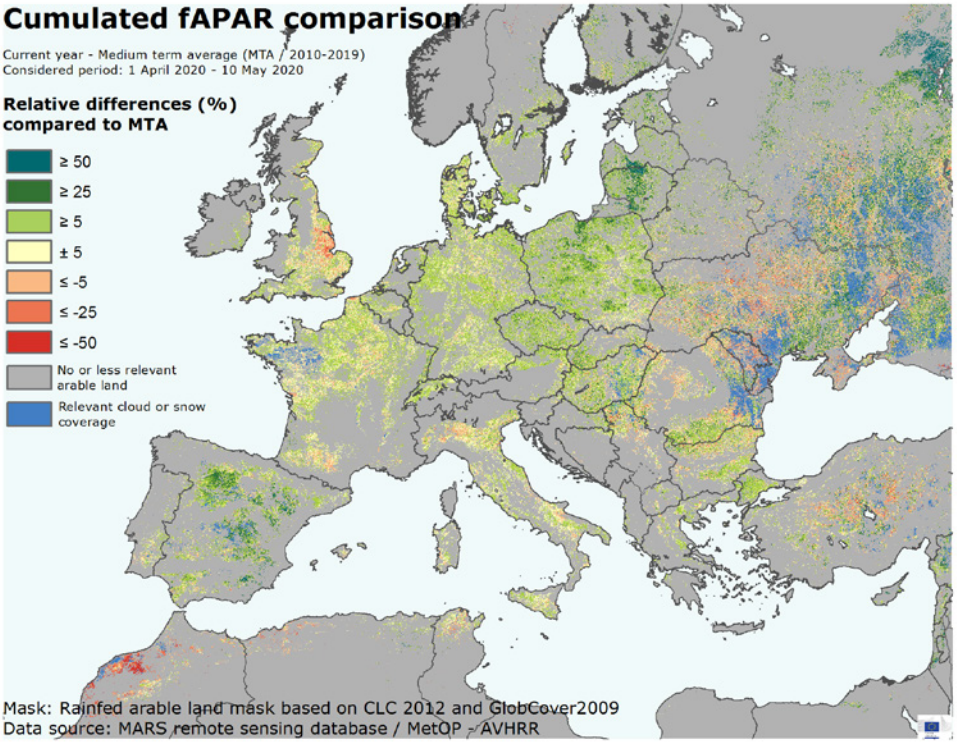






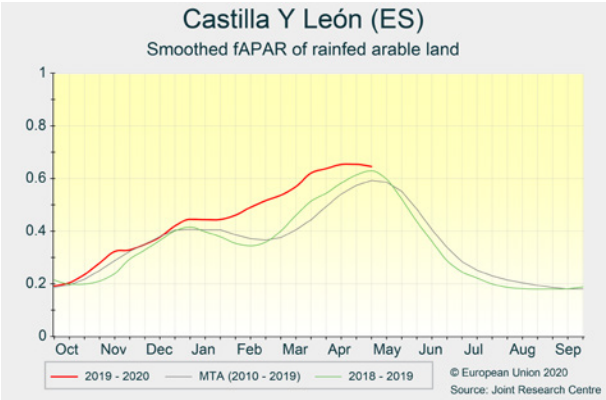
2. Remote sensing – observed canopy conditions

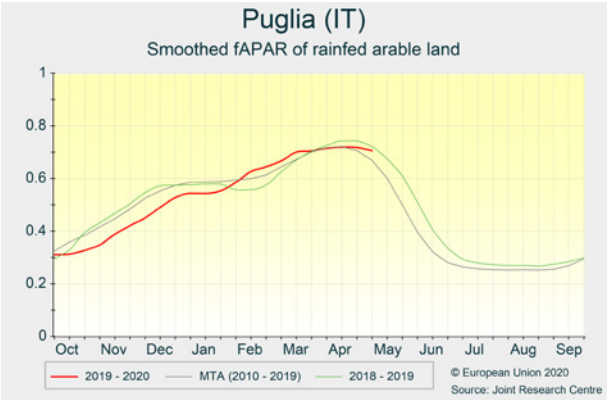
Slowdown in biomass accumulation in central and eastern Europe

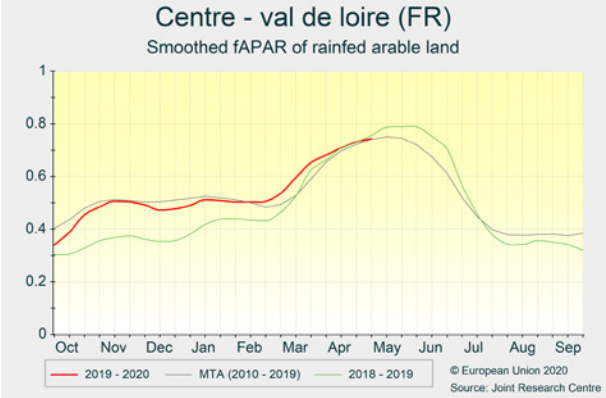


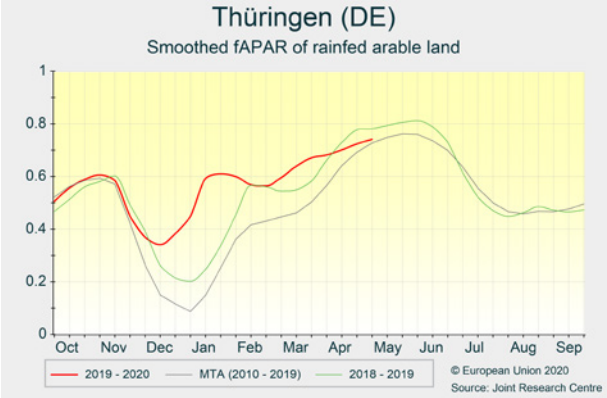
The map above displays the differences between the fraction of absorbed photosynthetically active radiation (fAPAR) cumulated from 1 April to 10 May 2020, and the medium-term average (MTA, 2010–2019) for the same period. Positive anomalies (in green) reflect above-average canopy density or early crop development, while negative anomalies (in red) reflect below-average biomass accumulation, or late crop development.

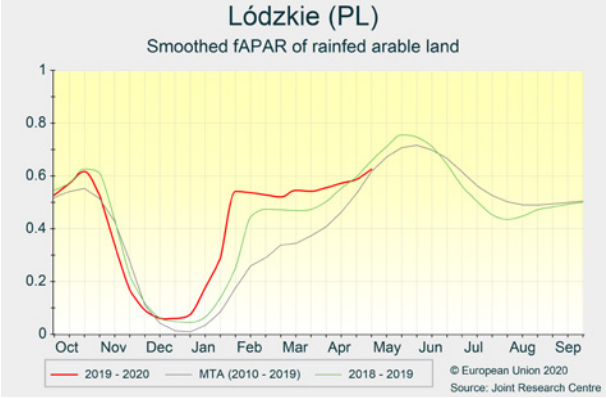
In **Spain**, winter crops exhibit generally favourable biomass accumulation and very advanced stages (e.g. in *Castilla y León*), thanks to persistent rainfall and warm weather. The flowering stage has almost ended, and the fAPAR curve displays a similar trend to that of 2016, a year which resulted in very good winter crop yields. In **southern Italy**, colder temperatures than usual until mid April caused a slowdown in biomass accumulation (e.g. in *Puglia*), and rainfall sustained average crop development. Winter crops are flowering, and their conditions are mixed, still reflecting the unfavourable early spring conditions. In north-eastern **France**, the unfavourable start for spring crops and the slowdown of winter crop development is reflected by the overall crop biomass accumulation averaging lower than usual (light red on the map). In northern and north-western regions, winter crop development remains slightly advanced, and vegetative growth is sustained, as a result of the favourable rainy and warm weather conditions which have taken place since the end of April. In **Germany**, the development of winter crops changed from very advanced to slightly advanced, due to a combination of dropping temperatures at the beginning of April and suboptimal soil moisture throughout the whole month. Crop biomass accumulation slowed down significantly (e.g. in *Thüringen*). Since the beginning of May, some rainfall has meant that crops have avoided early senescence. In **Poland**, crop conditions are similar to those observed in Germany, but the slowdown of biomass accumulation is more marked, due to very low soil moisture, which hampered crop growth (e.g. in *Łódzkie*). The winter crops continue to be very advanced (green on the map), and the recent precipitation partially alleviated the dry conditions, but more rainfall is needed to further sustain crop growth. In **the Baltics** and **Finland**, the fAPAR displays very advanced stages: the biomass accumulation of winter crops has been well sustained by the favourably distributed precipitation since 1 April. In central Europe (**Slovakia**, **Czechia**, **Austria** and **Hungary**), the persistent dry conditions in April are similar to those of 2019 with respect to biomass accumulation, and crop development is advanced (e.g. in *Niederösterreich*). In western regions of **Romania** and **Bulgaria**, the winter crop conditions are favourable, despite the unfavourable dry conditions throughout April. In eastern regions, the long-lasting deficit of precipitation led to early senescence of winter crops, especially along the border with Moldova and Ukraine (e.g. in *Sud-Est*); the rainfall of May only partially mitigated the expected yield loss. In **Ukraine**, the deficit of precipitation came to an end in May. The previous lack of precipitation and the warm temperatures depleted topsoil moisture, but the very good soil moisture capacity maintained sufficient moisture for winter crop growth (e.g. in *Zaporiz'ka* – see cloud effect in May), with the exception of the *Odes'ka* region, where crops are wilting. In **the United Kingdom**, the negative fAPAR anomaly is a consequence of a reduction of the area of winter cereals. This reduction was compensated for by an increased area of spring cereals, which are progressing well and have benefited from the precipitation in late April and early May (e.g. in *Essex*). In **Turkey**, the delay of winter crops has not yet been fully caught up, but the yield outlook is positive. In **Morocco**, the winter crop season ended with low yields.

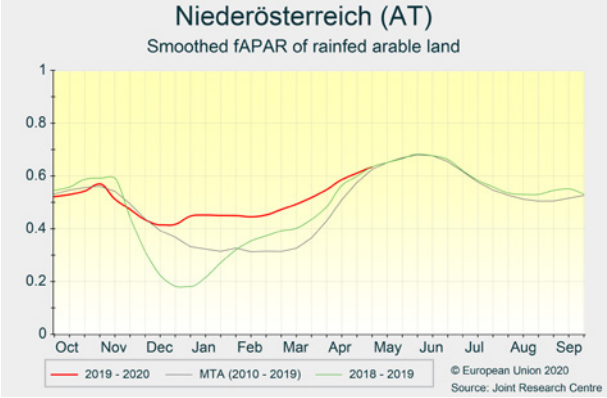

Castilla Y León (ES)
Smoothed fAPAR of rainfed arable land
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
2019 - 2020
MTA (2010 - 2019)
2018 - 2019
© European Union 2020
Source: Joint Research Centre

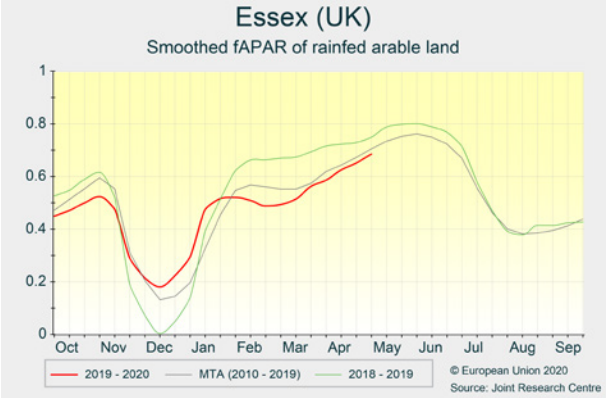

Puglia (IT)
Smoothed fAPAR of rainfed arable land
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
2019 - 2020
MTA (2010 - 2019)
2018 - 2019
© European Union 2020
Source: Joint Research Centre

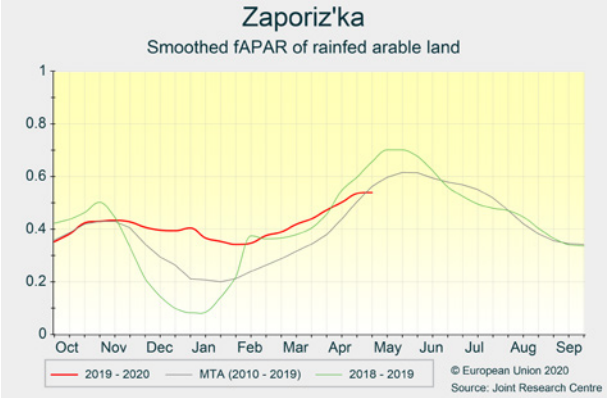

Centre - val de loire (FR)
Smoothed fAPAR of rainfed arable land
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
2019 - 2020
MTA (2010 - 2019)
2018 - 2019
© European Union 2020
Source: Joint Research Centre


Thüringen (DE)
Smoothed fAPAR of rainfed arable land
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
2019 - 2020
MTA (2010 - 2019)
2018 - 2019
© European Union 2020
Source: Joint Research Centre


Lódzkie (PL)
Smoothed fAPAR of rainfed arable land
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
2019 - 2020
MTA (2010 - 2019)
2018 - 2019
© European Union 2020
Source: Joint Research Centre

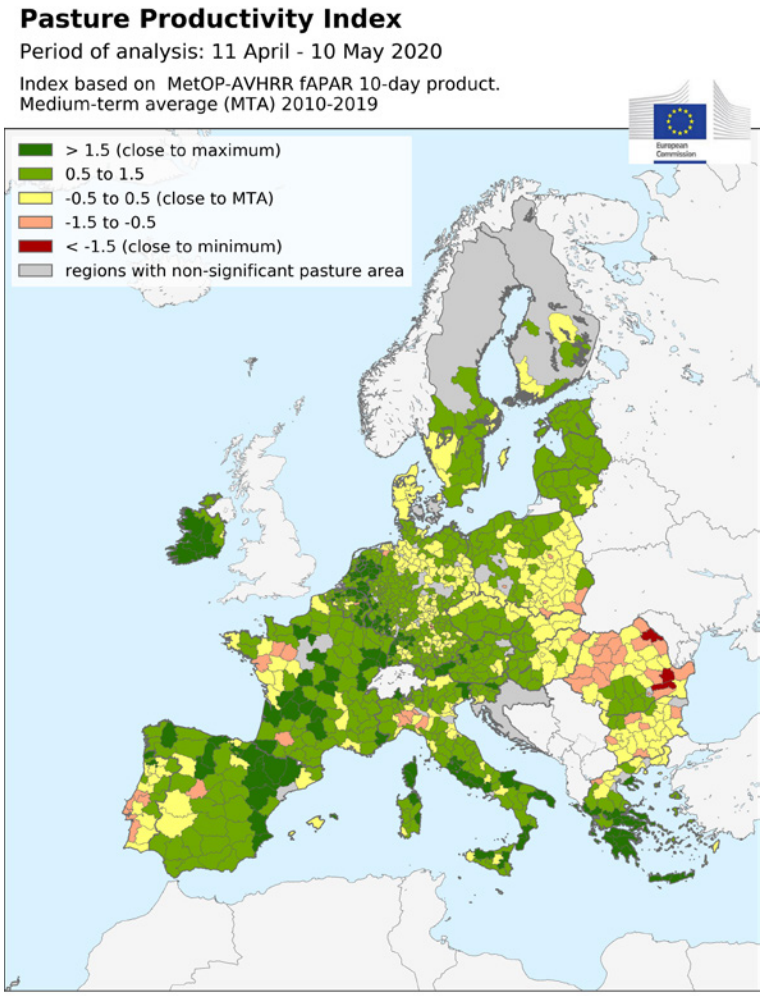

Niederösterreich (AT)
Smoothed fAPAR of rainfed arable land
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
2019 - 2020
MTA (2010 - 2019)
2018 - 2019
© European Union 2020
Source: Joint Research Centre


Essex (UK)
Smoothed fAPAR of rainfed arable land
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
2019 - 2020
MTA (2010 - 2019)
2018 - 2019
© European Union 2020
Source: Joint Research Centre


Zaporiz'ka
Smoothed fAPAR of rainfed arable land
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
2019 - 2020
MTA (2010 - 2019)
2018 - 2019
© European Union 2020
Source: Joint Research Centre

3. Pastures in Europe – regional monitoring

Dry conditions limit recent grassland productivity



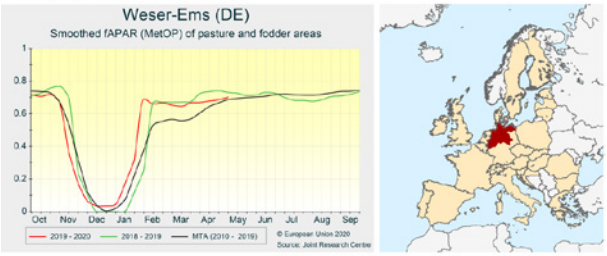
The pasture productivity index (PPI) for the period of 11 April to 10 May is shown in the main map above. The following countries or regions predominantly experienced above-average pasture productivity: Spain, Portugal ([1]), central Italy, Greece, Denmark, Sweden, Estonia and Finland. In these areas, favourable rainfall and temperatures encouraged good biomass growth.

Though the map suggests predominantly above-average pasture conditions across Europe, mainly triggered by the mild winter and spring temperatures, the appearance of yellow and reddish areas (when compared with the map published in the April issue of the bulletin) indicates hampered productivity. The lack of an increase in pasture productivity over the spring months – albeit due to the mild conditions at a relatively high initial productivity level – is mainly to be attributed to the unusually dry conditions which have prevailed since mid March in France (in all areas except for the far west), Germany, Austria, Czechia, Poland, eastern Romania, Slovenia, Croatia, Slovakia, north-eastern Bulgaria, Latvia, Lithuania and Ireland. Reports in the media suggest that the first cut is already compromised in some of these countries, such as in eastern Romania and certain parts of Poland. These two areas have been the most affected by the dry spell in the past months, and will require more regular rainfall to recover.

([1]) The below-average PPI values in southern Portugal are attributed to excessive cloud cover, which hampered adequate satellite observations. Rainfall and temperature conditions in these regions have been favourable for pastures.

Germany - North

Reference period: 01 Apr to 10 May 2020

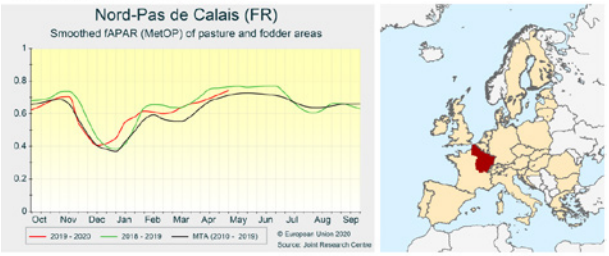


BULLETIN ISSUE

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
RAINFALL								
TEMPERATURE								
RADIATION								

France - East

Reference period: 01 Apr to 10 May 2020

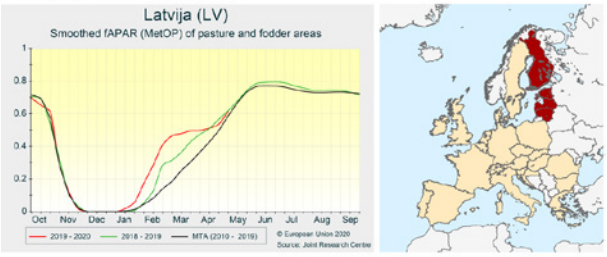


BULLETIN ISSUE

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
RAINFALL								
TEMPERATURE								
RADIATION								

Finland and Baltic republics

Reference period: 01 Apr to 10 May 2020

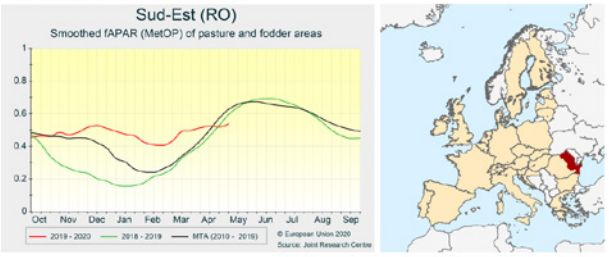


BULLETIN ISSUE

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
RAINFALL								
TEMPERATURE								
RADIATION								

Romania - East

Reference period: 01 Apr to 10 May 2020

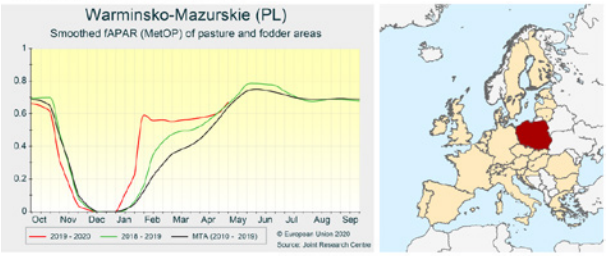


BULLETIN ISSUE

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
RAINFALL								
TEMPERATURE								
RADIATION								

Poland

Reference period: 01 Apr to 10 May 2020

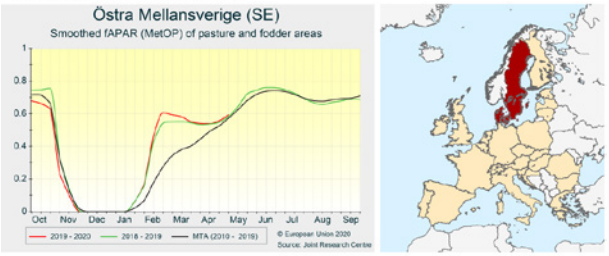


BULLETIN ISSUE

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
RAINFALL								
TEMPERATURE								
RADIATION								

Denmark and Sverige

Reference period: 01 Apr to 10 May 2020



BULLETIN ISSUE

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
RAINFALL								
TEMPERATURE								
RADIATION								

4. Country analysis

4.1. Sowing conditions

Spring barley

Sowing almost completed, in dry conditions

In France, Ireland, the Benelux countries, Germany and the United Kingdom, sowing was mainly concluded in good conditions, when soil moisture conditions were still adequate for sowing, as reported in the April issue of the bulletin. In general, these countries experienced warmer temperatures than usual, which had favourable results for emergence. However, the dry conditions created uneven emergence and gappy stands in some areas, particularly for the later-sown crops.

In Denmark (the EU's third largest producer, after Spain and France) and Sweden, sowing started later than usual, at the beginning of April, and the rainfall at the end of April and in early May improved soil conditions for emergence.

In Poland, where sowing was accomplished in early April, the rainfall at the end of April and the beginning of May improved soil water conditions, but emergence remained uneven.

In Hungary, Romania, Czechia, Slovakia and Croatia, sowing was concluded in dry conditions. Despite some recent rainfall, soil water deficit continues to prevail, causing loss to yield potentials.

Sowing is progressing well in the Baltic Sea region. Thanks to the mild weather conditions, the sowing campaign began earlier than usual, at the beginning of April in Latvia and in mid April in southern Finland. Cold weather, combined with some rainfall in May, slowed down sowing activities. Despite this, sowing continued within the normal window. Further north, where temperatures are still cold, sowing is expected to start after mid May, which is usual for these regions.

Sugar beet and potatoes

Dry conditions hamper germination and emergence in the main producing regions

In general, weather conditions have been favourable for the timely sowing of sugar beet across Europe, resulting in the completion of sowing work within the optimal time window. However, dry conditions in April in the main EU sugar beet producing regions of France, Germany, Poland, the United Kingdom and the Benelux countries hampered germination and the emergence of seedlings, most markedly in Germany and Poland. The situation improved at the end of April, when scattered showers resulted in improved water conditions for topsoil. However, in many fields germination was poor or uneven, and more rainfall is still needed in order to secure adequate early crop development. Additionally, in Poland, as in some other regions, emerging plants that have already been weakened by dry conditions might have been damaged by cold snaps, along with strong pest pressure.

A rainfall deficit led to similar difficulties in eastern Austria, Hungary, western Slovakia, eastern Croatia, eastern Slovenia and Romania.

In the United Kingdom, the situation looks more positive as the early-sown sugar beet crops emerged well but, there also, the dry April conditions resulted in an uneven emergence of sugar beet in many plots.

In northern Spain, the weather conditions were generally favourable for the development of sugar beet, while in Italy, dry conditions led to a suboptimal start to the season.

Similar challenges were faced for potatoes, the main producing regions of which coincide with those of sugar beet. In several regions of central and north-western Europe, early-sown stands were locally damaged due to frost events at the end of the review period. At the early stages of development potato crops normally recover well from such damage. In many regions, potato planting is still ongoing. Compared to initial plans, the area sown is likely to be somewhat reduced, due to a combination of the abovementioned difficulties and the drastically reduced demand for chips.

Maize

Maize sowing and emergence still facing difficulties in several regions

The sowing campaign for maize started with some concerns about a possible drought and low soil moisture levels not allowing plants to emerge. While rainfall observed since the beginning of May has been beneficial in the most affected regions, more rain is still needed to sustain adequate crop establishment.

Maize sowing has almost been completed in most of the main producing regions. However, difficulties are still observed and conditions are highly contrasting.

The long dry period observed in April allowed farmers to prepare the seedbeds despite the increasing difficulties (hard clods, dust) because of the dry upper soil layers.

In Romania, sowing is almost finished, and while the soil was dry at the start of the sowing campaign, conditions have improved, but some regions are still very dry. Fields that were partly dry during sowing now often present patchy stands. Ukraine and Bulgaria benefited from the recent rainfall.

In Hungary, *Veneto* (Italy), Germany, Lithuania and eastern Poland, a lack of rainfall might result in very poor emergence of maize sown into dry soils and some of the fields might eventually not be sown.

In France, a larger area than last year was sown with maize, and sowing was slightly advanced. The French south-western regions received a large rainfall surplus recently and this will ensure at least the early development of maize. Spain also benefited from a large rainfall surplus.

Sunflowers

Problematic sowing campaign due to dry topsoil in several regions

In Romania, Hungary and Croatia (the EU's first, third and ninth largest sunflower producing countries, respectively), the sowing campaign began around 5 April, with a delay of 1 to 2 weeks due to lower-than-usual topsoil temperatures. Sowing progressed well from the second dekad of April until late April, thanks to scarce rainfall and near-average or above-average temperatures. However, the conditions for sprouting and early crop development gradually worsened, as soils became progressively drier, which may lead to uneven stands. Beneficial rainfall in early May somewhat mitigated the situation. However, more rainfall is needed to sustain adequate development. Similar sowing problems occurred further north-west, in Slovakia, Czechia, Austria and Germany.

In Bulgaria and Greece (the EU's second and seventh largest producers, respectively), the sowing campaign started, slightly delayed, during the second week of April. Since then, rainfall and thermal conditions have been favourable for making good progress and for the sprouting and early growth of sunflower plants.

In France (the EU's fourth largest sunflower producer), the sowing of sunflower plants entered into full swing in the second half of April. Rainfall was substantially above the LTA in all main sunflower producing regions, but caused only short temporal delays. Rain fell with moderate intensity, favouring water infiltration of the soil without waterlogging problems, and thereby providing excellent conditions for emergence and crop establishment.

In Spain and Portugal (the EU's fifth and 13th largest producers, respectively), sizeable and well-distributed rainfall resulted in favourable conditions for soil preparation and sunflower sowing, which has now been mostly concluded. Also, in Italy (the EU's sixth largest producer), soil and weather conditions have been favourable for sunflower sowing and germination. In southern Italy, plants are now at the emergence stage. In northern Italy, the sowing ended more recently, and seeds are close to the emergence stage.

Soybeans

Soybean sowing campaign ongoing, but central Europe needs more rainfall

The soybean sowing campaign is reaching an end in France, Ukraine, Romania and Bulgaria. In these countries, the recent rainfall will ensure the emergence of soybean. As is the case with maize, some of the concerns about a difficult start to the season because of the rainfall deficit are still valid. Most of central Europe will need at least some rainfall to ensure adequate emergence. This is particularly the case in Hungary, north-western Austria and eastern Poland. In some of the main soybean producing regions of Italy, the EU's largest soybean producing country, water availability for irrigation and linked canopy temperature control are not currently fully guaranteed due to the low levels of water reservoirs.

4.2. European Union

France

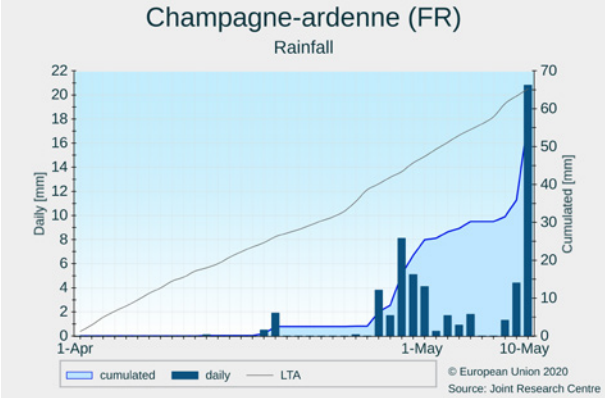
A challenging season and a particularly poor outlook for winter cereals

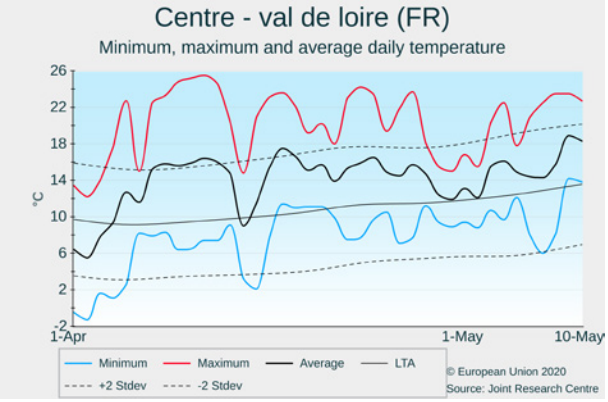
The succession of unfavourable weather conditions has resulted in a poor outlook for winter crops and spring cereals. Only summer crops are currently benefiting from a good start to the season.

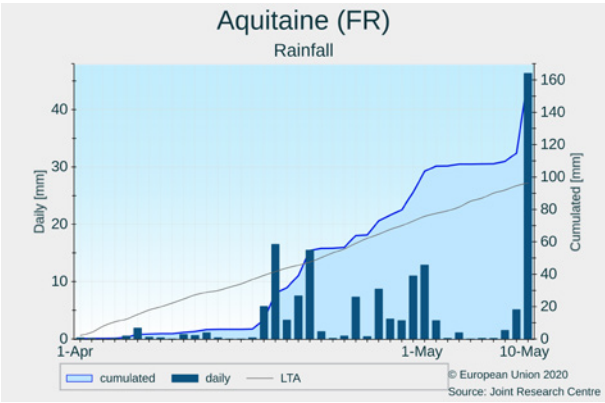
Weather conditions during the review period were exceptionally warm in April, combined with a long period without rainfall in northern and eastern France. Since the end of April, an exceptional rainfall surplus has been observed in southern France, but rainfall is still needed in northern and eastern France.

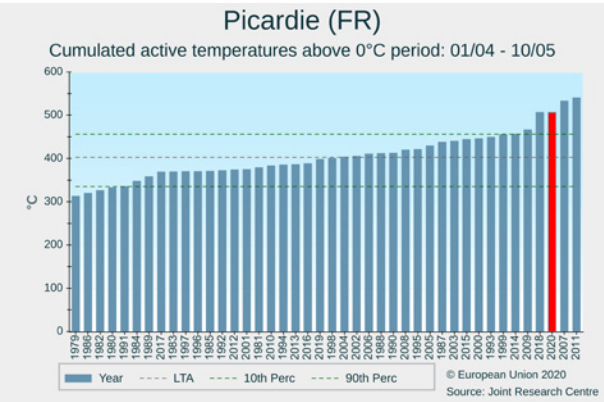
Throughout the review period, the dry and warm weather conditions hampered the early growth of spring barley as plants were exposed to water stress, and the same conditions favoured the development of aphids on winter wheat. Moreover, the record warm conditions in April caused an acceleration of the phenological development of winter and spring cereals between the tillering and heading stages, thus diminishing the yield potential. This accelerated development joins the long list of unfavourable conditions observed since the start of the season (as presented in earlier issues of the bulletin): a wet autumn, hampering sowing and crop establishment; waterlogging, hampering root growth; an exceptionally mild and wet winter, favouring high disease pressure; the delayed application of fertilisers at the start of a long dry period; and water stress. The recent rainfall limits further water stress, but increases disease pressure, particularly of *Septoria* for winter wheat and *Rhynchosporium* for winter barley. As the flowering stage for winter wheat is approaching, attention will be paid to wet conditions around flowering, which could favour the development of *Fusarium*. Similar difficulties were experienced by winter rapeseed, and the yield forecasts for all winter crops are now well below the historical trend.

Conditions for summer crops have been mixed. Irrigated potato crops benefited from a good start to the season, but rainfed potatoes and sugar beet have been exposed to water stress since their establishment. The main producing regions of grain maize, sunflower and soybean recently received a rainfall surplus, ensuring a good start to the season, which might be particularly valuable given the seasonal weather forecasts of a warm and dry summer.









Germany

Rainfall needed for adequate crop development

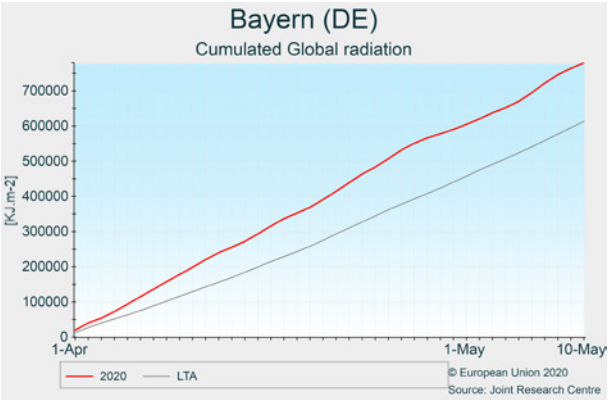
April marked a record dry period throughout Germany, as most regions did not have a single day with significant rainfall. A huge radiation surplus is confirmed, and crops are now in urgent need of rainfall. Forecasts for winter crops have been revised downwards.

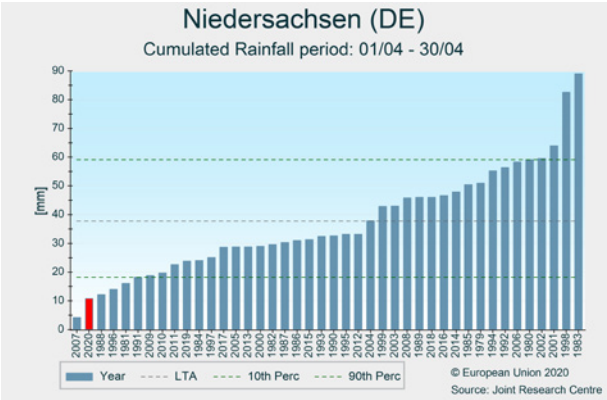
Crop growth conditions during April were characterised by an almost complete absence of rain and a very high level of sunshine. Some rainfall occurred during the last days of April and in the beginning of May; however this was not in the form of steady rain, but rather scattered showers. Consequently, the rain deficit remains huge, and concerns about a 3rd consecutive dry year have not been alleviated. Soils in the north which were overly wet are now dried out, and a broad band with quickly depleting soil moisture is depicted from *Nordrhein-Westfalen* and parts of *Schleswig-Holstein* towards the east (*Thüringen, Sachsen-Anhalt, Brandenburg, Sachsen*).

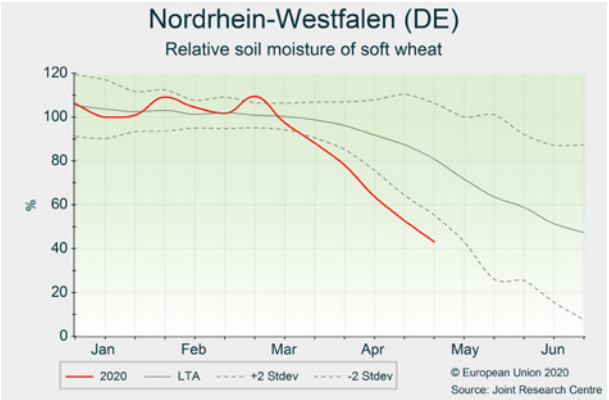
The phenological development of winter crops continues to be advanced, but with a cooler weather forecast for Germany, a beneficial slowdown of growth is expected. Winter wheat has started heading, and precipitation is needed to sustain the yield potential. The forecast has been lowered, but it is still above last year's level.

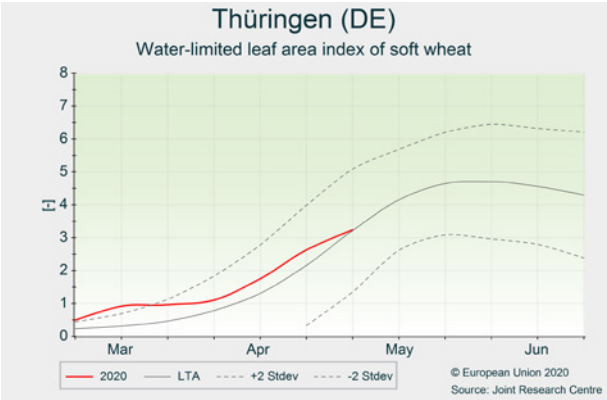
Rapeseed in the west – under stressed water supply conditions, and having experienced a few cold spells – is nearing the end of the flowering period. In *Bayern*, flowering started towards the end of April, and the flowers might be susceptible to the forecast cold spells. The rapeseed forecast is lower compared with the April bulletin, and corresponds to the 5-year average.

Summer crops were sown, and emerged under dry conditions (albeit with difficulties on very light soils). However, their yield potential should not be reduced if water supply returns to average within the next few weeks.









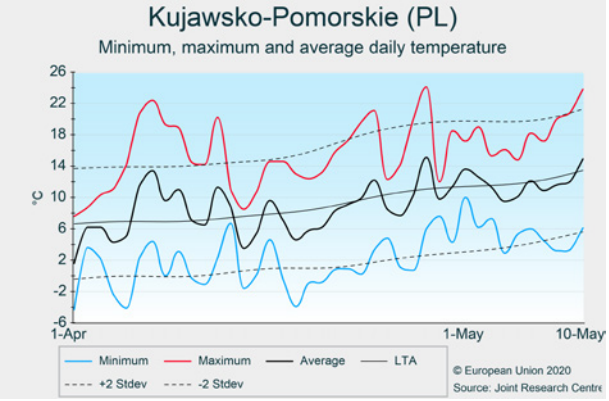
Poland

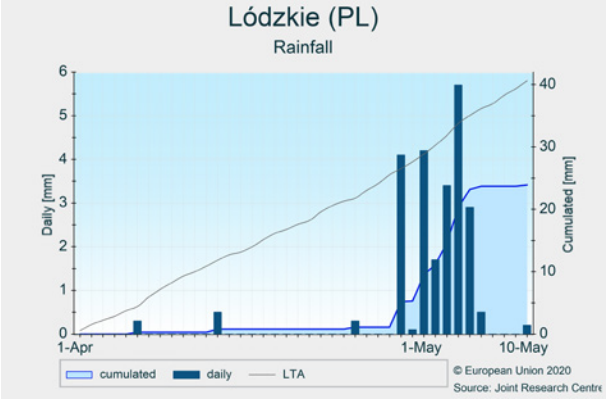
Dry conditions reduce yield potential for winter and spring crops

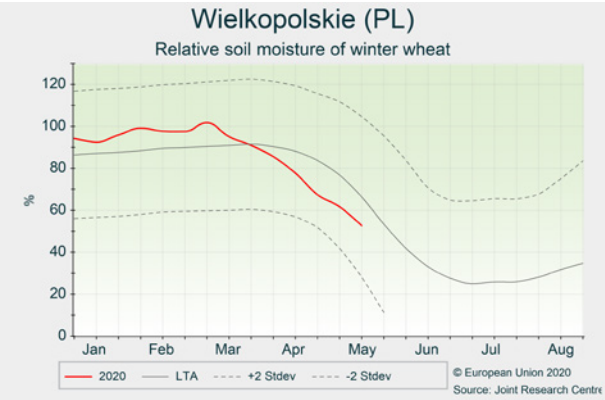
During the review period, temperatures oscillated around the LTA. Brief cold spells occurred during the first two dekads of April, with minimum temperatures below – 4 °C. Exceptionally low rainfall in April (75 % below the LTA) resulted in very dry soils. However, the moderate amount of rainfall that has occurred since the end of April temporarily increased topsoil water content, partially relieving crops.

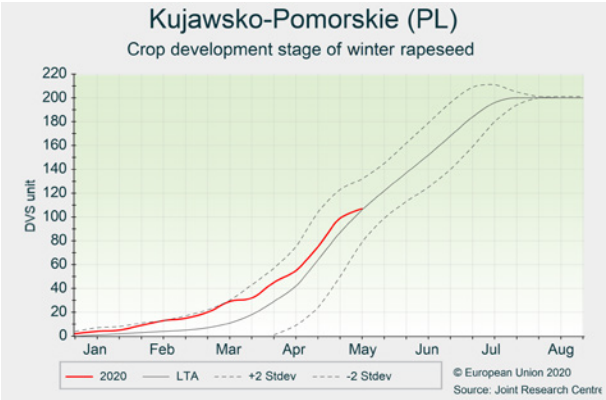
Rainfall at the end of April and the beginning of May brought critically needed water for winter crops which are entering the heading and flowering stages. The rain also improved topsoil water conditions for spring crops and favoured the germination and early development of summer crops. Very dry conditions from mid March to late April may negatively impact the yield potential for winter and spring crops. This will largely depend on whether enough rain will fall in the coming weeks to sustain the adequate development of these crops. Cumulative radiation was above the LTA. Colder nights during the first dekads of April, with temperatures of ~ 0 °C, slowed down crop development. Furthermore, frost events in April added further stress to the dry conditions for winter crops and emerging summer crops. In addition, sugar beet experienced strong pest pressures.

Spring and summer crop yield forecasts remain unchanged compared with last month and follow the historical trend. Yield forecasts for winter wheat and barley have been slightly reduced, due to unfavourably dry conditions.









Ireland

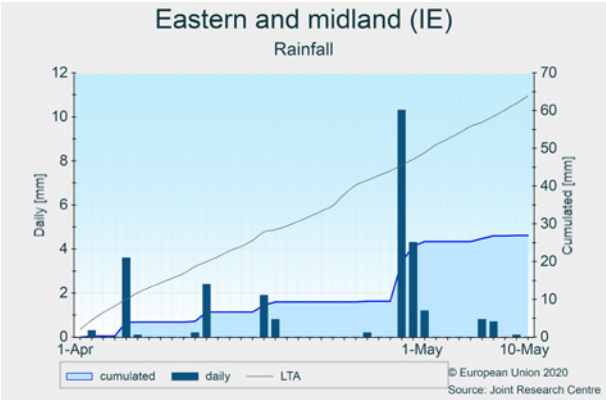
Crops are progressing well despite dry conditions – but more rain is needed

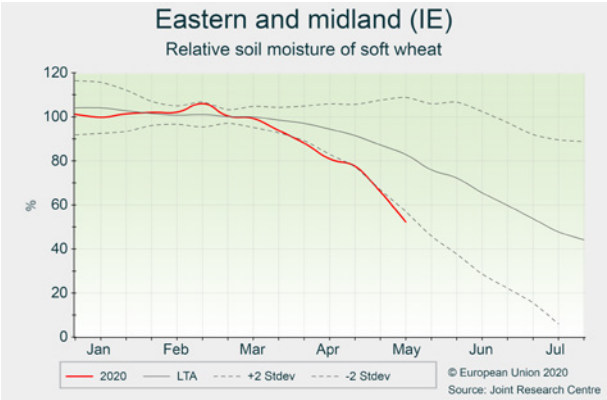
Warmer temperatures caused advanced crop development, and recent rainfall improved soil moisture conditions, particularly for the early growth of spring crops. Spring and winter crops are forecast below last year's yield, but close to the 5-year average.

Temperatures were above average, with cumulated radiation values higher than usual. Rainfall generally remained below average, but was more frequent and abundant in southern Ireland. Beneficial precipitation fell across the country from the end of April onward.

The sowing of spring cereals was mostly completed by mid April; the warmer temperatures enabled crops to emerge quickly, but the lack of soil moisture created uneven emergence. Spring crops benefited from rainfall at the end of April, and most crops are growing well. Sugar beet sowing is almost complete, and emergence is variable.

Winter wheat crops advanced in their development, and crop conditions are variable depending on the region and soil type, with better growing conditions in the southern areas, where rainfall has been more favourable. In some areas, the soil water content was depleted, and more rain is needed to maintain the yield potential. Generally, winter crops are around booting stage, the expected growth stage for this time of year. Winter rapeseed crops are at full flowering. Dry conditions are not considered to impact the yield at this stage, and our yield forecasts remain close to the 5-year average, but below the 2019 yield.





Spain and Portugal

Good crop growing conditions prevailing

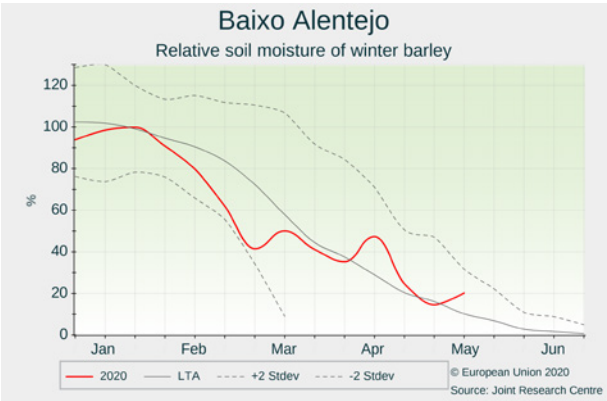
Soil moisture levels recovered well in most regions, but still remain below the optimum in the south. Nevertheless, the overall crop yield outlook is positive for both winter and summer crops.

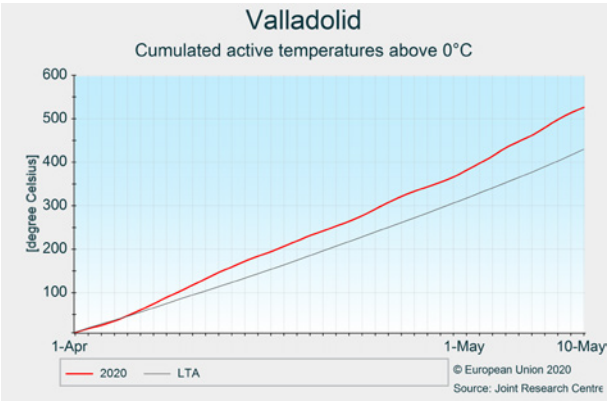
Rainfall has been above average from 1 April onward in most of Spain and Portugal, and was around average in *Castilla–La Mancha*, *Murcia* and *Andalucía*. Most of the soil moisture on the Iberian Peninsula is now fully recovered from the long-lasting dry winter period (see soil moisture and cumulated water balance figures below). Southern Portugal and Spain received less rainfall in recent weeks than central regions; however, the situation in the south is still close to average conditions, and is remarkably better than it was 2 months ago. Temperatures across the Iberian Peninsula were warmer than average, and this was more pronounced in the north, thus continuing the accelerating effect of the warm winter on crop development (see *Valladolid* figure below).

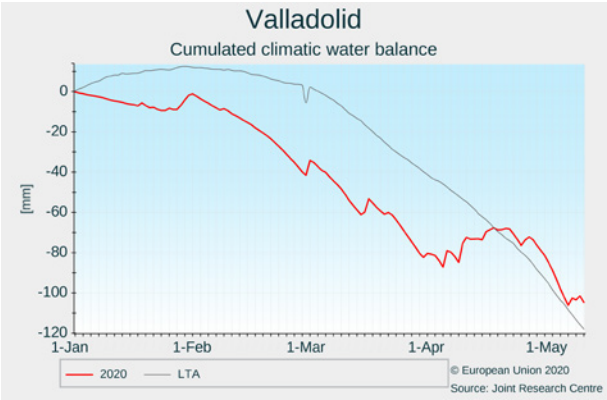
Winter crop development is more advanced than usual across all of Spain and Portugal due to the cumulated effect of mild winter conditions and the return of rainfall last month in the south, which has been beneficial for sustaining winter crop yields.

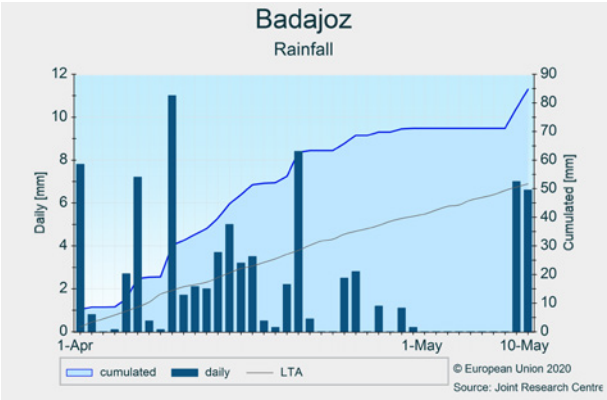
Regarding summer crops, the sowing of maize and sunflower was completed in good conditions, and initial soil water conditions have been favourable for their development. Limited water supply for irrigation may still be an issue in the coming months in southern Spain (*Andalucía*, *Guadiana*, *Guadalquivir*), where the accumulated water reserves amount to half, or less than half, of the 10-year average reservoir filling for May (*source:* www.embalses.net).

The yield outlook for both winter and summer crops is positive, and is in keeping with the forecast of the previous bulletin.







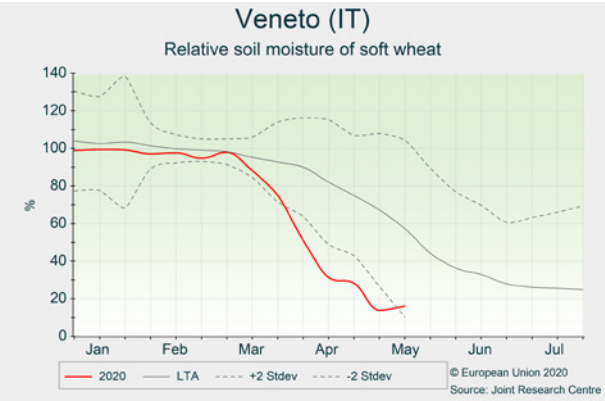


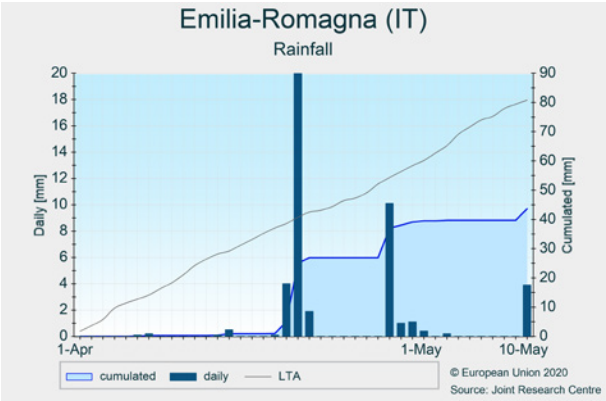
Italy

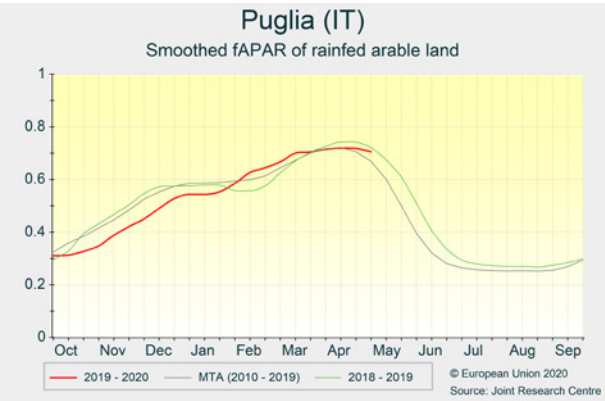
Mixed conditions for winter crops

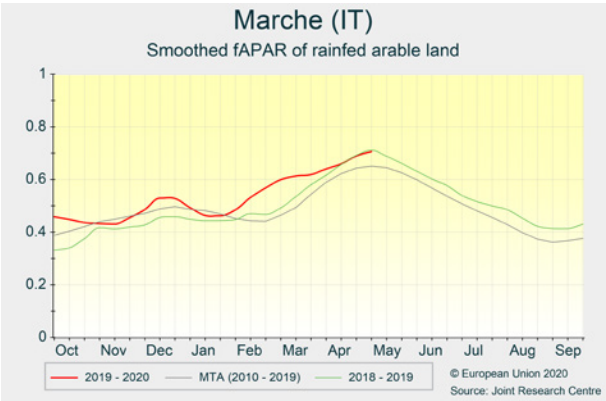
Winter wheat yield forecasts (soft and durum) are just below the 5-year average, but slightly above 2019 levels, reflecting the mixed crops conditions: in central and southern regions, average to good growing conditions counterbalanced the adverse dry weather in the north. Maize and soybean were planted during April under dry conditions, while sunflower sowing recently concluded with favourable weather. Summer crop yield forecasts still reflect the trend.

In north-western regions, May brought some rain, which partially mitigated the dry soil conditions. In northern and north-eastern regions, only 20 mm to 40 mm of rainfall has taken place since the beginning of April (20 % to 50 % of the LTA). During the review period, the warm weather (+ 2 °C to + 4 °C compared with the LTA) accelerated the soil moisture depletion in the Po Valley and in the north-eastern plain. Both areas present strong deficits in climatic water balance: – 80 mm since 1 April, compared with a positive water balance of + 20 mm in the LTA. The driest provinces (i.e. eastern *Emilia Romagna* and southern *Veneto*) are relevant for soft wheat (50 % of the national production), maize (30 %) and soybean (60 %) production. Negative effects on yields due to the unfavourable conditions for soft wheat in those regions are likely to be compensated for at a national level by the around-average crop conditions in *Piemonte* and *Lombardia*. For maize and soybean, water availability for irrigation and linked canopy temperature control is not currently fully guaranteed, due to water reservoir levels being low. In central regions, rainfall was almost seasonal, with 40 mm to 60 mm poured in just a few days at the beginning of May. Winter crop development is delayed in *Toscana,* but is slightly advanced in *Marche* and *Umbria,* with fair biomass accumulation. Sunflower sowing proceeded favourably. In late April, all southern regions (with the exception of eastern *Sicilia)* received beneficial rainfall. In these regions, durum wheat and winter barley, now around the flowering stage, present mixed conditions, resulting from the occurrence of several suboptimal weather conditions throughout the campaign. However, the very negative expectations for early spring did not materialise.









Hungary

Recent rainfall was insufficient to relieve concerns

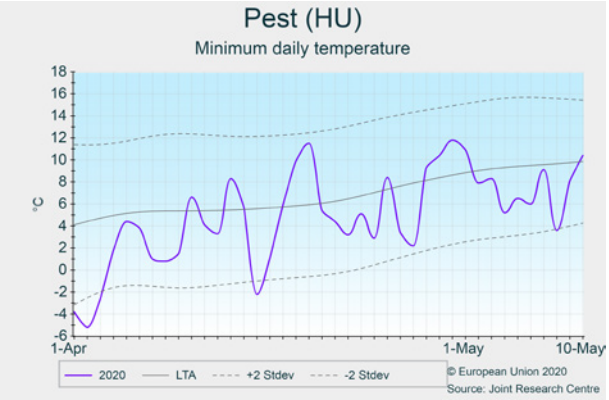
Dry weather conditions predominated until late April, when precipitation tendencies increased. However, this was insufficient to fully alleviate the winter crops' soil moisture deficit. The persistently suboptimal soil moisture levels are increasingly concerning, as winter cereals are close to reaching the sensitive heading/flowering stages.

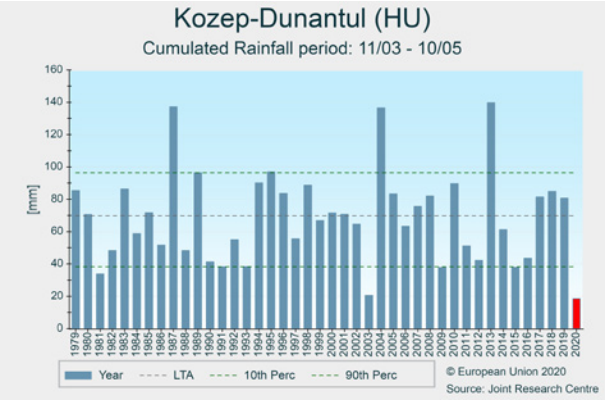
Temperatures fluctuated significantly, but were near-seasonal on average when considering the review period as a whole. A significant cold spell occurred in early April, and additional frost events took place in mid April. The latter are likely to have caused only limited damage to the flowering rapeseed stands.

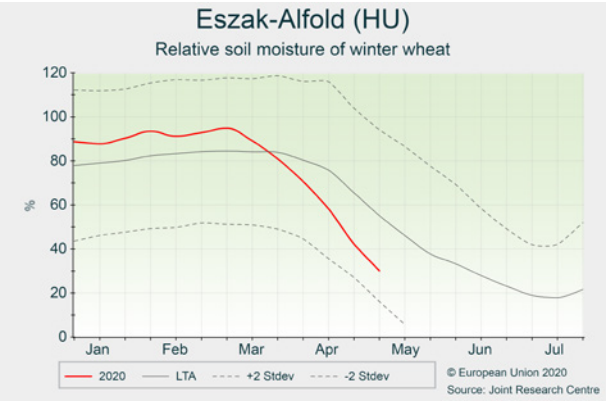
The very dry weather conditions from early March persisted throughout most of April. Rainfall became more frequent at the end of April and in early May, but was insufficient to fully alleviate the rainfall deficit. Precipitation totals for the past 60 days were on average between 10 mm and 35 mm, which corresponds to 35 % to 60 % of the LTA. This period has been either the driest or second driest since 1979. The medium-range weather forecast predicts 5 mm to 15 mm of precipitation, which would be insufficient for significantly improving soil moisture levels, which are particularly low in eastern Hungary and in some north-western regions.

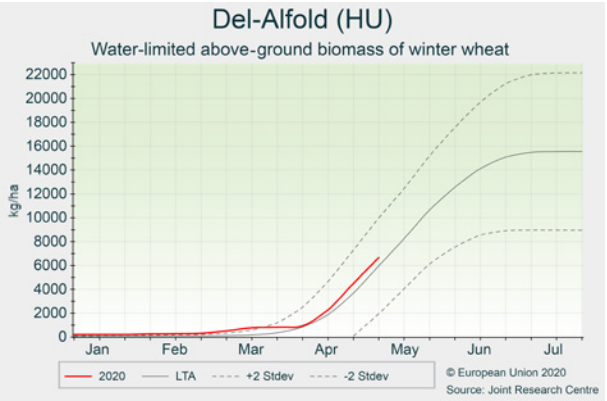
The spring sowing campaign accelerated after mid April, when soil temperatures reached adequate levels, but the quality of seed beds (dry, with many clods) was suboptimal. Recent rainfall is facilitating the sprouting, emergence and early development of summer crops.

The development of winter crops remains advanced, due to the unusually high temperatures during winter and early spring. The flowering of rapeseed began in mid April, but water supply – crucial for yield formation – has been suboptimal during this period. The current situation is delicate for winter cereals, which are close to reaching the heading/flowering stage. Remote sensing images and crop model results still indicate near-average or above-average conditions; however, water stress is imminent, considering the unfavourable water supply and negative precipitation outlook. The yield forecasts for winter crops and summer crops were revised downwards.









Romania

Drought forming

A long-lasting rain deficit resulted in serious crop water supply problems in eastern Romania (in Nord-Est *and, more seriously, in* Sud-Est*) and, to a lesser extent, in the western regions along the Hungarian border.*

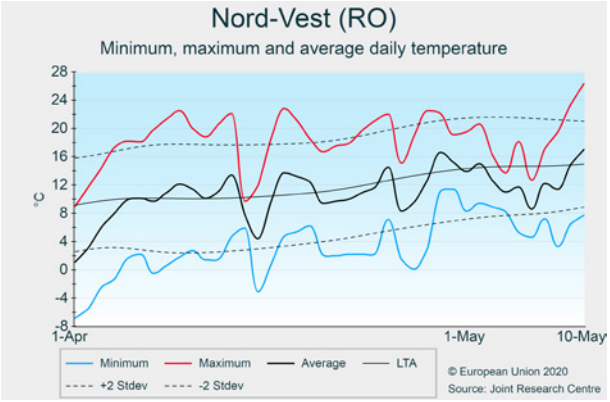
Near-average thermal conditions prevailed in eastern Romania, while the western half of the country was slightly colder than usual (1 °C to 2 °C), over the review period as a whole. Daily mean temperatures fluctuated considerably around the LTA, and two significant frost events occurred around 1 and 15 April.

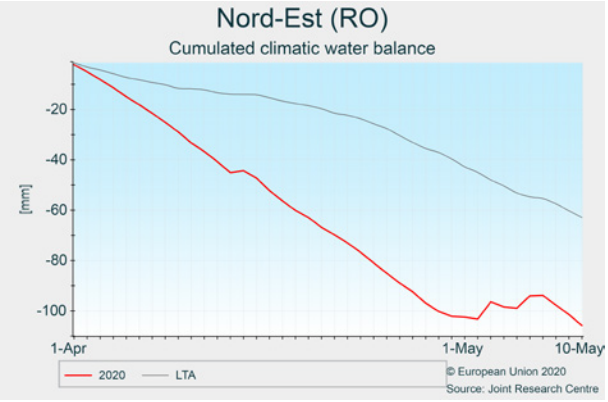
Dry weather which had begun in March persisted in April. Precipitation totals in April only reached between 5 mm and 25 mm. The southern and eastern regions received hardly any precipitation. In early May, beneficial precipitation (10 mm to 40 mm) arrived throughout the country, partially alleviating the rain deficit.

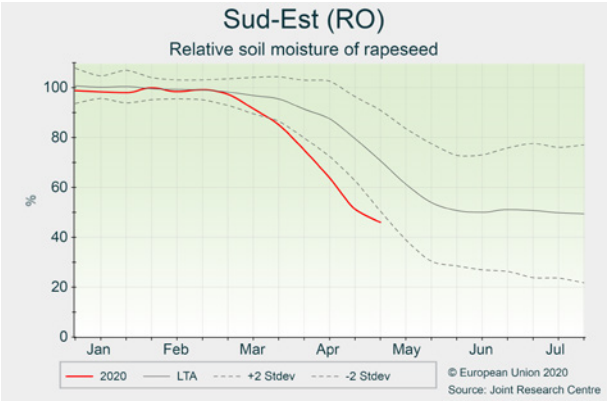
Soil moisture contents under winter crops are very low, primarily in the south and the east, where winter cereals are reaching the start of the heading/flowering stage, which is cardinal for yield formation and production. So far, inadequate water supply most adversely impacted flowering rapeseed crops, but also affected the canopy expansion and biomass accumulation of winter cereals.

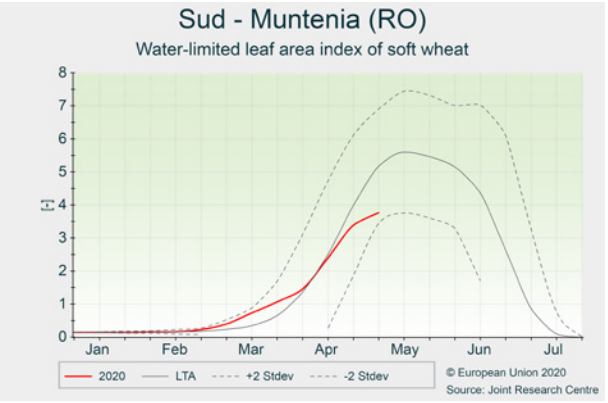
The dry conditions allowed good progress in the spring sowing campaign, and the most recent rainfall improved soil moisture levels. However, the same conditions were unfavourable for the emergence and early growth of spring and summer crops, particularly in the cases of spring barley and sugar beet.

The current medium-range weather forecast suggests considerable rainfall in north-western Romania (*Vest, Nord-Vest*, *Centru* and *Nord-Est*), but very little in southern regions. The yield forecasts for winter crops (particularly for rapeseed and winter wheat), as well as for spring crops, were revised considerably downwards, and moderately downwards for summer crops.









Bulgaria

Rainfall deficit in the north-eastern regions

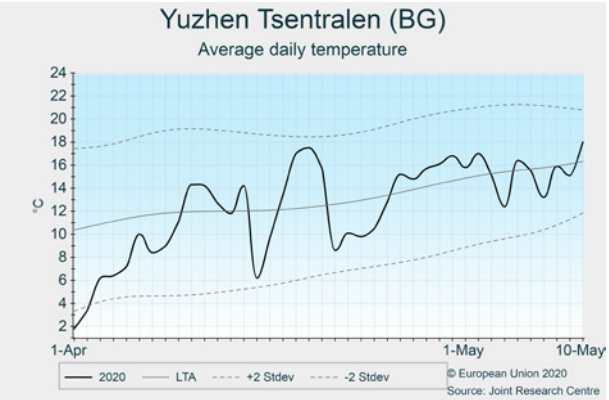
Crop water supply was mostly adequate in Bulgaria, except in the north-eastern regions. Recent rainfall improved the situation even in the north-east; however, soil moisture levels remain low. Remote sensing indicators suggest a near-average condition of winter crops.

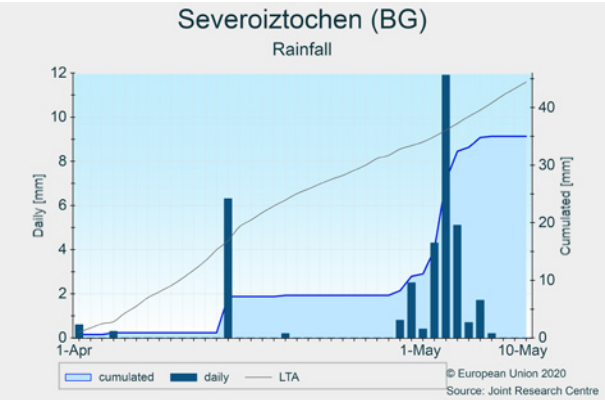
Thermal conditions were near the average throughout the review period (1 April to 10 May), albeit with considerable fluctuations. The first dekad of April was predominantly colder than usual.

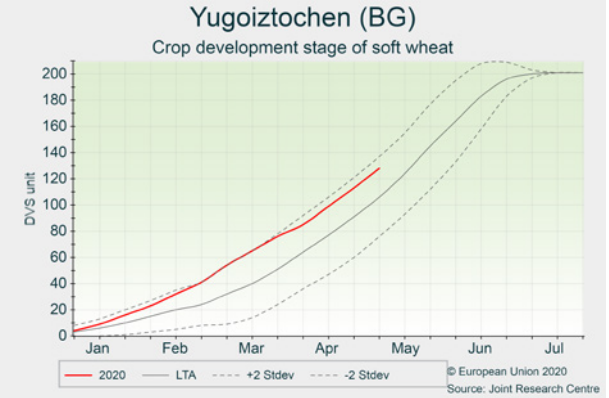
In northern and eastern Bulgaria, April was much drier than usual, with only 10 mm to 40 mm of rainfall (20 % to 50 % of the LTA). The most serious rainfall deficit occurred in north-eastern Bulgaria (*Severoiztochen* and *Severen Tsentralen*). However, the precipitation in early May mitigated the water supply problems in these regions. In contrast, the *Yuzhen Tsentralen* region received abundant precipitation (70 mm to 115 mm) during the review period, exceeding the LTA by 30 % to 120 %.

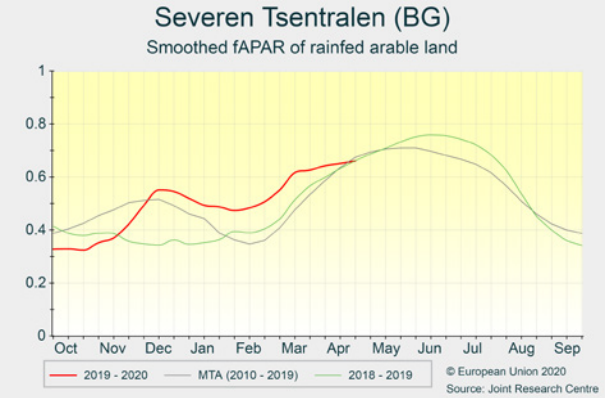
Topsoil conditions allowed adequate progress of the spring sowing campaign, except in south-central Bulgaria, where it was temporarily hampered by wet weather.

Soil moisture levels under winter crops are generally near or above average, but very dry soil conditions prevail in north-eastern regions. The development of winter crops is advanced by 5 to 10 days. Remote sensing indicators show near-average biomass accumulation. In the north-eastern and eastern regions (where much of the rapeseed is cultivated), the break point in the course of the fAPAR graphs (e.g. *Severen Tsentralen*) suggests that the situation has worsened from a good to an average level, due to inadequate water supply. In other regions, soil water supply is likely to be sufficient to meet the water demand of winter cereals in the near future. Our previous optimistic yield forecast for winter rapeseed was revised downwards, whereas our forecast for other winter crops was revised upwards, and is now following the trend.









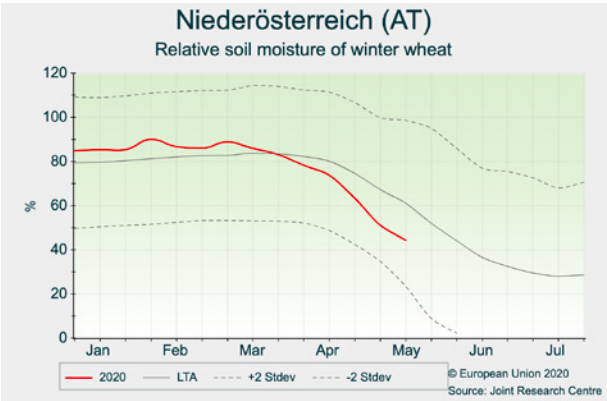
Austria, Czechia and Slovakia

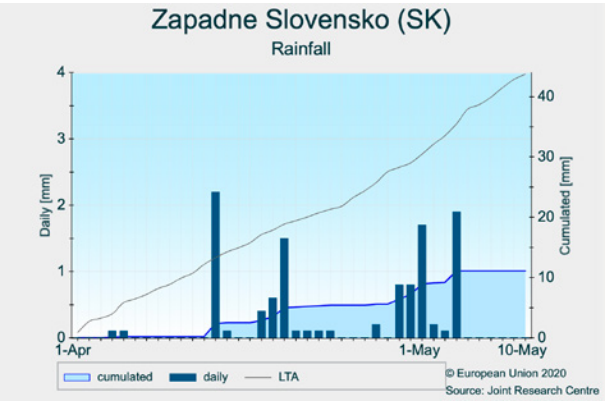
Deepening soil moisture deficit

Less than 30 mm of rainfall has been recorded since the beginning of April, which was not sufficient to replenish the soil moisture deficit in western Slovakia, eastern Austria and eastern Czechia. The dry conditions are limiting winter crop growth, reducing the yield outlook to below the 5-year average. Recent rainfall slightly improved the emergence conditions for summer crops.

With temperatures of up to 2 °C above the LTA, the period from the beginning of April onwards has been warmer than usual in Austria and Czechia. Maximum temperatures reached up to 26 °C. After a completely dry first half of April, several rainfall episodes followed in mid April and at the beginning of May; however, they occurred in very limited quantities. Since the beginning of April, the total rainfall recorded in Slovakia, eastern Austria and eastern Czechia was less than 30 mm, representing less than half of the expected seasonal values in these regions.

The recent rainfall was insufficient to compensate for the pronounced soil moisture deficit in eastern Austria, western Slovakia and eastern Czechia, limiting the growth of winter crops in these regions. Consequently, we revised the yield forecast for winter rapeseed downwards. Due to the warm winter and spring so far, winter soft wheat is in the advanced development stage, approaching the sensitive flowering period; final yields will strongly depend on the rainfall in the coming weeks. Therefore, as in the April bulletin, our forecast remains below the 5-year average. Also, the emergence of summer crops is hampered by the lack of moisture in many places, even though the recent rainfall has slightly improved surface soil moisture levels. It is still too early to understand the impact on summer crop yields, for which our current forecasts remain in line with the long-term trend.





Denmark and Sweden

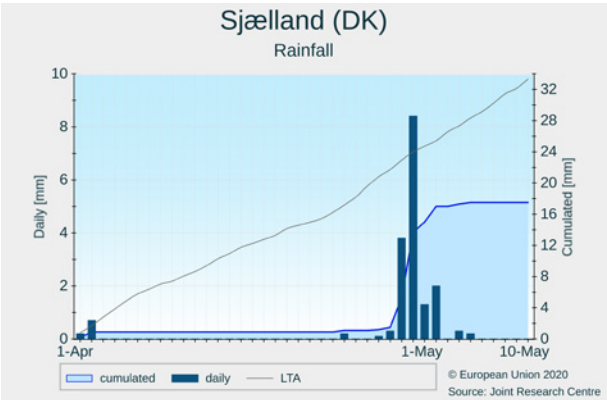
Positive yield outlook maintained for winter crops

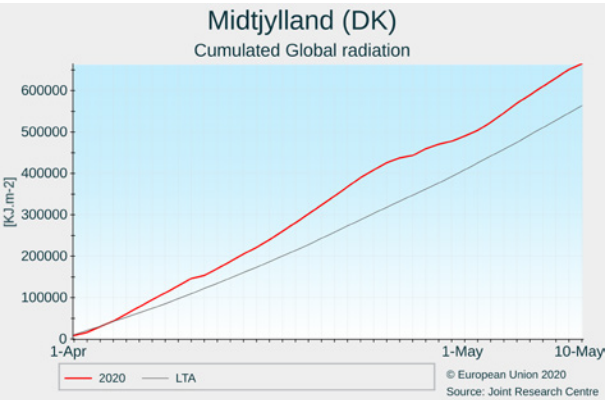
While a long dry period with a large radiation surplus was observed in April, weather conditions have returned to seasonal averages since the beginning of May. The yield forecasts for winter crops are maintained close to record levels.

While April was practically dry, substantial rainfall has taken place since the beginning of May, resulting in cumulative rainfall amounts for the entire review period of over 50 % of the seasonal values in all regions. Temperatures were slightly above average in April, after which the temperature regime gradually returned to seasonal values. An exceptional radiation surplus was observed throughout the review period.

Winter crops benefited from sufficient soil moisture and the radiation surplus, while warm temperatures in April favoured crop growth. The yield forecast for winter cereals and winter rapeseed are maintained well above the historical trend, reflecting the fact that many recent years have been characterised by an early start to spring.

Spring crops, and more particularly spring barley, which were largely sown after mid March, benefited from the rainfall at the beginning of May. The yield forecast for spring barley is maintained close to the trend, considering that the long dry period was not beneficial for crop establishment. However, the recent rainfall can still improve crop conditions.





Finland, Lithuania, Latvia and Estonia

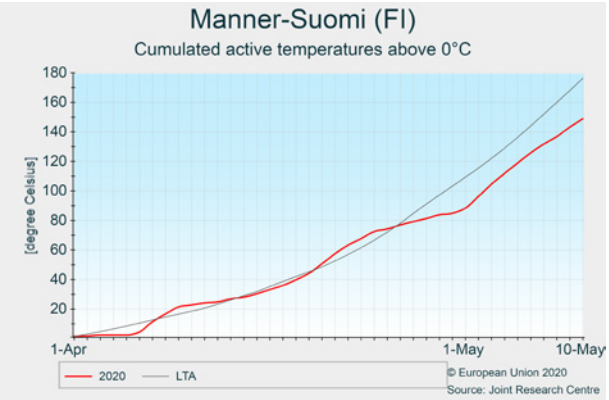
Spring sowing is progressing well

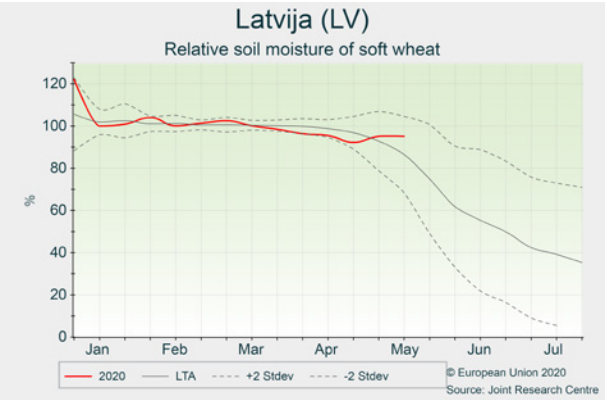
Winter crops are faring well in the Baltics and Finland. Although rainfall and cold weather slowed down spring sowing in Finland, it is still progressing within the expected window. Spring sowing is almost complete in the Baltic countries, where recent rainfall sustained the early growth stages.

Temperatures were warmer than usual in all agricultural regions until mid April. After this point, temperatures became colder than usual, with minimum temperatures decreasing to below 0 °C several times during the reporting period. Cumulative rainfall was below average in Lithuania and Latvia, and above average in the northern countries.

Winter crops are in good condition, and soil moisture is adequate to sustain growth in all countries. Spring sowing progressed well in the Baltic countries. Spring crops benefited from the rainfall at the beginning of May, which is confirmed by the adequate levels of soil water supply simulated by our model. Spring sowing started earlier than usual in Finland due to the warm weather and the small amount of snow in winter, but the cold weather and rainfall of May brought the work back to the usual schedule.

The winter crop yield forecasts remain close to the 5-year averages. For other crops, the yield forecast is still based on historical trends.





Belgium, Luxembourg and the Netherlands

More rain is needed to sustain a fair outlook

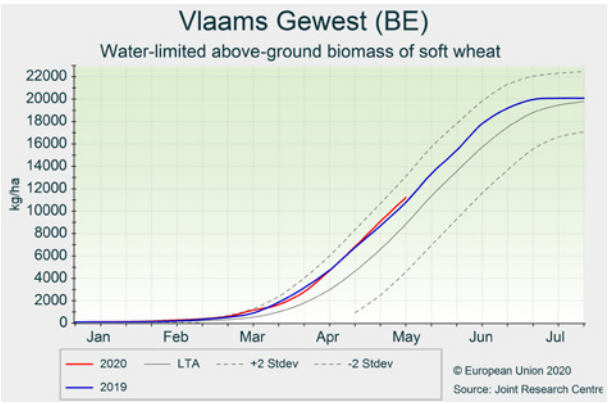
The rain since the end of April brought relief to winter crops and improved soil conditions for the sowing and emergence of sugar beet, potatoes and maize. Winter crops are in fair condition. However, soil moisture levels are still exceptionally low for May, and an above-average rainfall will be needed to sustain good yields.

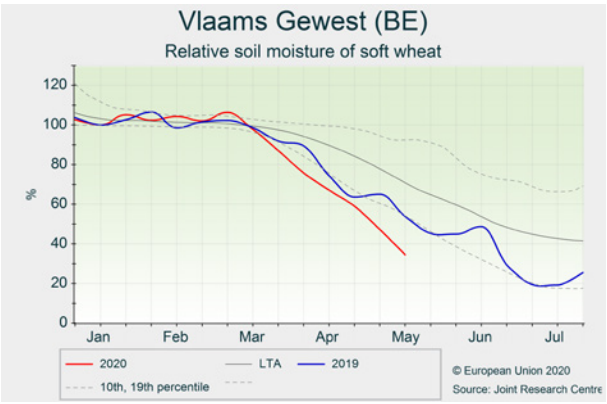
The exceptionally dry period from mid March onwards ended on 28 April, and was followed by a rainy period until 4 May, after which it was largely dry again. Precipitation totals during the review period varied between 20 mm and 30 mm (35 % to 55 % of the LTA), with the lowest values in the eastern Netherlands and north-eastern Belgium. Daily mean temperatures were predominantly above the LTA, but with large fluctuations. Minimum temperatures dropped to below 0 °C for 2 to 3 days in the first half of April, and to just above 0 °C for 2 to 3 days around 6 May. Radiation levels were exceptionally high.

In general, winter crops successfully withstood the unusually dry conditions that prevailed until the end of April, and have benefited from the improvement of the conditions since. Phenological development and biomass accumulation are above average. However, soil moisture levels are still exceptionally low and, while little to no rain is forecast for the coming 10 days, above-average rainfall of just the right amount will be needed to sustain good growth towards flowering and yield formation.

Conditions for recently sown crops improved with the recent rainfall. Sugar beet fields are uneven due to the dry conditions, and some fields were resown. The planting of potatoes and maize is well underway.

The yield forecasts for winter crops were revised slightly downwards, while the yield forecasts for summer crops are still based on historical trends.



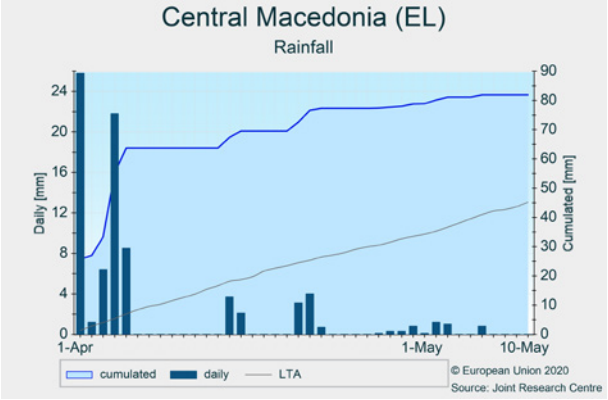


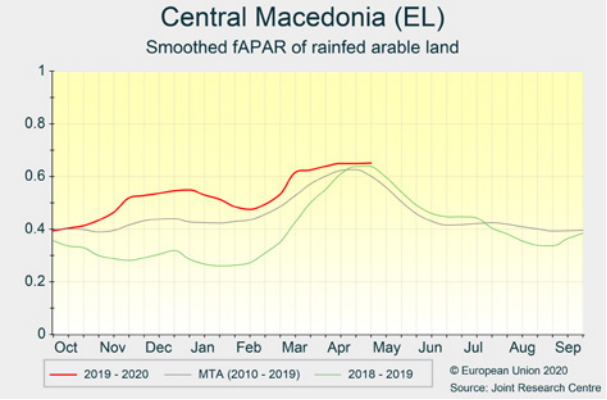
Greece and Cyprus

Positive outlook for winter cereals and favourable conditions for summer crops

In Greece, wet spring conditions were beneficial to crops. Cereal biomass accumulation is generally above average. Timely fungal treatments helped to manage most of the biotic crop stress which resulted from the overly wet conditions in April. Summer crops are developing well, and have entered the post-emergence stage.

The review period was characterised by an above-average rainfall which cumulated in eastern and central Greece, and by average precipitation levels along the Adriatic coast and in the *Peloponnese*. Most of the rain fell during the first two dekads of April, in events characterised by moderate intensity. Above-average precipitation was also observed in Cyprus, with fairly distributed events throughout the period. Temperatures have ranged from seasonal to slightly below average for both countries. No particular thermal anomalies were observed. Despite the overly wet conditions in spring, the situation for crops in Greece is generally favourable. The wet weather in March and April favoured fungal infections (i.e. *Septoria* spp.), which in most cases were treated in time and thus have not damaged the winter crop yields. Winter wheat is proceeding well, and is now at grain filling stages. Summer crops, mainly cultivated in the northern regions of Greece, are growing under favourable conditions, and are in the first vegetative stages. The analyses of satellite indicators confirm our positive expectations for both winter and summer crops. Biomass accumulation levels for rainfed and irrigated lands are above the MTA, and well above the levels of the previous season. Our forecasts are above the 5-year average for winter crops, and follow the trend for summer crops.





Slovenia and Croatia

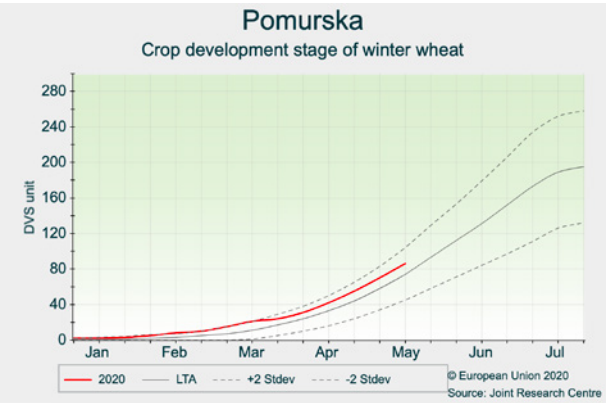
Dry conditions lowering winter crop yield outlook

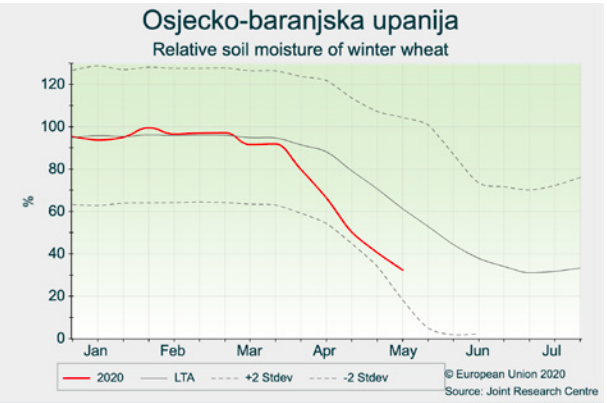
The lack of rainfall since the beginning of the year has caused drought stress in many agricultural regions of Croatia and Slovenia; most markedly in eastern regions of both countries. The yield outlook for winter crops has been revised downwards. The lack of soil moisture is also hampering the emergence of summer crops.

Even though April began with cold weather, the period as a whole was slightly warmer than usual in Slovenia and western Croatia. Both countries received less than half of their usual rainfall during the review period, and this was most pronounced in central-western and eastern Croatia: eastern Croatia saw less than 40 mm of rainfall altogether. Adding to the precipitation deficit since the beginning of the year, soil moisture levels for winter crops are now well below the LTA in eastern Croatia and in eastern Slovenia. The deficit is especially marked on sandy soils and soils with little organic matter.

The freezing temperatures at the beginning of April caused no significant damage to winter crops. Currently, the main threat to winter crop growth and to the emergence of summer crops comes from the prevailing drought conditions. Even though the cold weather anomaly at the end of March and the beginning of April slowed down the phenological development of winter crops, these are mainly in an advanced stage due to the preceding warm weather. Winter soft wheat is gradually entering the flowering stage, which is highly sensitive to drought stress. Consequently, we revised the yield outlook for winter wheat downwards, especially in Croatia. Similarly, the winter rapeseed outlook was also revised downwards.

For summer crop emergence, the lack of moisture in many places is a problem. Nevertheless, it is still too early to quantify the impact on crop yields, and so our forecast remains around the long-term trend.





4.4. United Kingdom

United Kingdom

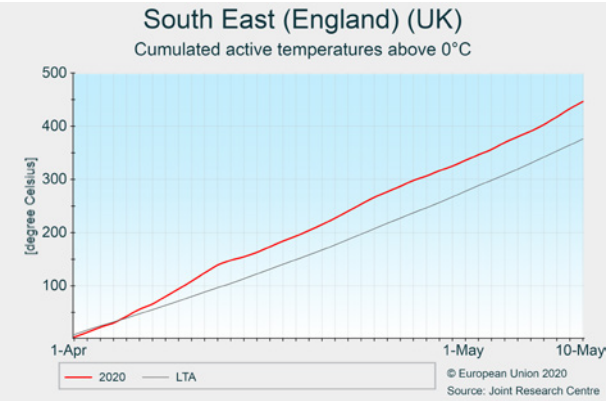
More rainfall is needed to maintain yield potentials

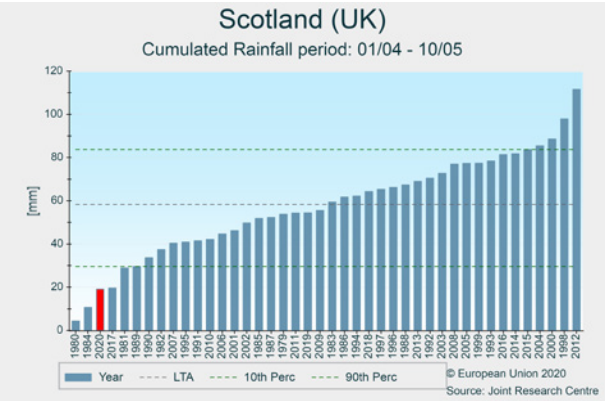
Above-average temperatures accelerated the development of winter crops. April rainfall sustained winter and spring cereals, although more rain is needed to approach yield potential. Dry conditions created uneven germination in spring barley and sugar beet.

Average temperatures were warmer than usual, with cumulated radiation above the LTA. The rainfall deficit continued throughout the review period, although moderate precipitation had occurred since mid April. In particular, this was Scotland's third driest period (1 April to 10 May) on record since 1979. This impacted spring barley germination, which is still not complete, and is uneven in many areas, particularly for crops that were sown later. Some farmers have irrigated spring barley fields.

Spring crops generally benefited from the rainfall occurring from mid April on, but more rain is needed to ensure optimal growth. Sugar beet is emerging well with the early drillings, but at the end of April, sugar beet establishment was uneven in many fields. Potato planting is in full swing, and many growers have started irrigating, especially in the east.

Winter wheat growth stages vary according to the drilling date, but the September-drilled crops in the south of the United Kingdom have reached the flag leaf stage, while winter barley is at booting stage. Winter cereals are faring well, but soil moisture content decreased to below normal levels, according to our simulations. More rainfall is needed to maintain good yield potentials, particularly now that the crops are approaching critical growth stages. Due to the depleted soil water profiles, yield forecasts are revised slightly downwards for winter crops, but are maintained close to the 5-year average for spring crops.





4.5. Black Sea area

Ukraine

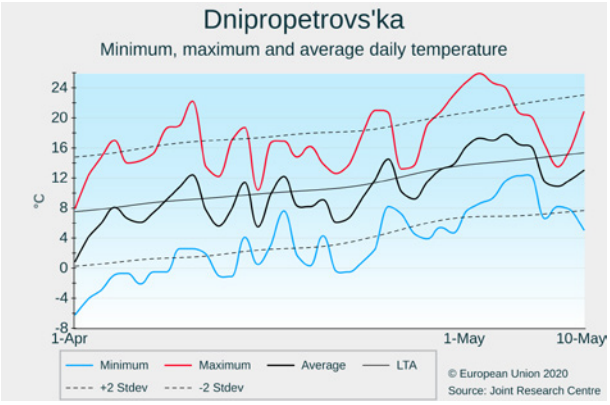
Wheat and barley yield forecasts lowered following the dry conditions

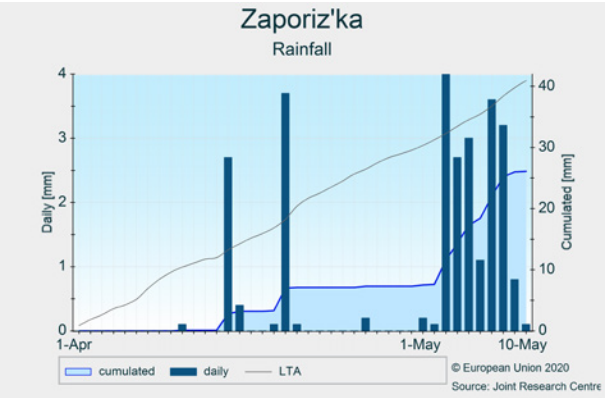
Despite the return of some rainfall since the beginning of May, the long dry period beforehand left a negative mark on the yield potential of winter cereals. Low temperatures and cold nights delayed the development of winter and spring crops.

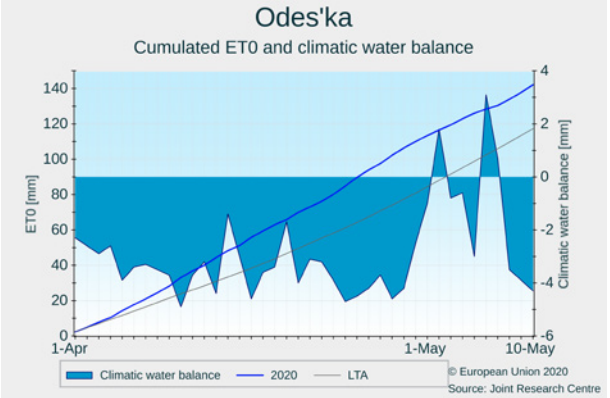
The weather was particularly dry in April, with only a few oblasts (*Kyyivs'ka* and *Vinnyts'ka*) receiving substantial rainfall, while the rest of the country experienced no more than 50 % of the usual rainfall. In the beginning of May, conditions changed, and since then, substantial rainfall has been observed in all oblasts except *Odes'ka,* which remained exposed to an exceptional drought. Temperatures were close to the seasonal average when considering the review period as a whole. However, daily amplitudes were large, and several night frost events were reported.

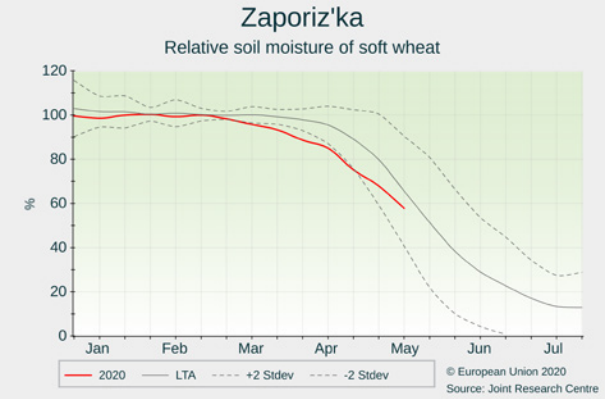
Winter wheat was impacted by the dry conditions, and the yield forecast was revised downwards as the main producing regions (except *Vinnyts'ka*) faced a water deficit. Winter barley in the main producing regions (*Odes'ka* and *Mykolayivs'ka*) was also impacted by the water deficit, and the yield forecast is now below the trend. Spring barley development was hampered by the low soil moisture, delayed by the cold temperatures and locally impacted by night frost.

While the sowing of summer crops was also hampered by the dry conditions and the cold (soil) temperatures, the precipitation observed since the beginning of May, combined with warmer temperatures, will finally allow the sowing campaign to be completed, and will ensure adequate emergence.







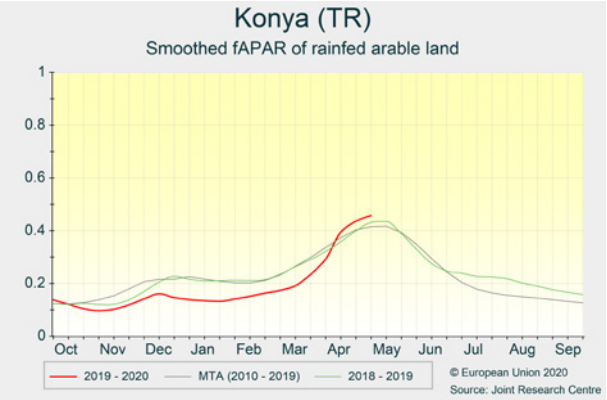


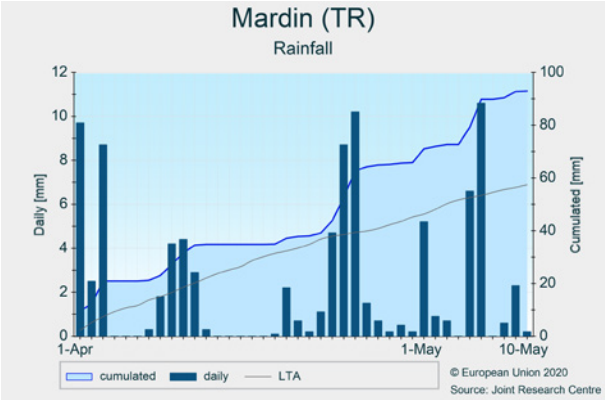
Turkey

Favourable winter crop season continues

Wheat and barley yield forecasting figures are above last year's, and the 5-year average. This is a result of very good crop conditions in south-eastern regions. Summer crop sowing is ongoing, and yield forecasts are based on trend analysis.

In *Konya* and *Kırıkkale*, seasonal temperatures occurring since 1 April favoured the normal development of winter crops. After a slow start to the season, crops recovered to normal stages and an almost favourable biomass accumulation. In *Ankara* and *Kayseri*, the temperature was slightly below average, and this slowed down crop growth, which had only recently reached average levels after an initial delay. In all aforementioned regions, favourable precipitation occurred at the beginning of May, replenishing soil moisture and fully sustaining crop growth. In the southern Anatolian regions (*Konya* and *Kırıkkale*), winter crops are almost at the heading stage, while in *Kayseri*, winter crops are still delayed and in full vegetative phase. In the Aegean regions (e.g. *Adana*), where most of the maize is cultivated, a surplus of precipitation occurred during the spring, and water reservoirs for irrigation have been replenished. The sowing period has just begun, and maize yields will mostly depend on summer temperatures. In south-eastern regions (i.e. *Gaziantep*, *Şanlıurfa* and *Mardin*), favourable precipitation is the main driver for the very favourable biomass accumulation during the winter crops' vegetative growth. The winter crops' flowering stage is now ending, and soil moisture is still sufficient to sustain grain filling. Yield expectations are very favourable. Water reservoirs have been replenished, creating favourable expectations for the summer season as well.





4.6. European Russia and Belarus

European Russia

A tempered outlook for winter cereals; good progress of spring sowing campaign

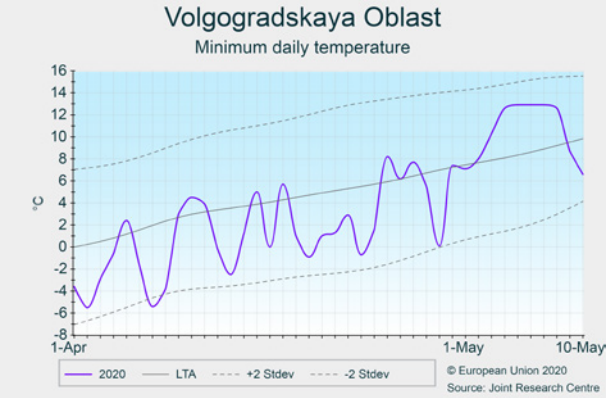
Severe frost events in the first half of April are expected to have caused leaf and stem damage to winter cereals. Increasing soil moisture deficit has started to negatively affect the (so far very good) yield potentials in the main winter wheat producing regions in south-western Russia. The spring sowing campaign has begun early and is progressing well.

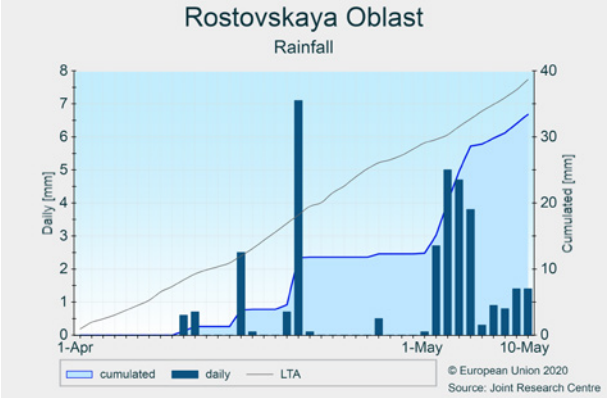
Most areas of European Russia largely experienced slightly colder thermal conditions than usual (0.5 °C to 2 °C below the LTA) during the review period (1 April to 10 May), except for certain eastern and northern areas, where near-seasonal and somewhat warmer temperatures than usual prevailed. In the first half of April, extraordinary frost events, with daily minimum temperatures of – 5 °C to – 10 °C (locally down to – 13 °C), caused leaf and stem injuries to winter cereals, even in the southern regions.

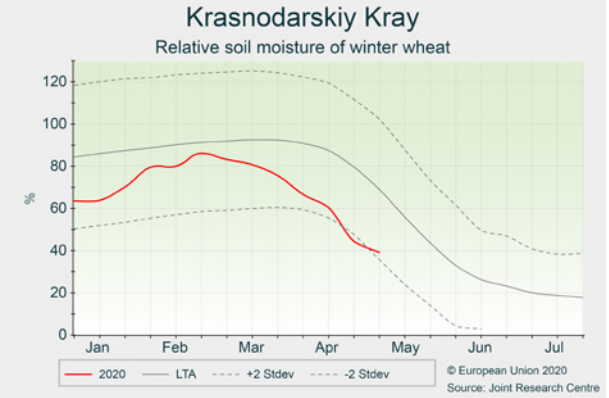
Rainfall during the review period was abundant (40 mm to 90 mm) in the Central okrug (e.g. in the Black Earth Region) and in the northern part of the Volga okrug. In contrast, in the southern and North Caucasian okrugs, dry conditions continued throughout, but the situation improved somewhat in early May, typically resulting in 10 mm to 40 mm for the review period as a whole (certain regions close to the Caucasus Mountains received 50 mm to 100 mm of rainfall).

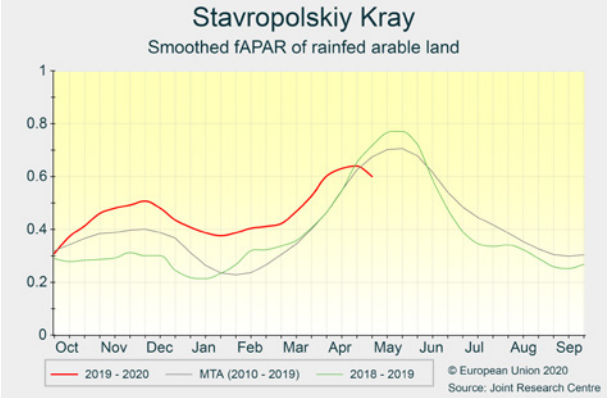
In southern Russia, after an excellent early start to spring, the growth of winter crops began to slow down due to the rapidly declining soil moisture levels. Nevertheless, crop model results and remote sensing images indicate still near-average biomass accumulation, thanks to water reserves in deeper layers of the deep chernozem soils. However, in the absence of very substantial rainfall, a drought situation could easily develop, as has been the case in the past 2 years.

The sowing of spring crops began early and advanced significantly quicker than usual. Rain hampered the spring sowing campaign only in the Central and Volga okrugs. In southern regions, even the sowing of thermophile crops such as sunflower and maize has begun, and is progressing well.









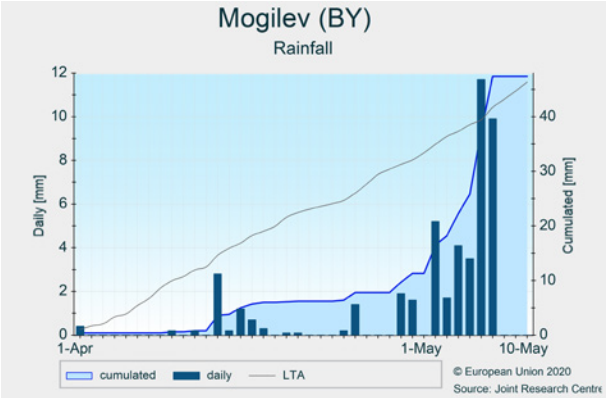
Belarus

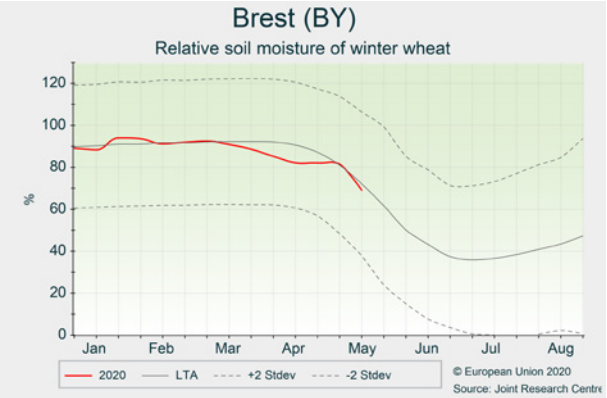
Average outlook despite a very dry April

During the review period, temperatures oscillated around the LTA. Frost conditions with minimum temperatures of lower than – 3.5 °C occurred briefly during the first two dekads of April. Cumulative precipitation in April was significantly below the LTA, at 65 % below normal levels. This resulted in decreasing soil water levels in most of the country, especially in the south. Fortunately, precipitation events since the end of April alleviated dry topsoil conditions in most of the country and brought some relief to crops.

Winter crops are generally in fair condition, developing at a normal pace and currently in the tillering and stem elongation stages. Yield potentials of winter cereals may have been affected by the low soil moisture levels in April, especially in southern regions. Nevertheless, recent rainfall brought some relief to crops. The sowing campaign for spring and summer crops is close to being finalised under adequate soil water conditions for germination and emergence.

We maintain our yield forecasts based on historical trends.





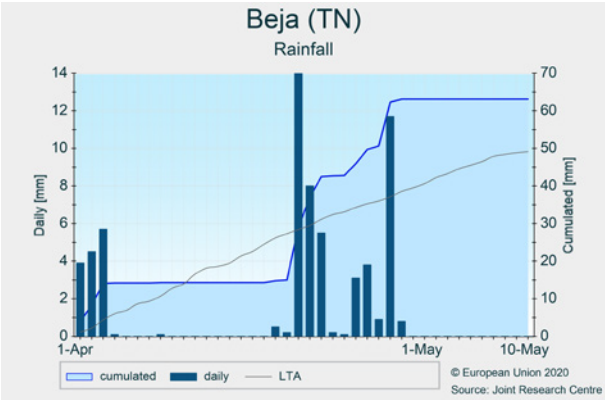
4.7. Maghreb

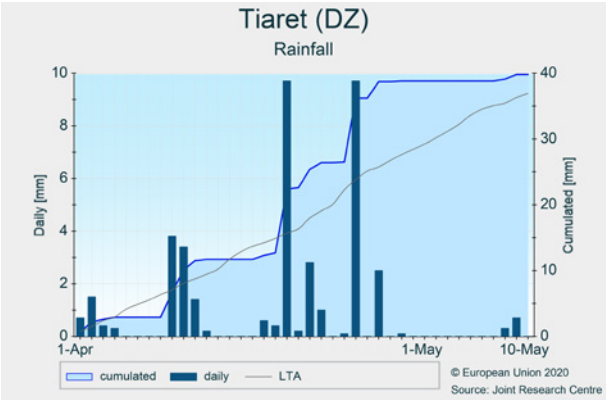
Morocco, Algeria and Tunisia

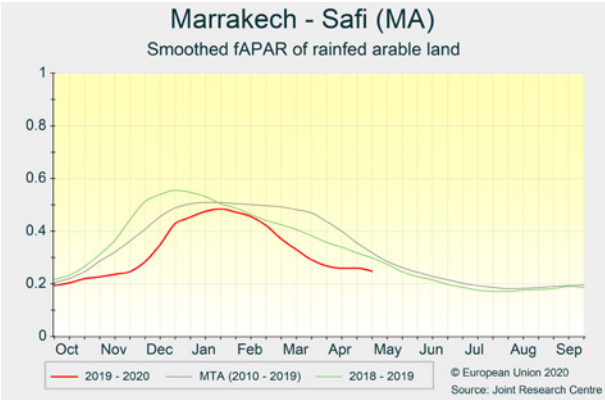
Rain in western Maghreb was insufficient for crops to recover

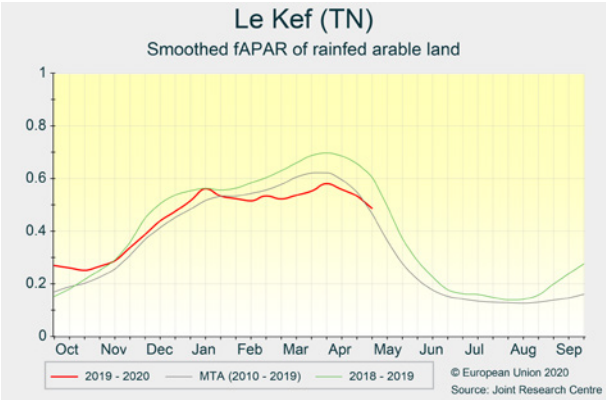
The exceptional shortfall in precipitation since the beginning of the 2019/2020 growing season has negatively affected growth and development in most of the rainfed cultivation in the Maghreb region. Late rainfall events in April and May were insufficient for crops to recover. Morocco is the worst hit by the drought. Algeria is affected in the western regions, and Tunisia in the inland barley producing regions.

In the Maghreb region, the review period (1 April to 10 May) has been characterised by rainfall events which mostly occurred in western Maghreb. More precisely, rain fell across the northern belt to eastern *Tanger* (Morocco) and western *Nabeul* (Tunisia). Accumulated rainfall values ranged from 20 mm to 60 mm, i.e. 50 % to 60 % more than the LTA. Rain was 10 mm to 20 mm below average in central and southern Morocco, and at average levels in central Tunisia. Precipitation arrived too late to stimulate crop recovery in Morocco and eastern Algeria, but was beneficial for soft and durum wheat in northern Tunisia. Crops in Morocco have almost completed the phenological cycle, which was accelerated during February and March in response to drought conditions. By contrast, biomass levels are above average in eastern Algeria (e.g. in *Guelma* and *Tebessa*) and in the northern littoral regions of Tunisia (e.g. *Bizerte* and *Jendouba*), where grain filling in April occurred under favourable soil moisture conditions. For the regions of *Le Kef*, *Siliana*, *Kasserine* and *Kairouan* in central Tunisia, remote sensing indicators suggest below-average biomass accumulation during grain filling. This trend was already observed during flowering in March, and is a consequence of the scarce precipitation in these regions during spring, but also of the exposure to above-average temperatures, including a heatwave during the review period, in early May. The outlook for barley production in these regions deteriorated. Our forecasts generally reaffirm the negative expectations for cereals in Morocco, remain close to average for Algeria and are revised downwards for barley in Tunisia.



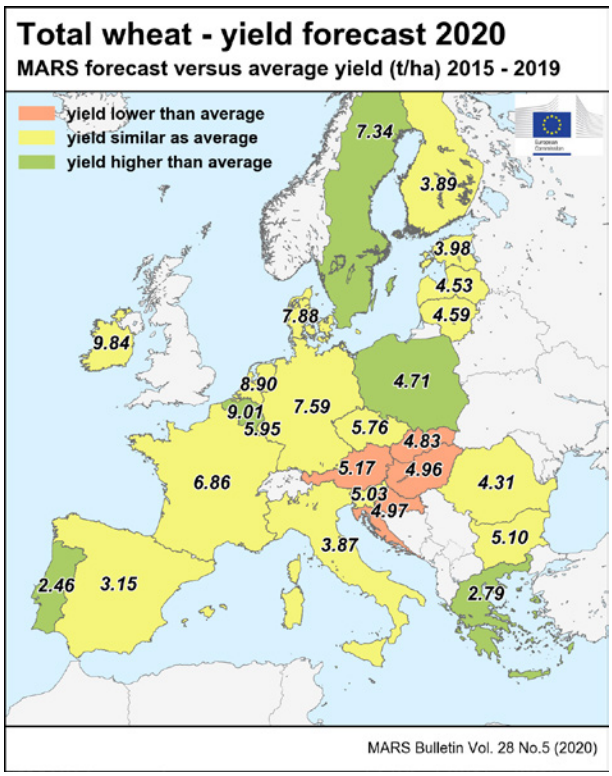




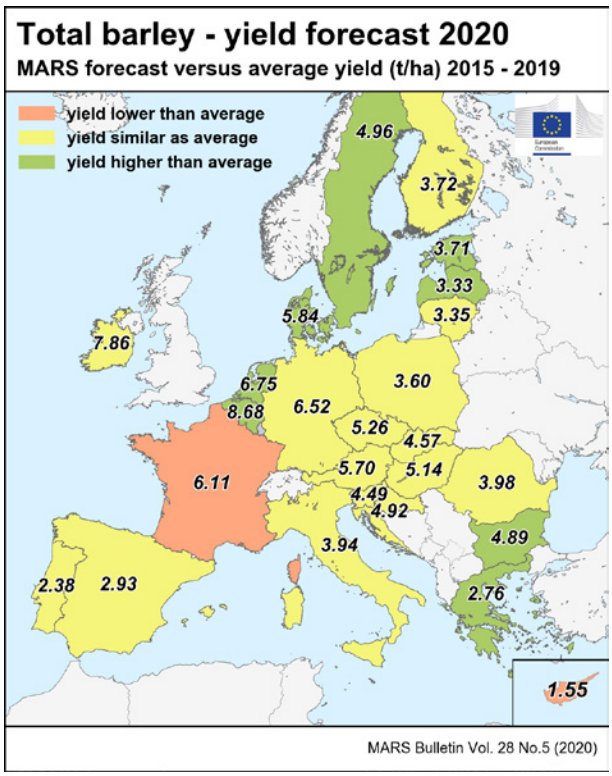


5. Crop yield forecasts

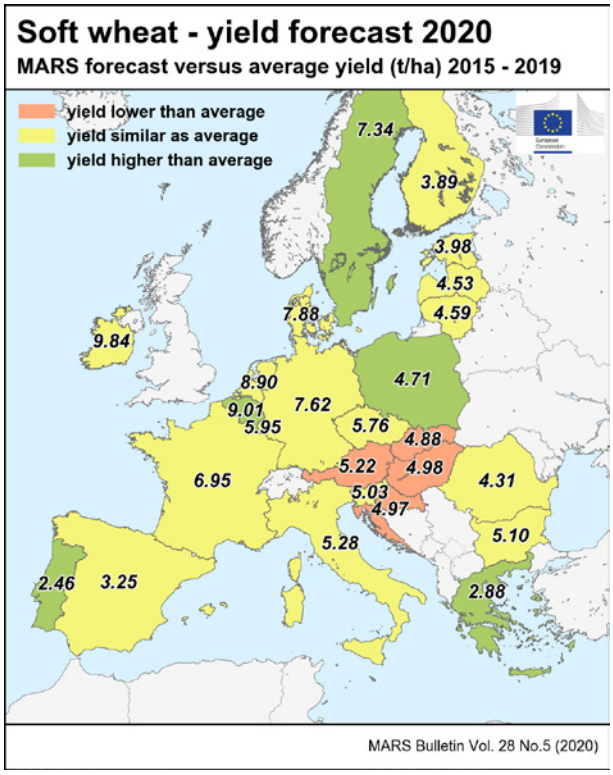
Country	Total wheat (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	5.54	5.77	**5.50**	– 0.6	– 4.7
AT	5.45	5.77	**5.17**	– 5.1	– 10
BE	8.47	9.23	**9.01**	+ 6.4	– 2.4
BG	4.93	5.14	**5.10**	+ 3.5	– 0.8
CY	—	—	**—**	—	—
CZ	5.93	5.73	**5.76**	– 3.0	+ 0.4
DE	7.50	7.40	**7.59**	+ 1.2	+ 2.6
DK	7.66	8.19	**7.88**	+ 2.9	– 3.8
EE	3.97	5.07	**3.98**	+ 0.3	– 21
ES	2.62	2.65	**2.79**	+ 6.3	+ 5.2
FI	3.14	3.04	**3.15**	+ 0.4	+ 3.5
FR	3.91	4.56	**3.89**	– 0.4	– 15
EL	6.99	7.84	**6.86**	– 1.9	– 13
HR	5.54	5.53	**4.97**	– 10	– 10
HU	5.27	5.28	**4.96**	– 5.9	– 6.0
IE	9.84	9.99	**9.84**	– 0.1	– 1.6
IT	3.94	3.75	**3.87**	– 1.9	+ 3.1
LT	4.48	4.29	**4.59**	+ 2.4	+ 7.1
LU	5.78	6.01	**5.95**	+ 3.0	– 1.0
LV	4.49	4.81	**4.53**	+ 0.8	– 5.9
MT	—	—	**—**	—	—
NL	8.90	9.44	**8.90**	+ 0.0	– 5.7
PL	4.49	4.39	**4.71**	+ 4.9	+ 7.3
PT	2.19	2.23	**2.46**	+ 12	+ 10
RO	4.44	4.80	**4.31**	– 3.0	– 10
SE	6.55	7.40	**7.34**	+ 12	– 0.8
SI	4.99	5.23	**5.03**	+ 0.7	– 3.9
SK	5.15	4.81	**4.83**	– 6.2	+ 0.5
UK	8.34	8.94	**8.01**	– 4.0	– 10



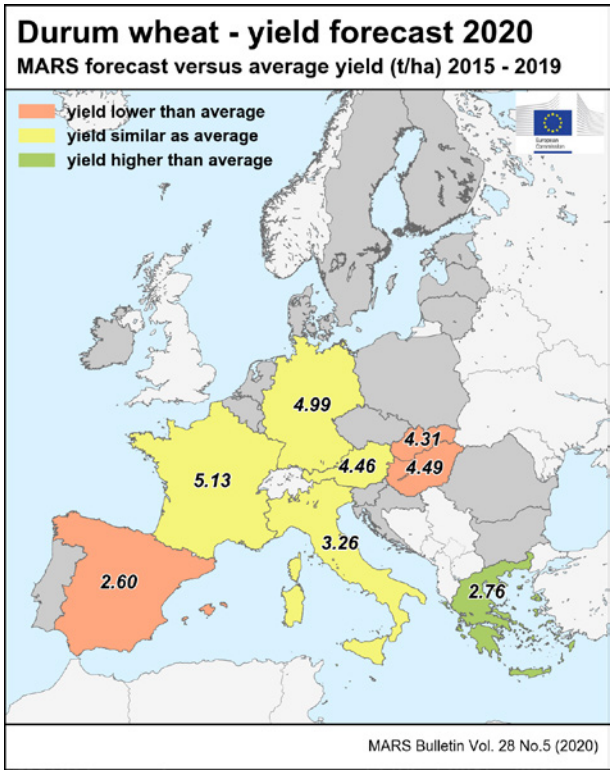
Country	Total barley (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	4.78	4.99	**4.72**	– 1.1	– 5.4
AT	5.67	6.07	**5.70**	+ 0.6	– 6.0
BE	8.06	8.56	**8.68**	+ 7.6	+ 1.4
BG	4.40	4.90	**4.89**	+ 11	– 0.1
CY	1.67	2.70	**1.55**	– 7.4	– 43
CZ	5.33	5.38	**5.26**	– 1.4	– 2.1
DE	6.66	6.78	**6.52**	– 2.1	– 3.9
DK	5.60	6.29	**5.84**	+ 4.2	– 7.2
EE	3.45	4.09	**3.71**	+ 7.4	– 9.4
ES	2.60	2.71	**2.76**	+ 5.8	+ 1.8
FI	2.93	2.76	**2.93**	– 0.1	+ 6.4
FR	3.72	4.23	**3.72**	+ 0.0	– 12
EL	6.45	7.08	**6.11**	– 5.3	– 14
HR	4.79	5.18	**4.92**	+ 2.9	– 5.0
HU	5.07	5.54	**5.14**	+ 1.5	– 7.1
IE	8.01	8.66	**7.86**	– 1.8	– 9.2
IT	4.00	4.05	**3.94**	– 1.4	– 2.7
LT	3.36	3.37	**3.35**	– 0.4	– 0.5
LU	—	—	**—**	—	—
LV	3.19	3.43	**3.33**	+ 4.7	– 2.7
MT	—	—	**—**	—	—
NL	6.44	6.51	**6.75**	+ 4.8	+ 3.7
PL	3.56	3.46	**3.60**	+ 1.2	+ 4.0
PT	2.39	2.64	**2.38**	– 0.4	– 10
RO	4.04	4.44	**3.98**	– 1.7	– 11
SE	4.68	5.31	**4.96**	+ 6.0	– 6.5
SI	4.65	4.85	**4.49**	– 3.4	– 7.4
SK	4.66	4.81	**4.57**	– 2.0	– 4.9
UK	6.27	6.92	**6.14**	– 2.2	– 11



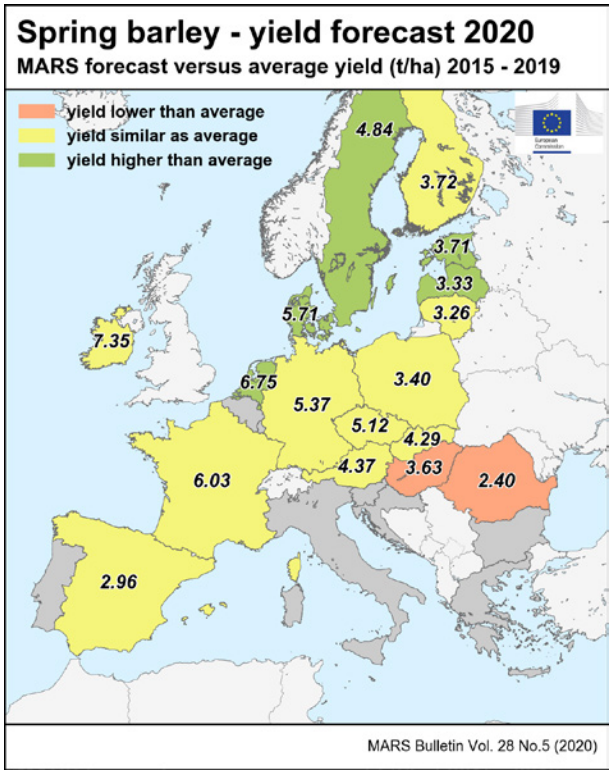
Country	Soft wheat (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	5.77	6.00	**5.72**	– 0.9	– 4.7
AT	5.52	5.83	**5.22**	– 5.4	– 11
BE	8.47	9.23	**9.01**	+ 6.4	– 2.4
BG	4.93	5.14	**5.10**	+ 3.5	– 0.8
CY	—	—	—	—	—
CZ	5.93	5.73	**5.76**	– 3.0	+ 0.4
DE	7.52	7.42	**7.62**	+ 1.3	+ 2.6
DK	7.66	8.19	**7.88**	+ 2.9	– 3.8
EE	3.97	5.07	**3.98**	+ 0.3	– 21
EL	2.70	2.77	**2.88**	+ 6.5	+ 4.0
ES	3.23	3.09	**3.25**	+ 0.6	+ 5.0
FI	3.91	4.56	**3.89**	– 0.4	– 15
FR	7.11	7.92	**6.95**	– 2.2	– 12
HR	5.54	5.53	**4.97**	– 10	– 10
HU	5.29	5.32	**4.98**	– 5.9	– 6.3
IE	9.84	9.99	**9.84**	– 0.1	– 1.6
IT	5.41	5.14	**5.28**	– 2.6	+ 2.6
LT	4.48	4.29	**4.59**	+ 2.4	+ 7.1
LU	5.78	6.01	**5.95**	+ 3.0	– 1.0
LV	4.49	4.81	**4.53**	+ 0.8	– 5.9
MT	—	—	—	—	—
NL	8.90	9.44	**8.90**	+ 0.0	– 5.7
PL	4.49	4.39	**4.71**	+ 4.9	+ 7.3
PT	2.19	2.23	**2.46**	+ 12	+ 10
RO	4.44	4.80	**4.31**	– 3.0	– 10
SE	6.55	7.40	**7.34**	+ 12	– 0.8
SI	4.99	5.23	**5.03**	+ 0.7	– 3.9
SK	5.22	4.87	**4.88**	– 6.4	+ 0.3
UK	8.34	8.94	**8.01**	– 4.0	– 10



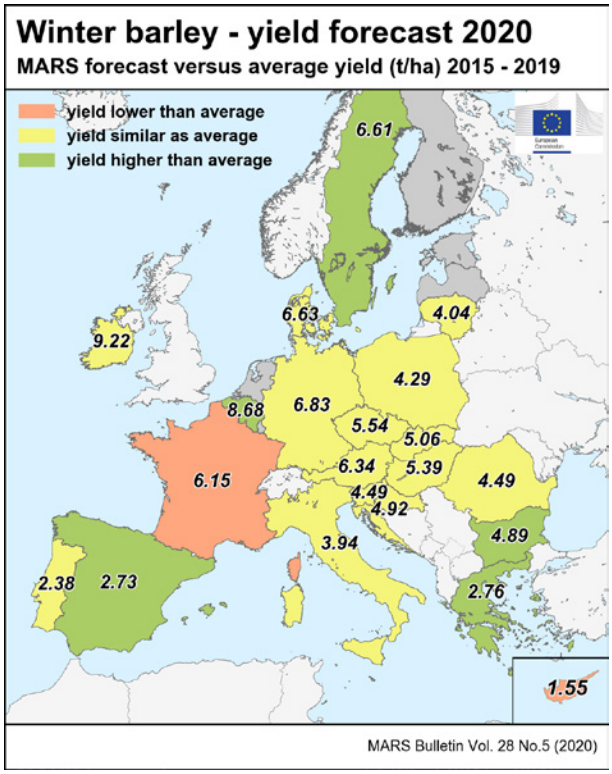
Country	Durum wheat (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	3.49	3.47	**3.38**	– 2.9	– 2.4
AT	4.58	4.83	**4.46**	– 2.7	– 7.7
BE	—	—	—	—	—
BG	—	—	—	—	—
CY	—	—	—	—	—
CZ	—	—	—	—	—
DE	5.06	4.92	**4.99**	– 1.5	+ 1.4
DK	—	—	—	—	—
EE	—	—	—	—	—
ES	2.59	2.61	**2.76**	+ 6.4	+ 5.7
FI	2.73	2.76	**2.60**	– 4.6	– 5.7
FR	—	—	—	—	—
EL	5.29	6.28	**5.13**	– 2.9	– 18
HR	—	—	—	—	—
HU	4.71	4.34	**4.49**	– 4.6	+ 3.5
IE	—	—	—	—	—
IT	3.34	3.15	**3.26**	– 2.6	+ 3.3
LT	—	—	—	—	—
LU	—	—	—	—	—
LV	—	—	—	—	—
MT	—	—	—	—	—
NL	—	—	—	—	—
PL	—	—	—	—	—
PT	—	—	—	—	—
RO	—	—	—	—	—
SE	—	—	—	—	—
SI	—	—	—	—	—
SK	4.53	4.29	**4.31**	– 4.9	+ 0.5
UK	—	—	—	—	—



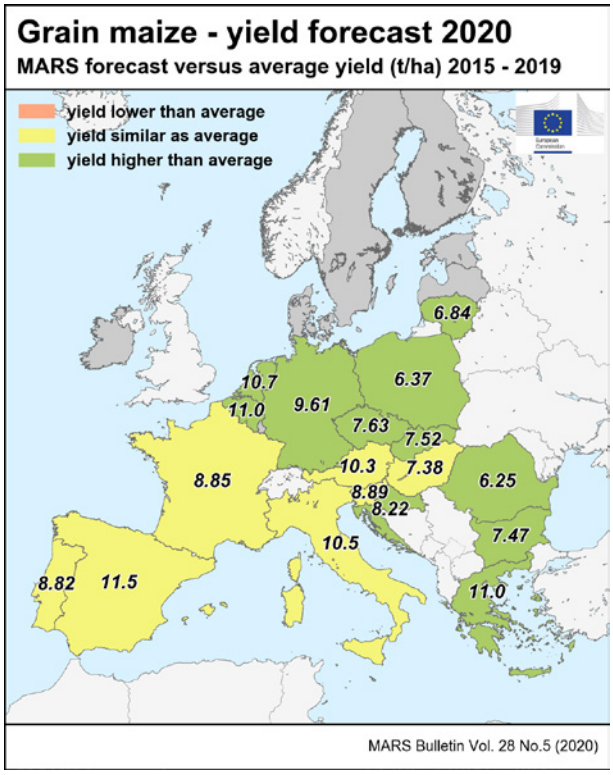
Country	Spring barley (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	4.02	4.13	**4.05**	+ 0.8	– 1.8
AT	4.44	4.17	**4.37**	– 1.5	+ 4.8
BE	—	—	**—**	—	—
BG	—	—	**—**	—	—
CY	—	—	**—**	—	—
CZ	5.18	5.07	**5.12**	– 1.1	+ 1.0
DE	5.21	5.12	**5.37**	+ 3.1	+ 4.9
DK	5.44	6.14	**5.71**	+ 5.0	– 7.0
EE	3.45	4.09	**3.71**	+ 7.4	– 9.4
EL	—	—	**—**	—	—
ES	3.01	2.80	**2.96**	– 1.8	+ 5.4
FI	3.72	4.23	**3.72**	+ 0.0	– 12
FR	6.22	7.04	**6.03**	– 3.1	– 14
HR	—	—	**—**	—	—
HU	3.96	4.56	**3.63**	– 8.4	– 21
IE	7.27	8.00	**7.35**	+ 1.2	– 8.1
IT	—	—	**—**	—	—
LT	3.34	3.29	**3.26**	– 2.2	– 0.9
LU	—	—	**—**	—	—
LV	3.19	3.43	**3.33**	+ 4.7	– 2.7
MT	—	—	**—**	—	—
NL	6.44	6.51	**6.75**	+ 4.8	+ 3.7
PL	3.37	3.21	**3.40**	+ 0.9	+ 6.0
PT	—	—	**—**	—	—
RO	2.73	2.81	**2.40**	– 12	– 14
SE	4.61	5.19	**4.84**	+ 5.1	– 6.7
SI	—	—	**—**	—	—
SK	4.45	4.57	**4.29**	– 3.5	– 6.2
UK	5.74	6.34	**5.73**	– 0.2	– 9.6



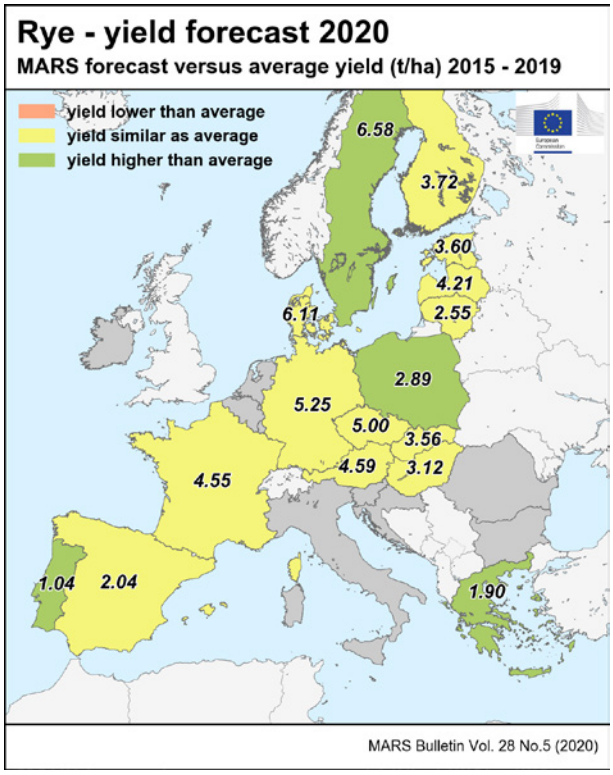
Country	Winter barley (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	5.75	6.11	**5.63**	– 2.0	– 7.8
AT	6.34	6.74	**6.34**	+ 0.0	– 5.8
BE	8.06	8.56	**8.68**	+ 7.6	+ 1.4
BG	4.40	4.90	**4.89**	+ 11	– 0.1
CY	1.67	2.70	**1.55**	– 7.4	– 43
CZ	5.68	5.98	**5.54**	– 2.5	– 7.4
DE	7.09	7.22	**6.83**	– 3.6	– 5.4
DK	6.47	7.03	**6.63**	+ 2.4	– 5.7
EE	—	—	**—**	—	—
EL	2.60	2.71	**2.76**	+ 5.8	+ 1.8
ES	2.41	2.31	**2.73**	+ 13	+ 18
FI	—	—	**—**	—	—
FR	6.54	7.09	**6.15**	– 5.9	– 13
HR	4.79	5.18	**4.92**	+ 2.9	– 5.0
HU	5.28	5.65	**5.39**	+ 2.2	– 4.5
IE	9.25	9.42	**9.22**	– 0.4	– 2.1
IT	4.00	4.05	**3.94**	– 1.4	– 2.7
LT	3.90	3.89	**4.04**	+ 3.4	+ 3.8
LU	—	—	**—**	—	—
LV	—	—	**—**	—	—
MT	—	—	**—**	—	—
NL	—	—	**—**	—	—
PL	4.26	4.31	**4.29**	+ 0.9	– 0.3
PT	2.39	2.64	**2.38**	– 0.4	– 10
RO	4.48	4.91	**4.49**	+ 0.2	– 8.6
SE	5.91	6.85	**6.61**	+ 12	– 3.4
SI	4.65	4.85	**4.49**	– 3.4	– 7.4
SK	5.21	5.29	**5.06**	– 2.8	– 4.5
UK	7.16	7.84	**6.87**	– 4.1	– 12



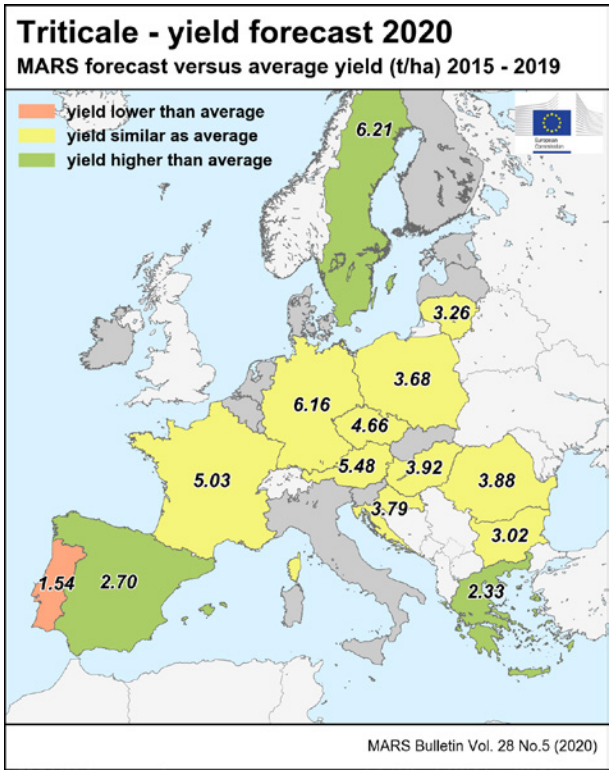
Country	Grain maize (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	7.58	7.90	**7.94**	+ 4.8	+ 0.6
AT	10.1	10.4	**10.3**	+ 2.0	– 1.3
BE	10.4	10.5	**11.0**	+ 5.8	+ 5.7
BG	6.44	6.96	**7.47**	+ 16	+ 7.3
CY	—	—	**—**	—	—
CZ	7.30	8.29	**7.63**	+ 4.5	– 8.0
DE	9.21	8.81	**9.61**	+ 4.3	+ 9.1
DK	—	—	**—**	—	—
EE	—	—	**—**	—	—
EL	10.3	10.6	**11.0**	+ 7.0	+ 3.9
ES	11.6	11.8	**11.5**	– 0.4	– 2.3
FI	—	—	**—**	—	—
FR	8.85	8.58	**8.85**	+ 0.0	+ 3.1
HR	7.87	9.01	**8.22**	+ 4.5	– 8.8
HU	7.50	8.05	**7.38**	– 1.7	– 8.4
IE	—	—	**—**	—	—
IT	10.2	10.0	**10.5**	+ 3.0	+ 4.5
LT	6.39	7.67	**6.84**	+ 6.9	– 11
LU	—	—	**—**	—	—
LV	—	—	**—**	—	—
MT	—	—	**—**	—	—
NL	9.78	9.75	**10.7**	+ 9.7	+ 10
PL	6.09	5.61	**6.37**	+ 4.7	+ 14
PT	8.52	8.98	**8.82**	+ 3.5	– 1.9
RO	5.52	6.52	**6.25**	+ 13	– 4.1
SE	—	—	**—**	—	—
SI	8.85	9.27	**8.89**	+ 0.4	– 4.1
SK	6.94	7.39	**7.52**	+ 8.4	+ 1.8
UK	—	—	**—**	—	—



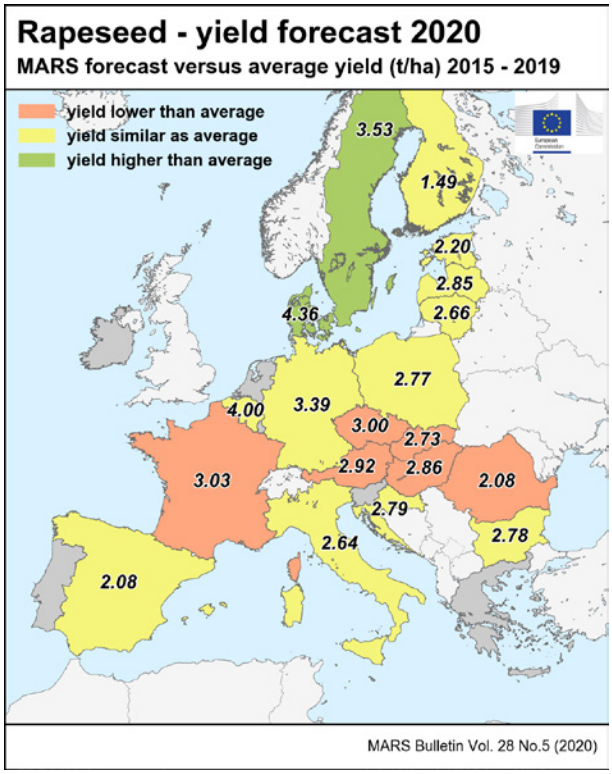
Country	Rye (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	3.75	3.87	**3.90**	+ 4.0	+ 0.8
AT	4.43	4.60	**4.59**	+ 3.6	– 0.3
BE	—	—	**—**	—	—
BG	—	—	**—**	—	—
CY	—	—	**—**	—	—
CZ	4.93	5.06	**5.00**	+ 1.4	– 1.3
DE	5.12	5.24	**5.25**	+ 2.5	+ 0.2
DK	5.89	6.10	**6.11**	+ 3.9	+ 0.3
EE	3.61	4.12	**3.60**	– 0.3	– 13
EL	1.72	1.86	**1.90**	+ 10	+ 2.1
ES	2.10	1.82	**2.04**	– 2.8	+ 13
FI	3.79	4.82	**3.72**	– 1.7	– 23
FR	4.52	4.77	**4.55**	+ 0.7	– 4.5
HR	—	—	**—**	—	—
HU	3.14	3.37	**3.12**	– 0.5	– 7.3
IE	—	—	**—**	—	—
IT	—	—	**—**	—	—
LT	2.51	2.63	**2.55**	+ 1.7	– 2.9
LU	—	—	**—**	—	—
LV	4.14	4.43	**4.21**	+ 1.6	– 5.0
MT	—	—	**—**	—	—
NL	—	—	**—**	—	—
PL	2.77	2.72	**2.89**	+ 4.2	+ 6.0
PT	0.95	1.06	**1.04**	+ 9.2	– 2.2
RO	—	—	**—**	—	—
SE	6.17	6.76	**6.58**	+ 6.5	– 2.8
SI	—	—	**—**	—	—
SK	3.44	3.44	**3.56**	+ 3.6	+ 3.5
UK	2.22	2.38	**2.26**	+ 1.6	– 5.3



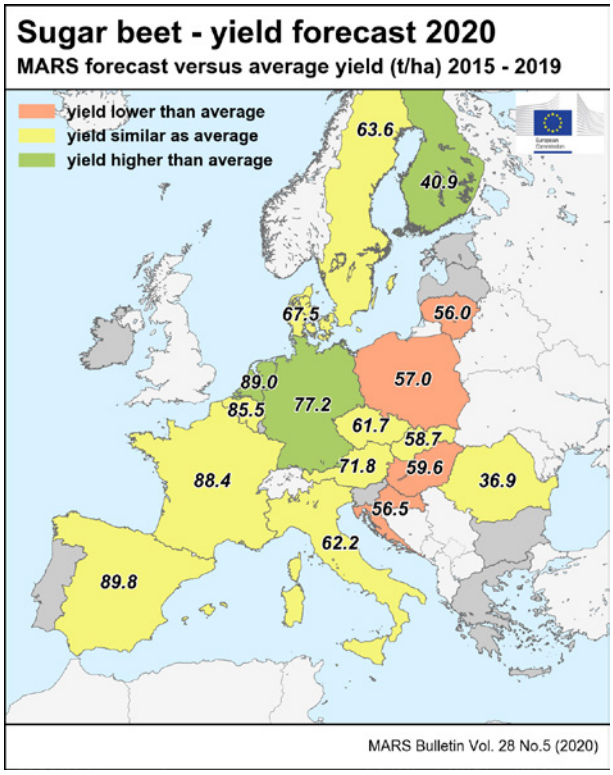
Country	Triticale (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	4.04	4.06	**4.15**	+ 2.7	+ 2.2
AT	5.36	5.49	**5.48**	+ 2.2	– 0.2
BE	—	—	—	—	—
BG	2.96	2.84	**3.02**	+ 2.1	+ 6.5
CY	—	—	—	—	—
CZ	4.79	4.93	**4.66**	– 2.9	– 5.5
DE	6.01	6.13	**6.16**	+ 2.4	+ 0.5
DK	—	—	—	—	—
EE	—	—	—	—	—
EL	2.11	2.24	**2.33**	+ 10	+ 3.7
ES	2.35	2.32	**2.70**	+ 15	+ 16
FI	—	—	—	—	—
FR	5.04	5.44	**5.03**	– 0.2	– 7.6
HR	3.93	3.98	**3.79**	– 3.6	– 4.7
HU	3.96	3.95	**3.92**	– 1.1	– 0.9
IE	—	—	—	—	—
IT	—	—	—	—	—
LT	3.36	3.29	**3.26**	– 2.9	– 0.9
LU	—	—	—	—	—
LV	—	—	—	—	—
MT	—	—	—	—	—
NL	—	—	—	—	—
PL	3.55	3.49	**3.68**	+ 3.6	+ 5.5
PT	1.67	1.47	**1.54**	– 7.9	+ 5.2
RO	3.90	4.12	**3.88**	– 0.5	– 5.7
SE	5.58	6.36	**6.21**	+ 11	– 2.3
SI	—	—	—	—	—
SK	—	—	—	—	—
UK	4.33	4.48	**4.10**	– 5.2	– 8.5



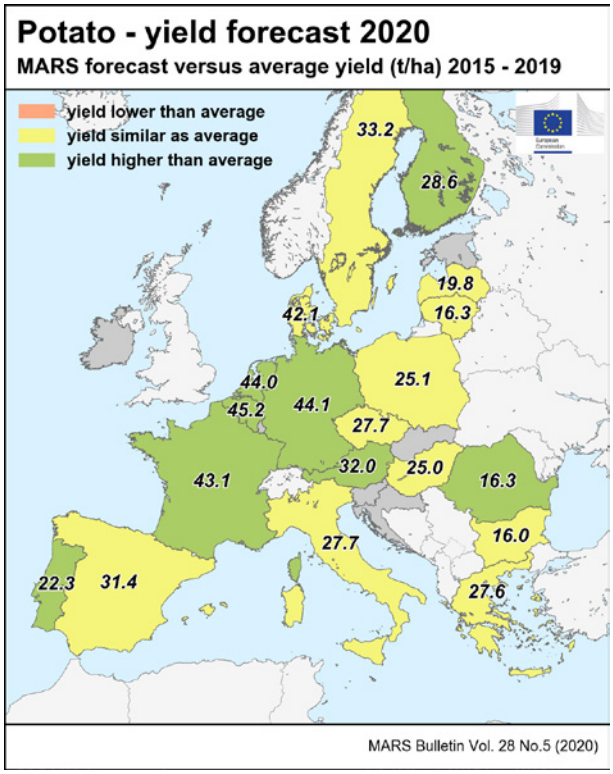
Country	Rape and turnip rape (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	3.08	2.96	**2.95**	– 4.4	– 0.4
AT	3.08	2.98	**2.92**	– 5.4	– 2.2
BE	3.87	3.52	**4.00**	+ 3.5	+ 14
BG	2.73	2.67	**2.78**	+ 1.6	+ 4.1
CY	—	—	—	—	—
CZ	3.26	3.05	**3.00**	– 8.0	– 1.7
DE	3.39	3.30	**3.39**	+ 0.0	+ 2.7
DK	3.92	4.40	**4.36**	+ 11	– 1.0
EE	2.14	2.64	**2.20**	+ 3.1	– 17
EL	—	—	—	—	—
ES	2.10	2.13	**2.08**	– 1.2	– 2.5
FI	1.49	1.33	**1.49**	– 0.6	+ 12
FR	3.33	3.11	**3.03**	– 8.9	– 2.5
HR	2.78	2.50	**2.79**	+ 0.2	+ 12
HU	3.08	2.97	**2.86**	– 6.9	– 3.6
IE	—	—	—	—	—
IT	2.60	2.66	**2.64**	+ 1.4	– 0.6
LT	2.73	2.85	**2.66**	– 2.5	– 6.7
LU	—	—	—	—	—
LV	2.75	2.93	**2.85**	+ 3.7	– 2.7
MT	—	—	—	—	—
NL	—	—	—	—	—
PL	2.77	2.73	**2.77**	– 0.1	+ 1.3
PT	—	—	—	—	—
RO	2.57	2.04	**2.08**	– 19	+ 2.2
SE	3.18	3.62	**3.53**	+ 11	– 2.6
SI	—	—	—	—	—
SK	3.02	2.84	**2.73**	– 9.4	– 3.8
UK	3.55	3.31	**3.46**	– 2.7	+ 4.5



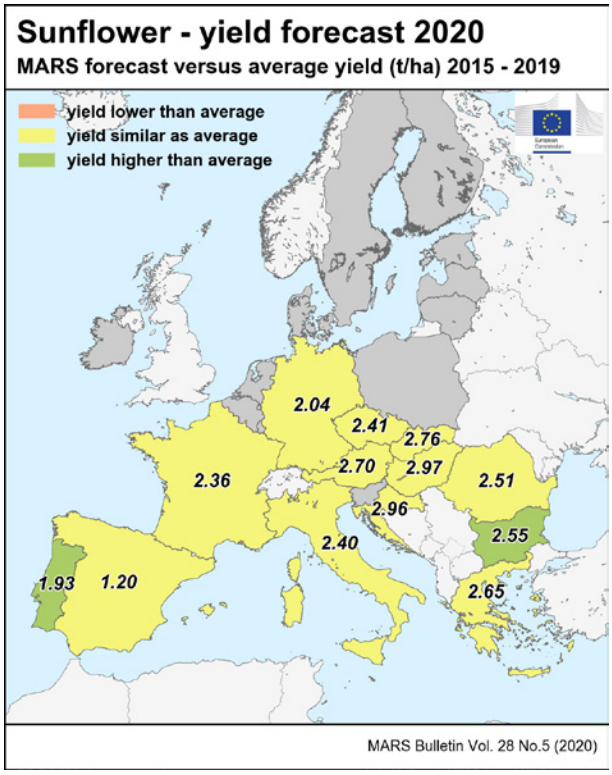
Country	Sugar beet (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	74.7	n/a	**75.4**	+ 0.9	n/a
AT	70.8	70.5	**71.8**	+ 1.5	+ 1.9
BE	84.9	88.2	**85.5**	+ 0.6	– 3.1
BG	-	-	**-**	-	-
CY	-	-	**-**	-	-
CZ	62.7	61.8	**61.7**	– 1.5	– 0.2
DE	73.6	72.7	**77.2**	+ 4.9	+ 6.1
DK	69.9	80.7	**67.5**	– 3.5	– 16
EE	-	-	**-**	-	-
EL	-	-	**-**	-	-
ES	91.0	96.7	**89.8**	– 1.3	– 7.2
FI	37.9	47.6	**40.9**	+ 7.9	– 14
FR	87.0	84.7	**88.4**	+ 1.7	+ 4.4
HR	60.1	52.8	**56.5**	– 6.0	+ 7.0
HU	62.3	58.4	**59.6**	– 4.4	+ 2.0
IE	-	-	**-**	-	-
IT	64.1	n/a	**62.2**	– 3.0	n/a
LT	59.3	71.0	**56.0**	– 5.7	– 21
LU	-	-	**-**	-	-
LV	-	-	**-**	-	-
MT	-	-	**-**	-	-
NL	83.1	83.9	**89.0**	+ 7.1	+ 6.0
PL	61.8	n/a	**57.0**	– 7.8	n/a
PT	-	-	**-**	-	-
RO	38.4	31.1	**36.9**	– 3.7	+ 19
SE	63.6	74.0	**63.6**	+ 0.0	– 14
SI	-	-	**-**	-	-
SK	59.7	57.6	**58.7**	– 1.7	+ 1.8
UK	70.4	69.0	**74.2**	+ 5.3	+ 7.5



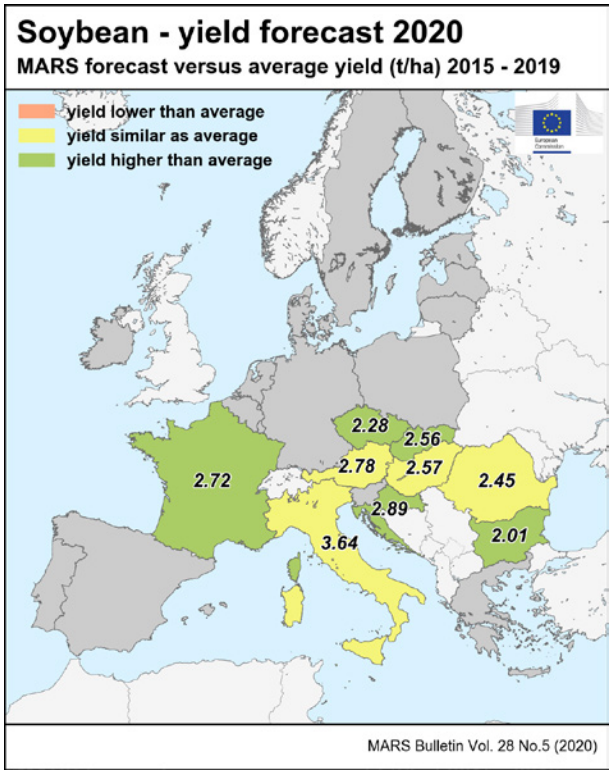
Country	Potato (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	32.5	n/a	**33.9**	+ 4.6	n/a
AT	30.3	31.3	**32.0**	+ 5.6	+ 2.2
BE	41.0	41.1	**45.2**	+ 10	+ 10
BG	16.5	14.5	**16.0**	– 2.9	+ 10
CY	—	—	**—**	—	—
CZ	26.9	27.2	**27.7**	+ 3.0	+ 1.9
DE	41.8	39.0	**44.1**	+ 5.5	+ 13
DK	41.0	42.5	**42.1**	+ 2.6	– 0.9
EE	—	—	**—**	—	—
EL	27.6	27.7	**27.6**	– 0.1	– 0.5
ES	31.5	33.1	**31.4**	– 0.3	– 5.1
FI	27.4	28.9	**28.6**	+ 4.3	– 1.1
FR	41.2	41.4	**43.1**	+ 4.5	+ 4.0
HR	—	—	**—**	—	—
HU	24.2	25.0	**25.0**	+ 3.2	– 0.1
IE	—	—	**—**	—	—
IT	28.3	n/a	**27.7**	– 2.3	n/a
LT	15.8	18.1	**16.3**	+ 3.3	– 9.8
LU	—	—	**—**	—	—
LV	19.6	n/a	**19.8**	+ 1.3	n/a
MT	—	—	**—**	—	—
NL	42.0	42.0	**44.0**	+ 4.6	+ 4.6
PL	25.7	n/a	**25.1**	– 2.4	n/a
PT	20.8	22.7	**22.3**	+ 7.0	– 1.8
RO	15.6	14.8	**16.3**	+ 4.3	+ 10
SE	34.2	35.8	**33.2**	– 2.9	– 7.3
SI	—	—	**—**	—	—
SK	—	—	**—**	—	—
UK	40.5	36.5	**41.8**	+ 3.2	+ 15



Country	Sunflower (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	2.25	2.32	**2.34**	+ 4.4	+ 1.2
AT	2.68	3.00	**2.70**	+ 0.9	– 10
BE	—	—	—	—	—
BG	2.28	2.31	**2.55**	+ 12	+ 10
CY	—	—	—	—	—
CZ	2.43	2.44	**2.41**	– 0.7	– 1.0
DE	2.02	2.04	**2.04**	+ 1.1	– 0.2
DK	—	—	—	—	—
EE	—	—	—	—	—
EL	2.59	2.80	**2.65**	+ 2.1	– 5.6
ES	1.15	1.12	**1.20**	+ 3.7	+ 6.3
FI	—	—	—	—	—
FR	2.28	2.19	**2.36**	+ 3.5	+ 7.5
HR	2.88	2.89	**2.96**	+ 2.9	+ 2.3
HU	2.88	3.00	**2.97**	+ 3.0	– 1.1
IE	—	—	—	—	—
IT	2.37	2.47	**2.40**	+ 1.0	– 3.0
LT	—	—	—	—	—
LU	—	—	—	—	—
LV	—	—	—	—	—
MT	—	—	—	—	—
NL	—	—	—	—	—
PL	—	—	—	—	—
PT	1.49	1.76	**1.93**	+ 30	+ 10
RO	2.47	2.64	**2.51**	+ 1.4	– 5.1
SE	—	—	—	—	—
SI	—	—	—	—	—
SK	2.66	2.64	**2.76**	+ 3.7	+ 4.6
UK	—	—	—	—	—



Country	Soybean (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	2.90	2.96	**2.95**	+ 1.5	– 0.4
AT	2.86	3.11	**2.78**	– 2.8	– 11
BE	—	—	—	—	—
BG	1.36	2.00	**2.01**	+ 48	+ 0.4
CY	—	—	—	—	—
CZ	2.10	2.27	**2.28**	+ 8.5	+ 0.4
DE	—	—	—	—	—
DK	—	—	—	—	—
EE	—	—	—	—	—
EL	—	—	—	—	—
ES	—	—	—	—	—
FI	—	—	—	—	—
FR	2.61	2.39	**2.72**	+ 4.3	+ 14
HR	2.74	2.90	**2.89**	+ 5.4	– 0.5
HU	2.60	2.78	**2.57**	– 1.0	– 7.6
IE	—	—	—	—	—
IT	3.61	3.66	**3.64**	+ 0.6	– 0.7
LT	—	—	—	—	—
LU	—	—	—	—	—
LV	—	—	—	—	—
MT	—	—	—	—	—
NL	—	—	—	—	—
PL	—	—	—	—	—
PT	—	—	—	—	—
RO	2.39	2.55	**2.45**	+ 2.5	– 4.0
SE	—	—	—	—	—
SI	—	—	—	—	—
SK	2.22	2.46	**2.56**	+ 15	+ 4.0
UK	—	—	—	—	—



Maghreb and Black Sea area

Country	Wheat (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
BY	3.51	3.83	**3.81**	+ 8.5	– 0.5
DZ	1.57	n/a	**1.55**	– 1.3	n/a
MA	1.89	1.54	**1.56**	– 18	+ 1.2
TN	1.77	n/a	**1.86**	+ 4.8	n/a
TR	2.78	2.78	**2.94**	+ 5.7	+ 5.9
UA	4.01	4.16	**4.09**	+ 1.7	– 1.8

Country	Barley (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
BY	3.08	3.50	**3.38**	+ 9.9	– 3.4
DZ	1.28	n/a	**1.23**	– 4.1	n/a
MA	1.27	n/a	**1.01**	– 21	n/a
TN	0.83	n/a	**0.74**	– 10	n/a
TR	2.70	2.64	**2.77**	+ 2.7	+ 5.1
UA	3.19	3.42	**3.28**	+ 2.8	– 4.2

Country	Grain maize (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
BY	5.86	6.00	**5.76**	– 1.9	– 4.1
DZ	—	—	**—**	—	—
MA	—	—	**—**	—	—
TN	—	—	**—**	—	—
TR	9.40	9.40	**9.64**	+ 2.5	+ 2.5
UA	6.59	7.19	**7.39**	+ 12	+ 2.7

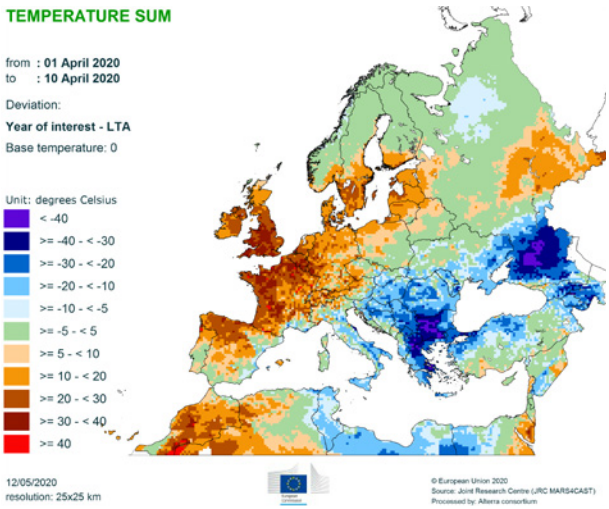
Country	Soybean (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
BY	—	—	**—**	—	—
DZ	—	—	**—**	—	—
MA	—	—	**—**	—	—
TN	—	—	**—**	—	—
TR	4.33	4.25	**4.58**	+ 5.7	+ 7.7
UA	2.19	2.29	**2.37**	+ 8.3	+ 3.4

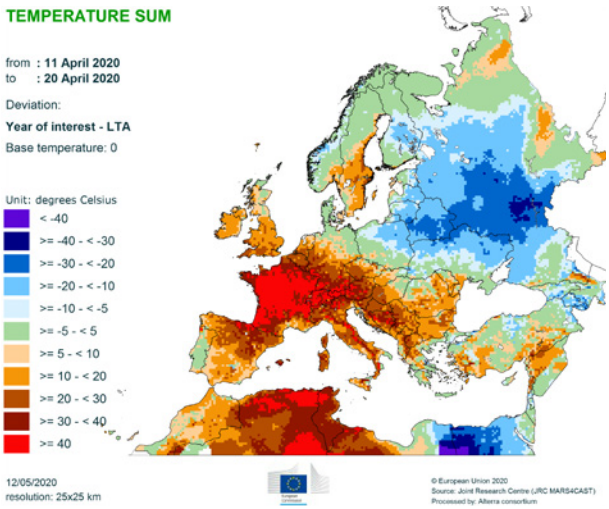
Note: Yields are forecast for crops with more than 10 000 ha per country with sufficently long and coherent yield time series (for rice more than 1 000 ha per country).
'%20/5yrs' stands for the 2020 change with respect to the 5-year average (%). Similarly, '%20/19' stands for the 2020 change with respect to 2019 (%).

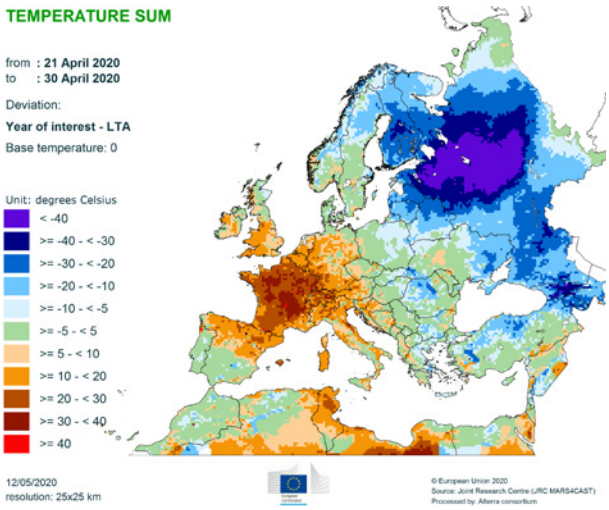
Sources: EU 2015–2020 data come from DG Agriculture and Rural Development short-term outlook data (dated February 2020, received on 02/03/2020), Eurostat Eurobase (last update: 25/02/2020) and EES (last update: 15/11/2017).
Non-EU 2015–2019 data come from USDA, DSASI-MADR Algeria, INRA Maroc, CNCT Tunisie, Turkish Statistical Institute (TurkStat), Eurostat Eurobase (last update: 25/02/2020), State Statistics Service of Ukraine, FAO and PSD-online.
2020 yields come from MARS crop yield forecasting system (output up to 10/03/2020).
EU aggregate after 01/02/2020 is reported.
n/a = Data not available.

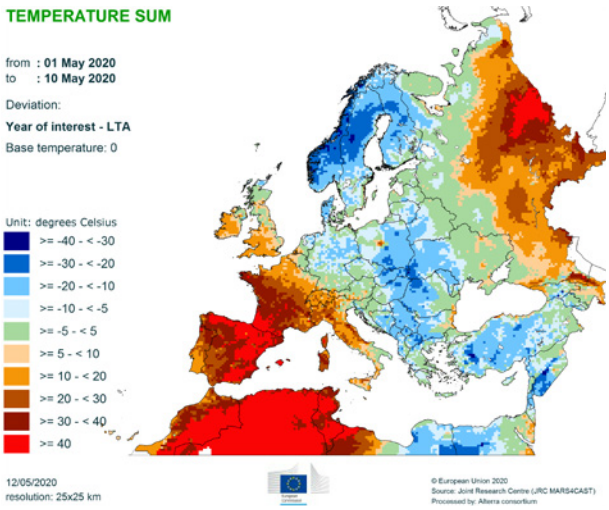
6. Atlas

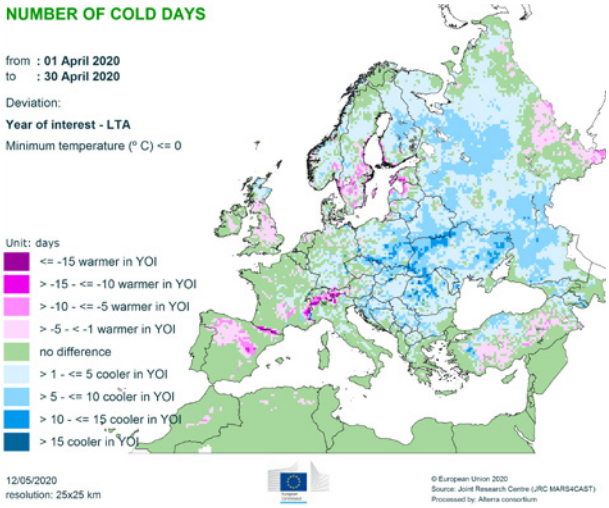
Temperature regime

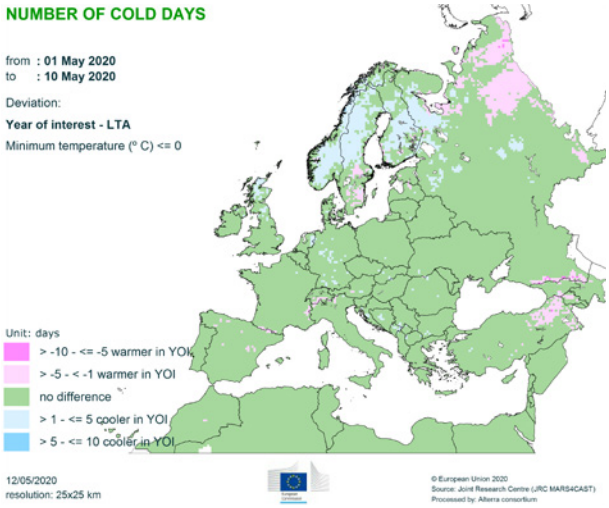


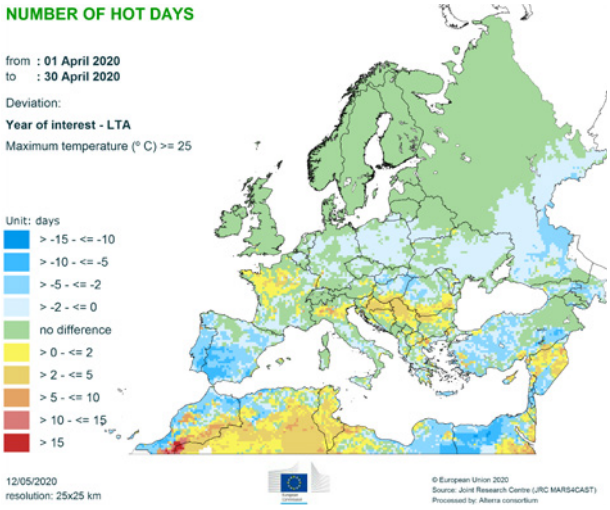


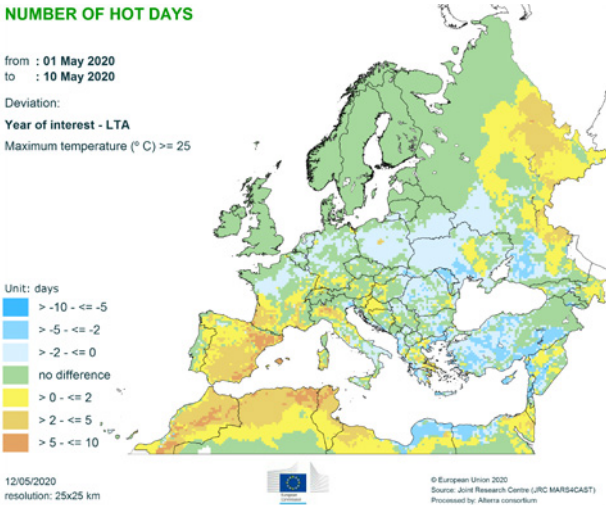




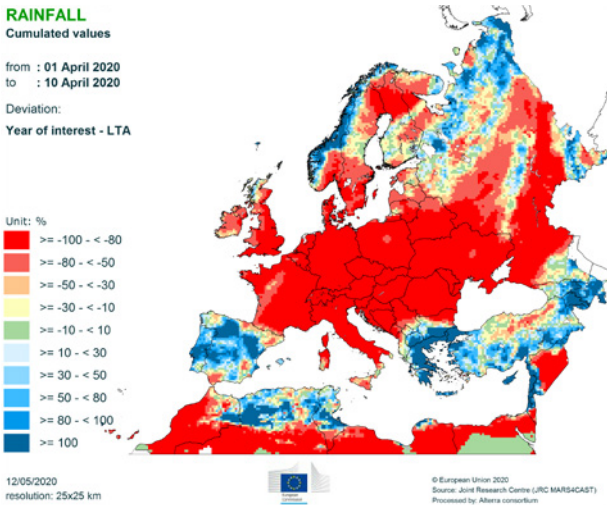


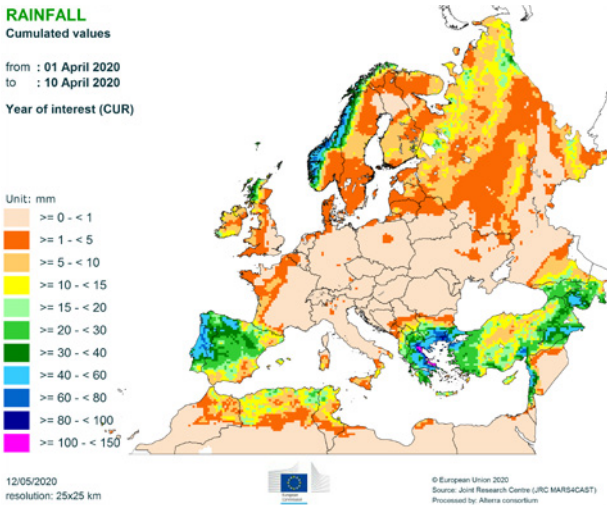


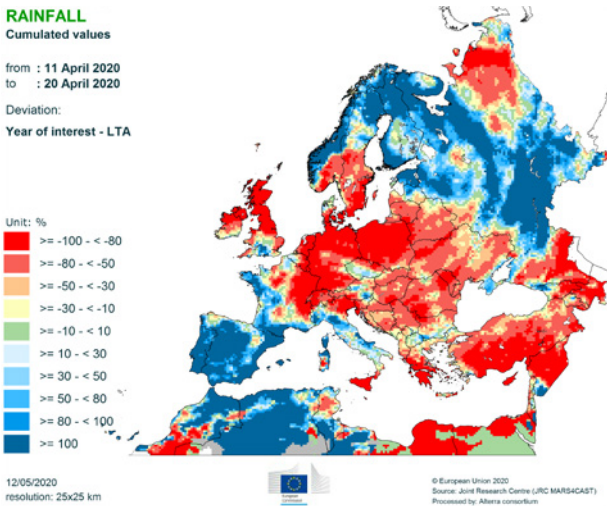


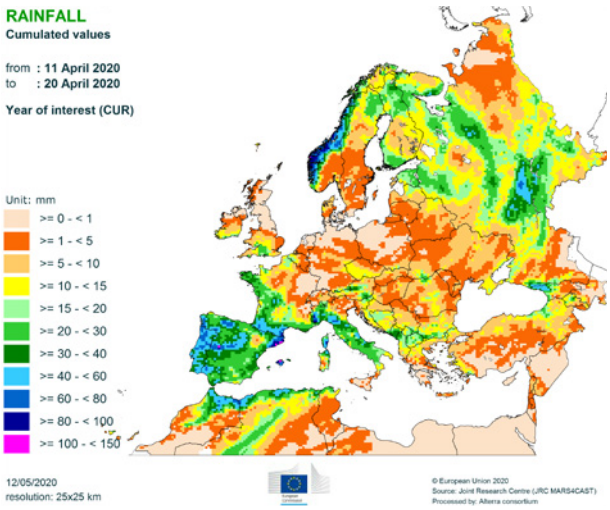


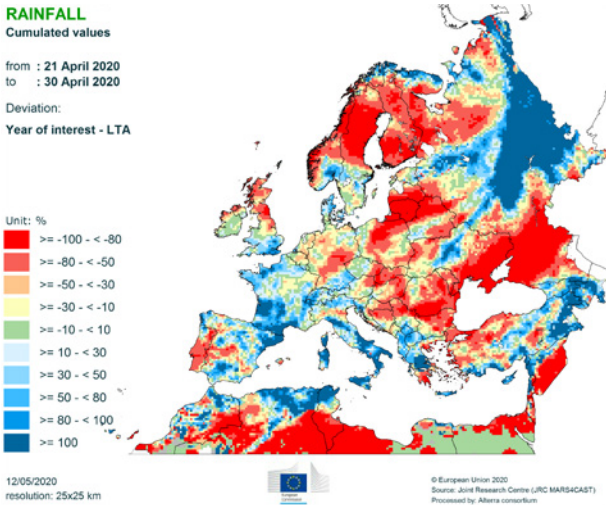
Precipitation







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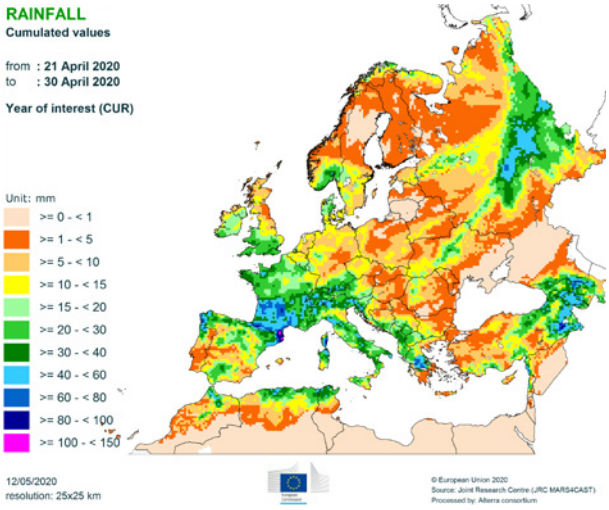
to : 30 April 2020
Deviation:
Year of interest - LTA
Unit: %
>= -100 - < -80
>= -80 - < -50
>= -50 - < -30
>= -30 - < -10
>= -10 - < 10
>= 10 - < 30
>= 30 - < 50
>= 50 - < 80
>= 80 - < 100
>= 100
12/05/2020
resolution: 25x25 km
© European Union 2020
Source: Joint Research Centre (JRC MARS4CAST)
Processed by: Alterra consortium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Cumulated values
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to : 30 April 2020
Year of interest (CUR)
Unit: mm
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>= 1 - < 5
>= 5 - < 10
>= 10 - < 15
>= 15 - < 20
>= 20 - < 30
>= 30 - < 40
>= 40 - < 60
>= 60 - < 80
>= 80 - < 100
>= 100 - < 150
12/05/2020
resolution: 25x25 km
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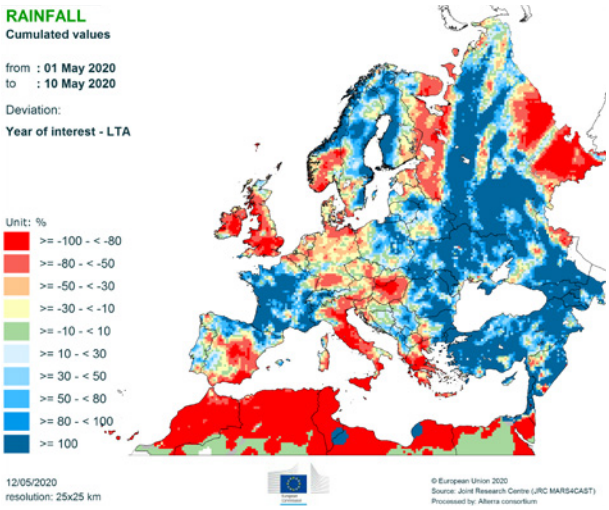
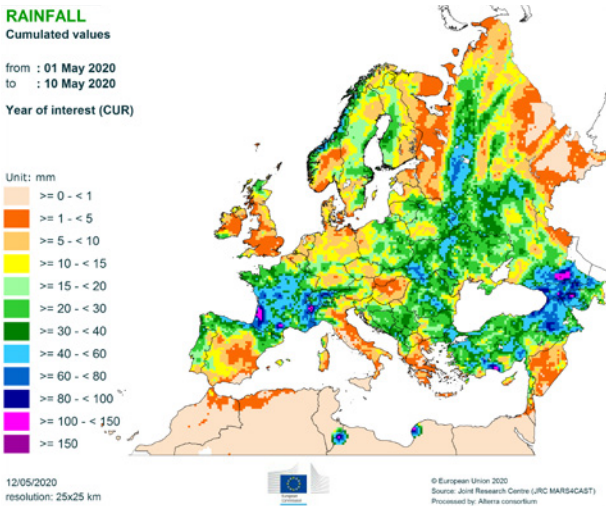
Source: Joint Research Centre (JRC MARS4CAST)
Processed by: Alterra consortium


RAINFALL
Cumulated values
from : 01 May 2020
to : 10 May 2020
Deviation:
Year of interest - LTA
Unit: %
>= -100 - < -80
>= -80 - < -50
>= -50 - < -30
>= -30 - < -10
>= -10 - < 10
>= 10 - < 30
>= 30 - < 50
>= 50 - < 80
>= 80 - < 100
>= 100
12/05/2020
resolution: 25x25 km
© European Union 2020
Source: Joint Research Centre (JRC MARS4CAST)
Processed by: Alterra consortium


RAINFALL
Cumulated values
from : 01 May 2020
to : 10 May 2020
Year of interest (CUR)
Unit: mm
>= 0 - < 1
>= 1 - < 5
>= 5 - < 10
>= 10 - < 15
>= 15 - < 20
>= 20 - < 30
>= 30 - < 40
>= 40 - < 60
>= 60 - < 80
>= 80 - < 100
>= 100 - < 150
>= 150
12/05/2020
resolution: 25x25 km
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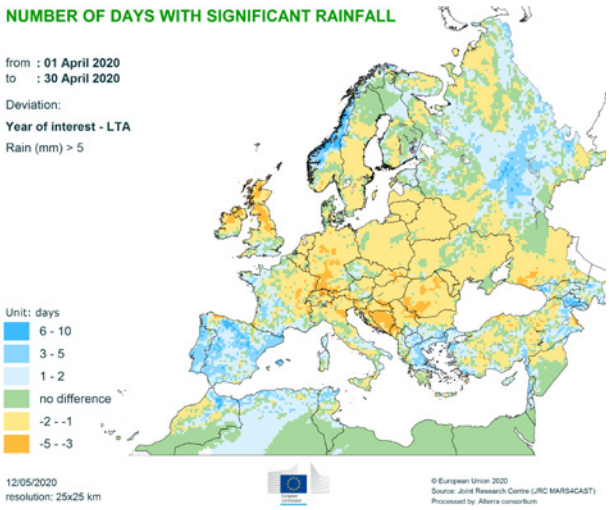
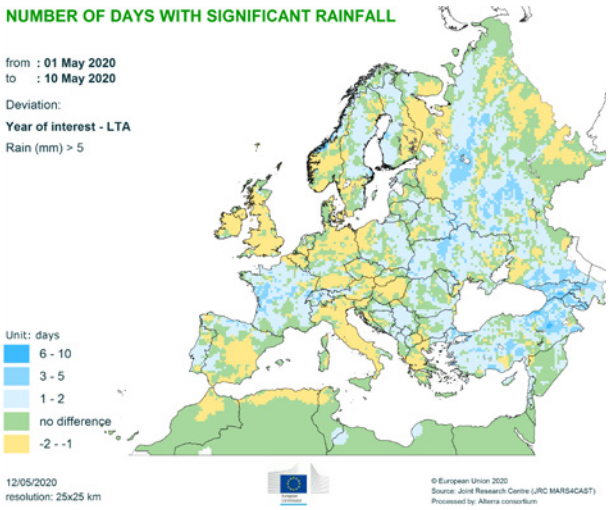
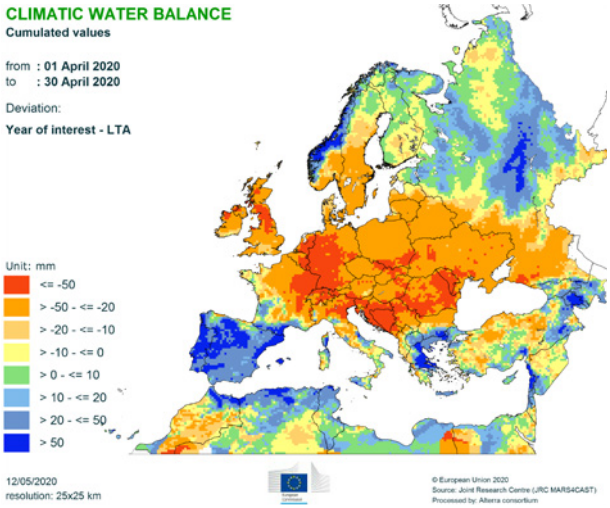
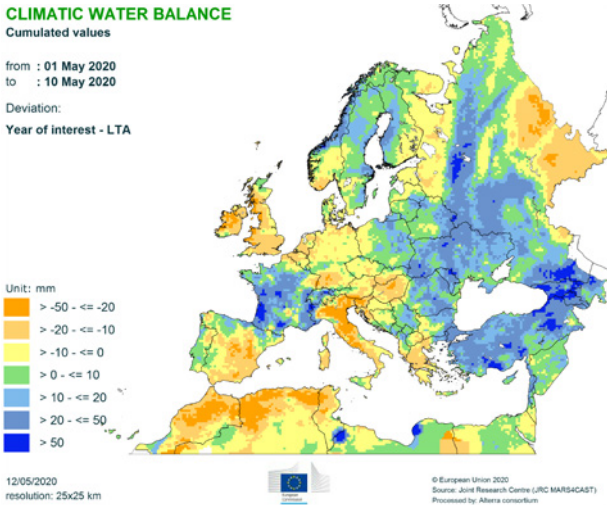
Source: Joint Research Centre (JRC MARS4CAST)
Processed by: Alterra consortium


NUMBER OF DAYS WITH SIGNIFICANT RAINFALL
from : 01 April 2020
to : 30 April 2020
Deviation:
Year of interest - LTA
Rain (mm) > 5
Unit: days
6 - 10
3 - 5
1 - 2
no difference
-2 - -1
-5 - -3
12/05/2020
resolution: 25x25 km
© European Union 2020
Source: Joint Research Centre (JRC MARS4CAST)
Processed by: Alterra consortium

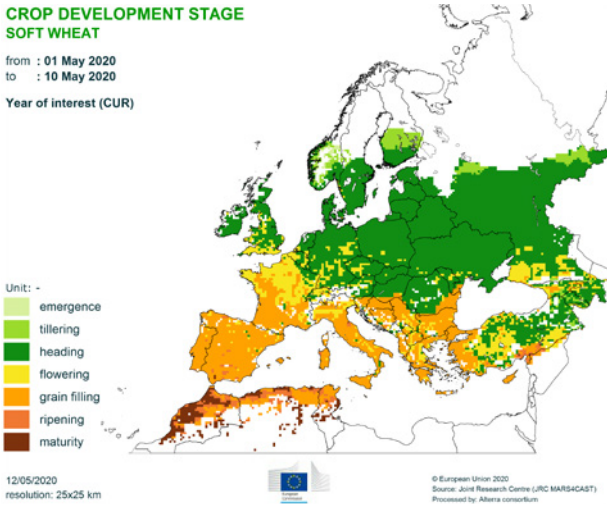

NUMBER OF DAYS WITH SIGNIFICANT RAINFALL
from : 01 May 2020
to : 10 May 2020
Deviation:
Year of interest - LTA
Rain (mm) > 5
Unit: days
6 - 10
3 - 5
1 - 2
no difference
-2 - -1
12/05/2020
resolution: 25x25 km
© European Union 2020
Source: Joint Research Centre (JRC MARS4CAST)
Processed by: Alterra consortium

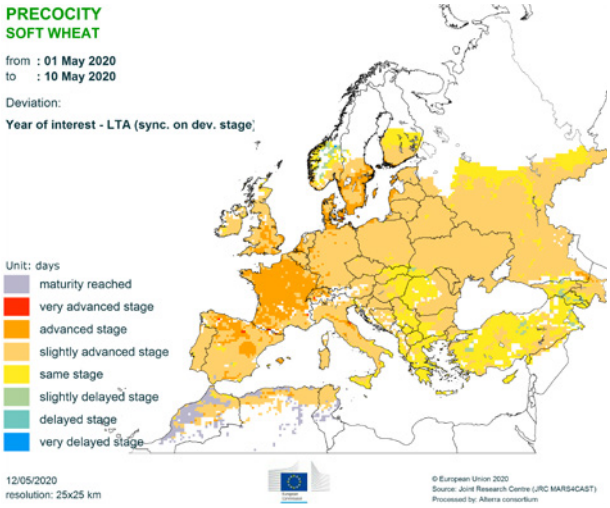
Climatic water balance

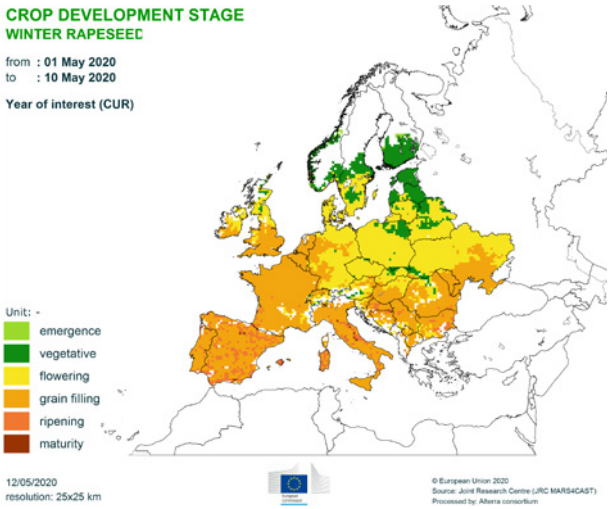


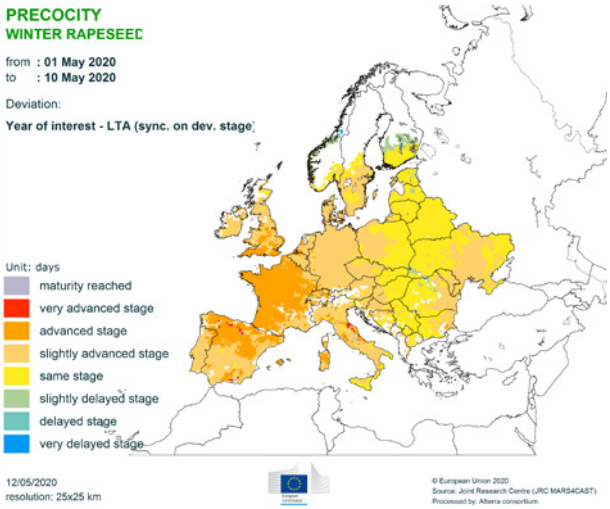


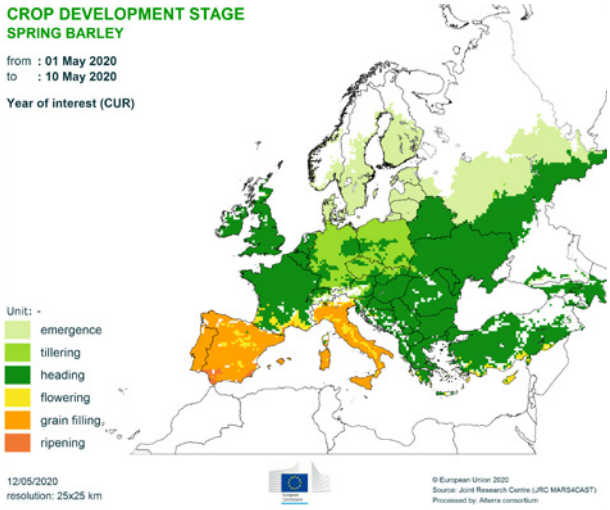
Crop development stages and precocity

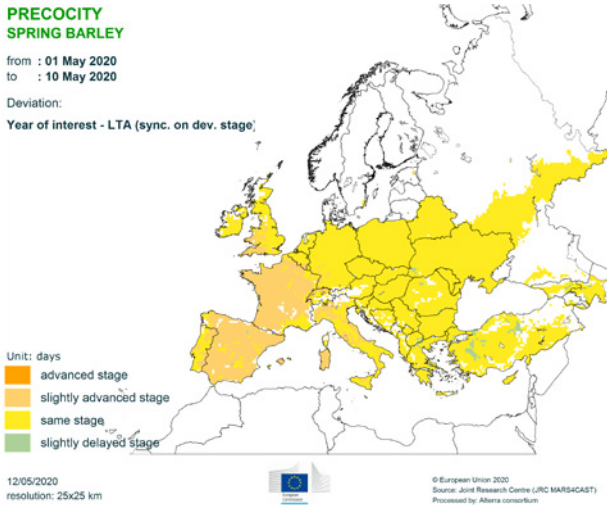




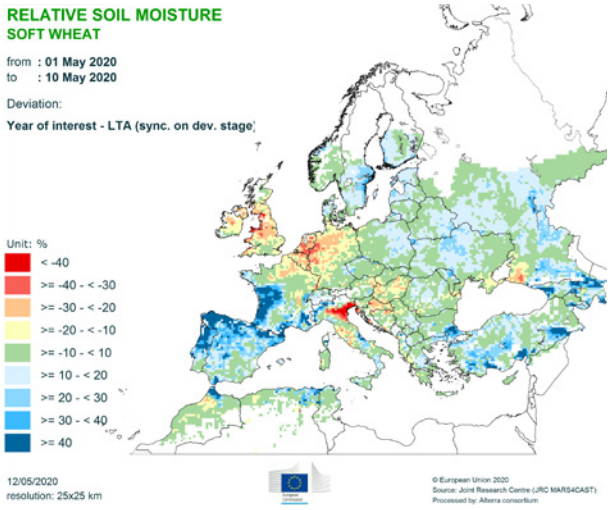


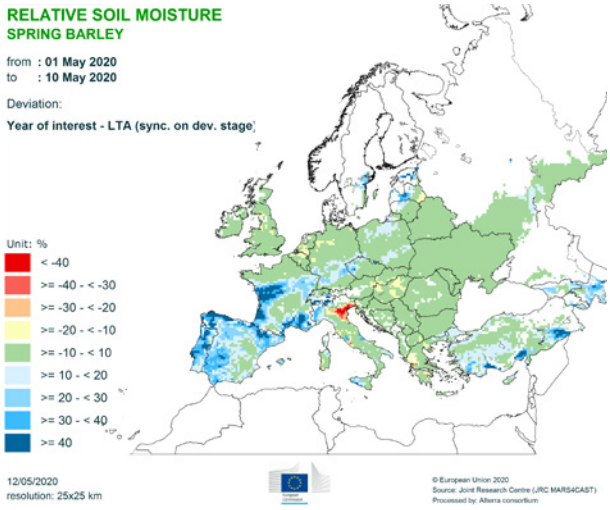




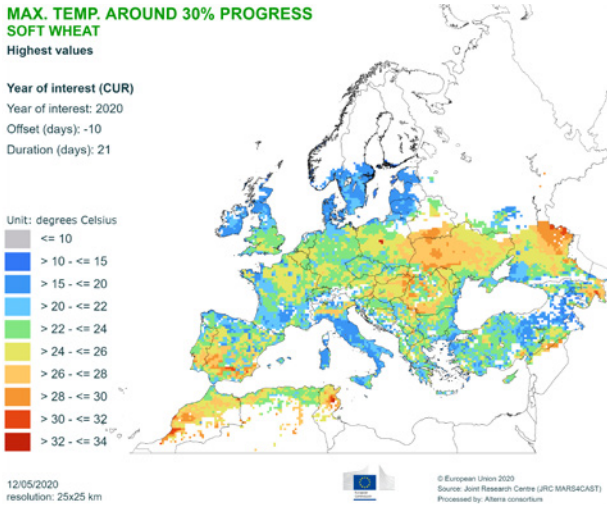


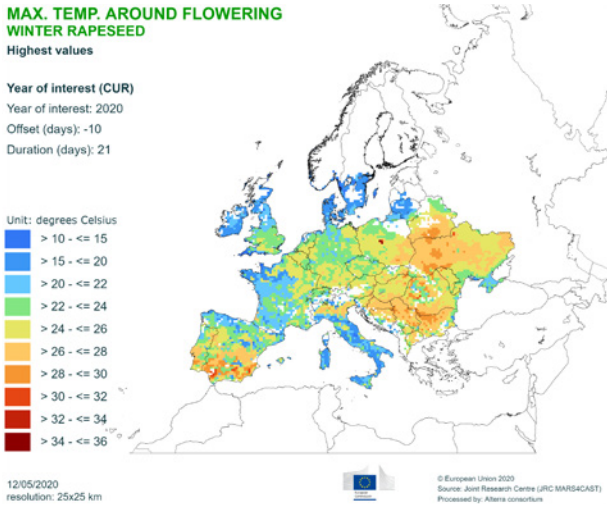
Relative soil moisture



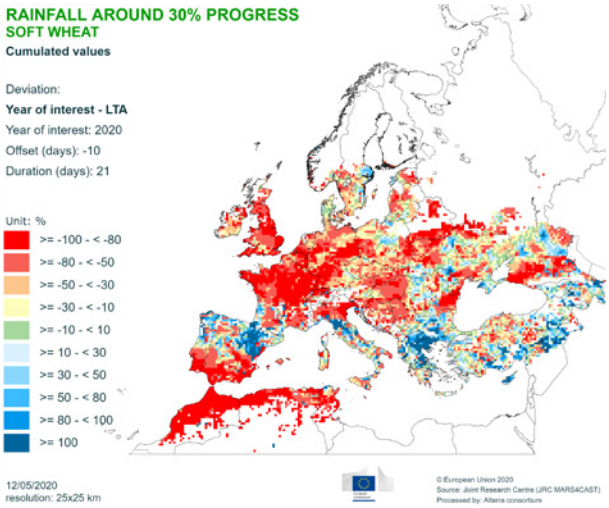


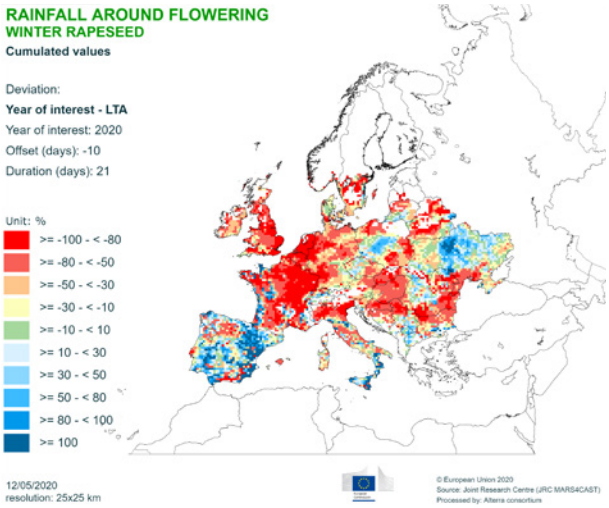
Maximum temperature around crop development





Precipitation around crop development





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JRC MARS Bulletins 2020

Date	Publication	Reference
27 Jan	Agromet analysis	Vol. 28 No 1
17 Feb	Agromet analysis	Vol. 28 No 2
23 Mar	Agromet analysis, yield forecast, pasture analysis	Vol. 28 No 3
27 Apr	Agromet analysis, remote sensing, pasture analysis, sowing conditions, yield forecast	Vol. 28 No 4
18 May	Agromet analysis, remote sensing, pasture analysis, sowing update, yield forecast	Vol. 28 No 5
15 Jun	Agromet analysis, remote sensing, pasture analysis, rice analysis, yield forecast	Vol. 28 No 6
27 Jul	Agromet analysis, remote sensing, pasture analysis, harvesting conditions, yield forecast	Vol. 28 No 7
24 Aug	Agromet analysis, remote sensing, pasture update, harvesting update, yield forecast	Vol. 28 No 8
14 Sep	Agromet analysis, remote sensing, pasture analysis, rice analysis, harvesting update, yield forecast	Vol. 28 No 9
26 Oct	Agromet analysis, pasture update, sowing conditions, harvesting update, yield forecast	Vol. 28 No 10
23 Nov	Agromet analysis, sowing update, harvesting update	Vol. 28 No 11
14 Dec	Agromet analysis	Vol. 28 No 12

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Technical note
The long-term average (LTA) used within this bulletin as a reference is based on an archive of data covering 1979–2019.

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