Issued: 22 April 2024
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European Commission

JRC MARS Bulletin

Crop monitoring in Europe

April 2024

Warm weather benefitted crops in most of Europe

Positive outlook for the Iberian Peninsula

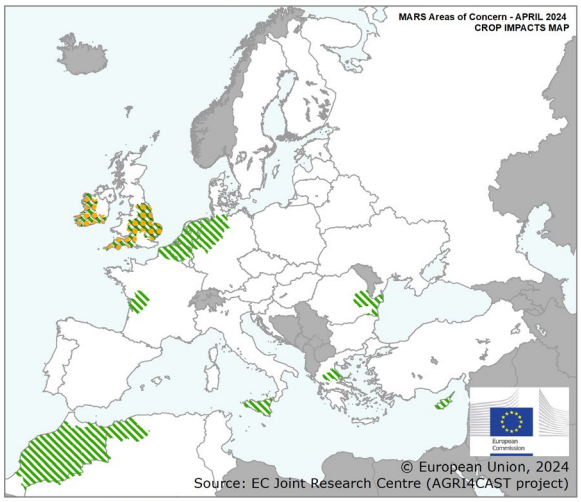
Exceptionally warm spring temperatures, combined with adequate water supply in most parts of Europe benefitted winter crops and created favourable conditions for the sowing and emergence of spring cereals and summer crops. Weather conditions have been particularly favourable in the Iberian Peninsula, leading to an upward revision of the yield forecast at EU level for durum wheat, spring barley and triticale.

However, overly wet conditions in north-western Europe negatively affected the yield potential and hampered sowing; most severely in Ireland and the United Kingdom. Conditions improved somewhat in northern and part of western France, as well as in Belgium, the Netherlands and north-western Germany, but winter crops in inadequately drained fields are unlikely to fully recover from the overly wet conditions during autumn and winter.

Water deficits, negatively affecting winter crops developed in central Greece and Cyprus. In *Sicilia*, as well as in eastern Romania rainfall arrived too late or was too little to fully recover the water stressed winter crops. Severe irreversible drought impact to winter crops is observed in large parts of Morocco and western Algeria.

This edition of the JRC MARS Bulletin contains several new features, such as the new approach for the areas-of-concern analysis, on page 2, and a new style and format of the yield forecast maps with bar and pie diagrams to put impacts at country level in EU perspective.

CROP IMPACTS
Reference period: until 13 April 2024



Crop	Yield t/ha				
	Avg 5yrs	March Bulletin	MARS 2024 forecasts	%24/5yrs	% Diff March
Cereals*	5.29	—	**5.40**	+ 2	—
Total wheat	5.65	5.70	**5.72**	+ 1	+ 0
Soft wheat	5.87	5.91	**5.93**	+ 1	+ 0
Durum wheat	3.44	3.44	**3.47**	+ 1	+ 1
Total barley	4.93	5.06	**5.11**	+ 4	+ 1
Spring barley	4.09	4.25	**4.32**	+ 6	+ 2
Winter barley	5.91	5.95	**5.97**	+ 1	+ 0
Rye	4.16	4.30	**4.29**	+ 3	– 0
Triticale	4.34	4.43	**4.46**	+ 3	+ 1
Rape and turnip rape	3.18	3.25	**3.26**	+ 3	+ 0

Issued: 22 April 2024

* Only the cereals specified in the table are included

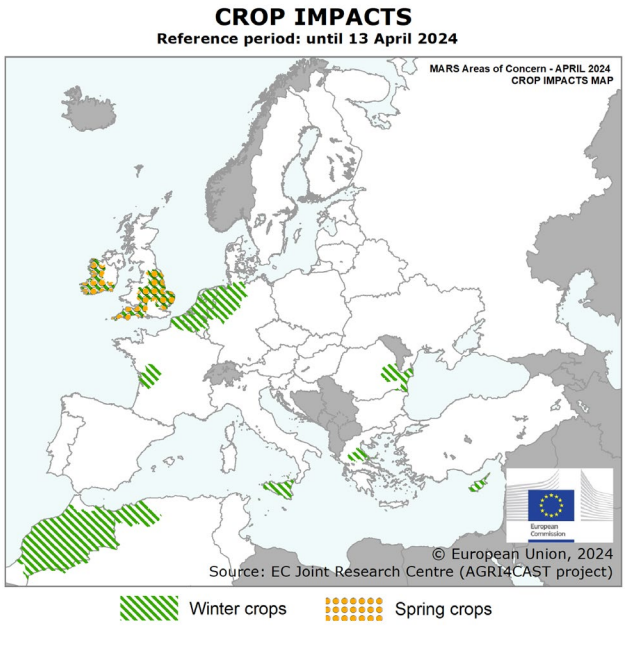
Contents:

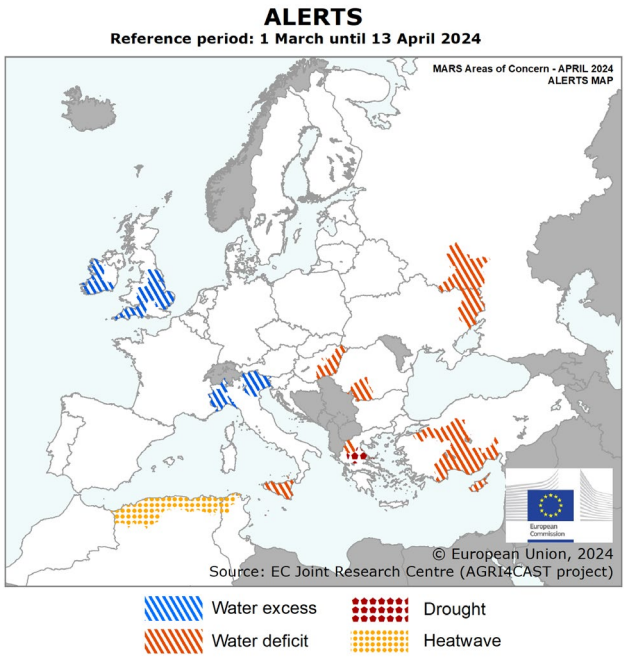
Covers the period from 1 March until 13 April

Joint Research Centre

1. Agrometeorological overview

1.1. Areas of concern





From March, the areas-of-concern analysis follows a different approach from that used for previous MARS bulletins.

The **crop impacts** map shows regions where crops (winter, spring and/or summer) have been 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 remaining sown areas of that crop are not repeated in subsequent editions of the Bulletin once reduced areas are reflected in the statistics.

The **alerts map** shows unusual weather events with potential negative **impacts on crops that occurred during the analysis period, from 1 March to 13 April**.

Water excess conditions are having a negative impact on winter and spring crops in **Ireland** and southern and central regions of the **United Kingdom**. In **Ireland**, overly wet soils are complicating field works, limiting winter crop fertilisation and spraying of fungicides; locally, damage due to hypoxia can also be expected. Similarly, winter crops are in poor condition in parts of the **United Kingdom**. In northern France and part of western **France**, as well as in **Belgium**, the **Netherlands** and north-western **Germany**, winter crops in inadequately drained fields are unlikely to fully recover from the overly wet conditions during autumn and winter. The worst-impacted fields are or will be resown with summer crops, while fields on well-drained soils are in good condition.

In north-eastern and north-western regions of **Italy**, abundant rainfall during the review period slowed down the early sowing of summer crops and led to suboptimal conditions for winter crops, yet without impacting yield potential, which in later stages might benefit from the additional soil water reserves.

Water deficit conditions developed in *Sicilia*, **Italy**, following a drought during winter. This drought was mitigated by a few rain events that have sustained crop growth; however, biomass accumulation remains below average and continued *water deficit* is a concern. In south-eastern parts of **Hungary** and south-western parts of **Romania**, a marked deficit in the climatic water balance has led to dry topsoils and hampered the sowing and emergence of spring and summer crops. In some parts of **European Russia** (*Voronezhskaya*, *Lipetskaya*, *Belgorodskaya*) and **Ukraine** (*Luhans'ka*, *Donets'ka*), the water deficit that has developed since early March has started to create unfavourable conditions for crops. Winter crops in western regions of **Türkiye** (*Konya*, *Bursa*, *Tantalya*, *Ankara*, *Adana*) are experiencing a rainfall deficit

close to flowering. The crops are still in good condition; however, if persistent, the water deficit will have a negative effect on yield outcomes. Water deficit and drought conditions have also developed in *Thessalia* and surrounding areas in **Greece**, due to a considerable rain deficit and unusually warm temperatures. In the other breadbasket regions of Greece (*Anatoliki Makedonia*, *Thraki*; *Kentriki Makedonia*), it has been the warmest year on record but with average rainfall, hence without raising concerns for crops so far. In **Cyprus**, barley has been impacted by dry conditions, which in some regions (*Paphos* and *Nicosia*) ended with heavy rain and hail, thus exacerbating the damage.

A first *heatwave* occurred in northern **Algeria** and **Tunisia** around 24 March, followed by a more intense second heatwave around 7 April. However, so far, the heat has not caused (additional) damage to crops. In **Morocco** and north-western **Algeria**, rain from the second half of March arrived too late to significantly improve the condition the drought-impacted winter crops. Therefore, the same impacted area as shown in the March bulletin is noted for this region.

1.2. Meteorological review (1 March –13 April 2024)

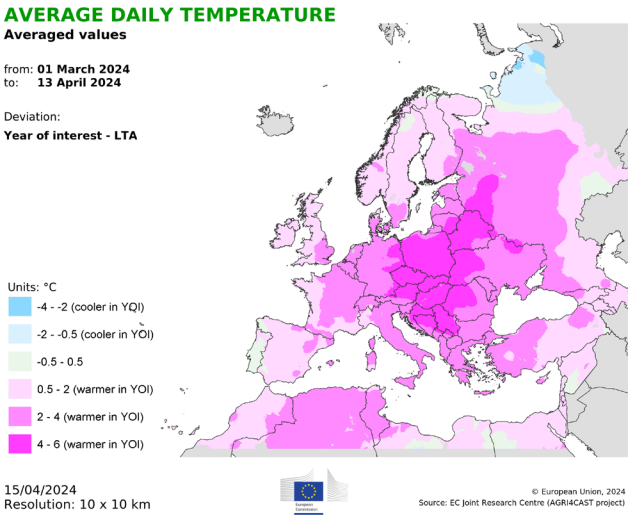
Warmer-than-usual conditions prevailed in almost all of Europe. Most regions were also wetter than usual, but it was drier than usual in parts of Scandinavia, central and southern Europe, and most of European Russia.

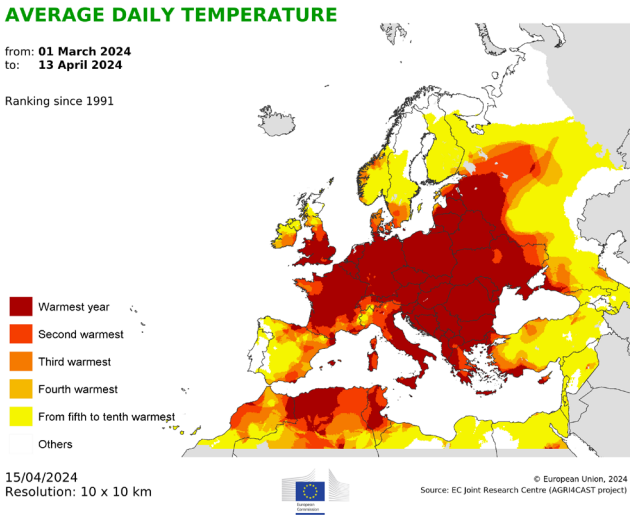
Warmer-than-usual conditions prevailed in almost all of Europe. The most distinct positive temperature anomalies (4°C to 6°C above the 1991-2023 long-term average (LTA)) were observed in parts of central and eastern Europe and western parts of the Balkan Peninsula. In most of these regions, average daily temperatures ranked among the warmest three in our records since 1991.

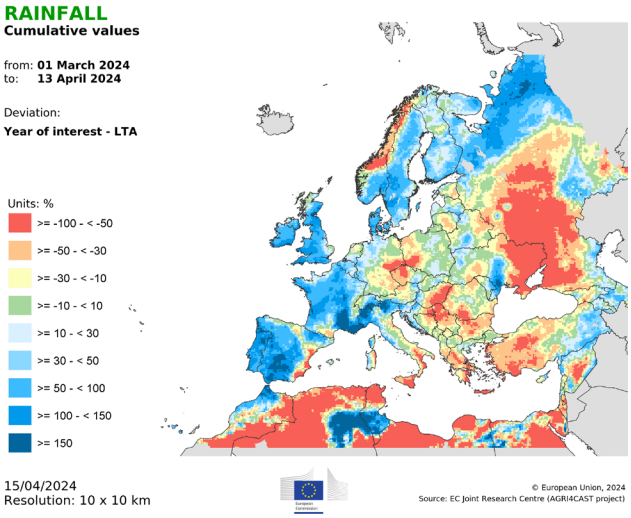
Colder-than-usual conditions, with temperature anomalies up to 4°C below the LTA, were observed in northern parts of European Russia.

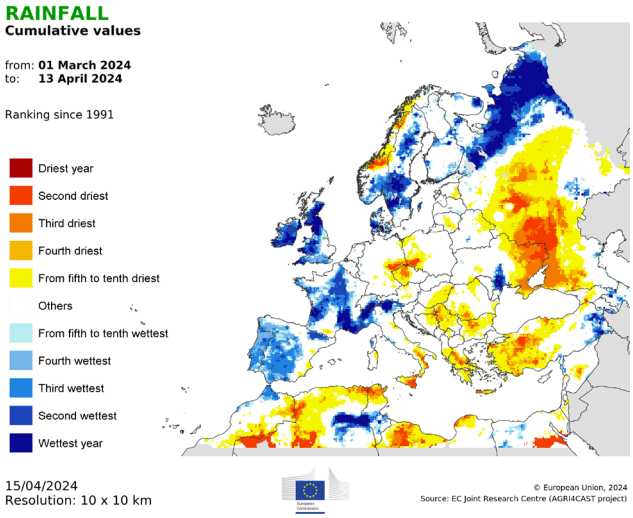
Much wetter-than-usual conditions (rainfall total more than 100% and in some regions more than 150% above the LTA) were observed in Ireland, large parts of the United Kingdom, the Iberian Peninsula, France, and northern Italy, as well as in parts of Denmark, Norway, and Sweden, northern European Russia, and southern Ukraine (*Odes'ka, Mykolayivs'ka*). In many of these regions, the review period ranked among the wettest three in our records.

Drier-than-usual conditions (rainfall total between 50% and 100% below the LTA) were observed in parts of southern Europe, the Balkan Peninsula, central Europe (Czechia-Germany-Poland border region), eastern Ukraine and most of central and southern European Russia, as well as along the Norwegian coast. In many of these regions, the review period ranked among the driest three in our records since 1991.









1.3. Weather forecast (18 April - 27 April)

Frontal systems from the north bring heavy rains, northerly winds, and cooler temperatures into most of Europe.

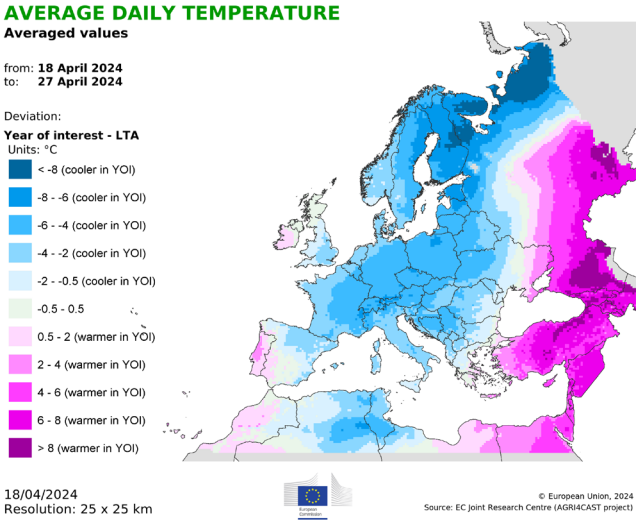
Colder-than-usual conditions are forecast for most of Europe. Most substantial anomalies (average daily temperatures more than 4 °C, below the LTA) are forecast for a region extending from the Alps and the western Balkan Peninsula northward into Scandinavia, Finland, and northernmost European Russia.

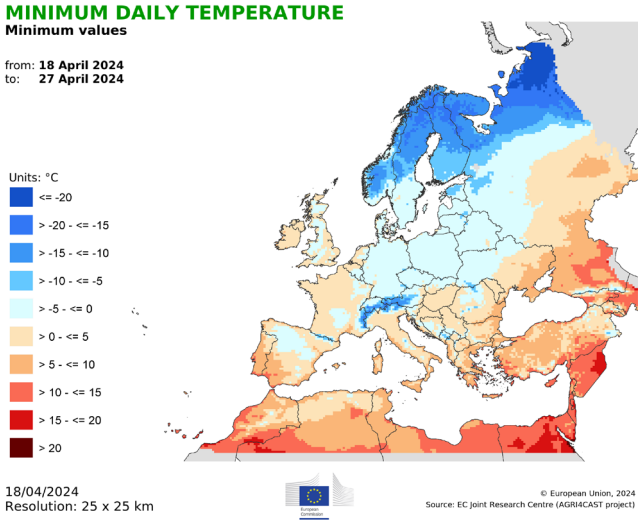
Warmer-than-usual conditions are forecast for Ireland and Portugal, as well as – with more substantial positive anomalies – in Türkyie, eastern Ukraine, and eastern European Russia.

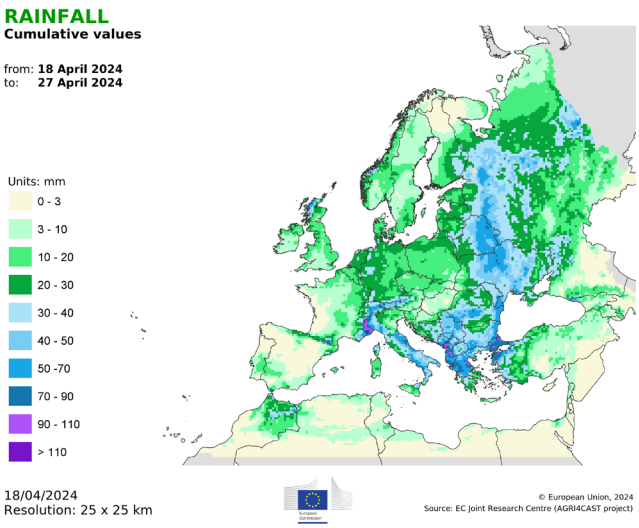
Dry conditions (total precipitation below 3 mm) are forecast for parts of the Iberian Peninsula, southwestern France, southern parts of Türkyie, locally in Hungary, northern Finland, and northernmost and southeastern European Russia.

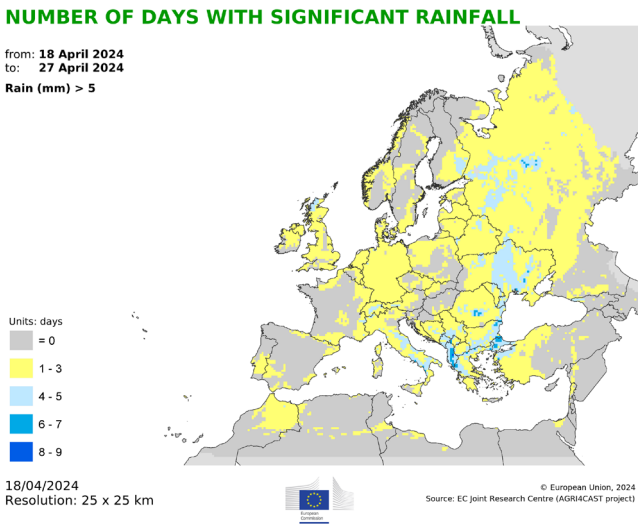
Wet conditions (precipitation above 10 mm and up to 90 mm) are forecast for most other parts of Europe, while **very wet conditions** (above 70 mm) are forecast for northeast Italy and western and southern parts of the Balkan Peninsula.

The long-range weather forecast for May-June-July points to highly likely warm conditions, exceeding the 24-year climatological median by up to 1°C in northern and by up to 2°C in southern Europe, and precipitation up to 50 mm below the mean for parts of southern Europe in May and most of southern Europe by June-July..



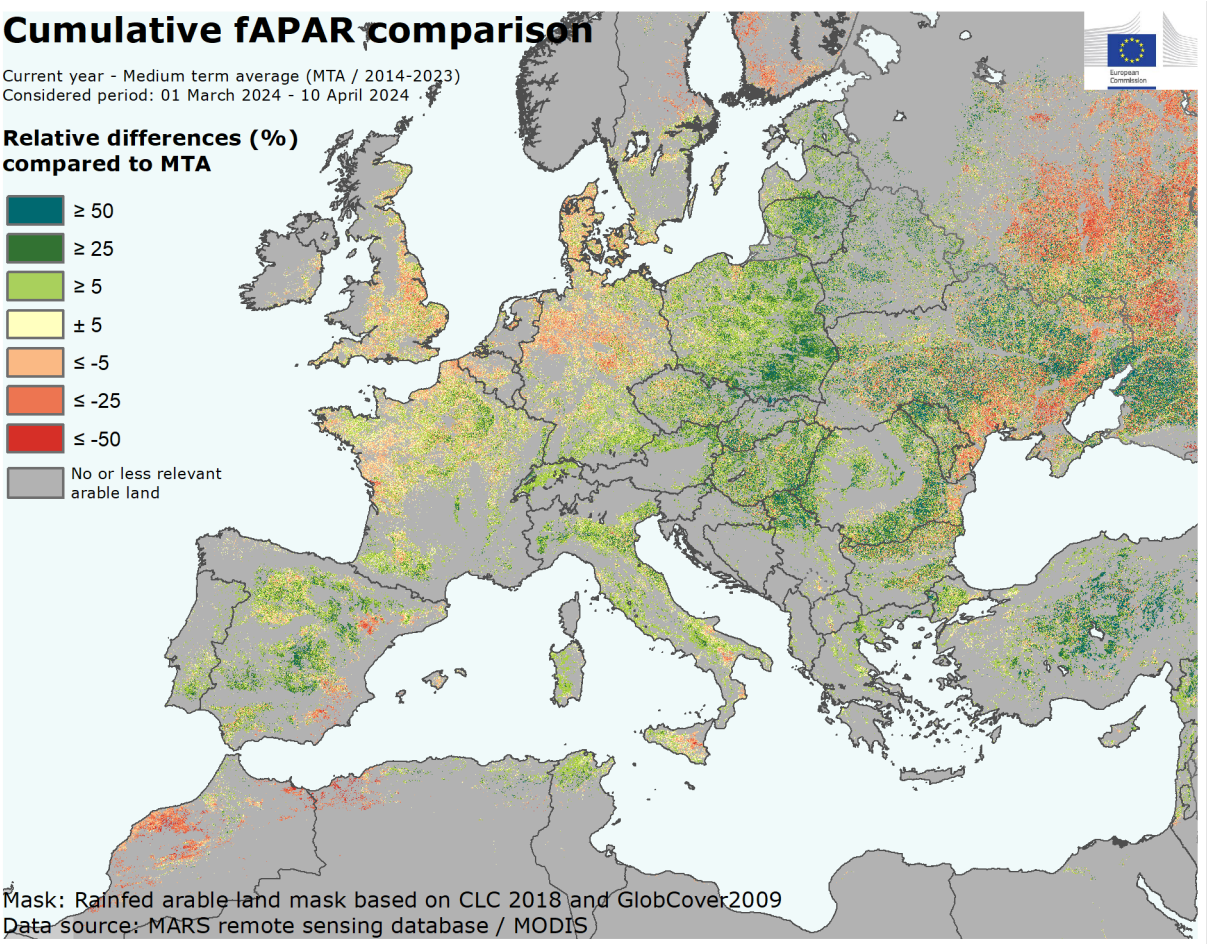






2. Remote sensing – observed canopy conditions

Early onset of spring in most of Europe



The map above displays the relative differences (in percentages) between the cumulated fraction of absorbed photosynthetically active radiation (fAPAR) from 1 March to 10 April 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 largely reflects winter crop conditions, with almost no contribution to the remote sensing signal from spring and summer crops.

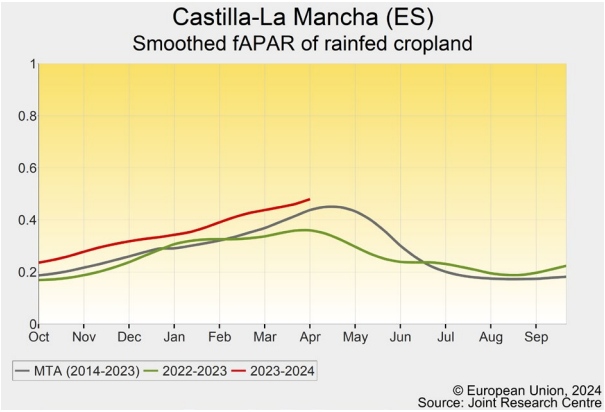
Abundant and well-distributed rainfall during winter and spring in the **Iberian peninsula** has led to advanced development and well above-average biomass accumulation in the most productive regions of central **Spain** and **Portugal**. However, the Mediterranean part of **Spain** exhibits a strong negative anomaly attributed to a continuous period of rainfall deficit. The situation in **Italy** and **Greece** is generally favourable, but some local rain deficits (e.g. *Sicilia*, *Basilicata*) have led to a reduction in biomass accumulation.

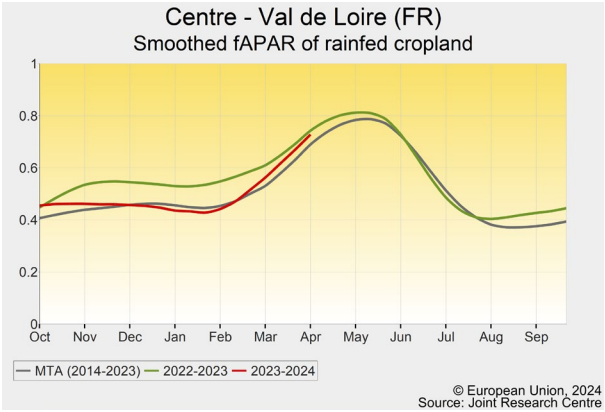
In north-western **France**, **Benelux** and north-western **Germany**, as well as in **Ireland** and large parts of the **United Kingdom**, very rainy conditions since October have caused problems for the autumn (October–December) and spring (February–March) sowing campaigns. This is reflected in a negative anomaly, due to incomplete sowing or poor condition of crops. In southern **Germany** and north-eastern and south-western **France**, warmer-than-usual conditions since January have contributed to the early onset of regrowth, reflected in positive anomalies.

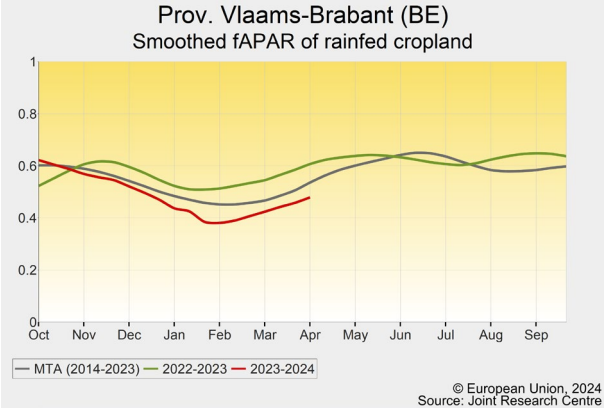
In **Denmark** and **Sweden**, biomass accumulation follows the MTA because of favourable conditions. In central Europe (**Hungary**, **Slovakia**, **Austria**, **Czechia**), **Poland**, the **Baltic** countries, most of **Romania** and **Belarus**, the situation also appears positive overall, benefiting from early regrowth due to above-average temperatures, and an adequate soil water supply since the end of winter. The Black Sea region of **Romania** and the south of **Ukraine**

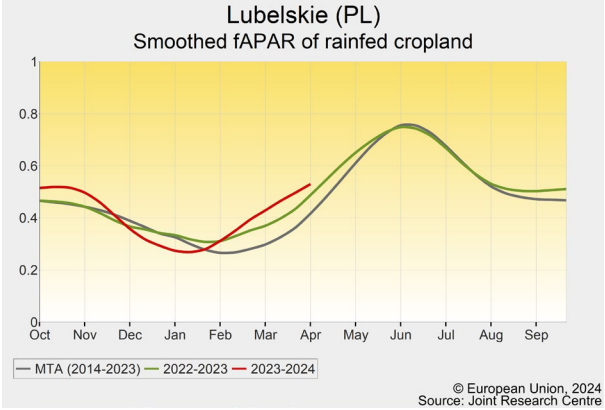
present a negative fAPAR anomaly, due to the rain deficit until mid March, which delayed the onset of spring growth. The effects of the Russian invasion of Ukraine are clearly visible in the north of *Zaporiz'ka* oblast, where much land remains uncultivated. Positive anomalies in the rest of **Ukraine** reflect the favourable weather conditions since winter. In central **Russia**, the late and prolonged melting of the heavy winter snow cover delayed the onset of spring growth, which is reflected in a negative fAPAR anomaly, while the winter crops in southern Russia (e.g. *Krasnodarskiy Kray*) benefited from a mild winter.

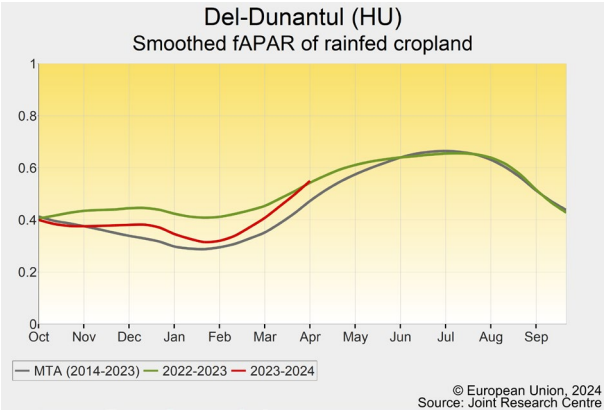
Most of **Türkiye** benefited from favourable precipitation and temperatures up to March, leading to the early onset of growth and consequently above-average biomass accumulation. In the main cereal-growing areas of **Morocco** and north-western **Algeria**, prolonged drought (since autumn) hampered crop growth during the vegetative phase, resulting in well below-average biomass accumulation and crop failures. Rainfall in early April came too late to have a positive effect. In **Tunisia**, wet conditions in early spring facilitated the rapid recovery of winter crops, resulting in above-average to well above-average biomass accumulation.

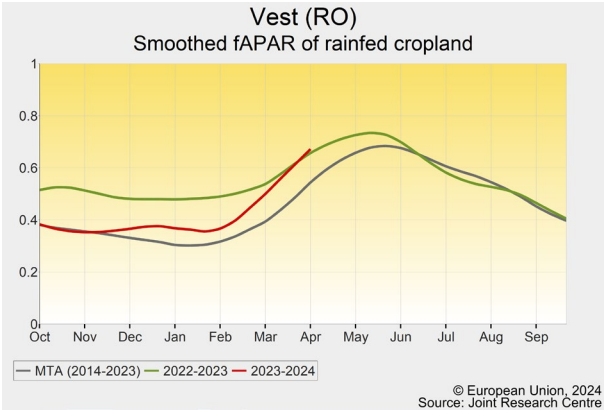


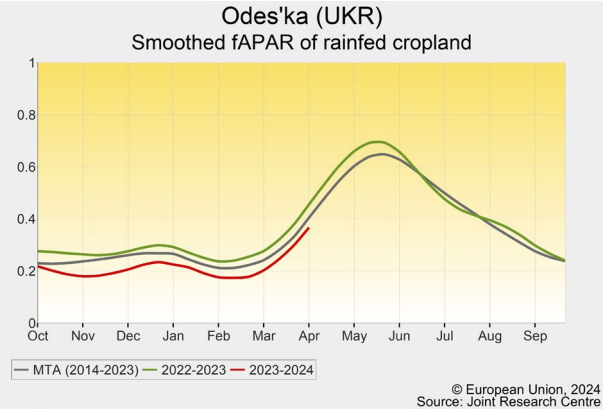


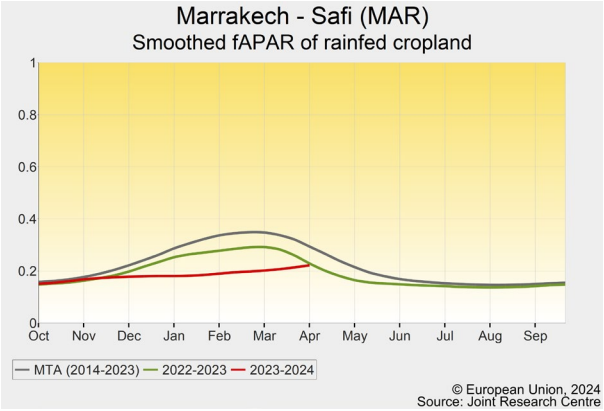








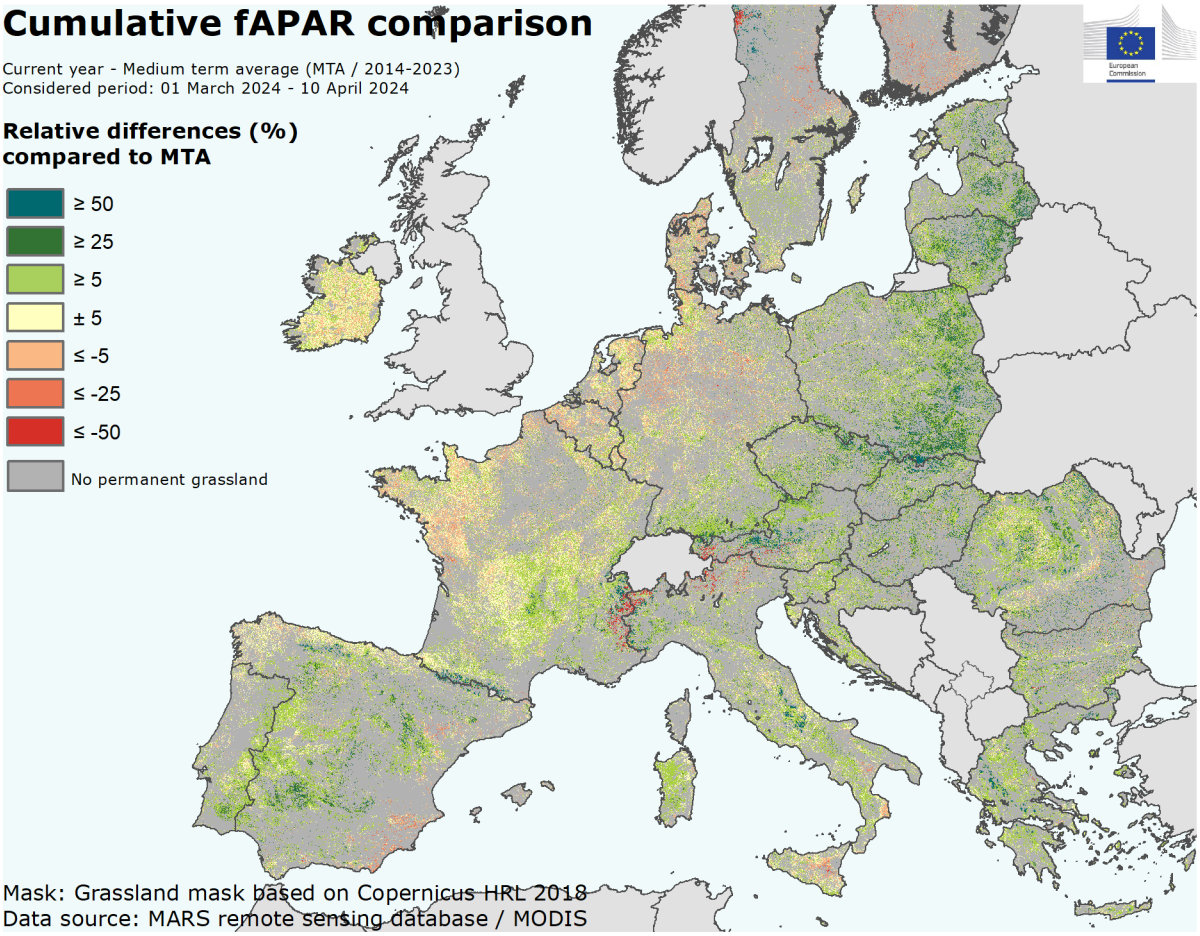

Odes'ka (UKR)
Smoothed fAPAR of rainfed cropland
1
0.8
0.6
0.4
0.2
0
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
MTA (2014-2023)
2022-2023
2023-2024
© European Union, 2024
Source: Joint Research Centre


Marrakech - Safi (MAR)
Smoothed fAPAR of rainfed cropland
1
0.8
0.6
0.4
0.2
0
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

Warm period benefits biomass accumulation, limited by overly wet soils in the north-west

The review period was characterised by exceptionally warm temperatures, particularly in central Europe. These conditions were generally very beneficial for biomass accumulation, which was also helped by frequent but not excessive rainfall. The situation was different in the north-west, where wet soils combined with recent rainfall events continued to hamper access to fields and the regrowth of grassland.



The map above displays the differences between the fraction of absorbed photosynthetically active radiation (fAPAR) accumulated from 1 March to 10 April 2024 and the medium-term average (MTA, 2014–2023) for the same period. Positive anomalies (in green) in this period reflect above-average surface greenness arising from early regrowth or early snow melt, while negative anomalies (in red) reflect below-average surface greenness. At this stage in the year, the status of fodder crops cannot yet be assessed.

In **Ireland**, continuous rainy conditions that prevailed since last autumn are complicating field work and grazing across the country. In **France**, the **Benelux** countries and north-western **Germany**, warm temperatures and moderate rainfall accelerated grassland growth, although most regions are still in line with or just below the fAPAR MTA. In many areas, field work and grazing are still complicated by the overly wet conditions caused by the exceptional rainfall during autumn and winter. In **Denmark**, **Sweden** and **the Baltic countries**, grasslands benefited from the positive temperature anomaly. fAPAR reached MTA levels throughout Denmark and was above the MTA in Sweden and the Baltic countries. In Finland, the grasslands are still mostly covered by snow or at the very beginning of the growing season.

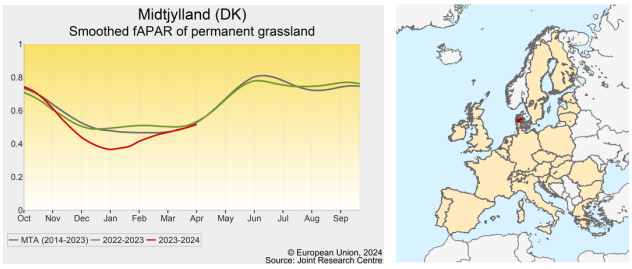
In southern and north-eastern **Germany**, **Poland**, **Czechia**, **Austria**, **Slovakia** and **Hungary**, the pattern of above-average growth continued due to the exceptionally warm conditions since mid February. Meanwhile, the previously high soil moisture levels fell to more favourable

levels for grassland growth. These circumstances further boosted biomass accumulation, which reached a level considerably above the MTA and last year's level.

In **Slovenia**, **Croatia**, **Bulgaria** and **Romania**, well distributed rainfall and unusually high temperatures resulted in slightly above-average biomass accumulation, comparable with that during the same period in 2023. In **Greece** and **Cyprus**, grassland growth benefited from warm temperatures and average cumulative rainfall, with the fAPAR level now well above the MTA. In northern **Italy**, warm and wet conditions boosted vegetation growth to above-average levels. In southern **Italy**, grassland growth benefited from the rains in March and is progressing well overall. In regions that had previously been affected by water deficit (e.g. *Puglia*, *Sicilia*), canopy conditions are average at best, putting them at risk in the event of hot and dry weather in the coming weeks. In most regions of **Spain** and **Portugal**, abundant rainfall has maintained biomass levels at considerably above average since October.

Denmark

Reference period: 01 Mar to 16 Apr 2024

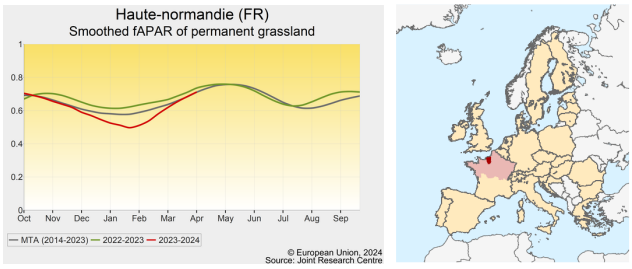


BULLETIN ISSUE

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
RAINFALL								
TEMPERATURE								
RADIATION								

France - North

Reference period: 01 Mar to 16 Apr 2024

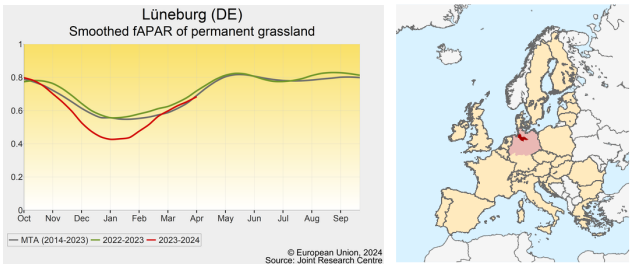


BULLETIN ISSUE

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
RAINFALL								
TEMPERATURE								
RADIATION								

Germany - North

Reference period: 01 Mar to 16 Apr 2024

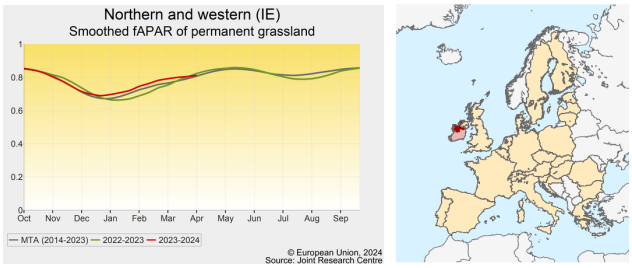


BULLETIN ISSUE

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
RAINFALL								
TEMPERATURE								
RADIATION								

Ireland

Reference period: 01 Mar to 16 Apr 2024

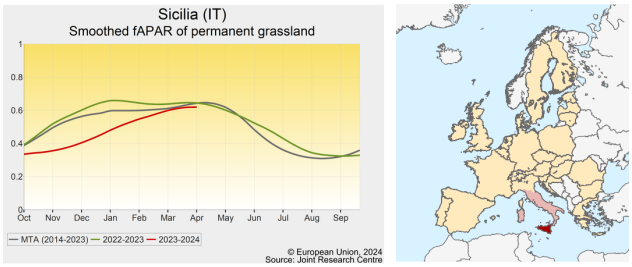


BULLETIN ISSUE

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
RAINFALL								
TEMPERATURE								
RADIATION								

Italy - Center, South and Islands

Reference period: 01 Mar to 16 Apr 2024

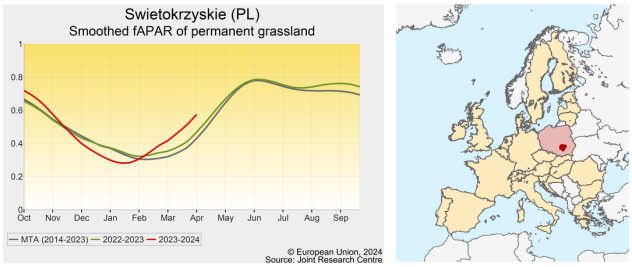


BULLETIN ISSUE

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
RAINFALL								
TEMPERATURE								
RADIATION								

Poland

Reference period: 01 Mar to 16 Apr 2024

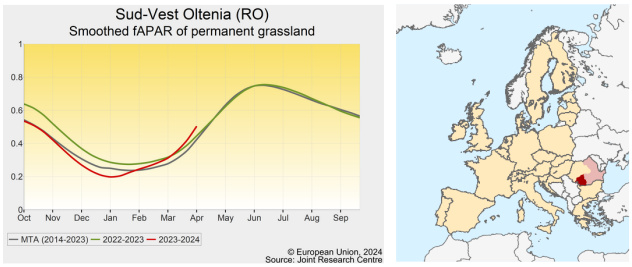


BULLETIN ISSUE

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
RAINFALL								
TEMPERATURE								
RADIATION								

Romania - East and South

Reference period: 01 Mar to 16 Apr 2024

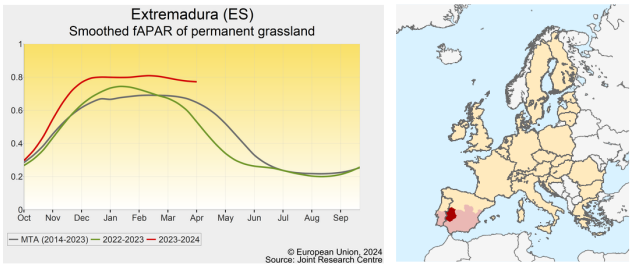


BULLETIN ISSUE

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
RAINFALL								
TEMPERATURE								
RADIATION								

Spain and Portugal - South

Reference period: 01 Mar to 16 Apr 2024



BULLETIN ISSUE

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
RAINFALL								
TEMPERATURE								
RADIATION								

4. Sowing conditions

Spring barley

Wet conditions delayed sowing in north-western Europe

In **Spain**, the EU's largest spring-barley-producing country, sowing was completed after some delays caused by abundant rain in autumn and winter. Some farmers were unable to sow during the optimal period due to excessive soil moisture. Currently, the crops are in good condition.

Excessive rainfall during the winter hampered and delayed sowing in **France**, **Germany** and the **Benelux** countries. In **France**, the sowing campaign is almost complete, having been disrupted by wet conditions at the end of winter, which caused a delay of almost 1 month. Sowing in **Germany** is expected to be completed in April in the south. In the north, field activities were delayed due to high soil moisture levels, but recent cloud-free days have accelerated field works and the sowing campaign. Even more challenging wet soil conditions have limited sowing opportunities in the **United Kingdom** and **Ireland**, with drilling delayed for many farmers and few spring crops already planted. In **Denmark** and **Sweden**, the usual window for spring barley sowing is about to start, while in the **Baltic Sea region** it should start around early May.

In contrast, temperature and soil moisture conditions in central and eastern Europe have enabled sowing to be completed or almost completed. Sowing has been successfully completed in **Austria**, **Czechia** and **Slovakia**, where the crops have experienced rapid growth due to warm weather and favourable soil moisture. In **Romania** and **Hungary**, sowing is almost complete without any concerns arising, except for some difficulties in eastern **Hungary** due to dry topsoil conditions. **Poland** and **Ukraine** have also experienced favourable conditions for their spring barley sowing campaigns, which are currently ongoing and slightly advanced compared with previous years.

Sugar beet

Slow and delayed start of sowing in north-western Europe

In the EU's main sugar producing countries of western Europe, sowing of sugar beet started slowly and with some delay due to frequent rainfall and wet soils. In **France** sowing started in the last dekad of March, two weeks behind schedule. In the first dekad of April, sowing was still at the beginning in the **Benelux** countries, as well as in **Germany** (particularly in the north). However, sowing strongly accelerated around the end of the review period, as farmers wanted to sow as much as possible before the forecast cold and rainy period. Due to warm conditions, sugar beet sowing has begun in south western **Poland**, slightly earlier than usual. Crops in emergence are generally in good condition.

In **Spain**, sugar beet sowing is completed in Andalucia with a 15% increase compared to last year. It is still underway in *Castilla y León*, where an increase in area is also expected this year.

In Central Europe, the rate of sowing is hetereogeneous, depending on the warm temperature spread in these countries. In **Austria**, sowing is almost completed, with already earlier-than-usual emergence in southern regions. In **Italy**, sowing began in the 1st dekad of March, ahead of schedule, and should be completed soon if favourable conditions persist. In **Hungary** and **Romania**, sowing progress is estimated at more than 50% despite a temporary topsoil dryness.

In Northern Europe, sugar beet sowing did not start yet, as the optimal window for sowing is still to come.

Grain maize

Warm temperatures enabled an early start to maize sowing

Weather conditions for maize sowing have been favourable overall. In central Europe, the optimum sowing window opened earlier than usual due to warm temperatures in March. Conversely, sowing in Italy and France was delayed by abundant rainfall events.

The text below roughly follows the sequence of grain maize area per country, in descending order. In southern **Romania** and south-western **Poland**, warm weather and evenly distributed rainfall created favourable conditions for soil preparation. Maize sowing began in the last dekad of March, earlier than the average crop calendar date. In southern **France**, sowing began in early April, after some delay due to overly wet conditions in the fields since March. In northern France, the campaign is expected to start, also after delays, in the second half of April. An increase in the sowing area in France is expected, partly due to earlier constraints affecting the sowing of winter and spring crops. The sowing campaign has started in the southern regions of **Hungary**, where temperatures during the review period were warmer than usual. Despite topsoils becoming drier than usual, the investment in sowing is expected to be greater than during the previous year's campaign. In **Italy**, initial sowing operations were delayed due to abundant rainfall in late March. However, the optimal sowing window is still open, as most sowing typically occurs in April. Sowing began in late March in **Bulgaria** and progressed better than in the average season due to warm soil condition, which is expected to speed up maize germination and emergence. Maize sowing has just started in southern **Germany** (i.e. south-west *Bayern*), where warm weather conditions in March made it possible to start earlier than usual. In southern **Spain** (*Andalucía*), soil preparation occurred on time and the sowing of maize started under favourable weather conditions. The less stringent restrictions on water use compared with those in place during the 2023 campaign are expected to trigger a substantial increase in the area sown. At the **EU** level, the total area sown to maize is expected to increase by around 8.5 % compared with the 2023 campaign (according to Eurostat ([1])).

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Sunflowers

Sowing advanced in south-eastern Europe; some delays in the west

In **Romania** and **Bulgaria**, the EU's largest and second-largest sunflower-producing countries, sowing started earlier than usual and is progressing well thanks to warm temperatures combined with infrequent rainfall recently.

Frequent and abundant precipitation events during the review period delayed the sowing campaign in **France**, which is only at a very early stage, in spite of favourable warmer-than-usual conditions. Sowing is expected to be in full swing from the second half of April onward.

In **Hungary** and **Croatia**, the sowing campaign started slightly earlier than usual, in late March / early April, due to soil temperatures well above average and well-distributed rainfall in most regions. However, in eastern **Hungary** dry topsoils are less than optimal for sprouting and initial crop development, which may result in uneven crop stands later on. In the westernmost parts of both countries, sowing has been delayed due to overly wet conditions.

In **Spain** and **Portugal**, the recent rain has created favourable conditions for soil preparation and sunflower sowing, which is almost complete in the south (*Andalucía*) and starting in the centre-north (*Castilla-La Mancha* and *Castilla y León*) regions of the Iberian peninsula.

In **Italy**, weather conditions in all regions are currently favourable for sowing.

The sowing campaign is just starting locally, after some delay, in southern **Germany**. It is too early yet for sowing of sunflowers in **Poland**.

In **Ukraine**, sowing started in the southern and south-western oblasts in the first dekad of April.

([1]) https://ec.europa.eu/eurostat/databrowser/bulk?lang=en.

5. Country analysis

5.1. European Union

France

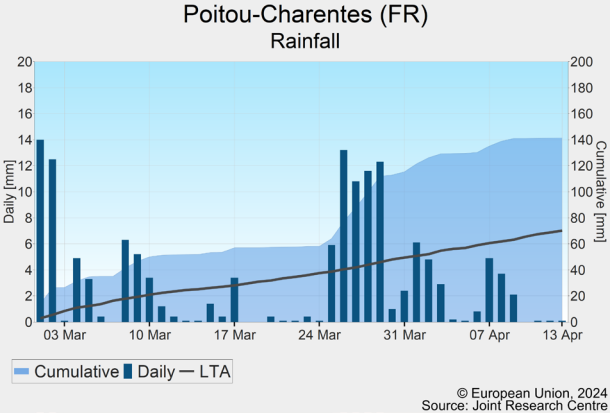
Early spring development hampered by abnormally high soil moisture conditions

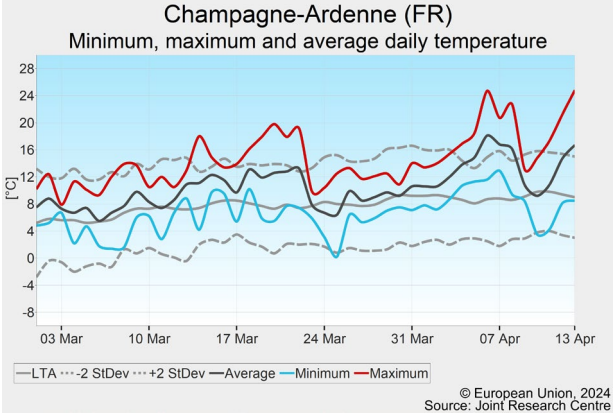
The review period was marked by exceptionally high temperatures in France, with cumulative temperature records surpassing historical highs in approximately three quarters of the country, according to our database. The period also saw persistent and above-average precipitation, predominantly affecting western and south-eastern areas.

The elevated temperatures have caused the early onset, compared with previous years, of the winter crops' expansive growth phase. However, the prolonged excessively wet soil conditions since autumn have adversely affected cereal crop areas and yield projections. Furthermore, the persistence of warm and wet conditions increases the risk of pests and disease.

In specific regions, notably the Atlantic coast, the yield potential of winter crops is reduced, with very high yields being unlikely. The ongoing rainfall events have also presented challenges to field operations, in particular impeding the timely sowing of spring cereals.

The sowing of summer crops started only in early April. The forecast reduction in rainfall is expected to favour progress on the sowing campaign.



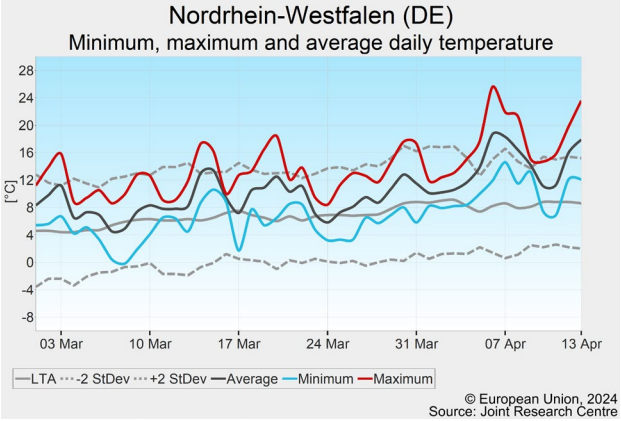


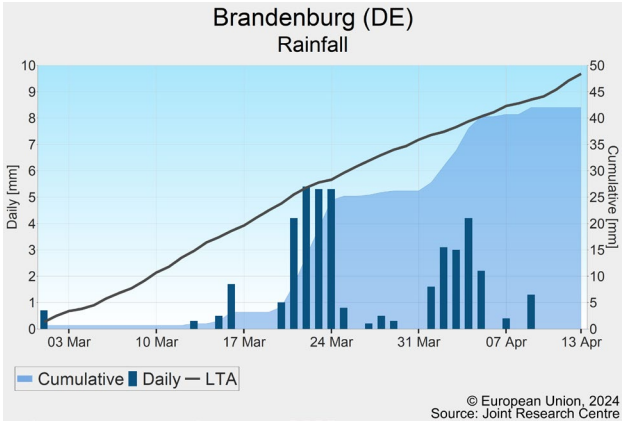
Germany

Fair weather conditions relieve pressure caused by overly wet soils

From mid January, temperatures remained above average with record-high average temperatures nationwide during the reporting period. At the same time, rainfall totals generally returned to normal levels. Currently, soils are in good condition, with beneficial moisture levels in the south and east, accompanied by abundant cloud-free days for sowing, whereas the north-west is still struggling with overly wet soils in many lowland regions, such as *Niedersachsen* and *Nordrhein-Westfalen*.

While the spring crop-sowing campaigns are progressing well in the south and east, failed winter crops are in the process of being replaced by spring crops in the other parts of Germany. Here, (re)sowing is delayed by still overly wet conditions, but recent cloud-free days have accelerated the campaigns. However, concerns remain about the availability and quality of spring barley and spring wheat seeds, which might affect the final yields. No adaptions have yet been made to our yield forecasts, which are still based on trends, except that for soft wheat, which has been slightly reduced on account of the persistently unfavourable conditions in northern Germany.





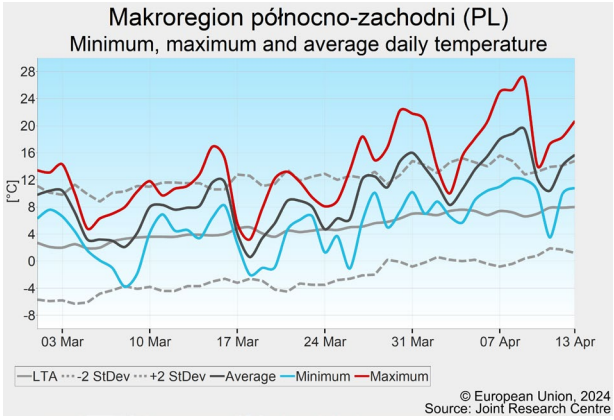
Poland

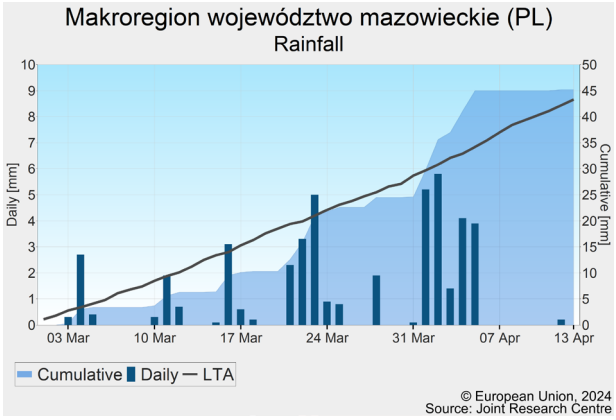
Favourable weather boosts crop development and accelerates sowing

During the reporting period, temperatures reached more than 4 °C above the LTA, and they have frequently exceeded 20 °C since late March, easily marking the warmest period in the past 30 years. Rainfall was around average, with a slight deficit in the south-west compared with the LTA.

In most parts of Poland, the warm weather and moderate rainfall helped to reduce excess soil water levels, resulting in beneficial conditions for crop development, making field operations possible and enabling sowing campaigns to start. In the east, overly wet soils are still hampering field works locally. Warm temperatures with sufficient water supply accelerated phenological development but also increased pest pressure. Winter rapeseed is now flowering roughly 2 weeks early, increasing its vulnerability to late cold spells.

Considering the beneficial growing conditions during the reporting period and the early stage of the season, our crop yield estimates remain consistent with historical trends.





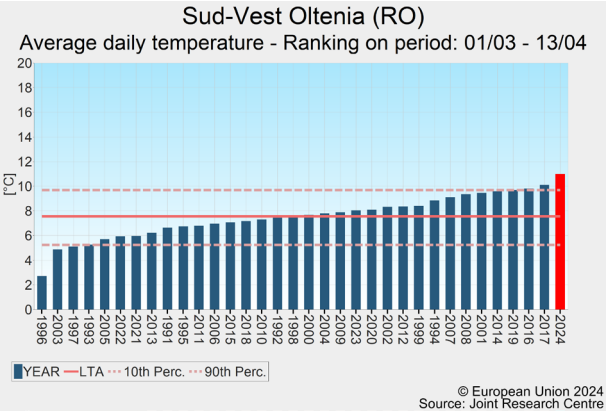
Romania

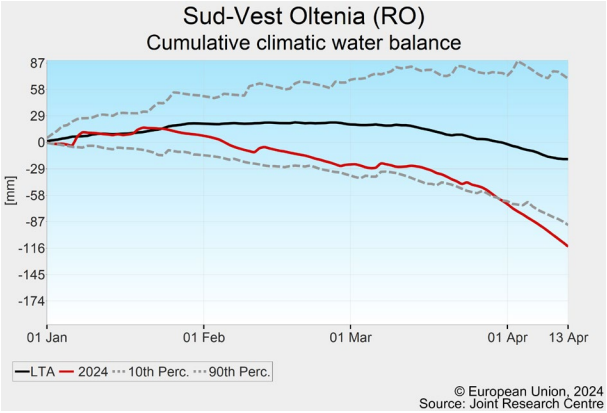
Exceptionally warm weather allowed early start to spring sowing campaign

This review period (1 March to 13 April) ranks as the warmest in our archive (since 1991). Temperature sums present surpluses of 120–190 growing degree days (T_{base} = 0 °C). The period from the end of March was particularly warm, with maximum temperatures exceeding 25 °C on some days. Precipitation was near seasonal in the central regions, but it was scarce in the *Sud-Vest Oltenia* and *Sud-Est* regions and along the western border. The mild thermal conditions facilitated the regrowth of winter crops and accelerated phenological development.

Winter crops are in good shape. However, the crop water supply situation is fragile in some western and southern regions, especially close to the Black Sea, considering the cumulative rainfall deficit and the increased evaporative demand.

Dry and mild weather conditions facilitated good progress on the spring sowing campaign, and the unusually warm temperatures allowed an early start to maize and sunflower sowing in the southern and western regions. Current yield forecasts are still based on historical trends.





Spain and Portugal

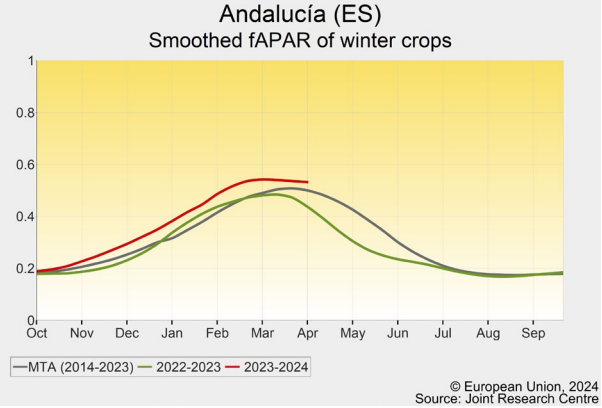
Favourable conditions for winter crops throughout the Iberian Peninsula

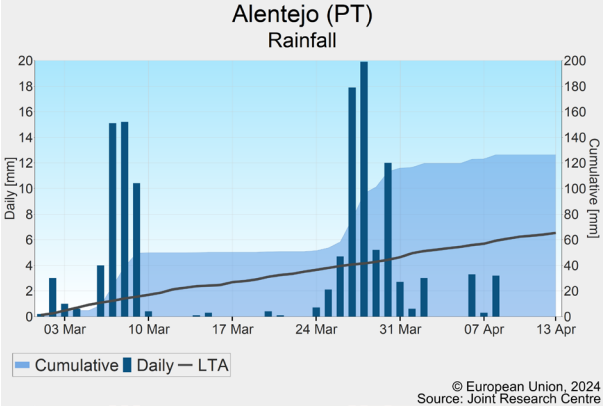
With the exception of part of the Mediterranean coast, the abundant rainfall in the first and last dekads of March ensured that agricultural conditions remained favourable on the Iberian Peninsula. In southwestern regions, March was one of the wettest in our records (since 1991). This has enabled the continuation of the replenishment of water reservoirs in most of the peninsula.

Temperatures were mostly in line with the LTA, with the exception of a warmer-than-usual northeastern part of the peninsula. Mild temperatures and the absence of rain in mid-March and early April created favourable conditions for the sowing of summer crops.

Winter crops are generally in good condition, exhibiting advanced development, and with distinctly above-average biomass accumulation. An exception are some areas in eastern Spain (Mediterranean Coast, east *Albacete* and southeast *Aragón*), where crop growth lags behind due to persistently drier-than-usual conditions.

Our yield forecasts have been revised upwards in comparison to historical trends, particularly for durum wheat, which is already at an advanced stage of development in *Andalucía*.





Hungary

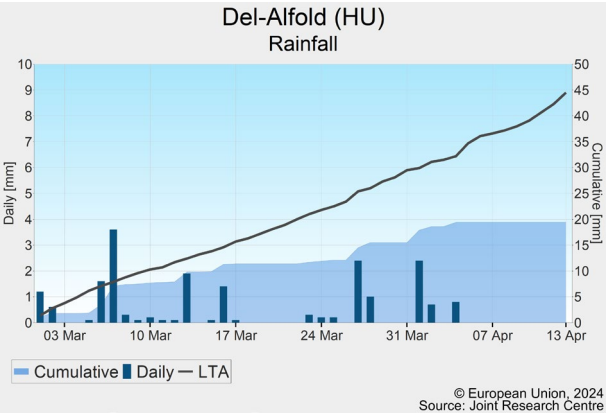
Promising winter crop conditions, but more rain is needed in the east

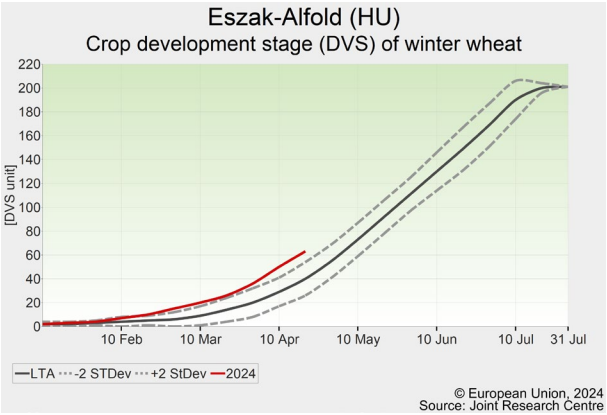
In March and the first half of April, daily temperatures exceeded the LTA by 3–5 °C, rendering the review period the warmest such period since 1991. The days since late March have been exceptionally warm, with daily maxima around 25 °C on average and approaching or exceeding 30 °C on the hottest days. Precipitation totals reached or exceeded the average in the west and north, while the south-eastern regions (*Dél-Alföld*, *Észak-Alföld*) experienced a rainfall deficit of 50–80 % of the expected average.

Thanks to the warm weather, winter crop development is advanced by 2–3 weeks. Rapeseed started flowering in the first days of April. Winter crops are in good shape thanks to an adequate water supply so far, but the south-eastern regions are now waiting for rainfall.

The sowing of spring barley and sugar beet progressed well across the country, except in the south-east, where the topsoils were too dry for fields to be prepared for sowing. Warm soils facilitated an early start to the sunflower and maize sowing campaigns, but sufficient rain is now needed to enable the sprouting and early development of the seedlings.

Our yield forecasts are still based on historical trends.





Italy

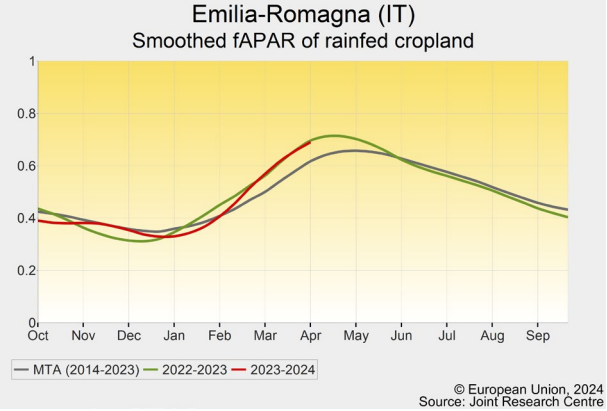
Warm and wet weather boosted winter crop growth

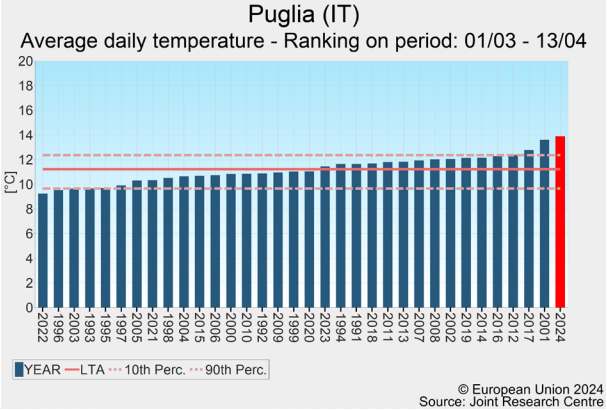
In Italy, the weather was predominantly warmer than usual and was accompanied by favourable precipitation.

The north experienced abundant rainfall in March, particularly during 1–10 March and 25–31 March, with *Piemonte* notably experiencing the wettest March on record. April has been drier so far, with significantly increased temperatures. While the excessively wet conditions delayed the planting of early summer crops in March, they restored soil moisture to optimal levels, favouring the ongoing sowing activity in April, still well within the optimal window. Winter crops mostly benefited from the abundant rainfall, leading to enhanced biomass accumulation and advanced crop development.

In the centre and south, rainfall was around average, with some deficit in *Puglia*, *Basilicata* and *Sicilia*. At the same time, these three regions experienced the warmest period (1 March–13 April) recorded since 1979. Winter crops are generally progressing favourably thanks to the warm and sufficiently humid conditions. Only in *Sicilia* are winter crops in mediocre shape, due to an unfavourably dry winter, from which crops have not fully recovered.

Overall, expectations for winter crops are fair and have improved since the last assessment.



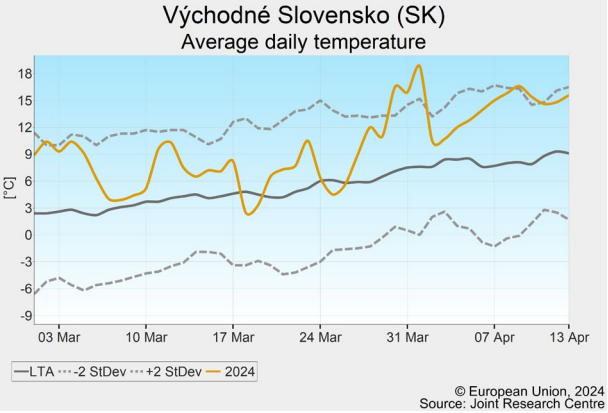


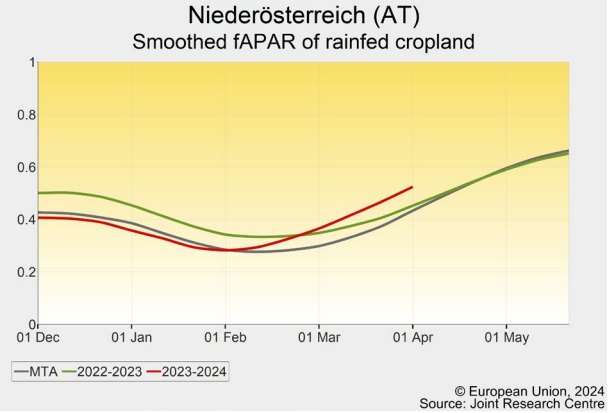
Czechia, Austria and Slovakia

Winter crops in rapid growth, sowing of spring crops in progress

Exceptionally warm temperatures in all three countries since the start of March, resulting in the warmest such period in our records since 1991, have greatly accelerated the regrowth of winter crops. Cereals are now in heading stage, 3 weeks ahead of the LTA. Rapeseed entered flowering stage in southern Czechia and reached full flowering stage in Austria and Slovakia. It is, however, too early to tell whether winter crops will entirely recover from the wet winter and can fully benefit from the current favourable weather conditions. Our yield forecasts for winter crops remain trend-based.

Soils are now in good condition for agricultural operations thanks to the warm temperatures, which helped to dry topsoils. Drilling of spring crops is in progress, well on schedule. Our forecasts for spring crop yields are based on trends.





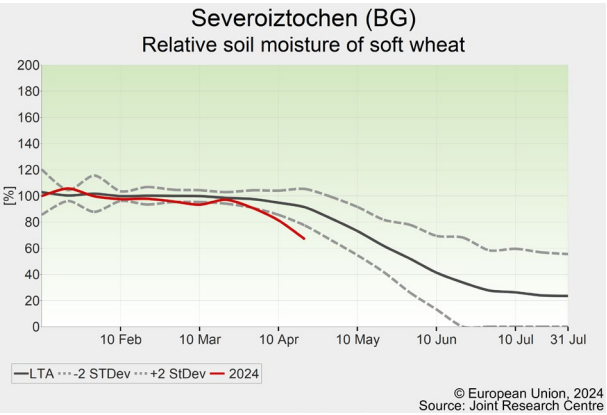
Bulgaria

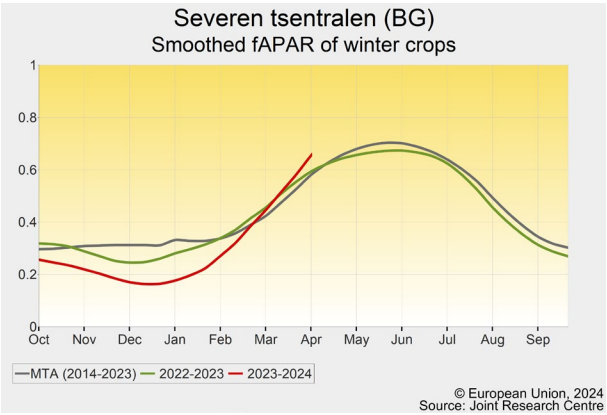
Unusually mild start to spring sowing campaign

A mild winter was followed by a significantly warmer-than-usual first half of the spring. In most regions, the positive temperature anomaly reached 3–4 °C for the review period as a whole. Rainfall was typically in the range of 20–50 mm, which is 40–80 % of the LTA.

The warm start of spring accelerated the development of winter crops, which is currently 10–20 days in advance of an average season. Soil moisture reserves decreased quickly because of the sparse rainfall and increased evaporative demand, but so far they have provided an adequate water supply for winter crops, which are generally in good condition. Satellite images indicate above-average biomass accumulation, although this is partly a result of advanced crop phenology. More rain would be beneficial to maintain the yield potential of winter cereals.

The sowing campaign for summer crops is well advanced thanks to the warm weather and favourable topsoil conditions, and the infrequent rainfall episodes. The yield outlook for winter crops remains in line with the historical trend.



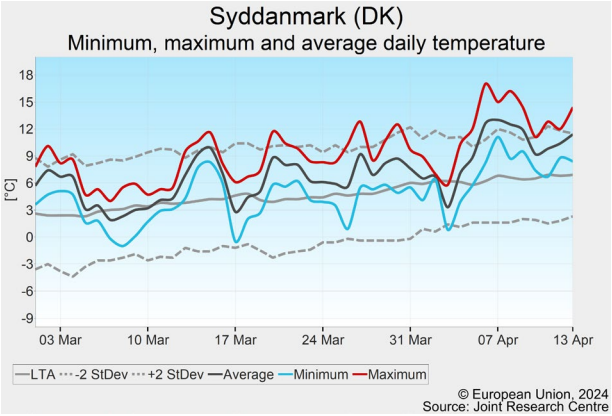


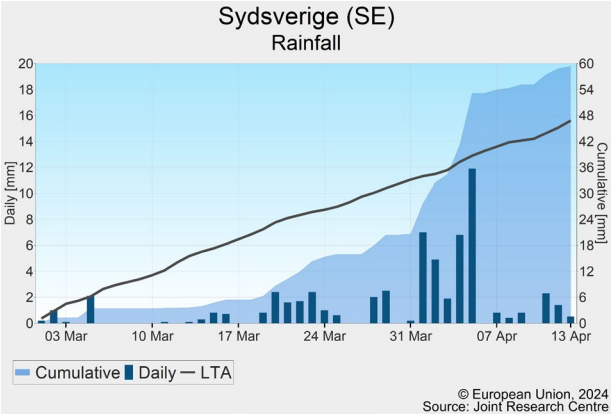
Denmark and Sweden

Adequate weather for start of spring

Temperatures fluctuated mainly above the LTA during the review period, with a positive temperature anomaly overall in both countries. Precipitation remained scarce throughout March, whereas in April rainfall was above average, resulting in a positive precipitation anomaly in both countries. A slight negative anomaly was reported for radiation. Our remote sensing data indicate average growth of winter crops, which are about to enter their stem elongation phase.

The dry conditions in March are likely to have been beneficial for winter crops, making it possible to carry out field operations such as fertilisation, while soil moisture levels remained adequate due to the humid winter. The rain in April contributed to the growth of winter crops, without causing any delays to spring sowing, which should start soon. Our crop yield forecasts are still based on and remain in line with historical trends.



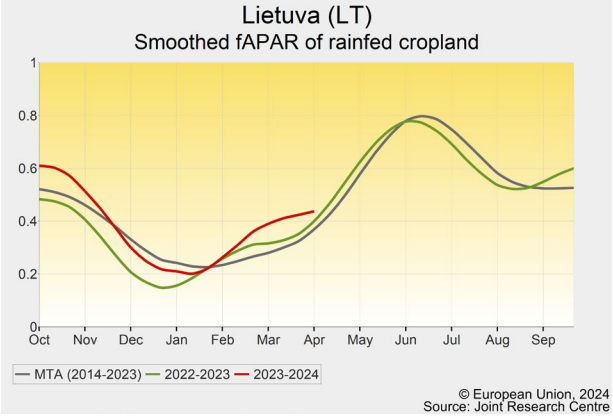


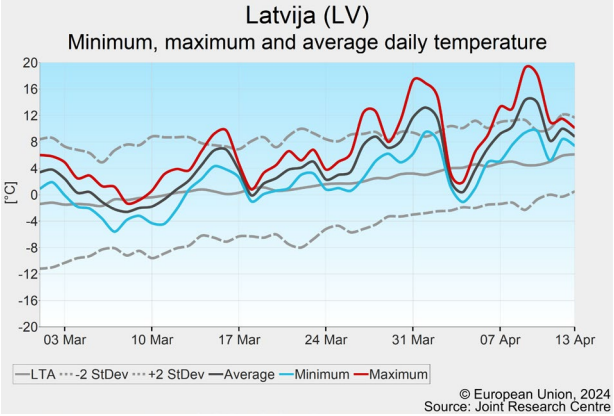
Estonia, Latvia, Lithuania, Finland

Good crop conditions overall in the Baltic region

Precipitation was scarce in the first half of March and close to normal thereafter, resulting in rainfall totals close to the LTA in all countries. Snow started to melt to a significant degree across Finland. A negative radiation anomaly was reported for all countries except Lithuania, where radiation was in line with the LTA. Temperatures were generally close to or above the LTA, resulting in large positive temperature accumulation anomalies in the Baltic countries, while in Finland cumulative temperatures remained close to the LTA. Our remote sensing data indicate that crop development is close to average in Finland and more advanced than in an average season in Estonia, Latvia and Lithuania, suggesting good winter crop conditions overall in these countries.

Spring sowing is expected to start in the coming weeks in all four countries and should benefit from the currently adequate soil moisture levels. Our crop yield forecasts remain unchanged.



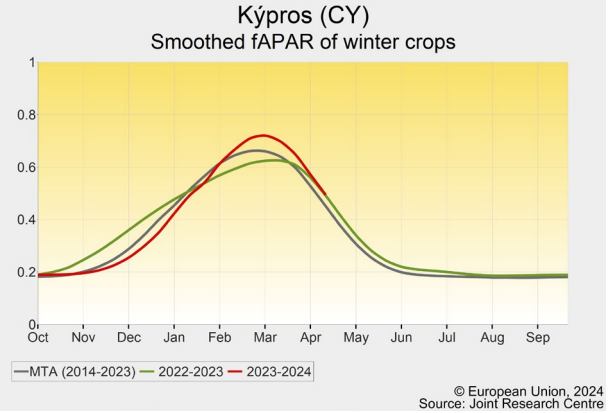


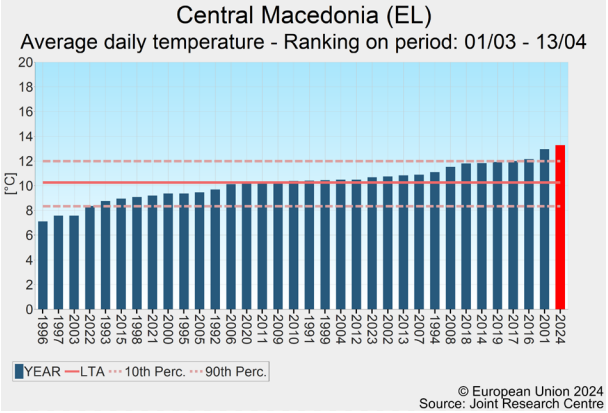
Greece and Cyprus

Crops thrive amidst record-breaking temperatures

Temperatures in northern Greece and *Thessaly* region have been among the warmest on record since 1991 for the period from 1st March to 13th April. Maximum temperatures in all these breadbasket regions have reached their highest levels since 1991, surpassing the long-term average by more than 4 °C in *Central Macedonia* and *Western Macedonia*. Rainfall has been around average in northern Greece, but below average from *Western Macedonia* to *Thessaly*, *Central Greece*, and *Peloponnese*, with rain being absent since mid-March. Overall, the warm weather with a minimum of rainfall has been beneficial to winter crops. Meanwhile, Greece started its summer crop sowing season with the planting of maize. The period of analysis saw below-average rainfall in Cyprus until the first week of April, but still sufficient to maintain crop growth, followed by significant rainfall until mid-April. Average daily temperatures were 2-3 °C warmer than average. Crop development and biomass production continued favourably, especially where farmers were able to irrigate in March. Most of barley has already been harvested for silage and hay. However, barley in *Paphos* and *Nicosia* districts might have been damaged locally by the recent heavy rain and hail.

Remote sensing indicators show above-average biomass accumulation both in Cyprus and in the breadbasket regions of Greece. Nevertheless, increased temperatures and high humidity can boost fungal diseases that is too early to be detected by our satellite imagery. Overall, our forecasts for winter crops are moderately above average, confirming our previous outlook. The forecasts for spring crops are instead aligned with the trend in this early stage of the season.



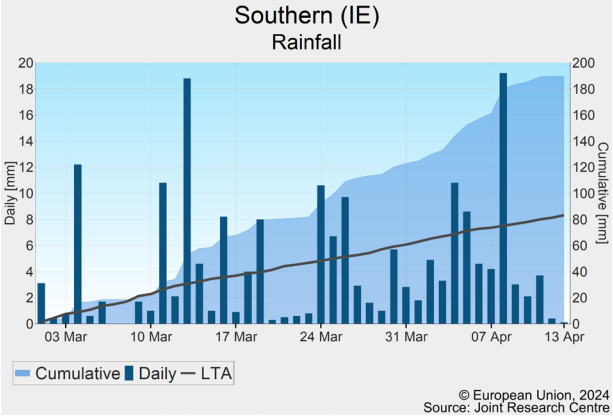


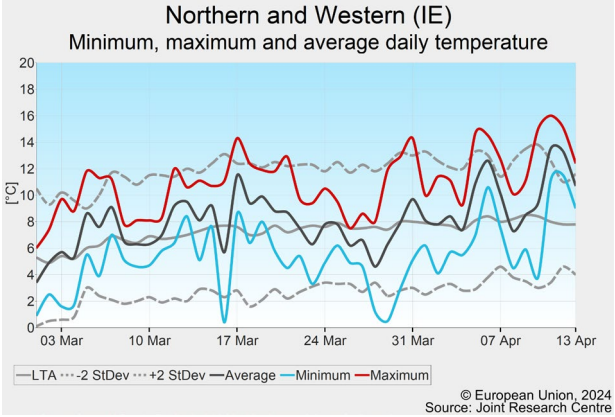
Ireland

Spring sowing delayed by rain

Temperatures close to or above normal prevailed, resulting in a slight positive temperature anomaly. Precipitation remained close to the LTA for the first half of March, while the rest of the review period was wetter than usual. Cumulative precipitation figures were as a result largely above the LTA, by more than twofold in southern Ireland. Cumulative radiation showed a slight negative anomaly, without any impacts on crops being expected. Our remote sensing data confirm overly wet soils, as do local field reports.

Field operations were complicated by the wet soils. For winter crops, fertilisation and pesticide application could not be systematically carried out. For spring crops, sowing delays have been reported, and dry conditions are needed very soon, as the optimal sowing window is closing. Our yield forecasts have been reduced to below the 5-year average for winter crops and to slightly below the 5-year average for spring barley.





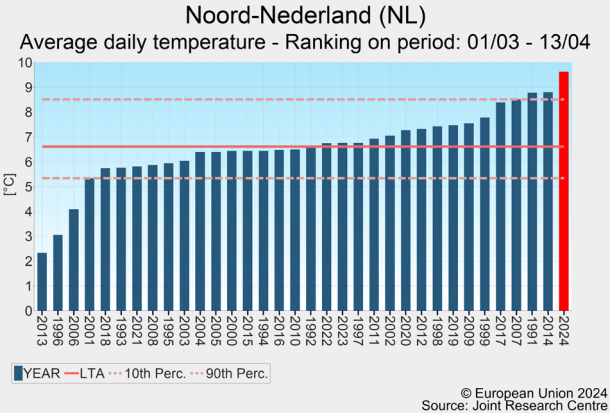
Belgium, Luxembourg and the Netherlands

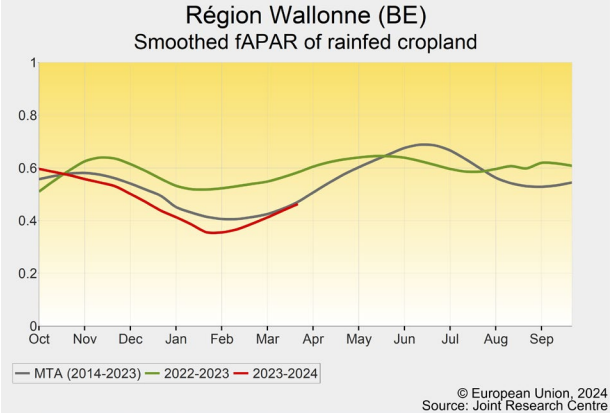
Warm start to spring beneficial for winter crops and spring sowing

The review period was warmer than usual; in most regions the warmest in our records since 1991. Temperatures remained almost continuously above the LTA, and frost events were rare and only light. Rainfall returned to normal after a wet autumn and winter, but remained around or slightly above the LTA in most regions. Only in the northern provinces of the Netherlands was rainfall slightly below the LTA.

The return to normal rainfall allowed farmers to resume field operations, albeit in start–stop mode, and winter crops to recover on well-drained soils. Stands on imperfectly drained soils – including those that were damaged by the use of heavy machinery – are expected to only partly recover, and in the worst cases will be resown with summer crops.

Sowing of sugar beet and potatoes started slowly around mid March, but progressed well during the sunny and warm final days of the review period. Poorly drained fields will require more time to dry, though.





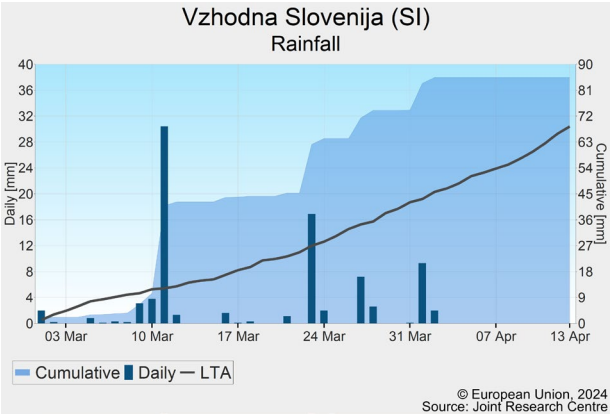
Slovenia and Croatia

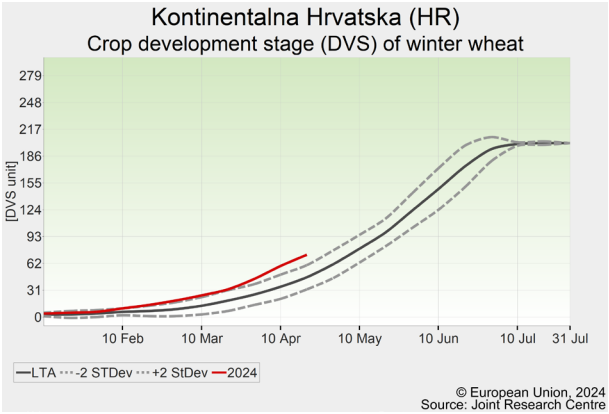
Warm weather and rain favourable for winter crops and spring sowing

During the review period, Slovenia and Croatia experienced higher-than-usual temperatures. While average daily temperatures remained 2–4 °C above the LTA in March, they were exceptionally high in the first half of April, with daily averages generally 4–6 °C above the LTA and even more than 6 °C above it in central and eastern Croatia.

Both countries experienced significant and well-distributed rainfall in March, except in eastern Croatia, where precipitation during that month was 30–50 % below the LTA. The widespread absence of rainfall at the beginning of April and the warm temperatures have created ideal conditions for the spring sowing campaign, which is currently ongoing.

Suitable soil moisture levels and warm temperatures have generally maintained winter crops in good condition. The fAPAR signal from satellite data suggests an above-average accumulation of biomass, which is particularly significant in eastern Slovenia, and our models indicate notably advanced development of winter crops compared with seasonal values. The yield forecast in both countries remains in line with the historical trend.





5.2 United Kingdom

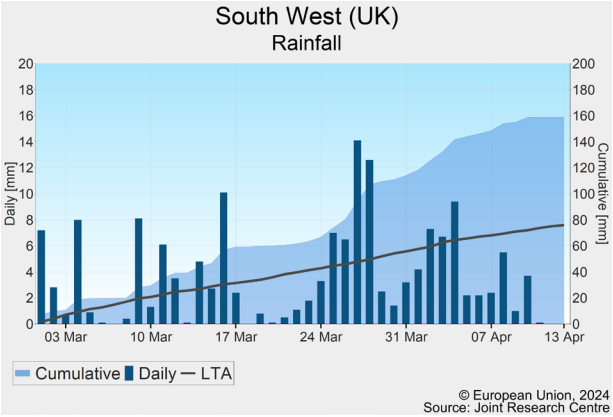
Fair weather, but wet soils hamper spring crop sowing

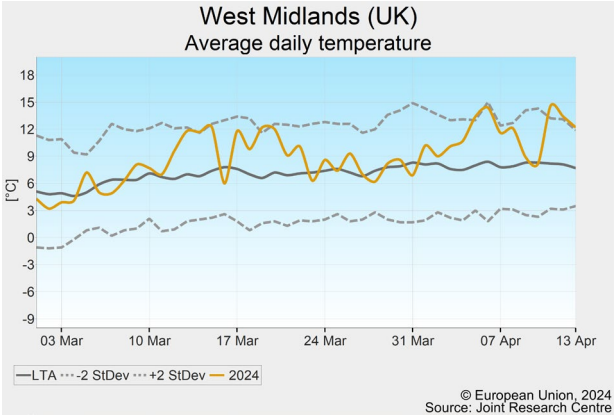
The warmer-than-average temperatures prevailing in the southern and eastern UK over the review period helped to dry soils after continued significant rainfall, essentially since early winter. Weather conditions remain challenging for field operations that are now critical for securing yields, in particular fungicide application to hold back septoria spreads on cereals and rapeseed.

In addition to the winter crop yield losses or failures caused by the overly wet and waterlogged soils, the delayed sowing will result in lower spring crop yields, too.

In early April, field operations started on fields with light soils, and spring sowing is ongoing. Decreasing rainfall forecast for the next week will enable most farmers to drill their fields, but not all failed winter crops will be resown with spring crops in the remaining time window.

We have revised our yield forecasts down by 5 % for winter wheat and barley. Production in 2024 will also depend on the area that can be resown with spring crops, which is still uncertain at this time.





5.3 Black Sea Area

Ukraine

Overall fair -to-good conditions for winter and spring crops

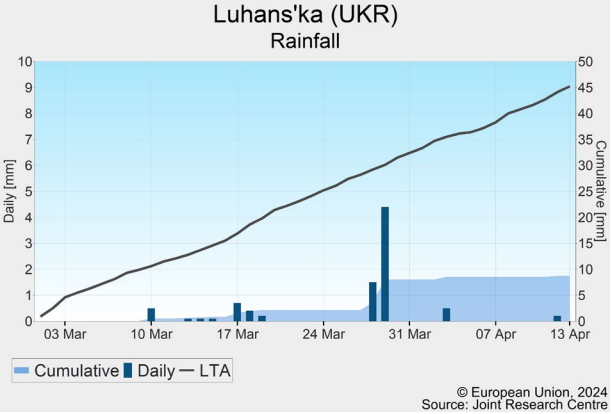
Until 26 March, temperatures remained close to the LTA, after which they increased sharply, reaching record highs in the country's southern areas.

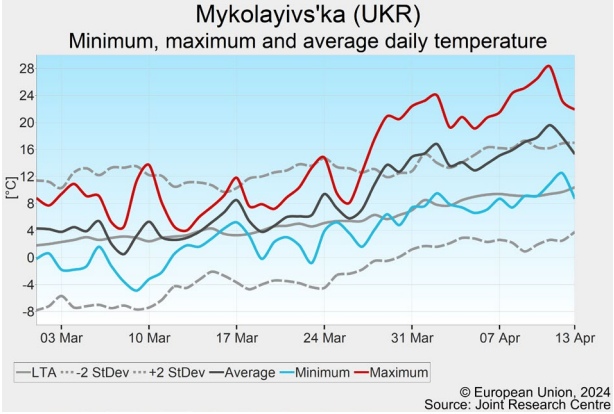
Precipitation during the review period was near-average to above-average in western parts of the country. For *Odes'ka,* which had faced a prolonged period of scarce rainfall in preceding months, the current review period was one of the wettest on record. By contrast, rainfall in the eastern parts of the country was distinctly below the LTA, with this review period being the driest on record.

Winter cereals and rapeseed are in good condition in most of the country. The *Odes'ka* region stands as an exception, as crops were impacted by water scarcity during February and March. Moreover, the remote sensing map reveals a distinct increase in abandoned land within the war zone.

Thanks to favourable weather, the planting of spring cereals has surpassed 60% completion, which is advanced in comparison with an average season. The planting of summer crops is also underway.

Yield forecasts, are maintained at the level of historical trends. However, the figures for winter crops in the table below are based on a more refined analysis than in March: at oblast level. Cropped areas in the government-controlled oblasts were derived from data from the Ukrainian Ministry of Agriculture, and from Sentinel-2 remote sensing data[2] in the non-controlled areas.





Crop	Region	Area (x 1000 ha)	MARS Yield forecasts (t/ha)	Production (x 1000 t)				
				2024	Avg 5yrs	2021	%24/5yrs	%24/21
Wheat	Ukraine	**5 110**	**4.63**	**23 682**	27 222	32 152	– 13	– 26
	Government-controlled areas	**4 057**	**4.88**	**19 798**	21 095	24 732	– 6	– 20
	Non-controlled areas	**1 053**	**3.69**	**3 884**	6 127	7 420	– 37	– 48
Winter barley	Ukraine	**563**	**4.08**	**2 297**	3 598	4 856	– 36	– 53
	Government-controlled areas	**447**	**4.11**	**1 837**	2 981	3 918	– 38	– 53
	Non-controlled areas	**117**	**3.94**	**460**	617	938	– 25	– 51
Rapeseed	Ukraine	**1 557**	**3.14**	**4 891**	2 745	2 931	+ 78	+ 67
	Government-controlled areas	**1 429**	**3.20**	**4 575**	2 371	2 506	+ 93	+ 83
	Non-controlled areas	**128**	**2.48**	**316**	374	424	– 15	– 25

Sources:
2019-2023 data come from the State Statistics Service of Ukraine.
2024 areas for the Government-controlled oblasts were derived from Ukrainian Ministry of Agrarian Policy and Food.
2024 areas for non-controlled areas from Sentinel-2 remote sensing data[2].
2024 yields come from MARS Crop Yield Forecasting System (output up to 19.04.2024).
The column header '%24/5yrs' stands for the 2024 change with respect to the 5-year average(%). Similarly, '%24/21' stands for the 2024 change with respect to 2021(%).

[2] Methodological details are given in https://publications.jrc.ec.europa.eu/repository/handle/JRC133193

Türkiye

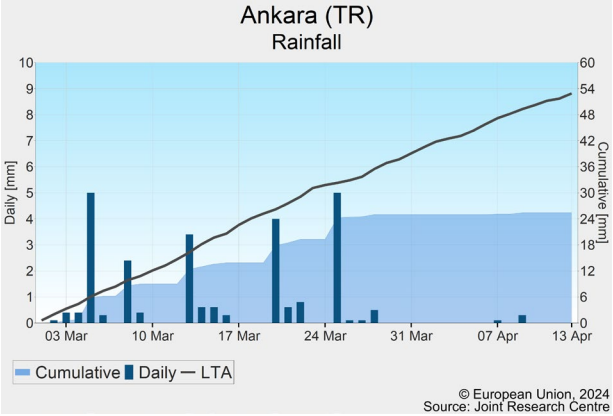
Crops are in good condition

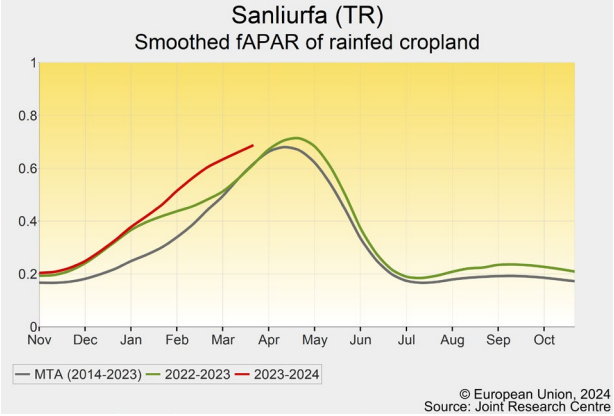
In Türkiye, weather conditions have remained favourable for crop growth despite increasingly dry conditions. In the western regions, precipitation was relatively frequent and close to average until 25 March. After this date, precipitation became less frequent and temperatures sharply increased for about a week, with a maximum temperature anomaly of up to +14°C. These conditions caused crop growth to slow down, particularly in *Ankara* and *Bursa*, but it remained above average overall.

In the eastern regions, nearly 100 mm of rain fell between 15 March and 13 April, which is 20 mm to 40 mm above the LTA. This sustained optimal winter crop growth during the heading and early flowering stages. Phenological development, which was already advanced, further accelerated since 27 March due to 10 days of warmer–than-usual temperatures. Crops in the region of *Mardin* are in optimal shape.

Overall, yield expectations for winter crops are positive. The sowing campaign for summer crops is about to begin under favourable soil moisture conditions and with nearly full water reservoirs.

A more detailed analysis is provided in the JRC MARS Bulletin on Türkiye in the Global outlook series[3]





[3] https://publications.jrc.ec.europa.eu/repository/handle/JRC136671

5.4 European Russia and Belarus

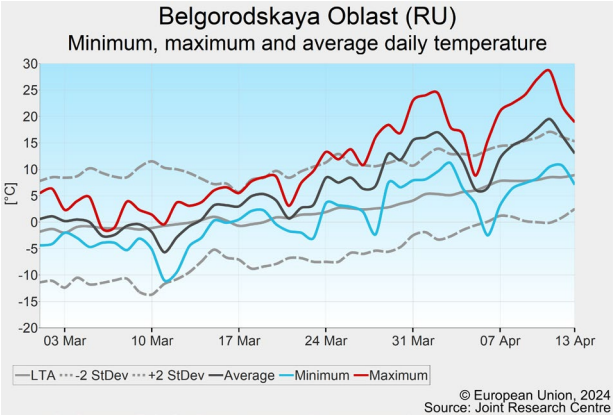
European Russia

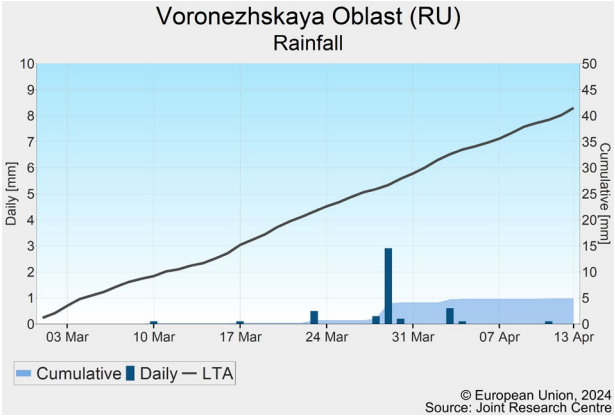
Promising conditions for winter crops in the south-west, but weaker elsewhere

From early March, temperatures in the western half of European Russia presented a 2–5 °C positive thermal anomaly compared with the LTA, while near-average temperatures prevailed in the eastern half. Rainfall during the period under review was significantly (40–90 %) below the LTA (typically in the range of 3–30 mm) in most arable areas, but the North-western okrug and south-eastern parts of the Volga okrug received average to above-average precipitation.

The above-average temperatures accelerated the melting of snow cover in the Central and Volga okrugs and led to some flood events. Mild weather was favourable for the regreening of winter cereals after winter dormancy in the Southern and North Caucasus okrugs. In these regions, winter cereals present above-average leaf area extension and biomass accumulation. Crop development and general winter crop conditions are weaker in the Central and Volga okrugs. The current rainfall deficit is not yet limiting the growth of winter cereals, but it will become a concern if dry conditions continue in the coming weeks.

The warm and dry weather enabled an early start to the sowing of spring barley and spring wheat in the farthest south-western regions from late February. Further north, in the Central okrug, soil temperature reached the critical + 5 °C only in late March / early April, allowing the spring sowing campaign to start. In the Volga and North-western okrugs, the sowing of spring cereals will begin in mid Apri.





Belarus

Warm temperatures and adequate rainfall boost crop growth and development

During our review period, daily temperatures almost constantly exceeded the LTA, by 2–3 °C until late March, and after that by 6–8 °C.

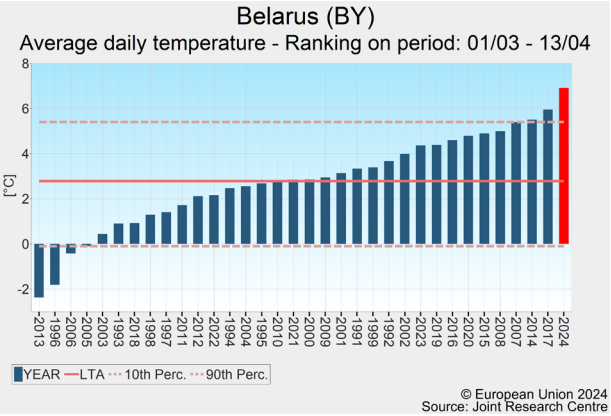
Precipitation totals were close to the LTA, and well distributed in time, thus allowing agricultural activities (soil preparation, sowing) to progress well.

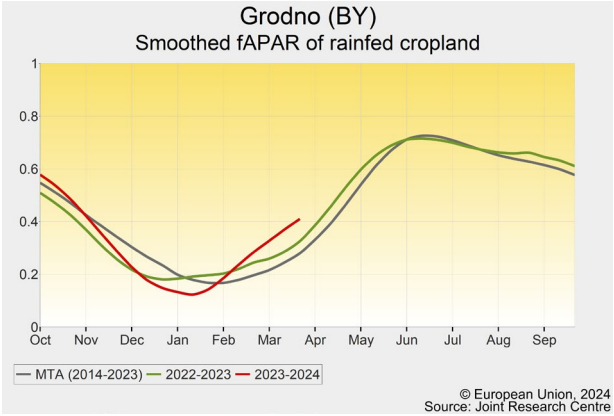
Winter wheat phenological development is strongly advanced thanks to the mild winter and warm spring. Biomass accumulation and photosynthetic activity also greatly exceed the average level.

Thanks to mild/warm temperatures and adequate topsoil conditions, the sowing of spring cereals started early and progressed faster than usual. It has finished in the western and southern parts of the country and is well advanced in the cooler north-eastern regions such as *Mogilev* and *Vitebsk*.

In the southern regions along the Ukrainian border, even the sowing of maize has started, exceptionally early, in the first dekad of April.

The current yield forecast is based on historical trends.



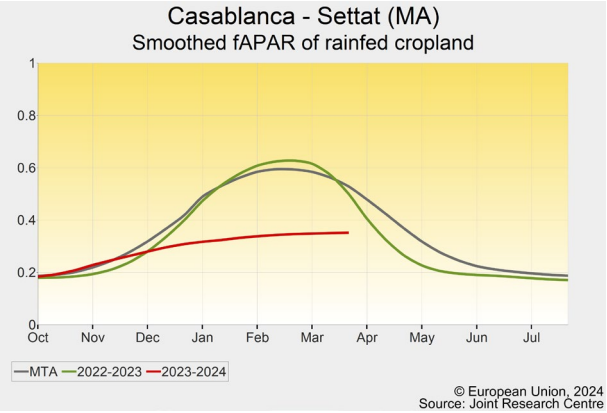


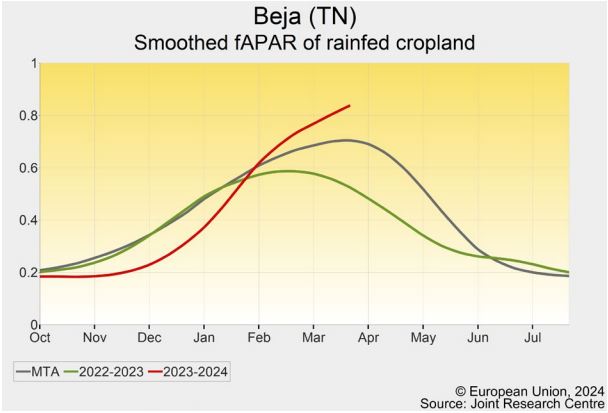
5.5 Maghreb

Morocco, Algeria and Tunisia

Improving conditions in Algeria and Tunisia, negative outlook for Morocco

In **Morocco**, the rain in March did not improve the growing conditions for winter crops. Due to the prolonged drought from September to February, biomass accumulation remained well below the MTA or failed totally, as in the regions of *Casablanca* and *Oriental,* which are usually among the most productive regions in the country. Our yield forecasts in Morocco for wheat and barley are 25 % below the 5-year average. By contrast, the rain that occurred in **Algeria** at the end of March helped crops to withstand the warm weather, with daily average temperatures 2 °C (north-east) to more than 3 °C (north-west) above the LTA. These conditions enabled the overall recovery of crops, particularly in the centre and east of the country. The positive biomass accumulation in these regions partly compensated for the negative performance of crops, especially barley, since the beginning of the season in the north-western regions (e.g. *Tlemcen*, *Sidi Bel Abbès*), caused by drought conditions in January and February. Our yield forecasts are 4 % below average for wheat and close to average for barley. In **Tunisia**, average daily temperatures 2–3 °C above the LTA and well-distributed rain during the month of March provided optimal growth conditions for winter crops. Remote sensing signals clearly indicate above-average growth, with the possibility of further improvement in the coming weeks. Our yield forecasts for Tunisia are well above the 5-year average.

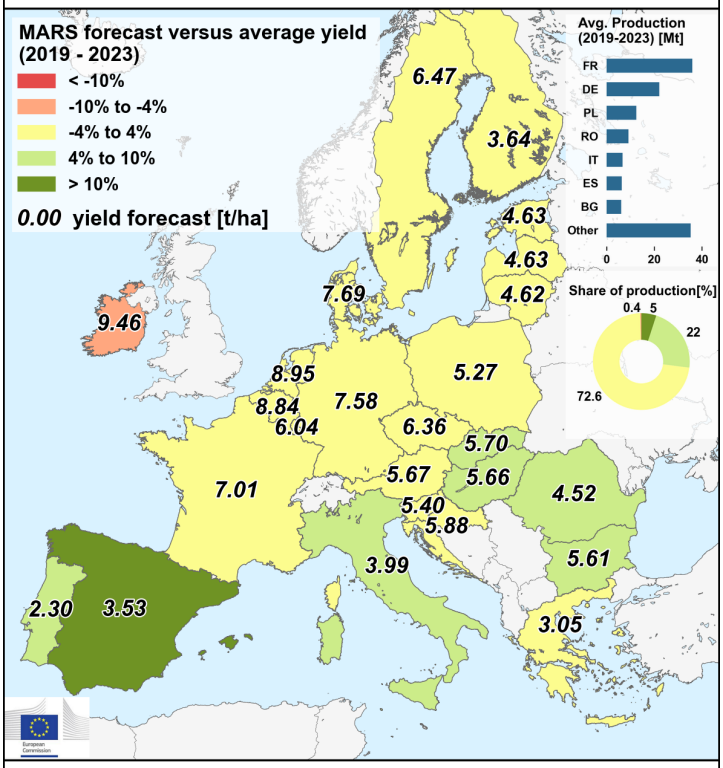




6. Crop yield forecast

Country	Total wheat (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff April/March
EU	5.65	5.60	**5.72**	+ 1	+ 2	+ 0
AT	5.81	6.12	**5.67**	– 3	– 7	+ 0
BE	8.80	8.91	**8.84**	+ 1	– 1	+ 0
BG	5.14	5.43	**5.61**	+ 9	+ 3	+ 0
CY	—	—	—	—	—	—
CZ	6.13	6.43	**6.36**	+ 4	– 1	+ 0
DE	7.51	7.48	**7.58**	+ 1	+ 1	– 1
DK	7.98	7.41	**7.69**	– 4	+ 4	+ 0
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	**3.53**	+ 11	+ 73	+ 5
FI	3.61	3.19	**3.64**	+ 1	+ 14	+ 0
FR	7.21	7.28	**7.01**	– 3	– 4	+ 0
HR	5.71	4.78	**5.88**	+ 3	+ 23	+ 0
HU	5.35	5.63	**5.66**	+ 6	+ 1	+ 0
IE	9.91	9.33	**9.46**	– 5	+ 2	– 7
IT	3.78	3.60	**3.99**	+ 6	+ 11	+ 3
LT	4.73	4.74	**4.62**	– 2	– 3	+ 0
LU	5.98	5.75	**6.04**	+ 1	+ 5	+ 0
LV	4.67	4.07	**4.63**	– 1	+ 14	+ 0
MT	—	—	—	—	—	—
NL	8.87	8.59	**8.95**	+ 1	+ 4	+ 0
PL	5.10	5.38	**5.27**	+ 3	– 2	+ 0
PT	2.18	1.38	**2.30**	+ 6	+ 67	+ 8
RO	4.22	4.55	**4.52**	+ 7	– 1	+ 0
SE	6.65	5.46	**6.47**	– 3	+ 19	+ 0
SI	5.47	5.07	**5.40**	– 1	+ 7	+ 0
SK	5.41	6.16	**5.70**	+ 5	– 7	+ 0

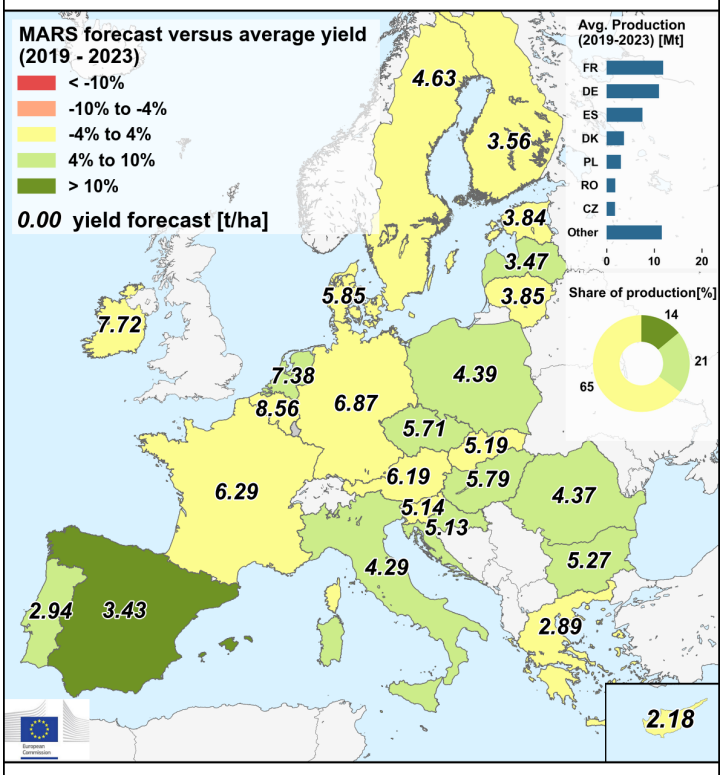
Total wheat - yield forecast 2024



MARS Bulletin Vol. 32 No.4 (2024)

Country	Total barley (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff April/March
EU	4.93	4.64	**5.11**	+ 4	+ 10	+ 1
AT	6.18	6.22	**6.19**	+ 0	– 0	+ 0
BE	8.31	8.62	**8.56**	+ 3	– 1	+ 0
BG	4.96	5.30	**5.27**	+ 6	– 1	+ 0
CY	2.11	1.74	**2.18**	+ 3	+ 25	+ 0
CZ	5.46	5.50	**5.71**	+ 5	+ 4	+ 0
DE	6.79	6.88	**6.87**	+ 1	+ 0	+ 0
DK	5.98	4.61	**5.85**	– 2	+ 27	+ 0
EE	3.81	2.95	**3.84**	+ 1	+ 30	+ 0
EL	2.83	2.55	**2.89**	+ 2	+ 13	+ 0
ES	2.97	1.61	**3.43**	+ 16	+ 113	+ 6
FI	3.48	3.13	**3.56**	+ 2	+ 14	+ 0
FR	6.36	6.80	**6.29**	– 1	– 8	– 0
HR	4.89	4.00	**5.13**	+ 5	+ 28	+ 0
HU	5.54	5.46	**5.79**	+ 5	+ 6	+ 0
IE	7.98	7.05	**7.72**	– 3	+ 10	– 3
IT	4.12	3.99	**4.29**	+ 4	+ 8	+ 3
LT	3.71	3.56	**3.85**	+ 4	+ 8	+ 0
LU	—	—	—	—	—	—
LV	3.31	2.79	**3.47**	+ 5	+ 25	+ 0
MT	—	—	—	—	—	—
NL	6.95	6.51	**7.38**	+ 6	+ 13	+ 0
PL	4.14	4.49	**4.39**	+ 6	– 2	+ 0
PT	2.71	1.56	**2.94**	+ 8	+ 88	+ 7
RO	3.98	4.61	**4.37**	+ 10	– 5	+ 0
SE	4.68	3.30	**4.63**	– 1	+ 40	+ 0
SI	5.08	4.60	**5.14**	+ 1	+ 12	+ 0
SK	5.09	5.31	**5.19**	+ 2	– 2	+ 0

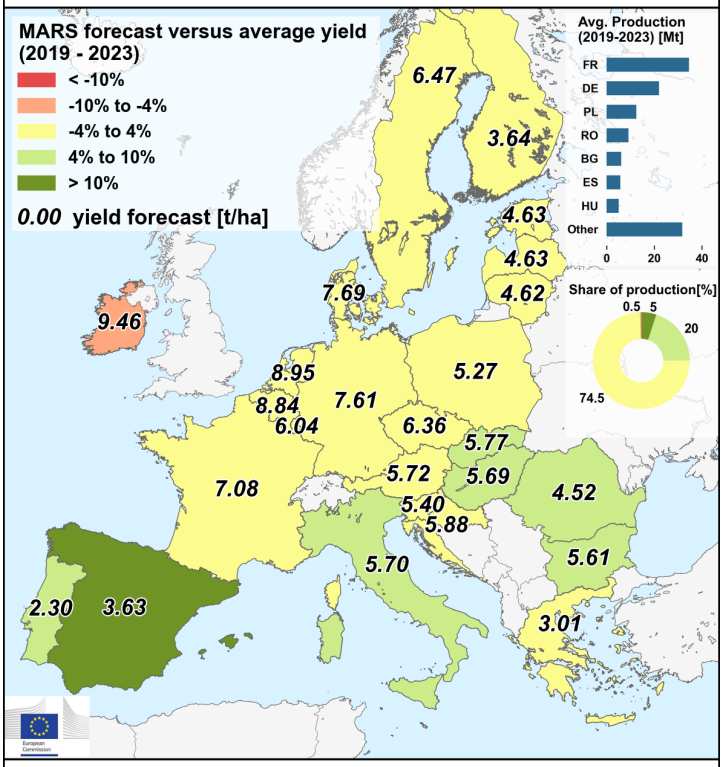
Total barley - yield forecast 2024



MARS Bulletin Vol. 32 No.4 (2024)

Country	Soft wheat (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff April/March
EU	5.87	5.82	**5.93**	+ 1	+ 2	+ 0
AT	5.87	6.14	**5.72**	– 3	– 7	+ 0
BE	8.80	8.91	**8.84**	+ 1	– 1	+ 0
BG	5.14	5.43	**5.61**	+ 9	+ 3	+ 0
CY	—	—	—	—	—	—
CZ	6.13	6.43	**6.36**	+ 4	– 1	+ 0
DE	7.54	7.51	**7.61**	+ 1	+ 1	– 1
DK	7.98	7.41	**7.69**	– 4	+ 4	+ 0
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	**3.63**	+ 11	+ 72	+ 4
FI	3.61	3.19	**3.64**	+ 1	+ 14	+ 0
FR	7.30	7.37	**7.08**	– 3	– 4	+ 0
HR	5.71	4.78	**5.88**	+ 3	+ 23	+ 0
HU	5.37	5.65	**5.69**	+ 6	+ 1	+ 0
IE	9.91	9.33	**9.46**	– 5	+ 2	– 7
IT	5.34	5.08	**5.70**	+ 7	+ 12	+ 5
LT	4.73	4.74	**4.62**	– 2	– 3	+ 0
LU	5.98	5.75	**6.04**	+ 1	+ 5	+ 0
LV	4.67	4.07	**4.63**	– 1	+ 14	+ 0
MT	—	—	—	—	—	—
NL	8.87	8.59	**8.95**	+ 1	+ 4	+ 0
PL	5.10	5.38	**5.27**	+ 3	– 2	+ 0
PT	2.18	1.38	**2.30**	+ 6	+ 67	+ 8
RO	4.22	4.55	**4.52**	+ 7	– 1	+ 0
SE	6.65	5.46	**6.47**	– 3	+ 19	+ 0
SI	5.47	5.07	**5.40**	– 1	+ 7	+ 0
SK	5.42	6.16	**5.77**	+ 6	– 6	+ 0

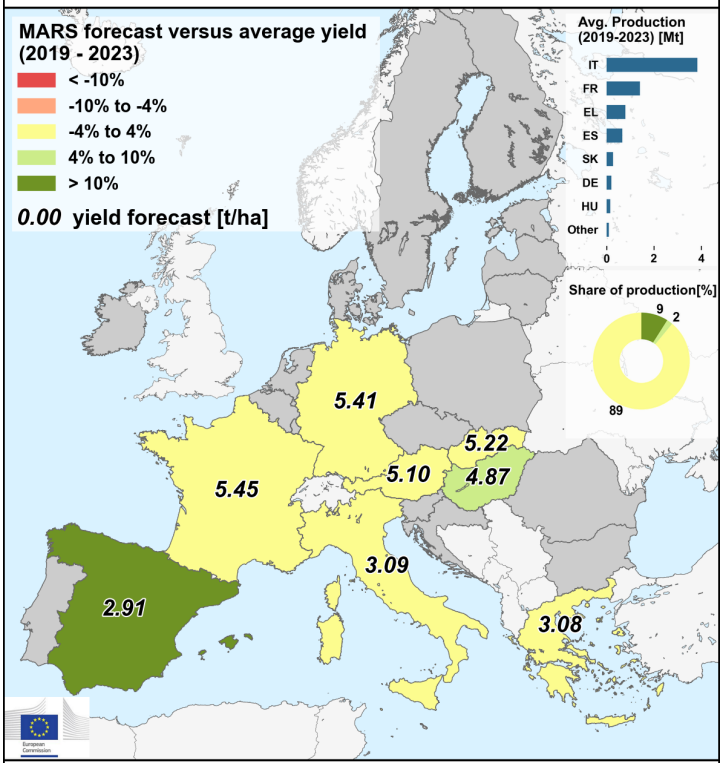
Soft wheat - yield forecast 2024



MARS Bulletin Vol. 32 No.4 (2024)

Country	Durum wheat (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff April/March
EU	3.44	3.29	**3.47**	+ 1	+ 6	+ 1
AT	5.07	5.88	**5.10**	+ 1	– 13	+ 0
BE	—	—	—	—	—	—
BG	—	—	—	—	—	—
CY	—	—	—	—	—	—
CZ	—	—	—	—	—	—
DE	5.40	5.74	**5.41**	+ 0	– 6	+ 0
DK	—	—	—	—	—	—
EE	—	—	—	—	—	—
EL	2.98	3.31	**3.08**	+ 3	– 7	+ 0
ES	2.54	1.61	**2.91**	+ 15	+ 81	+ 9
FI	—	—	—	—	—	—
FR	5.53	5.44	**5.45**	– 2	+ 0	+ 0
HR	—	—	—	—	—	—
HU	4.63	5.20	**4.87**	+ 5	– 6	+ 0
IE	—	—	—	—	—	—
IT	3.11	2.91	**3.09**	– 1	+ 6	+ 0
LT	—	—	—	—	—	—
LU	—	—	—	—	—	—
LV	—	—	—	—	—	—
MT	—	—	—	—	—	—
NL	—	—	—	—	—	—
PL	—	—	—	—	—	—
PT	—	—	—	—	—	—
RO	—	—	—	—	—	—
SE	—	—	—	—	—	—
SI	—	—	—	—	—	—
SK	5.35	6.14	**5.22**	– 2	– 15	+ 0

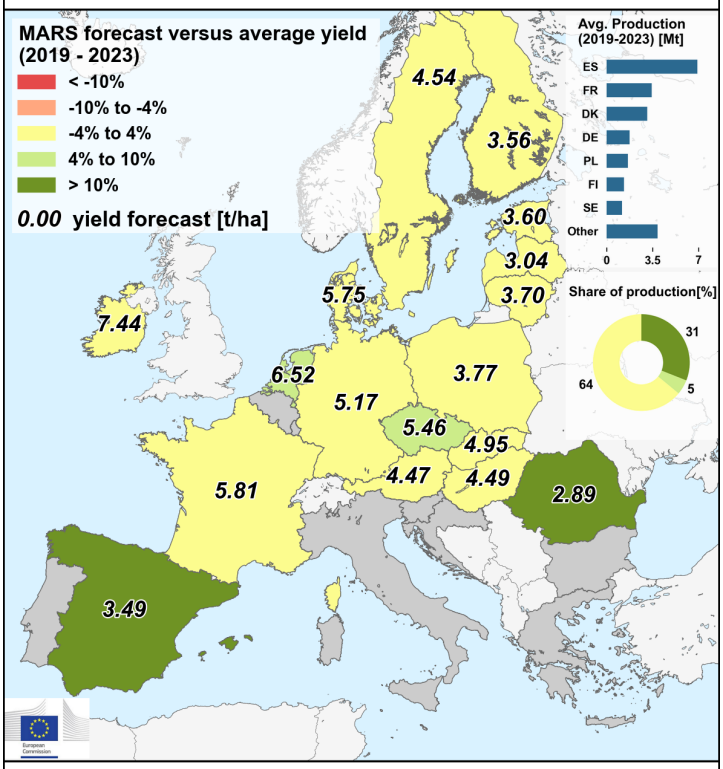
Durum wheat - yield forecast 2024



MARS Bulletin Vol. 32 No.4 (2024)

Country	Spring barley (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff April/March
EU	4.09	3.18	**4.32**	+ 6	+ 36	+ 2
AT	4.49	4.75	**4.47**	– 1	– 6	+ 0
BE	—	—	—	—	—	—
BG	—	—	—	—	—	—
CY	—	—	—	—	—	—
CZ	5.12	4.95	**5.46**	+ 7	+ 10	+ 0
DE	5.11	4.46	**5.17**	+ 1	+ 16	+ 0
DK	5.84	4.39	**5.75**	– 2	+ 31	+ 0
EE	3.55	2.59	**3.60**	+ 1	+ 39	+ 0
EL	—	—	—	—	—	—
ES	3.02	1.67	**3.49**	+ 15	+ 109	+ 6
FI	3.48	3.13	**3.56**	+ 2	+ 14	+ 0
FR	5.75	5.78	**5.81**	+ 1	+ 1	– 1
HR	—	—	—	—	—	—
HU	4.51	4.40	**4.49**	– 0	+ 2	+ 0
IE	7.44	6.38	**7.44**	+ 0	+ 17	– 2
IT	—	—	—	—	—	—
LT	3.60	3.40	**3.70**	+ 3	+ 9	+ 0
LU	—	—	—	—	—	—
LV	3.04	2.42	**3.04**	+ 0	+ 26	+ 0
MT	—	—	—	—	—	—
NL	6.25	4.76	**6.52**	+ 4	+ 37	+ 0
PL	3.65	3.79	**3.77**	+ 3	– 1	+ 0
PT	—	—	—	—	—	—
RO	2.55	3.25	**2.89**	+ 13	– 11	+ 0
SE	4.56	3.15	**4.54**	– 1	+ 44	+ 0
SI	—	—	—	—	—	—
SK	4.79	5.10	**4.95**	+ 3	– 3	+ 0

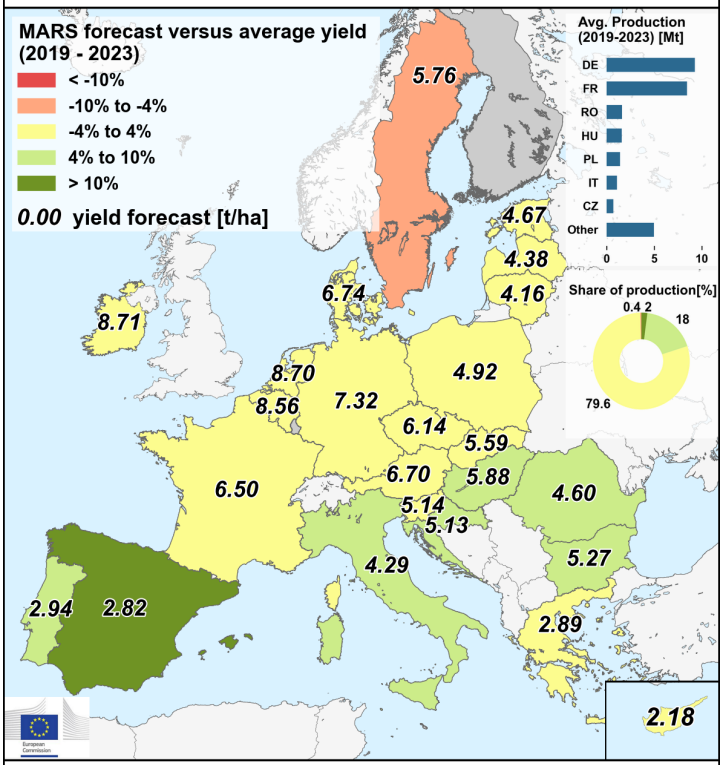
Spring barley - yield forecast 2024



MARS Bulletin Vol. 32 No.4 (2024)

Country	Winter barley (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff April/March
EU	5.91	6.05	**5.97**	+ 1	– 1	+ 0
AT	6.69	6.55	**6.70**	+ 0	+ 2	+ 0
BE	8.31	8.62	**8.56**	+ 3	– 1	+ 0
BG	4.96	5.30	**5.27**	+ 6	– 1	+ 0
CY	2.11	1.74	**2.18**	+ 3	+ 25	+ 0
CZ	6.09	6.33	**6.14**	+ 1	– 3	+ 0
DE	7.24	7.48	**7.32**	+ 1	– 2	+ 0
DK	6.92	6.53	**6.74**	– 3	+ 3	+ 0
EE	4.67	3.68	**4.67**	+ 0	+ 27	+ 0
EL	2.83	2.55	**2.89**	+ 2	+ 13	+ 0
ES	2.51	1.06	**2.82**	+ 12	+ 166	+ 8
FI	—	—	—	—	—	—
FR	6.65	7.13	**6.50**	– 2	– 9	+ 0
HR	4.89	4.00	**5.13**	+ 5	+ 28	+ 0
HU	5.62	5.51	**5.88**	+ 5	+ 7	+ 0
IE	8.97	8.72	**8.71**	– 3	– 0	– 6
IT	4.12	3.99	**4.29**	+ 4	+ 8	+ 3
LT	4.17	3.98	**4.16**	– 0	+ 5	+ 0
LU	—	—	—	—	—	—
LV	4.49	3.59	**4.38**	– 3	+ 22	+ 0
MT	—	—	—	—	—	—
NL	8.42	8.91	**8.70**	+ 3	– 2	+ 0
PL	4.87	5.07	**4.92**	+ 1	– 3	+ 0
PT	2.71	1.56	**2.94**	+ 8	+ 88	+ 7
RO	4.25	4.80	**4.60**	+ 8	– 4	+ 0
SE	6.06	5.19	**5.76**	– 5	+ 11	+ 0
SI	5.08	4.60	**5.14**	+ 1	+ 12	+ 0
SK	5.54	5.55	**5.59**	+ 1	+ 1	+ 0

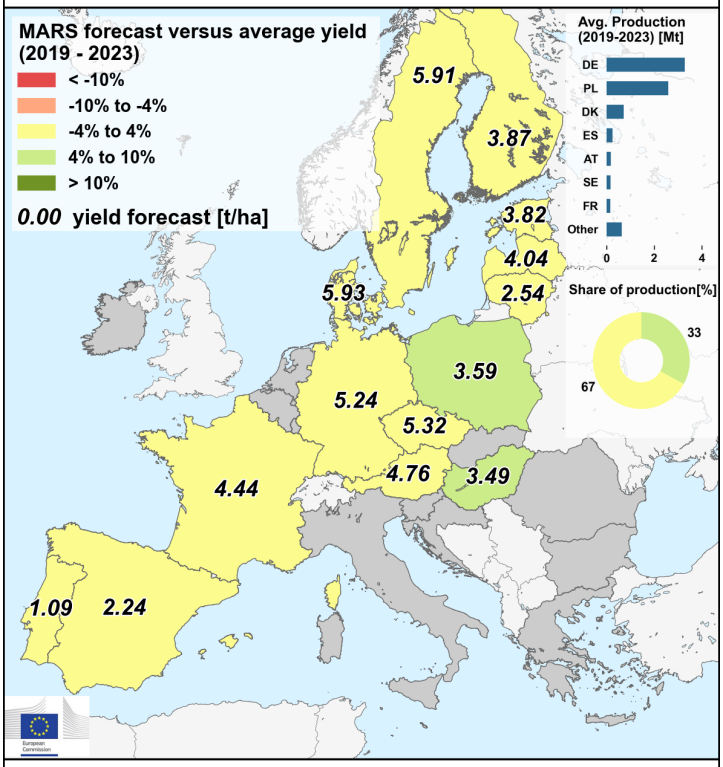
Winter barley - yield forecast 2024



MARS Bulletin Vol. 32 No.4 (2024)

Country	Rye (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff April/March
EU	4.16	4.11	**4.29**	+ 3	+ 5	+ 0
AT	4.76	4.54	**4.76**	+ 0	+ 5	+ 0
BE	—	—	—	—	—	—
BG	—	—	—	—	—	—
CY	—	—	—	—	—	—
CZ	5.19	5.03	**5.32**	+ 3	+ 6	+ 0
DE	5.26	5.01	**5.24**	– 0	+ 5	+ 0
DK	6.12	5.67	**5.93**	– 3	+ 5	+ 0
EE	3.86	3.66	**3.82**	– 1	+ 5	+ 0
EL	—	—	—	—	—	—
ES	2.16	1.41	**2.24**	+ 4	+ 59	+ 8
FI	3.93	3.45	**3.87**	– 2	+ 12	+ 0
FR	4.32	4.34	**4.44**	+ 3	+ 2	+ 0
HR	—	—	—	—	—	—
HU	3.27	3.34	**3.49**	+ 7	+ 4	+ 0
IE	—	—	—	—	—	—
IT	—	—	—	—	—	—
LT	2.59	2.36	**2.54**	– 2	+ 8	+ 0
LU	—	—	—	—	—	—
LV	3.94	3.20	**4.04**	+ 3	+ 26	+ 0
MT	—	—	—	—	—	—
NL	—	—	—	—	—	—
PL	3.31	3.55	**3.59**	+ 9	+ 1	+ 0
PT	1.06	0.90	**1.09**	+ 3	+ 22	+ 5
RO	—	—	—	—	—	—
SE	6.06	5.25	**5.91**	– 3	+ 13	+ 0
SI	—	—	—	—	—	—
SK	—	—	—	—	—	—

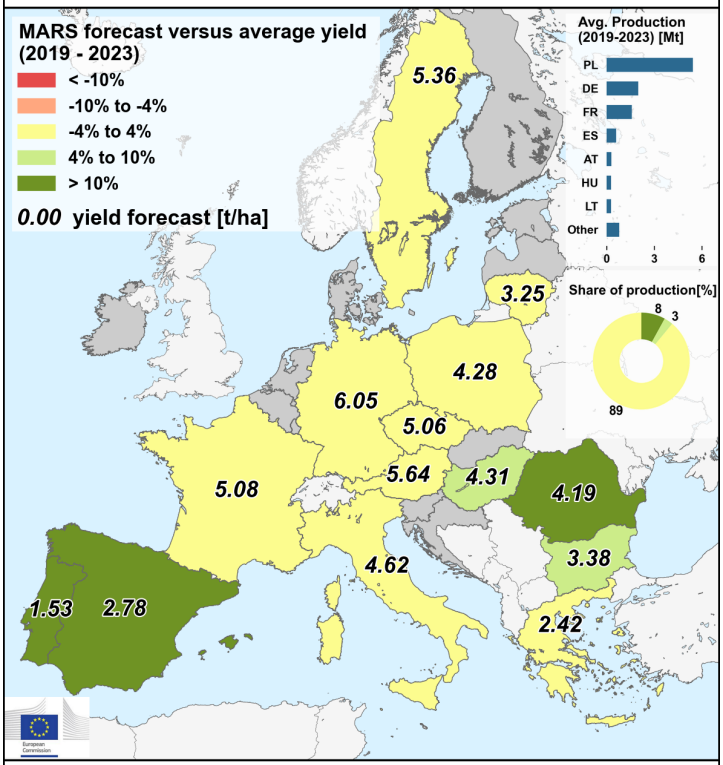
Rye - yield forecast 2024



MARS Bulletin Vol. 32 No.4 (2024)

Country	Triticale (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff April/March
EU	4.34	4.37	**4.46**	+ 3	+ 2	+ 1
AT	5.58	5.62	**5.64**	+ 1	+ 0	+ 0
BE	—	—	—	—	—	—
BG	3.22	3.76	**3.38**	+ 5	– 10	+ 0
CY	—	—	—	—	—	—
CZ	4.96	4.94	**5.06**	+ 2	+ 2	+ 0
DE	5.94	5.85	**6.05**	+ 2	+ 4	+ 0
DK	—	—	—	—	—	—
EE	—	—	—	—	—	—
EL	2.36	1.80	**2.42**	+ 3	+ 35	+ 0
ES	2.34	1.42	**2.78**	+ 19	+ 96	+ 7
FI	—	—	—	—	—	—
FR	5.05	5.10	**5.08**	+ 1	– 1	+ 0
HR	—	—	—	—	—	—
HU	4.07	4.26	**4.31**	+ 6	+ 1	+ 0
IE	—	—	—	—	—	—
IT	4.44	4.54	**4.62**	+ 4	+ 2	+ 4
LT	3.30	3.09	**3.25**	– 2	+ 5	+ 0
LU	—	—	—	—	—	—
LV	—	—	—	—	—	—
MT	—	—	—	—	—	—
NL	—	—	—	—	—	—
PL	4.23	4.48	**4.28**	+ 1	– 5	+ 0
PT	1.33	0.75	**1.53**	+ 15	+ 105	+ 5
RO	3.79	4.30	**4.19**	+ 11	– 3	+ 0
SE	5.45	4.12	**5.36**	– 2	+ 30	+ 0
SI	—	—	—	—	—	—
SK	—	—	—	—	—	—

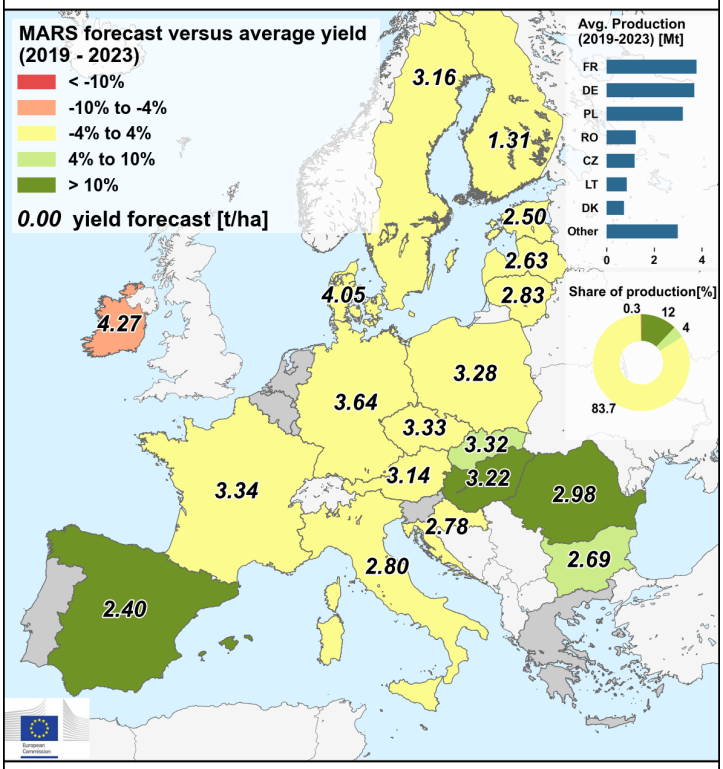
Triticale - yield forecast 2024



MARS Bulletin Vol. 32 No.4 (2024)

Country	Rape and turnip rape (t/ha)					
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	% Diff April/March
EU	3.18	3.20	**3.26**	+ 3	+ 2	+ 0
AT	3.11	3.23	**3.14**	+ 1	– 3	+ 0
BE	—	—	—	—	—	—
BG	2.58	2.62	**2.69**	+ 4	+ 3	+ 0
CY	—	—	—	—	—	—
CZ	3.24	3.40	**3.33**	+ 3	– 2	+ 0
DE	3.63	3.63	**3.64**	+ 0	+ 0	+ 0
DK	4.14	3.92	**4.05**	– 2	+ 3	+ 0
EE	2.55	1.98	**2.50**	– 2	+ 26	+ 0
EL	—	—	—	—	—	—
ES	2.12	1.62	**2.40**	+ 13	+ 48	+ 6
FI	1.30	1.29	**1.31**	+ 1	+ 2	+ 0
FR	3.26	3.17	**3.34**	+ 2	+ 6	+ 0
HR	2.71	2.93	**2.78**	+ 3	– 5	+ 0
HU	2.87	3.12	**3.22**	+ 12	+ 3	+ 0
IE	4.50	4.32	**4.27**	– 5	– 1	– 6
IT	2.82	2.71	**2.80**	– 1	+ 3	+ 0
LT	2.85	2.57	**2.83**	– 0	+ 10	+ 0
LU	—	—	—	—	—	—
LV	2.67	2.30	**2.63**	– 2	+ 14	+ 0
MT	—	—	—	—	—	—
NL	—	—	—	—	—	—
PL	3.19	3.38	**3.28**	+ 3	– 3	+ 0
PT	—	—	—	—	—	—
RO	2.69	3.01	**2.98**	+ 11	– 1	+ 0
SE	3.20	2.45	**3.16**	– 1	+ 29	+ 0
SI	—	—	—	—	—	—
SK	3.12	3.55	**3.32**	+ 6	– 7	+ 0

Rapeseed - yield forecast 2024



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Country	Wheat (t/ha)				
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23
BY	3.54	3.38	**3.65**	+ 3	+ 8
DZ	1.64	N/A	**1.57**	– 4	N/A
MA	1.58	N/A	**1.20**	– 25	N/A
TN	2.07	N/A	**2.26**	+ 9	N/A
TR	2.93	3.22	**3.09**	+ 6	– 4
UA	4.22	4.63	**4.63**	+ 10	+ 0
UK	8.17	8.10	**7.78**	– 5	– 4

Country	Barley (t/ha)				
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23
BY	2.88	2.75	**3.03**	+ 5	+ 10
DZ	1.13	N/A	**1.14**	+ 1	N/A
MA	1.02	N/A	**0.77**	– 25	N/A
TN	1.18	N/A	**1.30**	+ 10	N/A
TR	2.52	2.78	**2.74**	+ 9	– 2
UA	3.47	3.74	**3.57**	+ 3	– 5
UK	6.31	6.10	**6.33**	+ 0	+ 4

Country	Grain maize (t/ha)				
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23
BY	5.43	5.56	**5.74**	+ 6	+ 3
DZ	—	—	—	—	—
MA	—	—	—	—	—
TN	—	—	—	—	—
TR	9.29	9.40	**9.52**	+ 3	+ 1
UA	6.88	7.60	**7.21**	+ 5	– 5
UK	—	—	—	—	—

Country	Soybean (t/ha)				
	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23
BY	—	—	—	—	—
DZ	—	—	—	—	—
MA	—	—	—	—	—
TN	—	—	—	—	—
TR	4.22	4.21	**4.36**	+ 3	+ 4
UA	2.37	2.60	**2.50**	+ 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.

Sources: 2019-2024 data come from DG Agriculture and Rural Development short-term-outlook data (dated March 2024, received on 20.03.2024), Eurostat Eurobase (last update: 13.03.2024), ELSTAT, Statistics Netherlands (CBS) and EES (last update: 15.11.2017).

Non-EU 2019-2023 data come from USDA, INRA Maroc, ONICL 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: 13.03.2024), 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 10.04.2024).

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

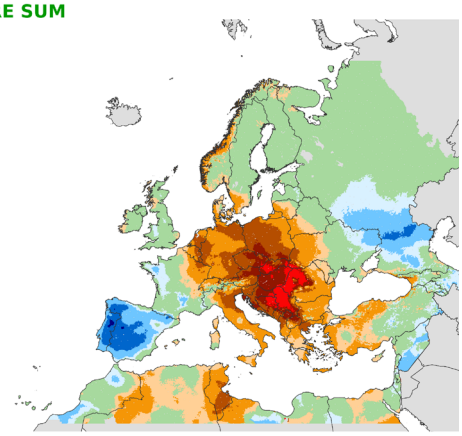
Temperature regime

TEMPERATURE SUM

from: **01 March 2024**
to: **10 March 2024**

Deviation:
Year of interest - LTA
Base temperature: 0 °C

Units: °C
- >= -40 - < -30
- >= -30 - < -20
- >= -20 - < -10
- >= -10 - < -5
- >= -5 - < 5
- >= 5 - < 10
- >= 10 - < 20
- >= 20 - < 30
- >= 30 - < 40
- >= 40



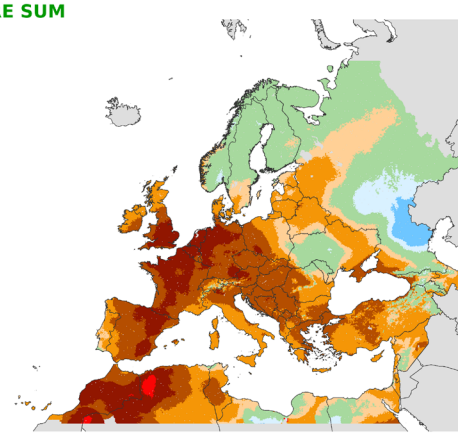
15/04/2024
Resolution: 10 x 10 km

TEMPERATURE SUM

from: **11 March 2024**
to: **20 March 2024**

Deviation:
Year of interest - LTA
Base temperature: 0 °C

Units: °C
- >= -20 - < -10
- >= -10 - < -5
- >= -5 - < 5
- >= 5 - < 10
- >= 10 - < 20
- >= 20 - < 30
- >= 30 - < 40
- >= 40



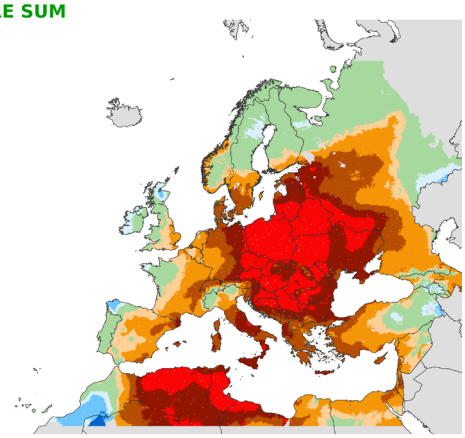
15/04/2024
Resolution: 10 x 10 km

TEMPERATURE SUM

from: **21 March 2024**
to: **31 March 2024**

Deviation:
Year of interest - LTA
Base temperature: 0 °C

Units: °C
- < -40
- >= -30 - < -20
- >= -20 - < -10
- >= -10 - < -5
- >= -5 - < 5
- >= 5 - < 10
- >= 10 - < 20
- >= 20 - < 30
- >= 30 - < 40
- >= 40

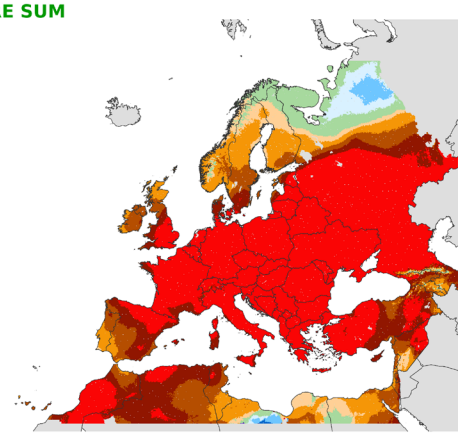


15/04/2024
Resolution: 10 x 10 km

TEMPERATURE SUM

from: **01 April 2024**
to: **13 April 2024**

Deviation:
Year of interest - LTA
Base temperature: 0 °C
Units: °C
- < -40
- >= -40 - < -30
- >= -30 - < -20
- >= -20 - < -10
- >= -10 - < -5
- >= -5 - < 5
- >= 5 - < 10
- >= 10 - < 20
- >= 20 - < 30
- >= 30 - < 40
- >= 40



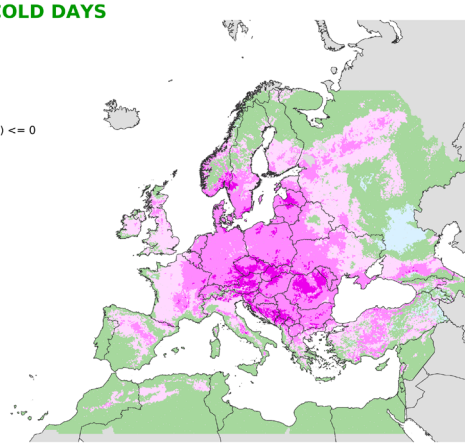
15/04/2024
Resolution: 10 x 10 km

NUMBER OF COLD DAYS

from: **01 March 2024**
to: **31 March 2024**

Deviation:
Year of interest - LTA
Minimum temperature (°C) <= 0

Units: days
- <= -15
- > -15 - <= -10
- > -10 - <= -5
- > -5 - < -1
- no difference
- > 1 - <= 5



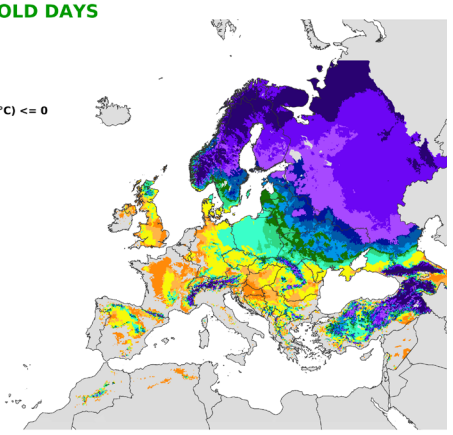
15/04/2024
Resolution: 10 x 10 km

NUMBER OF COLD DAYS

from: **01 March 2024**
to: **31 March 2024**

Period of interest
Minimum temperature (°C) <= 0

Units: days
- 0
- 1
- > 1 - <= 2
- > 2 - <= 5
- > 5 - <= 8
- > 8 - <= 10
- > 10 - <= 13
- > 13 - <= 15
- > 15 - <= 18
- > 18 - <= 20
- > 20 - <= 25
- > 25 - <= 30
- > 30

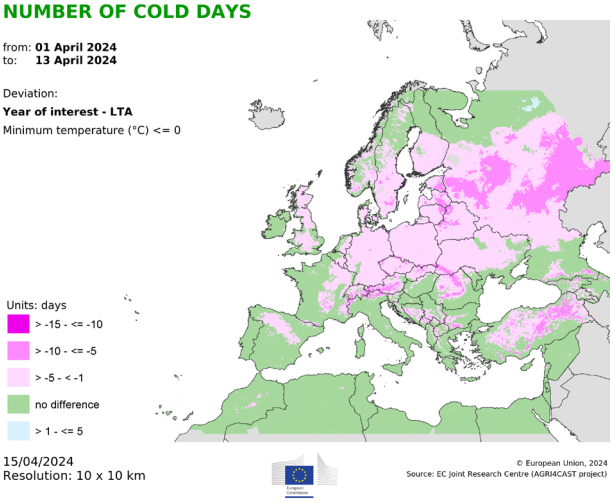


15/04/2024
Resolution: 10 x 10 km

NUMBER OF COLD DAYS

from: **01 April 2024**
to: **13 April 2024**

Deviation:
Year of interest - LTA
Minimum temperature (°C) <= 0

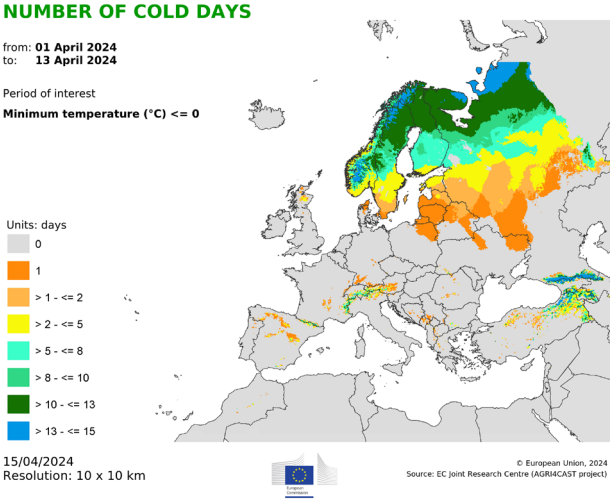


15/04/2024
Resolution: 10 x 10 km

NUMBER OF COLD DAYS

from: **01 April 2024**
to: **13 April 2024**

Period of interest
Minimum temperature (°C) <= 0



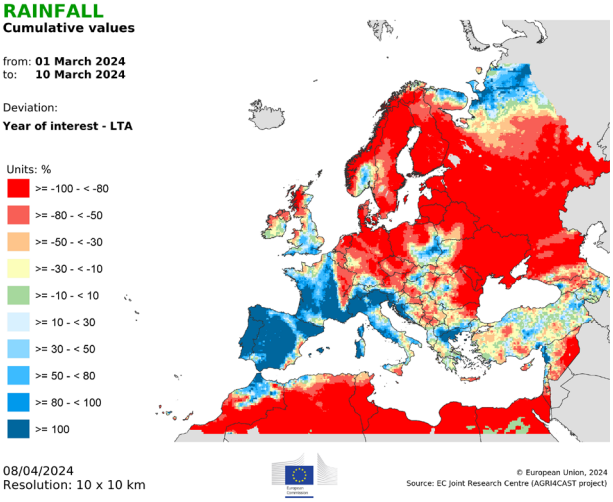
15/04/2024
Resolution: 10 x 10 km

Precipitation

RAINFALL
Cumulative values

from: **01 March 2024**
to: **10 March 2024**

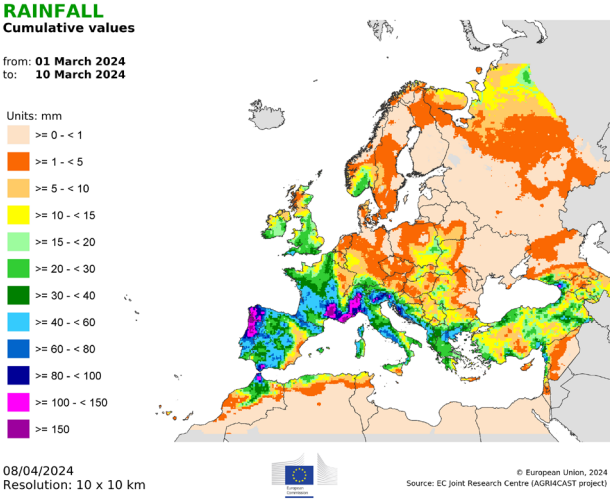
Deviation:
Year of interest - LTA



08/04/2024
Resolution: 10 x 10 km

RAINFALL
Cumulative values

from: **01 March 2024**
to: **10 March 2024**

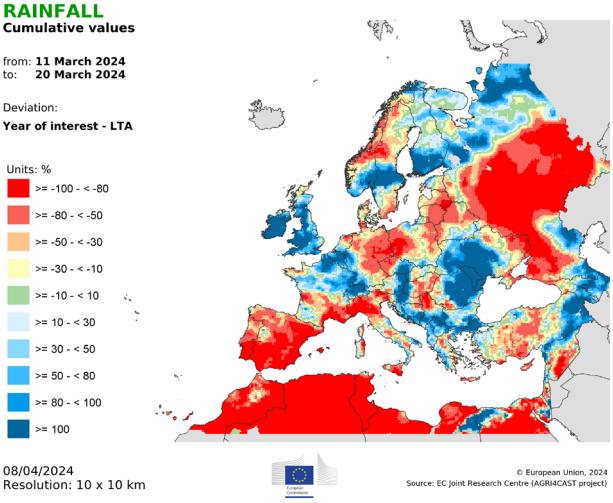


08/04/2024
Resolution: 10 x 10 km

RAINFALL
Cumulative values

from: **11 March 2024**
to: **20 March 2024**

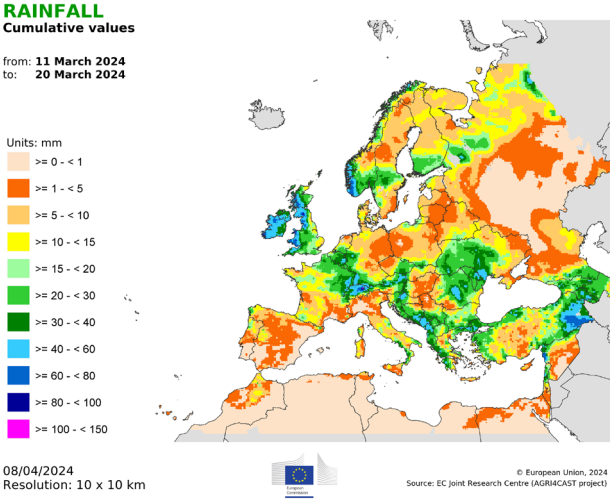
Deviation:
Year of interest - LTA



08/04/2024
Resolution: 10 x 10 km

RAINFALL
Cumulative values

from: **11 March 2024**
to: **20 March 2024**



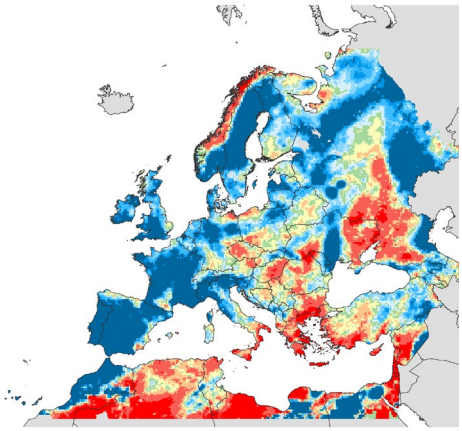
08/04/2024
Resolution: 10 x 10 km

RAINFALL
Cumulative values

from: **21 March 2024**
to: **31 March 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

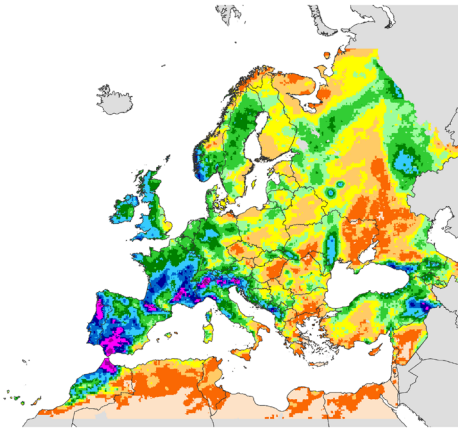


08/04/2024
Resolution: 10 x 10 km

RAINFALL
Cumulative values

from: **21 March 2024**
to: **31 March 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



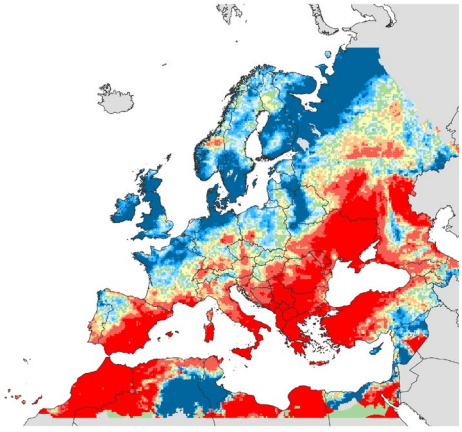
08/04/2024
Resolution: 10 x 10 km

RAINFALL
Cumulative values

from: **01 April 2024**
to: **13 April 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

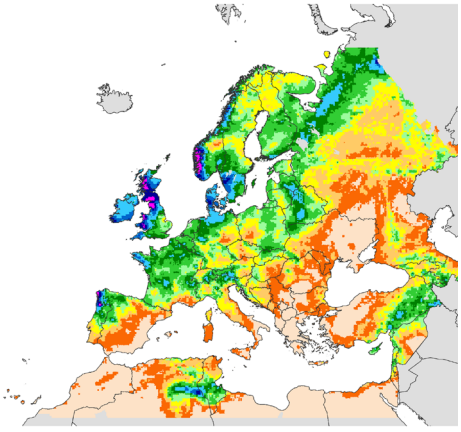


15/04/2024
Resolution: 10 x 10 km

RAINFALL
Cumulative values

from: **01 April 2024**
to: **13 April 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



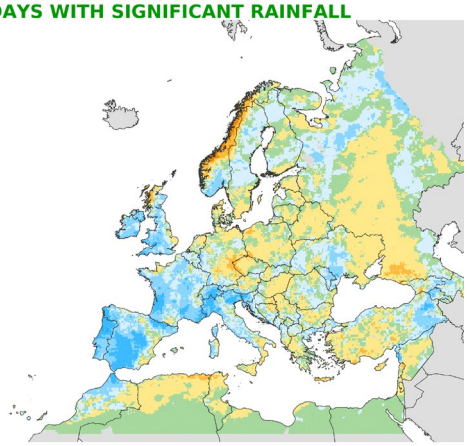
15/04/2024
Resolution: 10 x 10 km

NUMBER OF DAYS WITH SIGNIFICANT RAINFALL

from: **01 March 2024**
to: **31 March 2024**

Deviation:
Year of interest - LTA
Rain (mm) > 5

Units: days
- 11 - 15
- 6 - 10
- 3 - 5
- 1 - 2
- no difference
- -2 - -1
- -5 - -3
- -10 - -6



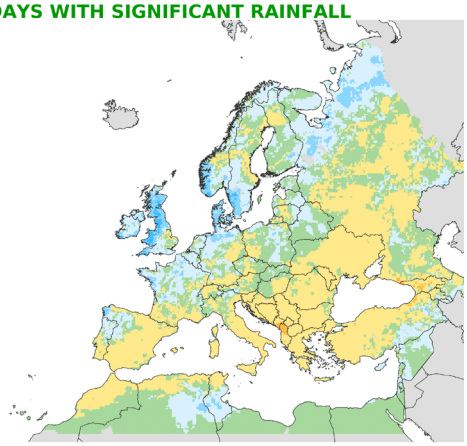
15/04/2024
Resolution: 10 x 10 km

NUMBER OF DAYS WITH SIGNIFICANT RAINFALL

from: **01 April 2024**
to: **13 April 2024**

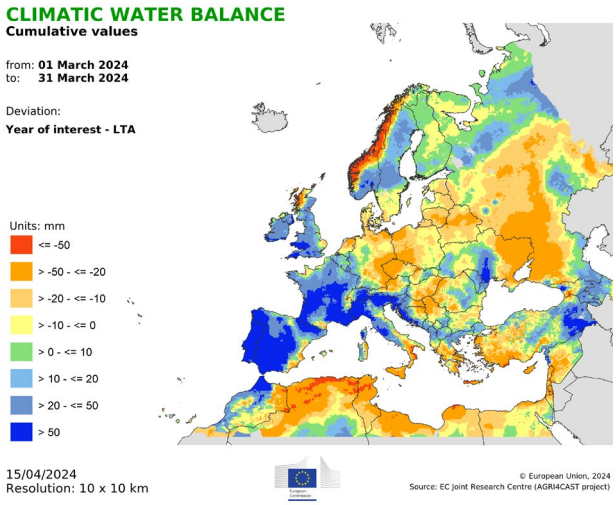
Deviation:
Year of interest - LTA
Rain (mm) > 5

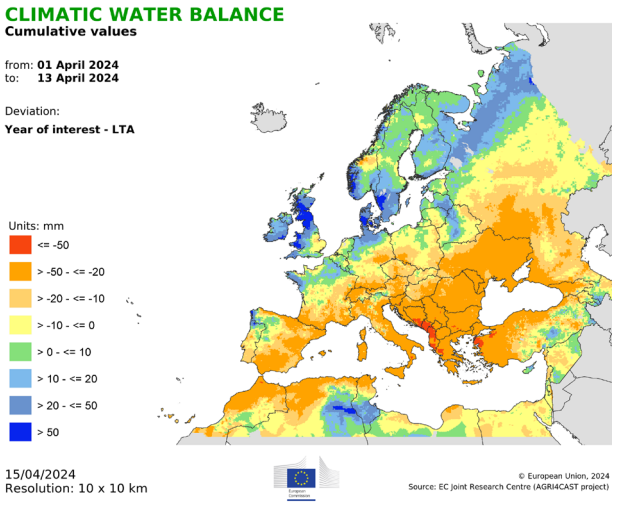
Units: days
- 6 - 10
- 3 - 5
- 1 - 2
- no difference
- -2 - -1
- -5 - -3



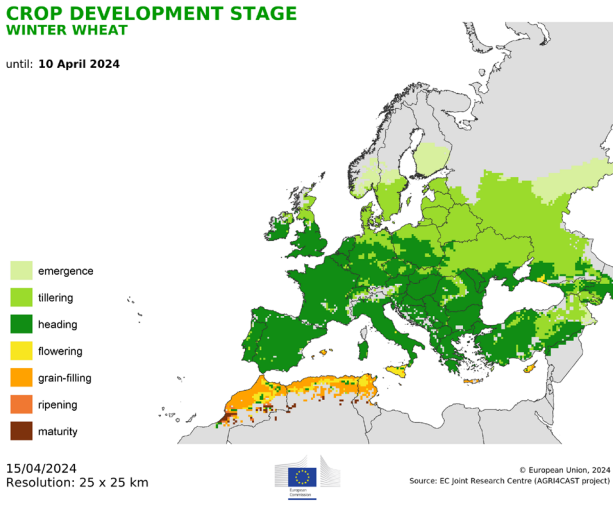
15/04/2024
Resolution: 10 x 10 km

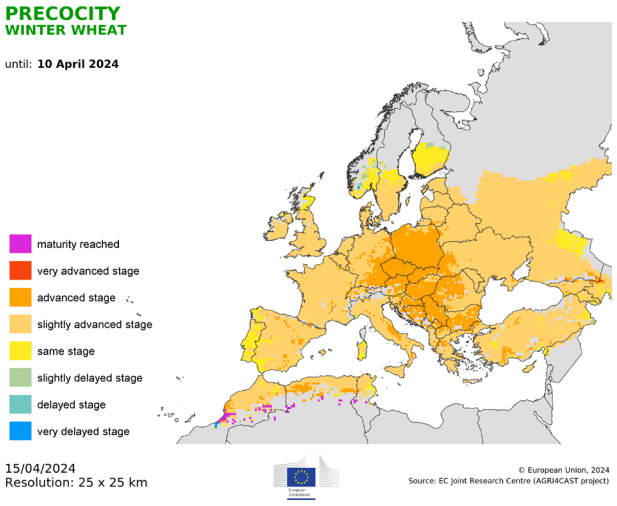
Climatic water balance

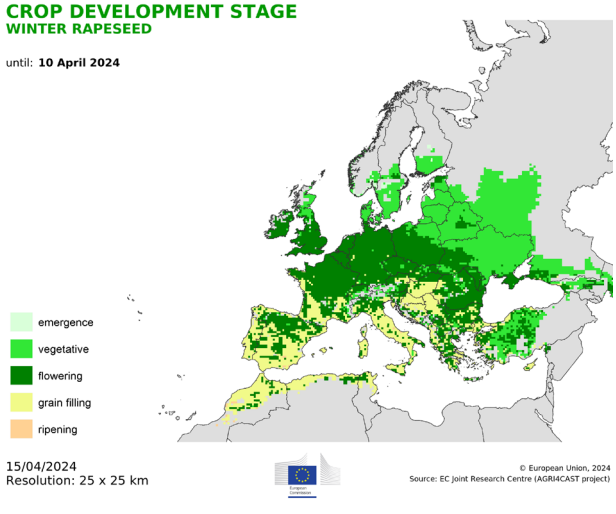


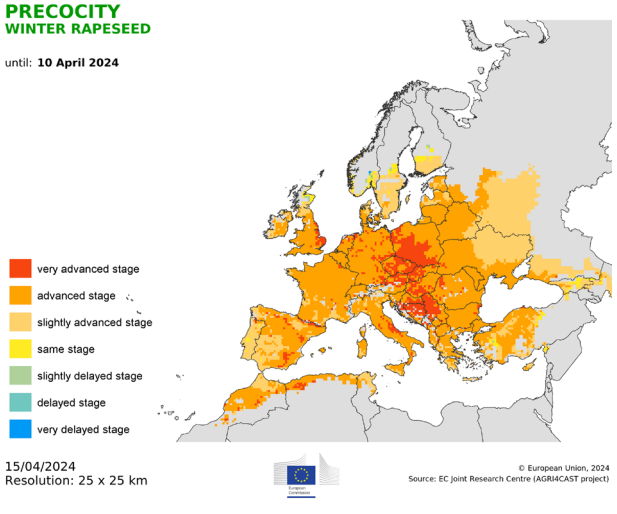


Crop development stages and precocity

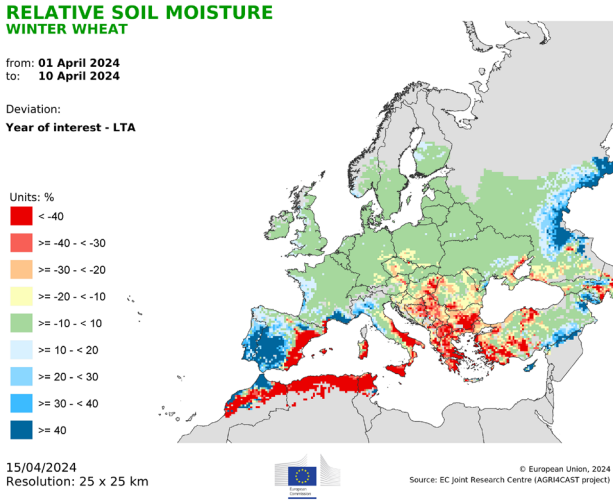


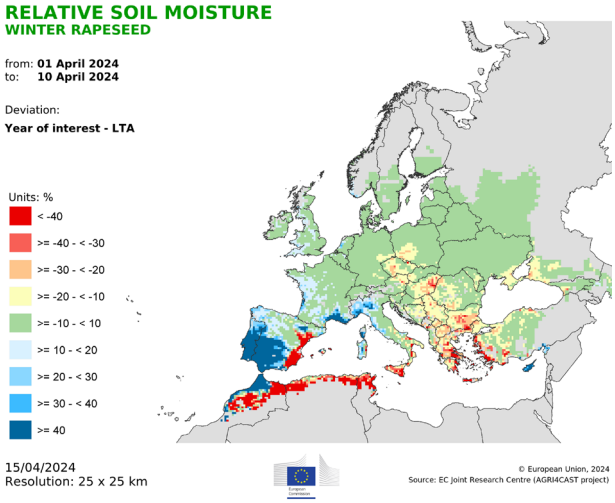






Relative soil moisture





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

Mission statement

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

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Analysis and reports

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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.

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