Issued: 24 June 2024
JRC MARS Bulletin Vol. 32 No 6

European Commission

JRC MARS Bulletin
Crop monitoring in Europe
June 2024

Difficult start to summer lowers yield prospects
Yield forecasts at EU level remain close to 5-year average

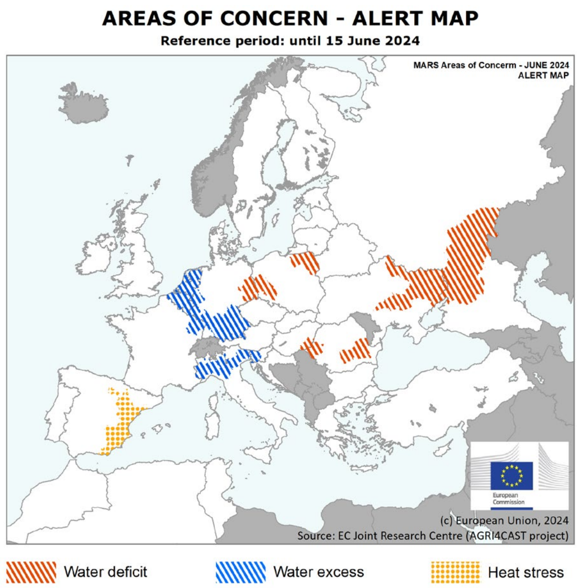
Durum wheat was most strongly reduced, mainly due to downward revisions for France and Italy. The yield forecast for soft wheat was revised most substantially downward for Italy, Romania and The Netherlands, and is now at the mediocre level of the 5-year average at EU level.

Water excess continued in the Benelux, western Germany, north-eastern France and northern Italy, negatively affecting crop growth and field operations. Summer crops sowing is still ongoing in several of these regions; with an overall delay of up to two months. In southern Germany, recent intense rainfall events led to water logging and local floods after previously favourable conditions.

In eastern Germany, south-western Poland and north-eastern Poland soil moisture levels are depleting, so far without negative impacts on crops. This is not the case in parts of Hungary, Romania, Ukraine and Russia, where a lasting water deficit negatively affected the yield expectations for winter crops.

In Spain, where overall yield expectations are positive, heatwaves in June worsened the condition of winter crops in some parts in the east that had already been affected by water stress.

This issue of the Bulletin features a special section on rice in Europe.



Crop	Yield t/ha				
	Avg 5yrs	May Bulletin	MARS 2024 forecasts	%24/5yrs	% Diff May
Total cereals	5.48	5.62	**5.59**	+ 2	− 1
Total wheat	5.64	5.71	**5.64**	− 0	− 1
Soft wheat	5.86	5.92	**5.86**	+ 0	− 1
Durum wheat	3.45	3.45	**3.30**	− 4	− 4
Total barley	4.93	5.13	**5.14**	+ 4	+ 0
Spring barley	4.08	4.34	**4.39**	+ 7	+ 1
Winter barley	5.91	5.98	**5.96**	+ 1	− 0
Grain maize	7.35	7.59	**7.55**	+ 3	− 1
Rye	4.15	4.28	**4.30**	+ 4	+ 0
Triticale	4.33	4.46	**4.47**	+ 3	+ 0
Rape and turnip rape	3.17	3.21	**3.16**	− 0	− 2
Potatoes	35.4	36.8	**35.8**	+ 1	− 3
Sugar beet	73.2	75.4	**74.4**	+ 2	− 1
Sunflower	2.15	2.25	**2.20**	+ 3	− 2
Soybeans	2.73	2.82	**2.91**	+ 6	+ 3
Field beans	2.72	2.85	**2.83**	+ 4	− 1
Field peas	2.33	2.47	**2.45**	+ 5	− 1
Rice	6.38	—	**6.80**	+ 7	—

Issued: 24 June 2024

Contents:

Covers the period from 1 May until 15 June

Joint Research Centre

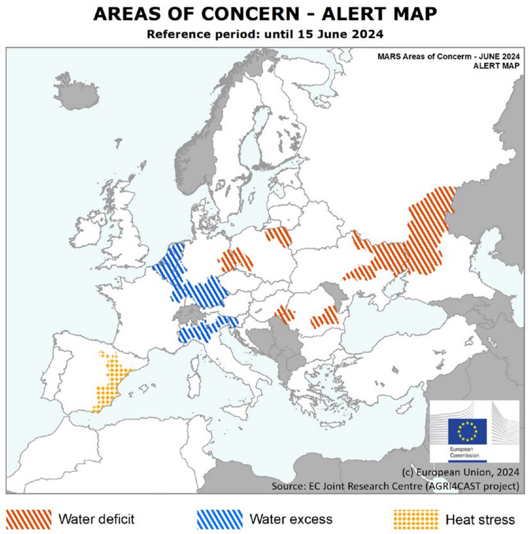
1. Agrometeorological overview

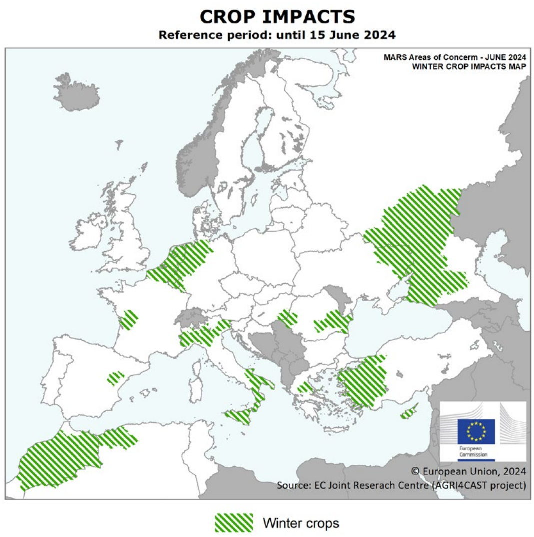
1.1. Areas of concern

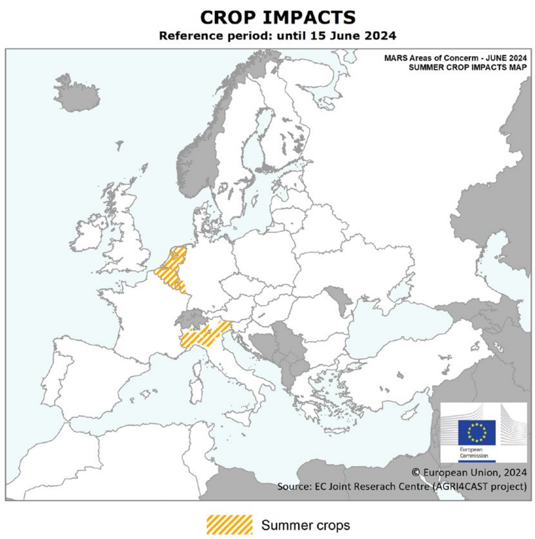
As of March, the areas-of-concern analysis follows a different approach from that used for previous MARS bulletins.The ***alert map*** *shows unusual weather events* ***that occurred during the analysis period****, from 1 May to 16 June, with* ***potential negative impacts on crops****. The* ***crop impacts*** *maps shows regions where crops (winter, spring and/or summer) were negatively affected in terms of area and/or yield. This map shows* ***impacts that have occurred since the start of the season****. However, reduced areas or resowing of specific crops without substantial impact on the yield potential of the other sown areas of that crop are not repeated in subsequent editions of the Bulletin once reduced areas are reflected in the statistics.*

Water excess continues in the Netherlands, Belgium, Luxembourg, western Germany and north-eastern France. Overly wet soil conditions are ongoing since April (in large areas since autumn 2023) and negatively affected crop growth and field operations. Winter crops in the Benelux countries and western Germany where intense rains, water logging have affect them around flowering. Concerns about summer crops in the above-mentioned regions are due to possible root anoxia, and delayed sowings – well beyond the optimal window, particularly in the Benelux countries. Pest and disease pressure remains also high in these regions, due to the combination of warm temperatures during most of spring, high humidity, and the difficult conditions for spraying and other field operations. In southern Germany recent intense rainfall events led to local floods and overly wet soils after previously favourable conditions. While local damage is starting to be reported, the rainfall in the coming weeks will be crucial to determine the intensity and extent of potential losses especially concerning summer crops.

In northern Italy, the review period was the wettest in our records. Winter crops are suffering from a broad range of negative factors such as root anoxia, lodging, reduced pollination and impossible field operations. Summer crops sowing (or re-sowing) is still ongoing; the overall delay might sum up to two months. Final yields will strongly depend on temperatures during summer and farmers adaptation strategy (e.g. moving production from grain maize to green maize). Average yields are still possible in







case of favourable weather conditions during the remainder of the growth cycle.

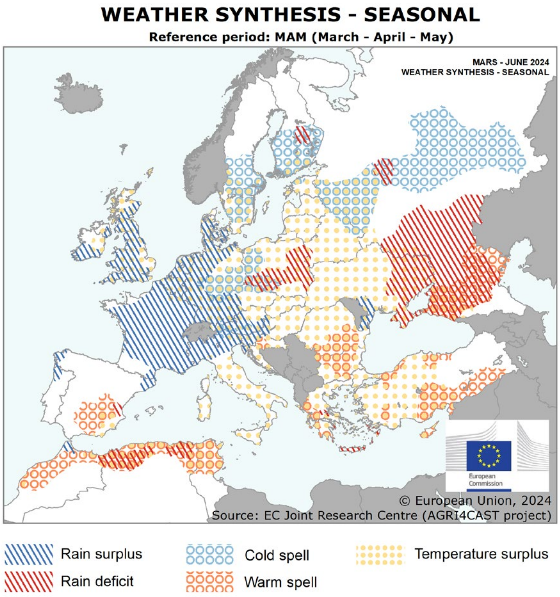
In eastern Germany, south-western Poland and north-eastern Poland soil moisture levels are depleting, so far without negative impacts on crops. This situation may be mitigated by the precipitation that is forecast for the coming days. This is not the case in south-eastern Hungary and western and south-eastern Romania, as well as in eastern Ukraine and western Russia, where a lasting water deficit negatively affected the yield expectations for winter crops.

In Spain, some eastern regions have experienced a rain deficit since the start of the season, and heatwaves in June further deteriorated the condition of winter crops during grain filling in part of these regions, with a consequent very strong decrease in yield expectations.

The areas marked on the winter crop impact map in western France, western Türkiye, Greece, Cyprus, southern Italy and the Maghreb region, are associated with negative impacts that occurred before the analysis period.

1.2. Spring review (March, April, May)

Spring was characterised by warmer-than-usual conditions in most of Europe, yet marked by cold spells in central and north-eastern regions. Distinctly wetter-than-usual conditions prevailed in western Europe, while parts of central, eastern and southern Europe were unusually dry.



The weather synthesis map above presents a summarised review of the most distinct anomalies during spring in reference to the 1991–2023 long-term average (LTA). Temperature and rainfall surplus and deficit represent unusual absolute and relative deviations from the LTA considering the March–May reporting period. Warm and cold spells correspond to extreme temperature lows and highs within a 5-day period relative to the 90th and 10th percentiles considering the same period in previous years (since 1991),. The weather synthesis map is supplemented by the usual single-indicator maps (below) for further context on each event.

Rain surplus was particularly high in the north-west Iberian peninsula, the Catalan coast of Spain, most of France, most of the United Kingdom, the Benelux countries, and in western parts of central Europe, northern Italy, Slovenia and *Odes'ka* oblast in Ukraine, and locally in the northernmost *Tanger Tetouan – Al Hoceima* region of Morocco. In most of these regions, the spring ranked among the wettest three in our records since 1991.

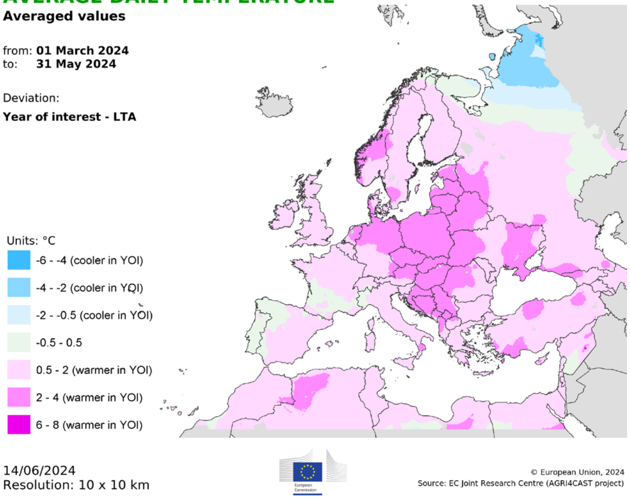
A marked **rain deficit** was observed in parts of Finland, Poland, southern Greece and the *Valencia* region in Spain (particularly in April and May), as well as in large areas of European Russia and eastern Ukraine, and in northern Algeria.

A distinct **temperature surplus** was observed in the United Kingdom, in the Benelux countries and eastwards into central, southern and eastern Europe, and in southern parts of northern Europe, as well as the Balkan peninsula, most of Türkiye and the north African coast. In many of these regions, spring ranked among the warmest three in our records since 1991.

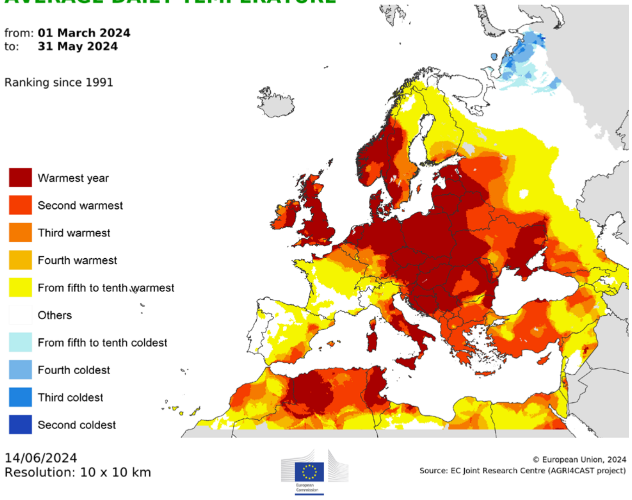
Series of unusual **warm spells**, with daily maximum and average temperatures exceeding the 90th percentile of the LTA, were observed in Bulgaria and Romania with the first episodes detected in April (1–8 and 14–17). A warm spell was also observed in Greece in the second half of May (approximately 15–25) and in central Spain at the end of May (27–31). Multiple warm spells have also been observed in the Maghreb region since March and in Türkiye since April.

A severe **cold spell**, with a sudden drop in minimum daily temperatures of up to 10 °C, or more overnight, was observed in southern Sweden and Finland, in central Germany and extending south-east into northern Czechia and western Poland, as well as in parts of the Austrian and Italian Alps region around 19–24 April. More about the late April cold spell was reported in the May issue of the bulletin. In easternmost Belarus and parts of European Russia, a cold spell was observed around 10–12 May.

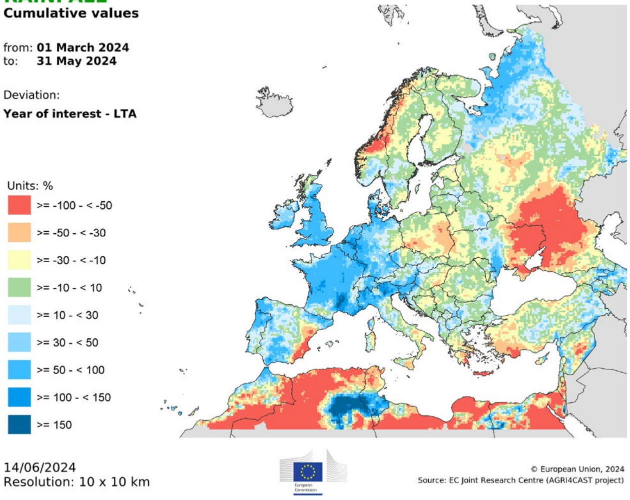
AVERAGE DAILY TEMPERATURE



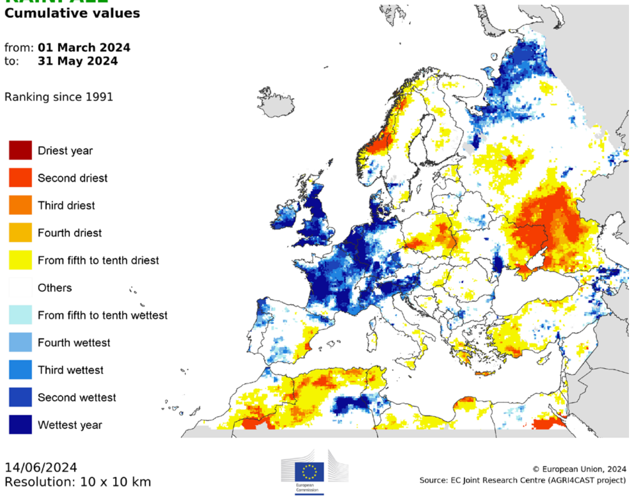
AVERAGE DAILY TEMPERATURE



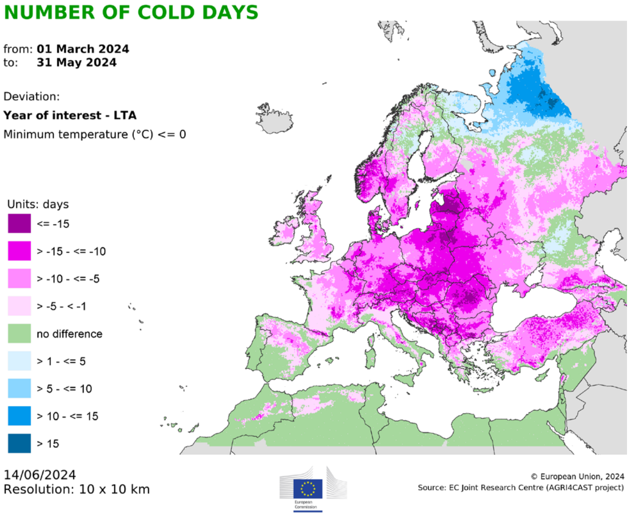
RAINFALL



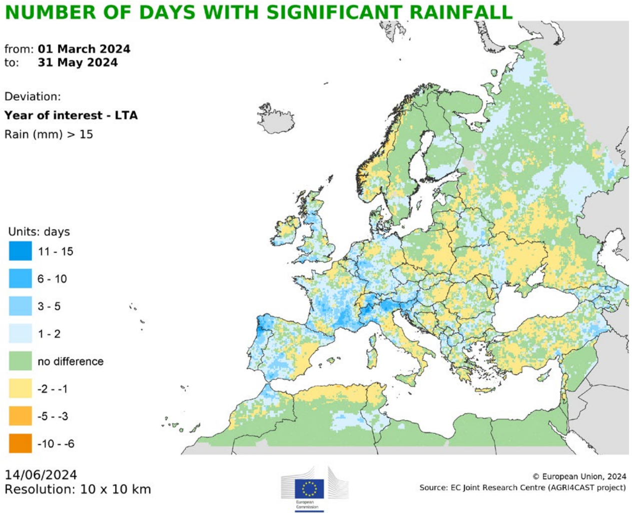
RAINFALL



NUMBER OF COLD DAYS

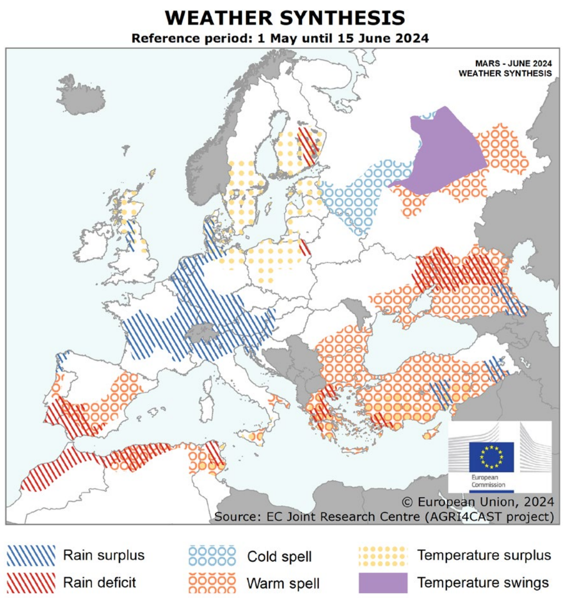


NUMBER OF DAYS WITH SIGNIFICANT RAINFALL



1.3. Meteorological review (1 May – 15 June 2024)

While cooler northern masses brought wetter-than-usual conditions to western and central Europe, intense heat built up in many parts of southern Europe, particularly the south-eastern Mediterranean region, with record-high daily temperatures in some areas. Warmer-than-usual conditions prevailed in northern Europe.



The weather synthesis map above presents a summarised review of the most distinct anomalies during the reporting period in reference to the 1991–2023 LTA. Temperature and rainfall surplus and deficit represent unusual absolute and relative deviations from the LTA for the reporting period from 1 May to 15 June. Warm and cold spells correspond to extreme temperature lows and highs within a 5-day period relative to the 90th and 10th percentiles, considering the same period in previous years (since 1991), and respective absolute temperature thresholds. The weather synthesis map is supplemented by single-indicator maps for further context on each event.

An exceptional **rain surplus** was observed in north-western Spain, western Scotland, Denmark, northern, western and southern regions of Germany, the Netherlands, most of Belgium and Luxembourg, central France from east to west, northern Italy, most of Austria, Slovenia, and parts of northern Croatia, western Hungary, Slovakia and Czechia. A marked rain surplus was also observed in parts of central and eastern Türkiye and south-eastern European Russia. In many of these regions, cumulative rainfall exceeded the LTA by 50 % or more, and the review period ranked among the wettest three in our records since 1991. In the Alps region, as well as other parts of France and central Europe, more than 15 days with daily rainfall above 5 mm and cumulative rainfall of 250 mm or more were observed, leading to flooding in some regions.

Rain deficit was marked in southern Finland, north-eastern Poland and southern regions of the Iberian peninsula, along the North African coast, in most of Greece and in south-western Türkiye, as well as in an area from eastern Ukraine extending into southern European Russia. Cumulative rainfall in these areas was below 50 mm (corresponding to between 50 % and 100 % below the LTA), and in some of these regions the review period ranked among the three driest in our records since 1991.

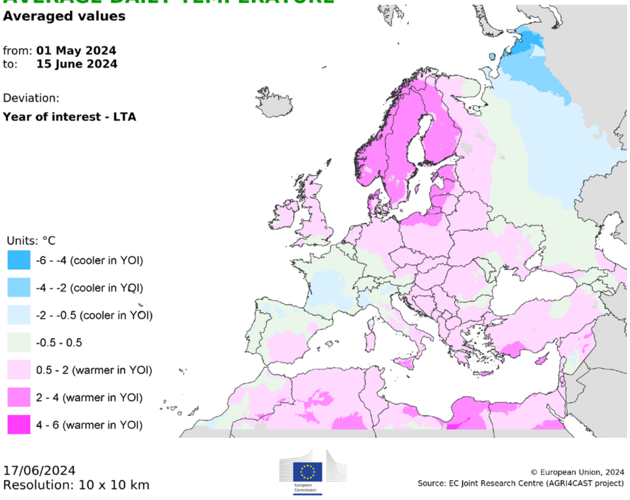
A distinct **temperature surplus** was observed in the North Sea–Baltic Sea region, and in the eastern Mediterranean region, where average daily temperatures exceeded the LTA by up to 2–4 °C and the review period ranked among the three warmest in our records since 1991.

Warm spells, with daily maximum and average temperatures exceeding the 90th percentile of the LTA, were observed in parts of the Iberian peninsula and the North African coast of Algeria and Tunisia, in Sicily and southern Italy (Puglia), the Balkan peninsula, southern Romania, Türkiye, south-eastern Ukraine, and southern and central regions of European Russia. In the last dekad of May and the first half of June, average daily temperatures up to 6 °C above the LTA were observed in central and northern regions of European Russia.

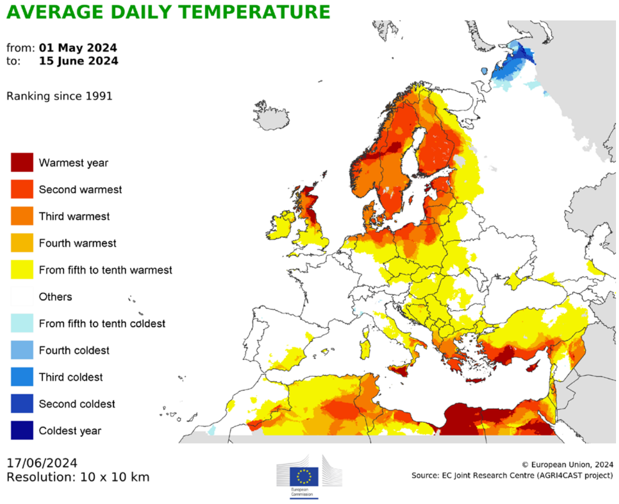
Cold spells with average daily temperatures between 4 °C and 6 °C (in some areas up to 8 °C) below the LTA in the first half of May were observed in central and western parts of European Russia and the region bordering Belarus.

A distinct **temperature swing** marked by the sharp transition between colder-than-usual conditions in May and warmer-than-usual conditions at the beginning of June occurred in central European Russia

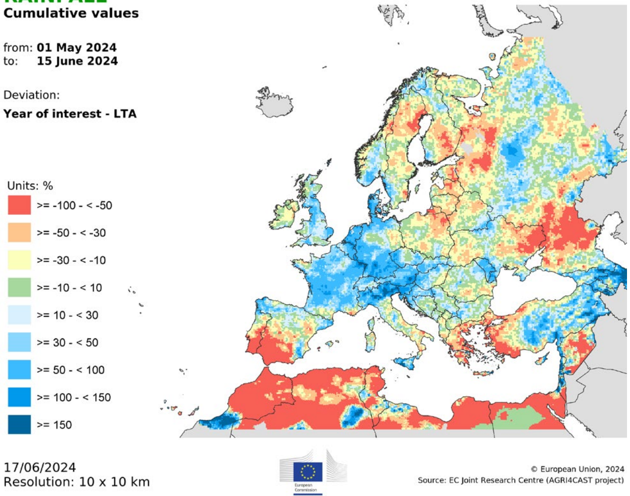
AVERAGE DAILY TEMPERATURE



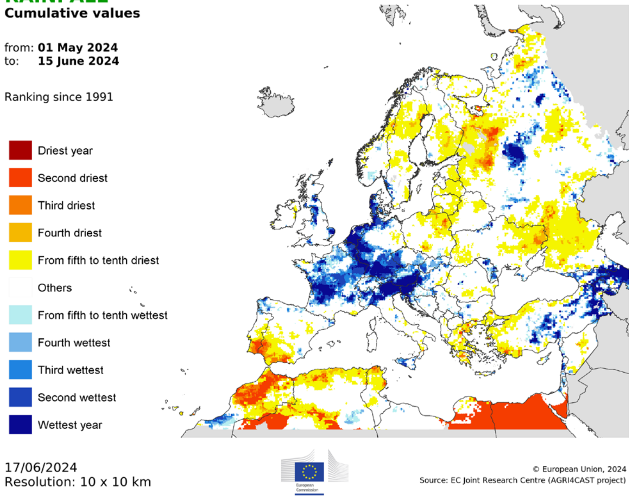
AVERAGE DAILY TEMPERATURE



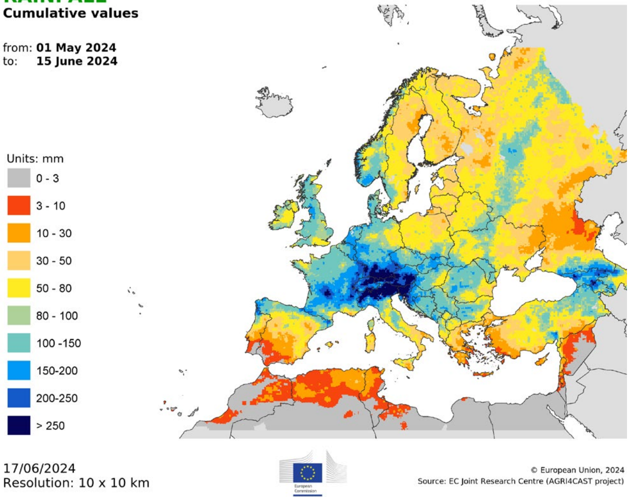
RAINFALL



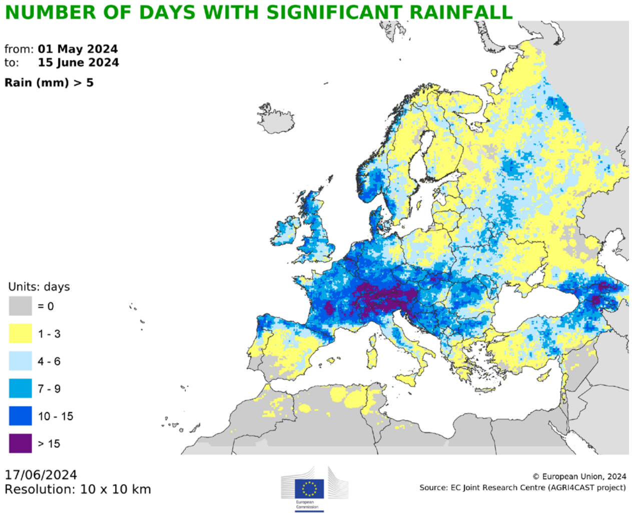
RAINFALL



RAINFALL



NUMBER OF DAYS WITH SIGNIFICANT RAINFALL



1.4. Weather forecast (20 - 29 June)

A frontal system brings thunderstorms and rains into the Alps region, the Eastern European Plain, and Ural Mountains; warmer-than-average conditions are forecast for a wide north-south band from Scandinavia to southern Italy and the Black Sea region.

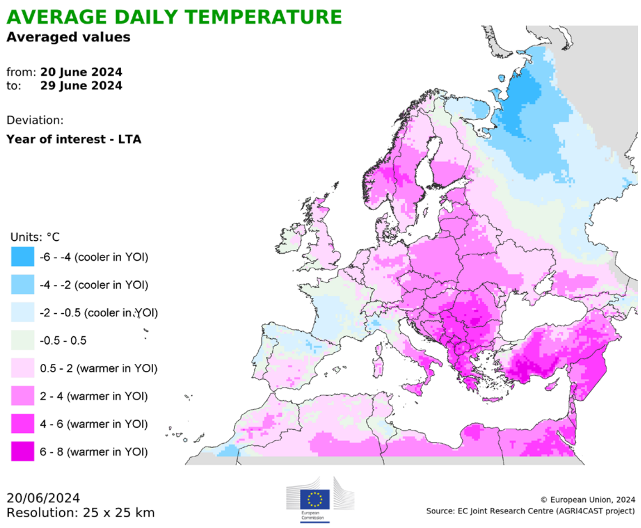
Colder-than-usual conditions, with average daily temperatures up to 2 °C (in parts of European Russia up to 6 °C) below the LTA are forecast for parts of the Iberian Peninsula, south-western France, and north-western Italy.

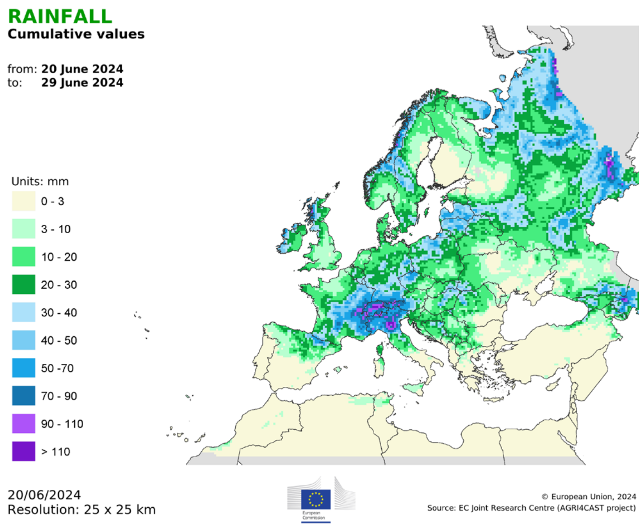
Warmer-than-usual conditions are forecast for most of the rest of Europe. Most substantial positive temperature anomalies (between 4 °C and 6 °C, locally up to 8 °C above the LTA) are forecast for parts of the Scandinavian Peninsula and southernmost Italy, most of the Balkan Peninsula, and south-western Türkyie. Maximum temperatures on the hottest days are forecast to exceed 35 °C in large parts of southern Europe and the Balkan region.

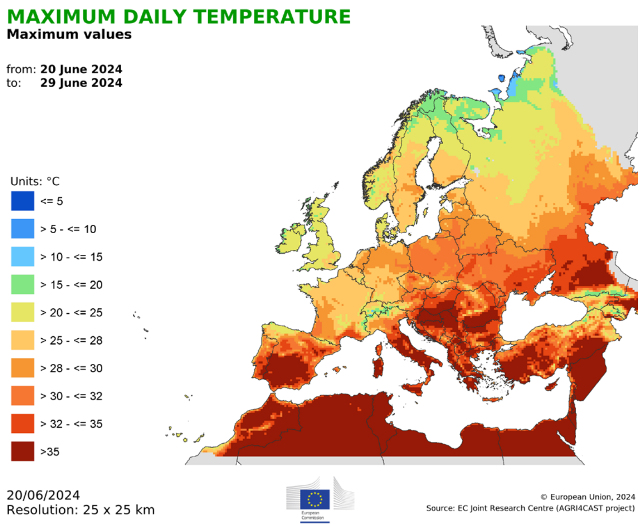
Dry conditions (total precipitation below 3 mm) are forecast for most of the Iberian Peninsula, southern Italy, most of the Balkan Peninsula, Türkyie, and Cyprus, as well as parts of Scandinavia, European Russia, and Ukraine.

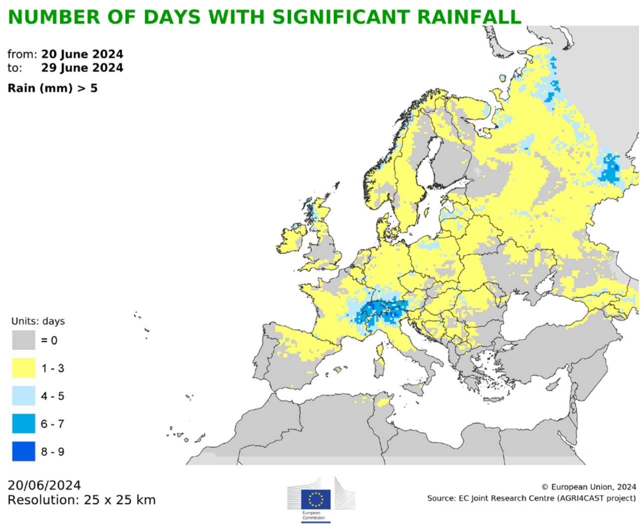
Wet conditions (rainfall above 10 mm) are forecast for most other parts of Europe, while **very wet conditions** (above 70 mm) are forecast for the Alps region, northern Italy and Slovenia, as well as eastern parts of European Russia.

The long-range weather forecast points to highly likely warm conditions, exceeding the 24-year climatological median in July-August by up to 1°C in the Great European Plain and northern Europe, and by up to 2°C in the rest of Europe, and in September – by up to 1°C in most of Europe. Albeit with high uncertainty, precipitation up to 50 mm below the mean is forecast for most of central and southern Europe, mainly in July-August; near-normal – in September.



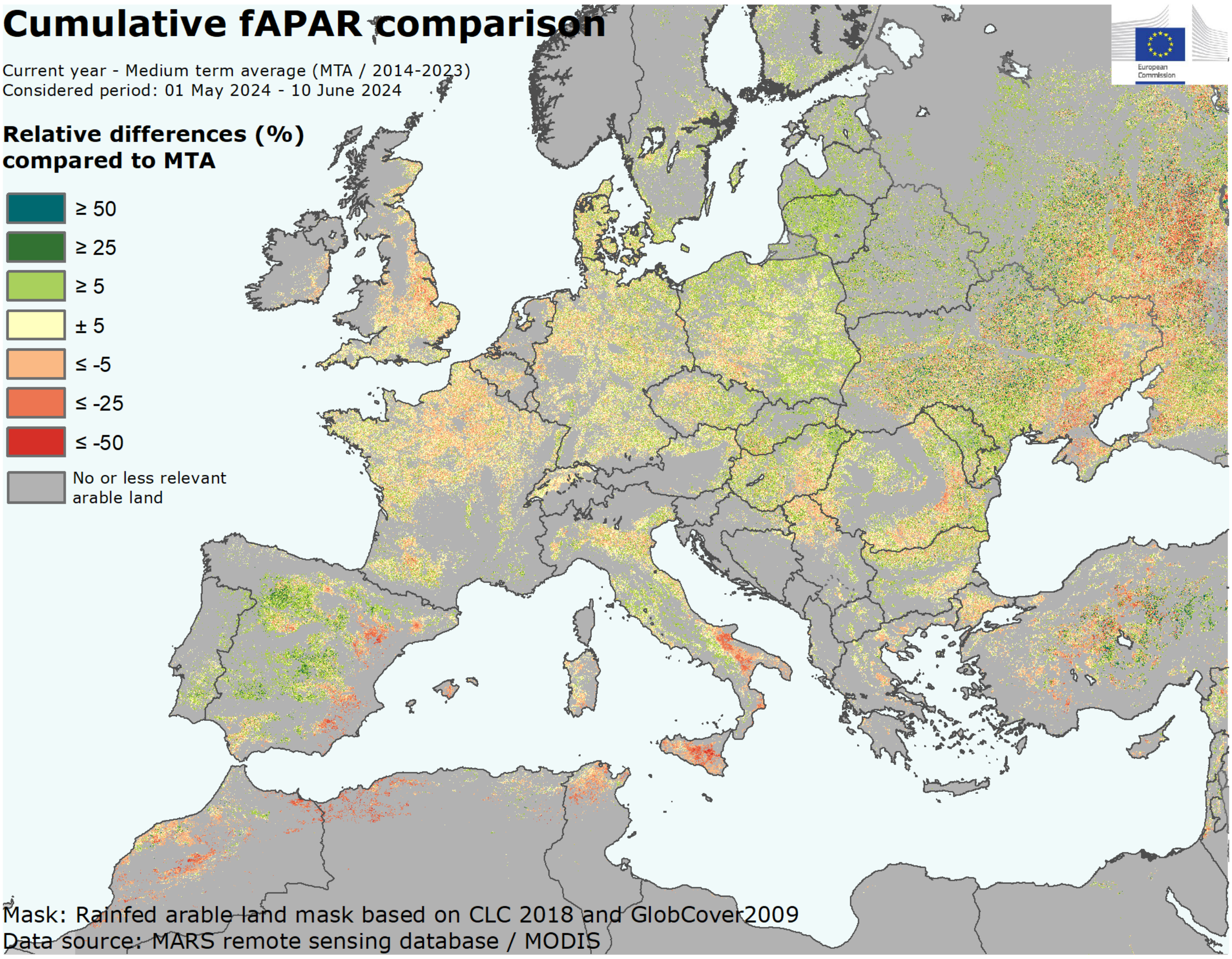






2. Remote sensing – observed canopy conditions

Early and below-average fAPAR peak in most of Europe



The map displays the relative differences (in percentages) between the cumulated fraction of absorbed photosynthetically active radiation (fAPAR) from 1 May to 10 June 2024 and the medium-term average (MTA, 2014–2023) for the same period. Positive anomalies (in green) reflect above-average biomass or early crop development, while negative anomalies (in red) reflect below-average biomass or late crop development.

The map above displays predominantly winter crop conditions, as biomass accumulation for summer crops in northern and central Europe has just started and is contributing little to variations in fAPAR values. Across Europe, the fAPAR signals peaked earlier than usual thanks to advanced development associated with the early start of spring. However, overall conditions have not been favourable, leading to a below-average fAPAR peak.

In the **United Kingdom**, northern **France**, the **Benelux** countries and western **Germany**, the fAPAR is slightly lower than the MTA as a result of the water excess in spring which yielded to below-average fAPAR peak of winter crops and delayed sowing of summer crops.

In most parts of the **Iberian peninsula**, fAPAR remains above average, as crops benefited from favourable conditions during the season. However, the Mediterranean part of Spain is experiencing a worsening situation due to a persistent lack of rainfall. In most parts of **Italy**, fAPAR is in line with the MTA, thanks to abundant rain and moderate temperatures. Yet in southern regions, such as *Puglia* and *Sicilia*, the ongoing water deficit caused a significant drop in biomass accumulation.

In **Bulgaria** and eastern **Romania**, the growing season of winter crops has progressed early into the ripening phase at a normal rate, supported by above-average water availability since mid April. Likewise, in **Türkiye**, the observed negative anomaly in fAPAR is indicative of an early start of the ripening phase, which is not attributed to any problems in crop development.

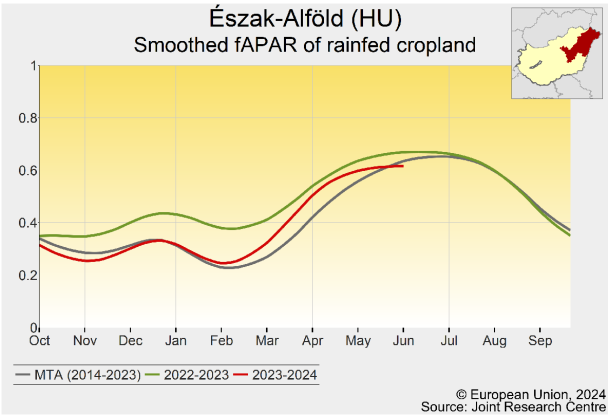
In south-eastern **Hungary**, the advanced season, coupled with drier-than-usual conditions until mid May, has led to a significantly earlier onset of the ripening phase. In the rest of **Hungary**, **Slovakia** and **Czechia**, above-average rainfall has sustained the green canopies, which is likely to result in a longer period of biomass accumulation than typically observed.

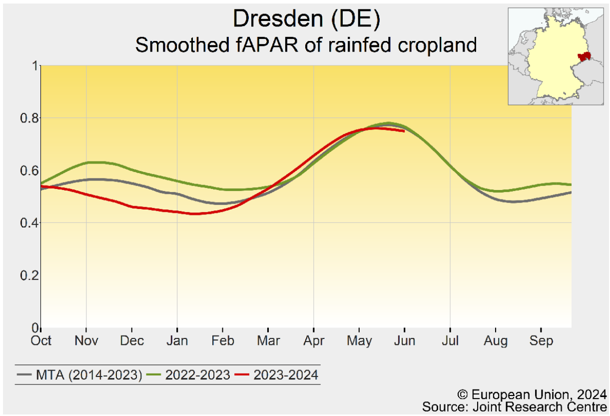
In eastern **Germany** and **Poland**, the fAPAR levels, which have not peaked yet, are higher than average thanks to the advanced stage of crop growth. Nonetheless, the lack of sufficient rainfall in May and early June might hinder the attainment of above-average fAPAR peaks. The impact of reduced precipitation is already becoming evident in south-western **Poland** and south-eastern **Germany.**

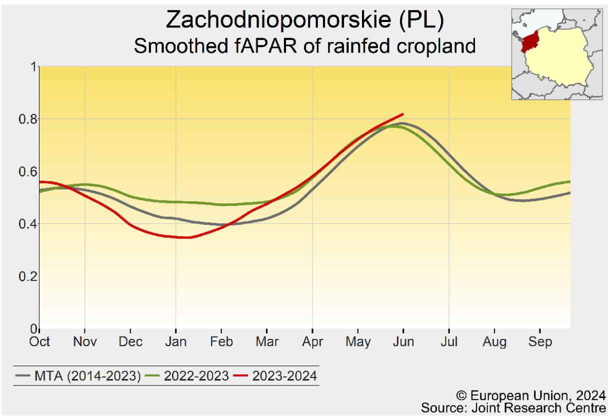
The positive fAPAR anomaly in northern Europe (including **Denmark**, **Sweden** and the **Baltic states**) is associated with the favourable conditions that have prevailed during the season since its early onset. In this region, the peak of fAPAR has not yet been reached.

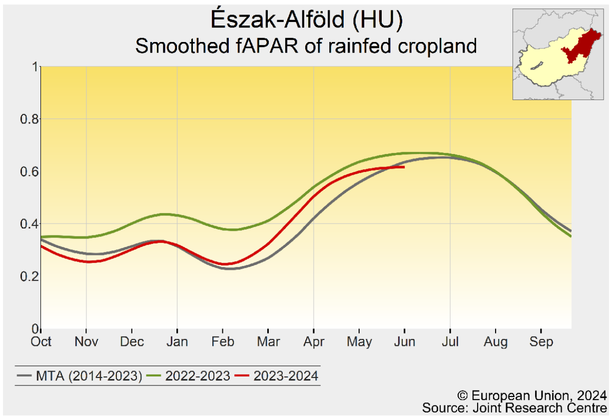
In the **Maghreb**, the cereal season has come to an end. Cereal yields were severely affected by drought in large parts of **Morocco** and the northwestern regions of **Algeria**. Favourable growing conditions sustained above-average crop growth in Tunisia.

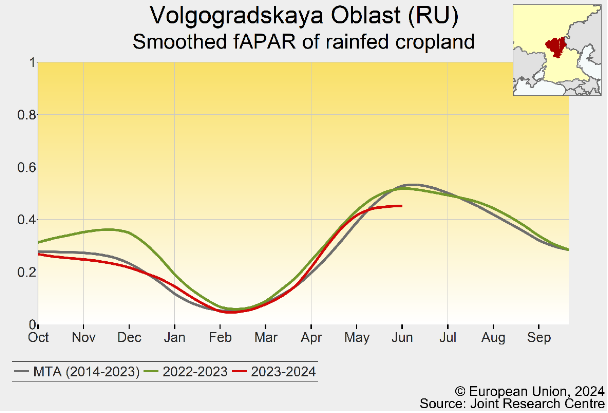
In **Ukraine**, fAPAR levels in the western regions are near the MTA, thanks to the favourable weather that prevailed until the beginning of May. However, the succeeding dry spell curtailed the hitherto promising outlook for crop yields. In the eastern Ukrainian oblasts and the adjacent Russian oblasts, ongoing drought conditions are seriously affecting the yield potential. In the Central okrug of **Russia**, the fAPAR observations signal distinct damage to crops (locally crop failure), as a consequence of the late frosts that occurred in early May.

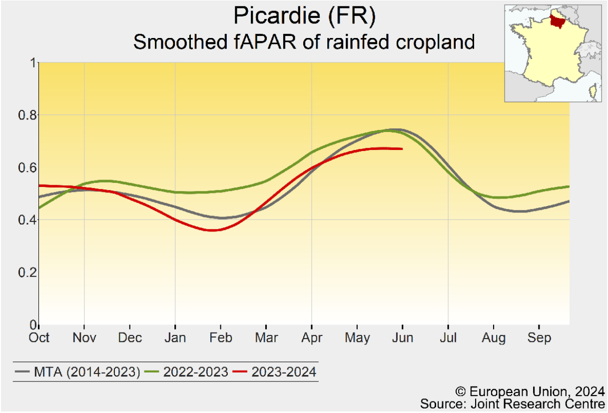


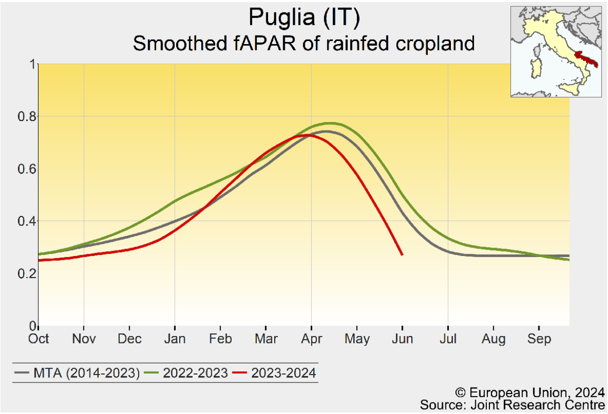


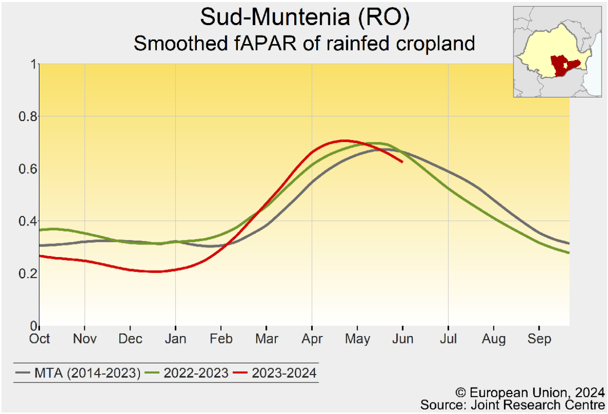





Volgogradskaya Oblast (RU)
Smoothed fAPAR of rainfed cropland
0 0.2 0.4 0.6 0.8 1
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
MTA (2014-2023) 2022-2023 2023-2024
© European Union, 2024
Source: Joint Research Centre


Picardie (FR)
Smoothed fAPAR of rainfed cropland
0 0.2 0.4 0.6 0.8 1
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
MTA (2014-2023) 2022-2023 2023-2024
© European Union, 2024
Source: Joint Research Centre


Puglia (IT)
Smoothed fAPAR of rainfed cropland
0 0.2 0.4 0.6 0.8 1
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
MTA (2014-2023) 2022-2023 2023-2024
© European Union, 2024
Source: Joint Research Centre

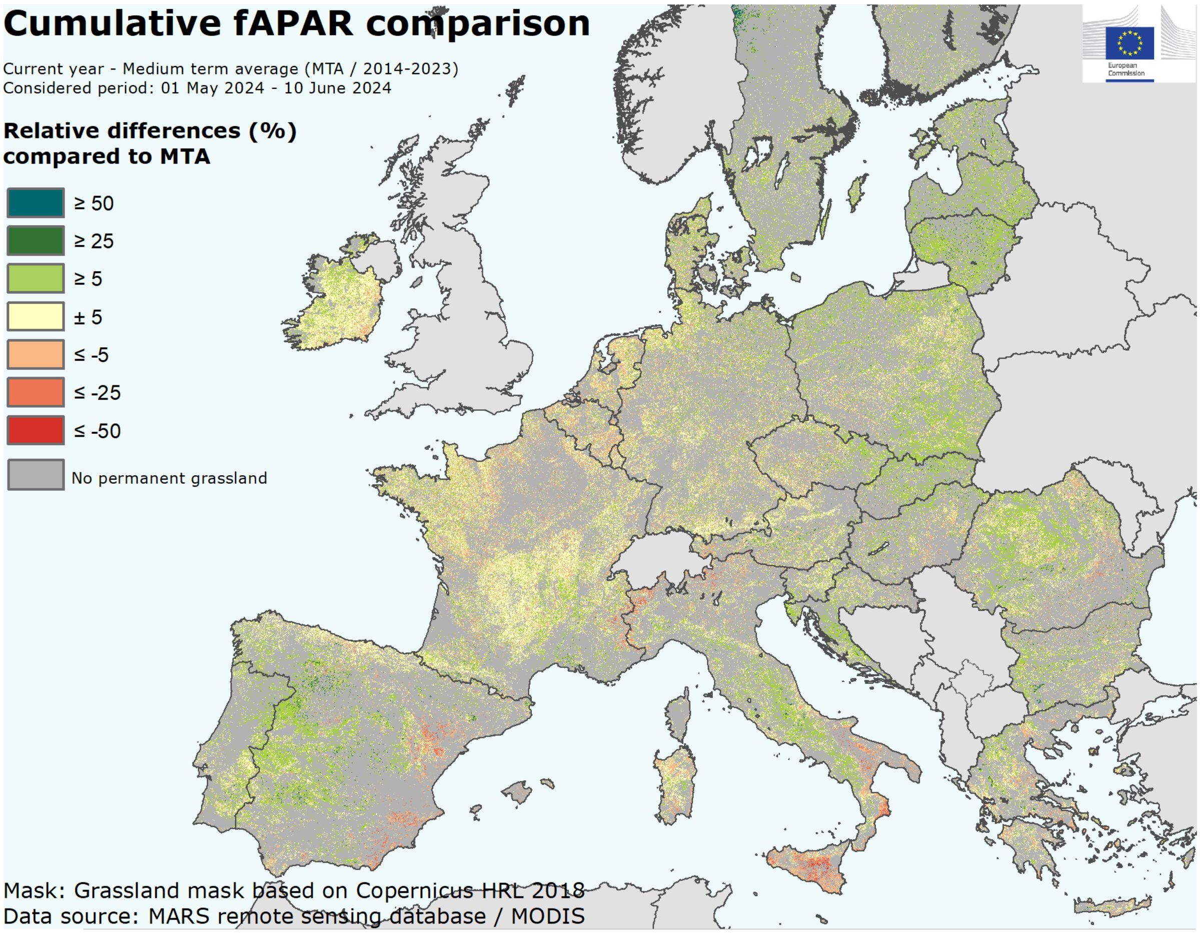

Sud-Muntenia (RO)
Smoothed fAPAR of rainfed cropland
0 0.2 0.4 0.6 0.8 1
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
MTA (2014-2023) 2022-2023 2023-2024
© European Union, 2024
Source: Joint Research Centre

3. Grassland and fodder monitoring

Grasslands thrive in the north and east

The review period is characterised by warmer-than-usual temperatures in central and northern Europe and abundant rainfall in western and part of central Europe. Grassland biomass remains above average in most of northern and eastern Europe, and in most parts of the Iberian peninsula. In other parts of western and southern Europe, accumulated biomass is average to below average, due to water excess (in the west) or deficit (in the south).

The map below displays the differences between the fraction of absorbed photosynthetically active radiation (fAPAR) cumulated from 1 May to 10 June 2024, and the medium-term average (MTA, 2014–2023) for the same period. Positive anomalies (in green) reflect above-average surface greenness, representing above-average biomass accumulation, while negative anomalies (in red) reflect below-average surface greenness.



In **Ireland**, the remote sensing signal is slightly above average in the western half of the country, and in line with the average in the eastern half. In **France**, the map suggests close-to-average grassland productivity. However, wet conditions complicate field operations, especially in the central western part and Alsace and Lorraine, which experienced record levels of rainfall. In the **Benelux countries** and western **Germany**, overly wet conditions continued to hamper growth and field operations. Some farmers have not yet been able to conduct the first cut in the most-affected areas, and grazing is less frequent than usual to avoid damage to muddy sods. Grasslands in southern **Germany** still appear to be in fair shape, yet recent rainfall and local floods probably decreased the biomass accumulation.

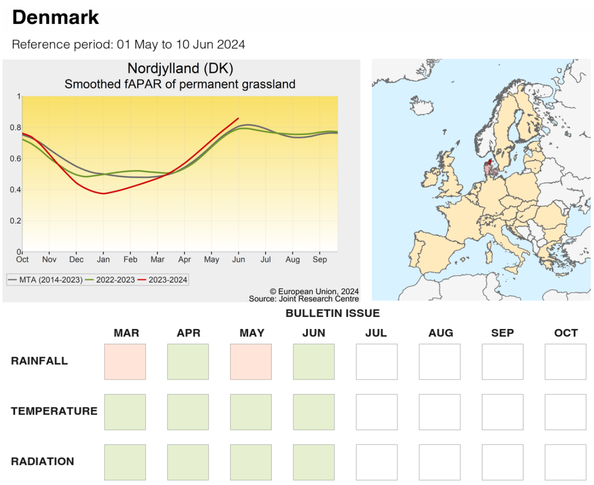
In northern **Germany**, above-average temperatures and beneficial rainfall increased biomass accumulation, as reflected in the above-average fAPAR signals. However, the east is still suffering from a soil moisture deficit that has started to slow down biomass accumulation rates. In **Poland**, warm temperatures stabilised above-average biomass accumulation rates, and recent rainfall sustained growth. However, in the western parts of the country, the recent warm period caused further depletion of soil water levels, with negative effects on biomass accumulation. In **Denmark** and **Sweden**, grasslands are in good condition, and the above-average fAPAR signal suggests higher-than-usual levels of biomass. In **Finland**, warm temperatures and adequate rainfall led to above-average levels of biomass despite the complicated (colder- and drier-than-usual) start of the season. In the **Baltic countries**, growing conditions are positive, with well-above-average biomass levels in all three countries.

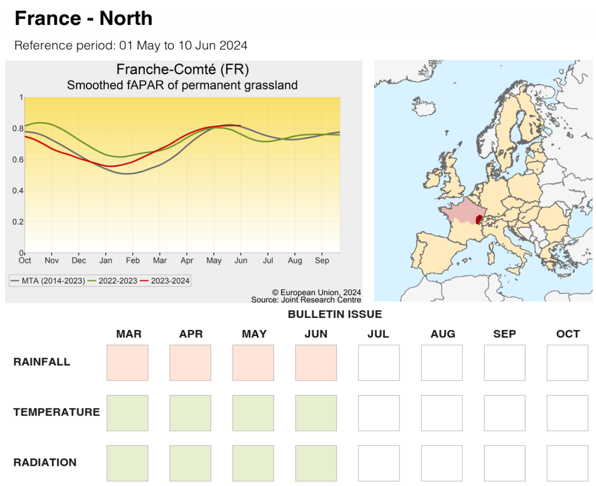
In **Czechia**, grassland biomass reached a plateau in May, with levels above the MTA in the east thanks to warm temperatures. Conversely, levels are slightly below normal further west. In **Slovakia**, growth slowed down after an early start, but remains above average. In **Austria**, biomass accumulation returned to normal, except in Burgenland, where biomass levels are higher than last year and the MTA, thanks to significant rainfall in the second half of May. In **Hungary**, grasslands in the west benefited from abundant precipitation, while the long-lasting rainfall deficit and above-average temperatures led to advanced senescence and decreased photosynthetic activity. **Croatia** and **Slovenia** experienced favourable weather conditions, maintaining above-average biomass accumulation levels.

In western and central **Romania**, biomass formation is in line with the average thanks to near-average rainfall. South-eastern regions experienced a rainfall deficit resulting in an early decrease in photosynthetic activity and below-average grassland productivity. In **Bulgaria** and **Greece**, biomass formation is in line with the average or above average.

In northern **Italy**, grasslands suffered as a result of the overly wet conditions, which limited growth and caused water logging in the soils. At the same time, green maize, the most common fodder crop in northern Italy, is significantly delayed due to the wet soils that hampered sowings. While grassland and fodder crops in central Italy are progressing well under very favourable weather conditions, in southern Italy, notably eastern regions and *Sicilia*, they strongly suffered due to a persistent deficit of precipitation and high temperatures.

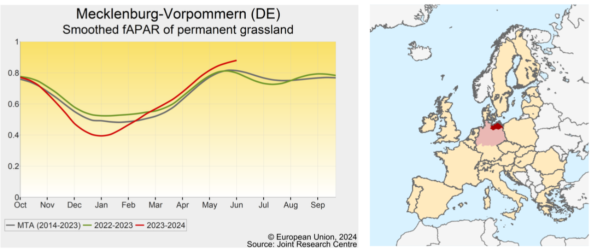
Northern **Spain** and **Portugal** continue to benefit from this year's favourable weather conditions. Except in Aragon, which is still suffering from the drought that affected the eastern part of the peninsula, the fAPAR signal continues to indicate above-average biomass accumulation. In the south of the peninsula, the remote sensing signal showed a return to close-to-average biomass accumulation, and grasslands are about to enter their summer dormancy phase.





Germany - North

Reference period: 01 May to 10 Jun 2024

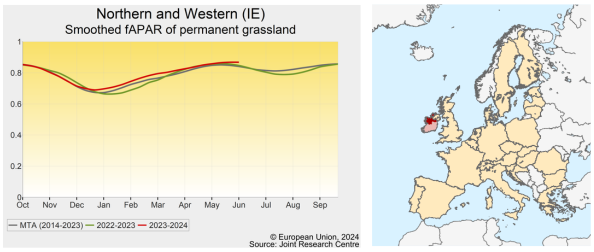


BULLETIN ISSUE

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
RAINFALL								
TEMPERATURE								
RADIATION								

Ireland

Reference period: 01 May to 10 Jun 2024

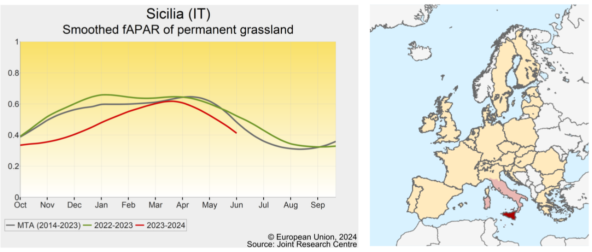


BULLETIN ISSUE

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
RAINFALL								
TEMPERATURE								
RADIATION								

Italy - Center, South and Islands

Reference period: 01 May to 10 Jun 2024

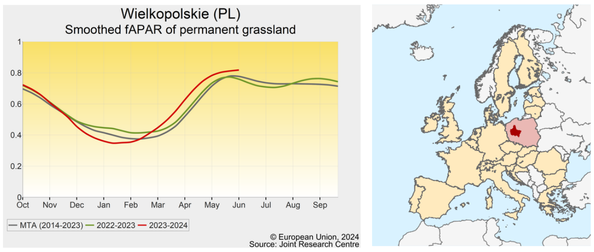


BULLETIN ISSUE

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
RAINFALL								
TEMPERATURE								
RADIATION								

Poland

Reference period: 01 May to 10 Jun 2024

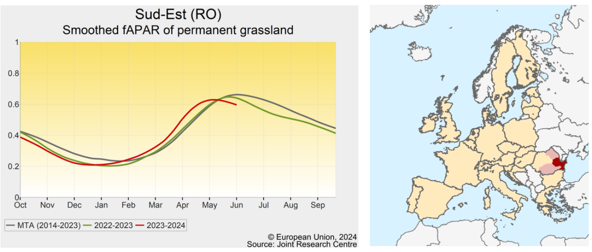


BULLETIN ISSUE

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
RAINFALL								
TEMPERATURE								
RADIATION								

Romania - East and South

Reference period: 01 May to 10 Jun 2024

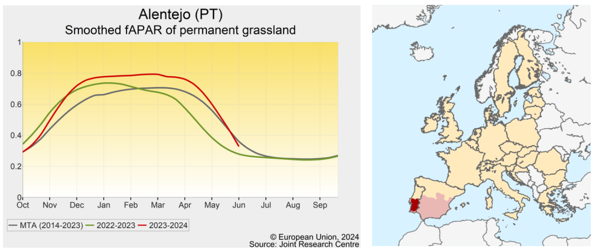


BULLETIN ISSUE

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
RAINFALL								
TEMPERATURE								
RADIATION								

Spain and Portugal - South

Reference period: 01 May to 10 Jun 2024



BULLETIN ISSUE

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
RAINFALL								
TEMPERATURE								
RADIATION								

4. Rice in Europe

A favourable start to the season, despite sowing delays

The sowing campaign in large parts of Europe's rice-growing regions was characterised by delays, as a consequence of frequent rain events in April and May. Compared with 2023, the area sown with rice is projected to increase by 4 % in Italy (which accounts for 55 % of EU production) and by 13 % in Spain (which represents 23 % of EU production). The increase in the sown area was driven by the higher levels of snowpacks and of water in reservoirs available for irrigation. The yield forecast is based on historical trends and is 7.0 % above the 5-year average at the EU level.

In **Italy**, this year's sowing campaign was influenced by continuous and incessant rainfall in northern regions in March and April. Most farmers had to postpone the preparation of rice fields, and consequently the sowing, as is clearly reflected in the fAPAR profile below for Vercelli. The short periods during which soil moisture levels were suitable for sowing were used for dry seeding with late rice varieties. The prevailing relatively low temperatures may have reduced the effectiveness of pre-emergence weed treatments. An increase of 9 600 ha in the rice area is expected this season, representing a 4.1 % increase compared with 2023 (but in line with 2022) ([1]).

The sowing campaign in **Spain** has progressed with some delays, but overall well as a result of improved water availability. According to government information, the rice-cultivated areas will reach even 64 000 ha, nearly 15 % more than the previous season([2]). The sowing campaign in *Andalucía* proceeded smoothly. The peculiar fAPAR image for Seville is attributed to weeds that proliferated after rice fields were abandoned in 2023, but that were removed before this year's sowing campaign. In *Extremadura*, a normal irrigation campaign is expected to cover the entire rice-cultivated area, but farmers experienced difficulties in procuring seed after a very poor year for rice seed producers in 2023. Positive expectations also prevail in the rice-cultivated areas at the mouth of the Ebro (*Cataluña*) and Albufera (*Valencia*) rivers, given the improved water availability. Our yield forecast is above the 5-year average.

The onset of the rice season in **Greece**, specifically in Central Macedonia, was delayed by 10–15 days because of the rainy weather in mid April, which hindered preparatory field work (i.e. land levelling, soil tillage). Despite the delay, plant emergence at the beginning of June progressed well. Overall expectations for final production are positive.

In **Portugal**, the start of the rice season was marked by temperatures 2–3 °C above average in April, followed by moderately below-average temperatures in May and June. Rainfall has been very favourable, and, unlike 2023, no restrictions are expected on the use of irrigation water for rice fields. Rice growth is somewhat delayed compared with an average season, but faring well overall in both the *Coimbra* and *Leziria do Tejo* regions. Our yield forecast is in line with the medium-term trend.

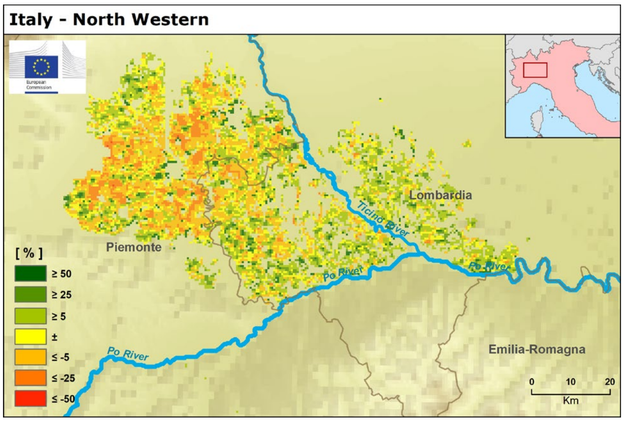
Seasonal weather conditions have prevailed in southern **France** (*Bouches-du-Rhône*), with frequent rain events in May and temperatures in line with the LTA in May and June. Such weather conditions allowed the favourable progress of sowing and good emergence, resulting in positive expectations for final production.

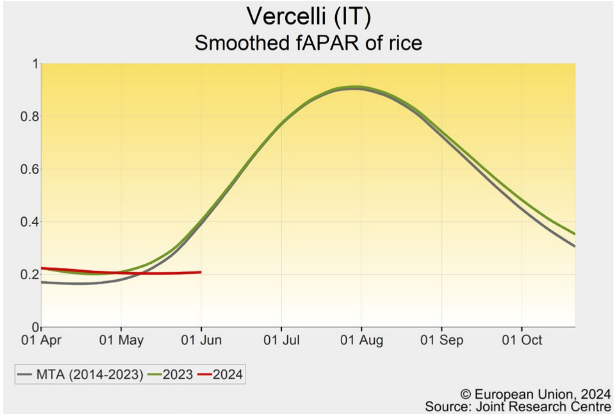
In **Bulgaria** (*Plovdiv* and *Stara Zagora*), seasonal daily temperatures since the last dekad of April and average rainfall allowed the timely completion of the rice-sowing campaign. Satellite images confirm a phenological stage at the beginning of the vegetative phase and biomass accumulation levels in line with the MTA. Our forecast is close to the 5-year average.

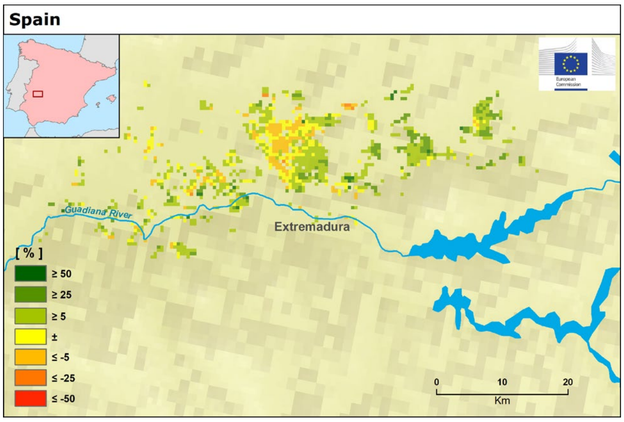
The start to the rice season in **Romania** was characterised by seasonal or slightly below-average daily temperatures in May, followed by a rise in temperatures in June to 3–4 °C above the LTA. Precipitation was around the LTA. Biomass accumulation during the early vegetative stages appears to be higher than average and similar to last year. Our yield forecast for the country is above the 5-year average.

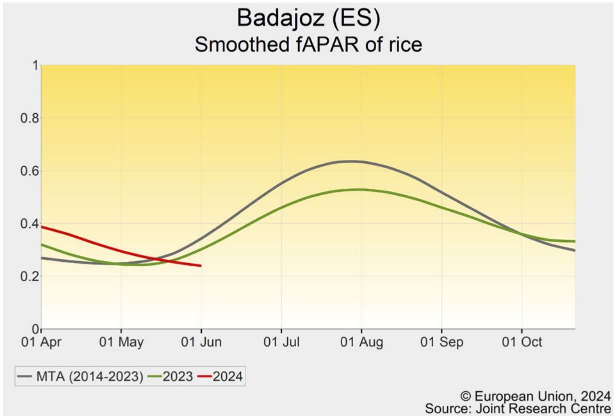
Hungary has experienced mild temperatures and near-average precipitation. The area sown with rice is expected to be similar to last year. The potential yield variation will largely depend on temperatures in the coming months. At this stage, our yield forecast is trend-based: 3 % above the average of the last 5 years.

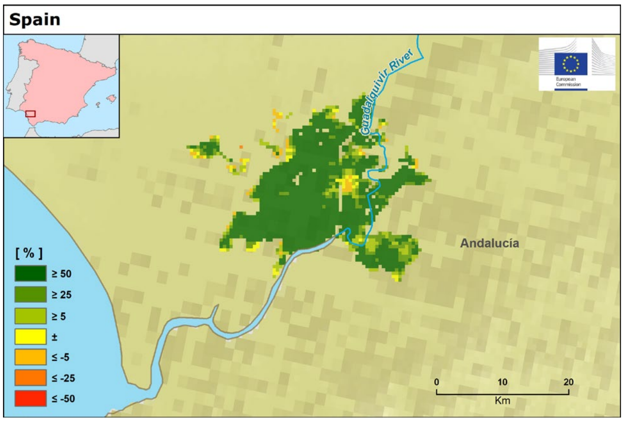
(1) https://www.enterisi.it/servizi/funzioni/download.aspx?ID=109851&IDc=784
(2) https://www.mapa.gob.es/es/estadistica/temas/estadisticas-agrarias/cuaderno_marzo2024_tcm30-683977.pdf

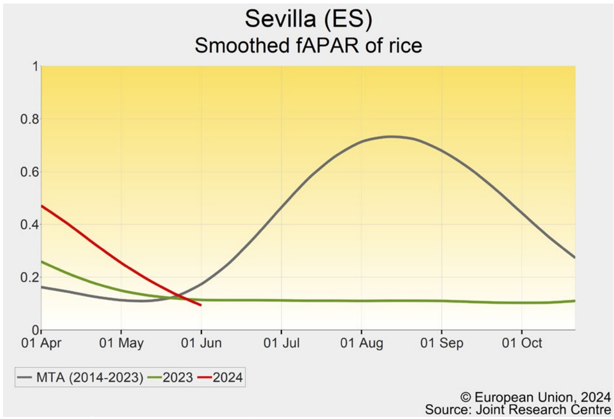

Italy - North Western
Lombardia
Piemonte
Emilia-Romagna
Ticino River
Po River
[%]
≥ 50
≥ 25
≥ 5
±
≤ -5
≤ -25
≤ -50
0 10 20
Km

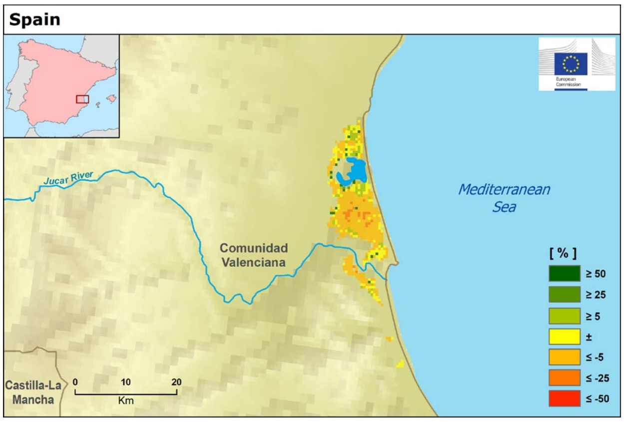

Vercelli (IT)
Smoothed fAPAR of rice
1
0.8
0.6
0.4
0.2
0
01 Apr
01 May
01 Jun
01 Jul
01 Aug
01 Sep
01 Oct
MTA (2014-2023)
2023
2024
© European Union, 2024
Source: Joint Research Centre

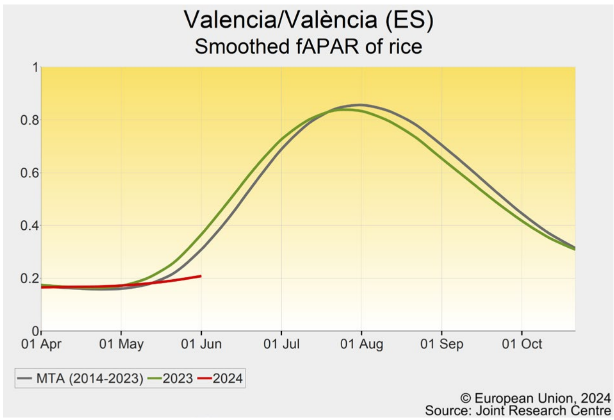

Spain
Guadiana River
Extremadura
[%]
≥ 50
≥ 25
≥ 5
±
≤ -5
≤ -25
≤ -50
0 10 20
Km

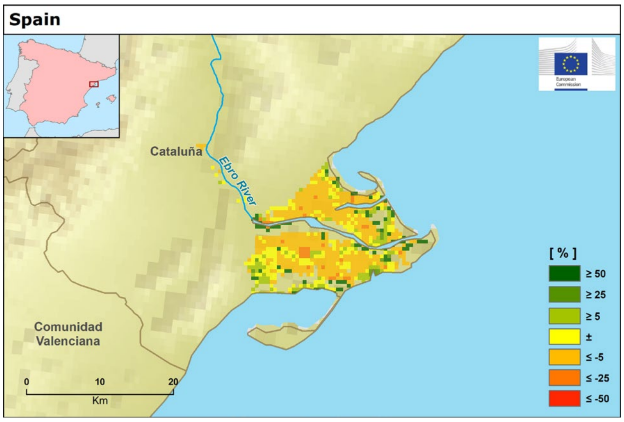

Badajoz (ES)
Smoothed fAPAR of rice
1
0.8
0.6
0.4
0.2
0
01 Apr
01 May
01 Jun
01 Jul
01 Aug
01 Sep
01 Oct
MTA (2014-2023)
2023
2024
© European Union, 2024
Source: Joint Research Centre

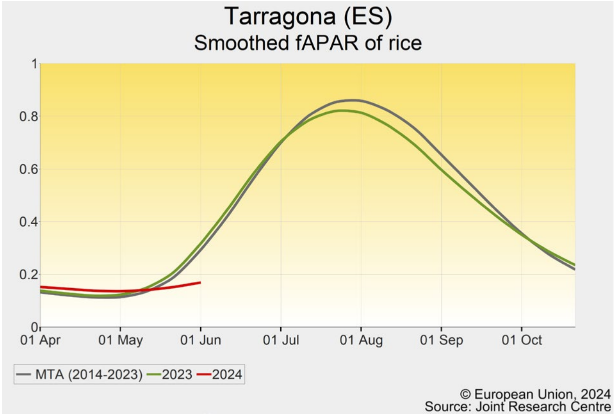

Spain
Guadalquivir River
Andalucia
[%]
≥ 50
≥ 25
≥ 5
±
≤ -5
≤ -25
≤ -50
0 10 20
Km

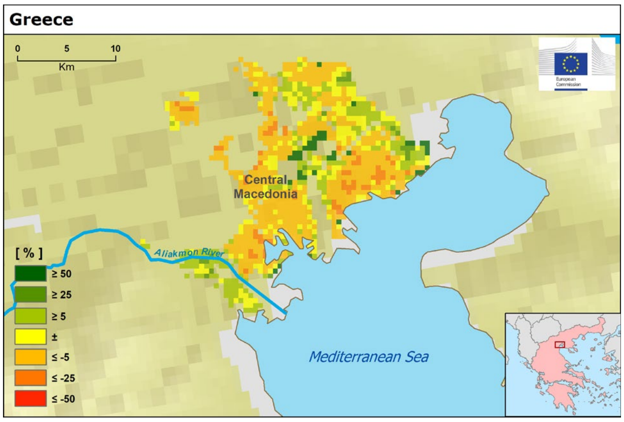

Sevilla (ES)
Smoothed fAPAR of rice
1
0.8
0.6
0.4
0.2
0
01 Apr
01 May
01 Jun
01 Jul
01 Aug
01 Sep
01 Oct
MTA (2014-2023)
2023
2024
© European Union, 2024
Source: Joint Research Centre

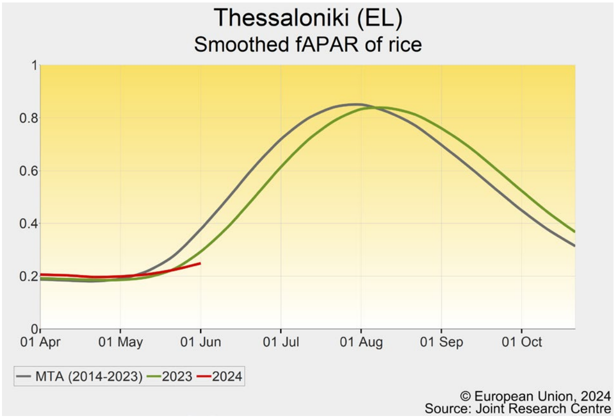

Spain
Jucar River
Comunidad Valenciana
Mediterranean Sea
Castilla-La Mancha
[%]
≥ 50
≥ 25
≥ 5
±
≤ -5
≤ -25
≤ -50
0 10 20
Km

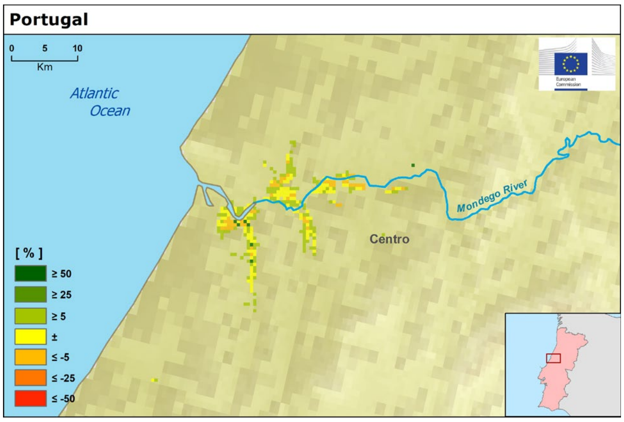

Valencia/València (ES)
Smoothed fAPAR of rice
1
0.8
0.6
0.4
0.2
0
01 Apr
01 May
01 Jun
01 Jul
01 Aug
01 Sep
01 Oct
MTA (2014-2023)
2023
2024
© European Union, 2024
Source: Joint Research Centre

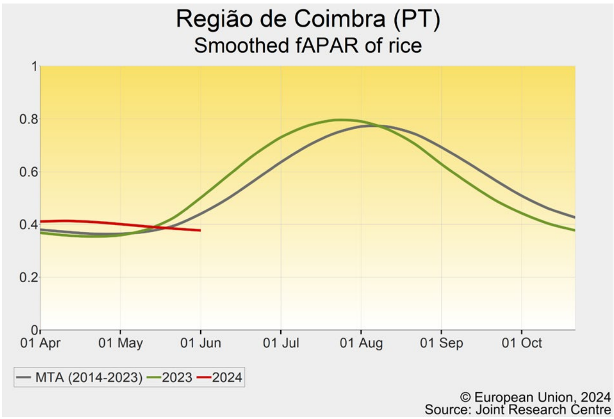

Spain
Cataluña
Ebro River
Comunidad Valenciana
0 10 20
Km
[%]
≥ 50
≥ 25
≥ 5
±
≤ -5
≤ -25
≤ -50

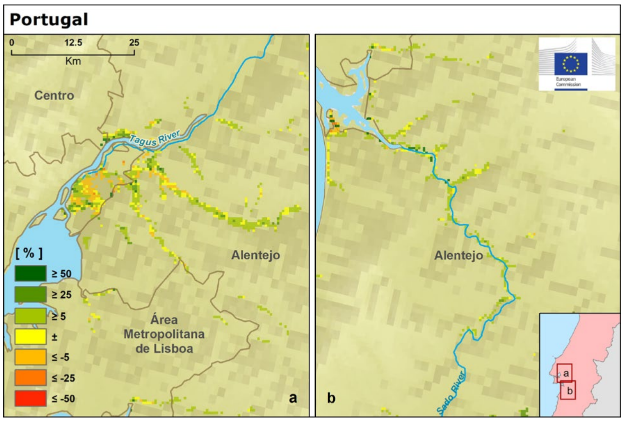

Tarragona (ES)
Smoothed fAPAR of rice
01 Apr
01 May
01 Jun
01 Jul
01 Aug
01 Sep
01 Oct
MTA (2014-2023)
2023
2024
© European Union, 2024
Source: Joint Research Centre

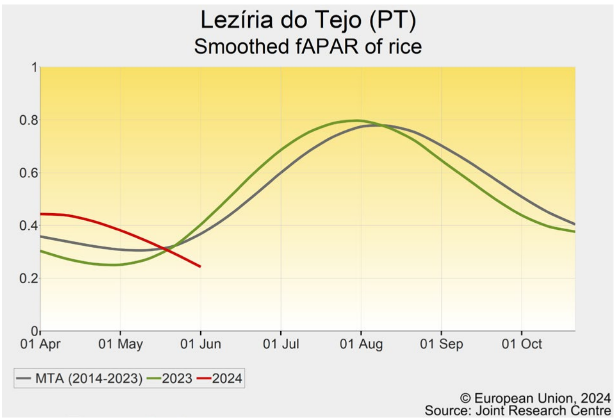

Greece
0 5 10
Km
Central Macedonia
Aliakmon River
Mediterranean Sea
[%]
≥ 50
≥ 25
≥ 5
±
≤ -5
≤ -25
≤ -50

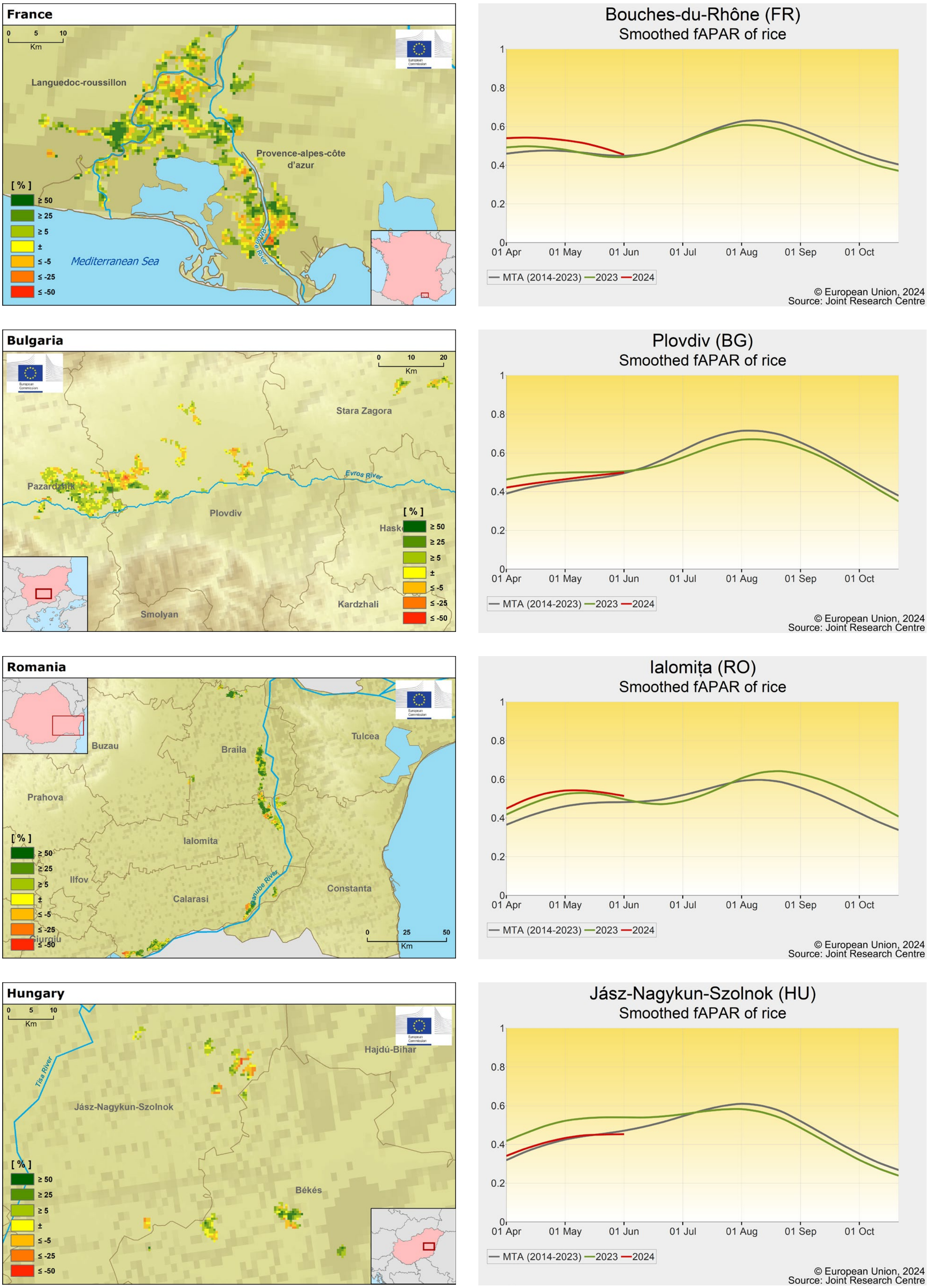

Thessaloniki (EL)
Smoothed fAPAR of rice
01 Apr
01 May
01 Jun
01 Jul
01 Aug
01 Sep
01 Oct
MTA (2014-2023)
2023
2024
© European Union, 2024
Source: Joint Research Centre


Portugal
0 5 10
Km
Atlantic Ocean
Mondego River
Centro
[%]
≥ 50
≥ 25
≥ 5
±
≤ -5
≤ -25
≤ -50


Região de Coimbra (PT)
Smoothed fAPAR of rice
01 Apr
01 May
01 Jun
01 Jul
01 Aug
01 Sep
01 Oct
MTA (2014-2023)
2023
2024
© European Union, 2024
Source: Joint Research Centre


Portugal
0 12.5 25
Km
Centro
Tagus River
Alentejo
Área Metropolitana de Lisboa
Alentejo
Sado River
a
b
[%]
≥ 50
≥ 25
≥ 5
±
≤ -5
≤ -25
≤ -50


Lezíria do Tejo (PT)
Smoothed fAPAR of rice
01 Apr
01 May
01 Jun
01 Jul
01 Aug
01 Sep
01 Oct
MTA (2014-2023)
2023
2024
© European Union, 2024
Source: Joint Research Centre



The maps display the difference between the cumulative fraction of photosynthetic active radiation (fAPAR) from 1 April to 10 June 2024 and the medium-term average (2014–2023) for the same period. Mask: rice areas based on Corine Land Cover 2018. Data source: JRC MARS remote sensing database / MODIS.

5. Country analysis

5.1. European Union

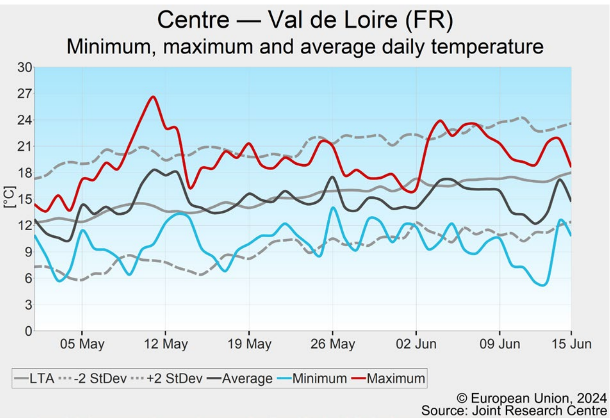
France

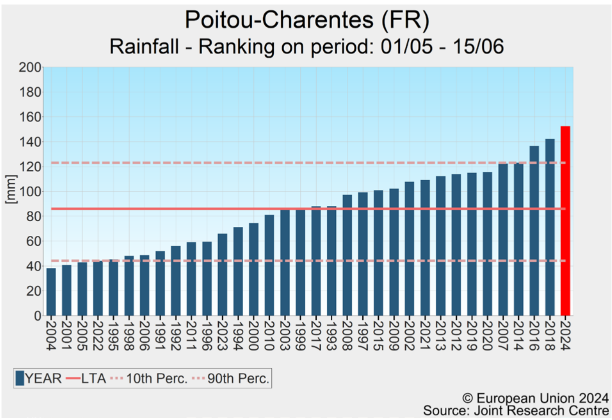
Continuing wet conditions resulting in below-average yield outlook for most crops

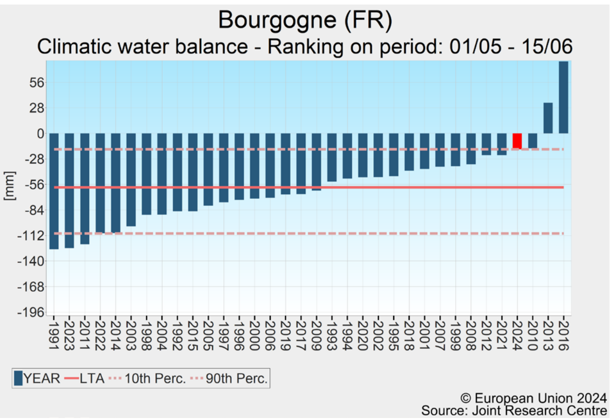
The wet weather persisted across France, significantly increasing the risk of pests and diseases for winter and spring crops. Unfavourable weather also impeded the sowing process and hindered the early development of summer crops.

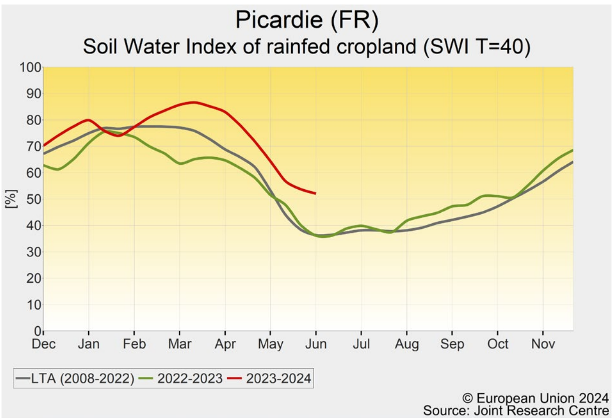
The review period was characterised by wetter-than-average conditions across a wide band from the north-east to the central Atlantic coast. During the review period, the north-eastern region experienced up to 200 mm of precipitation, exceeding the average more than two-fold. From 1 to 20 May, the western regions received more than 130 mm of rain, making 2024's the wettest season in our 30-year record database. Overall, temperatures in May were close to average, whereas June saw below-average temperatures, especially in the north. Radiation levels during the review period were slightly below average (– 1.5 % at the country level).

The wet conditions continue to have a negative impact on winter and spring crops, which are currently in the grain-filling stage. Pest and disease pressure remains high in most regions, particularly in the north-east and in parcels with heavy and poorly draining soils. However, the relatively mild temperatures since May have had a positive effect during the grain-filling stage, such that a low ear density may be compensated for by higher-than-normal grain weights. The summer crop sowing campaign was completed in early June, about 2 weeks later than usual. This delay might affect yields, as farmers had to choose early-maturing varieties with lower yield potential. Yield forecasts for soft wheat and rapeseed have been reduced to account for the effects of persistent rain, while the yield outlook of summer crops is slightly reduced because of the expected shorter season; both winter and summer crop yield forecasts are now around or below the trend.









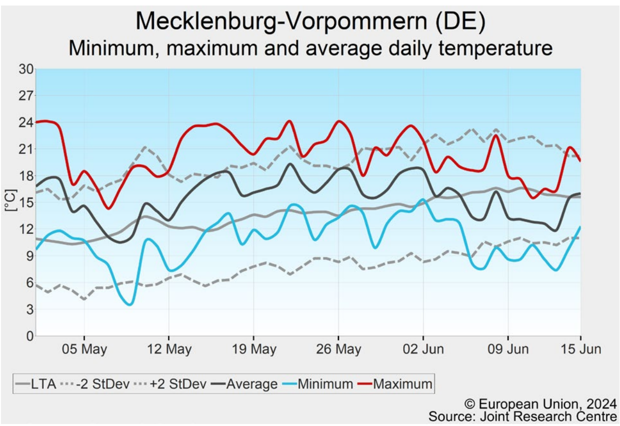
Germany

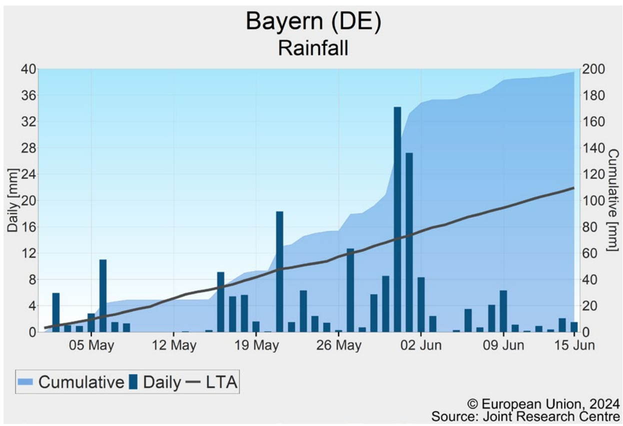
Favourable conditions in the north and east, while the south and west face serious water excess

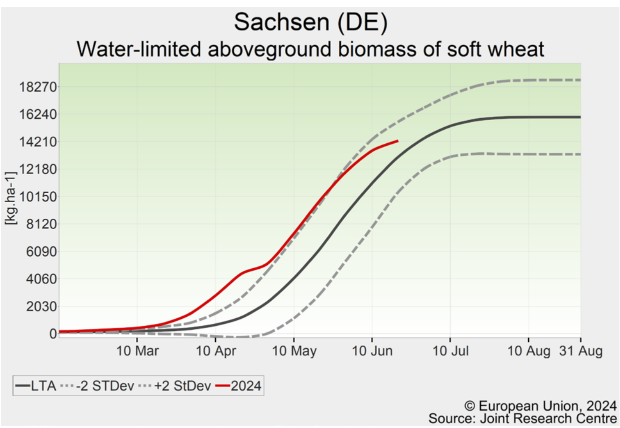
Warm conditions in the north and east were beneficial for crop development but are starting to dry soils in the east. Heavy rainfall with serious flooding in the west and south caused overly wet soils that compromise growing conditions.

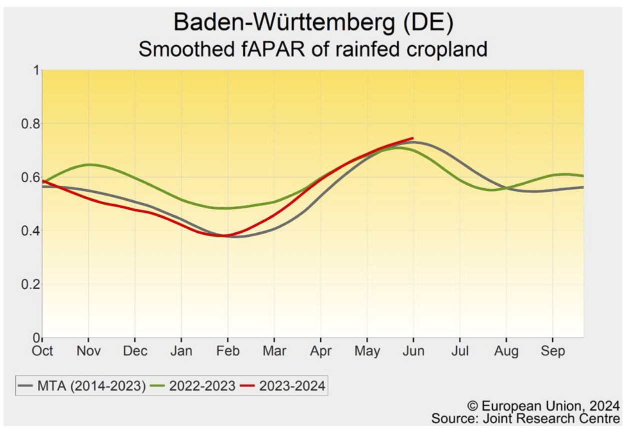
The first half of May was characterised by slightly colder-than-usual weather and episodic rainfall events, especially in southern and western Germany. Since then, above-average temperatures during the day and below-average temperatures at night have brought the temperature sum for the reporting period as a whole close to the LTA. The dry period led to a considerable rainfall deficit, with record-low precipitation totals since mid-May (only approximately 50% of the LTA in the country as a whole and a deficit of around 80% in the north-east). While abundant precipitation in the previous months had fully restored soil moisture in the west and south, northern and eastern Germany did not experience this beneficial rainfall and these areas are now facing severely decreased soil water levels (e.g. -25% in *Mecklenburg-Vorpommern*) and hence considerably reduced plant water availability.

Currently, these conditions have not yet affected plant growth and consequently our yield forecasts for winter crops remain above the 5-year average. Rainfall in the coming weeks will be crucial for grain filling and for maintaining yield expectations, and weather forecasts for the next week suggest the return of precipitation across Germany, even though it might remain below average. Summer crops, benefiting from the higher temperatures and radiation levels during the day, have so far gained ground after the delay in sowing but are still behind schedule. However, if conditions remain dry, the increasing soil moisture deficit may have a significant negative impact on crop development and yield. Our yield estimates for summer crops remain generally positive compared to both the 5-year average and 2022, but some were revised downwards (e.g. sugar beet, potatoes and sunflowers).





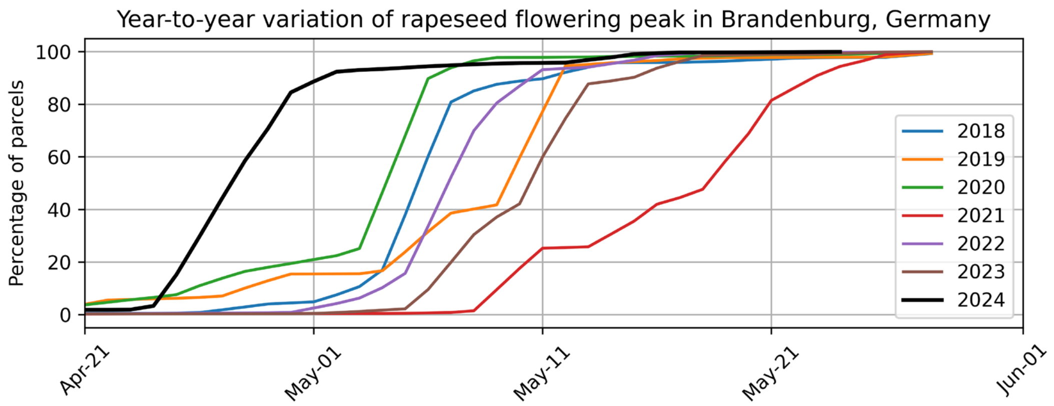




Detecting rapeseed flowering using earth observation

In 2024 Germany has experienced the warmest period from mid-February to mid-April recorded in the past 30 years. The advances of plant phenology were visible across nearly all vegetation types in central European countries. Key phenological phases were advanced by up to two weeks, including the flowering of winter rapeseed. The accurate detection of flowering is an important step for successful yield predictions.

Information from the Copernicus Sentinel-2 satellites deliver adequate temporal and spectral information to timely identify the yellow colour of flowering rapeseed parcels[3]. The following example shows the potential for such quantification for rapeseed parcels in Brandenburg, Germany (around 100'000 ha in 2023), and the differences in flowering peaks from 2018 to 2024. The 'Flowering peak' in the graph below describes the moment, in which the yellowness of a parcel reaches its maximum. The lines in the graph show the cumulative occurrence of parcels that met this criterion over time. They reveal that the widespread peak of flowering in 2024 was reached considerably earlier as compared to the six years before. When compared to phenological ground observations of the beginning of flowering, provided by the German Weather Service (DWD[4]), a delay of the detected flowering peak of one to two weeks can be regularly observed throughout the years, which is in good agreement with the expected phenological development of rapeseed and demonstrates the stability of the approach. This analysis can be extended to other regions, offering in-season information on the flowering stages of rapeseed and could improve future yield predictions.



[3] https://doi.org/10.1016/j.rse.2020.111660
[2] https://www.dwd.de/DE/leistungen/phaeno_akt/phaenoakt.html

Poland

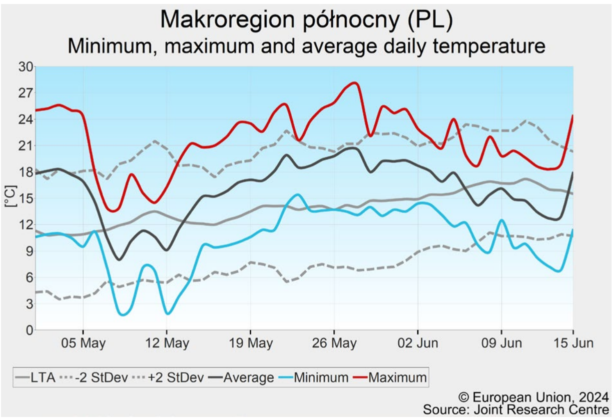
Positive yield outlook despite concerns about rainfall deficit

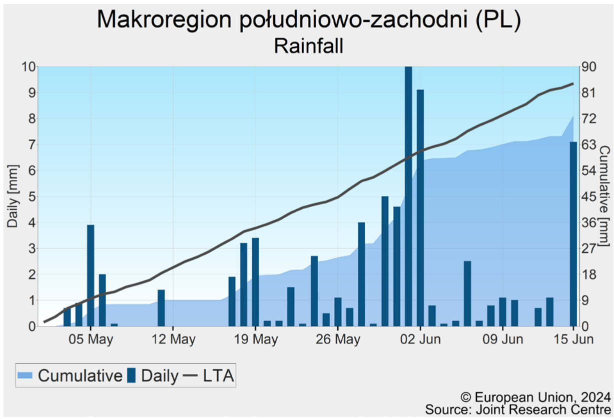
The very warm May, with temperatures above average across the country, provided favourable growing conditions. However, below-average precipitation further deteriorated the available soil water, with additional rain required.

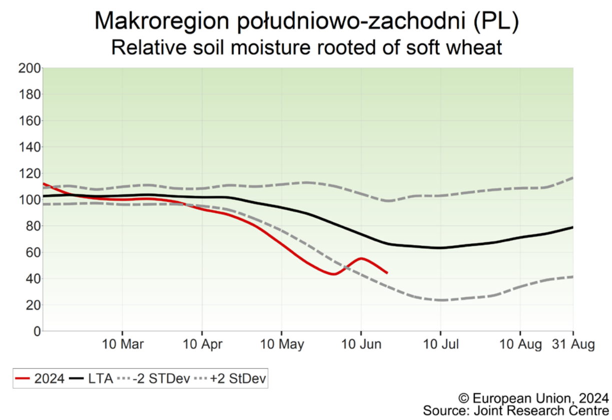
In May, temperatures across Poland reached record levels of up to 30 °C, especially in the north, before returning to average levels in June. At the same time, it was exceptionally dry in the first two dekads of May, leading to a fast decline of soil moisture. Thereafter and until early June, about 30–80 mm of rainfall partially alleviated the soil water deficit but the combination with high temperatures led to topsoils continuing to be dry, especially in the north-east and south-west.

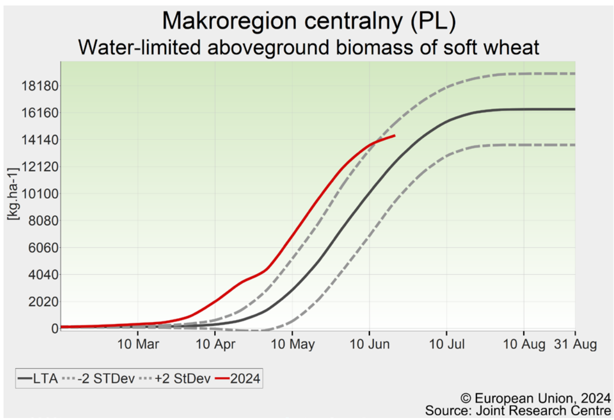
Both summer and winter crops benefited from the warm conditions. Repeated rainfall and warm temperatures after the summer crop sowing were beneficial for emergence and early development. However, the still limited soil moisture levels have not yet impacted crops and could lead to a decrease in productivity during grain filling if these conditions persist. More rain is needed quickly to sustain the growth of both winter and summer crops. Current weather forecasts show that deficits might be eliminated in the north-east, but the forecasted rainfall will probably not suffice in the west.

Considering the favourable overall conditions and the still-limited influence of the soil moisture deficit, our winter crop yield forecasts have been slightly increased. The yield forecasts of summer crops have received minor adjustments, mainly positive, to account for the beneficial weather conditions.









Romania

Yield forecast revised down for winter crops

Beneficial rains provided adequate water supply in most parts of Romania, but the important south-eastern regions suffered a precipitation deficit. The yield outlook for winter crops was revised down. The situation is also delicate for summer crops in the south.

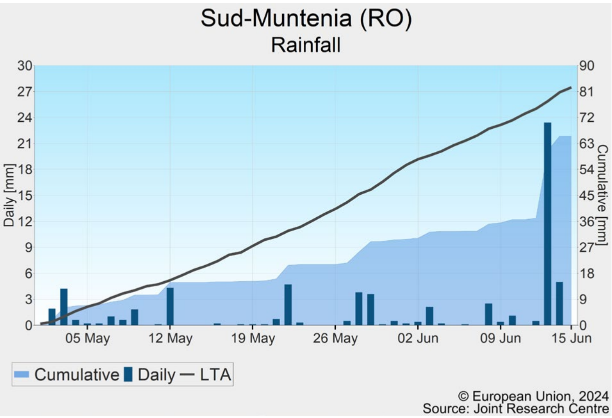
In May, daily temperatures fluctuated above the LTA in the north-eastern regions, but remained slightly below average in the south-east, while elsewhere near-seasonal thermal conditions were experienced. In late May, temperatures steeply increased, and there was a heatwave in the southern and eastern areas, with daily maxima between 30 °C and 37 °C until 12 June.

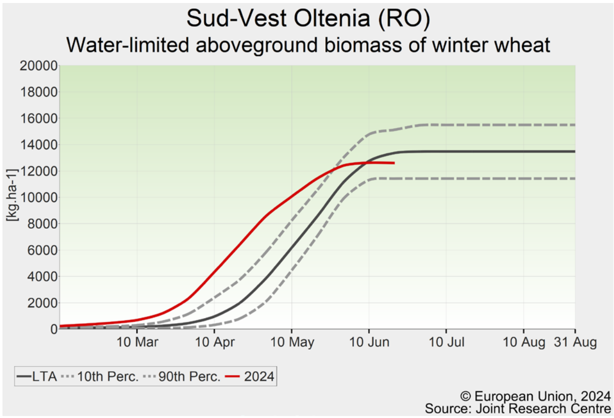
Precipitation during the review period was in the range of 80–160 mm in most of Romania, thus reaching the LTA or exceeding it by up to 60 %. However, in western and south-eastern regions, rainfall remained mostly below average and was poorly distributed, since most of it arrived around 13 June, after a long dry period.

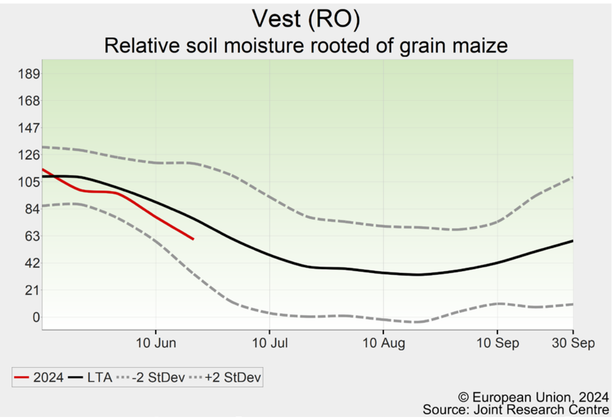
While the warm period in April advanced the development of winter crops, the more moderate temperatures of May were favourable for yield formation. The hot spell in June accelerated canopy senescence and shortened the reproductive phase.

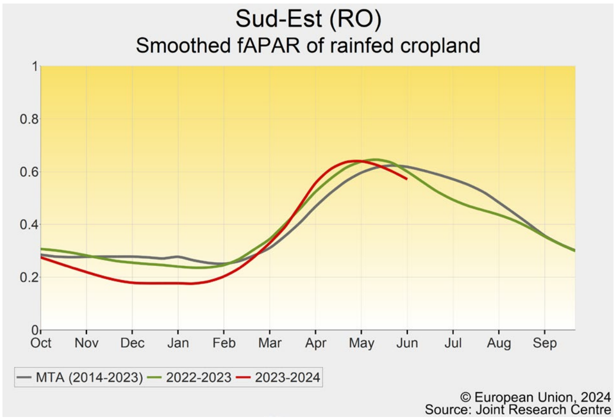
Crop model simulations show near- to above-average biomass accumulation of winter crops in most regions, but in some areas at the western border (in the *Vest* region), and in the south-eastern part of the country (e.g. *Sud-Muntenia*, *Sud-Est*) along the foot of the Carpathian Mountains, biomass accumulation is below average due to the limited water supply. Therefore, our yield forecasts for winter cereals were revised downwards and are now close to the 5-year average.

Soil moisture contents for summer crops decreased sharply to below-average levels in southern Romania. Canopy development and biomass formation have been adequate so far, but (unless irrigated) the crops have become very vulnerable to dry and hot conditions, which are forecast for the coming week. The yield forecasts for grain maize and sunflowers were revised downwards to below the 5-year average.









Spain and Portugal

Continuing positive outlook for winter and spring crops

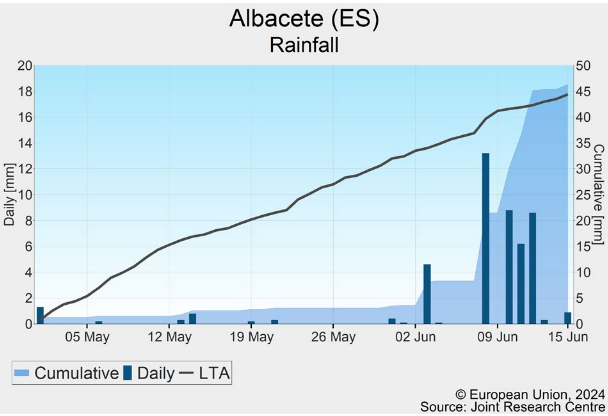
The harvest of winter crops has begun in the southern regions of the peninsula. Field-based reports confirm the positive yield expectations. Favourable conditions persist in Castilla y León, while water deficit and heat stress reduced the yield potential in eastern regions. Summer crops are developing under average conditions.

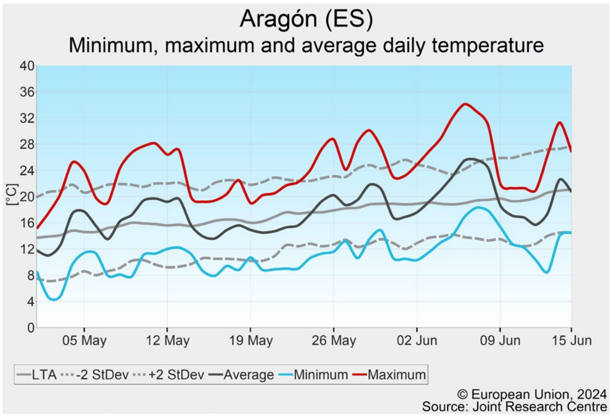
During the review period, the south of the peninsula experienced dry conditions, while widespread rains occurred in the north, and precipitation arrived in the east in June. Heat spells occurred in the first half of both May and June, whereas the second half of May was colder than usual. These conditions facilitated the grain filling of crops in *Castilla y León*. However, the heat spells had a negative impact in the eastern parts of the peninsula, which had been suffering from a water deficit since the start of the season. The rains recorded in June in these regions arrived too late to be of significant benefit. Consequently, below-average winter crop yields are expected in areas such as southern *Aragon*, southern *Cataluña* and eastern *Albacete* in *Castilla La Mancha*.

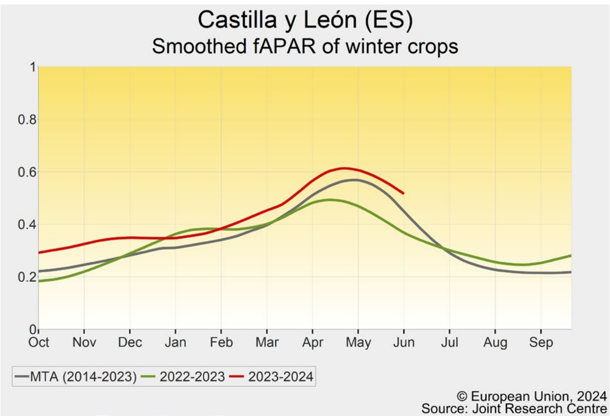
In southern parts of the peninsula, the harvest of winter cereals began during the second half of May and has been progressing very well. Above-average yields and quality have been confirmed by regional authorities[5] and farmers organisations[6]. The harvest is about to start in *Castilla La Mancha* and southern areas of *Castilla y León*.

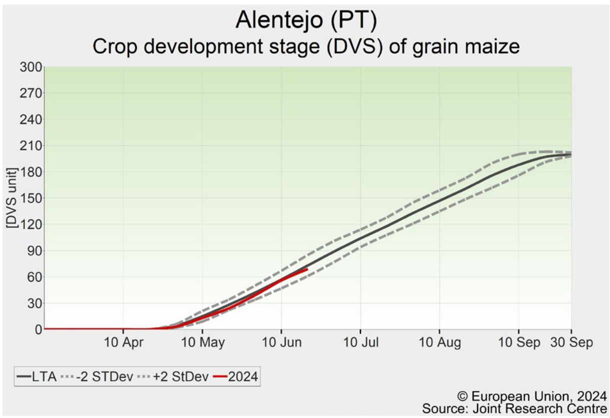
At national level, our yield forecasts for winter and spring crops are maintained, notably above the 5-year average.

Our crop simulation models suggest that summer crops in both countries are progressing well in growth and development, in line with an average season. The yield forecast remains slightly above the 5-year average.









[5] https://www.juntadeandalucia.es/agriculturapescaaguaydesarrollorural/raif/boletin-provincial/informe-semanal/
[6] https://www.agrodigital.com/2024/05/27/iniciada-la-cosecha-de-trigos-en-andalucia-con-luces-y-sombras-segun-las-zonas/

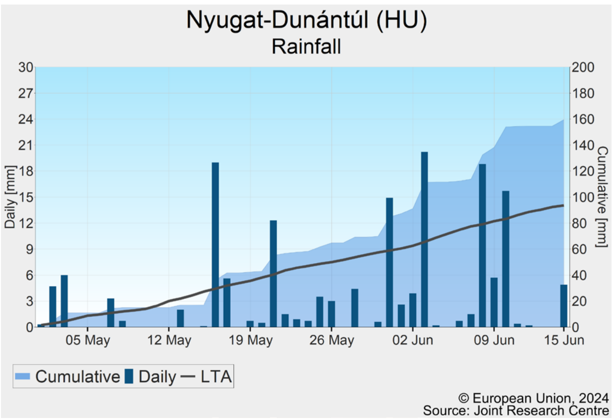
Hungary

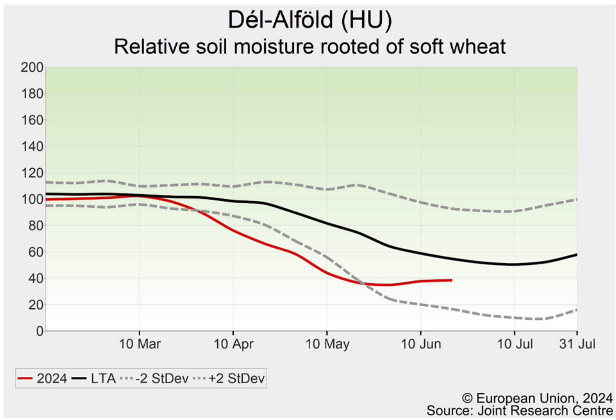
Winter crop yield forecasts revised down

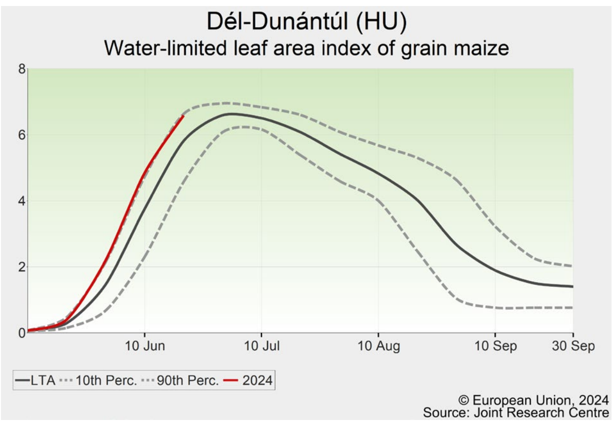
In the south-east, winter crops faced water supply problems that led to a downward revision of our forecasts for winter cereals, together with the heatwave forecast for the third dekad of June. Summer crops have shown fair development and growth so far.

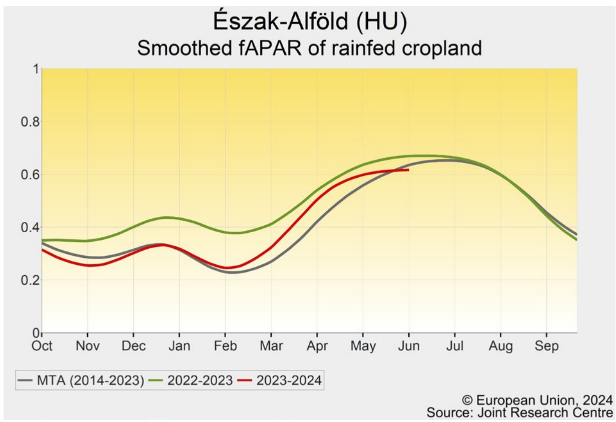
Average weather predominated during the first dekad of May. A short but significant drop in temperatures occurred around 15 May. During this cold spell, daily minimum temperatures decreased to slightly below 0 °C in some north-eastern regions. From 18 May onward, daily temperatures mostly increased again to above the LTA, but remained in a moderate range, with maxima exceeding 30 °C only for a few days in early June. Scarce (< 10 mm) rainfall characterised the northern and eastern regions until mid May. Later, substantial rainfall occurred across the country, and rainfall totals for the whole review period approached normal levels (60–80 mm) in the south-east, while elsewhere 100–200 mm was recorded, 30–150 % above the LTA.

The phenological development of winter crops is advanced. In the east, below-average soil moisture levels prevailed in May despite some recurring rainfall in late May and early June. The limited crop water supply compromised the biomass accumulation of storage organs and accelerated the senescence of leaves. In contrast, the soil moisture levels remained high in the west during the flowering and early grain-filling stages of winter crops. Here, the pest pressure has been high. Therefore, the overall yield forecasts for winter cereals and rapeseed have been revised downward.
The growth of spring and summer crops is moderately advanced. The soil water content is satisfactory for vegetative development, except in the east, where it is moderately below average. As biomass accumulation and canopy expansion are adequate, our yield forecasts of summer crops have been increased to slightly above the trend.









Italy

Winter crop conditions further deteriorated

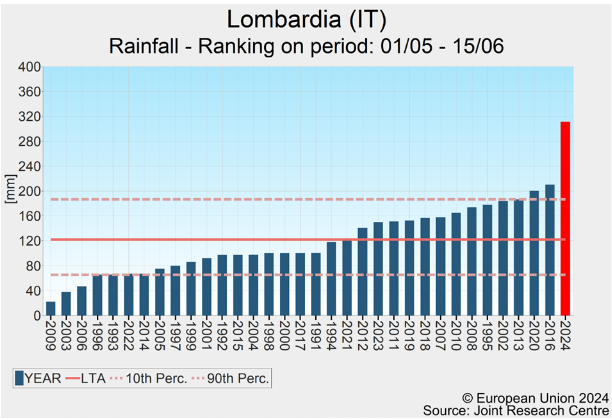
While the persistent over-wet conditions in the north continue to affect both winter and summer crops, the continued dry spell in the south is reducing durum wheat yield expectations.

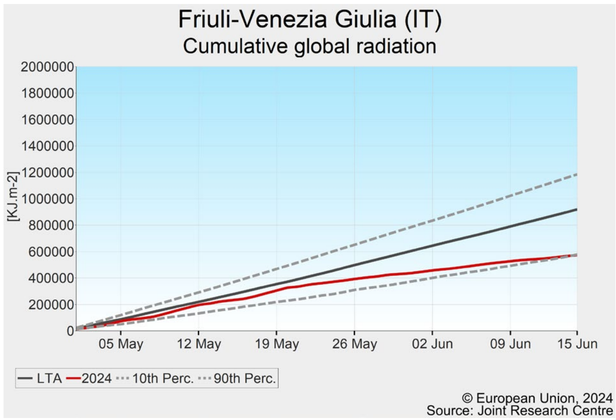
In the north, the spring season of 2024 is the wettest in our records (since 1978). Although temperatures remained around average, the persistent cloud cover significantly reduced incoming radiation, particularly in *Friuli-Venezia Giulia* (– 30 % since 1 May). Winter crops are now close to maturity, but the abundant rain negatively affected pollination and caused widespread lodging. The soils remain too wet for proper field management, and harvest cannot start. In addition, the excess humidity might affect the quality of winter crop grains. Regarding summer crops, the planting of maize and soybeans was considerably delayed, and initial growth has been slow so far. In certain areas, notably in the north-east, planting is yet to be completed, or replanting is still to occur. Nevertheless, with average summer conditions in the next few weeks the season could still develop more favourably, and final yields could still reach average values.

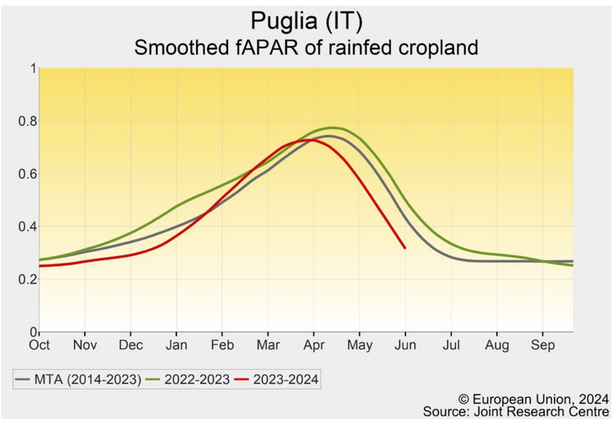
In central Italy (*Toscana*, *Marche*, *Umbria*, *Lazio*), crops are progressing well under average weather conditions. Winter crops are approaching the end of their cycle with fair yield expectations.

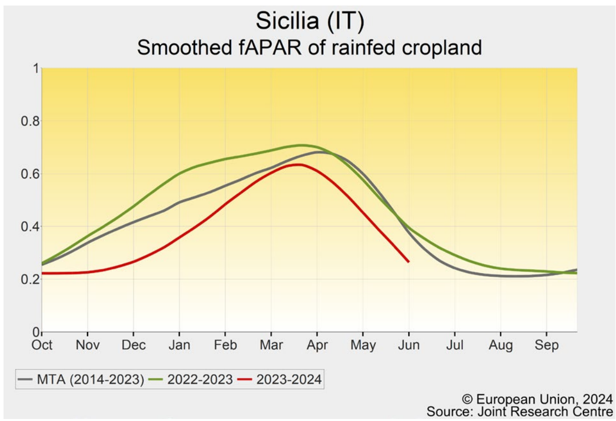
In the south, the weather has been continuously warmer than usual with only occasional rainfall. While the rain has been beneficial locally, it arrived too late to mitigate the negative impacts of the dry spell of recent months, which caused early senescence of durum wheat (e.g. in *Puglia*). In *Sicilia*, the loss of durum wheat and forage production is likely to be considerable.

Overall, our yield expectations for winter crops have been decreased owing to the unfavourable conditions in both northern and southern regions. For summer crops, despite a difficult start to the season, our yield forecasts remain around the trend.









Czechia, Austria and Slovakia

Crops in good condition and ahead in development

Favourable weather continues to sustain the growth of crops. While winter crops are still recovering from the very wet winter, spring crops are in good condition.

Warm temperatures, slightly above the LTA, prevailed during the review period.

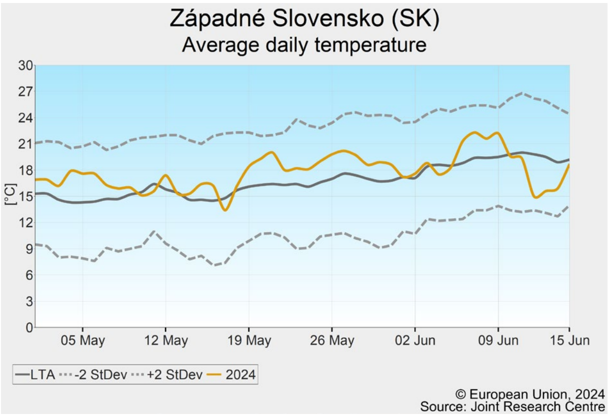
Increasing rainfall since the end of May has optimally accompanied the temperature increase, resulting in a favourable soil water balance, except for eastern Moravia, where there is still a water deficit.

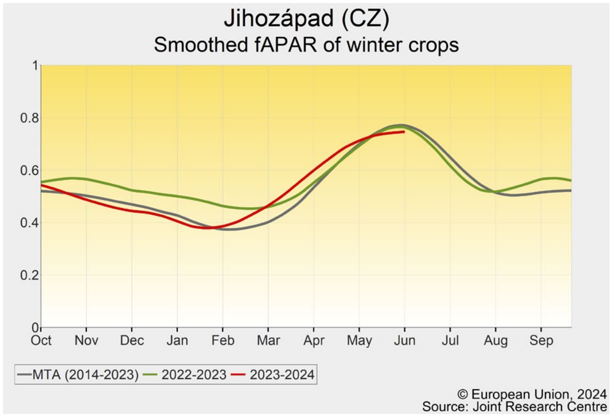
Weather conditions in May were beneficial to winter crops, which are now in good condition. However, they had already completed vegetative development with slightly below-average biomass due to the wet winter, which restricted root development.

The rain in June replenished soil moisture levels, allowing crops to take up nitrogen from the soil and fill the grains. As no significant rainfall is forecast in the next 10 days to adversely affect the grain-filling stage, winter crops have a realistic outlook for a decent yield despite the wet winter.

The warm weather with sufficient moisture supply will continue to support a steady growth of spring and summer crops.

Our yield forecasts for winter crops are mostly unchanged, close to the historical trends. Spring and summer crops are still in early stages. The grain-filling stage will be crucial for the success of their season; so far, we have kept the yield forecast of spring and summer crops in line with the trend.





Bulgaria

Beneficial rain for winter and summer crops

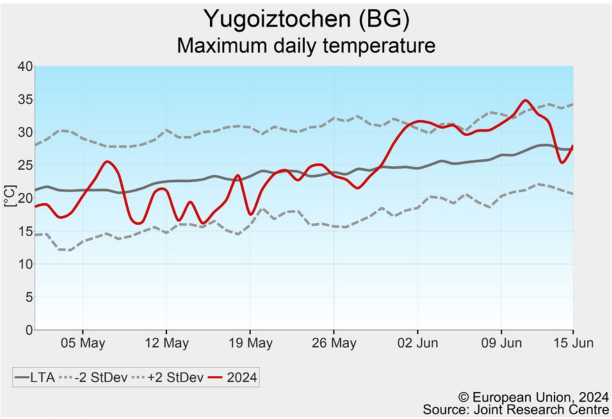
Near- to above-average rainfall improved the water supply conditions for winter and summer crops. Yield formation of winter cereals is promising in spite of high temperatures in June. Growth of summer crops has been adequate so far and yield expectations are above average.

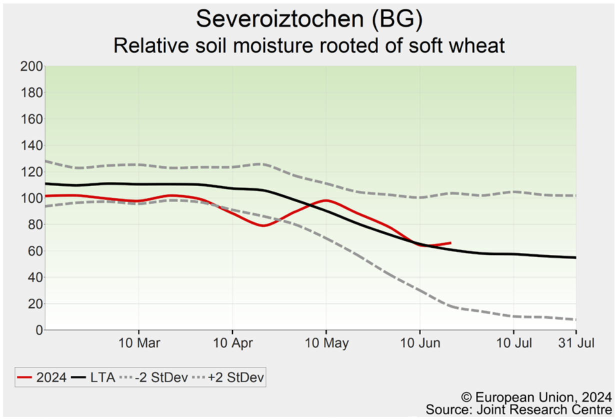
Considering the review period as a whole (1 May – 15 June), seasonal thermal conditions prevailed in Bulgaria, but May was slightly colder than usual, whereas the first half of June was decidedly (by 2–5 °C) warmer than usual. During this warm spell, daily maximum temperatures mostly exceeded 30 °C, and reached 33–38 °C on the hottest days.

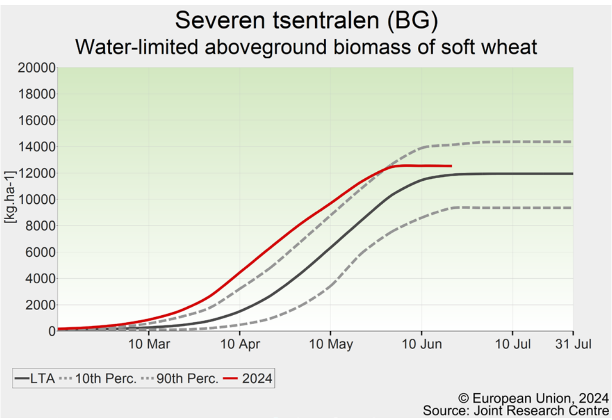
Rainfall totals reached 50–150 mm in most regions. In the *Severozapaden* and *Yugozapaden* regions, precipitation exceeded the LTA by 10–55 %. Only the southern parts of the country (some parts of *Yugoiztochen* and *Yuzhen Tsentralen*) received slightly (10–30 %) below-average rainfall.

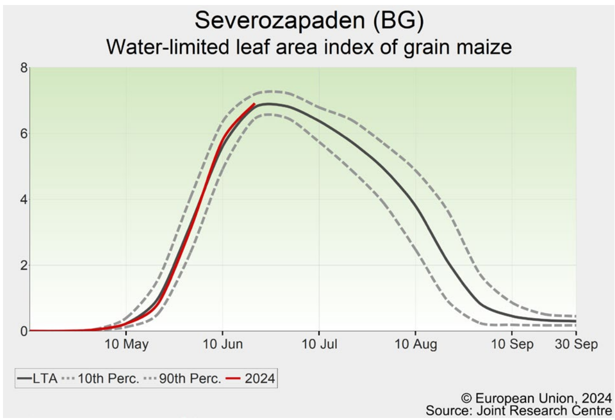
After the abundant precipitation of late April, rainfall during the current review period was sufficient to keep soil moisture close to average levels. This, together with the mild, slightly colder-than-average, temperatures, supported the yield formation during flowering and early grain filling of winter cereals. However, these benefits were partly undone by the hot conditions in June. Towards mid June, soil moisture under winter crops decreased to below average in central Bulgaria, but near-seasonal levels prevailed in the eastern and western regions of the country. Our yield forecasts for winter crops were maintained.

Summer crops also benefited from the improved water supply conditions that have existed since mid April. Biomass accumulation and canopy expansion of grain maize and sunflower crops are near or above average in the main producing northern areas. Growth is weaker in the south-east, due to more limited water supply to the shallow-rooting young stands. Yield expectations at national level are positive, above the 5-year average.









Denmark and Sweden

Positive outlook with warmer and drier weather

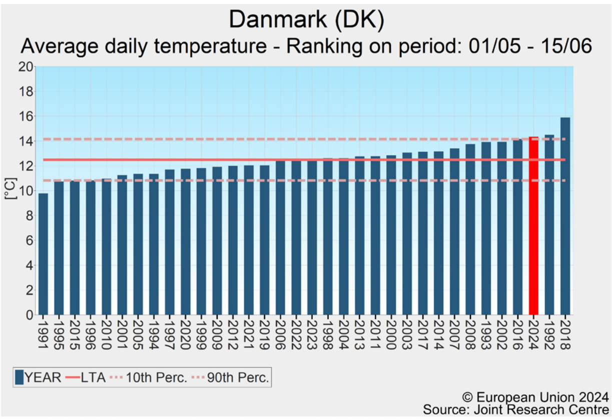
Warmer-than-usual weather combined with adequate rainfall sustained crop development in both countries. After challenging winter conditions, the outlook now is positive, and crop yield forecasts are revised upwards accordingly.

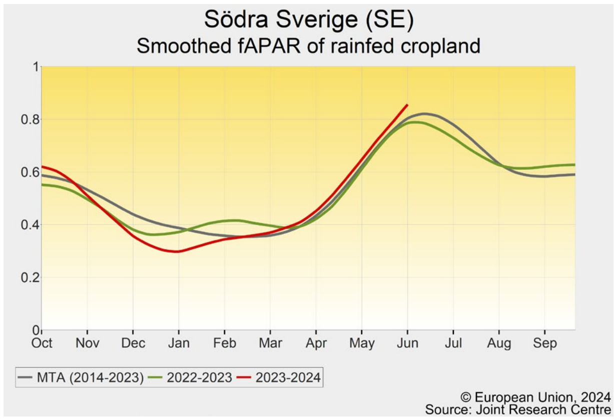
Temperatures were prevalently above normal in both countries, especially during the second half of May. Despite a cold spell in early June, overall temperatures for the review period rank among the three warmest in our records, thus resulting in a large positive anomaly in cumulative temperatures (T_{base} = 0 °C). The first 3 weeks of May were predominantly dry, whereas during the rest of the review period regular rainfall events were reported in both countries. Rainfall totals in most regions of Denmark and in *Västsverige* in Sweden were well above average (60 % above the LTA in Denmark), while close to or below average in the rest of Sweden. Radiation levels were in line with the LTA in Denmark but above average in Sweden.

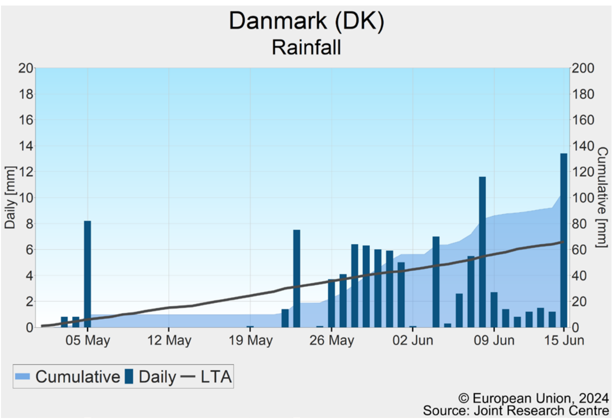
Satellite observations (MODIS) indicate crop development in line with or slightly above normal in Denmark, and predominantly above normal throughout Sweden, indicating overall good crop conditions in both countries.

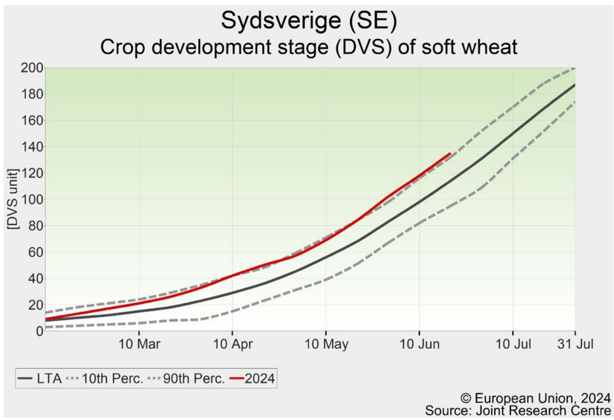
The warm temperatures accelerated winter and spring crop development. According to our models, soft wheat development is advanced by approximately 1 week in both countries and has almost completed flowering. Similarly, spring barley reached flowering 10 days ahead of normal. However, the warm and wet weather during the review period may have favoured the development and spreading of diseases in Denmark.

Overall, crops are expected to be in good condition. Our yield forecasts for winter and spring crops have been revised to above the trend.









Estonia, Latvia, Lithuania, Finland

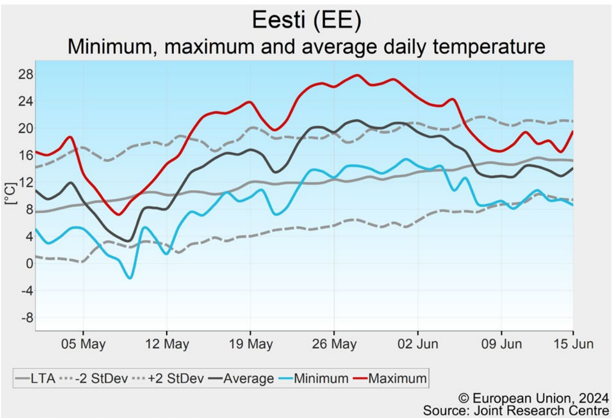
Overall good prospects for crops

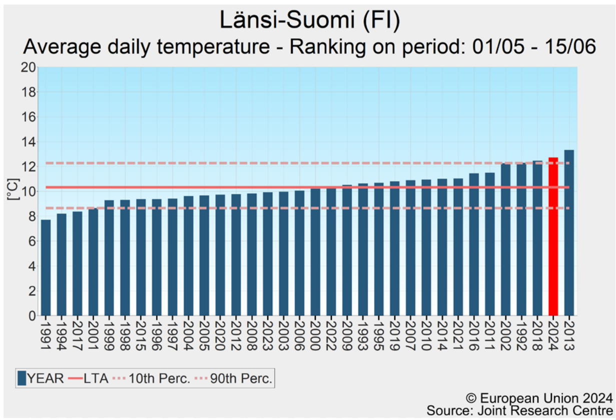
The review period has been exceptionally warm in the Baltic region, and dry by and large until early June. Crops are expected to be in fair condition in Finland and Estonia, and even in good condition in Lithuania and Latvia.

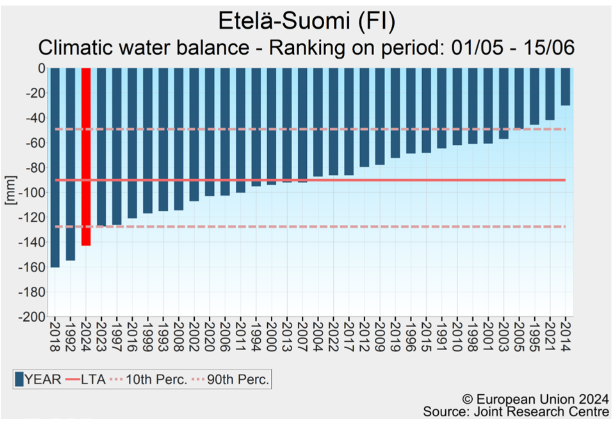
Below-average temperatures prevailed in the first week of May; in Estonia and Finland, a few days with minimum temperatures close to or below 0 °C were reported that may have slowed down spring sowing and may have caused damage to recently emerged crops. Then temperatures increased and were largely above the LTA from the second week of May until the second week of June, when they returned to normal. A large positive temperature anomaly resulted in the four countries, with the period ranking amongst the three warmest in our records. Precipitation was scarce during most of May, especially in Finland and Estonia, so, in combination with exceptionally warm temperatures, it may have affected the recently emerged crops. Then regular rainfall occurred in June in all four countries, alleviating the crop water stress in Finland and Estonia.

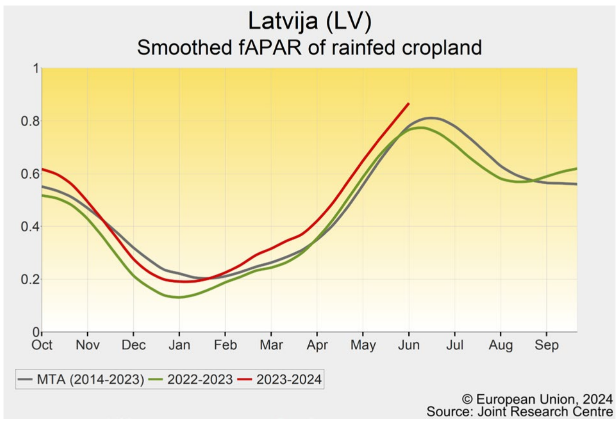
MODIS-derived fAPAR data show advanced crop development in Latvia and Lithuania, suggesting favourable growing conditions and above -average biomass accumulation. In Finland and Estonia, the fAPAR signal is close to average.

Despite overall favourable conditions, concerns remain in Finland and Estonia because of the cold spell at the beginning of the review period and the dry and warm conditions that prevailed until early June. The outlook is more positive in Latvia and Lithuania, where the water deficit was less pronounced. Winter and spring crop yield forecasts are maintained in Finland and Estonia and revised upwards in Latvia and Lithuania, above the 5-year average.









Greece

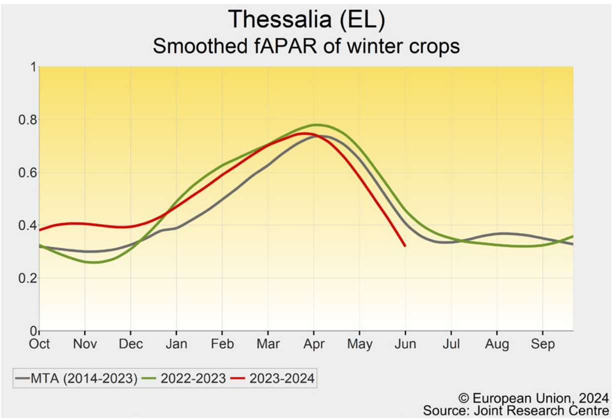
Winter crop campaign concluded with moderately above-average yield expectations

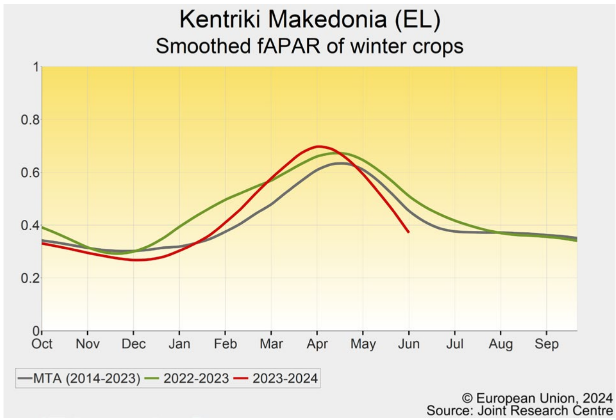
The harvest of winter crops finished better in the north than in central Greece thanks to late rainfall, while spring crops were sown under beneficial weather conditions with average temperatures and above-average rainfall.

In mainland Greece, the northward progression of the winter crop harvest during the review period corresponded to the advancement in crop development. In parallel, the yields increased from central Greece to the north, because crops harvested later in more northerly regions benefited from the end-of-season rainfall. Consequently, winter crop yields, but also crop quality, are forecast to be moderately above average in the northern Macedonian regions, whereas they remain below average in Thessaly. The sowing of summer crops in Greece was completed between the end of April and the beginning of May, under overall favourable conditions. Increasing temperatures in June and irrigation supported the early growth stages of summer crops. Additionally, there has been an increase in sunflower cultivation by around 25 % due to anticipated higher income.

For both winter and summer crops, the cultivated area in Thessaly was reduced due to the floods last September, which rendered land uncultivable.

Our yield forecasts mostly confirm our previous outlook for Greece, showing a moderately above-average yield for winter crops and continuing the historical trend for summer crops.





Ireland

Warm temperatures support crop development, but also diseases

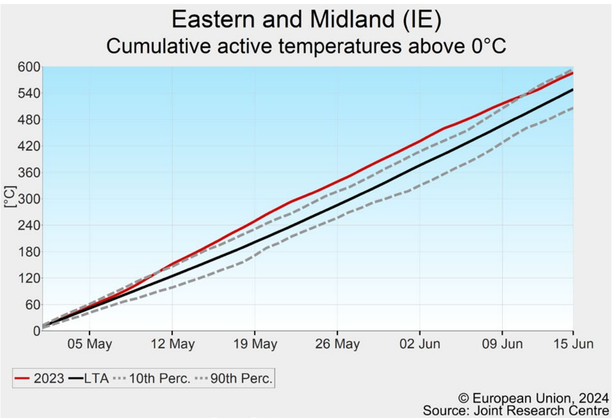
Favourable weather allowed crops to partially recover from adverse winter and early spring conditions. However, challenges remain, as the warm and wet conditions could favour the spread of diseases. Our yield forecasts are maintained.

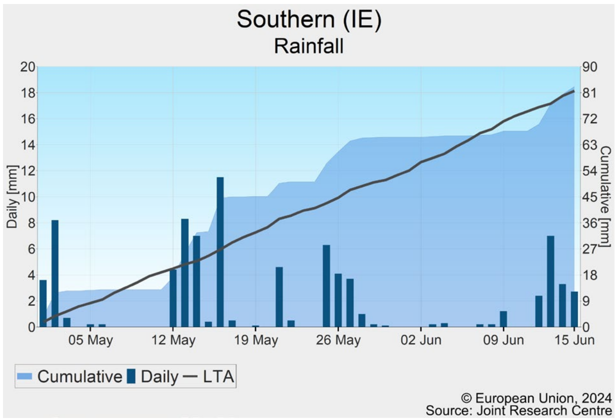
Temperatures were largely above the LTA during the first half of May, while the rest of the month was close to average and the first week of June slightly colder than average. Overall, a positive temperature anomaly was recorded throughout the country. Rainfall occurred throughout the review period, albeit limited in quantity, with a few intense episodes caused by thunderstorms in the south. Overall, below-average rainfall totals were reported in the *Eastern and Midland* region, and levels were close to average in the *Southern* region. Cumulative radiation levels remained below average.

Biomass development as inferred from MODIS satellite data remains below average across the country, indicating that crops have not yet fully recovered from the overly wet conditions of winter and early spring, despite the presently favourable weather.

According to our model simulations, soft wheat reached flowering about 10 days ahead of average, while biomass accumulation is around normal levels. A similar advance in the cycle is reported for spring barley, although large variations in development can be expected considering the sowing delays reported in the previous editions.

Besides improved growing conditions, the warm and wet weather since March could also have favoured the development and spread of diseases. The coming weeks will be crucial as crops are reaching their flowering stage. Our forecasts remain unchanged, below the 5-year average for winter crops and only slightly below the 5-year average for spring crops.





Belgium, Luxembourg and the Netherlands

Continued rainfall further dampens yield expectations

After a record-wet May, dry conditions in the first week of June brought some relief to crops and farmers, but then rain resumed again with frequent and substantial events, which are expected to continue well beyond the review period. Yield forecasts for all crops were revised downward.

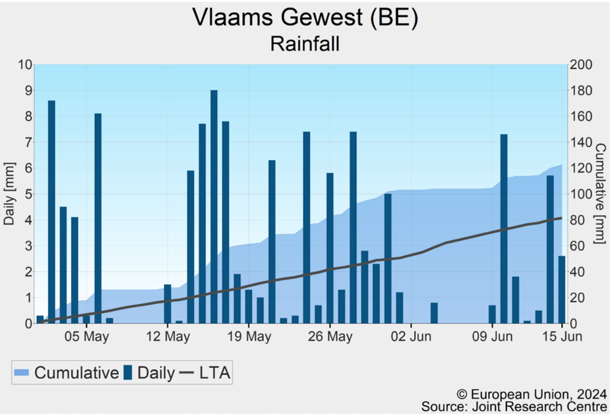
Temperatures were predominantly above the LTA in May and below the LTA in the first half of June. May was particularly warm in the Netherlands, where it was the second warmest in our records (after May 2018). Considering the review period as a whole, mean average temperatures were in line with the LTA in Belgium and Luxembourg, and slightly above the LTA in the Netherlands. Rainfall was 50-100% above the LTA, making the review period the wettest in our archive (since 1991) in Luxembourg and the Netherlands, and the second wettest (after 2016) in Belgium. Rainfall events were particularly frequent (almost daily) in the second half of May.

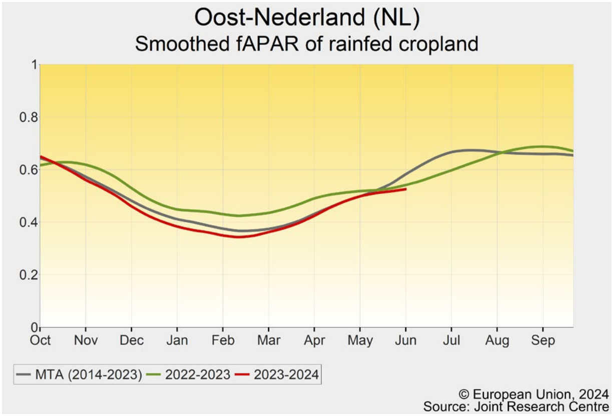
These weather conditions – the high rainfall in particular – were unfavourable for crops. Sowing of potatoes and maize, which was already severely delayed, was practically impossible during the second half of May. Conditions improved in the first week of June, but soon after the time that the soils were sufficiently drained it started raining again. Such delays come with a yield penalty, and are likely to lead to late harvesting in autumn, when soil moisture conditions also tend to be unfavourable. Even sugar beet sowing has not been totally completed yet[7].

Pest and disease pressure also remains high. Farmers are particularly concerned about *phytophthora* in potatoes. The incidence of aphids, which can transmit the leaf yellows virus in sugar beet, has been manageable so far.

Part of the winter cereals were exposed to the unfavourably wet conditions during the sensitive flowering stage. The impacts on the yield potential are negative but highly uncertain at this stage.

.





[7] https://www.akkerwijzer.nl/artikel/1042873-bij-het-begin-van-de-zomer-zijn-nog-steeds-niet-alle-bieten-gezaaid

Slovenia and Croatia

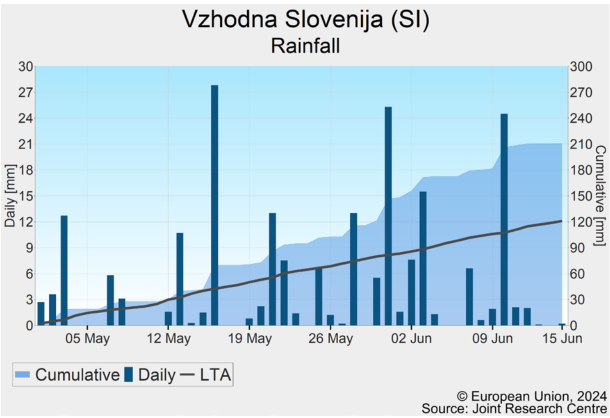
Winter crop yield outlook remains above the 5-year average

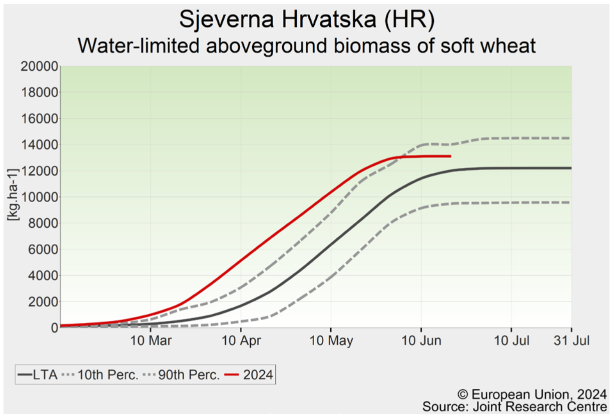
Abundant rainfall in May maintained good crop conditions, but also increased the risk of diseases regionally. The harvest of winter cereals started earlier than usual, with yield forecasts slightly above the 5-year average.

In Slovenia and Croatia, May was characterised by temperatures in line with the LTA, whereas the first dekad of June was warmer than usual. The review period was particularly wet across both countries, with rainfall totals significantly above the LTA. Particularly noteworthy are the precipitation totals in western Slovenia, which exceeded the LTA by 100–150 % and reached more than 400 mm.

Moderate temperatures in May facilitated grain ripening, and the precipitation contributed to the recovery of soil moisture in some areas of eastern Croatia. However, the warmer temperatures during the first dekad of June and the continued rainfall, particularly in Slovenia, have also increased disease pressure and may affect grain quality in those fields that were not treated in time. As noted in previous bulletins, the warmer-than-average temperatures during the season have advanced the winter crop cycle by approximately 2 weeks. In fact, the harvest already started in early June in eastern Croatia, and it is about to begin in Slovenia.

Our model simulations indicate above-average biomass levels in *Vzhodna Slovenija* and *Sjeverna Hrvatska*, and average values in *Panonska Hrvatska*. Our yield forecasts for winter crops remain slightly above the 5-year average. The adequate water supply so far, the expected rise in temperatures in June and the forecast of a drier period should all be beneficial for the positive development of summer crops. However, as it is too early to evaluate the impact of these conditions with certainty, our yield forecasts for summer crops remain in line with the historical trend.





5.2. United Kingdom

Fears are allayed while the weather is getting better

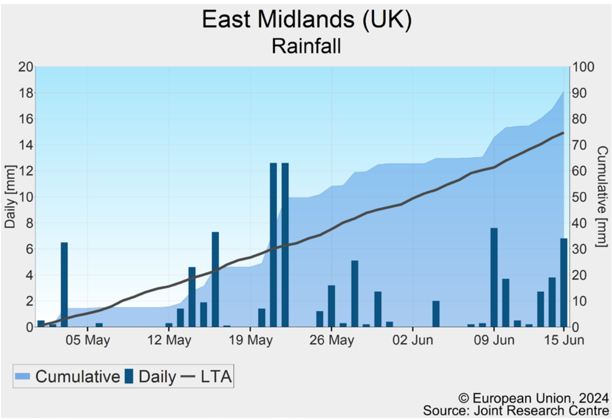
Winter crops are recovering but still in poorer condition than last year. Spring crops are late but on track for decent yields.

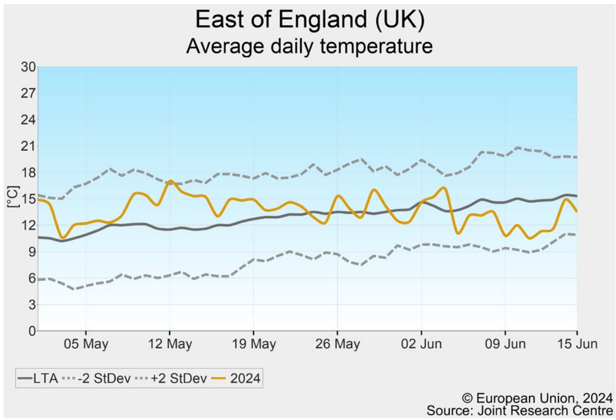
While rainfall in the south has returned to almost normal levels since May, the northern regions are still suffering from continued above-average precipitation. Temperatures have been generally higher than the LTA, except for the first half of June, which was cooler. However, the warm weather is forecast to be back in the next dekad.

The good weather conditions in the south enabled winter crops to partially recover from the extremely wet winter. However, their conditions are still significantly less favourable than those of last year, particularly in the north, and yields will definitively remain below the last 5-year average.

Spring crops were drilled late because of the ongoing rain. Consequently, their development is behind the medium-term average (MTA), up to 3 weeks in the East Midlands, although lately they have been showing fast growth. To catch up further within a reduced time window, dry and sunny weather is needed in the coming weeks to allow the successful grain filling and yield development of spring crops.

Our forecasts remain on average 5 % below the historical trend for winter crops, but in line with the trend for spring crops.





5.3. Black Sea Area

Ukraine

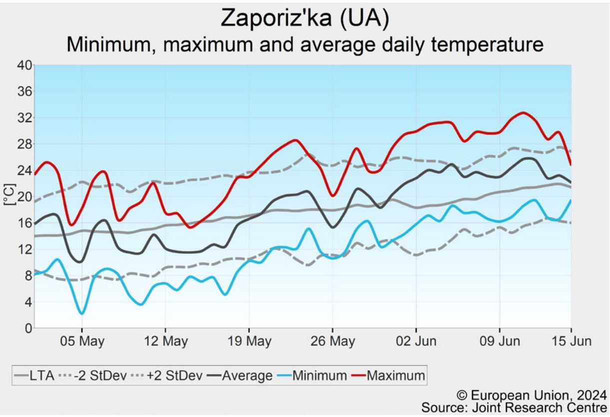
Yield outlook for winter crops considerably reduced by dry conditions in May

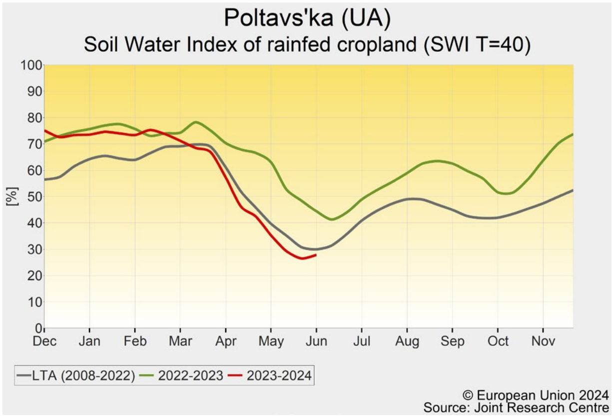
Whereas until April weather conditions were generally favourable in Ukraine (except the east), dry conditions in May and high temperatures in June adversely affected the yield outlook for winter crops and spring cereals.

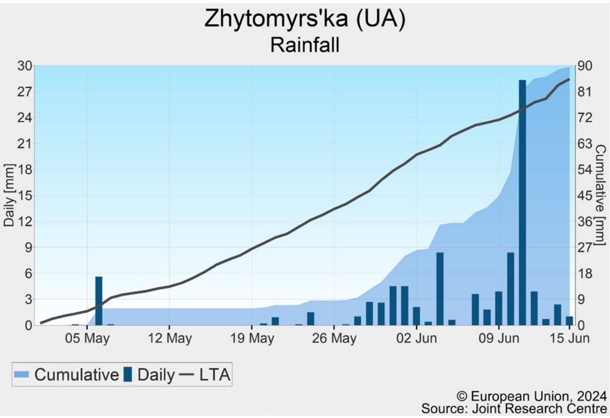
During the review period, Ukraine experienced a significant shortfall in rainfall throughout the country, with levels up to 100 % below the LTA. In 70 % of the country, May 2024 was one of the three driest of the past 30 years. Considering the review period as a whole, western Ukraine saw temperatures that were 0.5–2 °C above the LTA, while temperatures in central and most of eastern Ukraine were average. At the end of May, a heatwave developed in the eastern half of the country, with 6–12 days with maximum temperatures above 30 °C.

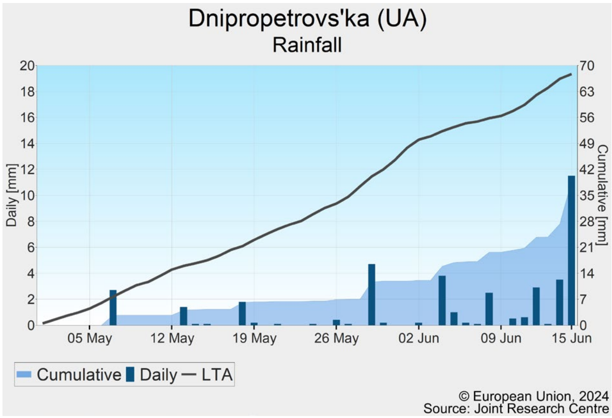
The rain deficit in May adversely affected the flowering stage of winter and spring crops throughout Ukraine, except *Odes'ka*. In June, the heatwave particularly affected the east, hindering the development of cereal grains. The summer crop sowing campaign is now concluded. Although temperatures were favourable, the dry conditions in the eastern half of the country did not support adequate emergence. The winter crop yield outlook is reduced to below the average.

A more detailed analysis is provided in the JRC MARS bulletin global outlook on Ukraine for June 2024 ([8]).









([8]) https://publications.jrc.ec.europa.eu/repository/handle/JRC136677.

Türkiye

Rain sustains a favourable outlook

Frequent rainfall and a warmer-than-usual spring supported the grain filling of winter crops, which are now close to maturity. Summer crops are still at the very beginning of the cycle.

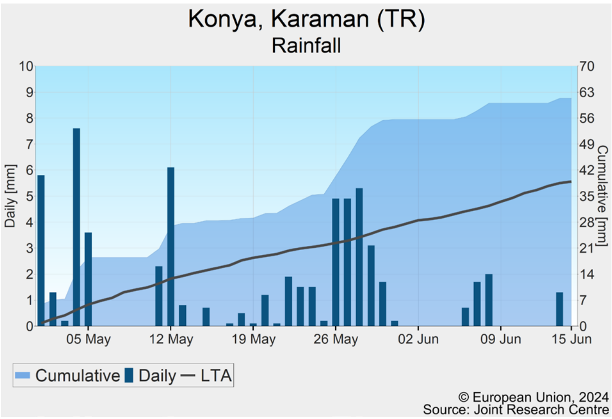
In Türkiye, precipitation in May was well above the LTA (> 50 %), with temperatures close to the average. Since early June, rainfall has almost ceased and temperatures increased, with maximum values reaching up to 6 °C above the LTA.

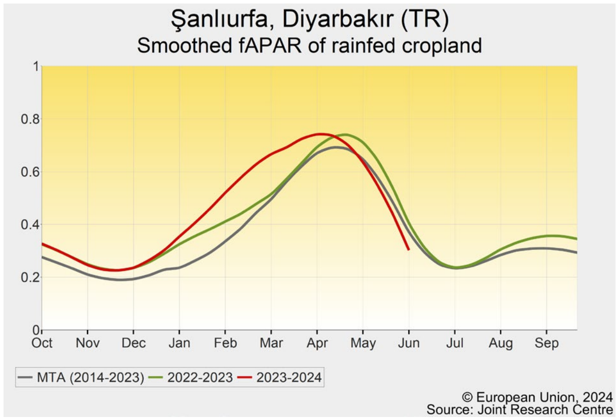
In western regions, the rainfall only partially mitigated the negative impact of the very warm weather occurring since 15 May, which turned hot in June with two heatwaves and maximum temperatures above 35 °C. Winter crops entered maturity stages in early June, as the hot spell shortened the grain-filling period and reduced the yield expectations below the average.

In western Anatolia (e.g. *Konya*), rainfall totals were 80–150 mm above the LTA. The low soil moisture of early May recovered to optimal levels and is now sufficient to sustain winter crops up to the end of their cycle, even with rising summer temperatures that already moved average temperatures to 4 °C above the LTA since early June. In western (*Ankara*, *Konya*) and central Anatolia (*Kırıkkale*), winter crop development was favoured by the rainfall in May. In *Ankara*, where crops suffered as a result of low soil moisture in April, winter crops fully recovered and reach maturity in average conditions. In *Konya* and *Kırıkkale*, where winter crops were sustained by irrigation, they developed favourably throughout May and are now in the grain-filling stage under favourable conditions. Summer crops had a late but good start of season thanks to a beneficial soil moisture content and the availability of water for irrigation.

In south-east Anatolia (e.g. *Şanlıurfa*, *Dyarbakır*), the winter crop cycle has finished with very good yield expectations thanks to a warm season with sufficient rainfall.

Overall, yield expectations for winter crops have slightly increased since our last assessment. Summer crop forecasts are still preliminary and based on trend analysis.





5.4. European Russia and Belarus

European Russia

Unfavourable weather conditions

Cold weather conditions and frost events in May caused delay to the spring sowing campaign in the northern regions of Central and Volga okrugs. In southern Russia, high temperatures and low soil moisture levels compromised the biomass accumulation of winter cereals. Yield expectations for wheat are below the 5-year average.

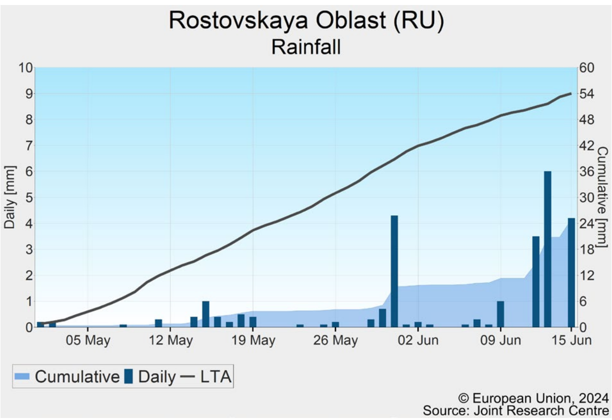
Temperatures in May presented a west–east gradient, from 1–2 °C above the LTA along the western border to 4–5 °C below the LTA along the Ural Mountains. In the first dekad of May, frost events in the range of – 2 °C to – 6 °C occurred in the Central, Southern and Volga okrugs, causing damage to the unhardened winter crops and spring crops. The last days of May and the first half of June were warmer than usual, with temperatures ranging from 1–2 °C above the LTA in the westernmost territories to 6–8 °C above the LTA in the east. During the first half of June, 8–17 hot days (with T_{max} > 30 °C) occurred in southern Russia and along the Kazakh border, but even in southern parts of the Central okrug and northern parts of the Volga okrug 2–5 hot days occurred.

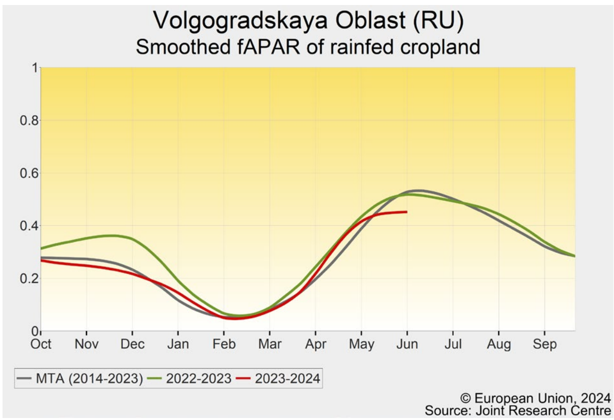
Rainfall was below the LTA in the areas between the Black Sea and the Caspian Sea. In some important winter wheat producing areas (e.g. in *Rostovskaya*, *Volgogradskaya* and *Krasnodarskiy*), the rainfall total remained 30–80 % below the LTA. In contrast, eastern and northern crop-producing regions were wetter than usual, with rainfall totals typically between 60 and 120 mm.

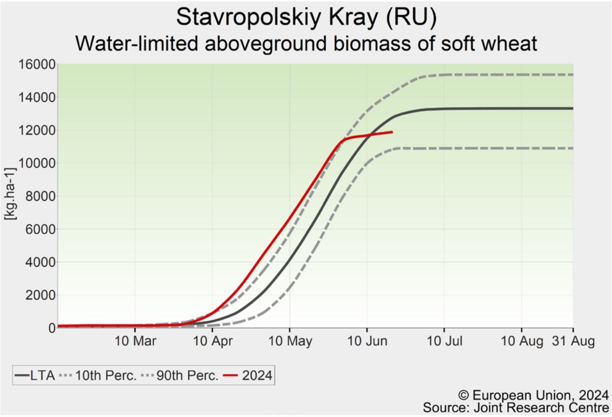
The development of winter cereals became advanced in the regions between the Black Sea and Caspian Sea. Winter cereals are in the grain-filling phase, but in the southernmost areas ripening has been reached. In southern and western regions, the negative impacts of deficient water supply, frost and/or heatwaves on crop canopies and biomass accumulation are clearly visible on satellite images, and led to a sharp drop in the yield potential.

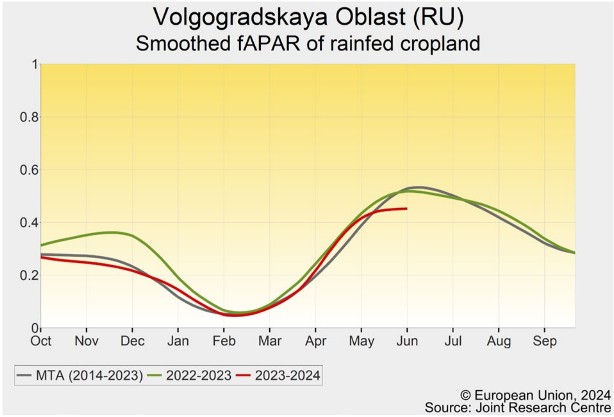
The progress of the spring sowing campaign was hampered by cold and wet weather conditions. Low temperatures were unfavourable for early development of spring cereals in the northern and eastern regions of European Russia. The sowing of grain maize also suffered delays (especially in the Central and Volga okrugs) due to cold soils. In the southern maize cultivation regions, the high temperatures and dry conditions are a concern.

A more detailed analysis, with quantitative yield and production forecasts, will be provided in the JRC MARS bulletin global outlook on Russia, which will be published 1 July 2024.









Belarus

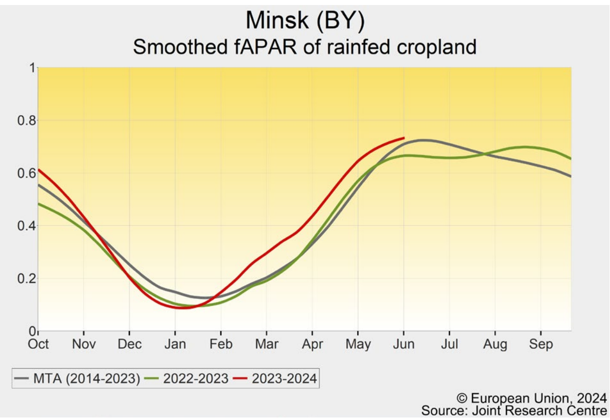
Continued positive yield expectations

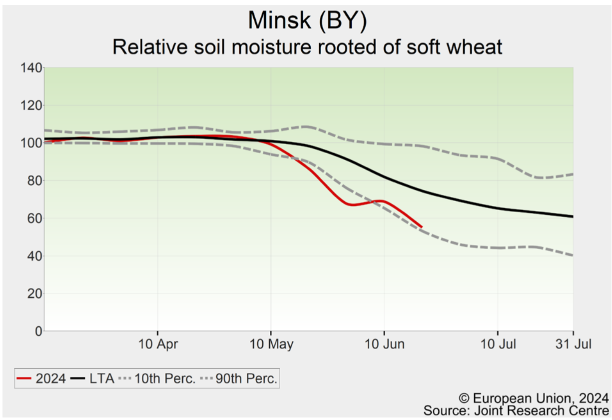
Above-average temperatures and adequate soil moisture continued to benefit winter, spring and summer crops. Soil water levels have dropped substantially but rain in the coming days is expected to sustain a high yield potential. The yield forecast for wheat and barley were revised upward.

Considering the review period as a whole, mean daily temperatures slightly exceeded the LTA the first half of May and the second week of June were slightly colder than usual, whereas the period in between was distinctly warmer than usual. A significant frost event occurred from 8 to 9 May in the north, where temperatures dropped to -4°C. Precipitation was in most regions below the LTA, with the most distinct negative anomaly (up to 40%) in central eastern parts of the country. Most rainfall occurred end May and the first dekad of June.

Overall these weather conditions continued to sustain above-average growth and development of winter crops, spring barley and grain maize. No damage to cereals is expected from the frost event in early May, and also maximum temperatures did not reach damaging levels. However, the combination of above-average temperatures (and radiation) caused rapid soil water depletion, particularly below the fully grown winter crops, where in some areas water deficiency has started to affect growth. Nevertheless, current soil water reserves and rain expected in the coming days are expected to sustain well-above average yields.

The yield forecasts for wheat and barley were revised upward, whereas the forecast for grain maize was maintained in line with the historical trend, above the 5-year average.





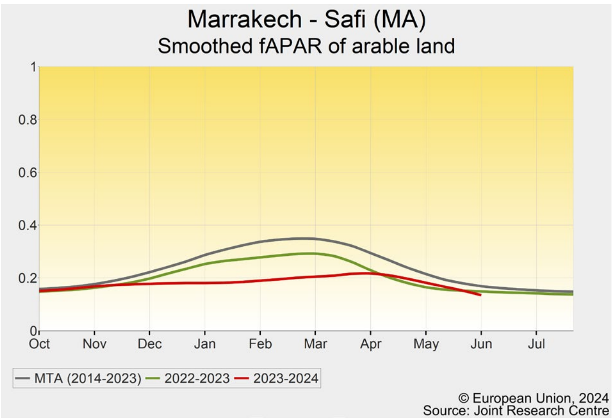
5.5. Maghreb

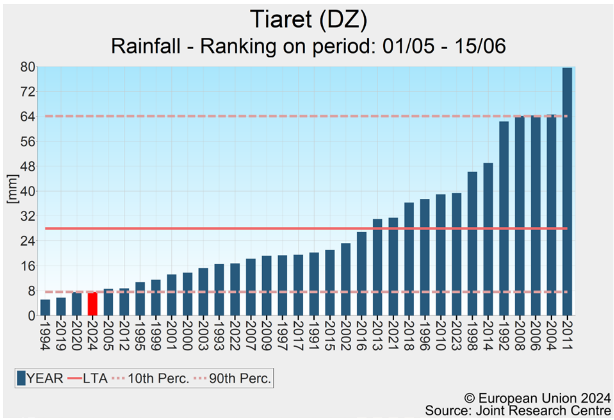
Morocco, Algeria and Tunisia

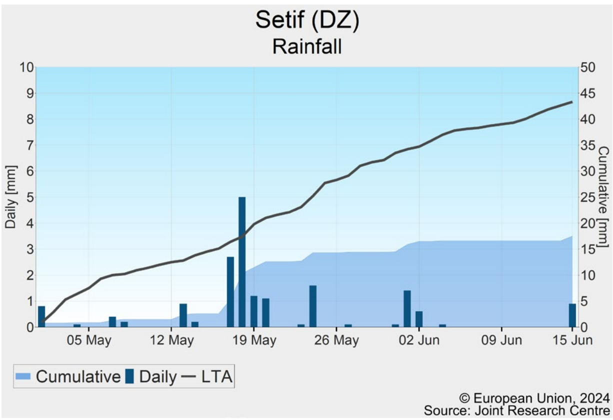
Negative outlook for Morocco, average to positive expectations for Algeria and Tunisia

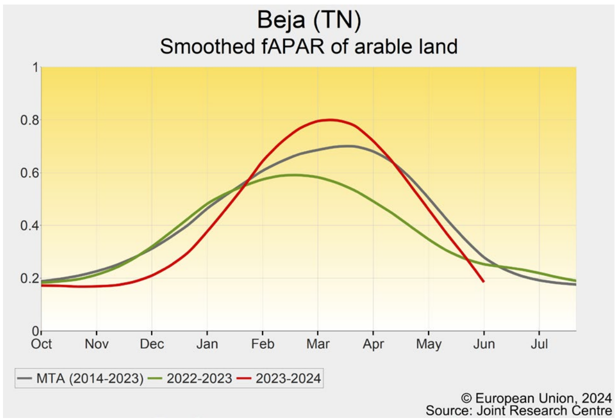
The yield outlook for cereals in Morocco remains well-below average due to drought. In Algeria, severe yield losses in the west are mostly offset at the national level by above-average yields in central and north-eastern regions. In Tunisia, favorable weather conditions have resulted in a positive yield outlook.

During the period under review, most of the cereal-producing regions of Maghreb experienced below to well-below average precipitation, resulting in a cumulative rain deficit of 15 to 40 mm compared with the LTA. Average daily temperatures were 0.5-2.0 °C above the LTA. Harvest operations have been completed in **Morocco**, with crop failures across the country due to seasonal drought. Our yield forecasts range from 29% (durum wheat) to 27% (soft wheat) below the 5-year average. In **Algeria**, cereals are at the end of harvesting as well. At the country level, yield expectations for winter cereals remain around average, as marked negative anomalies for biomass accumulation in the north-western agricultural regions are expected to be offset by above-average crop performance in a large belt of littoral and continental regions in central and eastern Algeria. In **Tunisia**, overall positive conditions were observed for wheat and barley. Harvesting is finished, and no biotic or abiotic stress took place in the last phase of the crops' cycle. Our forecasts are above the 5-year average.





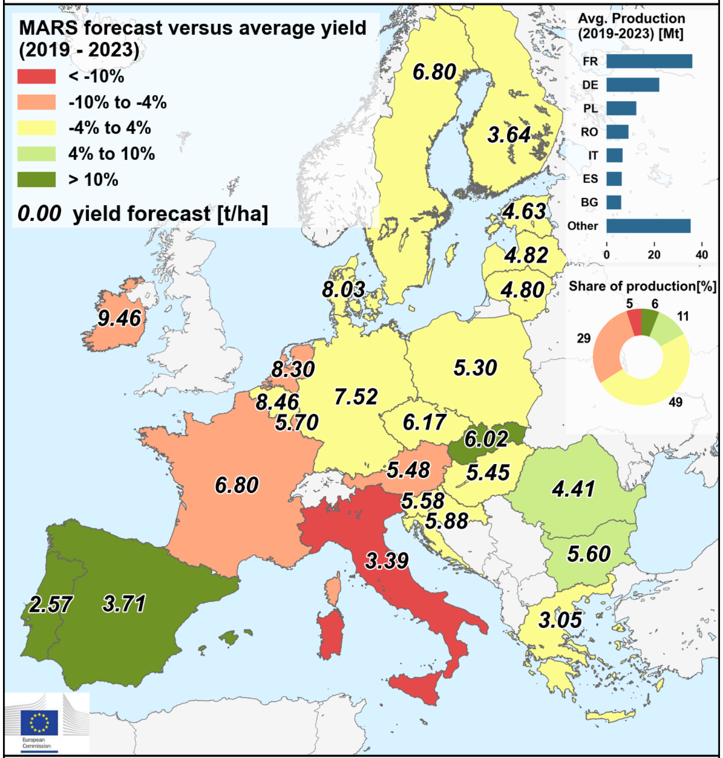




6. Crop yield forecast

Country	Total wheat (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff June/May
EU	5.64	5.59	**5.64**	– 0	+ 1	– 1
AT	5.81	6.12	**5.48**	– 6	– 11	– 3
BE	8.75	8.66	**8.46**	– 3	– 2	– 3
BG	5.13	5.43	**5.60**	+ 9	+ 3	– 0
CY	—	—	**—**	—	—	—
CZ	6.14	6.44	**6.17**	+ 1	– 4	– 4
DE	7.50	7.43	**7.52**	+ 0	+ 1	– 1
DK	7.97	7.36	**8.03**	+ 1	+ 9	+ 5
EE	4.57	4.00	**4.63**	+ 1	+ 16	+ 0
EL	2.97	3.15	**3.05**	+ 3	– 3	+ 0
ES	3.18	2.04	**3.71**	+ 17	+ 82	– 0
FI	3.62	3.23	**3.64**	+ 0	+ 13	+ 0
FR	7.21	7.28	**6.80**	– 6	– 7	– 2
HR	5.71	4.78	**5.88**	+ 3	+ 23	+ 0
HU	5.35	5.63	**5.45**	+ 2	– 3	– 2
IE	9.91	9.33	**9.46**	– 5	+ 2	+ 0
IT	3.78	3.60	**3.39**	– 10	– 6	– 10
LT	4.73	4.74	**4.80**	+ 2	+ 1	+ 1
LU	5.98	5.75	**5.70**	– 5	– 1	– 6
LV	4.67	4.07	**4.82**	+ 3	+ 18	+ 3
MT	—	—	**—**	—	—	—
NL	8.88	8.63	**8.30**	– 7	– 4	– 6
PL	5.10	5.38	**5.30**	+ 4	– 2	+ 1
PT	2.18	1.38	**2.57**	+ 18	+ 86	+ 2
RO	4.22	4.55	**4.41**	+ 5	– 3	– 5
SE	6.65	5.46	**6.80**	+ 2	+ 25	+ 5
SI	5.47	5.07	**5.58**	+ 2	+ 10	+ 0
SK	5.41	6.16	**6.02**	+ 11	– 2	+ 6

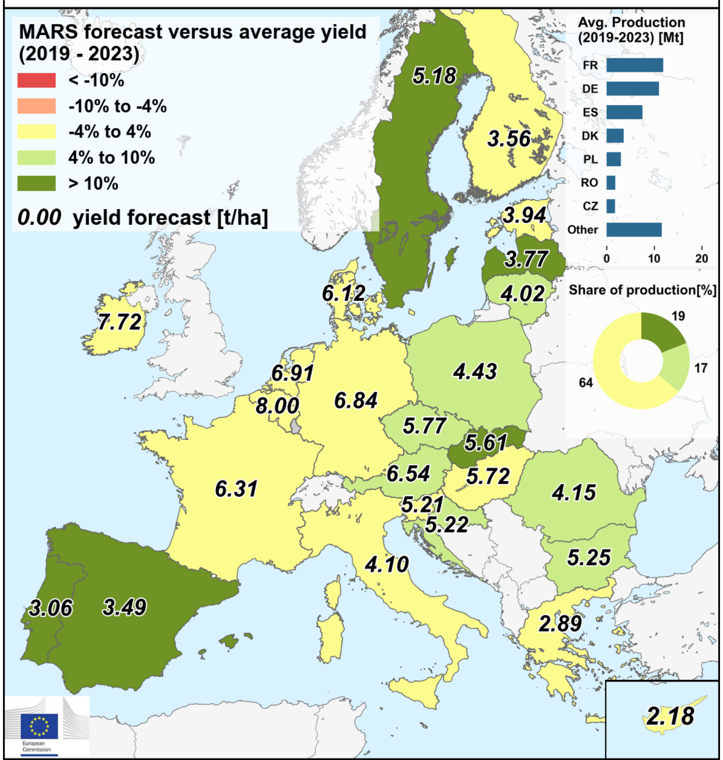
Total wheat - yield forecast 2024



MARS Bulletin Vol. 32 No.6 (2024)

Country	Total barley (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff June/May
EU	4.93	4.63	**5.14**	+ 4	+ 11	+ 0
AT	6.18	6.22	**6.54**	+ 6	+ 5	+ 0
BE	8.26	8.37	**8.00**	– 3	– 4	– 5
BG	4.93	5.18	**5.25**	+ 6	+ 1	– 2
CY	2.11	1.74	**2.18**	+ 3	+ 25	+ 0
CZ	5.46	5.49	**5.77**	+ 6	+ 5	– 0
DE	6.78	6.82	**6.84**	+ 1	+ 0	– 1
DK	5.97	4.58	**6.12**	+ 2	+ 34	+ 5
EE	3.81	2.95	**3.94**	+ 3	+ 33	+ 0
EL	2.83	2.55	**2.89**	+ 2	+ 13	+ 0
ES	2.97	1.61	**3.49**	+ 17	+ 116	– 1
FI	3.48	3.13	**3.56**	+ 2	+ 14	+ 0
FR	6.36	6.80	**6.31**	– 1	– 7	– 0
HR	4.89	4.00	**5.22**	+ 7	+ 30	+ 0
HU	5.54	5.46	**5.72**	+ 3	+ 5	+ 2
IE	7.98	7.05	**7.72**	– 3	+ 10	+ 0
IT	4.12	3.99	**4.10**	– 0	+ 3	+ 0
LT	3.71	3.56	**4.02**	+ 8	+ 13	+ 3
LU	—	—	**—**	—	—	—
LV	3.31	2.79	**3.77**	+ 14	+ 35	+ 5
MT	—	—	**—**	—	—	—
NL	6.96	6.58	**6.91**	– 1	+ 5	– 4
PL	4.14	4.49	**4.43**	+ 7	– 1	+ 1
PT	2.71	1.56	**3.06**	+ 13	+ 96	+ 0
RO	3.98	4.61	**4.15**	+ 4	– 10	– 6
SE	4.68	3.30	**5.18**	+ 11	+ 57	+ 12
SI	5.08	4.60	**5.21**	+ 3	+ 13	+ 0
SK	5.09	5.31	**5.61**	+ 10	+ 6	+ 6

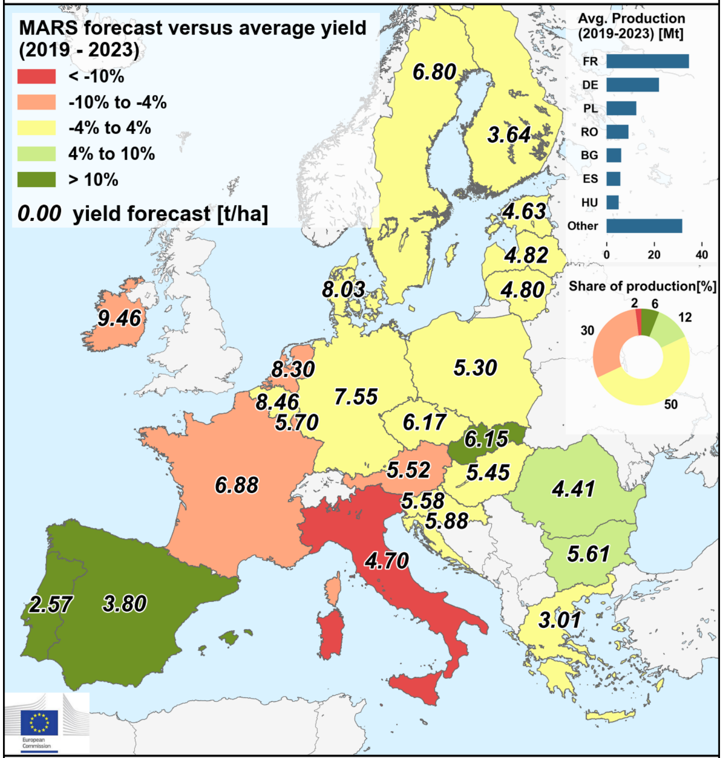
Total barley - yield forecast 2024



MARS Bulletin Vol. 32 No.6 (2024)

Country	Soft wheat (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff June/May
EU	5.86	5.81	**5.86**	+ 0	+ 1	– 1
AT	5.87	6.14	**5.52**	– 6	– 10	– 3
BE	8.75	8.66	**8.46**	– 3	– 2	– 3
BG	5.14	5.43	**5.61**	+ 9	+ 3	– 0
CY	—	—	**—**	—	—	—
CZ	6.14	6.44	**6.17**	+ 1	– 4	– 4
DE	7.53	7.46	**7.55**	+ 0	+ 1	– 1
DK	7.97	7.36	**8.03**	+ 1	+ 9	+ 5
EE	4.57	4.00	**4.63**	+ 1	+ 16	+ 0
EL	2.94	2.86	**3.01**	+ 3	+ 5	+ 0
ES	3.28	2.11	**3.80**	+ 16	+ 80	+ 0
FI	3.62	3.23	**3.64**	+ 0	+ 13	+ 0
FR	7.30	7.37	**6.88**	– 6	– 7	– 2
HR	5.71	4.78	**5.88**	+ 3	+ 23	+ 0
HU	5.37	5.65	**5.45**	+ 2	– 3	– 2
IE	9.91	9.33	**9.46**	– 5	+ 2	+ 0
IT	5.34	5.08	**4.70**	– 12	– 7	– 12
LT	4.73	4.74	**4.80**	+ 2	+ 1	+ 1
LU	5.98	5.75	**5.70**	– 5	– 1	– 6
LV	4.67	4.07	**4.82**	+ 3	+ 18	+ 3
MT	—	—	**—**	—	—	—
NL	8.88	8.63	**8.30**	– 7	– 4	– 6
PL	5.10	5.38	**5.30**	+ 4	– 2	+ 1
PT	2.18	1.38	**2.57**	+ 18	+ 86	+ 2
RO	4.22	4.55	**4.41**	+ 5	– 3	– 5
SE	6.65	5.46	**6.80**	+ 2	+ 25	+ 5
SI	5.47	5.07	**5.58**	+ 2	+ 10	+ 0
SK	5.42	6.16	**6.15**	+ 13	– 0	+ 7

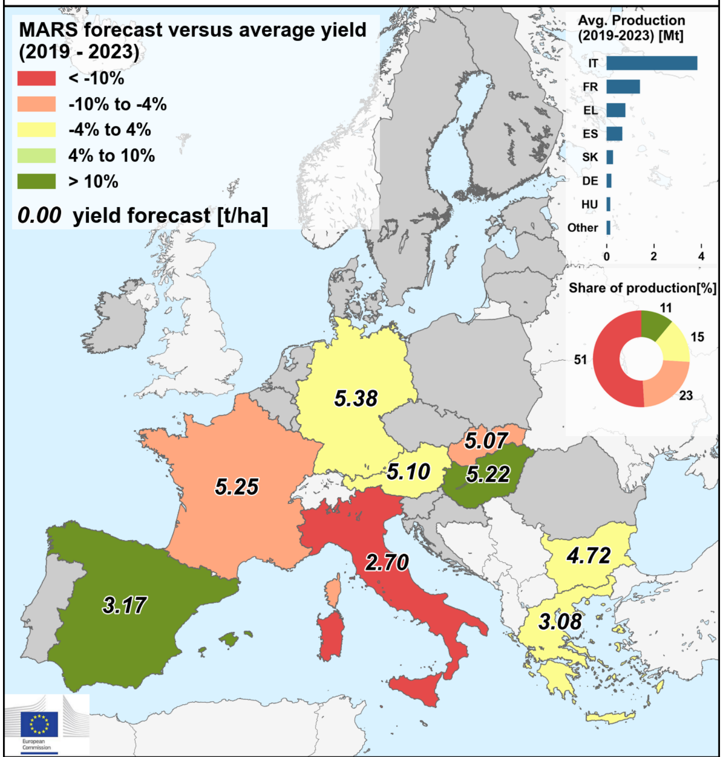
Soft wheat - yield forecast 2024



MARS Bulletin Vol. 32 No.6 (2024)

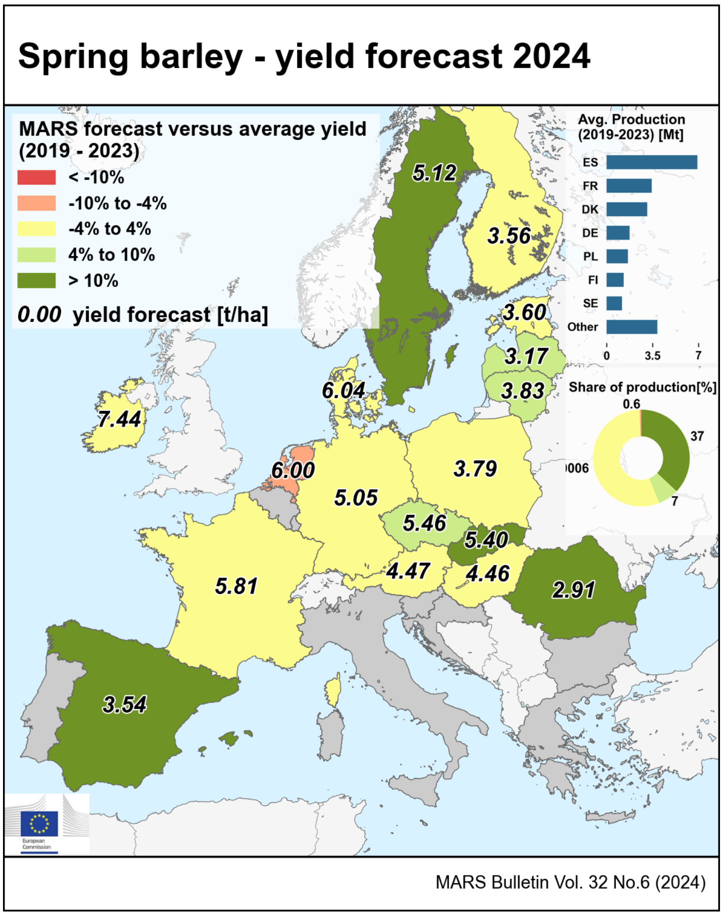
Country	Durum wheat (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff June/May
EU	3.45	3.30	**3.30**	– 4	– 0	– 4
AT	5.07	5.88	**5.10**	+ 1	– 13	+ 0
BE	—	—	**—**	—	—	—
BG	4.61	4.81	**4.72**	+ 2	– 2	—
CY	—	—	**—**	—	—	—
CZ	—	—	**—**	—	—	—
DE	5.40	5.75	**5.38**	– 0	– 6	– 1
DK	—	—	**—**	—	—	—
EE	—	—	**—**	—	—	—
EL	2.98	3.31	**3.08**	+ 3	– 7	+ 0
ES	2.54	1.61	**3.17**	+ 25	+ 97	+ 0
FI	—	—	**—**	—	—	—
FR	5.53	5.44	**5.25**	– 5	– 3	– 4
HR	—	—	**—**	—	—	—
HU	4.63	5.20	**5.22**	+ 13	+ 0	+ 3
IE	—	—	**—**	—	—	—
IT	3.11	2.91	**2.70**	– 13	– 7	– 8
LT	—	—	**—**	—	—	—
LU	—	—	**—**	—	—	—
LV	—	—	**—**	—	—	—
MT	—	—	**—**	—	—	—
NL	—	—	**—**	—	—	—
PL	—	—	**—**	—	—	—
PT	—	—	**—**	—	—	—
RO	—	—	**—**	—	—	—
SE	—	—	**—**	—	—	—
SI	—	—	**—**	—	—	—
SK	5.35	6.14	**5.07**	– 5	– 18	– 3

Durum wheat - yield forecast 2024

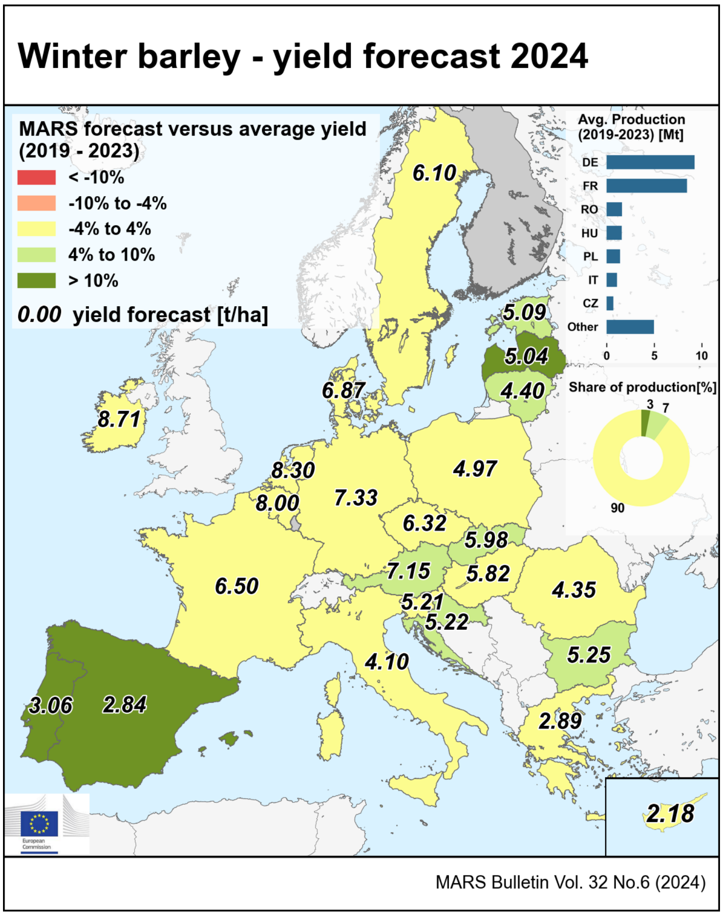


MARS Bulletin Vol. 32 No.6 (2024)

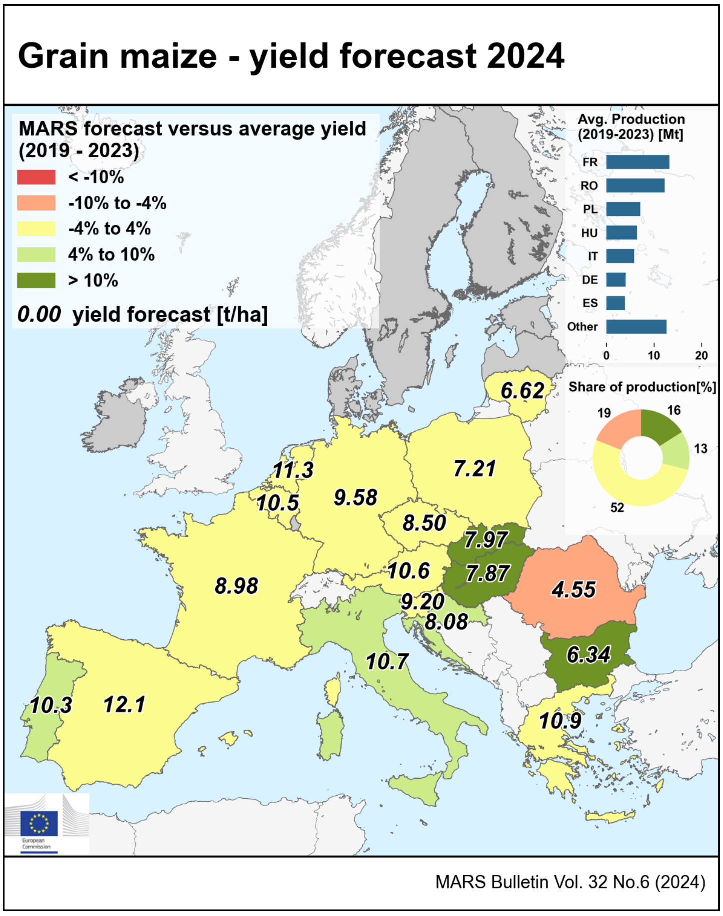
Country	Spring barley (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff June/May
EU	4.08	3.18	**4.39**	+ 7	+ 38	+ 1
AT	4.49	4.75	**4.47**	– 1	– 6	+ 0
BE	—	—	—	—	—	—
BG	—	—	—	—	—	—
CY	—	—	—	—	—	—
CZ	5.12	4.94	**5.46**	+ 7	+ 10	+ 0
DE	5.10	4.41	**5.05**	– 1	+ 15	– 0
DK	5.84	4.37	**6.04**	+ 3	+ 38	+ 5
EE	3.55	2.59	**3.60**	+ 1	+ 39	+ 0
EL	—	—	—	—	—	—
ES	3.02	1.67	**3.54**	+ 17	+ 112	– 1
FI	3.48	3.13	**3.56**	+ 2	+ 14	+ 0
FR	5.75	5.78	**5.81**	+ 1	+ 1	+ 0
HR	—	—	—	—	—	—
HU	4.51	4.40	**4.46**	– 1	+ 1	+ 5
IE	7.44	6.38	**7.44**	+ 0	+ 17	+ 0
IT	—	—	—	—	—	—
LT	3.60	3.40	**3.83**	+ 6	+ 13	+ 4
LU	—	—	—	—	—	—
LV	3.04	2.42	**3.17**	+ 4	+ 31	+ 4
MT	—	—	—	—	—	—
NL	6.26	4.82	**6.00**	– 4	+ 24	– 6
PL	3.65	3.79	**3.79**	+ 4	– 0	+ 1
PT	—	—	—	—	—	—
RO	2.55	3.25	**2.91**	+ 14	– 10	– 2
SE	4.56	3.15	**5.12**	+ 12	+ 62	+ 13
SI	—	—	—	—	—	—
SK	4.79	5.10	**5.40**	+ 13	+ 6	+ 9



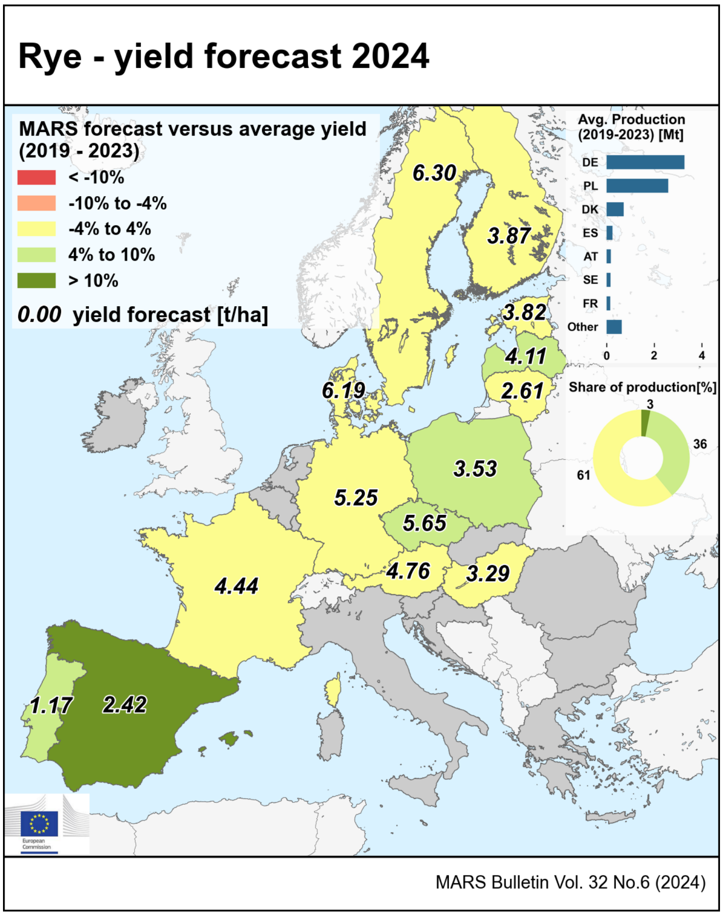
Country	Winter barley (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff June/May
EU	5.91	6.03	**5.96**	+ 1	– 1	– 0
AT	6.69	6.55	**7.15**	+ 7	+ 9	+ 0
BE	8.26	8.37	**8.00**	– 3	– 4	– 5
BG	4.93	5.18	**5.25**	+ 6	+ 1	– 2
CY	2.11	1.74	**2.18**	+ 3	+ 25	+ 0
CZ	6.09	6.32	**6.32**	+ 4	– 0	+ 0
DE	7.23	7.43	**7.33**	+ 1	– 1	– 1
DK	6.91	6.48	**6.87**	– 1	+ 6	+ 2
EE	4.67	3.68	**5.09**	+ 9	+ 39	+ 0
EL	2.83	2.55	**2.89**	+ 2	+ 13	+ 0
ES	2.51	1.06	**2.84**	+ 13	+ 168	+ 0
FI	—	—	—	—	—	—
FR	6.65	7.13	**6.50**	– 2	– 9	+ 0
HR	4.89	4.00	**5.22**	+ 7	+ 30	+ 0
HU	5.62	5.51	**5.82**	+ 4	+ 6	+ 2
IE	8.97	8.72	**8.71**	– 3	– 0	+ 0
IT	4.12	3.99	**4.10**	– 0	+ 3	+ 0
LT	4.17	3.98	**4.40**	+ 6	+ 11	+ 3
LU	—	—	—	—	—	—
LV	4.49	3.59	**5.04**	+ 12	+ 40	+ 6
MT	—	—	—	—	—	—
NL	8.43	8.96	**8.30**	– 2	– 7	– 2
PL	4.87	5.07	**4.97**	+ 2	– 2	+ 1
PT	2.71	1.56	**3.06**	+ 13	+ 96	+ 0
RO	4.25	4.80	**4.35**	+ 2	– 9	– 7
SE	6.06	5.19	**6.10**	+ 1	+ 17	+ 6
SI	5.08	4.60	**5.21**	+ 3	+ 13	+ 0
SK	5.54	5.55	**5.98**	+ 8	+ 8	+ 2



Country	Grain maize (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff June/May
EU	7.35	7.51	**7.55**	+ 3	+ 1	– 0
AT	10.5	9.93	**10.6**	+ 1	+ 7	+ 0
BE	10.8	12.1	**10.5**	– 3	– 13	– 3
BG	5.50	4.48	**6.34**	+ 15	+ 42	– 4
CY	—	—	**—**	—	—	—
CZ	8.75	7.88	**8.50**	– 3	+ 8	+ 0
DE	9.36	9.65	**9.58**	+ 2	– 1	– 1
DK	—	—	**—**	—	—	—
EE	—	—	**—**	—	—	—
EL	10.6	9.50	**10.9**	+ 2	+ 14	+ 0
ES	12.0	11.7	**12.1**	+ 0	+ 3	+ 0
FI	—	—	**—**	—	—	—
FR	8.77	9.83	**8.98**	+ 2	– 9	– 1
HR	7.76	7.42	**8.08**	+ 4	+ 9	+ 0
HU	6.93	8.17	**7.87**	+ 14	– 4	+ 5
IE	—	—	**—**	—	—	—
IT	10.1	10.7	**10.7**	+ 6	+ 0	+ 6
LT	6.51	8.24	**6.62**	+ 2	– 20	+ 0
LU	—	—	**—**	—	—	—
LV	—	—	**—**	—	—	—
MT	—	—	**—**	—	—	—
NL	11.3	12.8	**11.3**	+ 0	– 12	+ 0
PL	7.05	7.29	**7.21**	+ 2	– 1	+ 1
PT	9.90	10.7	**10.3**	+ 4	– 3	+ 0
RO	4.89	4.70	**4.55**	– 7	– 3	– 8
SE	—	—	**—**	—	—	—
SI	8.96	8.79	**9.20**	+ 3	+ 5	+ 0
SK	7.17	7.57	**7.97**	+ 11	+ 5	+ 3

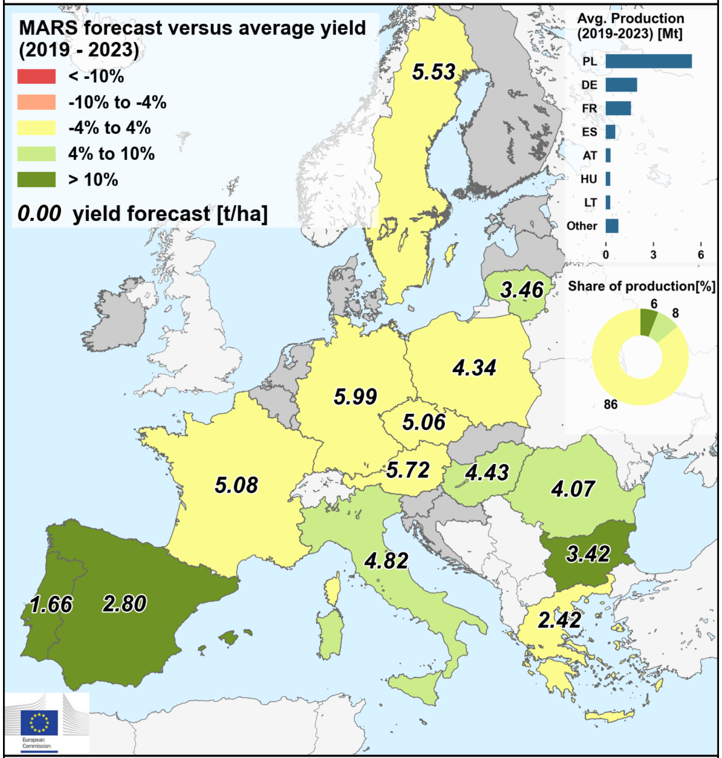


Country	Rye (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff June/May
EU	4.15	4.10	**4.30**	+ 4	+ 5	+ 1
AT	4.76	4.54	**4.76**	+ 0	+ 5	+ 0
BE	—	—	**—**	—	—	—
BG	—	—	**—**	—	—	—
CY	—	—	**—**	—	—	—
CZ	5.20	5.07	**5.65**	+ 9	+ 11	+ 0
DE	5.26	4.99	**5.25**	– 0	+ 5	+ 0
DK	6.11	5.60	**6.19**	+ 1	+ 11	+ 4
EE	3.86	3.66	**3.82**	– 1	+ 5	+ 0
EL	—	—	**—**	—	—	—
ES	2.16	1.41	**2.42**	+ 12	+ 71	+ 2
FI	3.95	3.53	**3.87**	– 2	+ 10	+ 0
FR	4.32	4.34	**4.44**	+ 3	+ 2	+ 0
HR	—	—	**—**	—	—	—
HU	3.27	3.34	**3.29**	+ 0	– 2	– 3
IE	—	—	**—**	—	—	—
IT	—	—	**—**	—	—	—
LT	2.59	2.36	**2.61**	+ 1	+ 10	+ 0
LU	—	—	**—**	—	—	—
LV	3.94	3.20	**4.11**	+ 4	+ 28	+ 2
MT	—	—	**—**	—	—	—
NL	—	—	**—**	—	—	—
PL	3.31	3.55	**3.53**	+ 7	– 0	– 0
PT	1.06	0.90	**1.17**	+ 10	+ 30	+ 1
RO	—	—	**—**	—	—	—
SE	6.06	5.25	**6.30**	+ 4	+ 20	+ 7
SI	—	—	**—**	—	—	—
SK	—	—	**—**	—	—	—



Country	Triticale (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff June/May
EU	4.33	4.35	**4.47**	+ 3	+ 3	+ 0
AT	5.58	5.62	**5.72**	+ 3	+ 2	+ 0
BE	—	—	—	—	—	—
BG	3.10	3.20	**3.42**	+ 11	+ 7	– 0
CY	—	—	—	—	—	—
CZ	4.97	4.98	**5.06**	+ 2	+ 2	+ 0
DE	5.95	5.88	**5.99**	+ 1	+ 2	– 1
DK	—	—	—	—	—	—
EE	—	—	—	—	—	—
EL	2.36	1.80	**2.42**	+ 3	+ 35	+ 0
ES	2.34	1.42	**2.80**	+ 20	+ 98	+ 0
FI	—	—	—	—	—	—
FR	5.05	5.10	**5.08**	+ 1	– 1	+ 0
HR	—	—	—	—	—	—
HU	4.07	4.26	**4.43**	+ 9	+ 4	+ 5
IE	—	—	—	—	—	—
IT	4.44	4.54	**4.82**	+ 9	+ 6	+ 6
LT	3.30	3.09	**3.46**	+ 5	+ 12	+ 6
LU	—	—	—	—	—	—
LV	—	—	—	—	—	—
MT	—	—	—	—	—	—
NL	—	—	—	—	—	—
PL	4.23	4.48	**4.34**	+ 3	– 3	+ 2
PT	1.33	0.75	**1.66**	+ 25	+ 122	+ 8
RO	3.79	4.30	**4.07**	+ 7	– 5	– 3
SE	5.45	4.12	**5.53**	+ 2	+ 34	+ 3
SI	—	—	—	—	—	—
SK	—	—	—	—	—	—

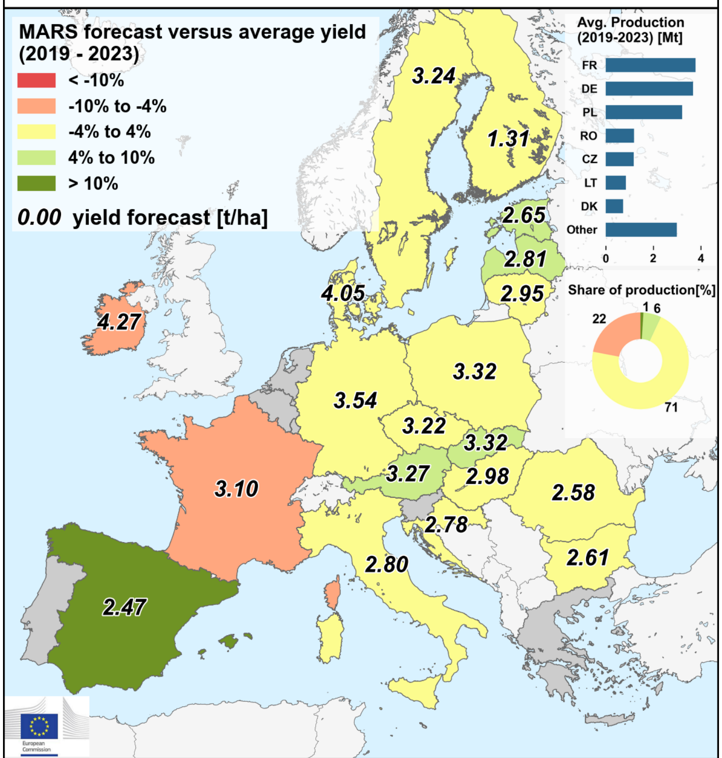
Triticale - yield forecast 2024



MARS Bulletin Vol. 32 No.6 (2024)

Country	Rape and turnip rape (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff June/May
EU	3.17	3.17	**3.16**	– 0	– 0	– 2
AT	3.11	3.23	**3.27**	+ 5	+ 1	+ 4
BE	—	—	—	—	—	—
BG	2.57	2.58	**2.61**	+ 2	+ 1	– 0
CY	—	—	—	—	—	—
CZ	3.25	3.45	**3.22**	– 1	– 7	– 3
DE	3.62	3.58	**3.54**	– 2	– 1	+ 0
DK	4.14	3.90	**4.05**	– 2	+ 4	+ 0
EE	2.51	1.80	**2.65**	+ 6	+ 47	+ 0
EL	—	—	—	—	—	—
ES	2.13	1.62	**2.47**	+ 16	+ 53	+ 0
FI	1.30	1.31	**1.31**	+ 1	– 0	+ 0
FR	3.26	3.17	**3.10**	– 5	– 2	– 5
HR	2.70	2.82	**2.78**	+ 3	– 2	+ 0
HU	2.89	3.27	**2.98**	+ 3	– 9	– 2
IE	4.50	4.33	**4.27**	– 5	– 1	+ 0
IT	2.82	2.71	**2.80**	– 1	+ 3	+ 2
LT	2.87	2.67	**2.95**	+ 3	+ 10	+ 0
LU	—	—	—	—	—	—
LV	2.68	2.35	**2.81**	+ 5	+ 20	+ 4
MT	—	—	—	—	—	—
NL	—	—	—	—	—	—
PL	3.20	3.39	**3.32**	+ 4	– 2	+ 1
PT	—	—	—	—	—	—
RO	2.58	2.63	**2.58**	+ 0	– 2	– 7
SE	3.21	2.51	**3.24**	+ 1	+ 29	+ 2
SI	—	—	—	—	—	—
SK	3.14	3.62	**3.32**	+ 6	– 8	+ 0

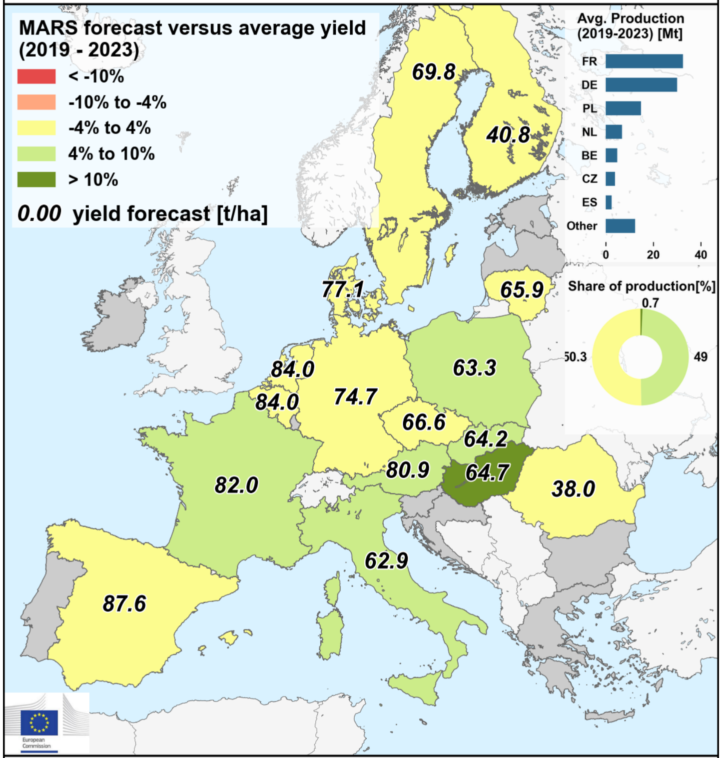
Rapeseed - yield forecast 2024



MARS Bulletin Vol. 32 No.6 (2024)

Country	Sugar beet (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff June/May
EU	73.2	N/A	**74.4**	+ 2	N/A	– 1
AT	77.1	75.0	**80.9**	+ 5	+ 8	+ 3
BE	86.2	87.0	**84.0**	– 3	– 3	– 3
BG	—	—	**—**	—	—	—
CY	—	—	**—**	—	—	—
CZ	65.2	65.2	**66.6**	+ 2	+ 2	+ 0
DE	75.9	79.7	**74.7**	– 2	– 6	– 1
DK	76.4	74.8	**77.1**	+ 1	+ 3	+ 0
EE	—	—	**—**	—	—	—
EL	—	—	**—**	—	—	—
ES	85.3	81.5	**87.6**	+ 3	+ 8	+ 1
FI	40.5	38.5	**40.8**	+ 1	+ 6	+ 0
FR	78.8	83.4	**82.0**	+ 4	– 2	– 3
HR	—	—	**—**	—	—	—
HU	56.8	58.0	**64.7**	+ 14	+ 12	+ 4
IE	—	—	**—**	—	—	—
IT	58.2	N/A	**62.9**	+ 8	N/A	+ 2
LT	66.5	72.2	**65.9**	– 1	– 9	+ 0
LU	—	—	**—**	—	—	—
LV	—	—	**—**	—	—	—
MT	—	—	**—**	—	—	—
NL	84.3	85.3	**84.0**	– 0	– 2	– 3
PL	60.8	61.3	**63.3**	+ 4	+ 3	+ 0
PT	—	—	**—**	—	—	—
RO	36.6	33.1	**38.0**	+ 4	+ 15	– 2
SE	67.7	60.4	**69.8**	+ 3	+ 16	+ 0
SI	—	—	**—**	—	—	—
SK	60.2	63.6	**64.2**	+ 7	+ 1	+ 4

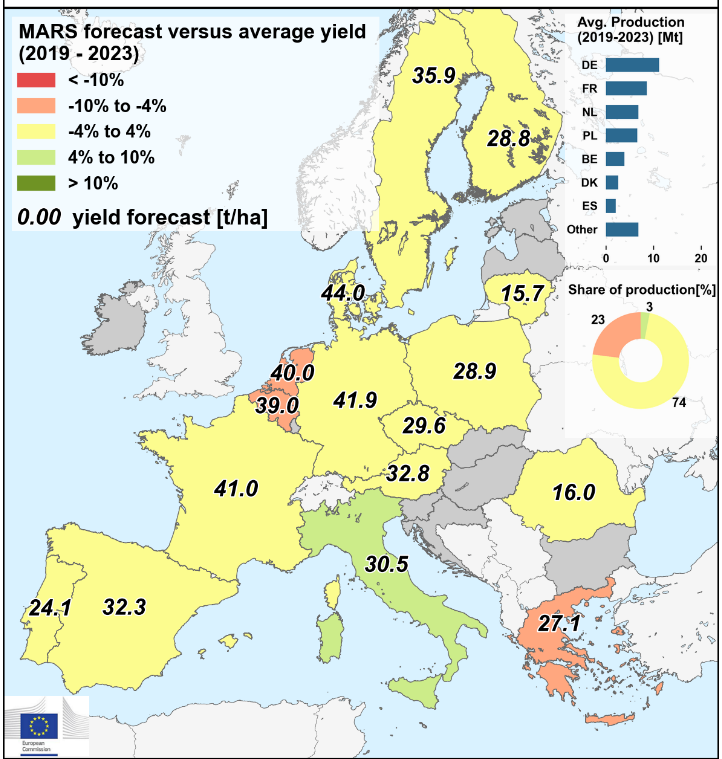
Sugar beet - yield forecast 2024



MARS Bulletin Vol. 32 No.6 (2024)

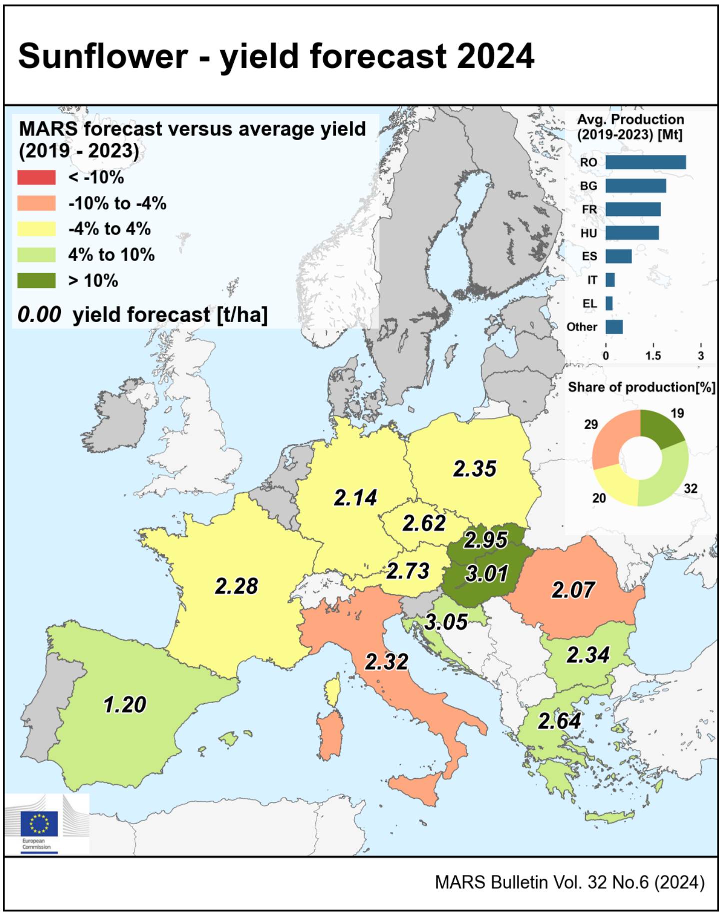
Country	Potatoes (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff June/May
EU	35.4	36.8	**35.8**	+ 1	– 3	– 3
AT	32.7	28.8	**32.8**	+ 0	+ 14	+ 0
BE	41.4	43.5	**39.0**	– 6	– 10	– 10
BG	—	—	**—**	—	—	—
CY	—	—	**—**	—	—	—
CZ	28.7	27.4	**29.6**	+ 3	+ 8	+ 0
DE	41.9	43.9	**41.9**	+ 0	– 5	– 3
DK	43.7	45.1	**44.0**	+ 1	– 2	+ 2
EE	—	—	**—**	—	—	—
EL	28.6	27.7	**27.1**	– 5	– 2	+ 0
ES	32.3	32.0	**32.3**	+ 0	+ 1	+ 0
FI	28.9	30.2	**28.8**	– 1	– 5	+ 0
FR	41.0	42.2	**41.0**	+ 0	– 3	– 3
HR	—	—	**—**	—	—	—
HU	—	—	**—**	—	—	—
IE	—	—	**—**	—	—	—
IT	29.0	27.8	**30.5**	+ 5	+ 10	+ 0
LT	16.1	18.1	**15.7**	– 2	– 14	+ 0
LU	—	—	**—**	—	—	—
LV	—	—	**—**	—	—	—
MT	—	—	**—**	—	—	—
NL	42.2	41.8	**40.0**	– 5	– 4	– 6
PL	28.8	29.6	**28.9**	+ 1	– 2	+ 0
PT	23.6	24.2	**24.1**	+ 2	– 1	+ 0
RO	15.6	14.1	**16.0**	+ 3	+ 14	+ 1
SE	35.8	35.6	**35.9**	+ 0	+ 1	+ 0
SI	—	—	**—**	—	—	—
SK	—	—	**—**	—	—	—

Potatoes - yield forecast 2024

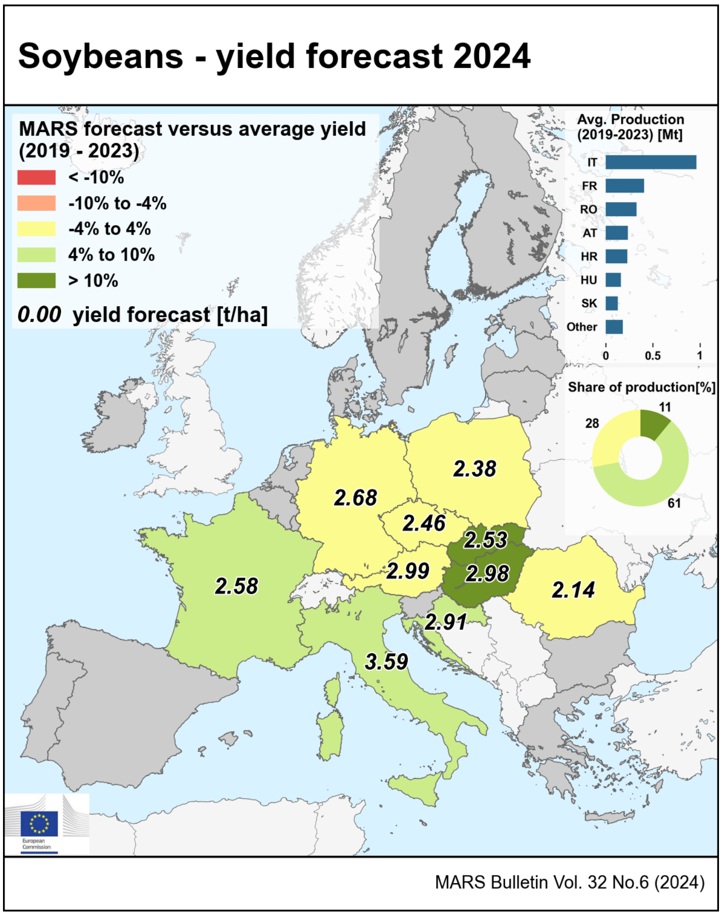


MARS Bulletin Vol. 32 No.6 (2024)

Country	Sunflower (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff June/May
EU	2.15	2.10	**2.20**	+ 3	+ 5	– 3
AT	2.68	2.69	**2.73**	+ 2	+ 2	+ 0
BE	—	—	—	—	—	—
BG	2.24	2.03	**2.34**	+ 5	+ 16	– 0
CY	—	—	—	—	—	—
CZ	2.63	2.49	**2.62**	– 0	+ 5	+ 0
DE	2.20	2.47	**2.14**	– 3	– 13	+ 0
DK	—	—	—	—	—	—
EE	—	—	—	—	—	—
EL	2.52	2.42	**2.64**	+ 5	+ 9	+ 0
ES	1.13	1.12	**1.20**	+ 6	+ 6	+ 0
FI	—	—	—	—	—	—
FR	2.30	2.50	**2.28**	– 1	– 9	– 2
HR	2.93	2.64	**3.05**	+ 4	+ 15	– 1
HU	2.64	2.90	**3.01**	+ 14	+ 4	+ 2
IE	—	—	—	—	—	—
IT	2.44	2.49	**2.32**	– 5	– 7	– 6
LT	—	—	—	—	—	—
LU	—	—	—	—	—	—
LV	—	—	—	—	—	—
MT	—	—	—	—	—	—
NL	—	—	—	—	—	—
PL	2.35	2.36	**2.35**	+ 0	– 1	– 0
PT	—	—	—	—	—	—
RO	2.21	1.86	**2.07**	– 7	+ 11	– 9
SE	—	—	—	—	—	—
SI	—	—	—	—	—	—
SK	2.58	2.78	**2.95**	+ 14	+ 6	+ 5

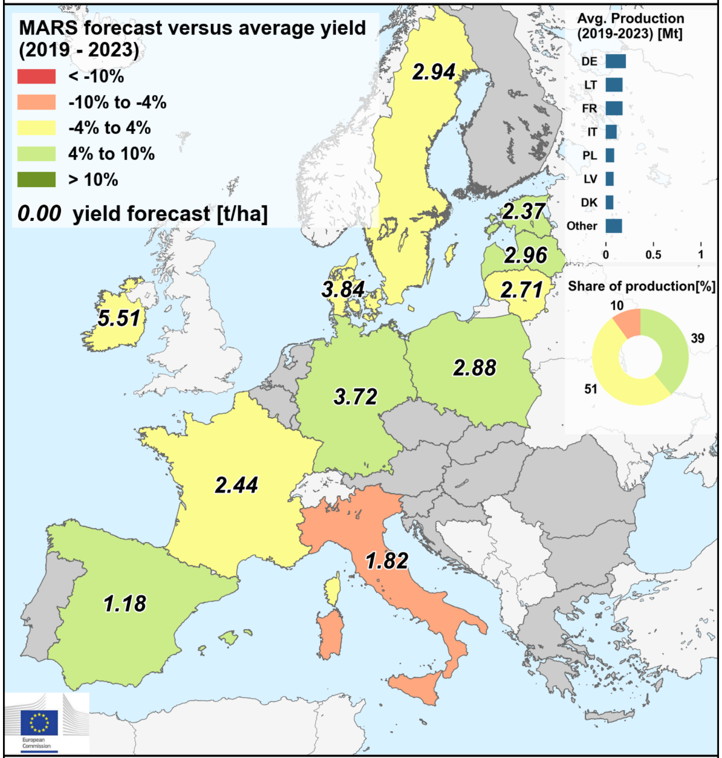


Country	Soybeans (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff June/May
EU	2.73	2.85	**2.91**	+ 6	+ 2	+ 3
AT	2.95	3.06	**2.99**	+ 1	– 2	– 3
BE	—	—	—	—	—	—
BG	—	—	—	—	—	—
CY	—	—	—	—	—	—
CZ	2.38	2.39	**2.46**	+ 3	+ 3	+ 0
DE	2.75	2.88	**2.68**	– 2	– 7	+ 0
DK	—	—	—	—	—	—
EE	—	—	—	—	—	—
EL	—	—	—	—	—	—
ES	—	—	—	—	—	—
FI	—	—	—	—	—	—
FR	2.41	2.44	**2.58**	+ 7	+ 6	+ 0
HR	2.76	2.86	**2.91**	+ 5	+ 2	– 1
HU	2.65	3.04	**2.98**	+ 12	– 2	+ 4
IE	—	—	—	—	—	—
IT	3.28	3.39	**3.59**	+ 10	+ 6	+ 9
LT	—	—	—	—	—	—
LU	—	—	—	—	—	—
LV	—	—	—	—	—	—
MT	—	—	—	—	—	—
NL	—	—	—	—	—	—
PL	2.31	2.58	**2.38**	+ 3	– 8	+ 0
PT	—	—	—	—	—	—
RO	2.19	2.14	**2.14**	– 2	+ 0	– 6
SE	—	—	—	—	—	—
SI	—	—	—	—	—	—
SK	2.27	2.59	**2.53**	+ 11	– 2	+ 0



Country	Field beans (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff June/May
EU	2.72	2.53	**2.83**	+ 4	+ 12	– 1
AT	—	—	—	—	—	—
BE	—	—	—	—	—	—
BG	—	—	—	—	—	—
CY	—	—	—	—	—	—
CZ	—	—	—	—	—	—
DE	3.55	2.88	**3.72**	+ 5	+ 29	+ 0
DK	3.83	3.27	**3.84**	+ 0	+ 18	+ 0
EE	2.25	2.32	**2.37**	+ 6	+ 2	+ 0
EL	—	—	—	—	—	—
ES	1.12	1.00	**1.18**	+ 6	+ 19	+ 1
FI	—	—	—	—	—	—
FR	2.41	2.66	**2.44**	+ 1	– 9	+ 0
HR	—	—	—	—	—	—
HU	—	—	—	—	—	—
IE	5.33	5.00	**5.51**	+ 3	+ 10	+ 0
IT	1.93	1.98	**1.82**	– 5	– 8	– 8
LT	2.72	2.37	**2.71**	– 0	+ 14	+ 0
LU	—	—	—	—	—	—
LV	2.83	2.30	**2.96**	+ 5	+ 29	+ 0
MT	—	—	—	—	—	—
NL	—	—	—	—	—	—
PL	2.74	2.61	**2.88**	+ 5	+ 11	+ 1
PT	—	—	—	—	—	—
RO	—	—	—	—	—	—
SE	2.94	2.42	**2.94**	+ 0	+ 22	+ 0
SI	—	—	—	—	—	—
SK	—	—	—	—	—	—

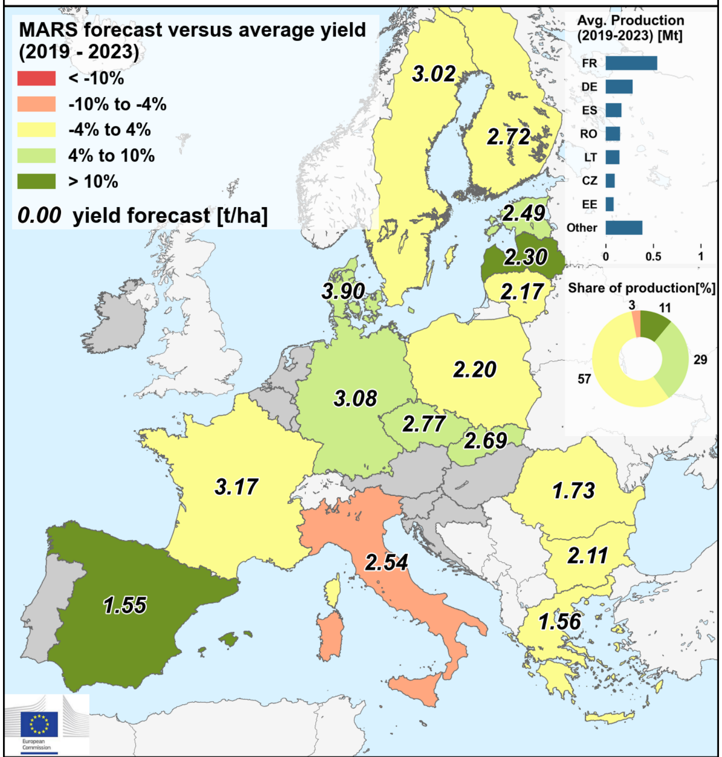
Field beans - yield forecast 2024



MARS Bulletin Vol. 32 No.6 (2024)

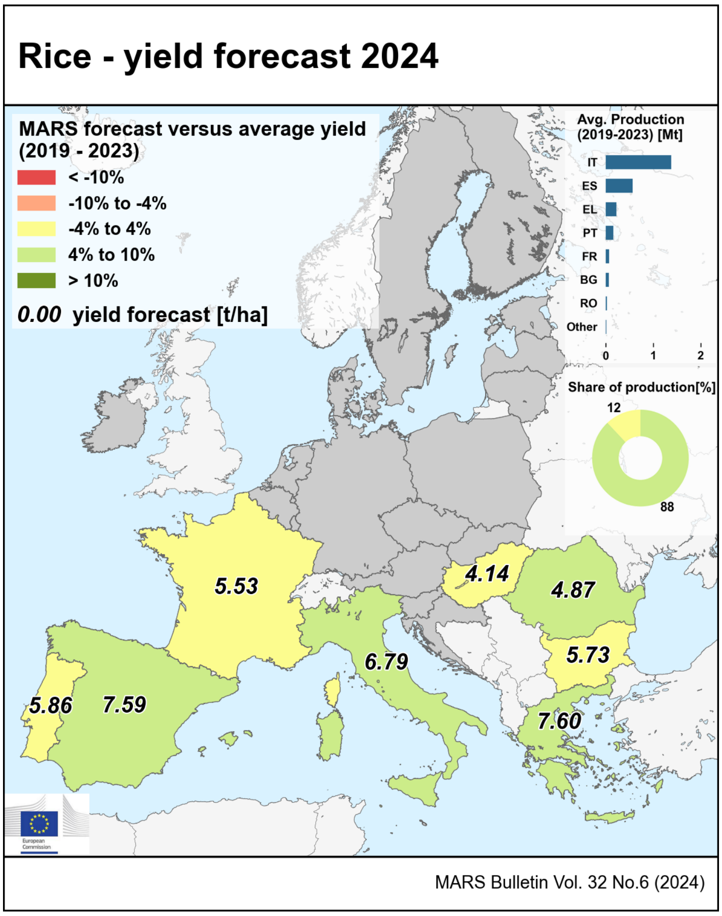
Country	Field peas (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff June/May
EU	2.33	1.99	**2.45**	+ 5	+ 23	– 1
AT	—	—	—	—	—	—
BE	—	—	—	—	—	—
BG	2.09	2.25	**2.11**	+ 1	– 6	+ 0
CY	—	—	—	—	—	—
CZ	2.55	2.25	**2.77**	+ 9	+ 23	+ 0
DE	2.95	2.25	**3.08**	+ 5	+ 37	+ 0
DK	3.67	2.88	**3.90**	+ 6	+ 35	+ 0
EE	2.28	2.20	**2.49**	+ 9	+ 13	+ 0
EL	1.55	1.60	**1.56**	+ 1	– 2	+ 0
ES	1.18	0.67	**1.55**	+ 31	+ 131	+ 0
FI	2.64	2.54	**2.72**	+ 3	+ 7	+ 0
FR	3.16	3.21	**3.17**	+ 0	– 1	+ 0
HR	—	—	—	—	—	—
HU	—	—	—	—	—	—
IE	—	—	—	—	—	—
IT	2.82	2.65	**2.54**	– 10	– 4	– 8
LT	2.14	2.10	**2.17**	+ 1	+ 3	+ 0
LU	—	—	—	—	—	—
LV	2.05	1.84	**2.30**	+ 12	+ 25	+ 0
MT	—	—	—	—	—	—
NL	—	—	—	—	—	—
PL	2.12	2.12	**2.20**	+ 4	+ 4	– 1
PT	—	—	—	—	—	—
RO	1.73	1.67	**1.73**	– 0	+ 4	– 18
SE	2.95	2.06	**3.02**	+ 2	+ 47	+ 0
SI	—	—	—	—	—	—
SK	2.47	2.08	**2.69**	+ 9	+ 29	+ 2

Field peas - yield forecast 2024



MARS Bulletin Vol. 32 No.6 (2024)

Country	Rice (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff June/May
EU	6.38	6.26	**6.80**	+7	+9	—
AT	—	—	**—**	—	—	—
BE	—	—	**—**	—	—	—
BG	5.78	6.20	**5.73**	– 1	– 8	—
CY	—	—	**—**	—	—	—
CZ	—	—	**—**	—	—	—
DE	—	—	**—**	—	—	—
DK	—	—	**—**	—	—	—
EE	—	—	**—**	—	—	—
EL	7.26	5.25	**7.60**	+ 5	+ 45	—
ES	7.08	5.94	**7.59**	+ 7	+ 28	—
FI	—	—	**—**	—	—	—
FR	5.52	5.77	**5.53**	+ 0	– 4	—
HR	—	—	**—**	—	—	—
HU	4.02	4.22	**4.14**	+ 3	– 2	—
IE	—	—	**—**	—	—	—
IT	6.24	6.58	**6.79**	+ 9	+ 3	—
LT	—	—	**—**	—	—	—
LU	—	—	**—**	—	—	—
LV	—	—	**—**	—	—	—
MT	—	—	**—**	—	—	—
NL	—	—	**—**	—	—	—
PL	—	—	**—**	—	—	—
PT	5.69	5.98	**5.86**	+ 3	– 2	—
RO	4.50	5.22	**4.87**	+ 8	– 7	—
SE	—	—	**—**	—	—	—
SI	—	—	**—**	—	—	—
SK	—	—	**—**	—	—	—



Country	Wheat (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff June/May
BY	3.54	3.38	**3.80**	+ 7	+ 12	+ 4
DZ	1.64	N/A	**1.66**	+ 2	N/A	+ 0
MA	1.61	1.71	**1.17**	– 28	– 32	– 5
TN	2.07	N/A	**2.20**	+ 6	N/A	– 3
TR	2.93	3.22	**3.06**	+ 5	– 5	+ 1
UA	4.18	4.53	**4.11**	– 2	– 9	– 8
UK	8.17	8.10	**7.80**	– 5	– 4	+ 1

Country	Barley (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff June/May
BY	2.88	2.75	**3.10**	+ 7	+ 13	+ 2
DZ	1.13	N/A	**1.16**	+ 3	N/A	+ 0
MA	1.04	1.09	**0.74**	– 28	– 32	– 5
TN	1.18	N/A	**1.19**	+ 0	N/A	– 3
TR	2.52	2.78	**3.00**	+ 19	+ 8	+ 9
UA	3.46	3.64	**3.57**	+ 3	– 2	– 4
UK	6.31	6.10	**6.33**	+ 0	+ 4	+ 0

Country	Grain maize (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff June/May
BY	5.43	5.56	**5.74**	+ 6	+ 3	+ 0
DZ	—	—	**—**	—	—	—
MA	—	—	**—**	—	—	—
TN	—	—	**—**	—	—	—
TR	9.29	9.40	**9.52**	+ 3	+ 1	+ 0
UA	6.90	7.73	**7.04**	+ 2	– 9	– 5
UK	—	—	**—**	—	—	—

Country	Soybean (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff June/May
BY	—	—	**—**	—	—	—
DZ	—	—	**—**	—	—	—
MA	—	—	**—**	—	—	—
TN	—	—	**—**	—	—	—
TR	4.22	4.21	**4.36**	+ 3	+ 4	+ 0
UA	2.39	2.61	**2.48**	+ 4	– 5	– 4
UK	—	—	**—**	—	—	—

NB: Yields are forecast for crops with more than 10 000 ha per country with sufficently long and coherent yield time series (for rice more than 1 000 ha per country).

Sources: 2019-2024 data come from DG Agriculture and Rural Development short-term-outlook data (dated May 2024, received on 04.06.2024), Eurostat Eurobase (last update: 17.05.2024), ELSTAT, Statistics Netherlands (CBS), DESTATIS and EES (last update: 15.11.2017).

Non-EU 2019-2023 data come from USDA, INRA Maroc, ONICL Maroc, Ministère de l'Agriculture, de la Pêche Maritime du Développement Rural et des Eaux et Forêts Maroc, Ministère de l'agriculture des ressources hydrauliques et de la pêche Tunisie, MED-Amin baseline DB, DSASI-MADR Algeria, Turkish Statistical Institute (TurkStat), Eurostat Eurobase (last update: 17.05.2024), Department for Environment, Food & Rural Affairs of UK (DEFRA), Ministry for Development of Economy, Trade and Agriculture of Ukraine, FAO and PSD-online.

2024 yields come from MARS Crop Yield Forecasting System (output up to 10.06.2024).

EU aggregate after 1.2.2020 is reported.

N/A = Data not available.

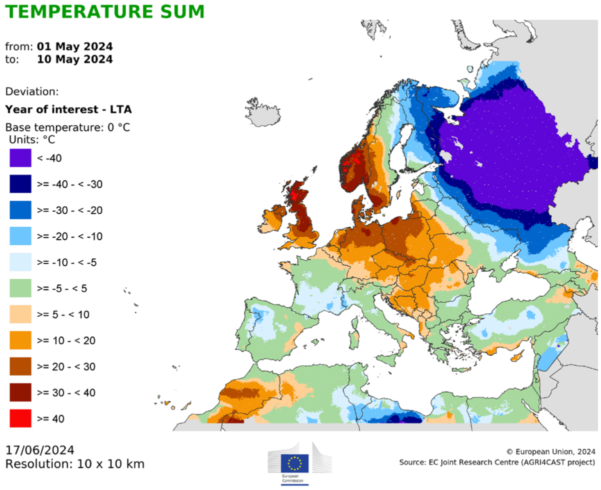
The column header '%24/5yrs' stands for the 2024 change with respect to the 5-year average(%). Similarly, '%24/23' stands for the 2024 change with respect to 2023(%).

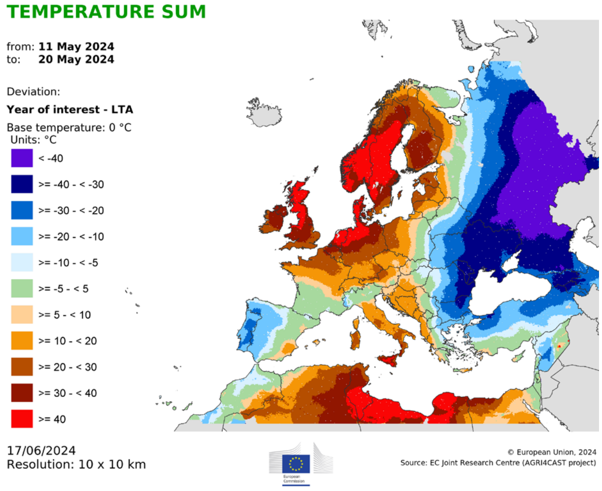
Cop name	Eurostat Crop name	Eurostat Crop Code	Official Eurostat Crop definition*
Total wheat	Wheat and spelt	C1100	Common wheat (*Triticum aestivum* L. emend. Fiori et Paol.), spelt (*Triticum spelta* L.), einkorn wheat (*Triticum monococcum* L.) and durum wheat (*Triticum durum* Desf.).
Total barley	Barley	C1300	Barley (*Hordeum vulgare* L.).
Soft wheat	Common wheat and spelt	C1110	Common wheat (*Triticum aestivum* L. emend. Fiori et Paol.), spelt (*Triticum spelta* L.) and einkorn wheat (*Triticum monococcum* L.).
Durum what	Durum wheat	C1120	*Triticum durum* Desf.
Spring barley	Spring barley	C1320	Barley (*Hordeum vulgare* L.) sown in the spring.
Winter barley	Winter barley	C1310	Barley (*Hordeum vulgare* L.) sown before or during winter.
Grain maize	Grain maize and corn-cob-mix	C1500	Maize (*Zea mays* L.) harvested for grain, as seed or as corn-cob-mix.
Green maize	Green maize	G3000	All forms of maize (*Zea mays* L.) grown mainly for silage (whole cob, parts of or whole plant) and not harvested for grain.
Rye	Rye and winter cereal mixtures (maslin)	C1200	Rye (*Secale cereale* L.) sown any time, mixtures of rye and other cereals and other cereal mixtures sown before or during the winter (maslin).
Triticale	Triticale	C1600	Triticale (x *Triticosecale* Wittmack).
Rape and turnip rape	Rape and turnip rape seeds	I1110	Rape (*Brassica napus* L.) and turnip rape (*Brassica rapa* L. var. oleifera (Lam.)) grown for the production of oil, harvested as dry grains.
Sugar beet	Sugar beet (excluding seed)	R2000	Sugar beet (*Beta vulgaris* L.) intended for the sugar industry, alcohol production or renewable energy production.
Potatoes	Potatoes (including seed potatoes)	R1000	Potatoes (*Solanum tuberosum* L.).
Sunflower	Sunflower seed	I1120	Sunflower (*Helianthus annuus* L.) harvested as dry grains.
Soybeans	Soya	I1130	Soya (*Glycine max* L. Merril) harvested as dry grains.
Field beans	Broad and field beans	P1200	All varieties of broad and field beans (Faba vulgaris (Moench) syn. Vicia faba L. (partim)) harvested dry for grain, including seed.
Field peas	Field peas	P1100	All varieties of field peas (Pisum sativum L. convar. sativum or Pisum sativum L. convar. arvense L. or convar. speciosum) harvested dry for grain, including seed.
Rice	Rice	C2000	Rice (*Oryza sativa*, L.).

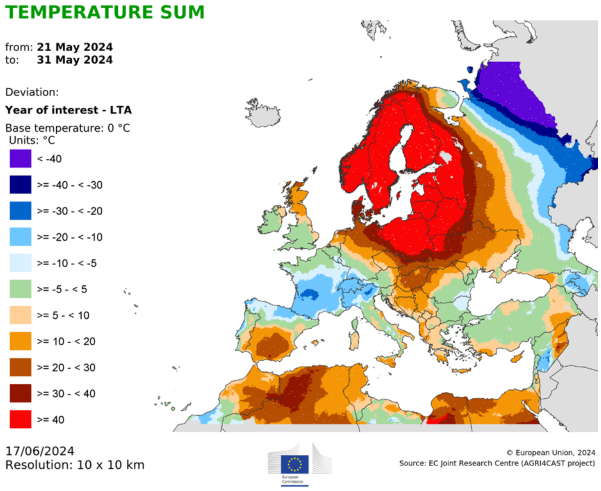
** Source:* Eurostat - Annual crop statistics (Handbook 2020 Edition)

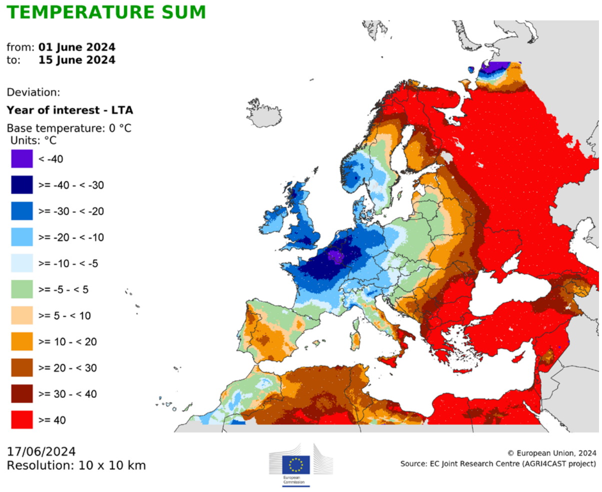
7. Atlas

Temperature regime

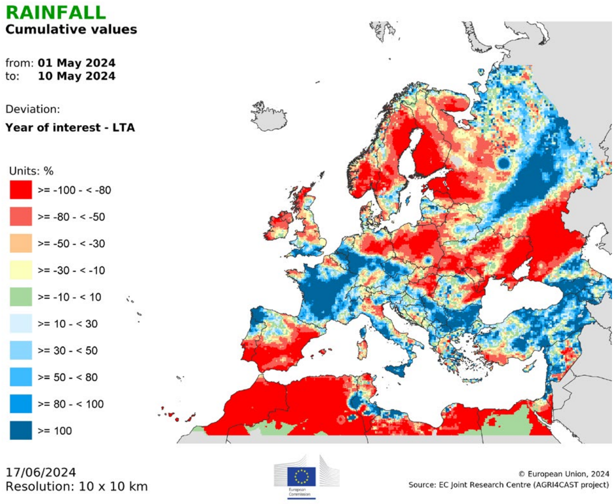


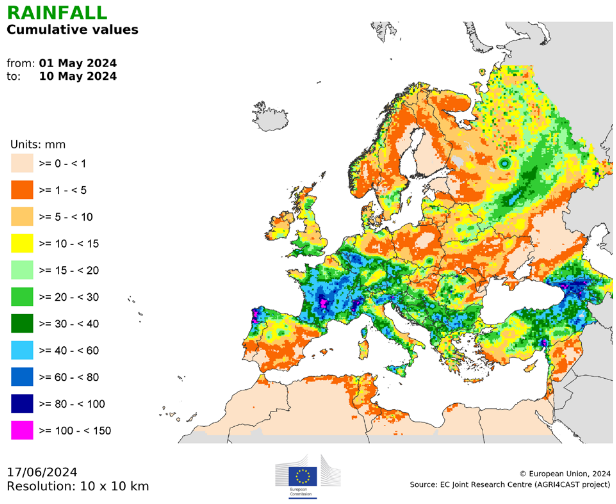


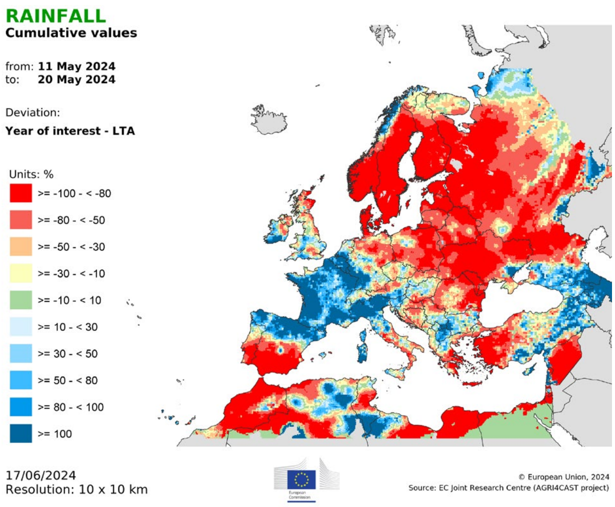


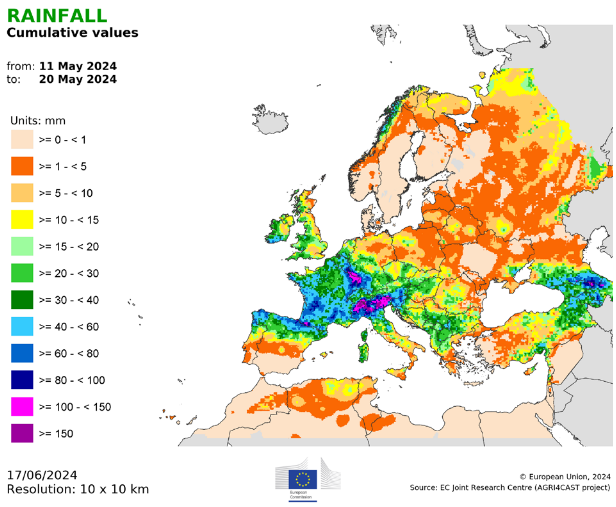


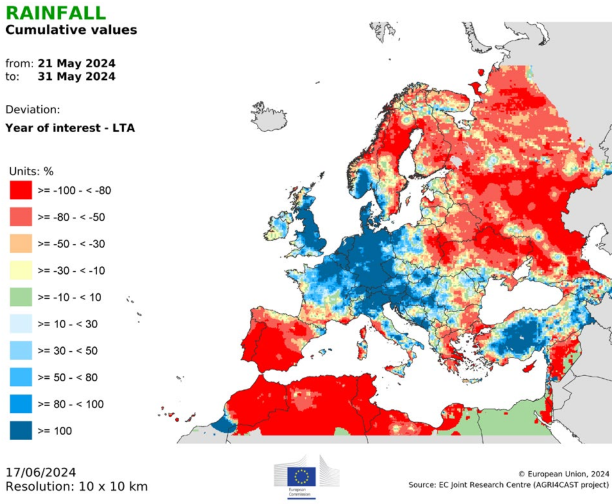
Precipitation

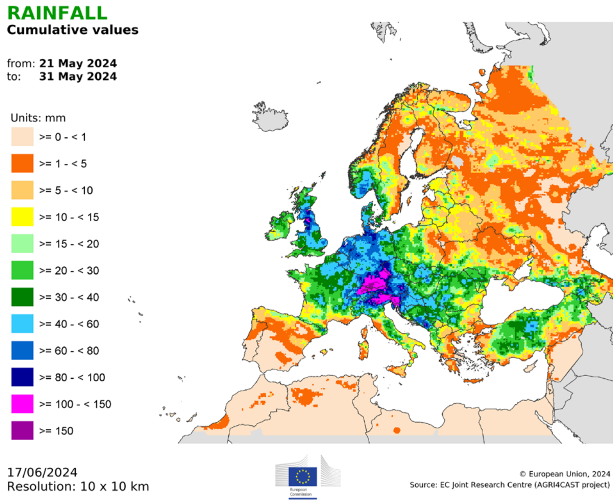


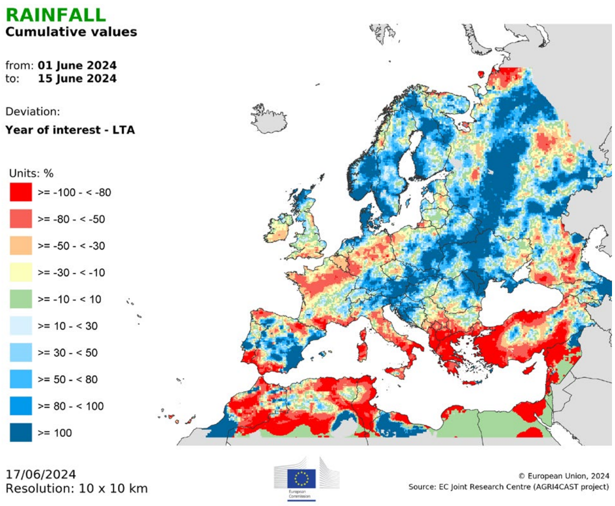


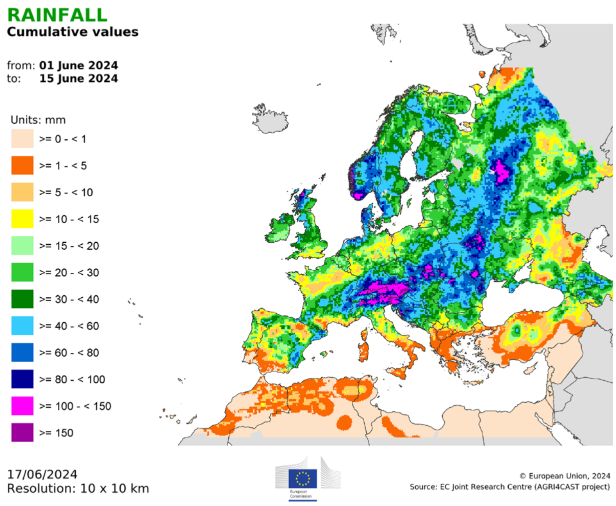

RAINFALL
Cumulative values
from: 11 May 2024
to: 20 May 2024
Deviation:
Year of interest - LTA
Units: %
>= -100 - < -80
>= -80 - < -50
>= -50 - < -30
>= -30 - < -10
>= -10 - < 10
>= 10 - < 30
>= 30 - < 50
>= 50 - < 80
>= 80 - < 100
>= 100
17/06/2024
Resolution: 10 x 10 km
© European Union, 2024
Source: EC Joint Research Centre (AGRI4CAST project)


RAINFALL
Cumulative values
from: 11 May 2024
to: 20 May 2024
Units: mm
>= 0 - < 1
>= 1 - < 5
>= 5 - < 10
>= 10 - < 15
>= 15 - < 20
>= 20 - < 30
>= 30 - < 40
>= 40 - < 60
>= 60 - < 80
>= 80 - < 100
>= 100 - < 150
>= 150
17/06/2024
Resolution: 10 x 10 km
© European Union, 2024
Source: EC Joint Research Centre (AGRI4CAST project)

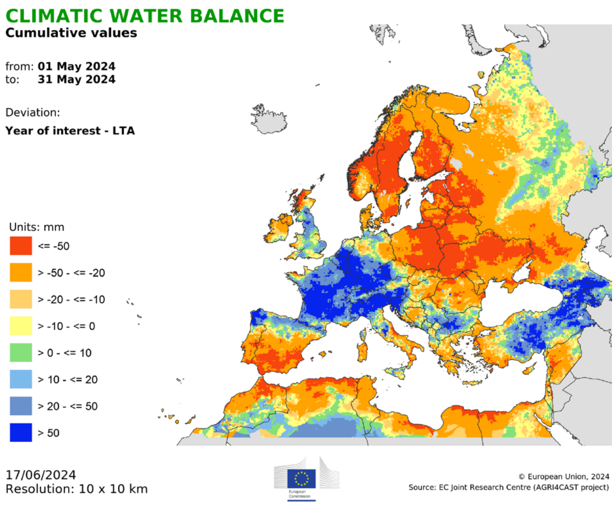

RAINFALL
Cumulative values
from: 21 May 2024
to: 31 May 2024
Deviation:
Year of interest - LTA
Units: %
>= -100 - < -80
>= -80 - < -50
>= -50 - < -30
>= -30 - < -10
>= -10 - < 10
>= 10 - < 30
>= 30 - < 50
>= 50 - < 80
>= 80 - < 100
>= 100
17/06/2024
Resolution: 10 x 10 km
© European Union, 2024
Source: EC Joint Research Centre (AGRI4CAST project)

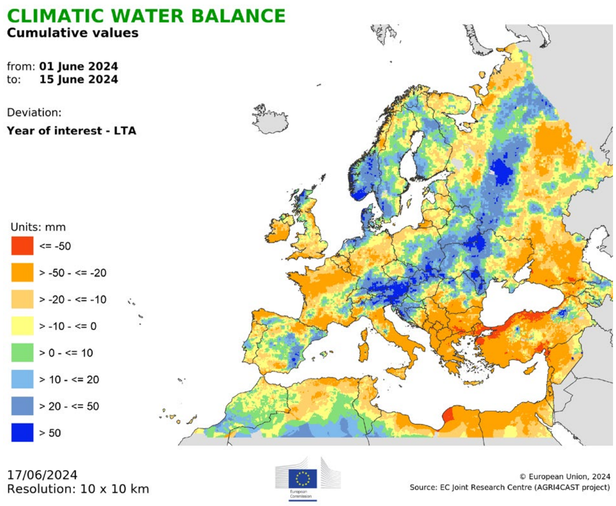

RAINFALL
Cumulative values
from: 21 May 2024
to: 31 May 2024
Units: mm
>= 0 - < 1
>= 1 - < 5
>= 5 - < 10
>= 10 - < 15
>= 15 - < 20
>= 20 - < 30
>= 30 - < 40
>= 40 - < 60
>= 60 - < 80
>= 80 - < 100
>= 100 - < 150
>= 150
17/06/2024
Resolution: 10 x 10 km
© European Union, 2024
Source: EC Joint Research Centre (AGRI4CAST project)


RAINFALL
Cumulative values
from: 01 June 2024
to: 15 June 2024
Deviation:
Year of interest - LTA
Units: %
>= -100 - < -80
>= -80 - < -50
>= -50 - < -30
>= -30 - < -10
>= -10 - < 10
>= 10 - < 30
>= 30 - < 50
>= 50 - < 80
>= 80 - < 100
>= 100
17/06/2024
Resolution: 10 x 10 km
© European Union, 2024
Source: EC Joint Research Centre (AGRI4CAST project)

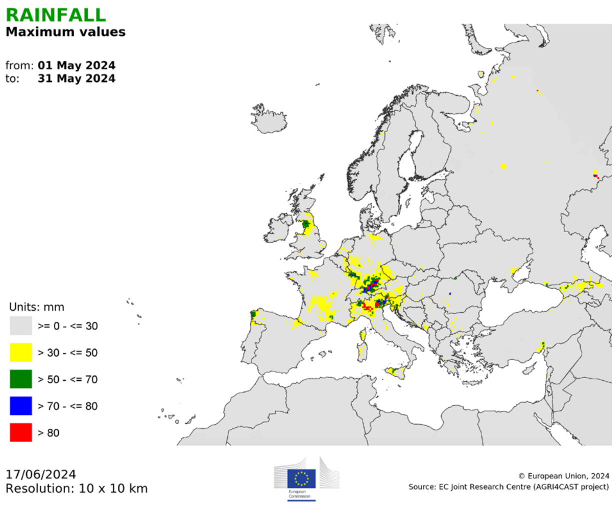

RAINFALL
Cumulative values
from: 01 June 2024
to: 15 June 2024
Units: mm
>= 0 - < 1
>= 1 - < 5
>= 5 - < 10
>= 10 - < 15
>= 15 - < 20
>= 20 - < 30
>= 30 - < 40
>= 40 - < 60
>= 60 - < 80
>= 80 - < 100
>= 100 - < 150
>= 150
17/06/2024
Resolution: 10 x 10 km
© European Union, 2024
Source: EC Joint Research Centre (AGRI4CAST project)

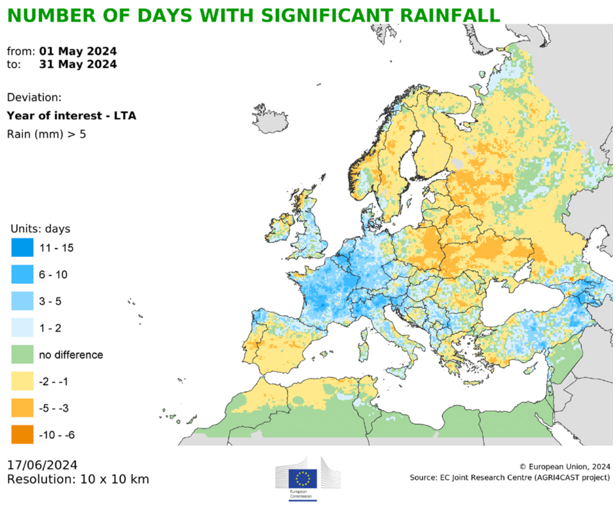
Climatic water balance

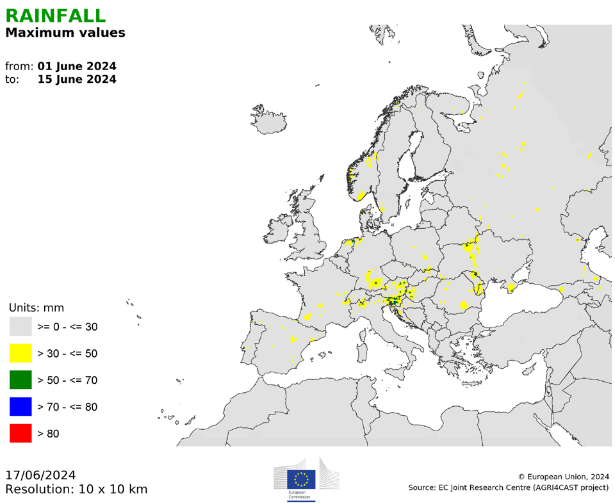


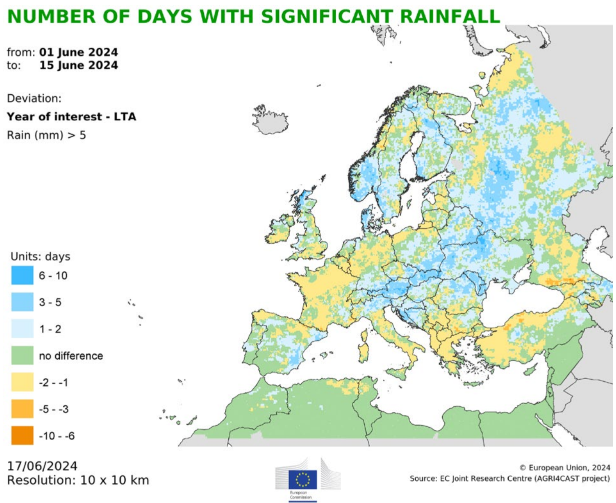


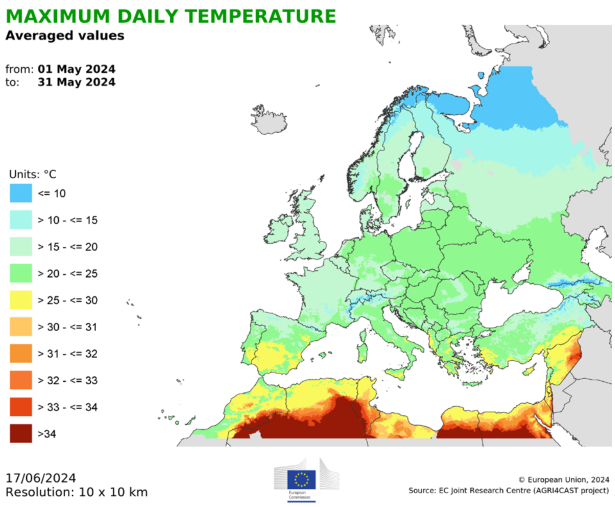
Weather events

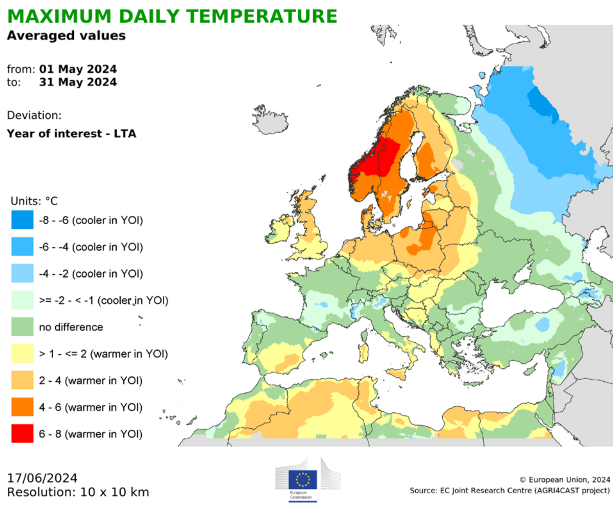


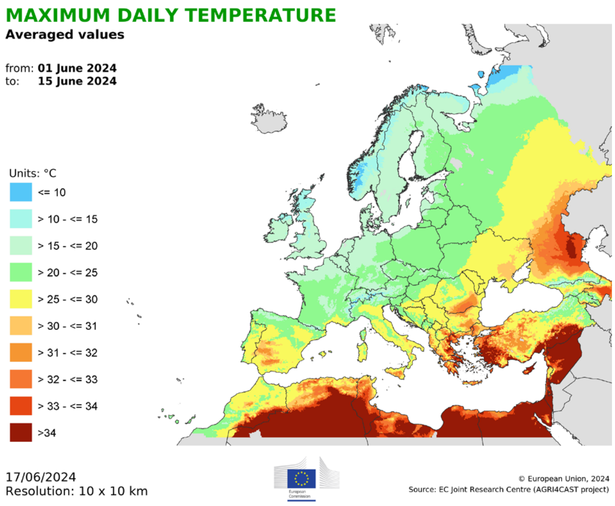


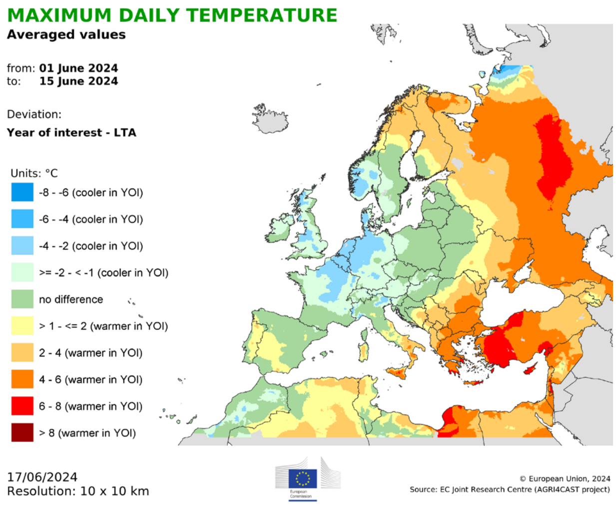


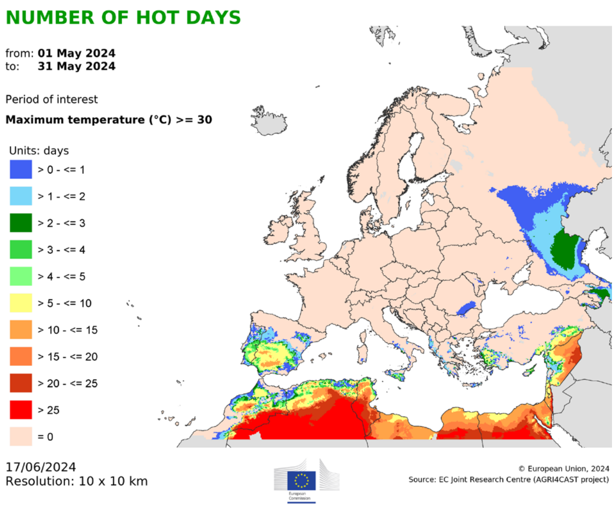


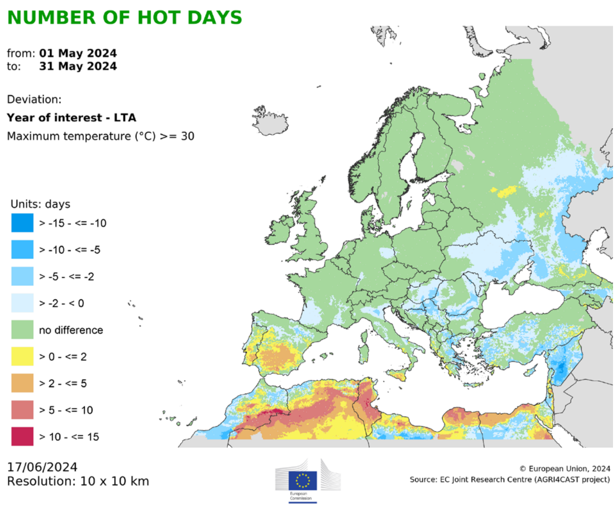

MAXIMUM DAILY TEMPERATURE
Averaged values
from: 01 May 2024
to: 31 May 2024
Units: °C
<= 10
> 10 - <= 15
> 15 - <= 20
> 20 - <= 25
> 25 - <= 30
> 30 - <= 31
> 31 - <= 32
> 32 - <= 33
> 33 - <= 34
>34
17/06/2024
Resolution: 10 x 10 km
© European Union, 2024
Source: EC Joint Research Centre (AGRI4CAST project)

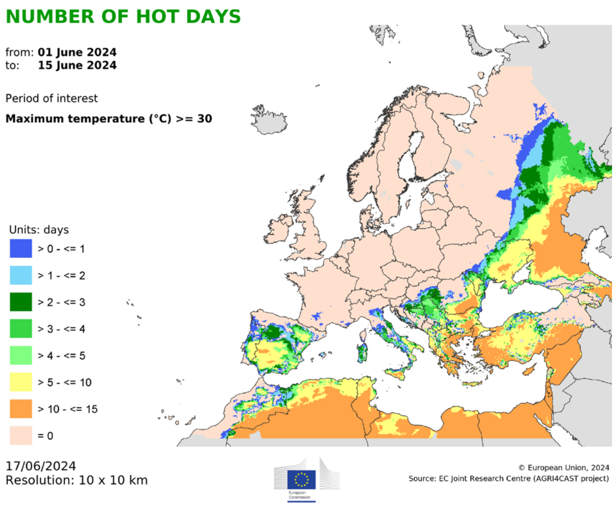

MAXIMUM DAILY TEMPERATURE
Averaged values
from: 01 May 2024
to: 31 May 2024
Deviation:
Year of interest - LTA
Units: °C
-8 - -6 (cooler in YOI)
-6 - -4 (cooler in YOI)
-4 - -2 (cooler in YOI)
>= -2 - < -1 (cooler in YOI)
no difference
> 1 - <= 2 (warmer in YOI)
2 - 4 (warmer in YOI)
4 - 6 (warmer in YOI)
6 - 8 (warmer in YOI)
17/06/2024
Resolution: 10 x 10 km
© European Union, 2024
Source: EC Joint Research Centre (AGRI4CAST project)

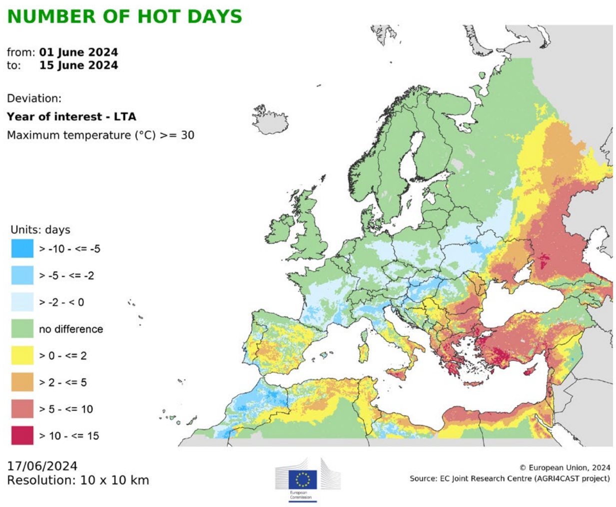

MAXIMUM DAILY TEMPERATURE
Averaged values
from: 01 June 2024
to: 15 June 2024
Units: °C
<= 10
> 10 - <= 15
> 15 - <= 20
> 20 - <= 25
> 25 - <= 30
> 30 - <= 31
> 31 - <= 32
> 32 - <= 33
> 33 - <= 34
>34
17/06/2024
Resolution: 10 x 10 km
© European Union, 2024
Source: EC Joint Research Centre (AGRI4CAST project)


MAXIMUM DAILY TEMPERATURE
Averaged values
from: 01 June 2024
to: 15 June 2024
Deviation:
Year of interest - LTA
Units: °C
-8 - -6 (cooler in YOI)
-6 - -4 (cooler in YOI)
-4 - -2 (cooler in YOI)
>= -2 - < -1 (cooler in YOI)
no difference
> 1 - <= 2 (warmer in YOI)
2 - 4 (warmer in YOI)
4 - 6 (warmer in YOI)
6 - 8 (warmer in YOI)
> 8 (warmer in YOI)
17/06/2024
Resolution: 10 x 10 km
© European Union, 2024
Source: EC Joint Research Centre (AGRI4CAST project)

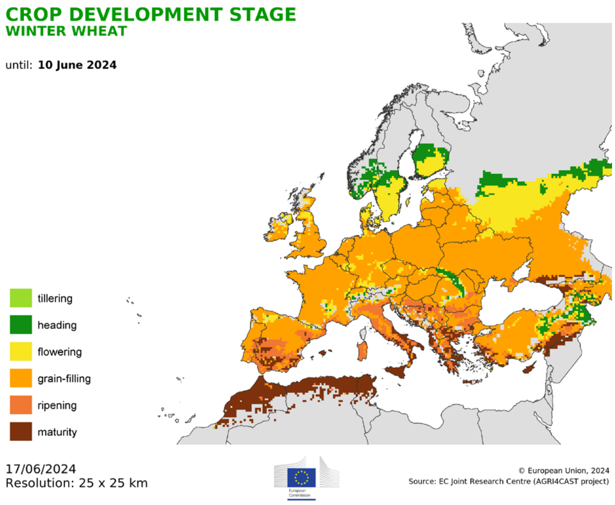

NUMBER OF HOT DAYS
from: 01 May 2024
to: 31 May 2024
Period of interest
Maximum temperature (°C) >= 30
Units: days
> 0 - <= 1
> 1 - <= 2
> 2 - <= 3
> 3 - <= 4
> 4 - <= 5
> 5 - <= 10
> 10 - <= 15
> 15 - <= 20
> 20 - <= 25
> 25
= 0
17/06/2024
Resolution: 10 x 10 km
© European Union, 2024
Source: EC Joint Research Centre (AGRI4CAST project)

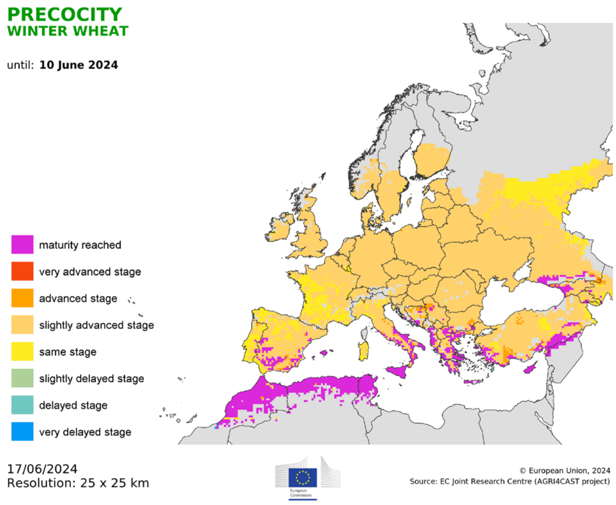

NUMBER OF HOT DAYS
from: 01 May 2024
to: 31 May 2024
Deviation:
Year of interest - LTA
Maximum temperature (°C) >= 30
Units: days
> -15 - <= -10
> -10 - <= -5
> -5 - <= -2
> -2 - < 0
no difference
> 0 - <= 2
> 2 - <= 5
> 5 - <= 10
> 10 - <= 15
17/06/2024
Resolution: 10 x 10 km
© European Union, 2024
Source: EC Joint Research Centre (AGRI4CAST project)

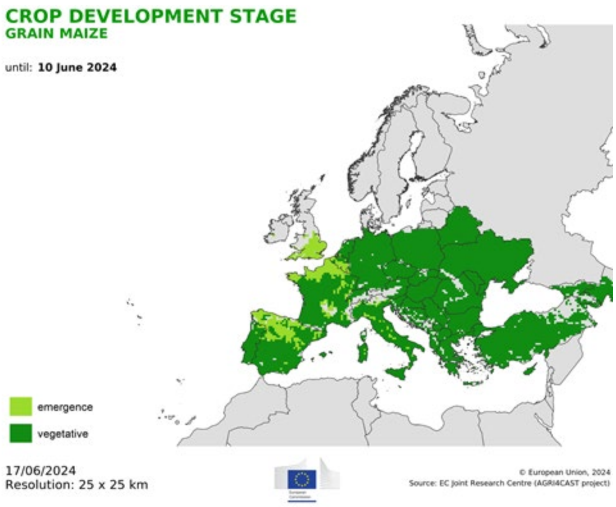


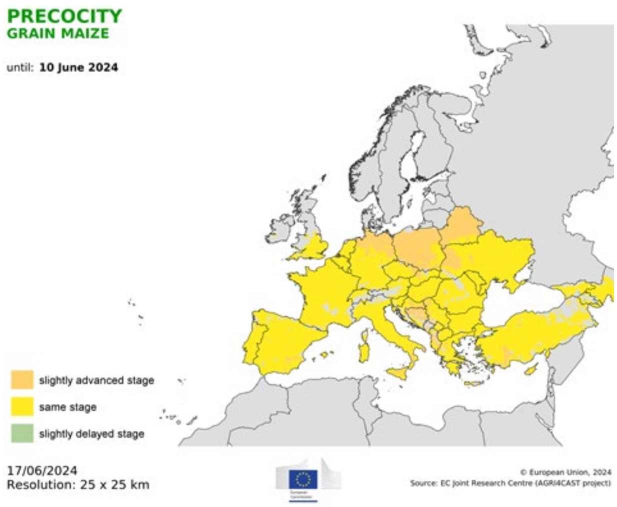


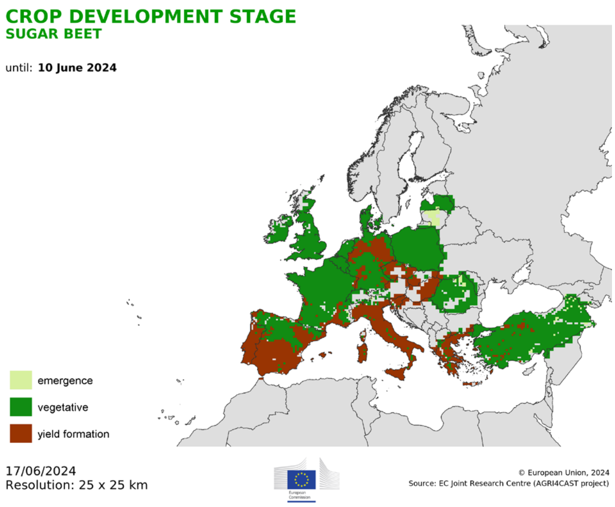
Crop development stages and precocity

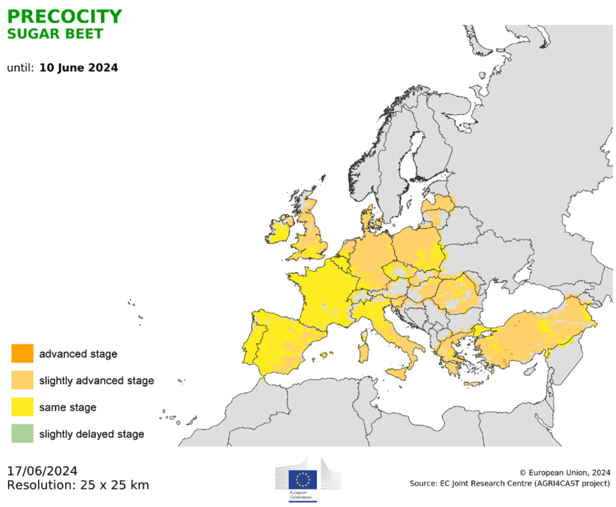




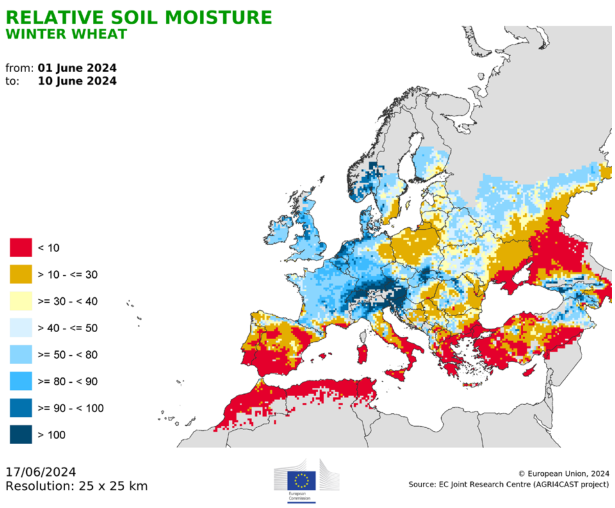


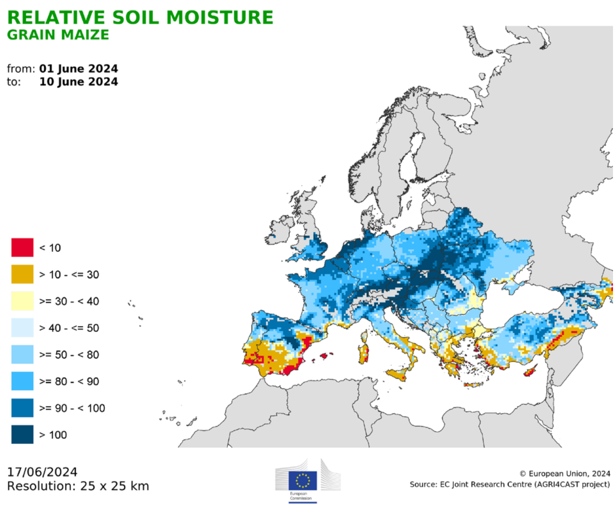


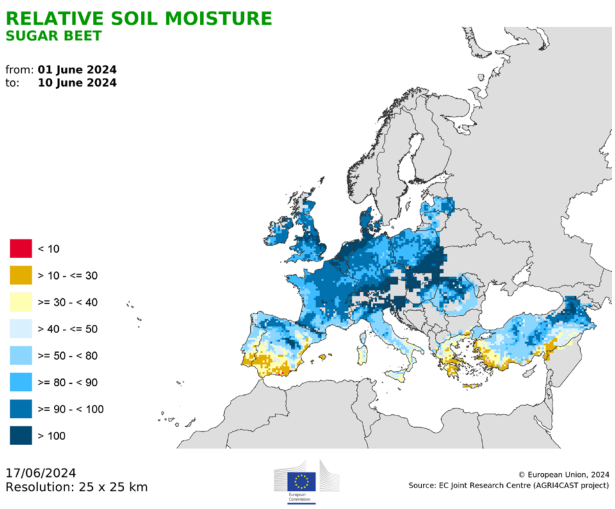




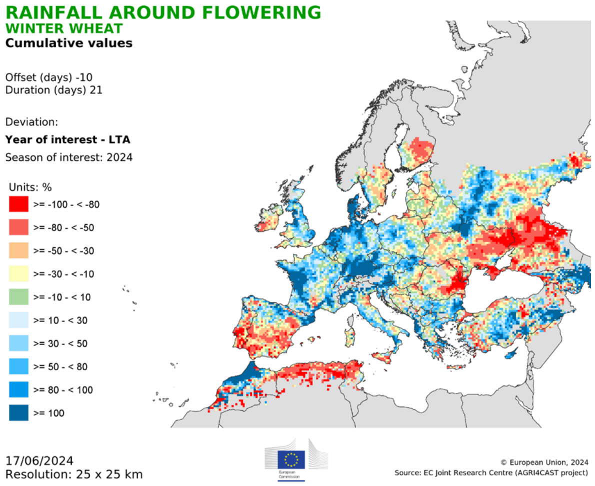
Relative soil moisture

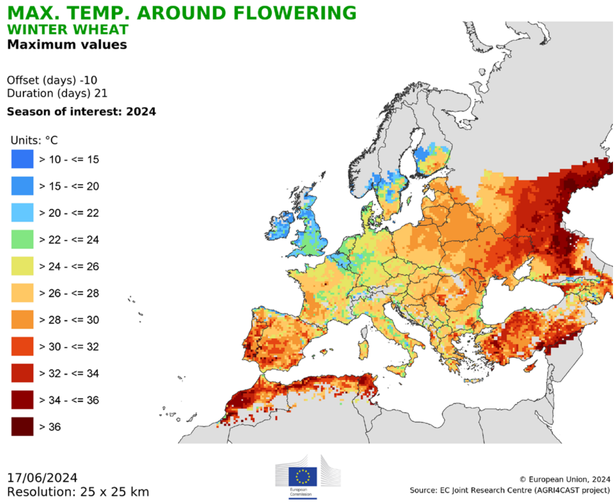


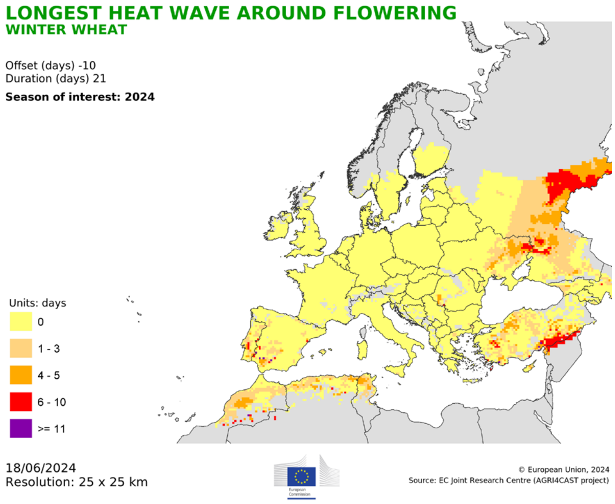




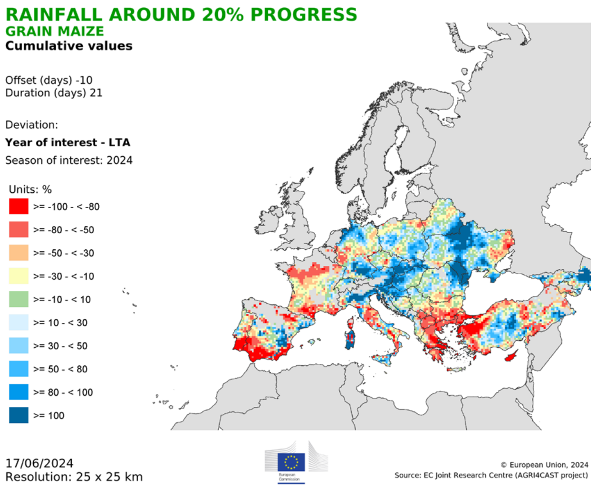
Winter wheat: precipitation and temperatures around flowering

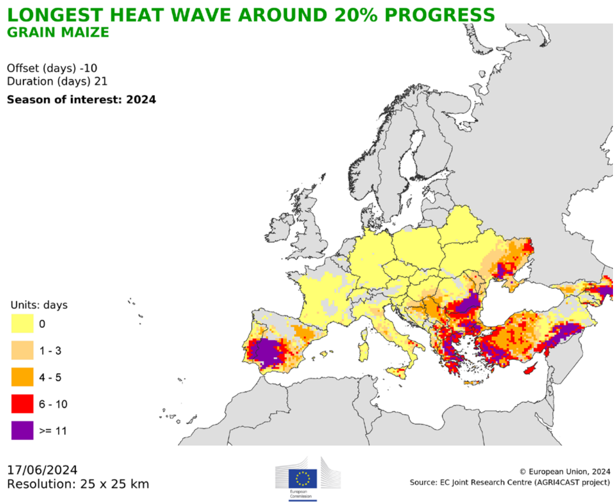






Maize: precipitation and temperatures around crop development





JRC MARS Bulletin 2024

Date	Publication	Reference
22 Jan	Agromet analysis	Vol. 32 No 1
26 Feb	Agromet analysis	Vol. 32 No 2
25 Mar	Agromet analysis, yield forecast	Vol. 32 No 3
22 Apr	Agromet analysis, remote sensing, pasture analysis, sowing conditions, yield forecast	Vol. 32 No 4
27 May	Agromet analysis, remote sensing, pasture analysis, sowing update, yield forecast	Vol. 32 No 5
24 Jun	Agromet analysis, remote sensing, pasture analysis, rice analysis, yield forecast	Vol. 32 No 6
22 Jul	Agromet analysis, remote sensing, pasture analysis, harvesting conditions, yield forecast	Vol. 32 No 7
26 Aug	Agromet analysis, remote sensing, pasture update, harvesting update, yield forecast	Vol. 32 No 8
23 Sep	Agromet analysis, remote sensing, pasture analysis, rice analysis, harvesting update, yield forecast	Vol. 32 No 9
28 Oct	Agromet analysis, pasture update, sowing conditions, harvesting update, yield forecast	Vol. 32 No 10
25 Nov	Agromet analysis, sowing update, harvesting update	Vol. 32 No 11
16 Dec	Agromet analysis	Vol. 32 No 12

The JRC MARS Bulletin – Crop monitoring in Europe is a European Commission publication of the Joint Research Centre's AGRI4CAST project (JRC Food Security Unit – Directorate for Sustainable Resources)

JRC MARS Bulletins are available at https://ec.europa.eu/jrc/en/mars/bulletins

AGRI4CAST Resources are available at https://agri4cast.jrc.ec.europa.eu

Analysis and reports
Biavetti, I., Bussay, A., Cerrani, I., Claverie, M., De Palma, P., Fumagalli, D., Luque Reyes, J., Manfron, G., Morel, J., Nisini, L., Panarello, L., Rossi, M., Sedano, F., Seguini, L., Tarnavsky, E., Todoroff, P., van den Berg, M., Zucchini, A.

Reporting support
Prepress projects Ltd., Biavetti, I.

Edition
Van den Berg, M., Niemeyer, S.

Data production
AGRI4CAST (Food Security Unit JRC D5), MARSOP6 Consortium

Contact
JRCMARSBULLETIN@ec.europa.eu

Technical note
The long-term average (LTA) used within this Bulletin as a reference is calculated on the basis of weather data from 1991-2023.

Mission statement
The Joint Research Centre provides independent, evidence-based knowledge and science, supporting EU policies to positively impact society.

ISSN 2443-8278 doi:10.2760/439527 KJ-AW-24-006-EN-N

Publications Office of the European Union