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Issued: 27 July 2020

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European Commission

JRC MARS Bulletin
Crop monitoring in Europe
July 2020

Sustained positive outlook for summer crops

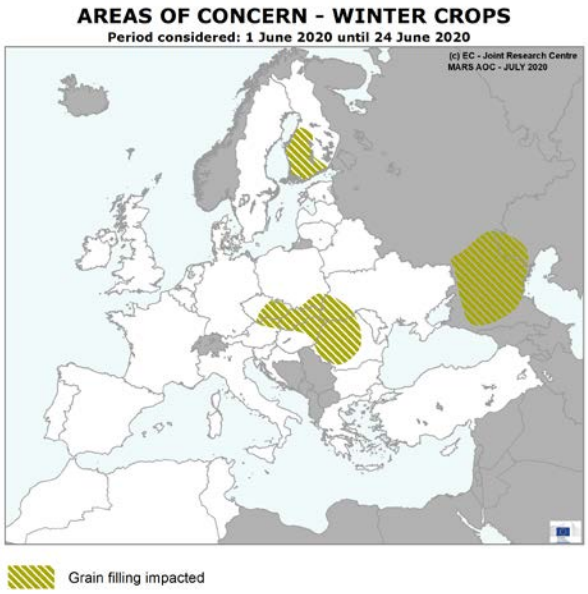
Substantial rainfall had mixed effects on yield forecasts for winter crops

Close-to-average weather conditions, with well-distributed rainfall and relatively few hot spells, have been favourable to crops in many parts of Europe. Extreme weather events with significant negative impacts – mostly on winter crops – occurred in much of central Europe, south-western Finland and southern Russia.

The predominantly favourable weather conditions contributed to an improved yield outlook in several regions. Compared to the yield forecasts presented in the June issue of the Bulletin, the strongest upward revision at EU level was for spring barley (+6.4%), reflecting improved or continued favourable conditions in almost all major producing countries. However, the forecast for winter wheat was slightly revised further downwards. This was mainly due to the sharp downward revisions of the yield forecast in Romania, Bulgaria and Hungary associated with a very unfavourable season worsened by heavy rain around ripening which outweighed the slight upward revisions in most other countries. For most other winter crops and summer crops, the balance was slightly positive. The yield forecasts for grain maize and sunflowers remain well above the 5-year average, reflecting a sustained positive outlook in all of the main producing countries.

Contents:

Covers the period from 1 June to 20 July 2020



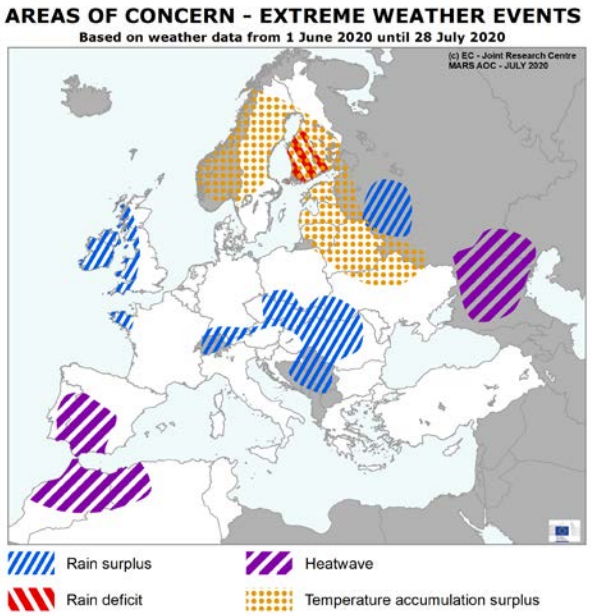
Crop	Yield (t/ha)				
	Avg 5yrs	June Bulletin	MARS 2020 forecasts	% Diff 20/5yrs	% Diff June
Total cereals	5.60	5.39	5.39	– 3.8	+ 0.0
Total wheat	5.54	5.39	5.34	– 3.6	– 0.9
Soft wheat	5.77	5.60	5.54	– 3.9	– 1.1
Durum wheat	3.49	3.31	3.35	– 4.0	+ 1.2
Total barley	4.78	4.71	4.89	+ 2.3	+ 3.8
Spring barley	4.02	4.07	4.33	+ 7.8	+ 6.4
Winter barley	5.75	5.58	5.64	– 1.9	+ 1.1
Grain maize	7.58	8.20	8.21	+ 8.3	+ 0.1
Rye	3.75	3.91	3.96	+ 5.7	+ 1.3
Triticale	4.04	4.06	4.03	– 0.1	– 0.7
Rape and turnip rape	3.08	2.90	2.97	– 3.8	+ 2.4
Potato	32.4	34.1	34.2	+ 5.5	+ 0.4
Sugar beet	74.5	75.5	75.9	+ 1.8	+ 0.5
Sunflower	2.25	2.39	2.46	+ 9.3	+ 2.9

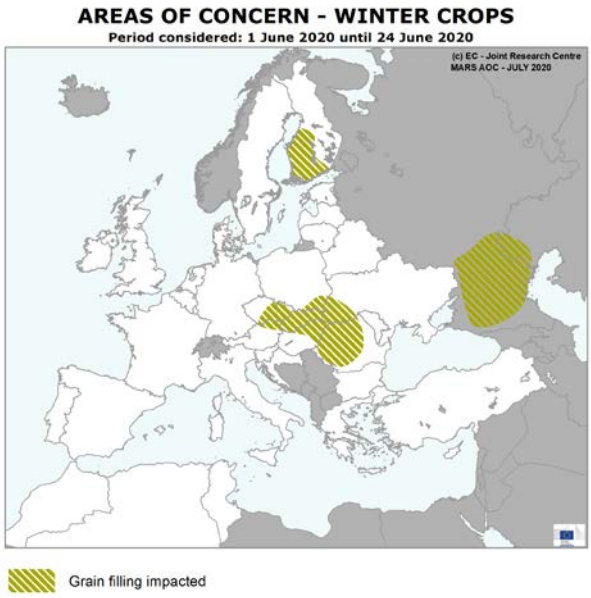
Issued: 24 July 2020

Joint Research Centre

1. Agrometeorological overview

1.1. Areas of concern





In many parts of Europe, close-to-average weather conditions, with well-distributed rainfall and relatively few hot spells, have been favourable to crops. Extreme weather events with significant negative impacts – mostly on winter crops - occurred in a large region in central Europe, southern Finland and southern and south-western Russia.

In **Ireland** and in the western **United Kingdom**, precipitation was 60mm to 80mm more than usual, bringing relief to crops and grasslands after a dry period.

Abundant rainfall, often in the form of heavy downpours, was also recorded in central Europe, with most of the precipitation concentrated in June and with cumulated values locally above 200mm.

In **Austria**, **Slovakia**, and **Czechia**, grain quality of winter crops is expected to be negatively affected due to this overly-wet period, while in **Hungary** and **Romania** the excessive rain negatively impacted final yields as well, by causing lodging, delays to harvesting and increased harvest losses. However, for summer crops, the abundant rainfall was predominantly beneficial and contributed to improved yield outlooks.

Abundant precipitation in northern **Italy** is not reported here as it was already mentioned in the June issue of the Bulletin.

Warmer-than-usual temperatures occurred in June in **Belarus**, the **Baltic countries**, **Finland**, northern **Sweden** and **Norway**, with monthly average temperatures of +4°C to +6°C compared to the long-term average. The warm temperatures contributed to increased crop water demand, leading to accelerated depletion of soil moisture in **Finland**, where it was already low due to a rain deficit lasting since May: these conditions had negative consequences for crop yield formation.

In southern **Spain** and the inland areas of **Portugal**, daily maximum temperatures in the period between 20 June and 10 July were above 35°C for several days and peaked at almost 40°C.

Hot and dry conditions in southern and south-western **Russia** led to limited water supply and weakened biomass accumulation, with negative impacts on the yield outlook for winter wheat. Yields of summer crops are also likely to be adversely impacted in these regions.

Have your say! Survey on how COVID-19 impacts the EU's agricultural-food supply chain

The JRC invites companies and businesses in the production, distribution, processing, wholesale or retail stages of the agri-food supply chain and associations that serve or represent their interest to participate in its survey on the impact of COVID-19 on the EU's agricultural-food supply chain by 30 September 2020.

Your responses can help provide relevant evidence to EU policymaking.

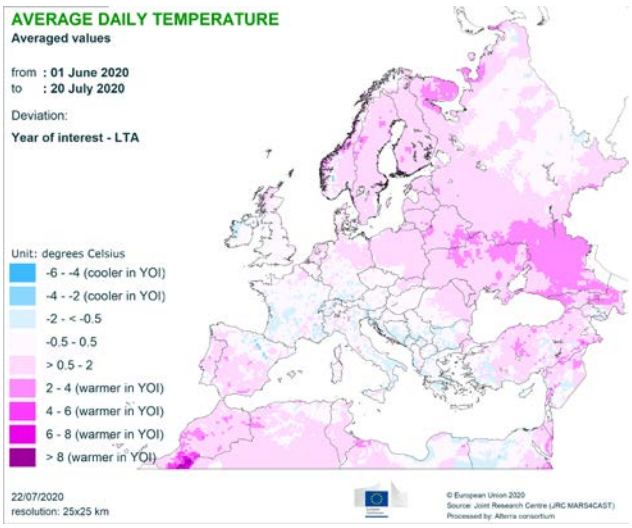
1.2. Meteorological review (1 June – 20 July 2020)

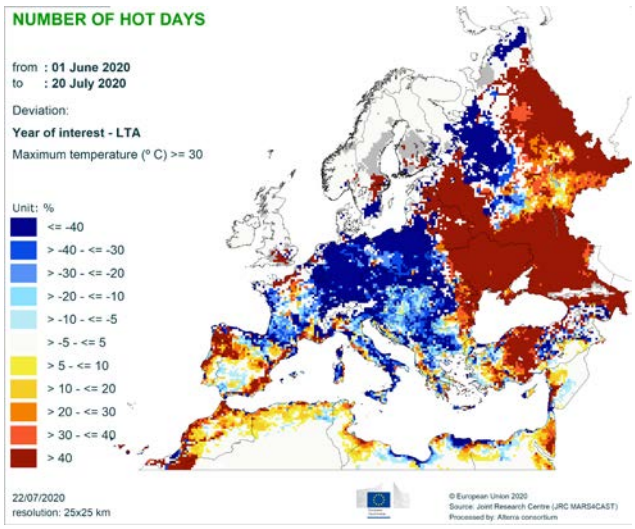
Slightly warmer-than-usual conditions were observed in eastern and northern Europe, the Iberian Peninsula, and Turkey. Daily mean temperature anomalies were mainly below 2°C. Temperature anomalies of up to 4°C were recorded in a large region north-east of the Black Sea.

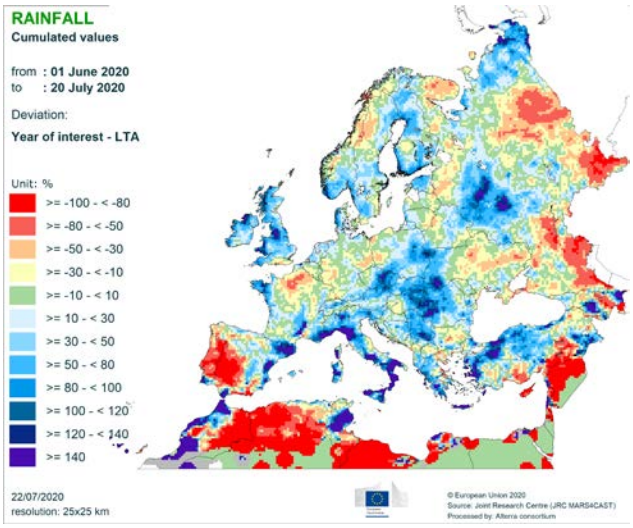
A higher-than-usual number of hot days, with daily maximum temperatures of above 30°C, were observed in a large area covering eastern Europe, Ukraine, and south-western Russia, as well as central Turkey, along the Mediterranean coast of Spain, and the north-western part of the Iberian Peninsula. In all of these regions, the number of hot days was over 40% above the long-term-average (LTA). Substantially **fewer-than-usual hot days** (more than -40% of the LTA) were recorded in a large region in central-eastern Europe, Italy, parts of south-eastern Europe, and European Russia.

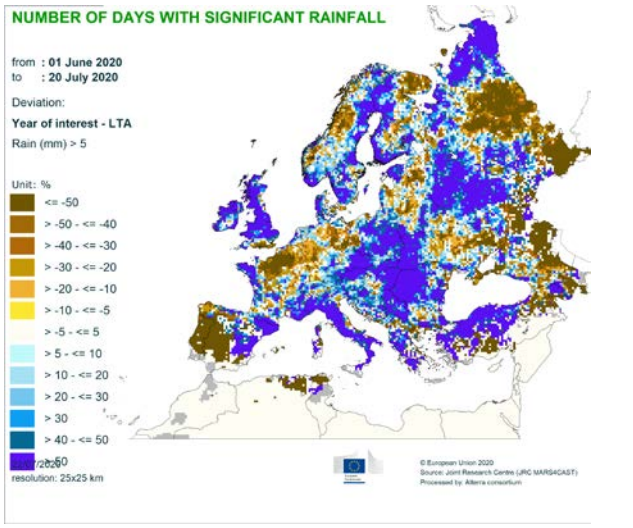
Wetter-than-usual conditions were observed in large parts of south-eastern Europe and Turkey, European Russia, Italy, the UK and Ireland, and in some areas of France and Spain. Anomalies mainly ranged between 50% and 80% (with respect to the LTA), but locally exceeded 140% of the LTA. In all of these regions, there was an unusually high number of days with significant rainfall (daily total precipitation above 5 mm); i.e. exceeding the LTA by 50% or more.

Drier-than-usual conditions were observed in a large region across Portugal and Spain, with anomalies mainly ranging from -100% to -80% of the LTA.









1.3. Weather forecast (24 - 30 July 2020)

Weather conditions during the forecast period will be mainly determined by fast disturbances triggering instabilities and rainfall in northern, central and eastern Europe. At the same time, a ridge will expand from north-western Africa towards the central Mediterranean region.

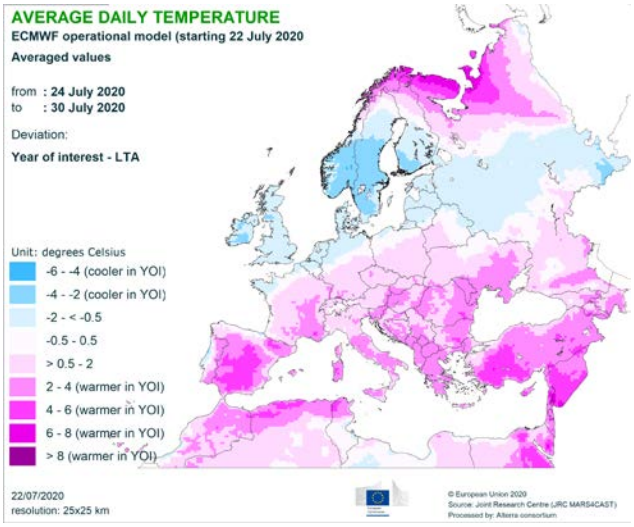
Warmer-than-usual conditions are expected in the Iberian Peninsula, and large parts of France, Italy, south-eastern Europe, and European Russia. Daily mean temperature anomalies will be between 2°C and 4°C higher than the LTA; however, in large areas of Spain, Turkey, and European Russia, anomalies of up to 6°C are predicted. In the greater Mediterranean region, almost all of the forecast period will be characterised by daily maximum temperatures above 30°C.

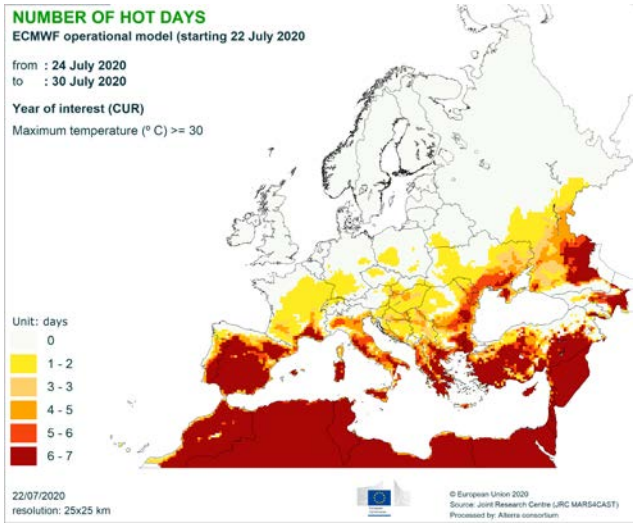
Slightly colder-than-usual conditions are forecast along the northern coast of Europe, the UK, Ireland, Norway, Sweden, Finland, and a large region in European Russia. Daily mean temperature anomalies are expected to range from -2°C to -0.5°C. In the southern Scandinavia and Ireland, anomalies may reach -4°C.

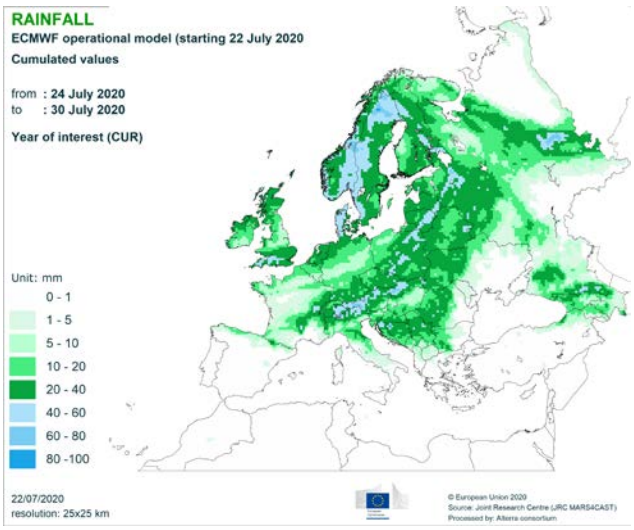
Dry conditions with less than 5 mm of accumulated precipitation are expected in the Iberian Peninsula, southern Italy, Greece, Turkey, and large regions of Bulgaria, Romania, and Ukraine.

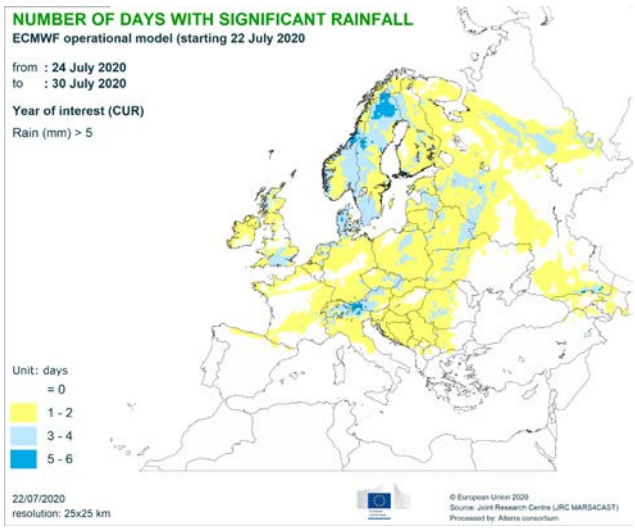
Wet conditions with accumulated precipitation of between **20 mm and 40 mm** (locally up to 60 mm) are forecast in a large zonal band extending from south-eastern France, across central and northern Europe to European Russia. In large areas of the Scandinavian Peninsula, the forecasted precipitation ranges from 40 mm to 60 mm.

The Long-range weather forecast for August, September, and October points to extremely likely warmer-than-usual conditions In the Baltic region. Drier-than-usual conditions are more likely than not predicted in the eastern Mediterranean region.



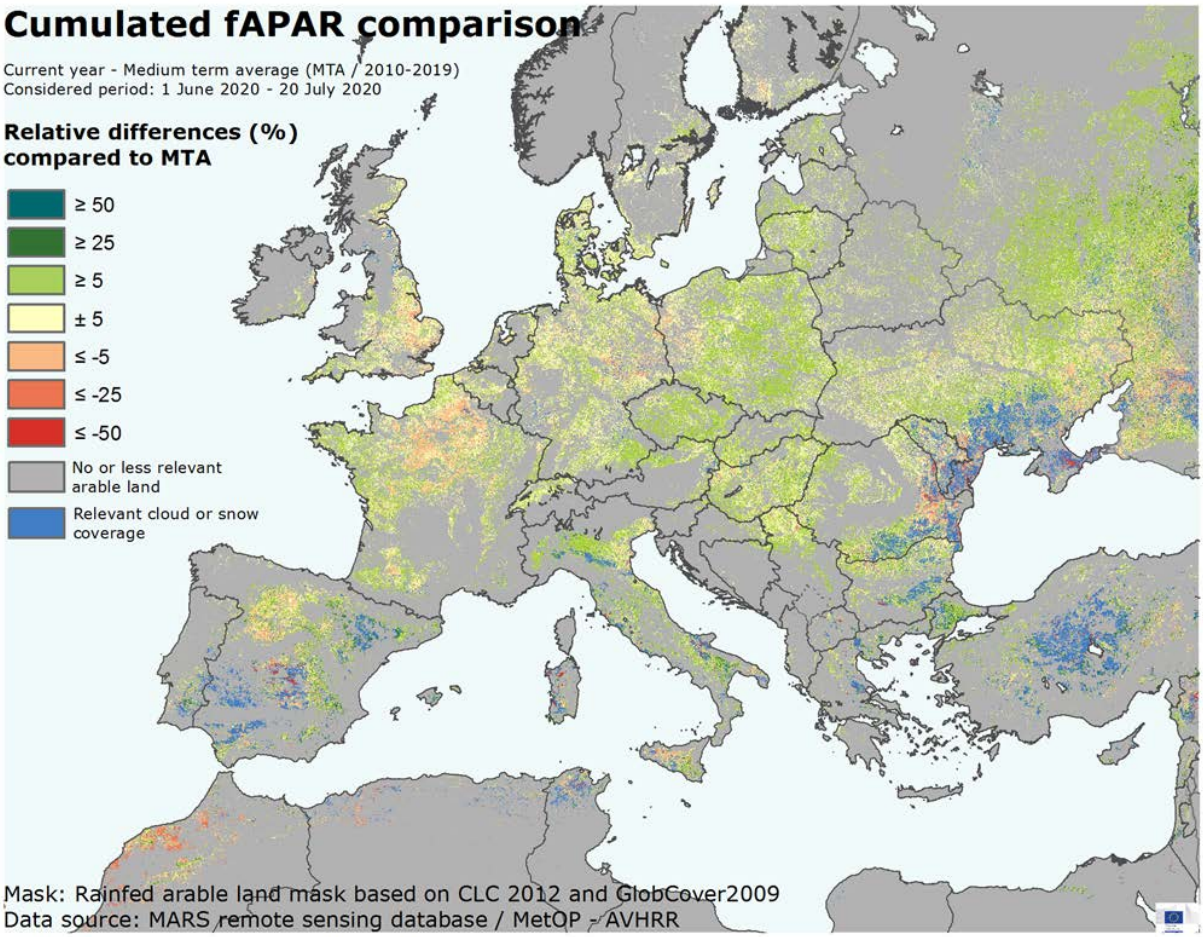






2. Remote sensing – observed canopy conditions

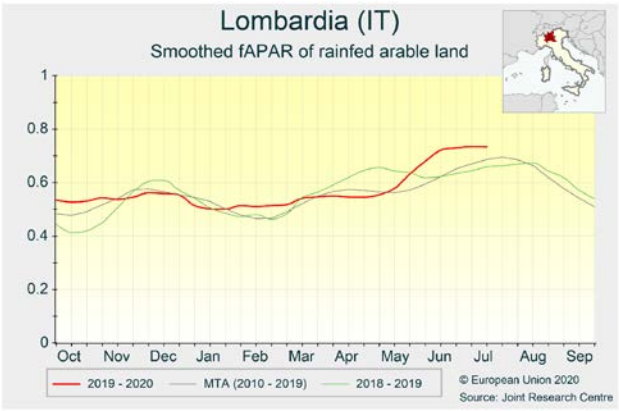
Rainfall sustained good development of summer crops

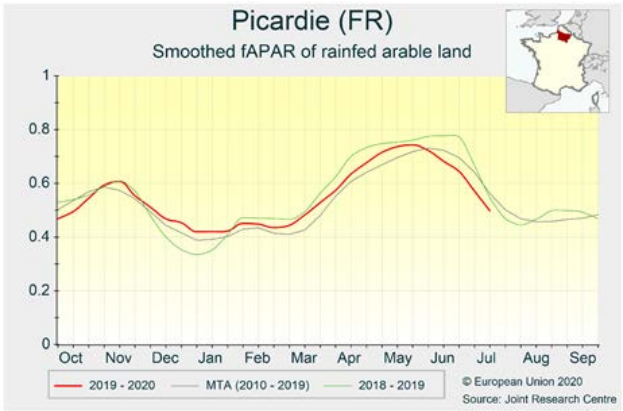


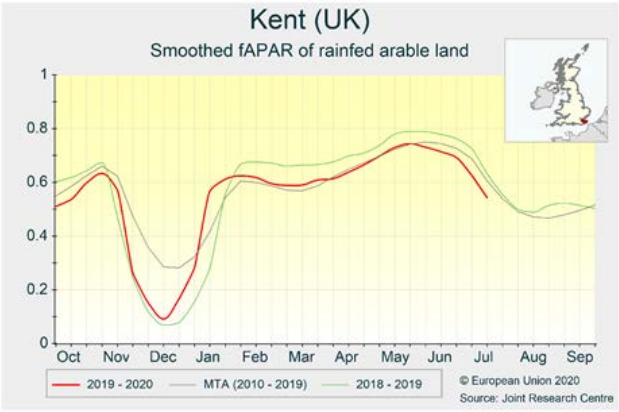
The map displays the differences between the fraction of Absorbed Photosynthetically Active Radiation (fAPAR) cumulated from 1 June to 20 July 2020, and the medium-term average (MTA, 2010-2019) for the same period. Positive anomalies (in green) reflect above-average canopy density or advanced crop development, while negative anomalies (in red) reflect below-average biomass accumulation or late crop development. Regions with no information due to persistent cloud coverage between 10 to 20 July are highlighted in blue.

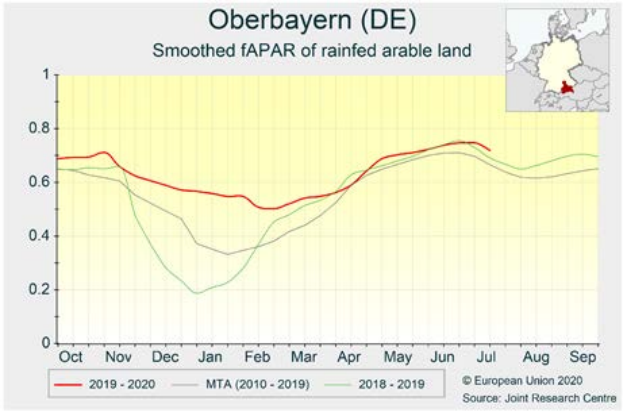
In **Spain,** a very positive cereal season has ended, characterised by abundant precipitation, and warm temperatures. In northern and central **Italy,** winter crops are currently harvested, with mixed outcomes. In north-western regions (e.g. *Lombardia*), maize benefitted from rainy and colder-than-usual conditions during June. In north-eastern regions, beneficial rainfall in early June improved soil moisture, and maize and soybean canopy conditions: crops' canopy, formerly underdeveloped, is now average to good. In most of the main agricultural regions of **France**, the maturity of winter cereals was advanced compared to an average year, explaining the negative anomaly observed on the fAPAR map. Those negative anomalies, were reinforced in *Picardie* by a dry spring and a rain deficit which continued for the current period of analysis. Unfavourable crop conditions are observed also in **the United Kingdom**, where a substantial lack of precipitation and increased temperatures in June accelerated crops senescence, reducing the grain filling duration (e.g. Kent). Precipitation in June slightly mitigated the unfavourable end of spring. In northern **Germany**, and **north-western Poland**, rainfall in June favoured the later stages of winter crops' grain filling. In southern **Germany**, substantial rainfall occurred from the start of June, favouring the growth of summer crops, whose biomass is now above average (e.g. *Oberbayern*). In eastern **Poland**, warmer-than-usual and rainy conditions have supported summer crops' biomass accumulation, which is now fairly above the average (e.g. Lubelskie). In central Europe (**Slovakia, Czechia,** and **Austria**), a positive fAPAR anomaly is also evident on the map. Summer crops' canopy results are above the average thanks to the rainfall surplus of June. In **Hungary**, where the temperature in June was slightly below the

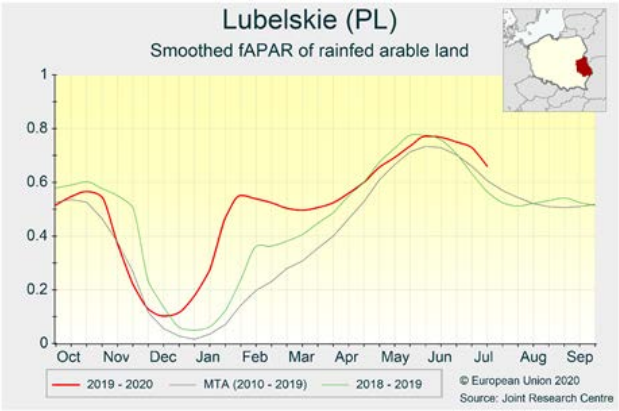
average, summer crops are developing slightly later than usual, but with very favourable biomass accumulation (e.g. Del-Dunantul). In **Romania**, an unfavourable winter crops season ended. In contrast, summer crops developed in June under favourable wet conditions, and are now around flowering (e.g. *Nord-Est*). In **Bulgaria,** the dry and fresh June delayed summer crops' growth, however overall biomass accumulation is now above the average, but further rain is needed. In central **Ukraine**, the fAPAR profiles show a late summer crop development; crops are now approaching flowering, with 10 to 20 days of delay, but with favourable biomass accumulation (e.g. *Poltavs'ka*). In southern regions, the winter season has unfavourably concluded. In **Turkey**, although slightly delayed with respect to the average, harvest is expected to start soon with favourable expectations.

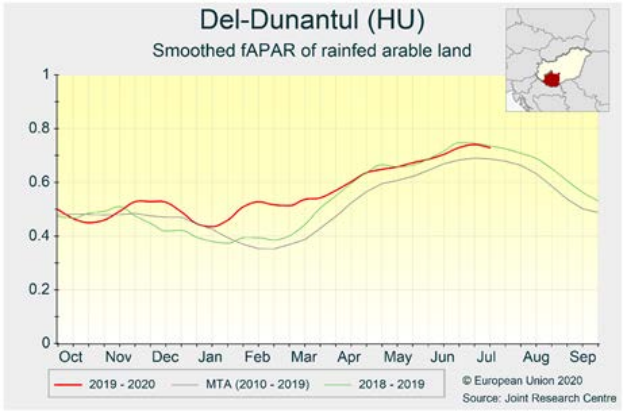


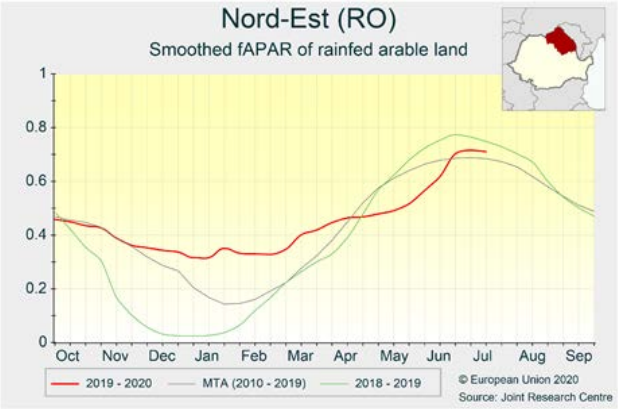


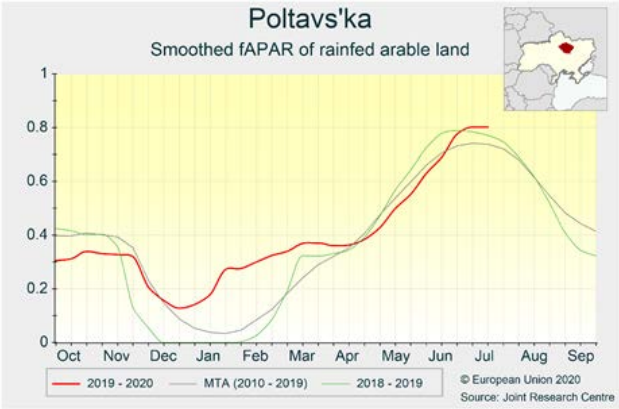









Nord-Est (RO)
Smoothed fAPAR of rainfed arable land
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
2019 - 2020
MTA (2010 - 2019)
2018 - 2019
© European Union 2020
Source: Joint Research Centre


Poltavs'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

Overall improved condition of pastures

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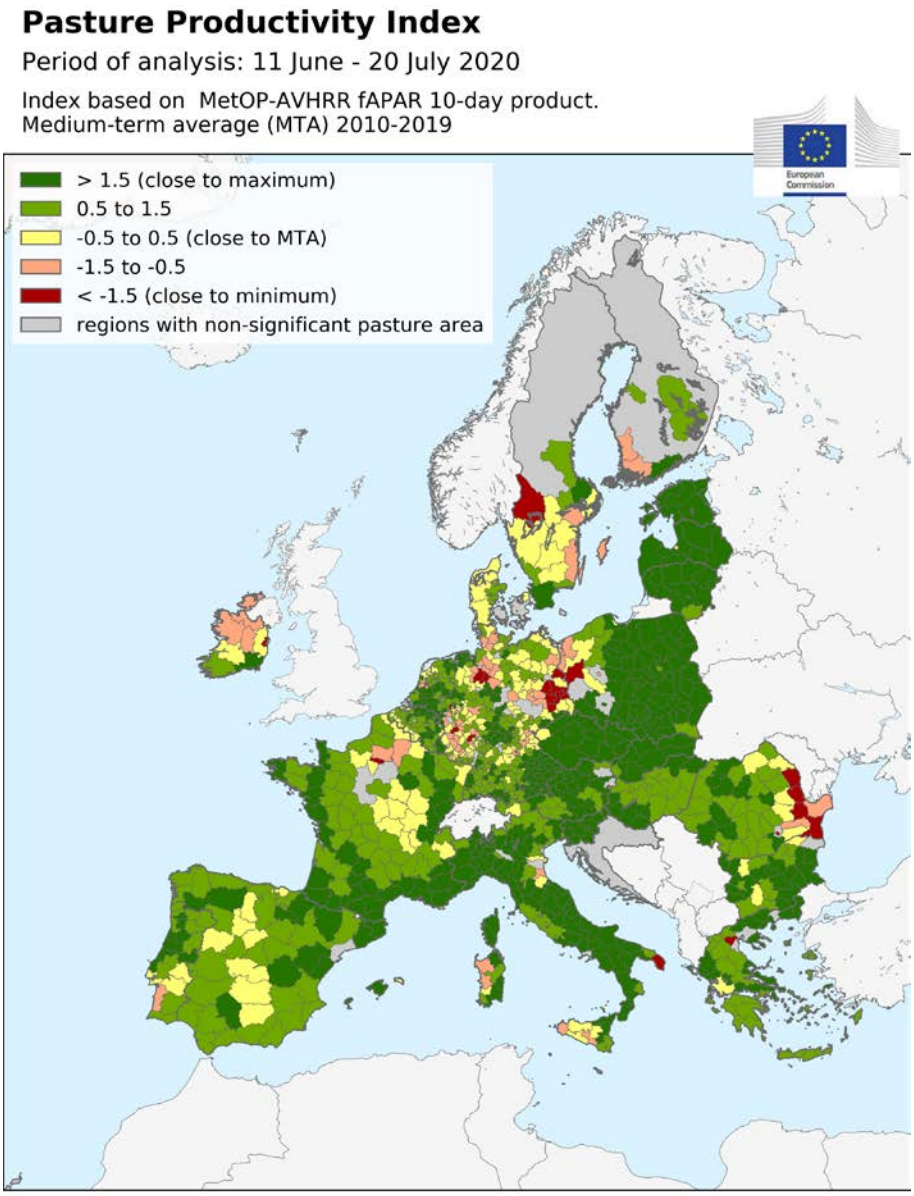


The pasture productivity index (PPI)[1] for the period 11 June to 20 July 2020 is shown on the map, above. The reddish (and part of the yellow) colours in Germany, Denmark, Sweden, and Poland are attributed to distortions to the fAPAR[2] signal, caused by cloud contamination.

Compared with the June 2020 issue of the Bulletin, the climatic conditions have improved as a result of substantial rainfall events in June-July and relatively mild summer temperatures in most of Europe. This has permitted a return to average or above-average growth in grasslands which had been negatively impacted by dry conditions. The following countries benefitted from such conditions: **Portugal, Ireland, France, the Benelux countries, Germany, Denmark, Poland, Finland** and the **Baltic countries, Italy, Czechia, Slovakia, Slovenia, Hungary, Bulgaria, Romania,** and **Greece**.

[1] PPI, the relative index of pasture productivity is an indicator of biomass formation, based on the integration of the fAPAR remote sensing product of pasture areas (at NUTS3 level) over a period of interest. The index shows the relative position of the current season within the historical series from 2010 to 2019.

[2] fAPAR: fraction of Absorbed Photosynthetically Active Radiation. The photosynthetically active radiation is 48% of the incoming solar radiation.

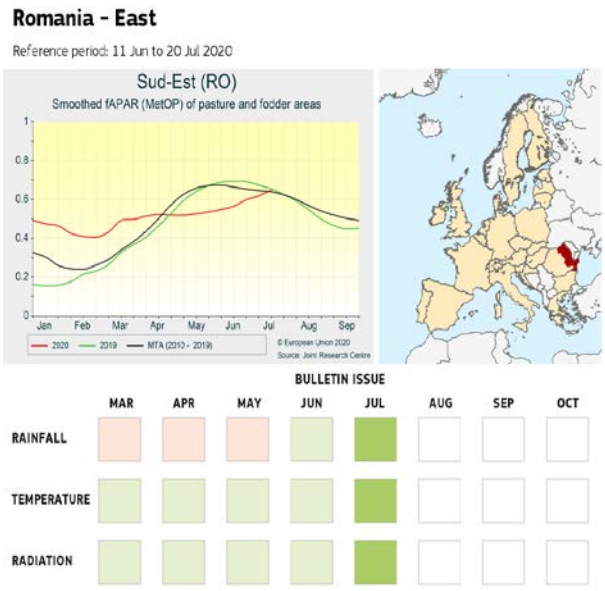
Although the rainfall has been beneficial overall, pasture productivity has not yet fully recovered in some places. In **eastern Romania**, the condition of pasture has just recovered, but pasture productivity since the beginning of June remained well below the 2010-2019 medium-term average (MTA), due to the damage caused by the preceding drought conditions (see graph). In western **Poland**, the *Zachodniopomorskie* and *Lubuskie* regions did not get sufficient rainfall for pastures to recover from the previous months' dry conditions, while in other parts of the country, pasture growth has been in line with – or above - the MTA (see graph).

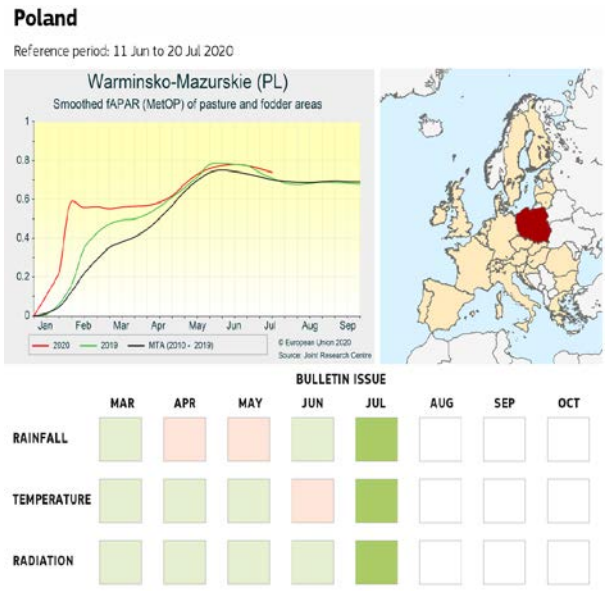
In **Germany**, rainfall has been substantial throughout the country, and biomass accumulation in pastures has recovered everywhere except in some areas in the north, where recovery is not yet complete. In the south, the areas bordering the Alpine region have had a large amount of rainfall, causing a boost to pasture growth.

For most of **France**, a rain surplus was observed from the beginning of June, while since the beginning of July, only a few significant rainfall events have been recorded. For the whole period, the cumulative rainfall has been above the LTA in most regions, except in *Picardie* and *Poitou-Charentes,* where little or no rain was observed in July, and would now be very beneficial. Otherwise, the southern parts of France generally enjoyed more favourable conditions than usual (see graph).

Conditions in the northern part of the Iberian Peninsula have been favourable for pasture biomass development (see graph for northern **Spain**), and well above the MTA.

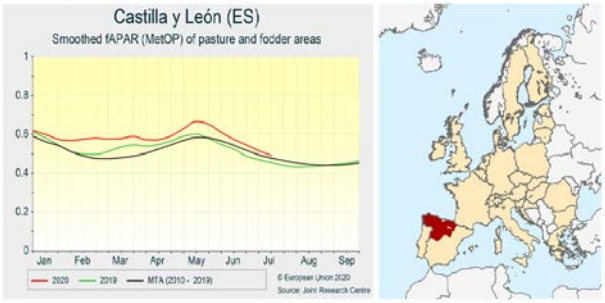
Central European regions (**Slovakia, Czechia, Austria**; see graph) present above-average fAPAR development due to above-average rainfall in frequent events in June and July. The same can be said about the **Baltic** countries (see graph for **Latvia**), which have resented above-average pasture growth in June and July. It was however variable in **Finland**, where a dry June characterised the western areas, though this was relieved by rainfall in July.

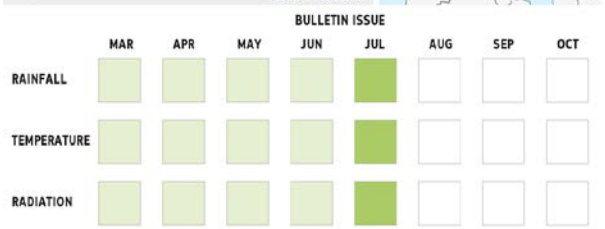




Spain and Portugal - North

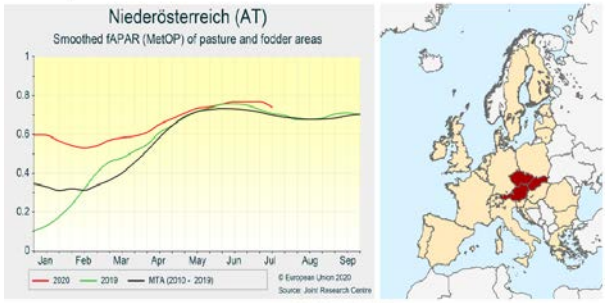
Reference period: 11 Jun to 20 Jul 2020

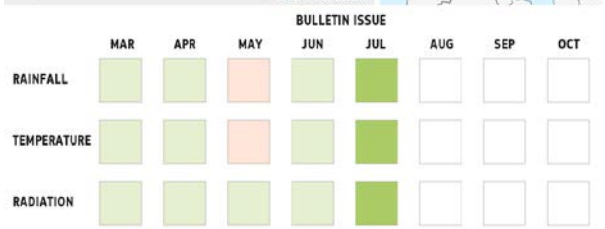




Austria, Czech Republic and Slovakia

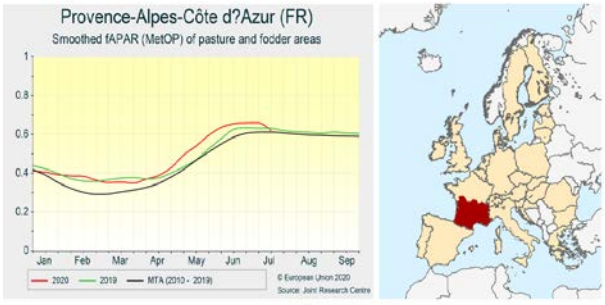
Reference period: 11 Jun to 20 Jul 2020

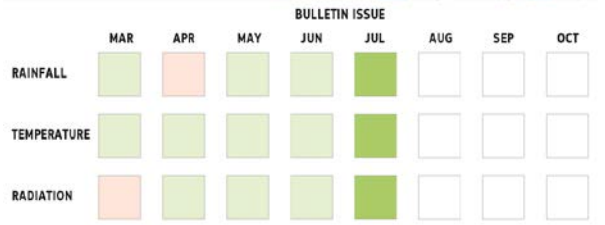




France - South

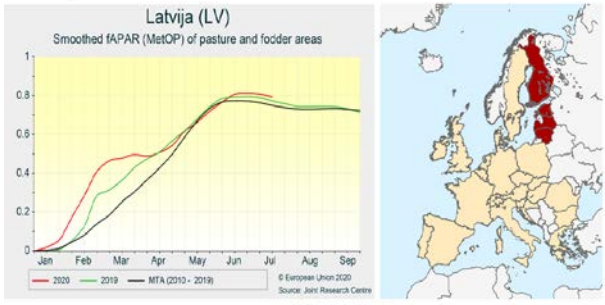
Reference period: 11 Jun to 20 Jul 2020

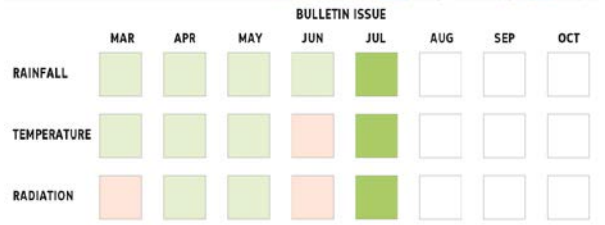




Finland and Baltic republics

Reference period: 11 Jun to 20 Jul 2020





4. Country analysis

4.1. European Union

France

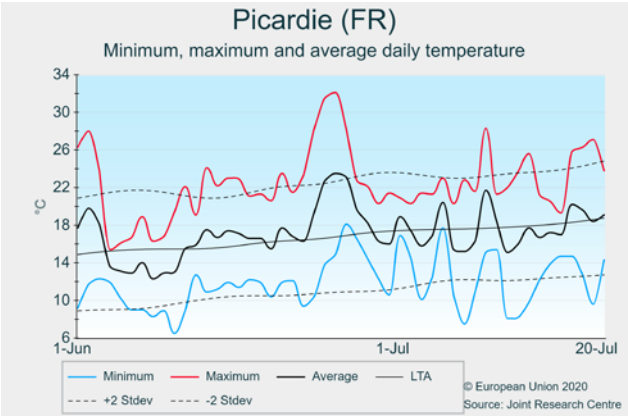
A positive outlook for summer crops, and beneficial end to the season for winter crops

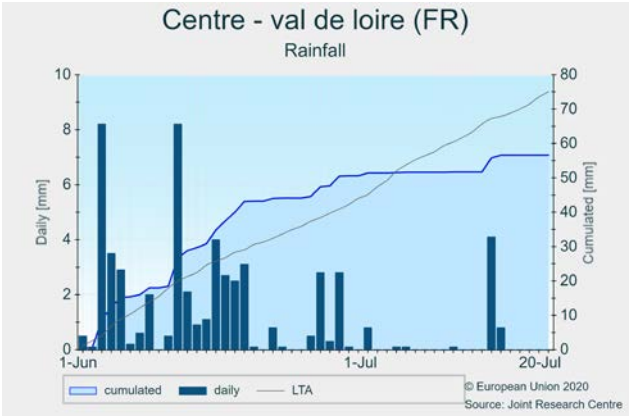
Cumulative rainfall in June has been particularly favourable. Temperatures remained close to average since the beginning of June, and benefitted the grain filling of winter crops, while ensuring enough water for summer crops, erasing concerns of a too dry summer.

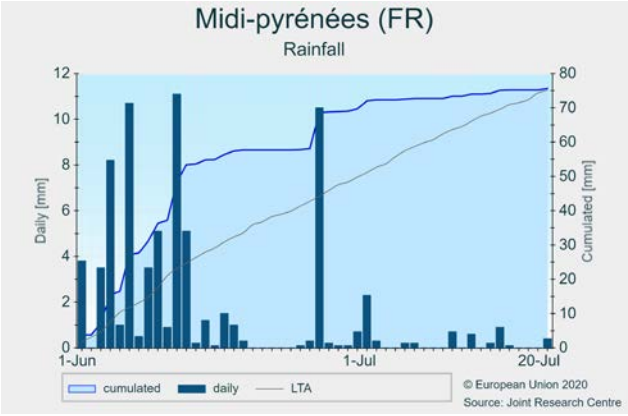
Cumulative rainfall for the analysis period was above-average in all regions except *Haute-Normandie*, *Ile-de-France*, where it was close to the LTA, and *Picardie*, where it was slightly below-average. Most of the rain surplus came in June, and was followed by a rain deficit from the beginning of July. Temperatures and potential evapotranspiration remained close to the LTA for the whole period, and thus, despite the rain deficit observed in July no water stress impacted arable crops.

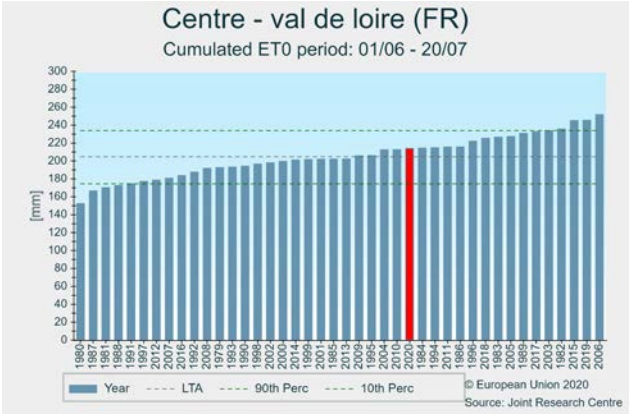
The winter crop season is nearing an end. Most of the winter barley is already harvested. The harvest of soft wheat is ongoing. Although the flowering stage for soft wheat was strongly advanced, the mild temperatures observed since June extended the grain filling period, and harvesting is less advanced than expected. Thermal conditions have been particularly favourable for the grain filling of winter cereals. Yield expectations are still below the 5-year average, due to the difficult start of the season and contrasted conditions, but the end of the season has been particularly beneficial. The winter barley yield forecast was revised largely upward, as bad conditions observed outside of the main producing regions had been previously overestimated. The soft wheat yield forecast remains unaltered despite the beneficial conditions in the main producing regions, as meagre areas previously exposed to bad conditions are also considered. If those areas were not taken into account, the forecast would have been closer to the 7.1 ton/ha of AGRESTE.

Conditions for summer crops are favourable. The rainy weather observed in June ensured a good water supply, and considering the substantial water recharge observed this winter, the outlook for irrigated crops is particularly positive. While the rainy weather in June increased the disease pressure for sugar beet and potatoes, the dry weather in July limited further spread. Thus, summer crop yields forecast have been increased above the trend.









Germany

Much needed rain prevents further yield losses

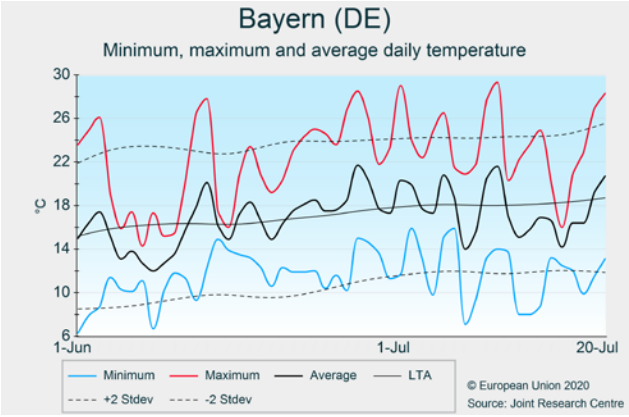
Unsteady weather and close-to-average cumulative precipitation characterised the review period. Further yield losses were prevented, and with the exception of winter barley, yield forecasts are close to or above the 5-year average. Prospects for summer crops are positive.

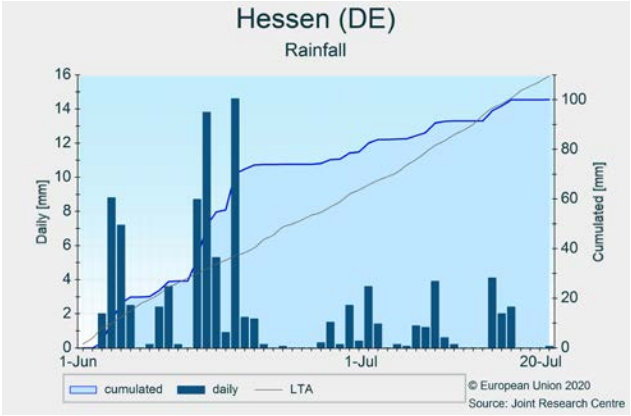
Since the beginning of June, unsteady weather has reigned over Germany. Temperature variation was high but without excessively hot temperatures, and nights were predominantly on the cooler side, especially during July. Hot days (above 30°C) during the review period were practically absent, apart from in eastern Germany, which experienced around two hot days.

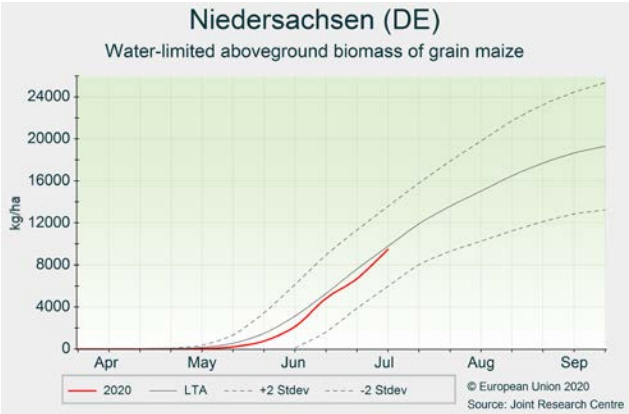
The unsteady weather brought many showers and some damaging wind- and hailstorms, but also steady rain in mid-June, partially replenishing soil moisture contents. The cumulative rainfall was mostly in the range of 80 mm to 150 mm, which is close to the LTA. Even greater values were recorded along the foothills of the Alps, while some parts in *Rheinland-Pfalz, Hessen, Baden-Württemberg, Sachsen,* and *Brandenburg* remained somewhat drier.

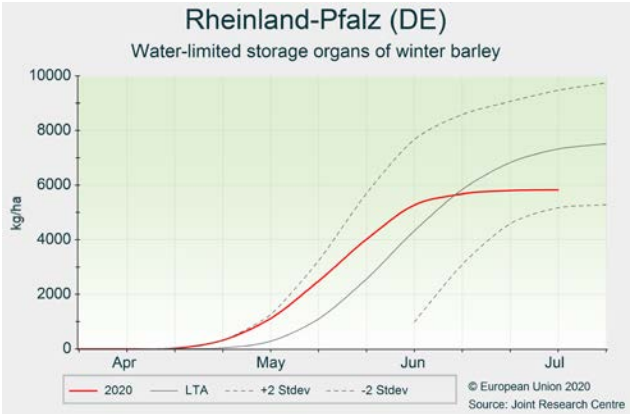
The mild weather conditions extended the grain filling phase of winter and spring cereals, and mitigated further yield losses. Compared to the June Bulletin, our yield forecasts are at the same level. Only winter barley has been revised downwards, as beneficial rains arrived too late. The harvest of winter barley as the first cereal has started towards the end of June and the beginning of July, partially interrupted by showers. A dry harvest period would be important to prevent further yield losses of rapeseed, and not to deteriorate grain quality of cereals.

With the increased precipitation, soil moisture contents for summer crops have improved, and biomass accumulation has started to recover after the spring drought that hampered the initial growing phases. This is reflected in yield forecasts above the 5-year average for maize, sugar beet, and potatoes. Maize has entered the crucial flowering stage.









Poland

Improved soil moisture conditions

Abundant rainfall in June and July improved soil moisture conditions for crops in most of the country (except for the northwest). Soil moisture conditions for summer crops were generally favourable, and crops have been recovering after a dry start to the season. Early harvest operations of winter barley and rapeseed were delayed due to rainy weather.

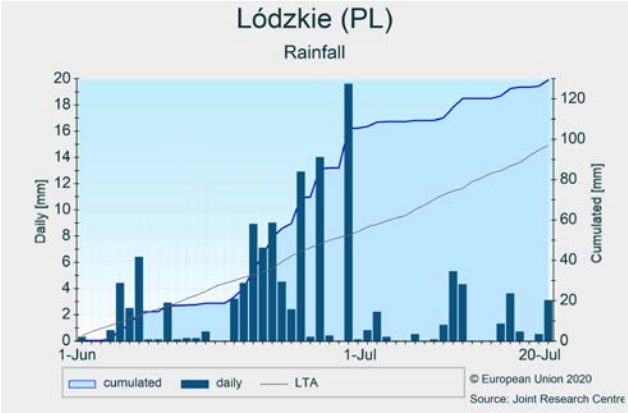
The review period was characterised by abundant precipitation in most of the country (30% above the LTA) with the exception of the northwest regions, where rainfall was below the LTA. As a result, soil moisture levels were satisfactory. Precipitation, mostly in form of storms, sometimes with hail and strong winds, could result in local inundations and crop damage. Temperatures during the review period oscillated around the LTA, while cumulative radiation was below-average.

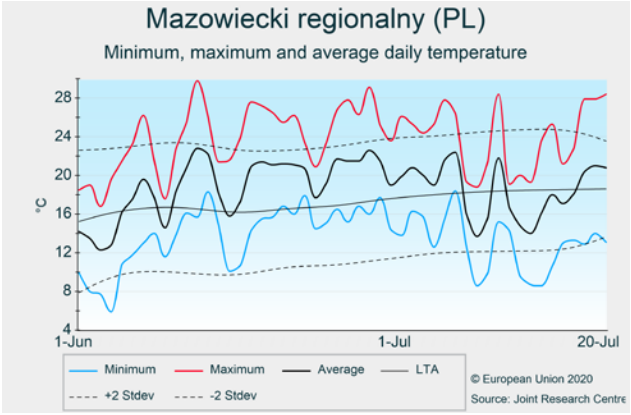
The harvest of barley and rapeseed began during the first dekad of July, albeit for a limited area with respect to the usual progress, as operations were delayed due to rainy weather. While rapeseed is currently profiting from additional days of grain filling, prolonged rainy weather could compromise rapeseed yields.

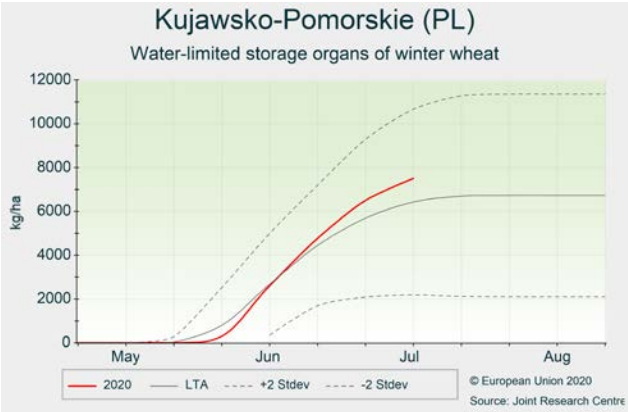
Weather conditions (adequate water supply and moderate temperatures) were generally favourable for the ongoing grain filing of winter wheat. Our crop model indicates heterogeneous yields across regions, with above-average expectations for several of the main producing regions (e.g. *Lubelskie, Kujawsko-pomorskie*), contrasted by lower yields in other regions (e.g. the dry northwest).

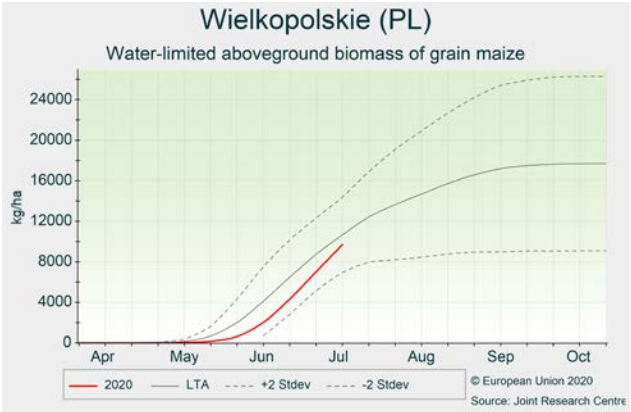
Soil moisture conditions favoured grain maize development and biomass accumulation, and are adequate for the flowering stage, which is about to begin. Biomass accumulation in potatoes and sugar beet crops has been catching up. However, the negative impact of the dry spring conditions is still visible in many fields. Additionally, wet conditions favour fungal diseases.

The yield forecasts for winter wheat, winter barley, potato, and sugar beet remain unchanged compared to last month, while yield forecasts for other crops have been increased due to favourable wet conditions.









Ireland

Favourable conditions during grain filling

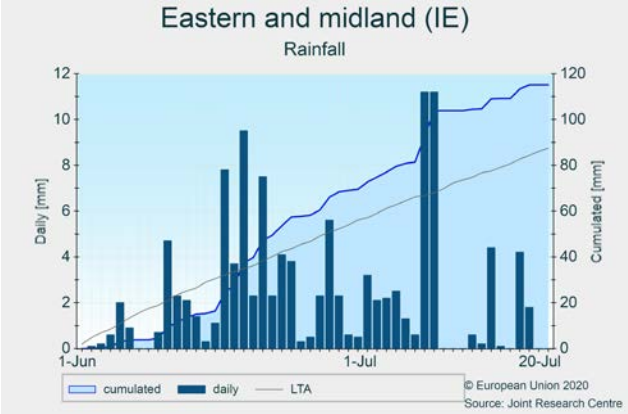
Substantial rainfall helped to restore soil moisture in many areas. Temperatures were favourable for grain filling. Nonetheless, due to the difficult season that created patchy fields and variable crop conditions across the country, yield forecasts were maintained slightly below-the-average.

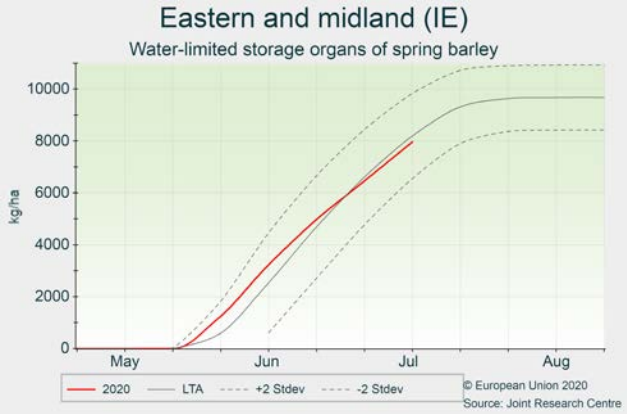
The review period was characterised by close to average temperatures, and abundant rainfall. Above-average amounts of rain fell since the end of the second dekad of June. Cumulative radiation was generally lower-than-usual, with the exception of around-average values in northern areas.

Soil moisture deficit decreased in many areas of the country. Grain filling benefitted from moderate temperatures, which resulted in higher-than-usual grain weights. However, due to the difficult beginning of the season, many cereal fields remained patchy, and late drilled spring barley crops looked thin, limiting yield expectations.

Winter barley harvest started during the second weekend of July, with variable yields. Better results are reported in the south of the country, where rainfall was more favourable during the growing season. According to our crop model, the maturity stage of winter wheat is going to be reached in two dekads. Overall, model outputs indicate close-to-average yields for winter crops.

Yield forecasts were maintained slightly below-the-average, taking into account the favourable conditions during grain filling, but also the patchy areas which characterised many fields across the country.





Spain and Portugal

Good prospects for wheat and barley in Spain

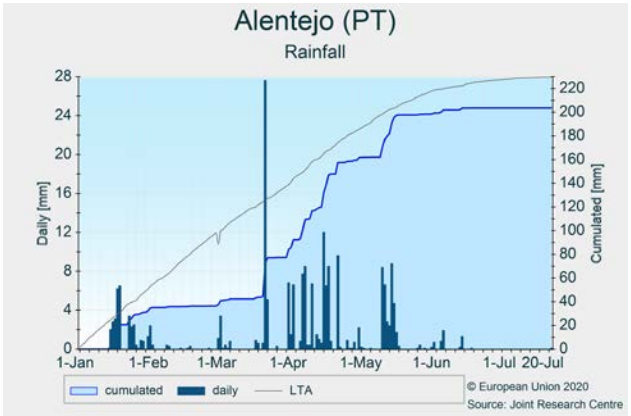
Around-average weather conditions during the review period, combined with the mild winter and spring, and above-average rainfall since the end of March, sustain a further upward revision of the yield forecasts for soft wheat, winter barley, and spring barley in Spain, to well above the 5-year average. The yield outlook for summer crops also remains positive.

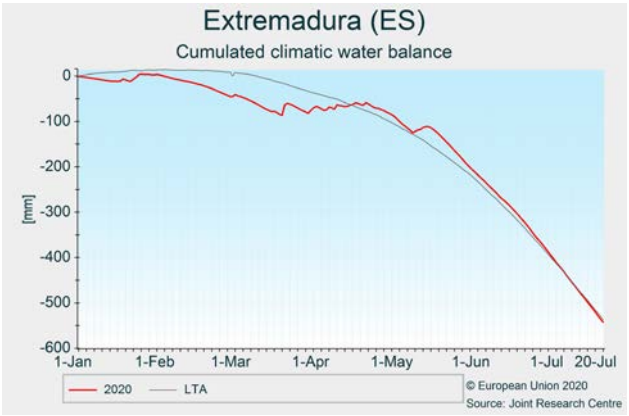
Weather conditions in the Iberian Peninsula have been favourable for spring and summer cereals. Rainfall and temperatures in *Castilla y Leon* were around the LTA. *Castilla la Mancha* had above-average cumulative rainfall largely in April-May, and less so in June-July. *Extremadura* has mostly been dry (see graph Extremadura), which is also in line with the LTA. The water reservoirs' levels in *Extremadura* are closely following the pattern of 2019, which was a dry year, and are well below the 10-year average (source: www.embalses.net 17.07.2020), at 53% of full capacity. Irrigation supply might therefore be managed closely, as was the case in 2019.

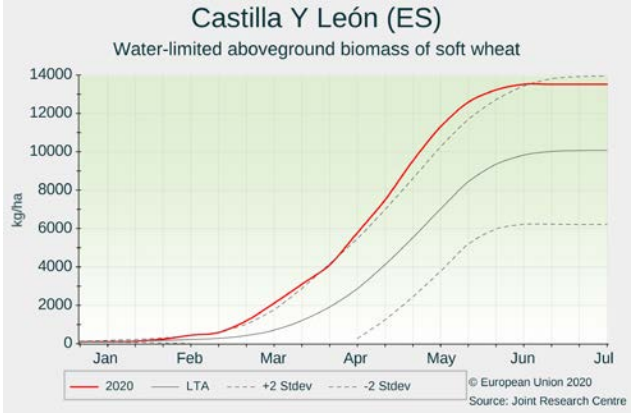
Southern Portugal has had less rainfall than usual for the period of review (see graph for Alentejo; <30 mm), as the cumulative rain in June-July was well below the LTA.

Overall, considering the course of the season in most of the Iberian Peninsula, starting with the mild winter and early spring, and average to above-average precipitation during the most demanding periods, the results have been very favourable for the development and growth of cereals under the specific regionally adapted conditions (see graph for Castilla y Leon), and has led to favourable conditions for maturation and harvesting. Consequently, the yield outlook continues to be positive, and has improved for the main cereal crops. The harvest of winter crops started in early July and is now mostly concluded, with spring cereals in their wake. Summer crops' development is progressing well throughout the Iberian Peninsula. Maize has already reached the flowering stage in several areas.

The yield forecasts for soft wheat, winter barley, and spring barley are well above the 5-year average, and were revised further upwards. Summer crops are in good condition; the yield outlook for grain maize and sunflower is also above-average. Yield expectations in Portugal's Centre and North are around the 5-year average.







Italy

Summer crops season is proceeding favourably

The winter crops season has ended across Italy with mixed yield expectations, while the condition of summer crops significantly improved thanks to a rainy June. Forecasts are confirmed to be below the 5-year average, and for soft and durum wheat, in line with 2019 figures. Maize and sunflower forecasts are above-average. The soybean forecast is still based on trend analysis.

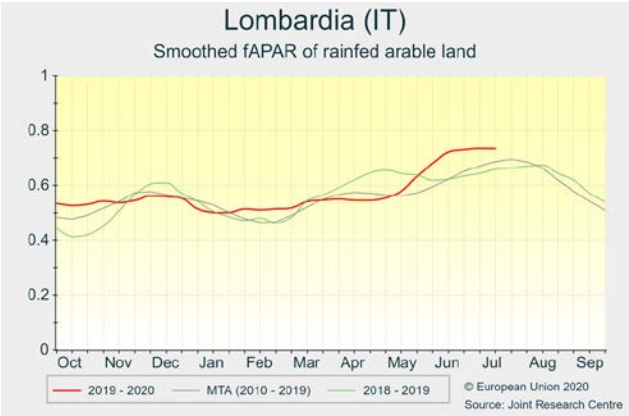
In Italy, the period of 1 to 20 June was generally wet, with more than 130 mm of precipitation in northern regions, and temperatures were slightly milder than usual. Since 20 June, temperatures sharply increased to above-average levels, and maximum temperatures passed 32°C for a few days. Since the beginning of July, temperatures returned to seasonal values, and dry conditions prevailed. Winter crops have now been harvested, while the condition of summer crops has significantly improved.

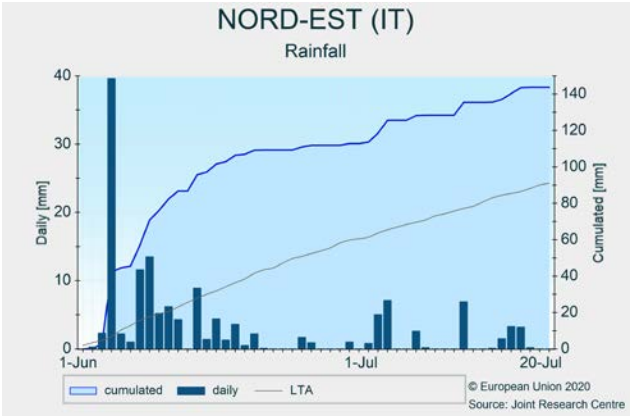
In north-western regions, overly wet conditions delayed winter crops' harvest, and possibly reduced grain quality. Maize, in advanced stages, profited from the succession of wet and hot weather, and it is now between the heading and flowering stages, with optimal biomass accumulation (e.g *Lombardia*).

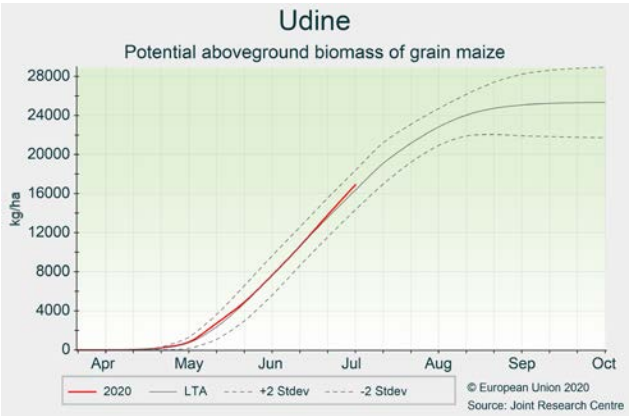
In north-eastern regions, winter crops benefitted from the rain in June (e.g. *Nord-Est*), and the yield loss expected as a result of the dry spring has been slightly mitigated in *Veneto* and *Friuli Venezia Giulia*. Summer crops' growth, which was initially negatively influenced by drought conditions, accelerated, and the biomass accumulation (e.g. *Udine*) is now above-average. Due to the combination of late sowings in spring, and mild temperatures in June, soybean and maize development are delayed in eastern *Emilia Romagna*, *Veneto,* and some parts of *Friuli Venezia Giulia*.

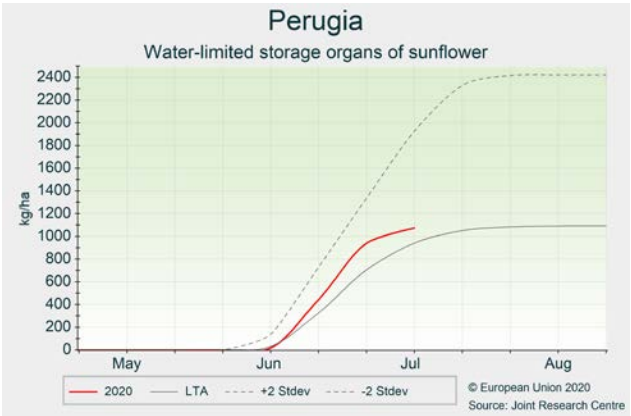
In Central Italy, the winter crops season ended favourably, while sunflower entered the grain filling stage in late June, with canopy in good shape (e.g. *Perugia*).

In southern regions, the winter crops season already ended at the beginning of June.









Hungary

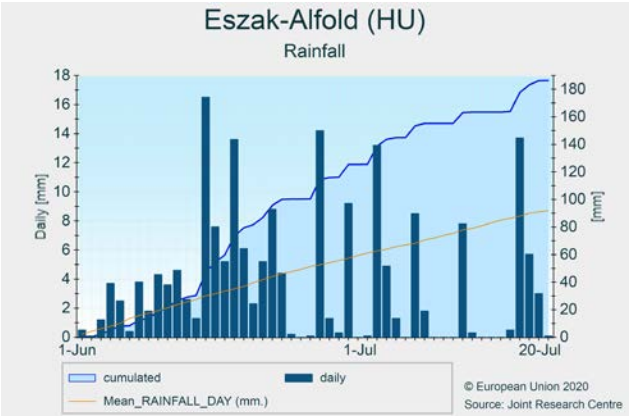
Bad rains for winter crops, good rains for summer crops

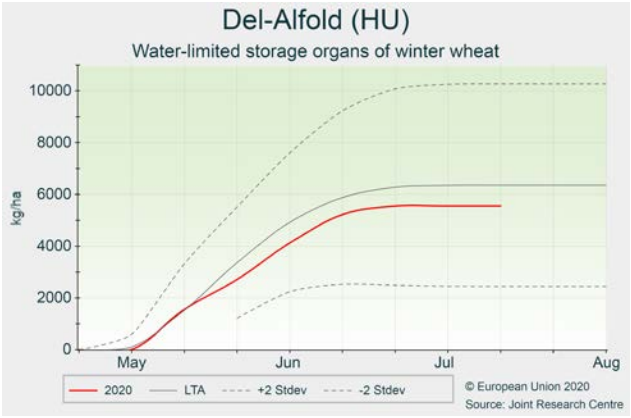
Abundant rain made this harvest campaign difficult, and reduced the yield expectations for winter crops. Summer crops benefitted from adequate water supply conditions during flowering, which sustained a continued positive outlook.

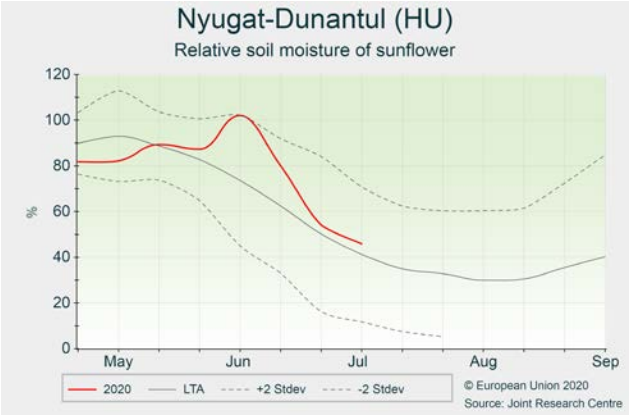
Near-average thermal conditions characterised our review period (1 June - 20 July) in Hungary, though early June and mid-July were colder-than-usual. Above-average temperatures mostly occurred between 25 June and 11 July, but the number of hot days (Tmax>30°C) remained below 10, even in the warmest southern and eastern regions, where hot days during this period were interspersed with mild days, alleviating the situation and preventing the formation of a heat wave.

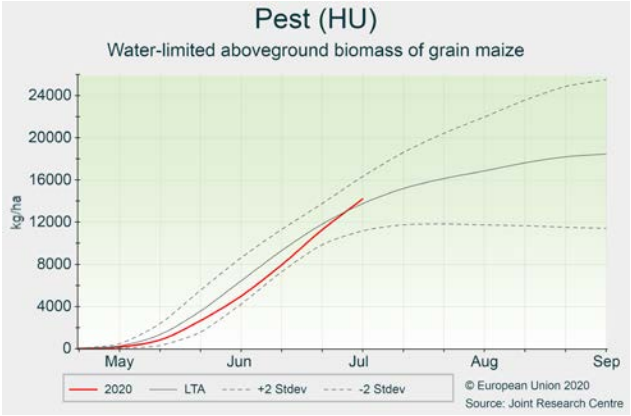
After the very dry spring, precipitation tendency increased considerably from the beginning of June, and became excessive in the second dekad of June causing local floods and inundations). Since then, precipitation remained abundant in the eastern half of Hungary, while it became more moderate in the western regions. Over the review period as a whole, the total levels of precipitation have been between 70 mm and 220 mm. Heavy rainstorms caused delays for the ripening of winter crops, damaged stands (e.g. due to lodging), and caused harvest losses, primarily to rapeseed, but winter cereals were also affected. Overly wet top soils hampered both the start and the progress of harvesting in several places. Moreover, the frequent rains are likely to have a negative effect on grain quality.

Summer crops, which had experienced a below-optimal (cold and dry) start to the cropping season, benefitted from the favourable water supply and thermal conditions which started in early June. Sunflower crops started to flower at the end of June, and grain maize flowering started in mid-July, which is somewhat delayed for both crops. Soil moisture contents are currently above-average and provide adequate conditions for maize and sunflower during the flowering period, which is crucial for yield formation. Remote sensing images also confirm high photosynthetic activity during this period. The yield forecasts for winter crops were revised downward, below the 5-year average, while the – already positive - outlook for summer crops was slightly further improved.









Romania

Excessive rain

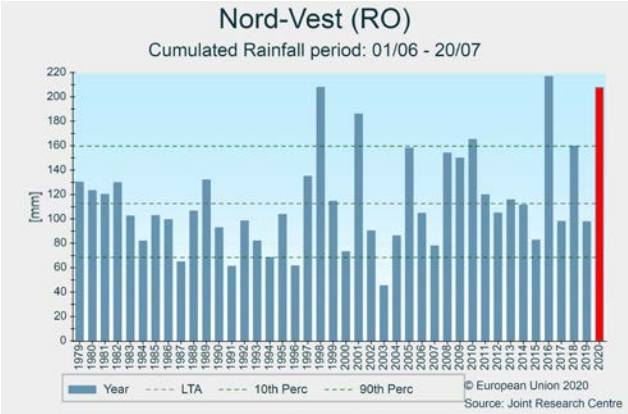
The yield outlook for winter crops was revised further downwards, to a very low level. The overall conditions for summer crops have been adequate, providing a promising yield outlook.

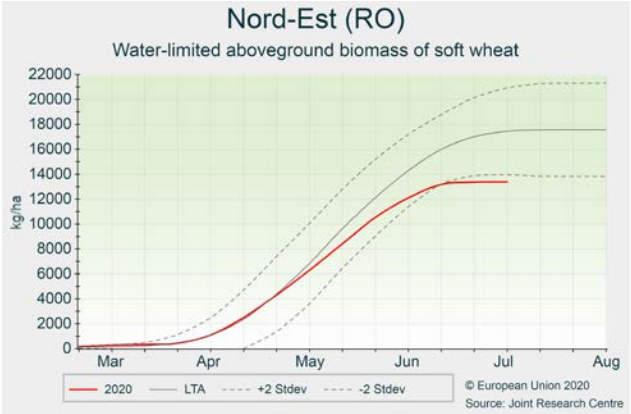
Considering the review period as a whole (1 June - 20 July), thermal conditions in most of Romania were in line with the LTA, though the eastern regions experienced moderately (0.5°C - 1.5°C) warmer-than-usual weather. Above-average temperatures dominated from 5 June until 6 July, while early June and mid-July were colder than usual. The number of hot days (Tmax>30°C) considerably exceeded the LTA only in south-eastern regions (by 5-10 days).

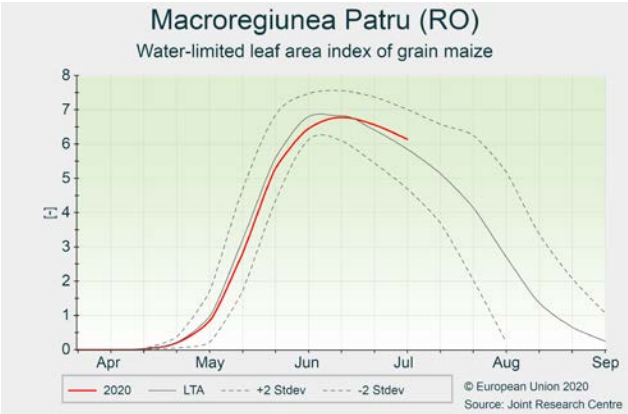
Rainfall was abundant, particularly in the second and third dekad of June. In western and central Romania, very intensive and excessive precipitation events caused floods and inundations in low-lying areas, adversely affected winter crops (lodging, increased harvest losses, and lowered quality), and caused a delay to the start of the harvesting campaign. In these regions, precipitation sums for the review period reached 150 mm - 320 mm. Southern and eastern regions received near- or above-average precipitation levels, in the range of 70 mm - 150 mm.

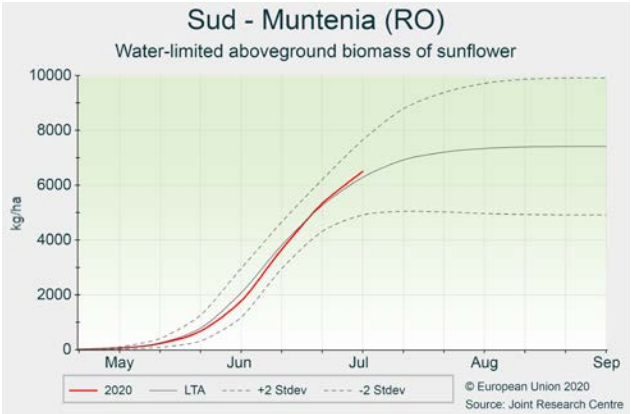
The yield forecasts for winter cereals were reduced further, and the forecast for rapeseed remains pessimistic.

Heavy rains replenished the soil moisture levels under summer crops. The beneficial crop water supply facilitated leaf area expansion and biomass accumulation during the vegetative stage of these crops. Soil moisture is still adequate for the flowering period in most of Romania. Water deficit occurs only along the Bulgarian border, and coastal areas of the Black Sea. The mild temperatures of mid-July cause an extension of the flowering period, which is also favourable for yield formation. Our yield forecast for summer crops – based on the presumption of average rainfall during the grain filling period - is positive, and well above the 5-year average.









Bulgaria

Reduced yield forecast for winter crops

Abundant and intensive rainfall in mid-June is likely to have caused damage and harvest loss to winter crops, depressing the yield expectations. The yield forecasts for maize and sunflower were maintained well above the 5-year average.

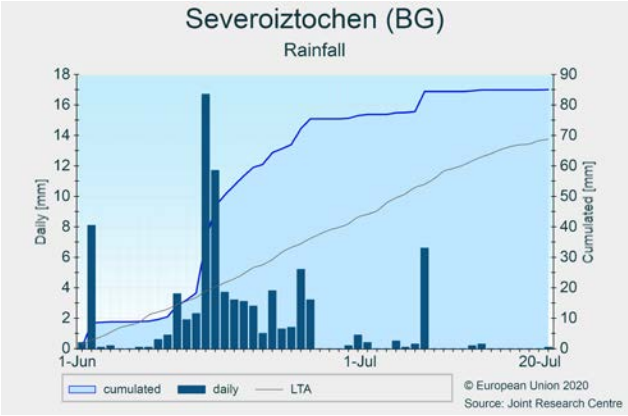
Daily temperatures remained in the usual range, and fluctuated around the LTA during the period of review, resulting in no significant anomaly for the period as a whole. However, the first week of June, and a one week period before mid-July were colder-than-usual. The frequency of hot days (Tmax > 30°C) exceeded the LTA by 2-9 days in eastern Bulgaria, but this is not expected to have had any significant negative effect on crops.

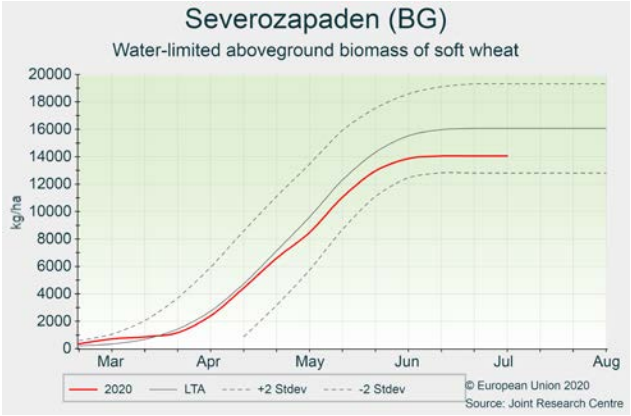
Rainfall was unevenly distributed: very intensive rainfall in the second dekad of June is likely to have caused damage to winter crops, caused delay to the start of the harvest, and probably increased harvest losses. In contrast, after 25 June, a dry spell began, and there has been hardly any rain in the main crop producing areas since then. The total levels of rainfall during the review period varied from 50 mm in *Yugoiztochen*, to between 110 mm and 170 mm in *Yugozapaden*.

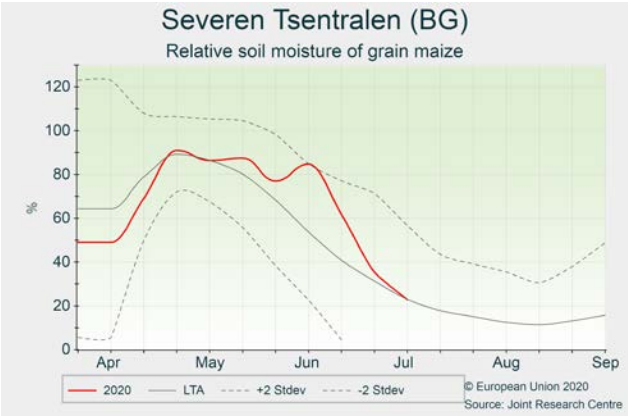
Our crop growth model and analyses of satellite imagery indicate significantly below-average biomass and yields at the end of the season for winter crops. Moreover, considering additional harvest losses, our previous yield forecasts for winter crops were revised considerably downwards again.

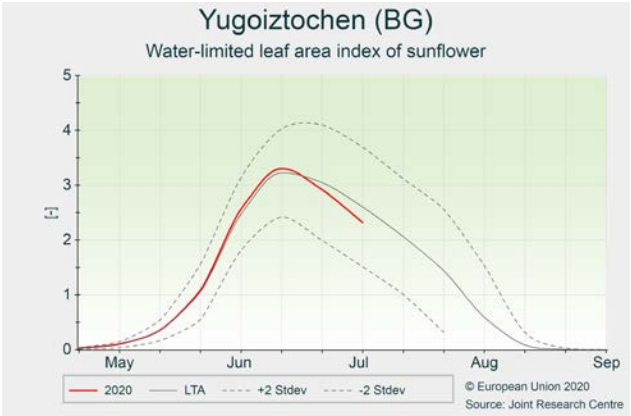
The phenological development of summer crops is seasonal. In northern and western regions, water supply to maize and sunflower crops has been generally adequate since mid-May, resulting in good canopy expansion, and above-average biomass accumulation.

In contrast, inadequate water supply in south-eastern regions has started to constrain crop growth during the flowering pheno-phase. Considering all the factors, the yield forecast was revised slightly downwards for grain maize and slightly upwards for sunflower; and remain well above the 5-year average.









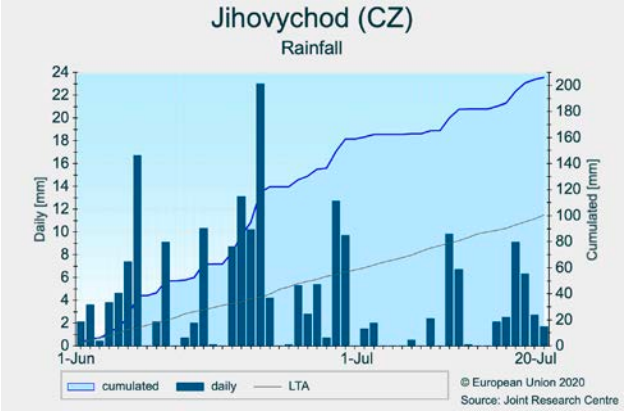
Austria, Czechia, and Slovakia

Rainfall limits winter crop yield losses due to spring drought

Wetter-than-usual weather conditions prevailed since the beginning of June. In the absence of heat waves, rainfall limited the yield loss for winter crops, for which the harvesting campaign has already begun. Rainfall also benefitted spring and summer crops.

The period since the beginning of June has been wetter-than-usual. Cumulative rainfall was generally above 150 mm, except for in western Czechia, western Slovakia, and *Burgenland* in Austria, where there was between 100 mm and 150 mm of rainfall. With cumulative rainfall of above 200 mm, eastern Czechia received more than double the LTA amount of rainfall. No significant heat waves were recorded, and usual temperature conditions prevailed since the beginning of June.

The rainfall recorded since the beginning of June has limited the potential yield loss for winter crops, due to the persisting spring drought in Czechia, Slovakia, and eastern Austria. Consequently, the yield outlook for winter cereals has been revised slightly upwards. Although the rainfall was beneficial for winter crops, the wet first half of July could negatively impact winter cereal grain quality regionally, as the winter cereal harvest has started. The rains also replenished soil moisture levels, which is necessary for good spring crop development. The spring crops outlook was therefore revised slightly upwards.

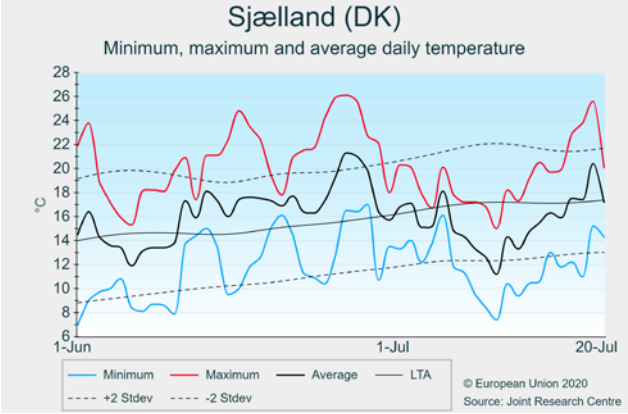


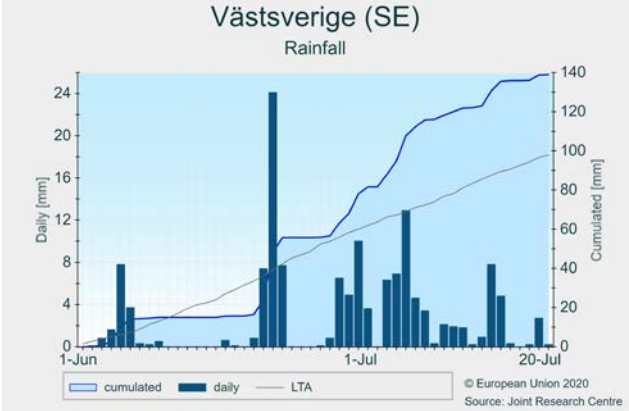
Denmark and Sweden

Uncertainties about the positive outlook are alleviated by substantial rainfall

The rainfall observed for the analysis period reduced the uncertainties on the yield outlook, following the rain deficit observed from mid-March to the end of April. The yield forecasts of all crops have been increased, and stand only slightly lower than last year.

Substantial rainfall was recorded from the beginning of June in all regions, with a large surplus in Denmark, except *Sjaelland,* which received a close-to-average cumulative rainfall. Similarly, western Sweden received a large rain surplus, while rainfall was close the LTA in eastern regions. Temperatures were above-average in June, and dropped below the LTA at the beginning of July. Conditions were favourable throughout most of the grain filling period for cereals, and only a short warm period at the end of July produced suboptimal conditions; however the impact of this is estimated to be minor when taking into account the grain filling period on the whole.. The yield forecast has been increased for most winter crops, as well as for spring barley following the substantial rainfall. However, yields are expected to be below last year considering the overly wet conditions observed during winter, followed by the rain deficit observed from mid-March to the end of April. The harvest is about to start at the beginning of August for most winter cereals and spring barley. The recent wet weather is favouring the disease pressure on sugar beet and potato, so the yield forecasts are maintained close to the trend, as the outcome will depend on the weather in the following weeks.





Finland, Lithuania, Latvia and Estonia

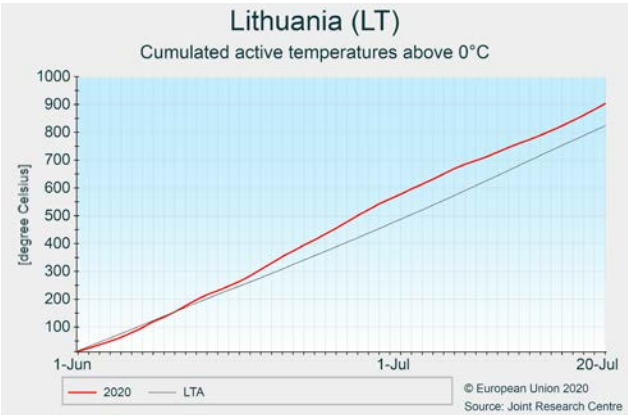
Positive outlook continues for the Baltic countries; reduced yield expectation for Finland

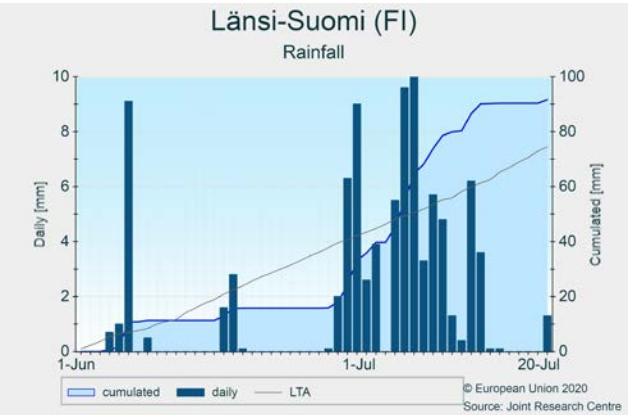
Despite less favourable weather conditions, there are still high yield expectations in the Baltic countries. Rainfall arrived too late in some south-western areas to sustain potential yield in Finland. The yield outlook is above-average for the Baltic countries, but below-average for Finland.

After a colder-than-usual first dekad of June, warm weather conditions prevailed across these countries, with maximum temperatures reaching values close to 30°C during the last two dekads of June. At the beginning of July, temperatures reached usual values, and then decreased between 2°C and 5°C below the LTA in all countries.

Rainfall totals were above the LTA, with the exception of a dry June that characterised the western areas of Finland, although this period was followed by abundant rainfall during July. Cumulative radiation was close to the LTA in the Baltic countries, and above-average in Finland.

The rain replenished soils in the Baltic countries. Overall, these conditions were favourable for crop growth, although the abundant rainfall flattened some cereal fields during grain filling. Nevertheless, at this stage of development, a limited yield impact is expected. The high yield expectations resulting from optimal thermal conditions during the season are maintained. In mid-July, most cereal crops in the Baltic countries were in the early stages of grain growth. In south-western areas of Finland, rainfall arrived too late to achieve potential yields, particularly for the late-drilled cereal crops. In Finland, cereal crops were at the beginning of grain filling following the typical seasonal development. Winter oilseed and rapeseed crops are in particularly good conditions in the Baltic countries, with high potential yields after a longer-than-usual flowering period. Yield forecasts are above the 5-year average for the Baltic countries, and below the 5-year average in Finland, particularly taking into account the late-drilled crops impacted by soil moisture deficits





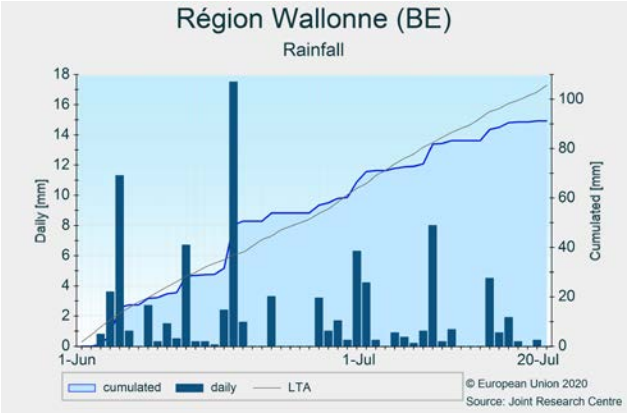
Belgium, Luxembourg and the Netherlands

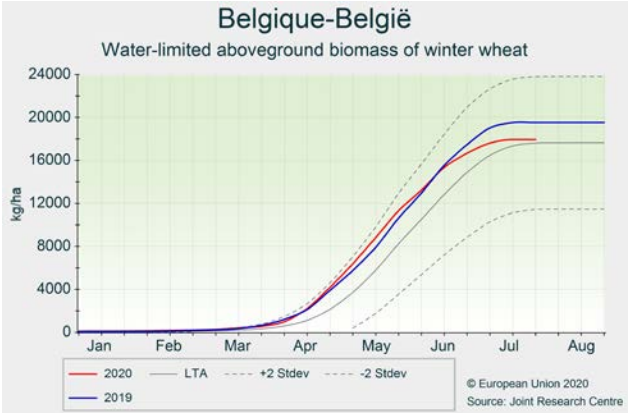
Excellent weather for crops; modest increases in yield forecasts

Mild temperatures, and well-distributed near- or above-average rainfall across most of the Benelux created excellent conditions for grain filling in winter cereals, and canopy formation and biomass accumulation in summer crops. Yield forecasts were revised upwards, and are now close to the 5-year average for winter cereals, and close to the historical trend for summer crops.

The review period (1 June – 10 July) was characterised by unsettled weather, with frequent but regularly distributed rainfall events, leading to a cumulative precipitation ranging from over 30% above the LTA in coastal regions, to 20% below the LTA in the westernmost parts of *Wallone*. Temperatures were mild, and usually close to the LTA, and daily maxima only reached values close to 30°C on one or two days around 25 June. Solar radiation levels were around the LTA. These weather conditions have been excellent for the grain filling of winter cereals, and for canopy formation and biomass accumulation of sugar beet, potatoes, green maize, and grain maize. Soil moisture conditions also improved, especially in areas with above-average rainfall, but only in the upper soil layers in most high-lying areas.

Winter crops and spring cereals benefitted from these improved conditions during the latter stages of flowering, and for most of the grain filling period. However, these benefits only led to modest increases of our yield forecasts, as yield potentials had been strongly reduced due to the very dry conditions during spring. The harvest of winter barley has been almost entirely completed, whereas the harvest of early winter wheat varieties has just started, or is about to start. Summer crops have partly recovered from the damage caused by the dry conditions, most markedly, potatoes, grain maize, and green (silage) maize. In the case of sugar beet, however, a large proportion of stands still present well below-average numbers of plants. Potentially very good yields of well-developed stands are unlikely to compensate for the poor yields expected in the poorly developed stands. Moreover, in most of Belgium and southern parts of the Netherlands soil moisture contents are still below average. This leaves crops potentially vulnerable should drier weather develop (not forecast for the coming ten days), while several of the previously announced water withdrawal restrictions are still in place. Therefore, the upward revision of the yield forecasts for summer crops is also modest.





Greece and Cyprus

Average season for summer crops

In Greece, summer crops' growing conditions are in line with an average season. Crops in Central Macedonia fully recovered after a period of slow growth at the start of the season. Above-average temperature conditions prevailed in the first week of July in Eastern Macedonia and Trace.

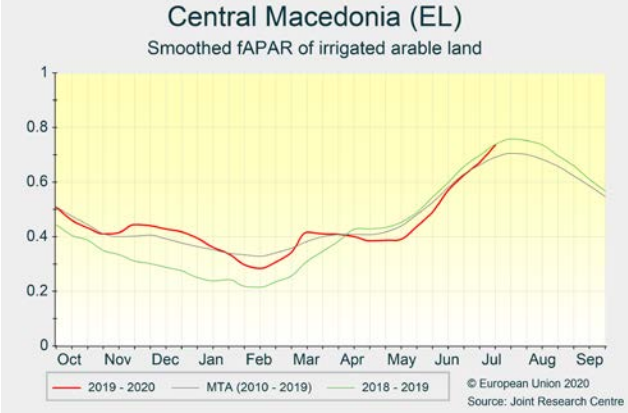
Rainfall on the Greek mainland was fairly well distributed in June and July, and cumulative rainfall levels were moderately above the LTA. An exception was the northern regions of eastern and central Macedonia, where rainfall predominantly occurred in June, and the cumulative rainfall was 20% below the reference values. Scarce precipitation (< 5 mm) is observed in Cyprus, which is in line with the usual expectations for this period.

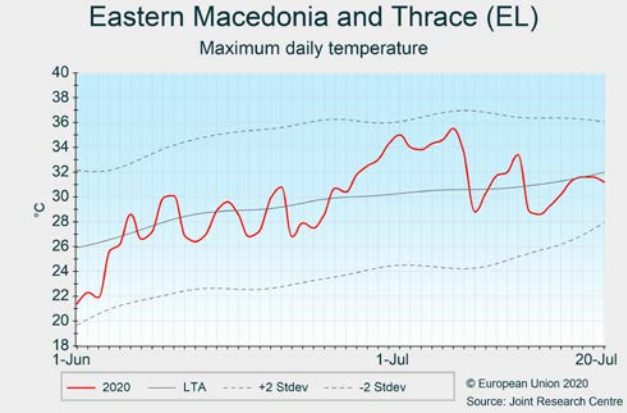
The average daily temperatures for Greece and Cyprus

were 2°C cooler than the June average (as in most of southern Europe), and 2°C above the LTA in July. An extended heat wave was observed in Eastern Macedonia and Trace, resulting in maximum daily temperatures above 34°C for the whole first week of July. This anomaly occurred during (summer crop) flowering, and may have caused abiotic stress (i.e. crop sterility) in some areas.. The region will be closely monitored, due to the importance of maize and soybean cultivation.

Remote sensing analyses depicted average biomass accumulation levels for summer crops in Greece. Agricultural areas of Central Macedonia have fully recovered from the crop growth slow-down monitored in the April-May period, which was due to hail and storm events.

Crop development stage simulated by the WOFOST crop model shows that (green and grain) maize and soybean crops are entering the grain filling phenological stage, following average long-term simulated values. Our forecasts confirm the values presented in the June Bulletin, and are in line with the5-year average.





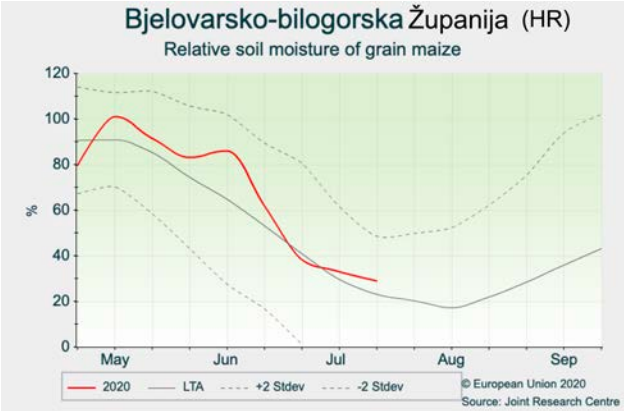
Slovenia and Croatia

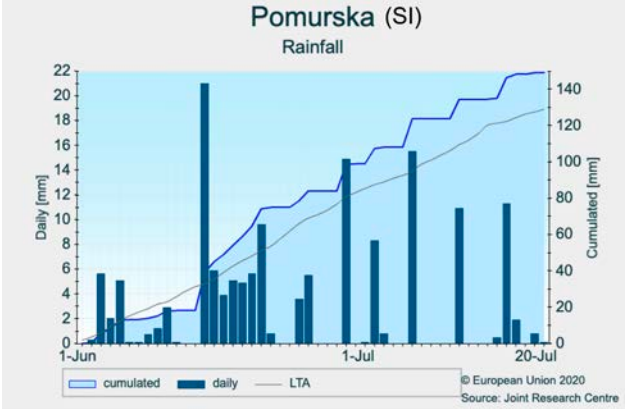
Beneficial rainfall increased winter cereal yield outlook

Wetter-than-usual conditions prevailed in Slovenia. Croatia recently received beneficial rainfall, replenishing the weak soil moisture deficit in the eastern areas of the country. Despite the earlier spring drought conditions, a good winter wheat yield outlook is expected in both Slovenia and Croatia. Summer crops are generally in good conditions, especially due to recent rainfall.

Wetter-than-usual conditions prevailed in Slovenia and Croatia. Slovenia recorded a cumulative rainfall of above 150 mm, and over 200 mm in western and northern regions. The main agricultural regions of eastern Croatia received between 80 mm and 150 mm of rainfall. In the presence of seasonal temperatures, heat waves were largely absent during the analysis period. Nevertheless, in the eastern continental part of Croatia, there were up to 5 consecutive days with maximum temperatures above 30°C.

The end of June and the beginning of July saw little rainfall in eastern Croatia, providing good harvesting conditions for winter cereals. Winter cereal yield outlook is satisfactory in both countries, despite the drought conditions during spring; which, however, might have reduced grain quality (lower protein). The winter wheat yield outlook has been revised upwards for Croatia. Summer crops are generally in good condition; even though eastern Croatia suffered from a rainfall deficit at the end of June and beginning of July, recent rainfalls replenished the soil moisture deficit. The yield outlook for summer crops has been revised slightly upwards.


Bjelovarsko-bilogorska Županija (HR)
Relative soil moisture of grain maize
%
120
100
80
60
40
20
0
May
Jun
Jul
Aug
Sep
2020
LTA
+2 Stdev
-2 Stdev
© European Union 2020
Source: Joint Research Centre


Pomurska (SI)
Rainfall
Daily [mm]
Cumulated [mm]
22
20
18
16
14
12
10
8
6
4
2
0
140
120
100
80
60
40
20
0
1-Jun
1-Jul
20-Jul
cumulated
daily
LTA
© European Union 2020
Source: Joint Research Centre

4.2. United Kingdom

Harvest kicked off with variable yields

Soil moisture recovered across the country, benefitting potato and sugar beet growth. However, high temperatures in June and abundant rainfall during grain filling further lowered our forecasts for winter cereals. Winter barley and oilseed rape harvests kicked off with variable yields.

After a colder-than-usual beginning of June, temperatures remained above the LTA until the end of the month, and decreased again to below-average values from the first week of July until mid-July, with variations around the average at the end of the period. Maximum temperatures reached close to 30°C in the southern areas for a few days during the last dekad of June.

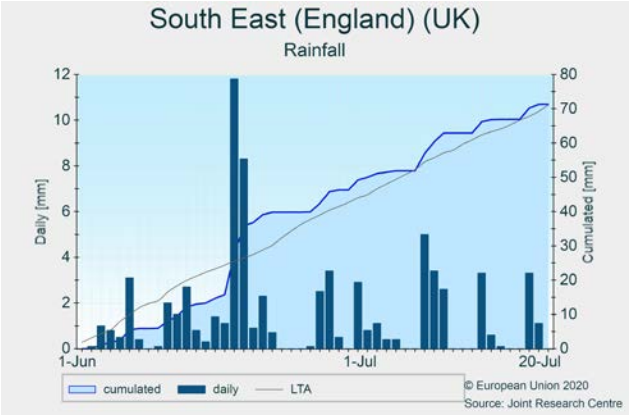
Rainfall was generally above average in most of the agricultural areas, and also exceeded the LTA in southern agricultural areas from the second dekad of June onward. Cumulative radiation was mostly close to LTA values.

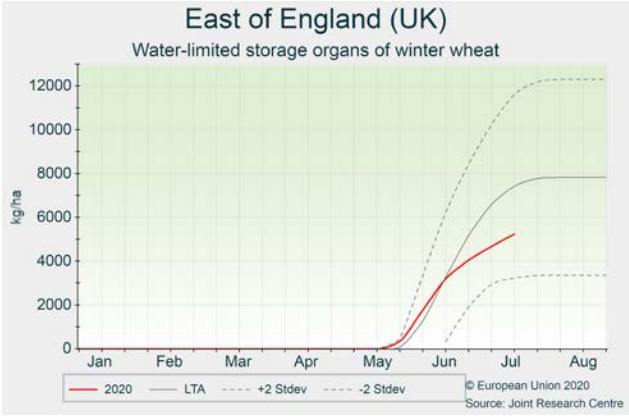
Substantial rainfall recovered the soil moisture deficits. These conditions benefitted potatoes and sugar beet growth, and limited further loss of winter and spring cereals. However, high temperatures in June partially hit winter cereals in southern areas, shortening grain filling.

Spring barley crops remain variable, with some very good crops and some poor crops, due to late ploughing and inadequate soil moisture during crop establishment. Winter cereal outcomes are geographically variable, with crops in northern areas in better conditions, as they have been affected less by soil moisture deficits.

Winter barley harvest started at the end of June in southern areas, around one week ahead of schedule, and with disappointing yields, especially in the east. Oilseed rape harvest is well under way after the second dry weekend in July, with very variable yields, ranging from poor to above-average, despite the difficult growing season.

Forecasts were further reduced for winter cereals. Forecasts for other crops remain close to those of the June Bulletin.





4.3. Black Sea Area

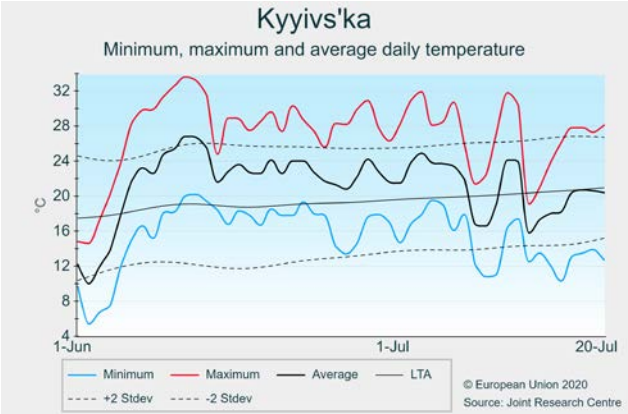
Ukraine

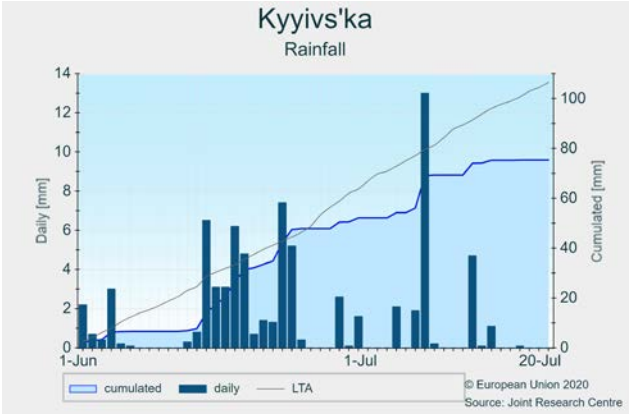
A beneficial start to the season for summer crops

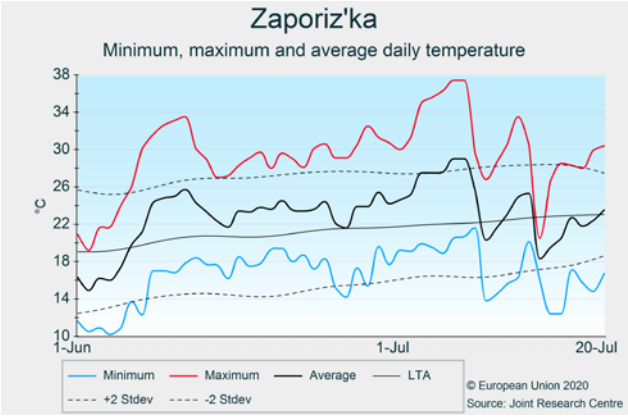
While the summer crop season started with dry soils, and was slightly delayed by below-average temperatures, the current period was dominated by warm temperatures and substantial rainfall. The outlook for summer crops is positive, while the yield forecasts for winter crops remain unchanged, well below the historical trend.

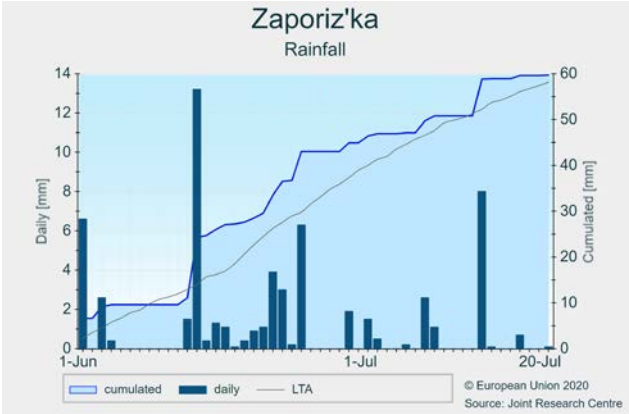
Rainfall during the review period was substantial, but unevenly distributed. The westernmost oblasts recorded a clear rain surplus, while a rain deficit was recorded on a strip extending from the north of *Vinnyts'ka*/*Kyyivs'ka,* to the north of *Donets'ka*. Near-average precipitation was recorded in the remaining areas of the country, and the formerly very dry southern regions received a substantial amount of rain.

Temperatures remained largely above the LTA during most of the analysis period, and were continuously above-average by between 3°C and 4°C from 6 June to mid-July. These warm temperatures have not been favourable for the grain filling of winter cereals. Winter barley and soft wheat yield forecasts have been maintained at the levels reported in the June issue of the Bulletin (i.e. below the historical trend and last year's levels), reinforced by the suboptimal temperatures observed during the grain filling period. The rainfall observed limited any further impact of water stress on yields in south-eastern oblasts, but is expected to have degraded the grain quality. Summer crops largely benefitted from the rainfall and warm temperatures, and biomass accumulation in the main grain maize and soybean producing regions is currently largely above-average. The yield forecasts for grain maize and soybean have been increased to reflect these beneficial conditions.









Turkey

Favourable winter crops season, despite some problems

The wheat yield forecast remains above the 5-year average. The barley yield forecast is revised downwards, due to the impact of heatwave in June. The summer crops' season is proceeding favourably, and the yield forecast for maize is above the 5-year average

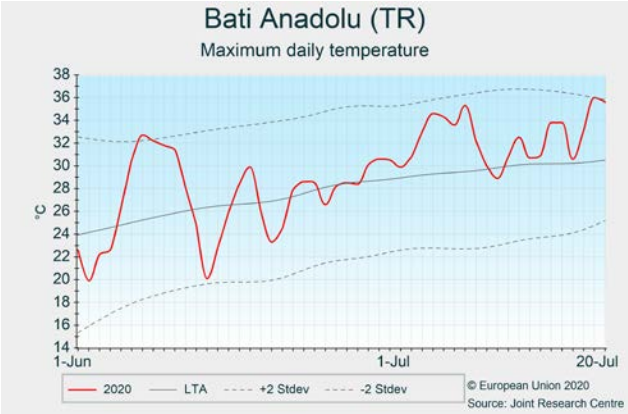
In western *Anatolia,* June started with a heatwave of moderate intensity (Tmax<34°C), after which there was some rainfall between 10 and 20 June in *Ankara*, *Eskisehir,* and *Afyon* (40 mm to 60 mm), while *Koyna* faced drier weather, receiving only around 20 mm of precipitation. Temperatures oscillated around the average. In July, another short heatwave moved temperatures up to 35°C (*Bati Anadolu*). In *Ankara* and *Eskisehir,* the June heatwave occurred during the initial grain filling period, reducing the yield expectations for barley.

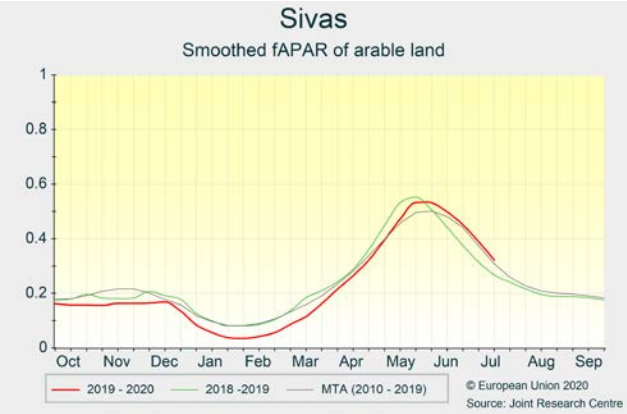
In *central Anatolia,* the weather pattern was similar. In *southern Kirikkale* and *Kayseri,* winter crops were delayed compared to the average, and suffered during the flowering and grain filling stages, due to the respective heatwaves in June and July. Such conditions accelerated phenological development, and moved crops from being delayed to an almost-average stage, reducing the yield formation period (e.g. *Sivas*). In *Yogatz* and *northern Kirikkale,* the rainy period (30 mm to 50 mm of rainfall) mitigated the impact, and provided some relief to winter crops.

In *Aegean regions, the* temperature was between average and slightly warmer-than-usual and summer crops are catching up to average development.

In *Sanliurfa,* one of the south-eastern regions, the summer crops season has not yet started, which is probably due to the late end to the winter crops season. In all other provinces, the development of summer crops is anticipated with favourable biomass accumulation.

At the level of the whole country, the heatwaves only negatively impacted barley. Wheat and barley were fully harvested by 15 July. The maize and soybean season is proceeding under favourable conditions.





4.4. European Russia and Belarus

European Russia

Reduced yield expectation of wheat and barley

Hot and dry conditions in southern and south-western Russia have led to limited water supply, and weakened biomass accumulation. The overall yield outlook for winter wheat has lowered, and is now close to the 5-year average. Yields of summer crops are also likely to be adversely impacted in these regions.

Considering the review period as a whole, a strong positive thermal anomaly (in the range of 2°C - 4°C) was observed in south-western regions, making this one of the hottest 1 June – 20 July periods in our records. Moderate temperature anomalies (1°C - 2°C) were observed along the western and southern borders, while seasonal thermal conditions prevailed elsewhere in European Russia. In the areas between the Black Sea and the Caspian Sea, as well as in the southern regions of the Volga okrug, 20-30 (locally up to 45) hot days (Tmax>30°C) occurred, exceeding the LTA by 5 to 20 days. Maximum temperatures reached between 38°C and 42°C on the hottest days.

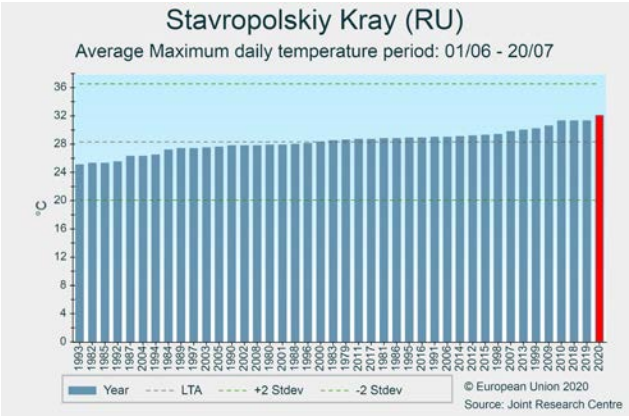
In June, abundant precipitation (in the range of 50 mm - 150 mm) arrived in the Central okrug and the western half of the Volga okrug. Some southern regions (*Krasnodarskiy,* and *Stavropolskiy kray*) also received beneficial rains, but *Volgogradskaya*, *Rostovskaya,* and the eastern part of the Volga okrug remained very dry.

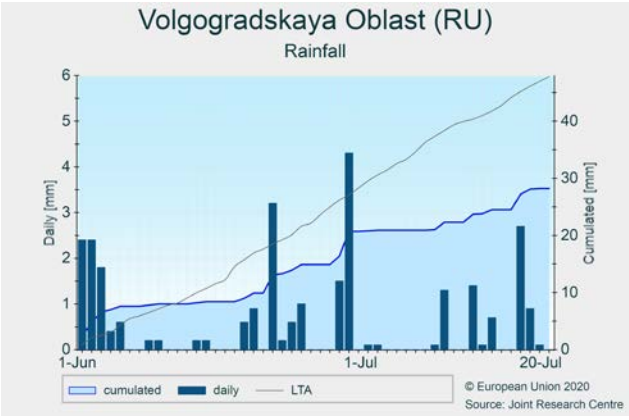
So far in July, the southern half of Russia has suffered from a considerable rainfall deficit, with only 5 mm - 20 mm precipitation recorded. In contrast, precipitation exceeded the average by between 50% and 200% in the western part of the Central okrug, and by between 20% and 100% in some northern spots of the Volga okrug.

The limited water supply and hot conditions adversely affected the grain filling of winter cereals in southern Russia, in contrast to the favourable humid and milder weather conditions in the Central okrug. The overall yield expectations for winter wheat, which is currently being harvested, have decreased to near the 5-year average level.

Spring cereals were also negatively impacted in the southern and south-western regions. The situation seems to be better in the central and northern regions, where, however, locally conditions are excessively wet.

In southern Russia, grain maize also suffers from inadequate water supply and heatwaves during the critical flowering and early grain filling phases. Soil moisture contents are favourable under grain maize in the Central okrug. Remote sensing images also depict problematic crop conditions in the southern regions of Russia.





Belarus

Fair conditions for crops

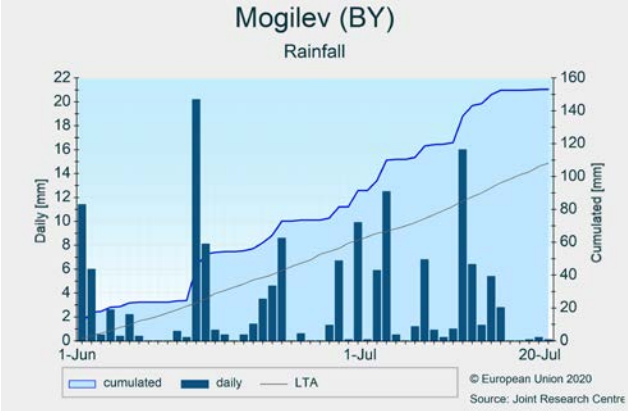
Average temperatures and intense precipitation in June and July resulted in improved soil moisture conditions in most of the country. Conditions were favourable for the grain filling of winter and spring cereals, and the development of summer crops.

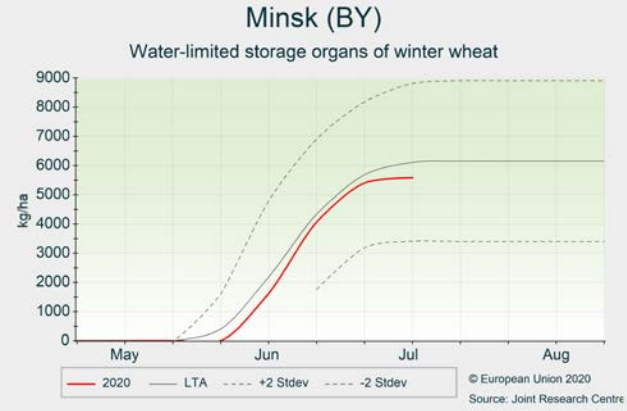
During the analysis period, daily temperatures were slightly above the LTA in most of the country, with the exception of the southeast, where daily temperatures were 2°C - 4°C above the LTA. Cumulative precipitation was variable across the country. Rainfall totals were above the LTA in the *Vitebsk* and *Mogilev* regions, but below-average in parts of the *Grodno* and *Gomel* regions.

Soil moisture conditions have been adequate for crops in most of the country, although locally abundant levels of precipitation resulted in inundations and crop damage. Radiation was slightly below the LTA.

Winter cereals are in fair condition, and are undergoing slow-paced grain filling under mild temperature conditions. Our crop model indicates that wheat biomass accumulation and storage organ weights are currently close-to-average. Biomass accumulation in grain maize crops remains below-average.

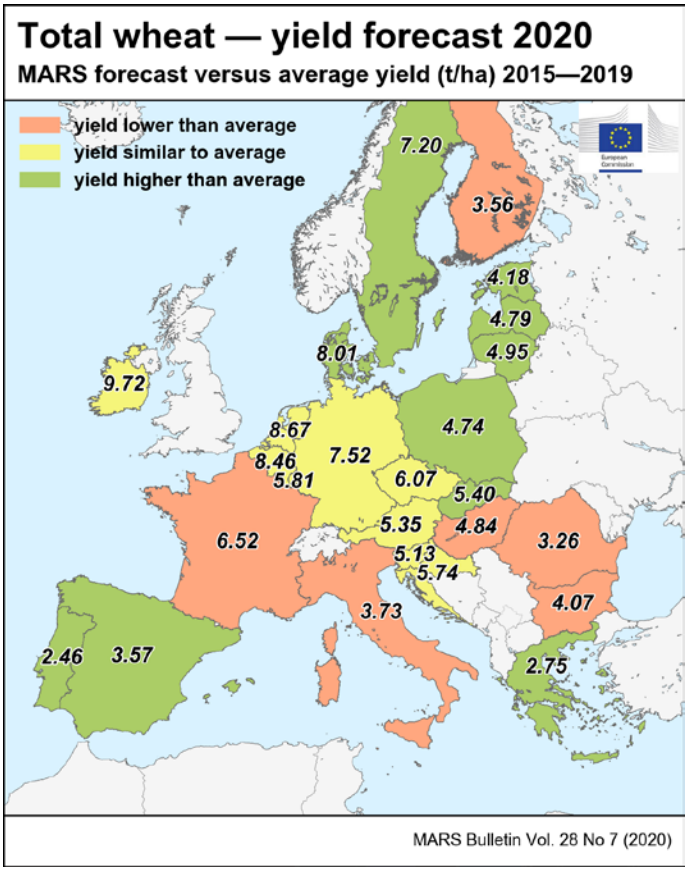
The outlook is positive for barley and wheat, while yield expectations for maize remain below the 5-year average.



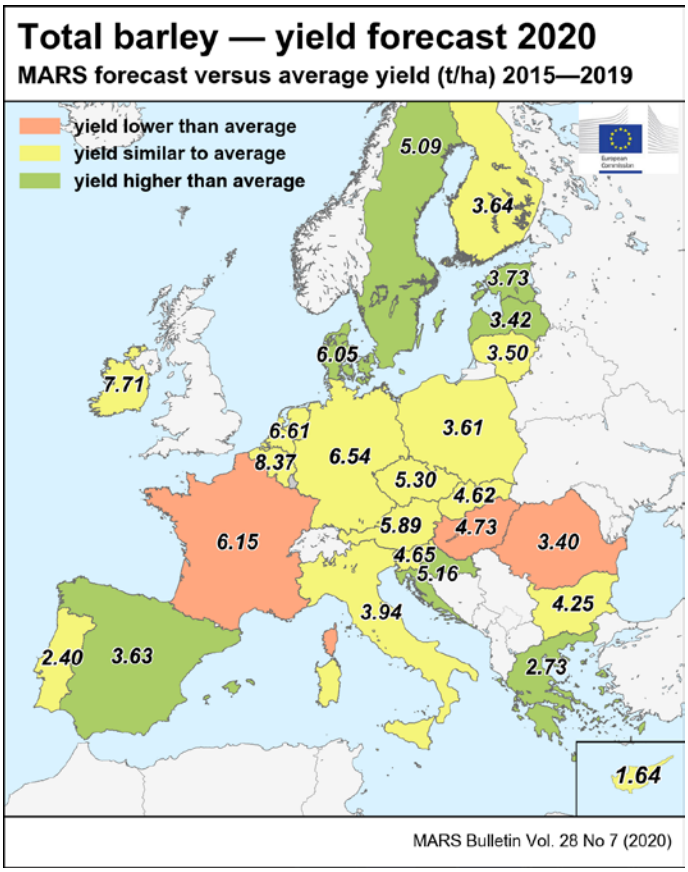


5. Crop yield forecast

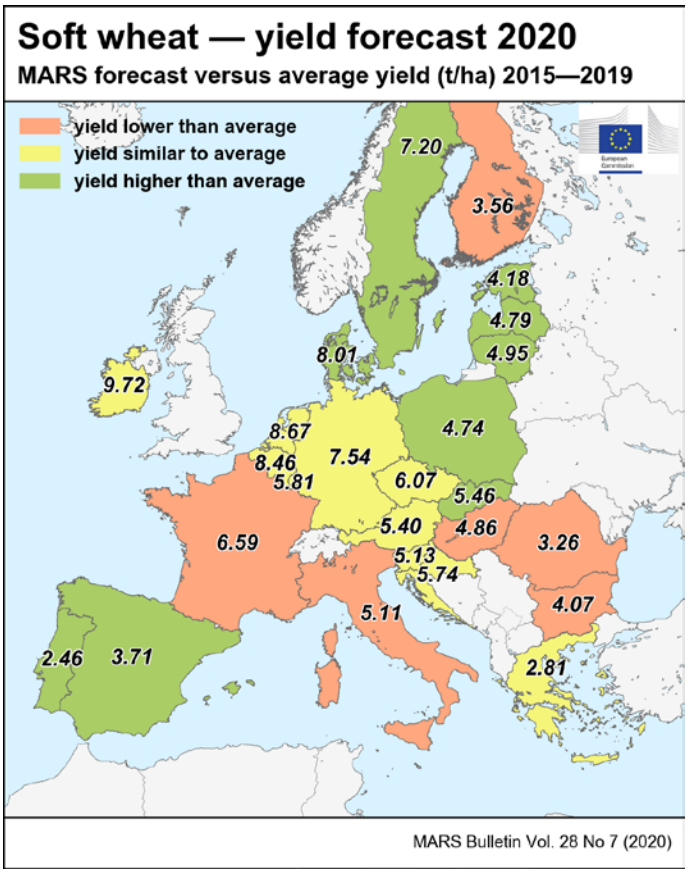
Country	Total wheat (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	5.54	5.77	**5.34**	– 3.6	– 7.5
AT	5.45	5.77	**5.35**	– 1.8	– 7.2
BE	8.47	9.23	**8.46**	– 0.1	– 8.4
BG	4.93	5.15	**4.07**	– 18	– 21
CY	—	—	**—**	—	—
CZ	5.93	5.73	**6.07**	+ 2.3	+ 5.8
DE	7.50	7.40	**7.52**	+ 0.3	+ 1.7
DK	7.66	8.19	**8.01**	+ 4.5	– 2.3
EE	3.97	5.07	**4.18**	+ 5.3	– 18
EL	2.62	2.65	**2.75**	+ 4.7	+ 3.6
ES	3.14	3.04	**3.57**	+ 14	+ 17
FI	3.91	4.56	**3.56**	– 8.9	– 22
FR	6.99	7.84	**6.52**	– 6.8	– 17
HR	5.54	5.53	**5.74**	+ 3.7	+ 3.9
HU	5.27	5.28	**4.84**	– 8.2	– 8.3
IE	9.84	9.99	**9.72**	– 1.3	– 2.8
IT	3.94	3.75	**3.73**	– 5.5	– 0.7
LT	4.48	4.29	**4.95**	+ 10	+ 15
LU	5.78	6.01	**5.81**	+ 0.5	– 3.4
LV	4.49	4.81	**4.79**	+ 6.6	– 0.5
MT	—	—	**—**	—	—
NL	8.90	9.44	**8.67**	– 2.6	– 8.2
PL	4.49	4.39	**4.74**	+ 5.7	+ 8.1
PT	2.19	2.23	**2.46**	+ 12	+ 10
RO	4.44	4.80	**3.26**	– 27	– 32
SE	6.55	7.40	**7.20**	+ 10	– 2.7
SI	4.99	5.23	**5.13**	+ 2.8	– 1.9
SK	5.15	4.81	**5.40**	+ 4.9	+ 12
UK	8.34	8.94	**7.80**	– 6.5	– 13



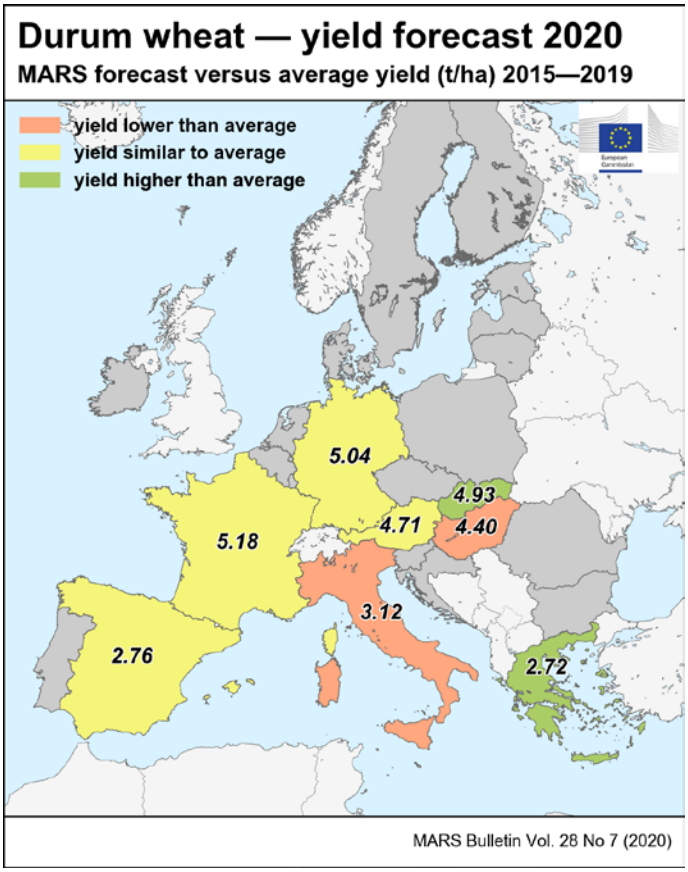
Country	Total barley (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	4.78	4.99	**4.89**	+ 2.3	– 2.1
AT	5.67	6.07	**5.89**	+ 4.0	– 2.9
BE	8.06	8.56	**8.37**	+ 3.9	– 2.2
BG	4.40	4.91	**4.25**	– 3.4	– 13
CY	1.67	2.70	**1.64**	– 1.8	– 39
CZ	5.33	5.38	**5.30**	– 0.7	– 1.5
DE	6.66	6.78	**6.54**	– 1.8	– 3.6
DK	5.60	6.29	**6.05**	+ 7.9	– 3.9
EE	3.45	4.09	**3.73**	+ 8.2	– 8.8
EL	2.60	2.71	**2.73**	+ 4.9	+ 0.9
ES	2.93	2.76	**3.63**	+ 24	+ 32
FI	3.72	4.23	**3.64**	– 2.3	– 14
FR	6.45	7.08	**6.15**	– 4.6	– 13
HR	4.79	5.18	**5.16**	+ 7.8	– 0.5
HU	5.07	5.54	**4.73**	– 6.8	– 15
IE	8.01	8.66	**7.71**	– 3.7	– 11
IT	4.01	4.10	**3.94**	– 1.7	– 4.0
LT	3.36	3.37	**3.50**	+ 4.0	+ 3.9
LU	—	—	**—**	—	—
LV	3.19	3.43	**3.42**	+ 7.4	– 0.2
MT	—	—	**—**	—	—
NL	6.44	6.51	**6.61**	+ 2.6	+ 1.5
PL	3.56	3.46	**3.61**	+ 1.5	+ 4.3
PT	2.39	2.64	**2.40**	+ 0.4	– 9.3
RO	4.04	4.44	**3.40**	– 16	– 23
SE	4.68	5.31	**5.09**	+ 8.7	– 4.1
SI	4.65	4.85	**4.65**	+ 0.1	– 4.0
SK	4.66	4.81	**4.62**	– 1.0	– 4.0
UK	6.27	6.92	**5.93**	– 5.5	– 14



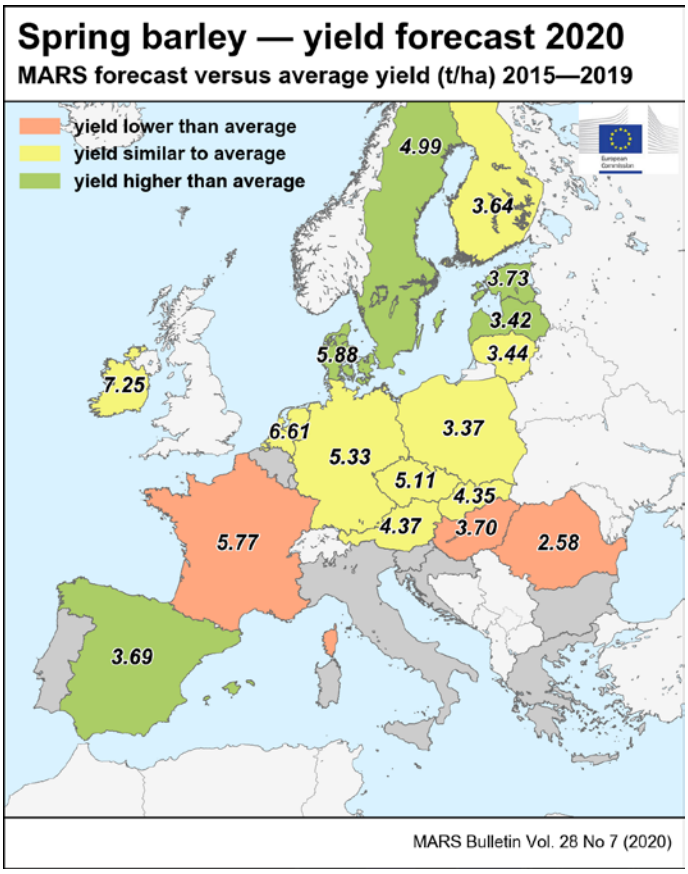
Country	Soft wheat (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	5.77	6.00	**5.54**	– 3.9	– 7.6
AT	5.52	5.83	**5.40**	– 2.2	– 7.5
BE	8.47	9.23	**8.46**	– 0.1	– 8.4
BG	4.93	5.15	**4.07**	– 18	– 21
CY	—	—	—	—	—
CZ	5.93	5.73	**6.07**	+ 2.3	+ 5.8
DE	7.52	7.42	**7.54**	+ 0.3	+ 1.7
DK	7.66	8.19	**8.01**	+ 4.5	– 2.3
EE	3.97	5.07	**4.18**	+ 5.3	– 18
EL	2.70	2.77	**2.81**	+ 4.0	+ 1.5
ES	3.23	3.09	**3.71**	+ 15	+ 20
FI	3.91	4.56	**3.56**	– 8.9	– 22
FR	7.11	7.92	**6.59**	– 7.3	– 17
HR	5.54	5.53	**5.74**	+ 3.7	+ 3.9
HU	5.29	5.32	**4.86**	– 8.3	– 8.6
IE	9.84	9.99	**9.72**	– 1.3	– 2.8
IT	5.41	5.14	**5.11**	– 5.6	– 0.6
LT	4.48	4.29	**4.95**	+ 10	+ 15
LU	5.78	6.01	**5.81**	+ 0.5	– 3.4
LV	4.49	4.81	**4.79**	+ 6.6	– 0.5
MT	—	—	—	—	—
NL	8.90	9.44	**8.67**	– 2.6	– 8.2
PL	4.49	4.39	**4.74**	+ 5.7	+ 8.1
PT	2.19	2.23	**2.46**	+ 12	+ 10
RO	4.44	4.80	**3.26**	– 27	– 32
SE	6.55	7.40	**7.20**	+ 10	– 2.7
SI	4.99	5.23	**5.13**	+ 2.8	– 1.9
SK	5.22	4.87	**5.46**	+ 4.6	+ 12
UK	8.34	8.94	**7.80**	– 6.5	– 13



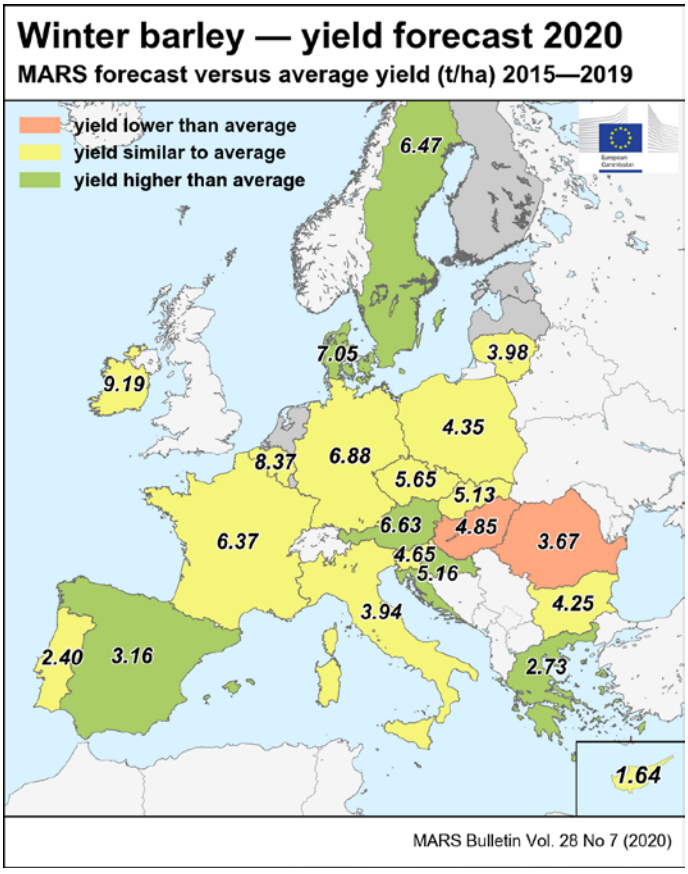
Country	Duram wheat (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	3.49	3.47	**3.35**	– 4.0	– 3.5
AT	4.58	4.83	**4.71**	+ 2.8	– 2.4
BE	—	—	—	—	—
BG	—	—	—	—	—
CY	—	—	—	—	—
CZ	—	—	—	—	—
DE	5.06	4.92	**5.04**	– 0.4	+ 2.5
DK	—	—	—	—	—
EE	—	—	—	—	—
EL	2.59	2.61	**2.72**	+ 5.0	+ 4.3
ES	2.73	2.76	**2.76**	+ 1.0	– 0.2
FI	—	—	—	—	—
FR	5.29	6.28	**5.18**	– 2.0	– 18
HR	—	—	—	—	—
HU	4.71	4.34	**4.40**	– 6.6	+ 1.4
IE	—	—	—	—	—
IT	3.34	3.15	**3.12**	– 6.6	– 0.9
LT	—	—	—	—	—
LU	—	—	—	—	—
LV	—	—	—	—	—
MT	—	—	—	—	—
NL	—	—	—	—	—
PL	—	—	—	—	—
PT	—	—	—	—	—
RO	—	—	—	—	—
SE	—	—	—	—	—
SI	—	—	—	—	—
SK	4.53	4.29	**4.93**	+ 8.7	+ 15
UK	—	—	—	—	—



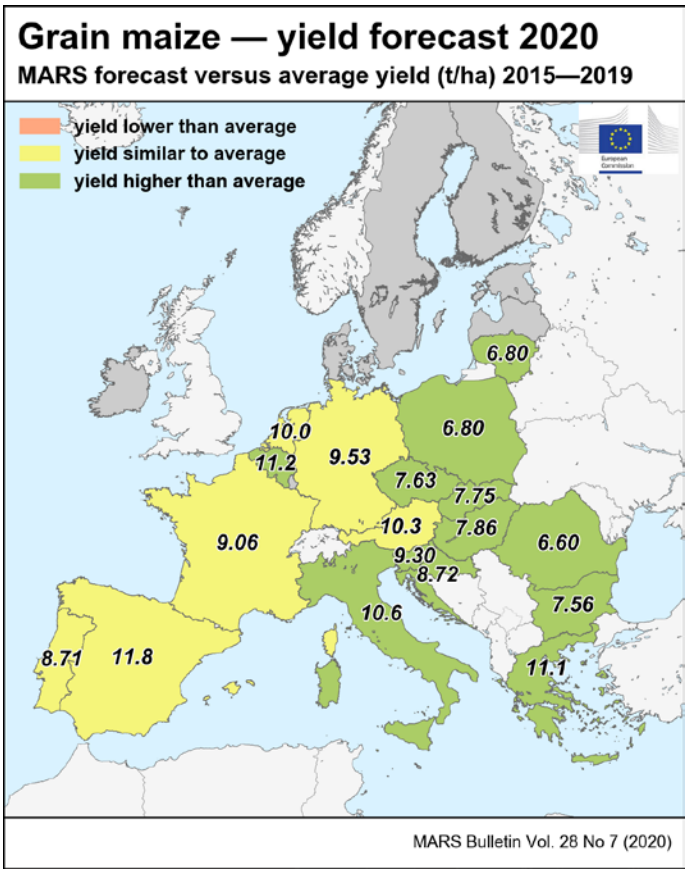
Country	Spring barley (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	4.02	4.13	**4.33**	+ 7.8	+ 5.1
AT	4.44	4.17	**4.37**	– 1.5	+ 4.8
BE	—	—	—	—	—
BG	—	—	—	—	—
CY	—	—	—	—	—
CZ	5.18	5.07	**5.11**	– 1.3	+ 0.8
DE	5.21	5.12	**5.33**	+ 2.2	+ 3.9
DK	5.44	6.14	**5.88**	+ 8.1	– 4.1
EE	3.45	4.09	**3.73**	+ 8.2	– 8.8
EL	—	—	—	—	—
ES	3.01	2.80	**3.69**	+ 23	+ 32
FI	3.72	4.23	**3.64**	– 2.3	– 14
FR	6.22	7.04	**5.77**	– 7.3	– 18
HR	—	—	—	—	—
HU	3.96	4.56	**3.70**	– 6.6	– 19
IE	7.27	8.00	**7.25**	– 0.2	– 9.4
IT	—	—	—	—	—
LT	3.34	3.29	**3.44**	+ 3.1	+ 4.4
LU	—	—	—	—	—
LV	3.19	3.43	**3.42**	+ 7.4	– 0.2
MT	—	—	—	—	—
NL	6.44	6.51	**6.61**	+ 2.6	+ 1.5
PL	3.37	3.21	**3.37**	– 0.1	+ 5.0
PT	—	—	—	—	—
RO	2.73	2.81	**2.58**	– 5.4	– 8.2
SE	4.61	5.19	**4.99**	+ 8.2	– 3.9
SI	—	—	—	—	—
SK	4.45	4.57	**4.35**	– 2.1	– 4.8
UK	5.74	6.34	**5.67**	– 1.2	– 11



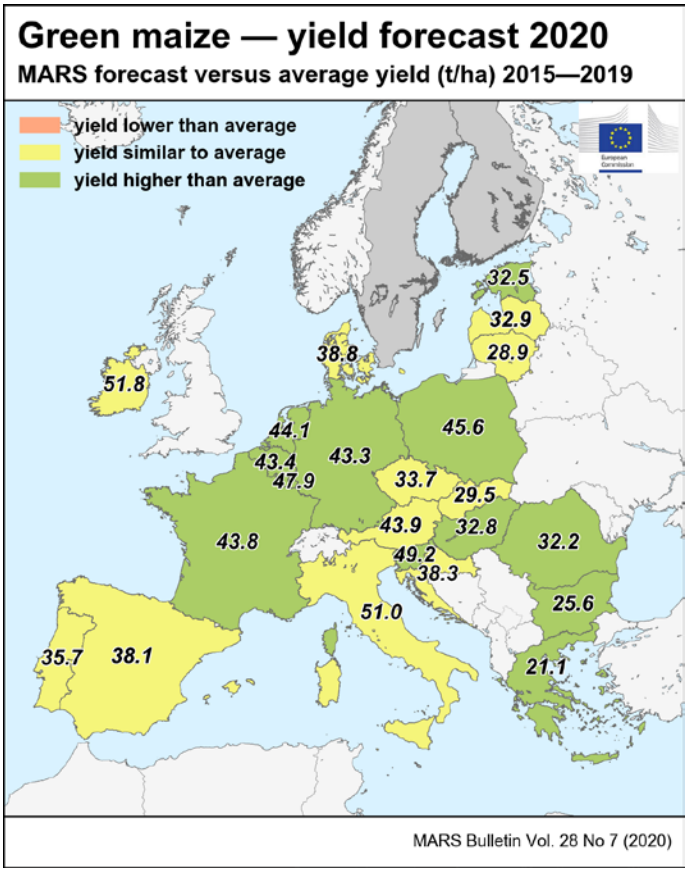
Country	Winter barley (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	5.75	6.11	**5.64**	– 1.9	– 7.8
AT	6.34	6.74	**6.63**	+ 4.6	– 1.5
BE	8.06	8.56	**8.37**	+ 3.9	– 2.2
BG	4.40	4.91	**4.25**	– 3.4	– 13
CY	1.67	2.70	**1.64**	– 1.8	– 39
CZ	5.68	5.98	**5.65**	– 0.6	– 5.6
DE	7.09	7.22	**6.88**	– 2.9	– 4.7
DK	6.47	7.03	**7.05**	+ 9.0	+ 0.3
EE	—	—	—	—	—
EL	2.60	2.71	**2.73**	+ 4.9	+ 0.9
ES	2.41	2.31	**3.16**	+ 31	+ 37
FI	—	—	—	—	—
FR	6.54	7.09	**6.37**	– 2.5	– 10
HR	4.79	5.18	**5.16**	+ 7.8	– 0.5
HU	5.28	5.65	**4.85**	– 8.2	– 14
IE	9.25	9.42	**9.19**	– 0.7	– 2.5
IT	4.01	4.10	**3.94**	– 1.7	– 4.0
LT	3.90	3.89	**3.98**	+ 2.0	+ 2.3
LU	—	—	—	—	—
LV	—	—	—	—	—
MT	—	—	—	—	—
NL	—	—	—	—	—
PL	4.26	4.30	**4.35**	+ 2.3	+ 1.2
PT	2.39	2.64	**2.40**	+ 0.4	– 9.3
RO	4.48	4.91	**3.67**	– 18	– 25
SE	5.91	6.85	**6.47**	+ 10	– 5.5
SI	4.65	4.85	**4.65**	+ 0.1	– 4.0
SK	5.21	5.29	**5.13**	– 1.4	– 3.1
UK	7.16	7.84	**6.72**	– 6.3	– 14



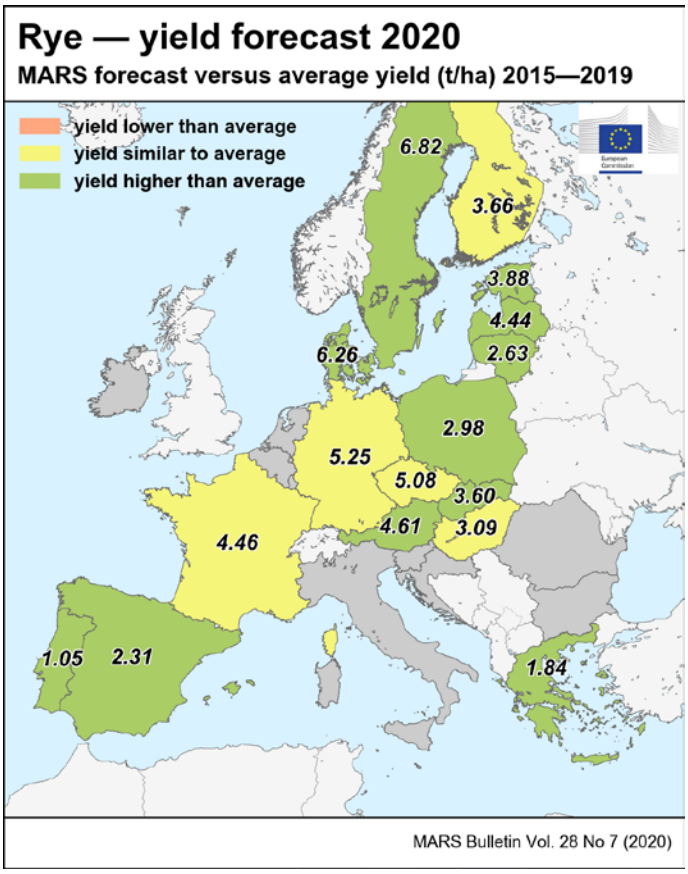
Country	Grain maize (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	7.58	7.90	**8.21**	+ 8.3	+ 3.9
AT	10.1	10.4	**10.3**	+ 2.0	– 1.3
BE	10.4	10.5	**11.2**	+ 6.8	+ 6.7
BG	6.48	7.11	**7.56**	+ 17	+ 6.2
CY	—	—	**—**	—	—
CZ	7.30	8.29	**7.63**	+ 4.5	– 8.0
DE	9.21	8.81	**9.53**	+ 3.5	+ 8.2
DK	—	—	**—**	—	—
EE	—	—	**—**	—	—
EL	10.3	10.6	**11.1**	+ 7.8	+ 4.7
ES	11.6	11.8	**11.8**	+ 2.2	+ 0.3
FI	—	—	**—**	—	—
FR	8.85	8.58	**9.06**	+ 2.4	+ 5.6
HR	7.87	9.01	**8.72**	+ 11	– 3.2
HU	7.50	8.05	**7.86**	+ 4.8	– 2.4
IE	—	—	**—**	—	—
IT	10.2	10.0	**10.6**	+ 4.4	+ 6.5
LT	6.39	7.67	**6.80**	+ 6.4	– 11
LU	—	—	**—**	—	—
LV	—	—	**—**	—	—
MT	—	—	**—**	—	—
NL	9.78	9.75	**10.0**	+ 2.3	+ 2.6
PL	6.09	5.62	**6.80**	+ 12	+ 21
PT	8.52	8.98	**8.71**	+ 2.2	– 3.1
RO	5.52	6.52	**6.60**	+ 20	+ 1.1
SE	—	—	**—**	—	—
SI	8.85	9.27	**9.30**	+ 5.0	+ 0.3
SK	6.94	7.39	**7.75**	+ 12	+ 4.9
UK	—	—	**—**	—	—



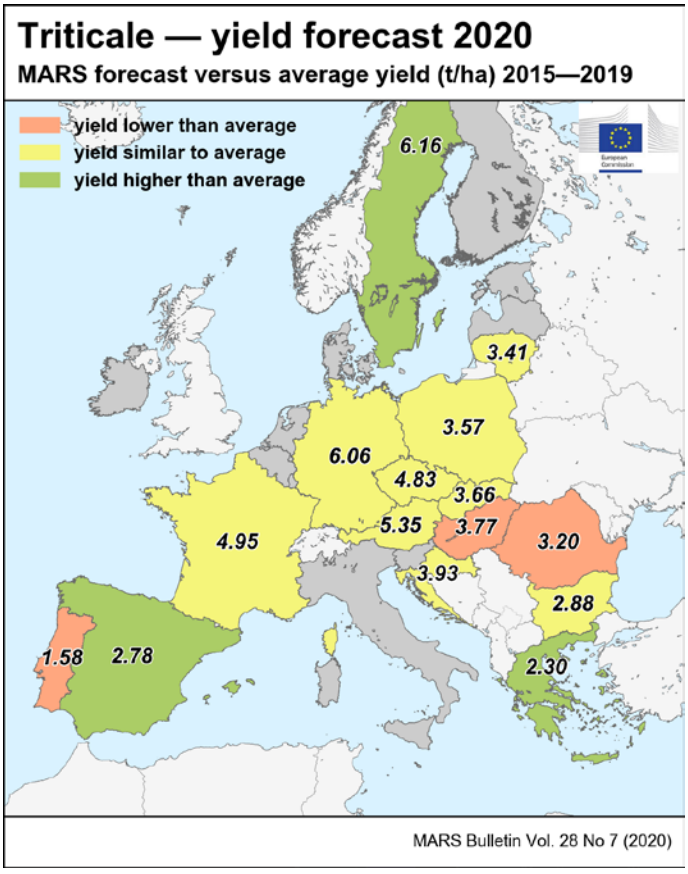
Country	Green maize (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU*	40.2	39.2	**42.5**	+ 5.8	+ 8.3
AT	45.4	46.1	**43.9**	– 3.2	– 4.9
BE	40.3	41.0	**43.4**	+ 7.6	+ 5.8
BG	21.5	21.4	**25.6**	+ 19	+ 20
CY	—	—	**—**	—	—
CZ	34.0	35.5	**33.7**	– 0.9	– 5.1
DE	41.2	39.0	**43.3**	+ 5.3	+ 11
DK	37.4	44.5	**38.8**	+ 3.9	– 13
EE	30.9	35.4	**32.5**	+ 5.0	– 8.4
EL	20.2	21.0	**21.1**	+ 4.5	+ 0.9
ES	39.6	44.0	**38.1**	– 3.7	– 13
FI	—	—	**—**	—	—
FR	39.7	37.7	**43.8**	+ 10	+ 16
HR	37.6	39.0	**38.3**	+ 1.7	– 1.9
HU	28.7	32.1	**32.8**	+ 14	+ 2.2
IE	50.0	51.3	**51.8**	+ 3.6	+ 0.9
IT	50.4	50.9	**51.0**	+ 1.1	+ 0.2
LT	29.0	30.7	**28.9**	– 0.2	– 6.0
LU	44.2	39.4	**47.9**	+ 8.4	+ 22
LV	32.1	36.1	**32.9**	+ 2.5	– 9.1
MT	—	—	**—**	—	—
NL	41.5	42.7	**44.1**	+ 6.4	+ 3.3
PL	43.5	40.6	**45.6**	+ 4.9	+ 12
PT	36.8	35.4	**35.7**	– 3.1	+ 0.8
RO	27.8	30.7	**32.2**	+ 16	+ 4.8
SE	—	—	**—**	—	—
SI	46.3	46.2	**49.2**	+ 6.3	+ 6.4
SK	28.9	30.0	**29.5**	+ 2.3	– 1.6
UK	—	—	**—**	—	—



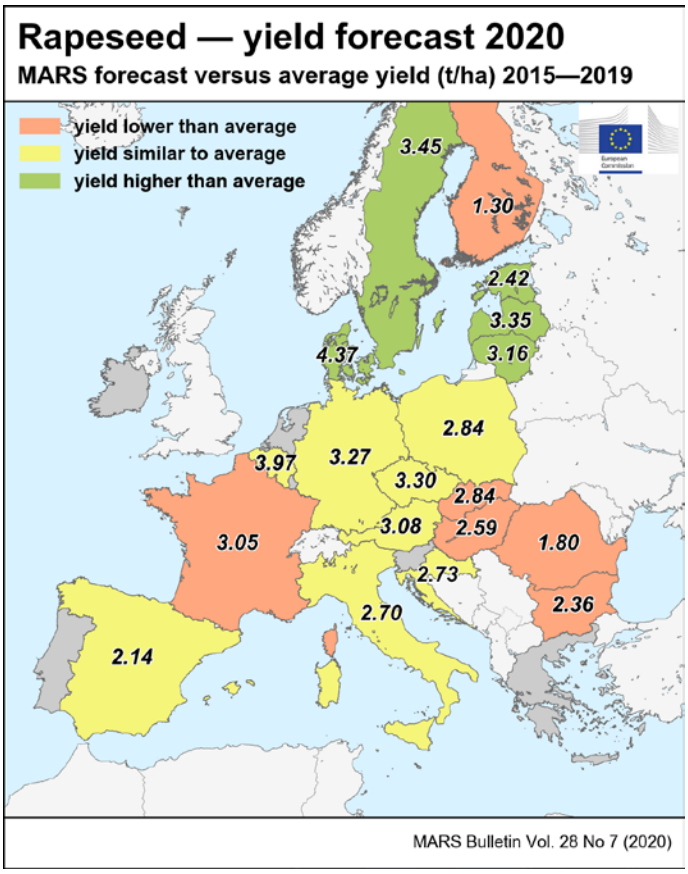
Country	Rye (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	3.75	3.87	**3.96**	+ 5.7	+ 2.4
AT	4.43	4.60	**4.61**	+ 4.1	+ 0.3
BE	—	—	—	—	—
BG	—	—	—	—	—
CY	—	—	—	—	—
CZ	4.93	5.06	**5.08**	+ 3.1	+ 0.3
DE	5.12	5.24	**5.25**	+ 2.5	+ 0.2
DK	5.89	6.10	**6.26**	+ 6.3	+ 2.6
EE	3.61	4.12	**3.88**	+ 7.5	– 5.7
EL	1.72	1.86	**1.84**	+ 7.0	– 1.1
ES	2.10	1.82	**2.31**	+ 9.9	+ 27
FI	3.79	4.82	**3.66**	– 3.2	– 24
FR	4.52	4.77	**4.46**	– 1.3	– 6.5
HR	—	—	—	—	—
HU	3.14	3.37	**3.09**	– 1.6	– 8.3
IE	—	—	—	—	—
IT	—	—	—	—	—
LT	2.51	2.63	**2.63**	+ 4.6	– 0.1
LU	—	—	—	—	—
LV	4.14	4.43	**4.44**	+ 7.3	+ 0.4
MT	—	—	—	—	—
NL	—	—	—	—	—
PL	2.77	2.72	**2.98**	+ 7.6	+ 9.4
PT	0.95	1.06	**1.05**	+ 11	– 1.0
RO	—	—	—	—	—
SE	6.17	6.76	**6.82**	+ 10	+ 0.8
SI	—	—	—	—	—
SK	3.44	3.44	**3.60**	+ 4.6	+ 4.5
UK	2.22	2.38	**2.15**	– 3.1	– 9.7



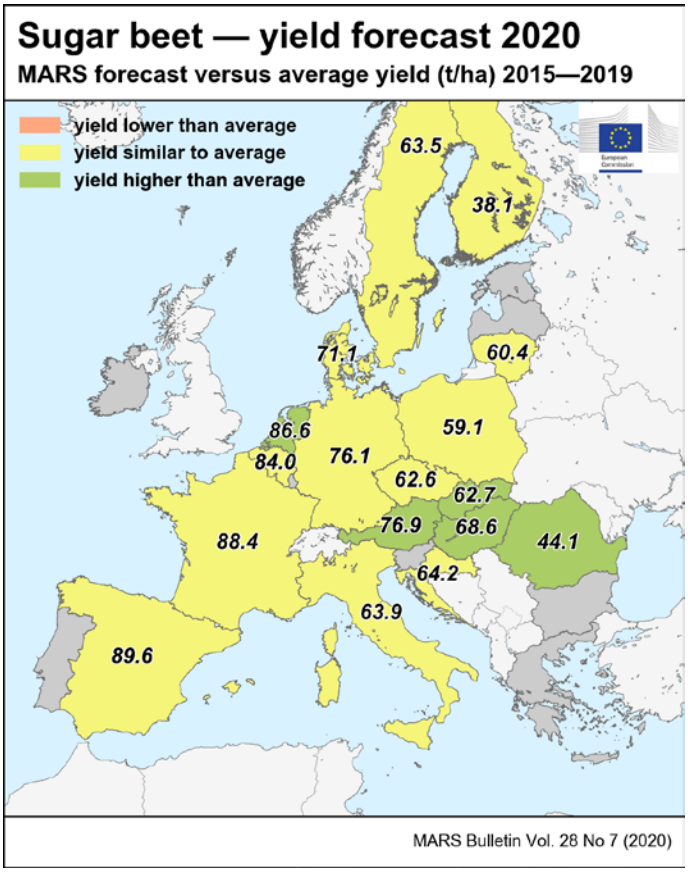
Country	Triticale (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	4.04	4.05	**4.03**	– 0.1	– 0.5
AT	5.36	5.49	**5.35**	– 0.2	– 2.6
BE	—	—	—	—	—
BG	2.96	2.84	**2.88**	– 2.6	+ 1.5
CY	—	—	—	—	—
CZ	4.79	4.93	**4.83**	+ 0.7	– 2.0
DE	6.01	6.13	**6.06**	+ 0.8	– 1.1
DK	—	—	—	—	—
EE	—	—	—	—	—
EL	2.11	2.24	**2.30**	+ 8.6	+ 2.3
ES	2.35	2.32	**2.78**	+ 18	+ 19
FI	—	—	—	—	—
FR	5.04	5.44	**4.95**	– 1.8	– 9.1
HR	3.93	3.98	**3.93**	+ 0.0	– 1.1
HU	3.96	3.95	**3.77**	– 4.8	– 4.6
IE	—	—	—	—	—
IT	—	—	—	—	—
LT	3.36	3.29	**3.41**	+ 1.4	+ 3.4
LU	—	—	—	—	—
LV	—	—	—	—	—
MT	—	—	—	—	—
NL	—	—	—	—	—
PL	3.55	3.49	**3.57**	+ 0.5	+ 2.5
PT	1.67	1.47	**1.58**	– 5.6	+ 7.8
RO	3.90	4.12	**3.20**	– 18	– 22
SE	5.58	6.36	**6.16**	+ 11	– 3.1
SI	—	—	—	—	—
SK	3.63	3.53	**3.66**	+ 0.7	+ 3.8
UK	4.33	4.48	**4.25**	– 1.8	– 5.2



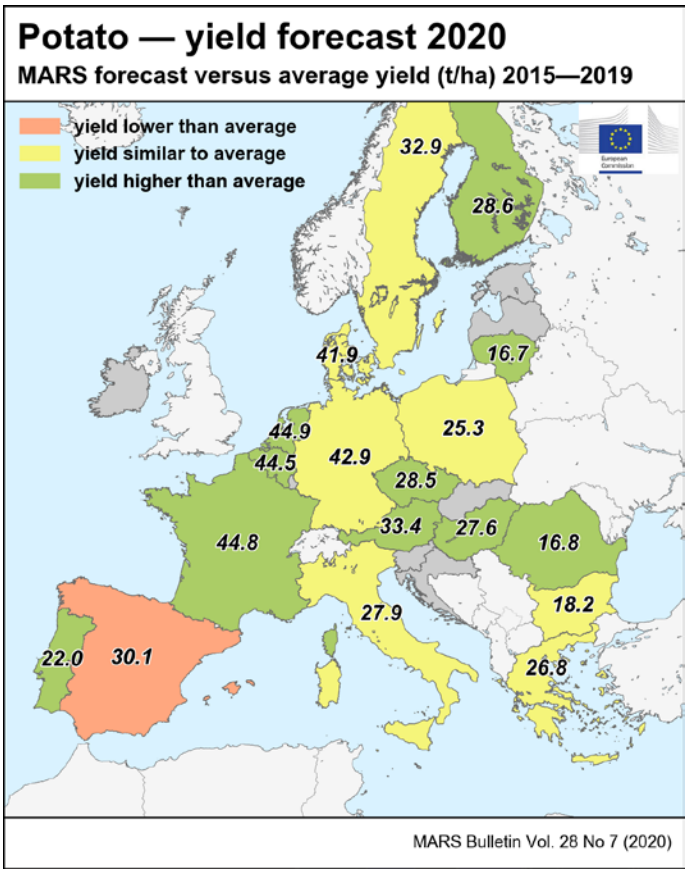
Country	Rape and turnip rape (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	3.08	2.96	**2.97**	– 3.8	+ 0.2
AT	3.08	2.98	**3.08**	– 0.2	+ 3.2
BE	3.87	3.52	**3.97**	+ 2.6	+ 13
BG	2.76	2.83	**2.36**	– 14	– 17
CY	—	—	—	—	—
CZ	3.26	3.05	**3.30**	+ 1.4	+ 8.4
DE	3.39	3.30	**3.27**	– 3.5	– 0.9
DK	3.92	4.40	**4.37**	+ 12	– 0.9
EE	2.14	2.64	**2.42**	+ 13	– 8.5
EL	—	—	—	—	—
ES	2.10	2.13	**2.14**	+ 1.7	+ 0.4
FI	1.49	1.33	**1.30**	– 13	– 2.0
FR	3.33	3.13	**3.05**	– 8.5	– 2.6
HR	2.78	2.51	**2.73**	– 1.9	+ 8.7
HU	3.08	2.97	**2.59**	– 16	– 13
IE	—	—	—	—	—
IT	2.60	2.66	**2.70**	+ 3.9	+ 1.8
LT	2.73	2.85	**3.16**	+ 16	+ 11
LU	—	—	—	—	—
LV	2.75	2.93	**3.35**	+ 22	+ 14
MT	—	—	—	—	—
NL	—	—	—	—	—
PL	2.77	2.71	**2.84**	+ 2.8	+ 4.8
PT	—	—	—	—	—
RO	2.57	2.04	**1.80**	– 30	– 12
SE	3.18	3.62	**3.45**	+ 8.6	– 4.7
SI	—	—	—	—	—
SK	3.02	2.84	**2.84**	– 5.8	+ 0.0
UK	3.55	3.31	**3.36**	– 5.5	+ 1.5



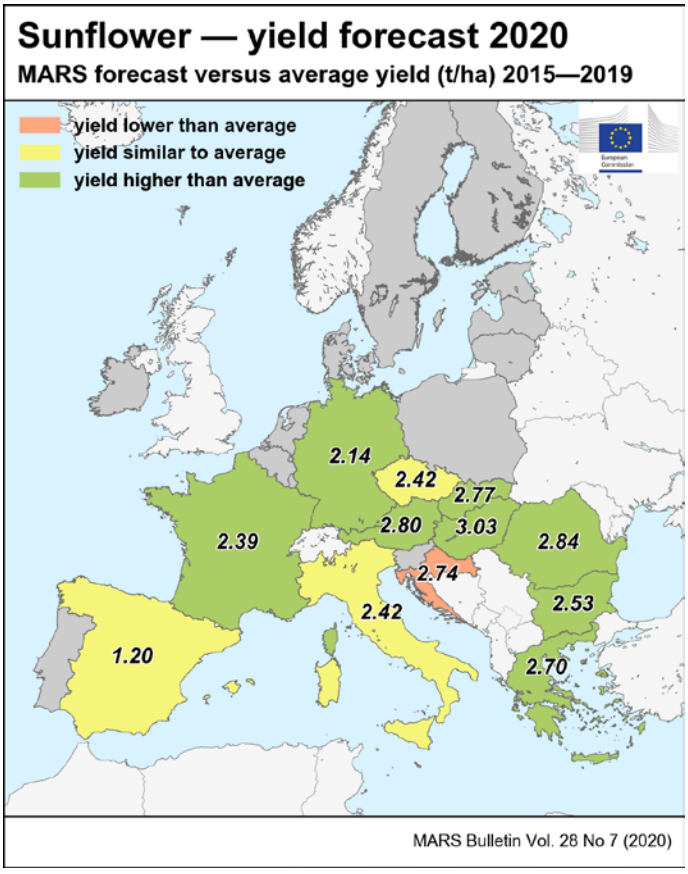
Country	Sugar beets (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	74.5	N/A	**75.9**	+ 1.8	N/A
AT	70.8	70.5	**76.9**	+ 8.7	+ 9.1
BE	84.9	88.2	**84.0**	– 1.1	– 4.7
BG	—	—	—	—	—
CY	—	—	—	—	—
CZ	62.7	61.8	**62.6**	– 0.0	+ 1.3
DE	73.6	72.7	**76.1**	+ 3.4	+ 4.6
DK	69.9	80.7	**71.1**	+ 1.7	– 12
EE	—	—	—	—	—
EL	—	—	—	—	—
ES	91.0	96.7	**89.6**	– 1.5	– 7.4
FI	37.9	47.6	**38.1**	+ 0.6	– 20
FR	87.0	84.7	**88.4**	+ 1.7	+ 4.4
HR	61.9	61.2	**64.2**	+ 3.8	+ 5.0
HU	62.3	58.4	**68.6**	+ 10	+ 17
IE	—	—	—	—	—
IT	64.1	N/A	**63.9**	– 0.3	N/A
LT	59.3	71.0	**60.4**	+ 1.7	– 15
LU	—	—	—	—	—
LV	—	—	—	—	—
MT	—	—	—	—	—
NL	83.1	83.9	**86.6**	+ 4.2	+ 3.2
PL	60.9	57.5	**59.1**	– 2.9	+ 2.8
PT	—	—	—	—	—
RO	38.4	31.1	**44.1**	+ 15	+ 42
SE	63.6	74.0	**63.5**	– 0.2	– 14
SI	—	—	—	—	—
SK	59.7	57.6	**62.7**	+ 5.1	+ 8.9
UK	70.4	69.0	**72.0**	+ 2.2	+ 4.3



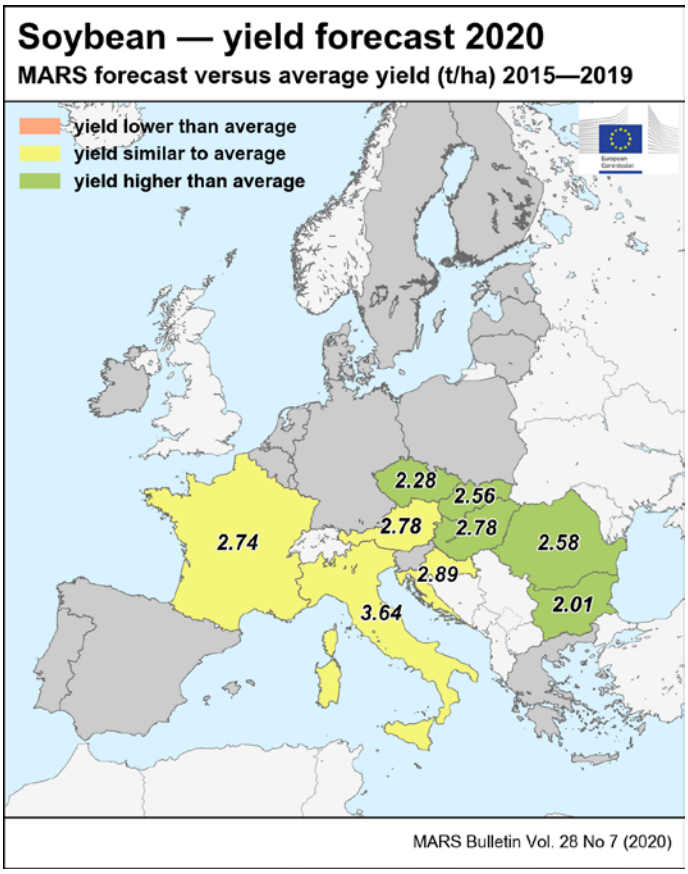
Country	Potato (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	32.4	N/A	**34.2**	+ 5.5	N/A
AT	30.3	31.3	**33.4**	+ 10	+ 6.5
BE	41.0	41.1	**44.5**	+ 8.4	+ 8.4
BG	17.6	21.3	**18.2**	+ 3.2	– 15
CY	—	—	**—**	—	—
CZ	26.9	27.2	**28.5**	+ 6.1	+ 4.9
DE	41.8	39.0	**42.9**	+ 2.6	+ 10
DK	41.0	42.5	**41.9**	+ 2.1	– 1.4
EE	—	—	**—**	—	—
EL	27.6	27.7	**26.8**	– 2.8	– 3.2
ES	31.5	33.1	**30.1**	– 4.4	– 9.0
FI	27.4	28.9	**28.6**	+ 4.3	– 1.1
FR	41.2	41.4	**44.8**	+ 8.7	+ 8.2
HR	—	—	**—**	—	—
HU	24.2	25.0	**27.6**	+ 14	+ 10
IE	—	—	**—**	—	—
IT	28.3	N/A	**27.9**	– 1.5	N/A
LT	15.8	18.1	**16.7**	+ 5.5	– 7.8
LU	—	—	**—**	—	—
LV	—	—	**—**	—	—
MT	—	—	**—**	—	—
NL	42.0	42.0	**44.9**	+ 6.9	+ 6.9
PL	24.8	21.4	**25.3**	+ 1.8	+ 18
PT	20.8	22.7	**22.0**	+ 5.8	– 2.9
RO	15.6	14.8	**16.8**	+ 7.0	+ 13
SE	34.2	35.8	**32.9**	– 3.9	– 8.2
SI	—	—	**—**	—	—
SK	—	—	**—**	—	—
UK	40.5	36.5	**41.2**	+ 1.8	+ 13



Country	Sunflower (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	2.25	2.32	**2.46**	+ 9.3	+ 6.0
AT	2.68	3.00	**2.80**	+ 4.6	– 6.8
BE	—	—	**—**	—	—
BG	2.28	2.35	**2.53**	+ 11	+ 7.7
CY	—	—	**—**	—	—
CZ	2.43	2.44	**2.42**	– 0.5	– 0.7
DE	2.02	2.04	**2.14**	+ 6.1	+ 4.7
DK	—	—	**—**	—	—
EE	—	—	**—**	—	—
EL	2.59	2.80	**2.70**	+ 4.1	– 3.7
ES	1.15	1.12	**1.20**	+ 3.7	+ 6.3
FI	—	—	**—**	—	—
FR	2.27	2.15	**2.39**	+ 5.4	+ 11
HR	2.90	3.02	**2.74**	– 5.5	– 9.2
HU	2.88	3.00	**3.03**	+ 5.2	+ 1.0
IE	—	—	**—**	—	—
IT	2.37	2.47	**2.42**	+ 1.9	– 2.1
LT	—	—	**—**	—	—
LU	—	—	**—**	—	—
LV	—	—	**—**	—	—
MT	—	—	**—**	—	—
NL	—	—	**—**	—	—
PL	—	—	**—**	—	—
PT	—	—	**—**	—	—
RO	2.47	2.64	**2.84**	+ 15	+ 7.5
SE	—	—	**—**	—	—
SI	—	—	**—**	—	—
SK	2.66	2.64	**2.77**	+ 4.1	+ 5.0
UK	—	—	**—**	—	—



Country	Soybean (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
EU	2.92	3.02	**2.96**	+ 1.4	– 2.2
AT	2.86	3.11	**2.78**	– 2.8	– 11
BE	—	—	**—**	—	—
BG	1.36	1.87	**2.01**	+ 47	+ 7.3
CY	—	—	**—**	—	—
CZ	2.10	2.27	**2.28**	+ 8.5	+ 0.4
DE	—	—	**—**	—	—
DK	—	—	**—**	—	—
EE	—	—	**—**	—	—
EL	—	—	**—**	—	—
ES	—	—	**—**	—	—
FI	—	—	**—**	—	—
FR	2.66	2.62	**2.74**	+ 2.9	+ 4.4
HR	2.79	3.15	**2.89**	+ 3.6	– 8.5
HU	2.60	2.78	**2.78**	+ 7.1	+ 0.0
IE	—	—	**—**	—	—
IT	3.61	3.66	**3.64**	+ 0.6	– 0.7
LT	—	—	**—**	—	—
LU	—	—	**—**	—	—
LV	—	—	**—**	—	—
MT	—	—	**—**	—	—
NL	—	—	**—**	—	—
PL	—	—	**—**	—	—
PT	—	—	**—**	—	—
RO	2.39	2.55	**2.58**	+ 8.2	+ 1.4
SE	—	—	**—**	—	—
SI	—	—	**—**	—	—
SK	2.22	2.46	**2.56**	+ 15	+ 4.0
UK	—	—	**—**	—	—



Country	Wheat (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
BY	3.51	3.83	**3.73**	+ 6.2	– 2.6
TR	2.78	2.78	**2.90**	+ 4.3	+ 4.5
UA	4.01	4.16	**3.98**	– 1.0	– 4.4

Country	Barley (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
BY	3.08	3.50	**3.46**	+ 12	– 1.2
TR	2.70	2.64	**2.80**	+ 3.8	+ 6.1
UA	3.19	3.42	**3.23**	+ 1.3	– 5.6

Country	Grain maize (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
BY	5.86	6.00	**5.62**	– 4.2	– 6.4
TR	9.40	9.40	**9.64**	+ 2.5	+ 2.6
UA	6.59	7.19	**7.49**	+ 14	+ 4.2

Country	Soybean (t/ha)				
	Avg 5yrs	2019	MARS 2020 forecasts	%20/5yrs	%20/19
BY	—	—	**—**	—	—
TR	4.33	4.25	**4.58**	+ 5.7	+ 7.7
UA	2.19	2.29	**2.45**	+ 12	+ 6.8

NB: Yields are forecast for crops with more than 10 000 ha per country with sufficently long and coherent yield time series.

Sources: 2015-2020 data come from DG Agriculture and Rural Development short-term-outlook data (dated June 2020, received on 8.7.2020), Eurostat Eurobase (last update: 10.7.2020) and EES (last update: 15.11.2017).

Non-EU 2015-2019 data come from USDA, Turkish Statistical Institute (TurkStat), Eurostat Eurobase (last update: 10.7.2020), State Statistics Service of Ukraine, FAO and PSD-online.

2020 yields come from MARS Crop Yield Forecasting System (output up to 20.7.2020).

EU aggregate after 1.2.2020 is reported.

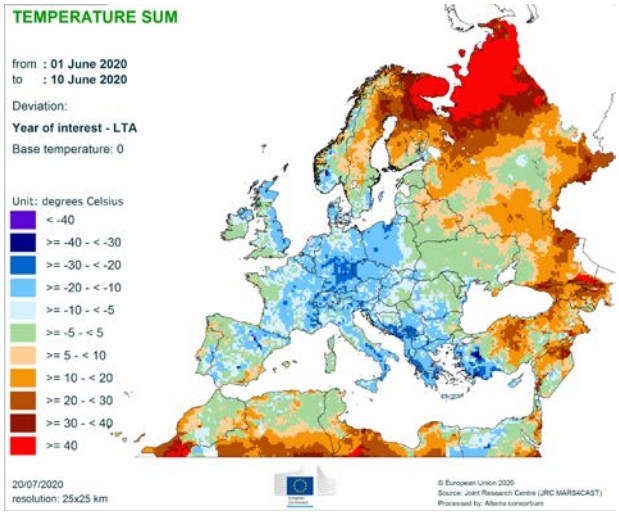
N/A = Data not available.

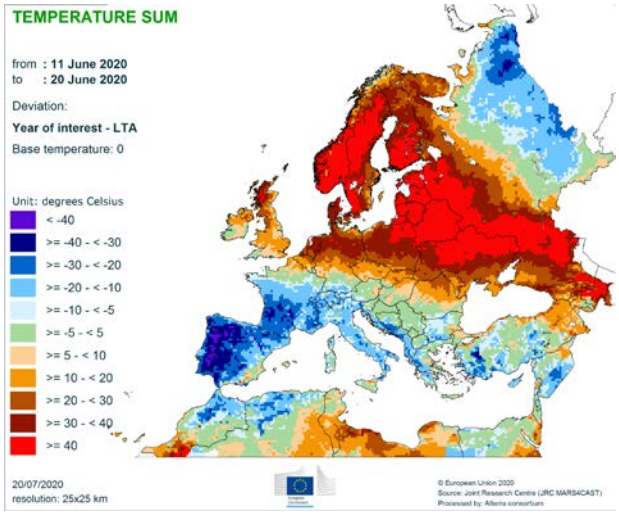
The column header '%20/5yrs' stands for the 2020 change with respect to the 5-year average (%). Similarly, '%20/19' stands for the 2020 change with respect to 2019 (%).

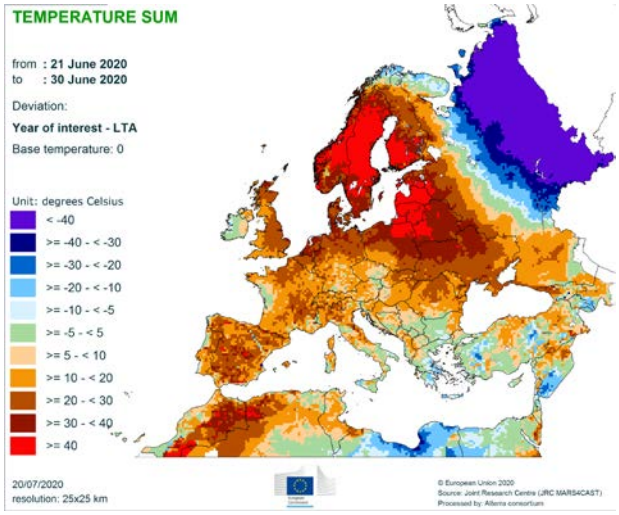
* The EU figures do not include green maize forecasts for Sweden and the United Kingdom since recent data on yields were not consistent.

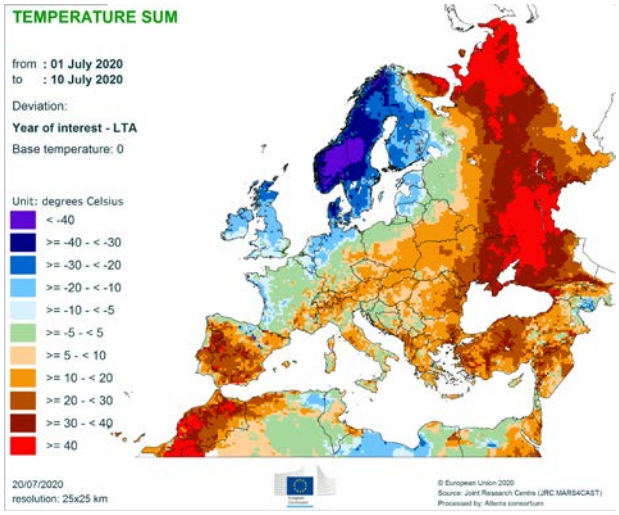
6. Atlas

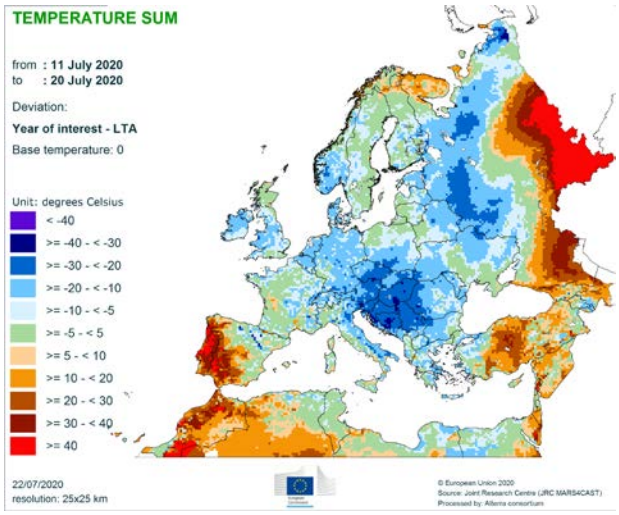
Temperature regime



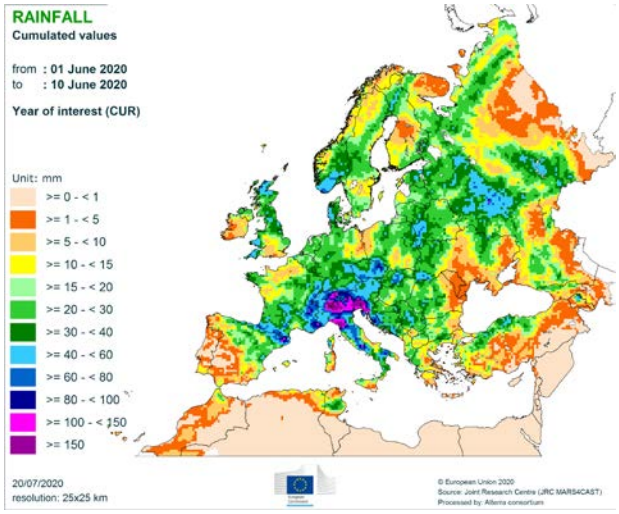


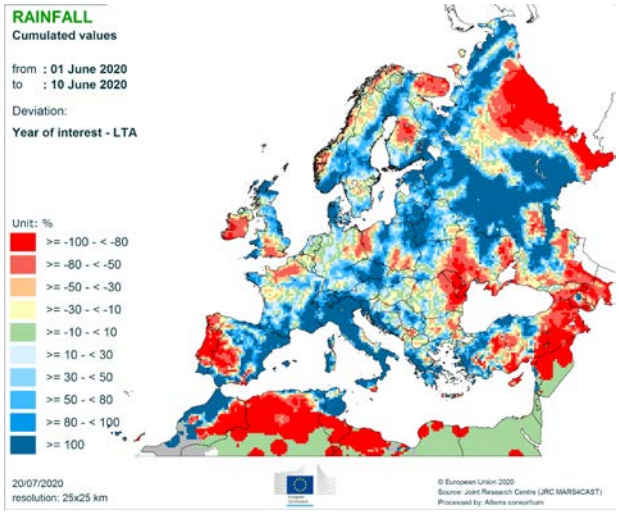


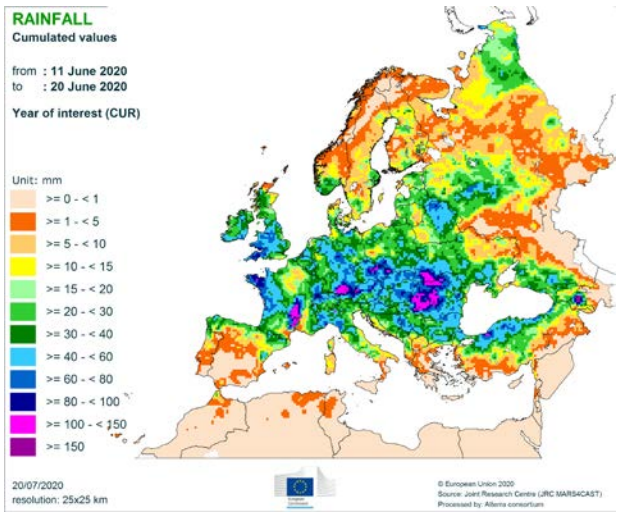


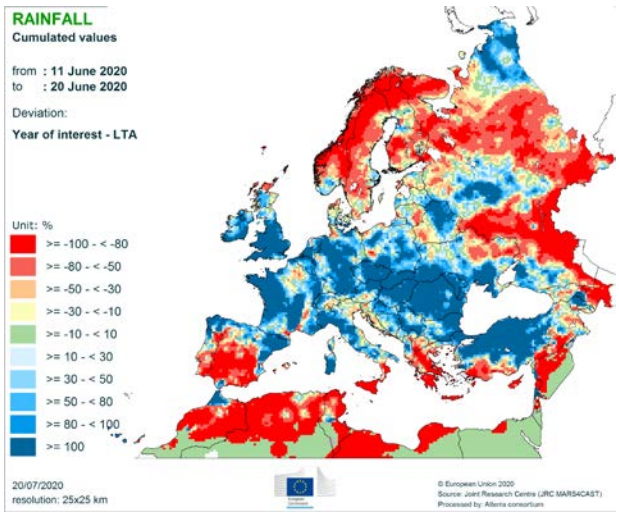


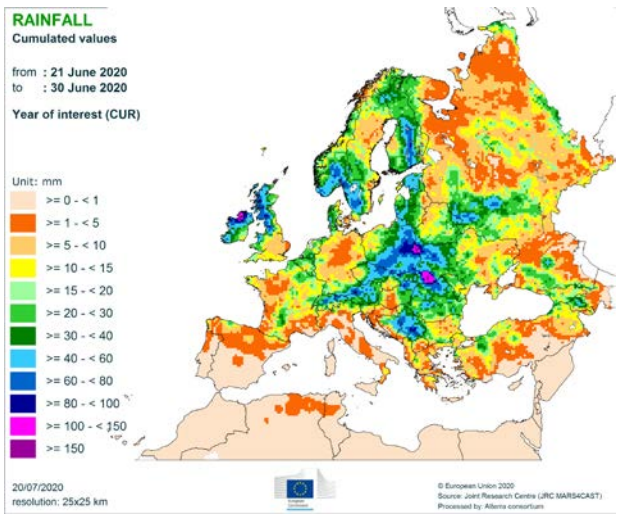
Precipitation

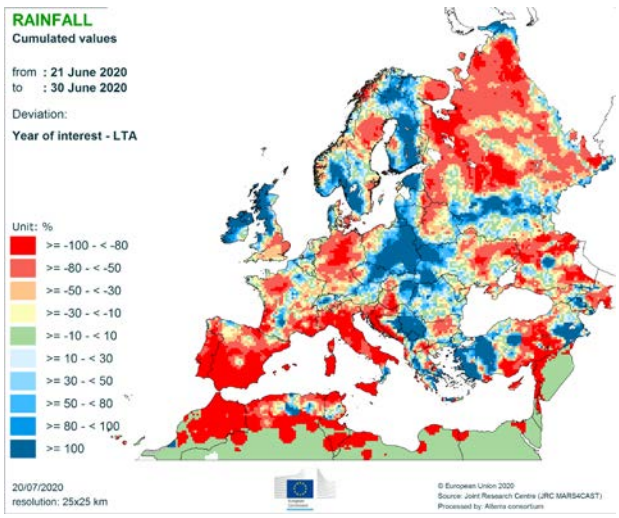


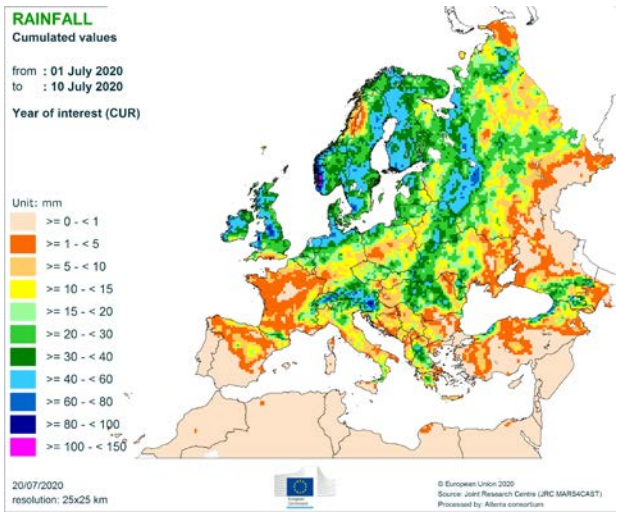


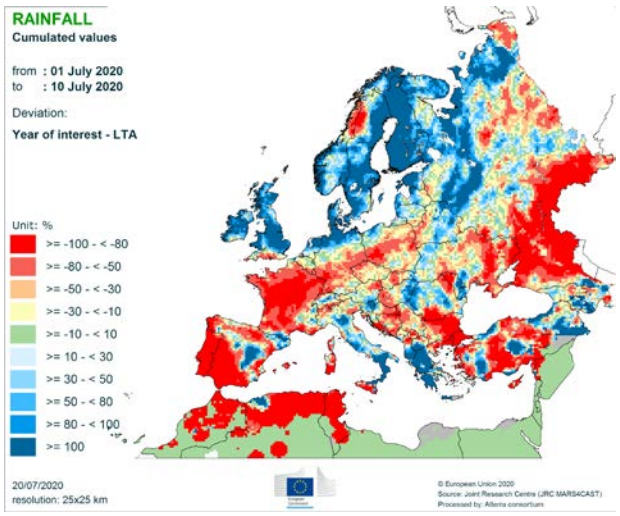


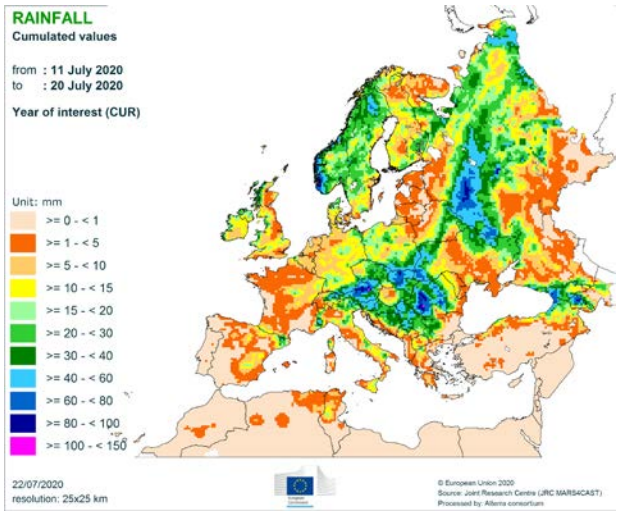


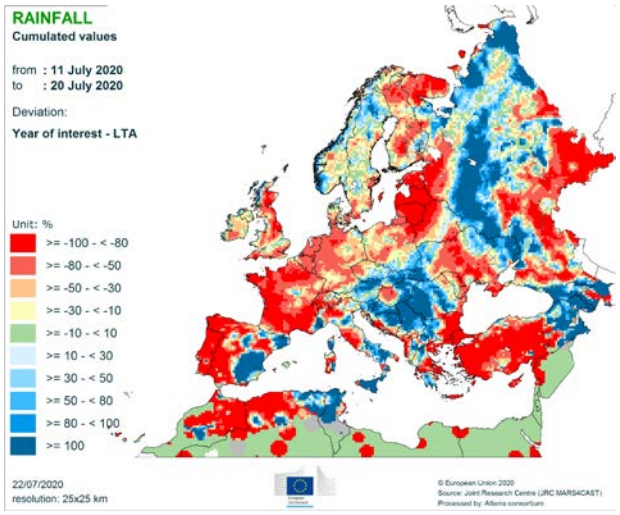




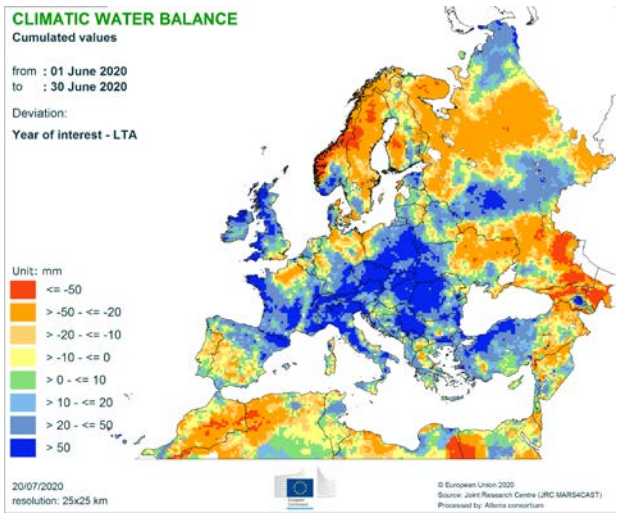


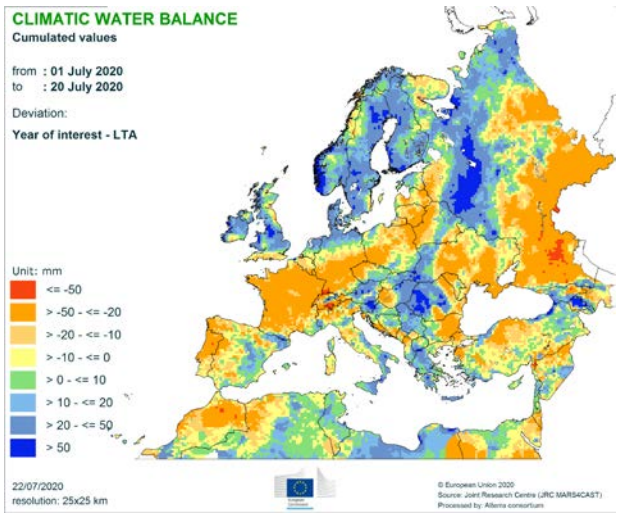




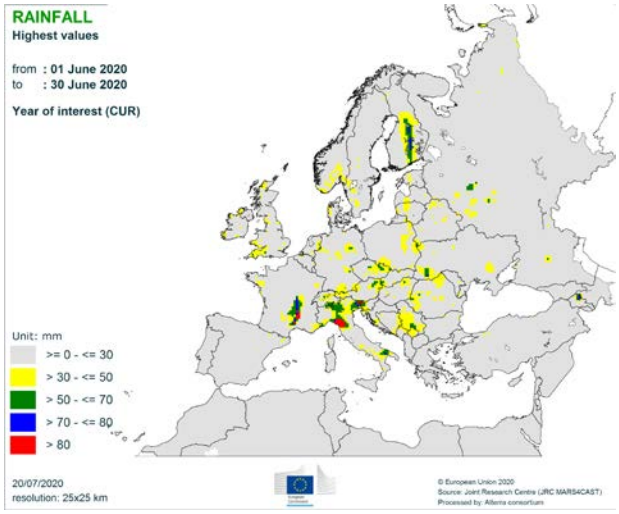


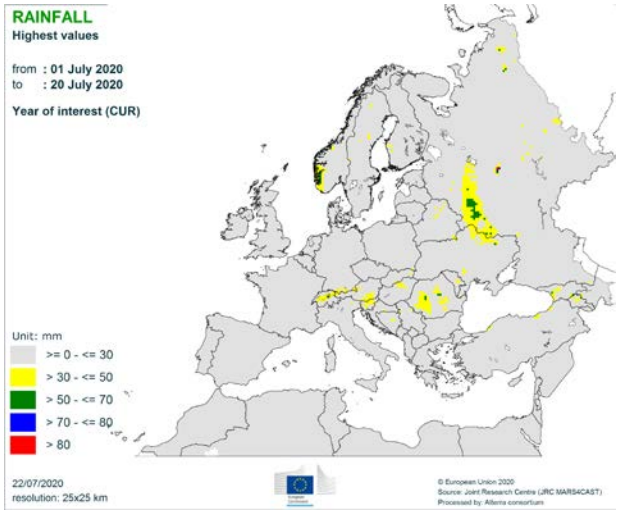
Climatic water balance

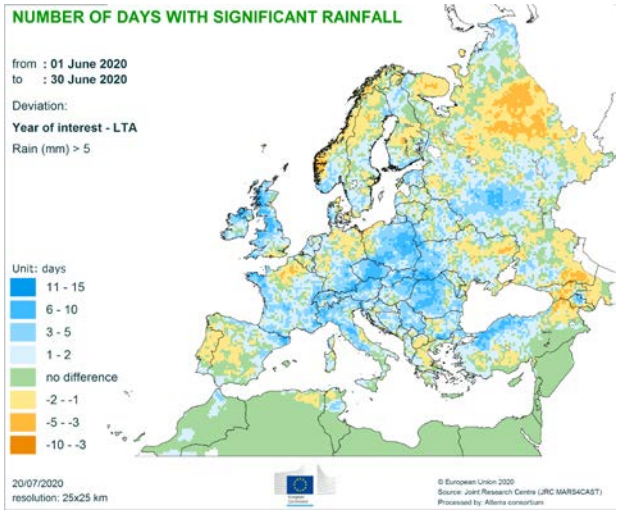


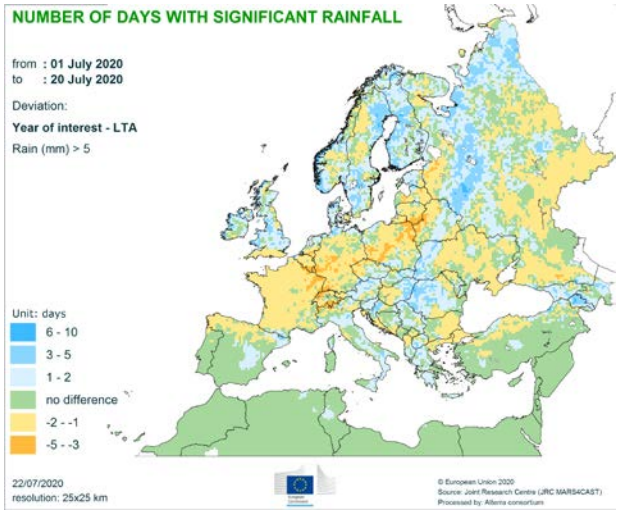


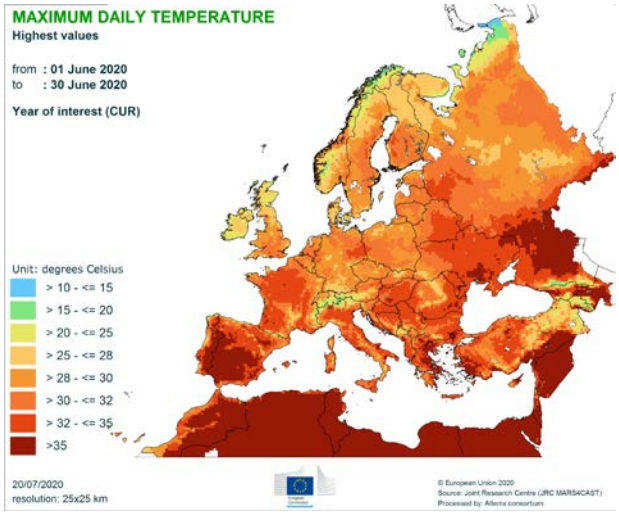
Weather events

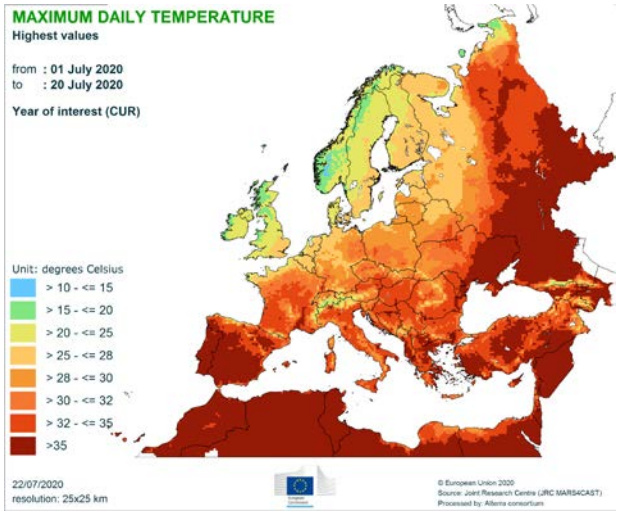


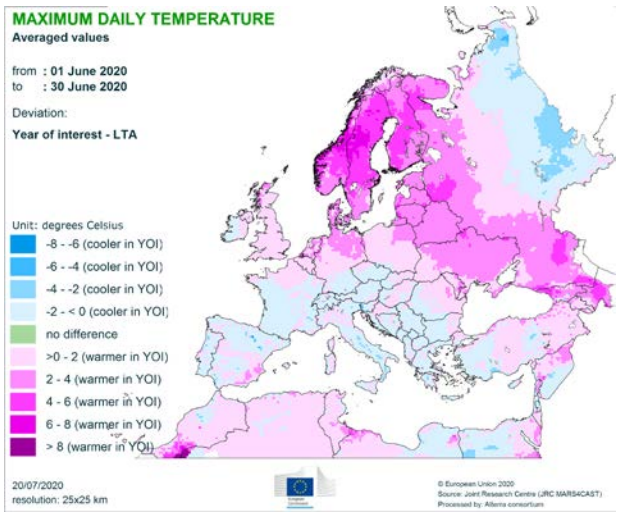


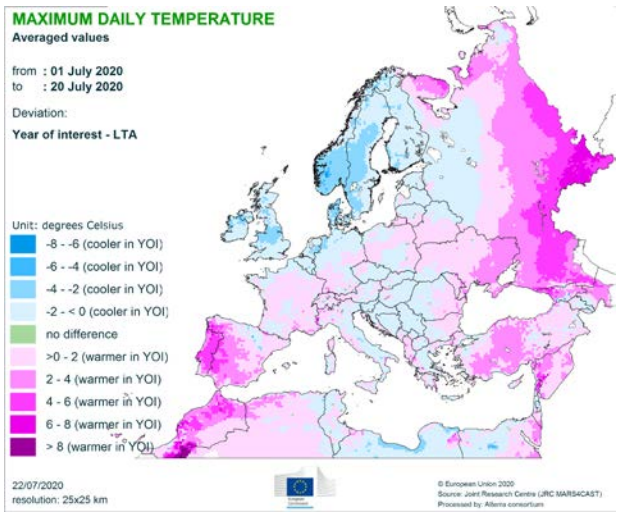









MAXIMUM DAILY TEMPERATURE
Averaged values
from : 01 June 2020
to : 30 June 2020
Deviation:
Year of interest - LTA
Unit: degrees Celsius
-8 - -6 (cooler in YOI)
-6 - -4 (cooler in YOI)
-4 - -2 (cooler in YOI)
-2 - < 0 (cooler in YOI)
no difference
>0 - 2 (warmer in YOI)
2 - 4 (warmer in YOI)
4 - 6 (warmer in YOI)
6 - 8 (warmer in YOI)
> 8 (warmer in YOI)
20/07/2020
resolution: 25x25 km


MAXIMUM DAILY TEMPERATURE
Averaged values
from : 01 July 2020
to : 20 July 2020
Deviation:
Year of interest - LTA
Unit: degrees Celsius
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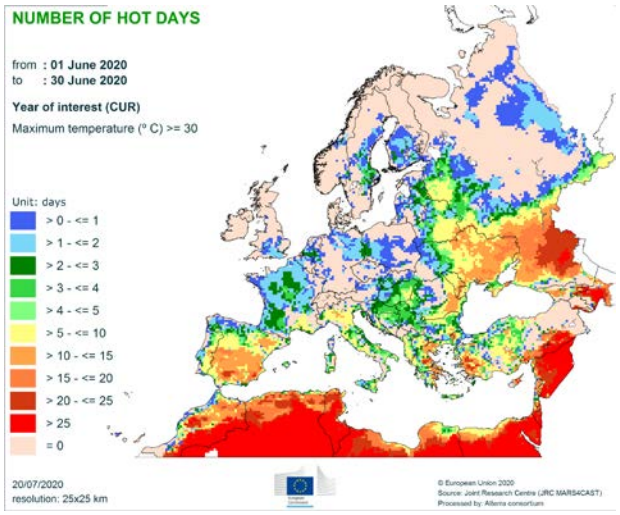
-6 - -4 (cooler in YOI)
-4 - -2 (cooler in YOI)
-2 - < 0 (cooler in YOI)
no difference
>0 - 2 (warmer in YOI)
2 - 4 (warmer in YOI)
4 - 6 (warmer in YOI)
6 - 8 (warmer in YOI)
> 8 (warmer in YOI)
22/07/2020
resolution: 25x25 km


NUMBER OF HOT DAYS
from : 01 June 2020
to : 30 June 2020
Year of interest (CUR)
Maximum temperature (° C) >= 30
Unit: days
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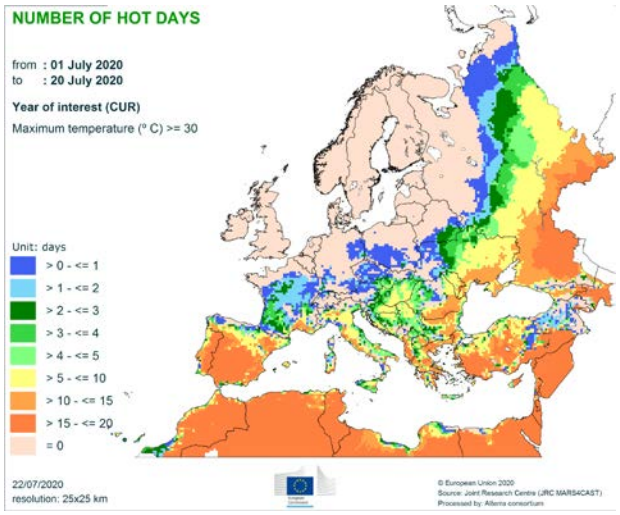
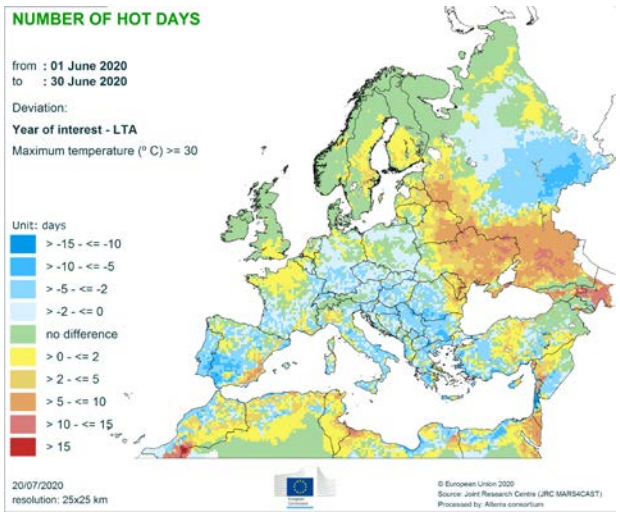
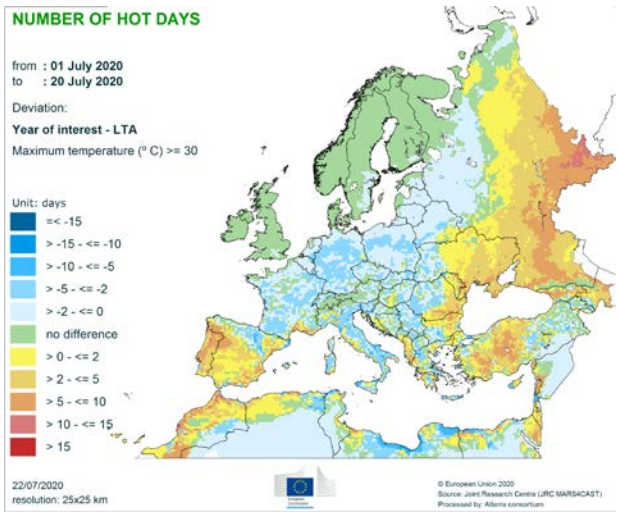
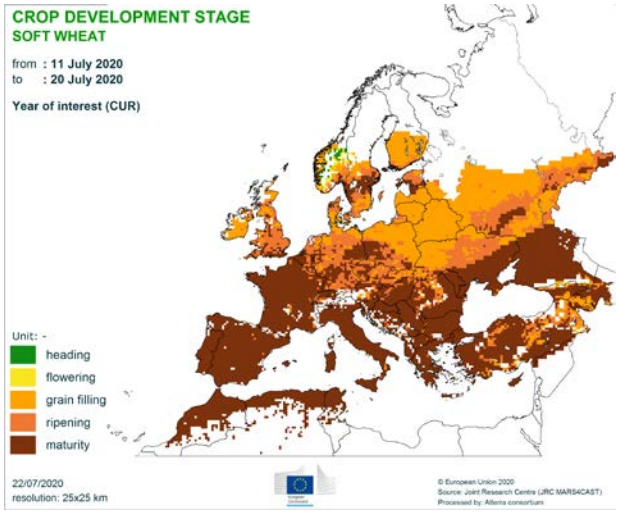
> 1 - <= 2
> 2 - <= 3
> 3 - <= 4
> 4 - <= 5
> 5 - <= 10
> 10 - <= 15
> 15 - <= 20
> 20 - <= 25
> 25
= 0
20/07/2020
resolution: 25x25 km

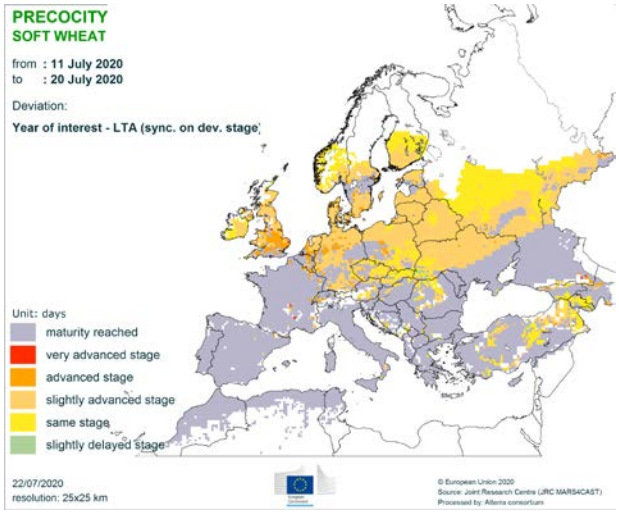

NUMBER OF HOT DAYS
from : 01 July 2020
to : 20 July 2020
Year of interest (CUR)
Maximum temperature (° C) >= 30
Unit: days
> 0 - <= 1
> 1 - <= 2
> 2 - <= 3
> 3 - <= 4
> 4 - <= 5
> 5 - <= 10
> 10 - <= 15
> 15 - <= 20
= 0
22/07/2020
resolution: 25x25 km

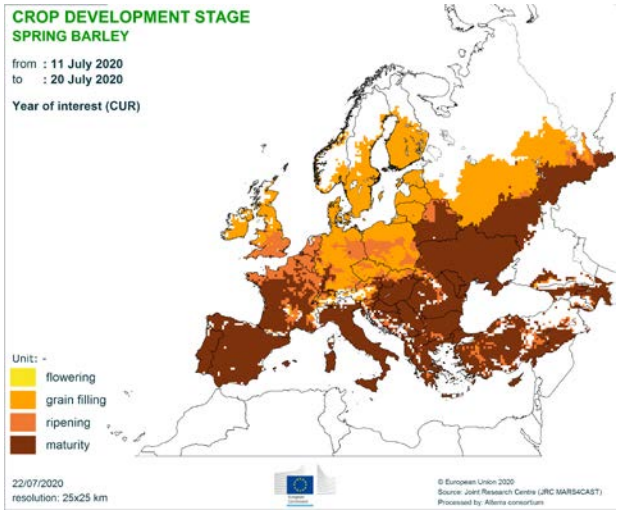

NUMBER OF HOT DAYS
from : 01 June 2020
to : 30 June 2020
Deviation:
Year of interest - LTA
Maximum temperature (° C) >= 30
Unit: days
> -15 - <= -10
> -10 - <= -5
> -5 - <= -2
> -2 - <= 0
no difference
> 0 - <= 2
> 2 - <= 5
> 5 - <= 10
> 10 - <= 15
> 15
20/07/2020
resolution: 25x25 km

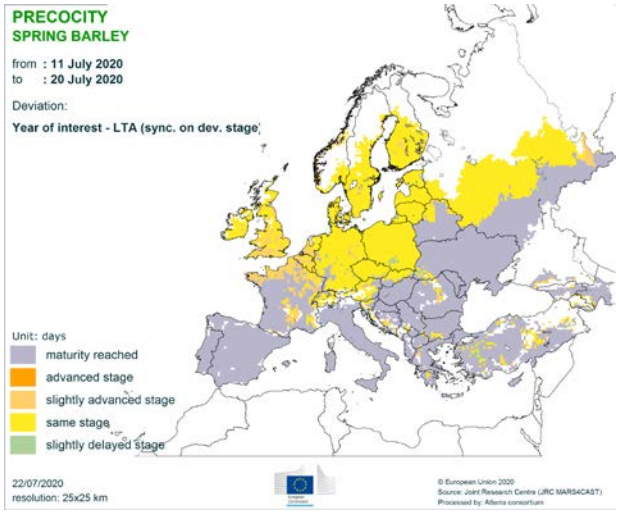

NUMBER OF HOT DAYS
from : 01 July 2020
to : 20 July 2020
Deviation:
Year of interest - LTA
Maximum temperature (° C) >= 30
Unit: days
=< -15
> -15 - <= -10
> -10 - <= -5
> -5 - <= -2
> -2 - <= 0
no difference
> 0 - <= 2
> 2 - <= 5
> 5 - <= 10
> 10 - <= 15
> 15
22/07/2020
resolution: 25x25 km

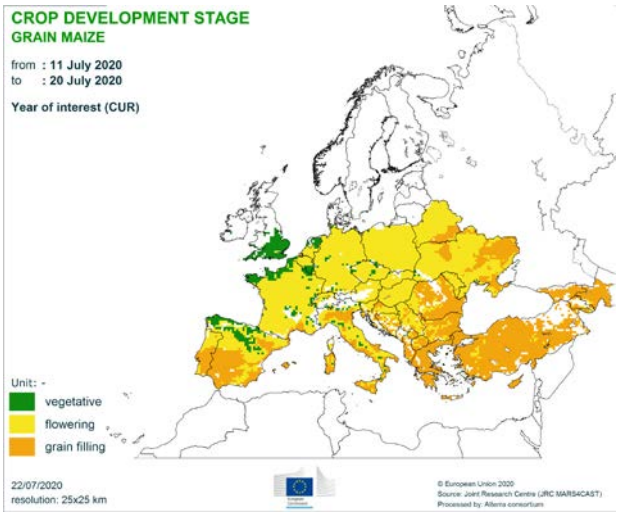
Crop development stages and precocity

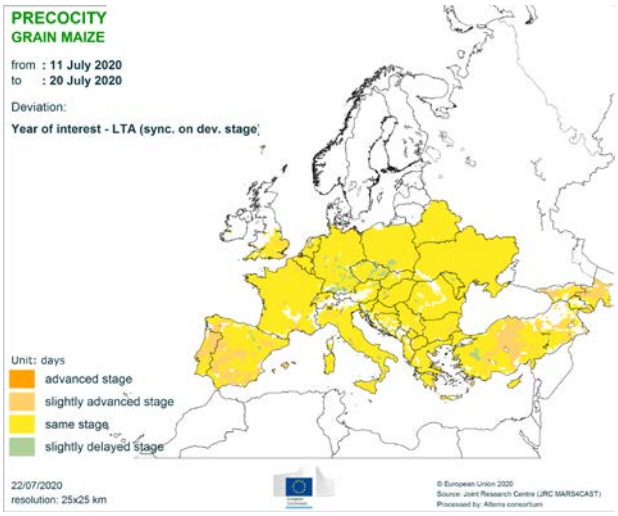


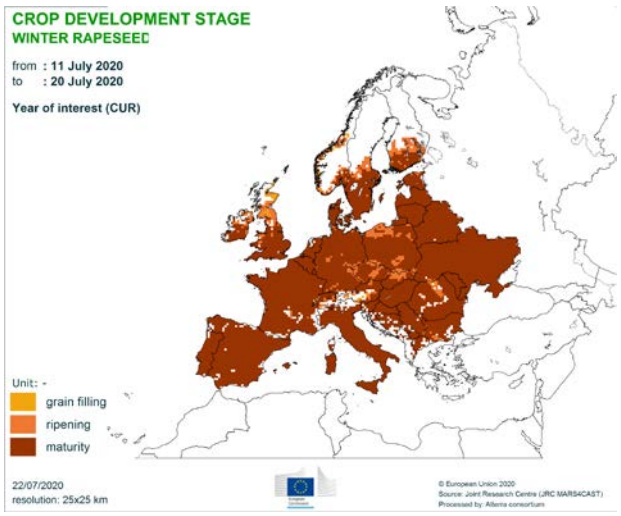


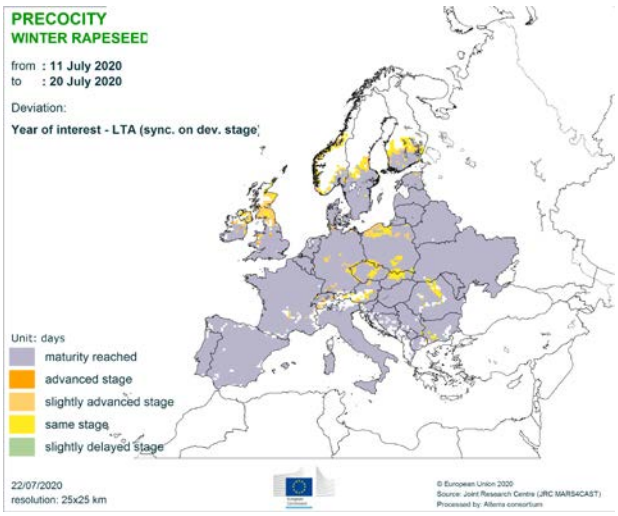


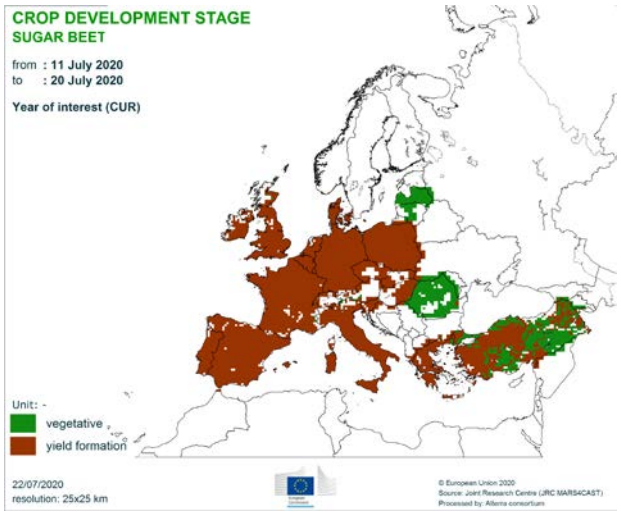


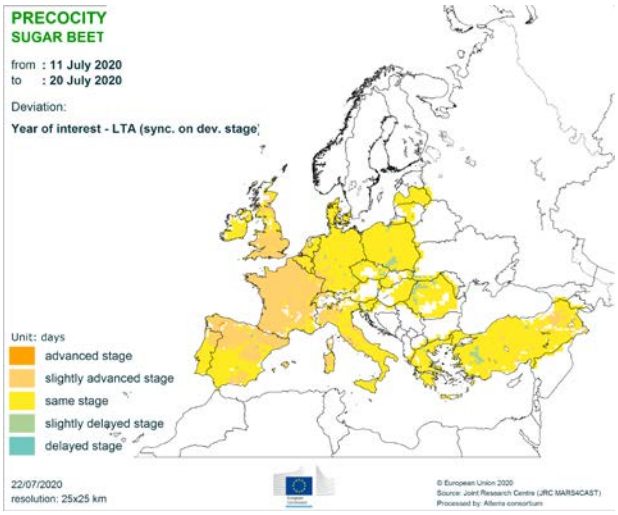




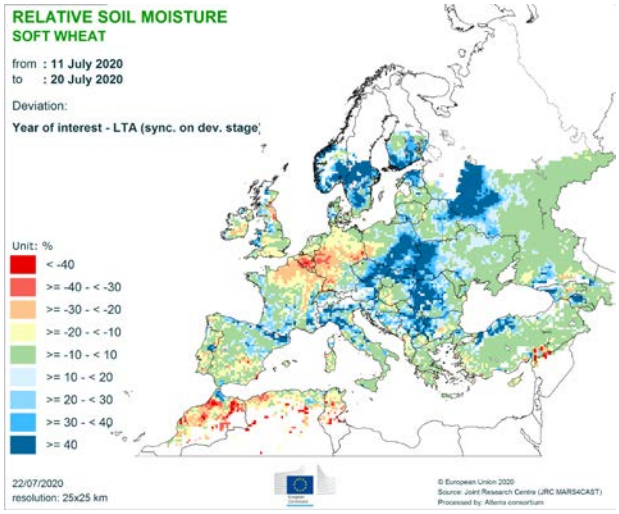

CROP DEVELOPMENT STAGE
WINTER RAPESEED
from : 11 July 2020
to : 20 July 2020
Year of interest (CUR)
Unit: -
grain filling
ripening
maturity
22/07/2020
resolution: 25x25 km

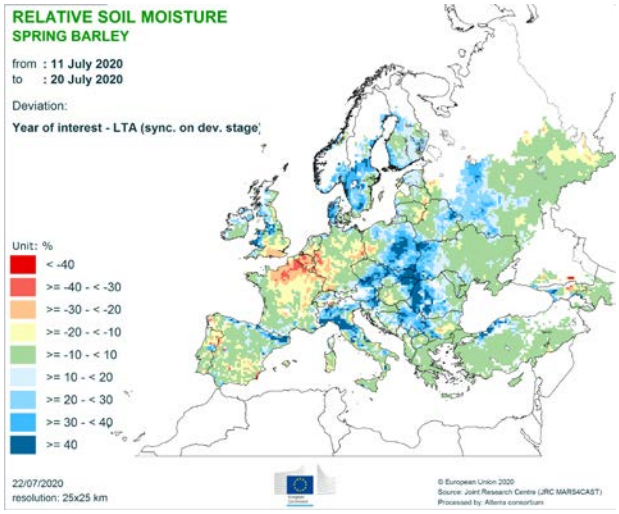

PRECOCITY
WINTER RAPESEED
from : 11 July 2020
to : 20 July 2020
Deviation:
Year of interest - LTA (sync. on dev. stage)
Unit: days
maturity reached
advanced stage
slightly advanced stage
same stage
slightly delayed stage
22/07/2020
resolution: 25x25 km

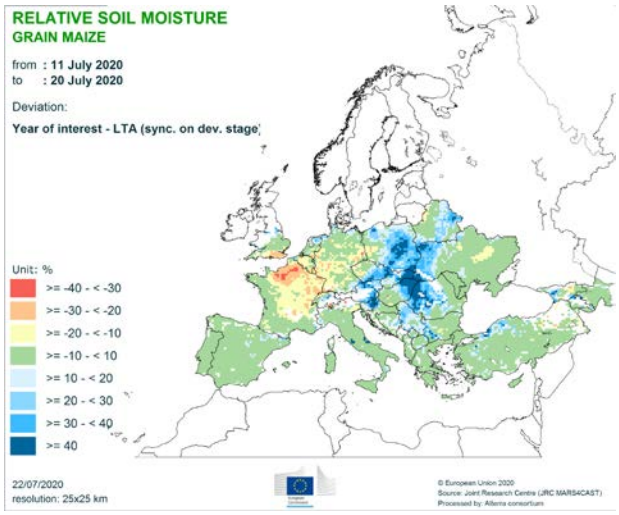

CROP DEVELOPMENT STAGE
SUGAR BEET
from : 11 July 2020
to : 20 July 2020
Year of interest (CUR)
Unit: -
vegetative
yield formation
22/07/2020
resolution: 25x25 km

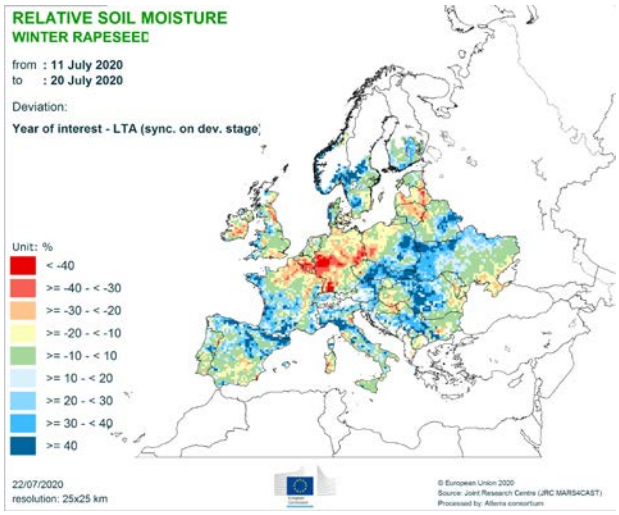

PRECOCITY
SUGAR BEET
from : 11 July 2020
to : 20 July 2020
Deviation:
Year of interest - LTA (sync. on dev. stage)
Unit: days
advanced stage
slightly advanced stage
same stage
slightly delayed stage
delayed stage
22/07/2020
resolution: 25x25 km

Relative soil moisture

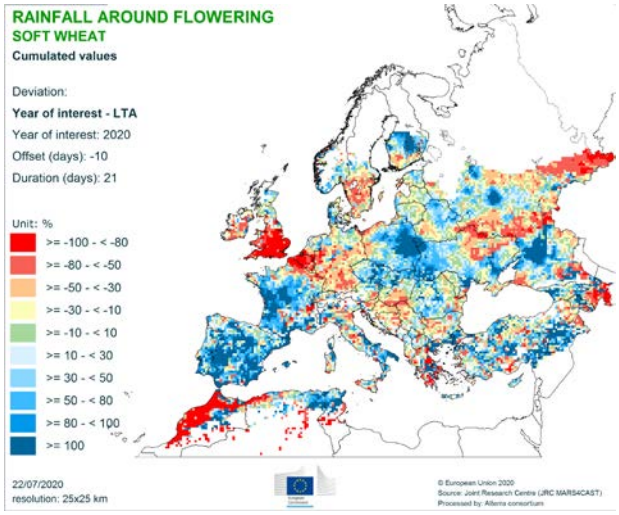


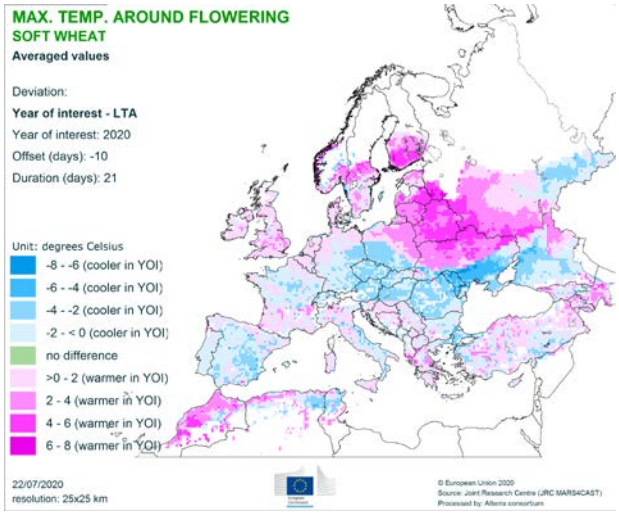


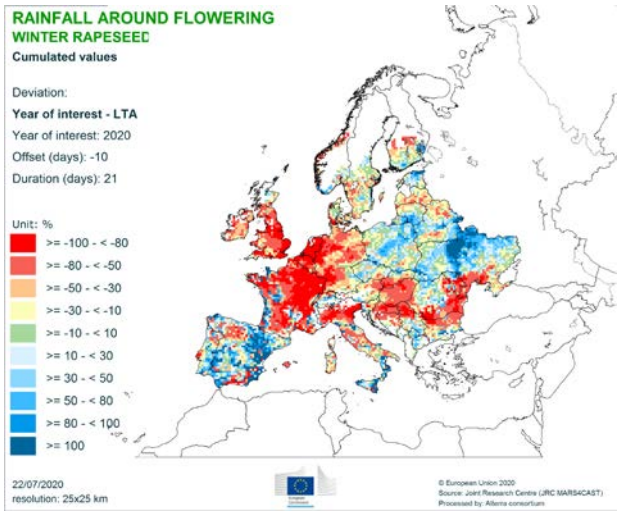


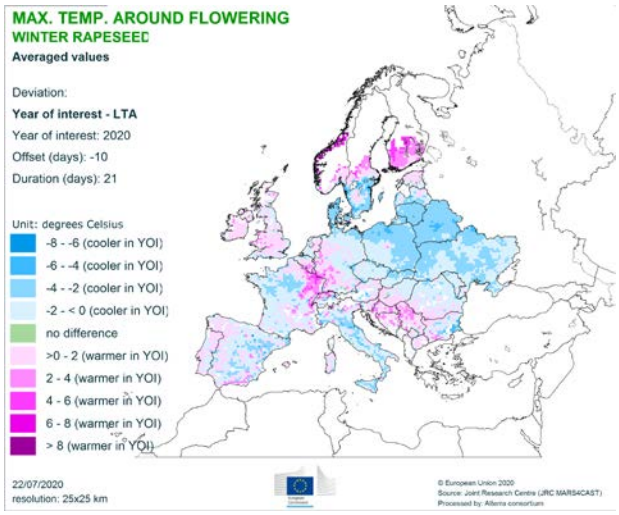


Precipitation and temperature anomalies around flowering

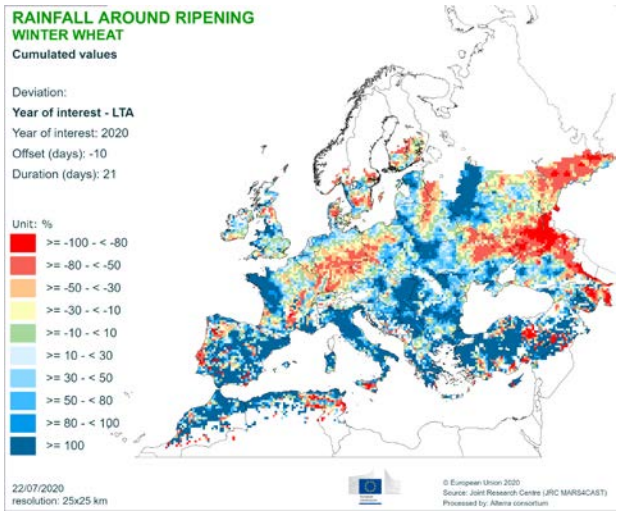


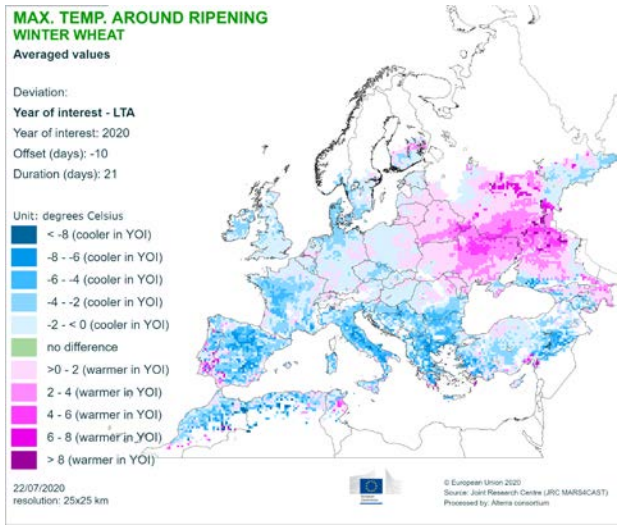


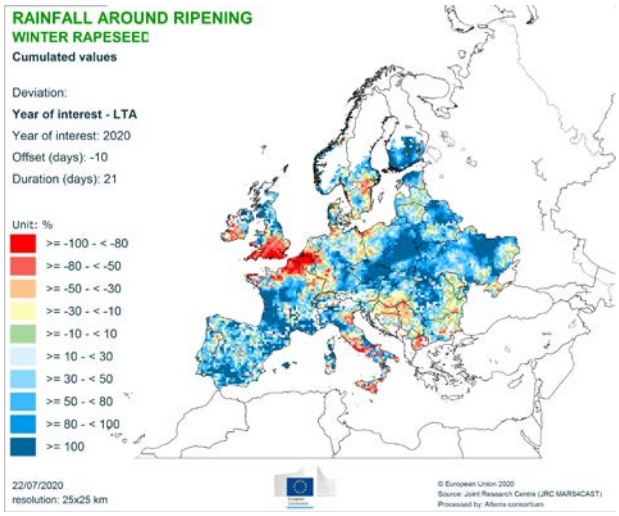


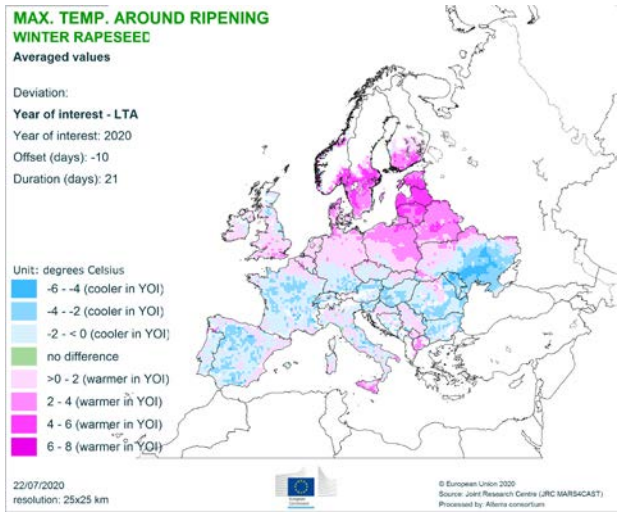


Precipitation and temperature anomalies around ripening

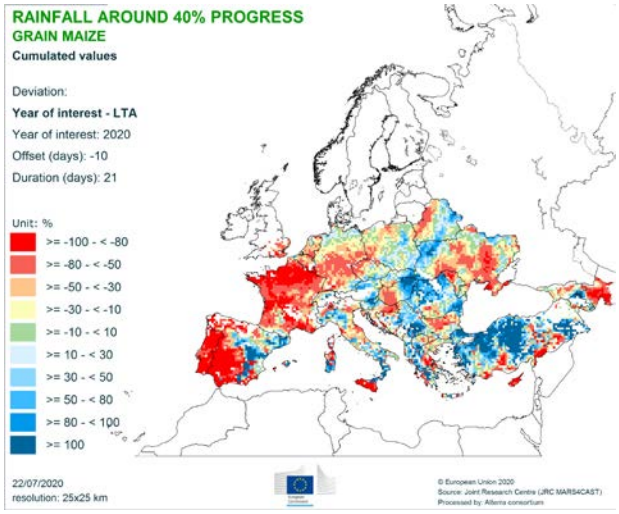


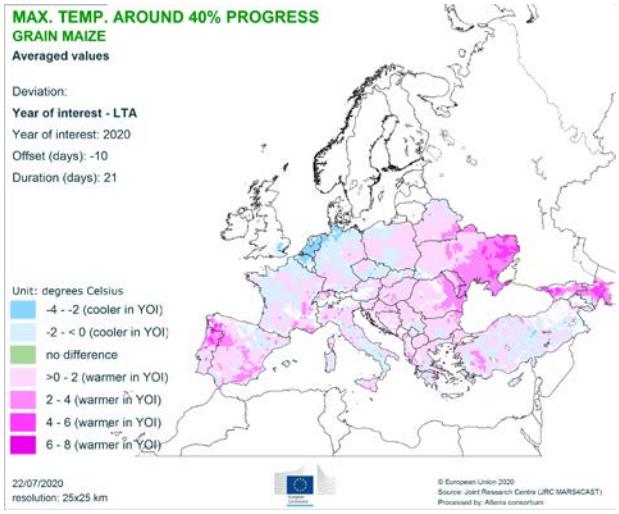


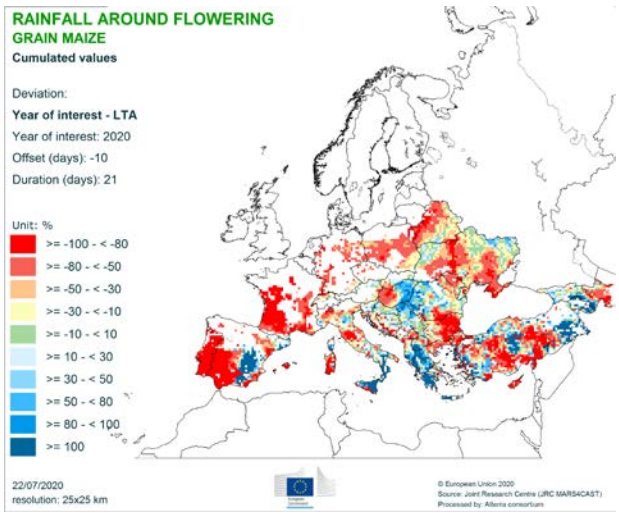


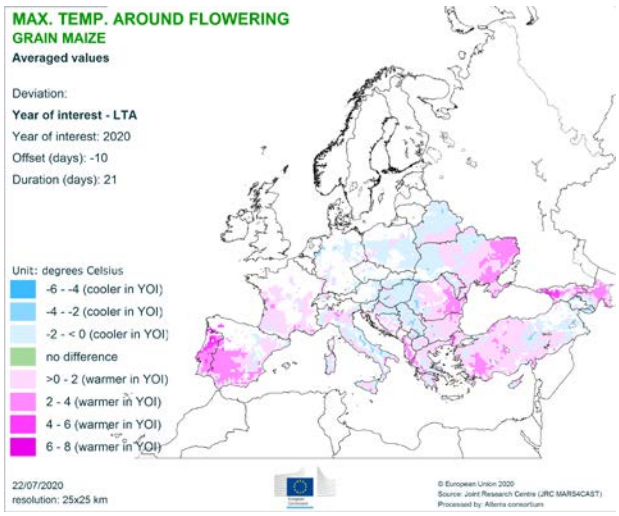


Maize: precipitation and temperature anomalies crop development









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	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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Analysis and reports
B. Baruth, S. Bassu, A. Bussay, A. Ceglar, I. Cerrani, Y. Chemin, P. De Palma, D. Fumagalli, R. Lecerf, G. Manfron, L. Nisini, L. Panarello, G. Ronchetti, L. Seguini, A. Toreti, M. van den Berg, M. van der Velde, Z. Zajac, A. Zucchini

Reporting support
SeproTec, G. Mulhern

Edition
M. van den Berg, B. Baruth, M. van der Velde

Data production
MARS4CAST (JRC Unit D5), WENR (NL), MeteoGroup (NL), VITO (BE)

Contact
JRC D5/MARS4CAST
JRCMARSBULLETIN@ec.europa.eu

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In terms of content, both versions are identical.