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European Commission

JRC MARS Bulletin

Crop monitoring in Europe

April 2021

Limited impacts of cold spells on annual crops

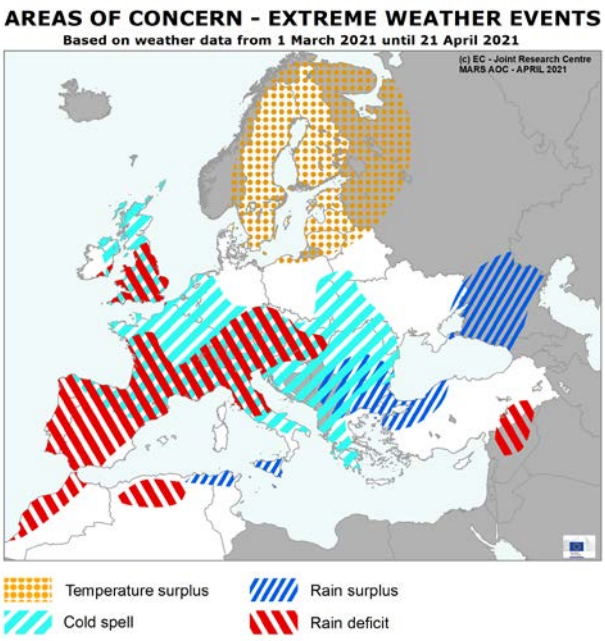
Many parts of Europe experienced colder-than-usual temperatures during the period of review, with distinct cold spells around mid-March and in the first half of April. Minimum temperatures on the coldest days were among the lowest in our records in a large belt extending from Scotland to southern Italy and Greece. Temperatures during this period strongly contrasted with a warm weather anomaly at the end of March.

Marked rain deficits were experienced in Mediterranean regions and in several parts of western and central Europe.

The cold and/or dry weather conditions hampered the growth and development of winter crops and caused delays to the sowing and emergence of spring and summer crops. Nevertheless, as it is still early in the season, negative impacts on annual crops are expected to have been very limited, and in only a few cases have led to significant downward revision of the yield forecasts, such as for rapeseed and durum wheat in France and several crops in Italy. Impacts on vineyards and fruit trees have been severe, however. The temperature surplus in northern regions and the precipitation surplus in eastern Europe and central Mediterranean regions were mostly favourable for crop growth.

Contents:

Covers the period from 1 March until 20 April



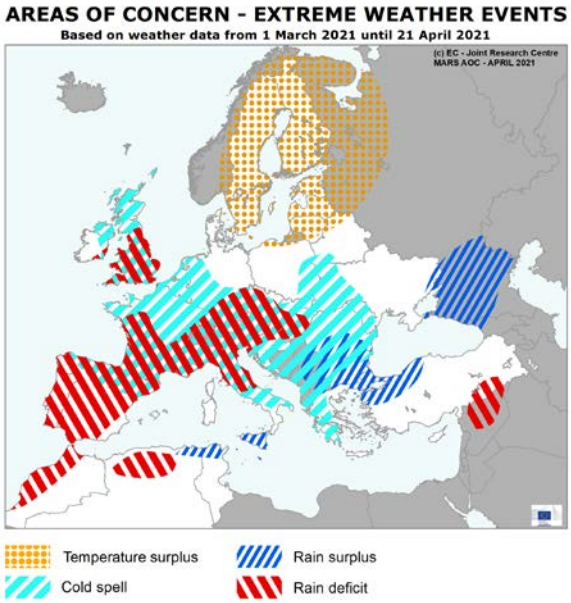
Crop	Yield t/ha				
	Avg 5yrs	March Bulletin	MARS 2021 forecasts	%21/5yrs	% Diff March
Total cereals	5.33	5.53	**5.52**	+ 3.6	-
Total wheat	5.47	5.67	**5.64**	+ 3.0	– 0.5
Soft wheat	5.69	5.89	**5.86**	+ 2.9	– 0.5
Durum wheat	3.49	3.60	**3.47**	– 0.8	– 3.6
Total barley	4.77	4.88	**4.86**	+ 1.7	-
Spring barley	4.12	4.11	**4.16**	+ 1.2	-
Winter barley	5.62	5.88	**5.83**	+ 3.7	– 0.9
Grain maize	7.75	7.85	**7.81**	+ 0.8	-
Rye	3.83	3.90	**3.98**	+ 3.9	+ 2.1
Triticale	4.07	4.20	**4.20**	+ 3.2	+ 0.0
Rape and turnip rape	3.05	3.26	**3.19**	+ 4.6	– 2.1
Potato	32.8	33.9	**33.9**	+ 3.5	-
Sugar beet	74.1	75.5	**75.6**	+ 1.9	-
Sunflower	2.26	2.20	**2.21**	– 2.4	-
Soybean	2.92	3.02	**3.01**	+ 3.0	-

Issued: 23 April 2021

Joint Research Centre

1. Agrometeorological overview

1.1. Areas of concern



A large region in western, southern, central and eastern Europe experienced colder-than-usual temperatures, with two cold spells around mid-March and in the first half of April. Temperatures dropped to values (-5 °C to -10 °C) among the three lowest on our records (since 1979) in large areas of France, Sardinia, central and northern Italy, south-western Germany, Slovenia, Croatia, Hungary, Slovakia, Austria, northern Bulgaria, southern Romania, North Macedonia, Greece and the northern UK. Temperatures during this period strongly contrasted with a warm weather anomaly at the end of March in central, western and south-western Europe, when temperatures were generally between 2 °C and 4 °C above the LTA, with maximum values reaching over 21 °C (regionally even over 25 °C). In northern regions (northern Germany, northern Poland, Sweden, Finland and the Baltic countries), temperature anomalies between 2 °C and 6 °C above the LTA were recorded. A more detailed characterisation of the cold spells is given in section 1.3 (page 4).

In Mediterranean regions and in western and central Europe (Spain, Portugal, central and southern France, southern UK, Italy, southern Germany, Austria, Czechia and Hungary), March and April were quite dry, with a precipitation deficit between -50% and -80%.

The above-mentioned cold and/or dry weather conditions, were unfavourable for most crops. Winter crop biomass accumulation slowed and phenological development moved from advanced to average (Germany, Austria, Czechia) or slightly delayed (Italy, France, United Kingdom). The sowing of spring and summer crops was delayed; where it did take place, emergence was slow and newly emerged plants suffered from the cold and/or dry weather. Nevertheless, as it is still early in the season, negative impacts on annual crops are expected to have been very limited, and in only a few cases have led to downward revision of the yield forecasts at national level (e.g. France, rapeseed and durum wheat; Italy, soft wheat, durum wheat, winter barley). However, in several regions there have been severe impacts on vineyards and fruit trees (see section 1.3).

The temperature surplus in northern regions and the precipitation surplus in eastern Europe (Romania, Bulgaria and Turkey) and central Mediterranean regions (southern Italy, Tunisia and eastern Algeria) were mostly favourable for crop growth.

The dry spell in the western Maghreb region had no significant effect on Moroccan crops (at the end of the grain filling phase), but led to reduce yield expectations in Algeria.

1.2. Meteorological review (1 March until 20 April 2021)

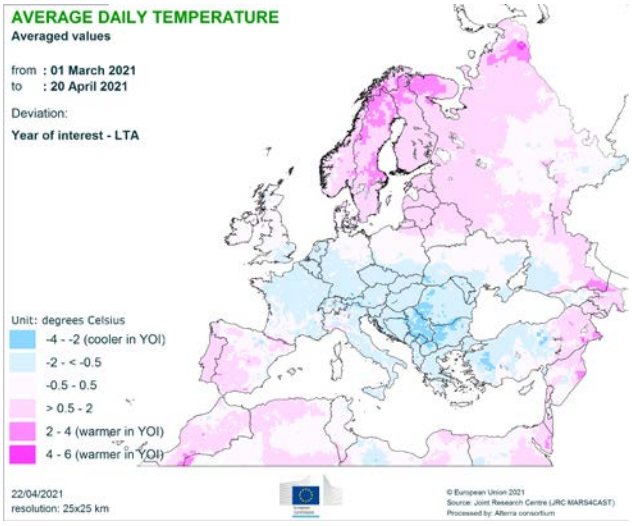
Slightly colder-than-usual conditions were observed in most of central and southern Europe, with daily mean temperature anomalies, with respect to the LTA, from -2 °C (locally -4 °C) to -0.5 °C. Large areas of France, Italy, south-eastern Europe and the United Kingdom experienced a **higher-than-usual number of cold days** (with daily minimum temperature below 0 °C), with anomalies above 80%.

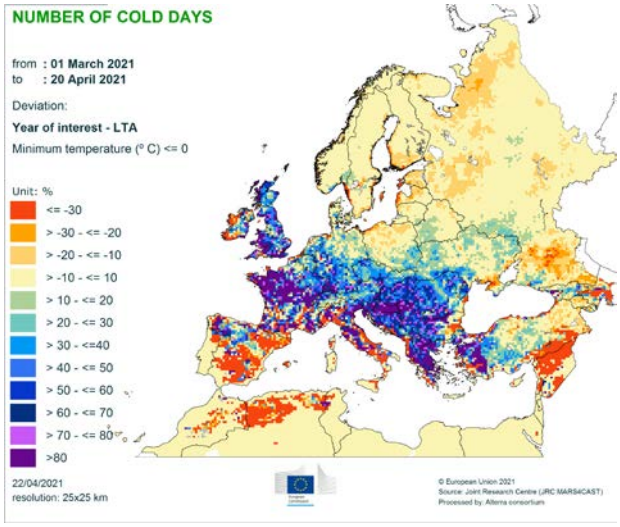
A series of cold spells affected the areas that overall experienced slightly colder-than-usual conditions. The first occurred during the first 10 days of March, followed by another in the second half of the month. At the end of March/beginning of April, warmer-than-usual conditions interrupted this series; very high daily temperature anomalies were recorded, mainly from +4 °C to +6 °C but up to +8 °C in large areas. This was followed by two more cold spells during the first half of April. A more detailed description of these events and their impacts is given in the dedicated section 1.3, on page 4.

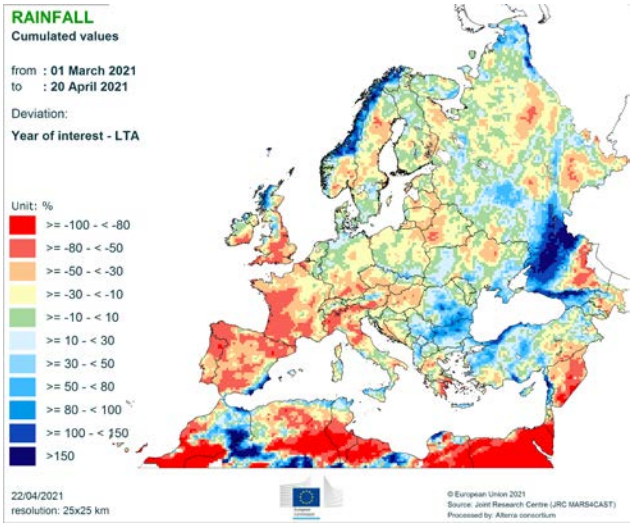
Slightly warmer-than-usual conditions were observed in the Baltic countries and the Scandinavian Peninsula, and in large regions of European Russia, Turkey and the Iberian Peninsula. Daily mean temperature anomalies ranged from +0.5 °C to +2 °C (locally +4 °C).

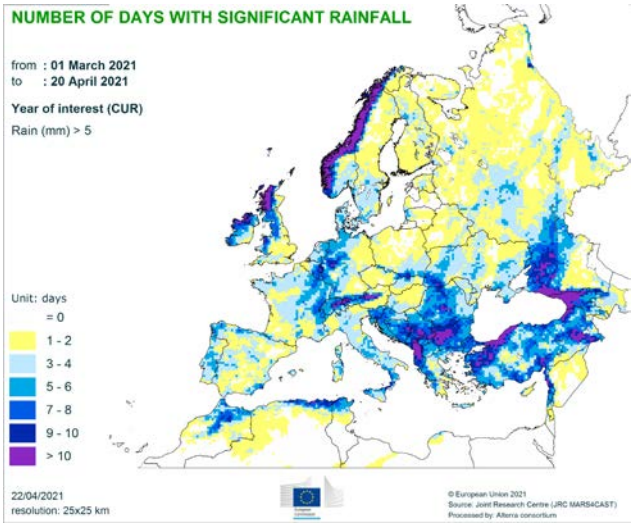
Drier-than-usual conditions were observed in large regions of western and central Europe, southern Ireland and the United Kingdom. Total precipitation anomalies ranging from -80% to -50% were recorded in large areas of Portugal, France, Italy, Ireland and England. In the other regions, anomalies were mainly from -50% to -30%.

Wetter-than-usual conditions were mainly observed in large areas of south-eastern Europe, Turkey, Norway and southern European Russia. Total precipitation anomalies were mainly from +50% to +80%, except for the southern part of European Russia and Norway, where higher values (above +100%) were recorded.









1.3. Expected impacts of the cold spells in Europe

After an exceptionally warm end to March, minimum temperatures during the cold spell in April were among the lowest recorded since 1979 for this time of year in large parts of Europe. We expect impacts to annual crops to be limited, but damage to fruit trees and vines may have been severe. The regions most affected are France, central and northern Italy, Slovenia, Croatia, Hungary, Slovakia and northern Greece.

Weather conditions

The period since the beginning of March has been characterised by exceptional temperature variations. First, a pronounced cold wave occurred during mid-March, when average air temperatures dropped to 2-4 °C below the long-term average (LTA) in central Europe, France, Spain, Italy, and throughout south-eastern Europe. Locally, temperatures in the central Balkans dropped to 6 °C below the LTA. Minimum temperatures recorded during this period were generally below -5 °C (regionally down to -10 °C) in central parts of Europe and the Balkan region. The cold weather during mid-March was followed by an exceptionally warm weather anomaly at the end of March and in the first days of April over major parts of Europe (except south-eastern Europe and Turkey, where the weather was slightly colder than usual). In central, western and south-western Europe, temperatures were generally between 2 °C and 4 °C above the LTA, with maximum values reaching above 21 °C (regionally even above 25 °C).

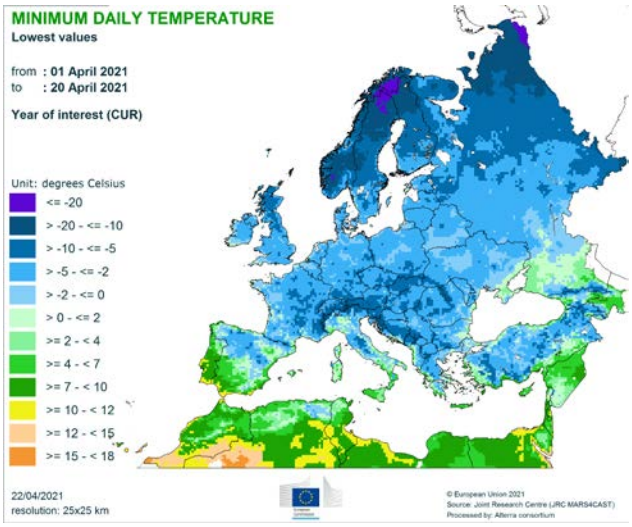
This period ended with a polar air intrusion after 4 April, progressing towards western, central and southern Europe. Minimum temperatures dropped below 0 °C, practically throughout Europe, except in the southern part of the Iberian Peninsula and in southern Mediterranean coastal areas. Minimum temperatures below -5 °C were recorded in several regions in France, northern and central Italy, southern Germany, Austria, Slovakia, Slovenia, Croatia, Hungary and south-eastern Europe. Locally – depending on micro-climatic conditions – minimum temperatures even dropped below -10 °C. Minimum temperatures reached at the beginning of April were the lowest, or among the three lowest, on our records (since 1979) in large areas of France, Sardinia, central and northern Italy, south-western Germany, Slovenia, Croatia, Hungary, Slovakia, Austria, northern Bulgaria, southern Romania, North Macedonia, Greece and northern UK. This cold wave was also characterised by persistence, with several consecutive days seeing minimum daily temperatures well below 0 °C.

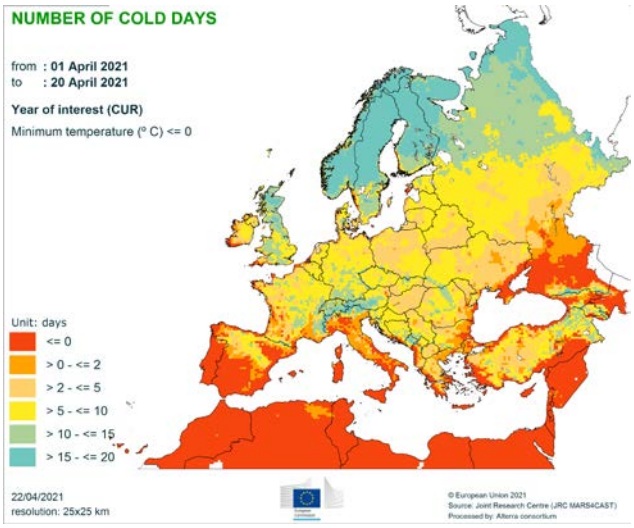
Expected impacts on annual crops

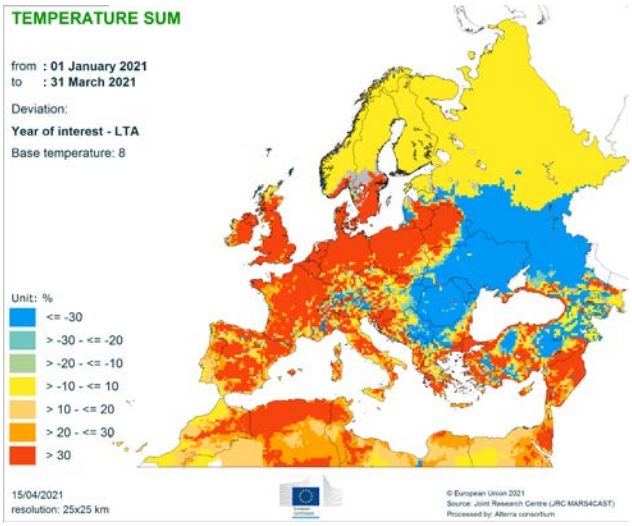
According to our model simulations, the intensive cold wave in April did not cause any substantial additional damage to soft winter wheat across Europe, beyond the levels reported in the March issue of the JRC MARS Bulletin. Frost may have caused some damage to emerging stands of early sown spring and summer crops, such as spring barley, sugar beet and potatoes. According to secondary information (such as local contacts and local news reports), spring barley has been negatively affected, especially in Slovakia, Czechia and northern Hungary by a combination of cold and dry anomalies. Low temperatures in France are expected to have caused damage to durum wheat, as well as to early winter rapeseed varieties, which were exposed to low temperatures during the sensitive stage of flowering. Part of the early-sown sugar beet needs to be re-sown. However, in the main production regions for sugar beet (as well as potatoes), most of these crops had not yet emerged and are expected to have suffered little or no damage.

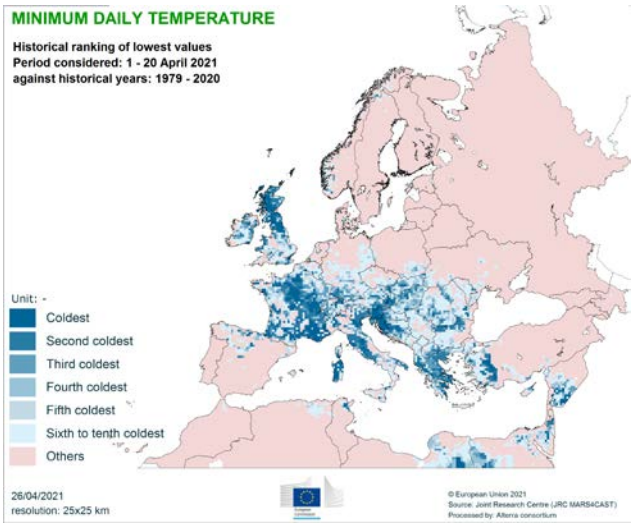
Expected impacts on fruit trees and vines

Overall, the mild progress of the winter, with exceptionally warm temperatures recorded in the second half of February and at the end of March, contributed to advanced phenological development of fruit trees and common grape vine in western, central and southern Europe, as reflected in well above-average sums of active temperatures. Consequently, the sensitive flowering period for many fruits was advanced compared with an average year. Hence, the arrival of a cold polar air mass over most of western, central and southern Europe is likely to have caused substantial damage. The extent of this mainly depends on the phenological stage of plants at the time the freezing air arrived, the duration of prevailing negative temperatures, and the minimum temperatures reached. Many regions in eastern France and in central and south-eastern Europe recorded freezing temperatures for several consecutive days, amplifying the overall damage. According to secondary information, the cold wave – with record low temperatures after 4 April – has caused major damage in vineyards and in orchards growing stone fruits (especially peach, apricot, cherry and plum) and to a lesser extent apples and pears, in widespread areas of France, central and northern Italy, Slovenia, Croatia, Hungary, Slovakia and northern Greece. Substantial damage to fruit trees has also been reported regionally in Austria, Czechia and southern Germany.









1.4. Weather forecast (23-30 April)

Weather conditions will be mainly determined by a large-scale cyclonic disturbance centred over the Baltic Sea, which will favour cold air intrusion in central, eastern and northern Europe. At the beginning of the forecast period, a ridge will determine weather conditions over most of western Europe and the Mediterranean, but a cyclonic disturbance will then approach these areas, triggering rainfall events.

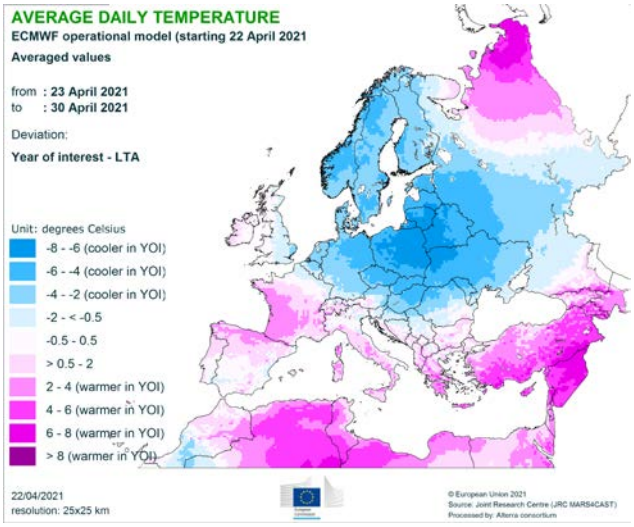
Colder-than-usual conditions are forecast in the western part of the Iberian Peninsula and in Russia, with daily mean temperature anomalies (with respect to the LTA) from – 4 °C to – 2 °C. **Slightly colder-than-usual conditions** are expected in Spain, western France, southern Italy, western Greece, Albania and southern Turkey. In these regions, daily mean temperature anomalies will not drop below – 2 °C.

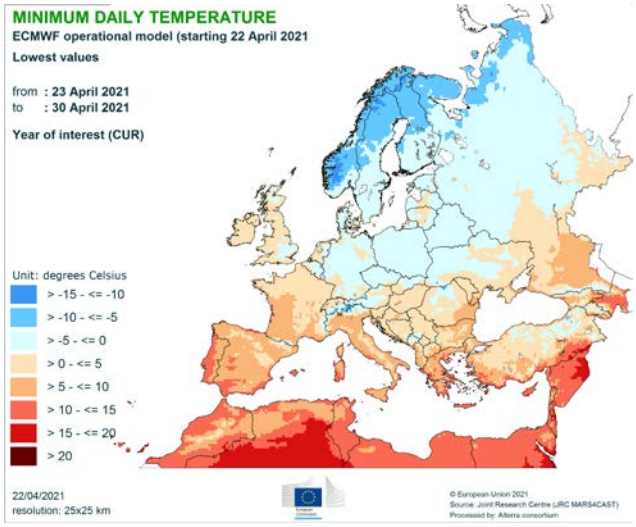
Warmer-than-usual conditions will prevail over most of central, eastern and northern Europe, with daily mean temperature anomalies mainly ranging from 2 °C to 4 °C, but up to 6 °C in a large region between Germany, Poland and Denmark. In most regions, daily maximum temperatures are not expected to exceed 28 °C. Nevertheless, in large areas they may reach 30-32 °C. In a large region of the Scandinavian Peninsula, as well as in the southern part of European Russia, the anomalies will range from 6 °C to 8 °C. In the latter region, daily maximum temperatures are forecast to exceed 35 °C.

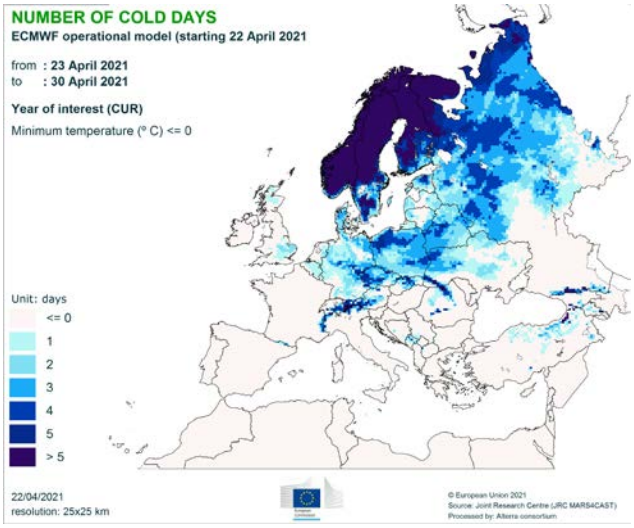
Dry conditions, with less than 5 mm of accumulated precipitation, are expected in a large region centred over Poland, as well as in Sweden and Spain.

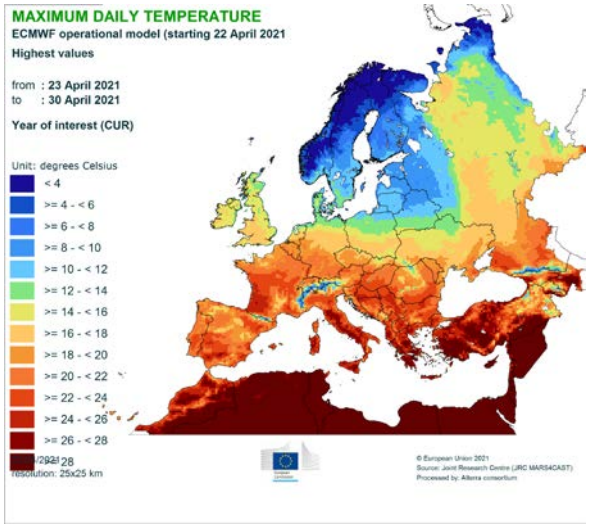
Wet conditions, with accumulated precipitation mostly ranging between **40 mm and 60 mm** (locally above 60 mm), are forecast in an elongated region running from the Netherlands to north-western Italy, and in a region running from Romania to eastern Belarus.

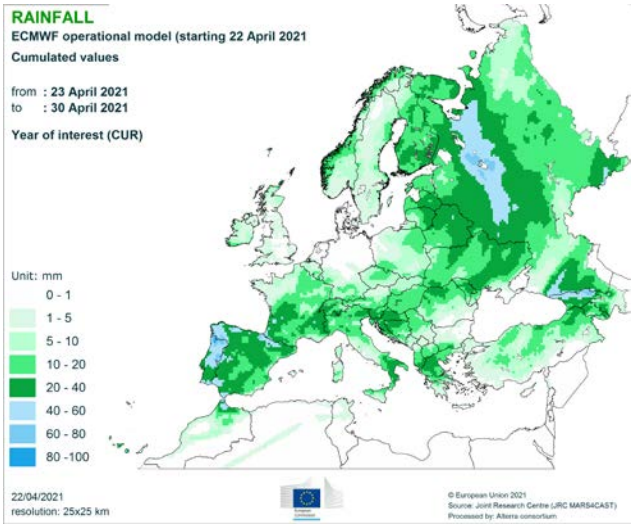
The long-range weather forecast for July, August and September indicates warmer-than-usual conditions are likely to occur in the Mediterranean region and south-eastern Europe. In the rest of Europe, warmer-than-usual conditions are more likely than not. Forecasts also indicate potentially drier-than-usual conditions in most of Europe.

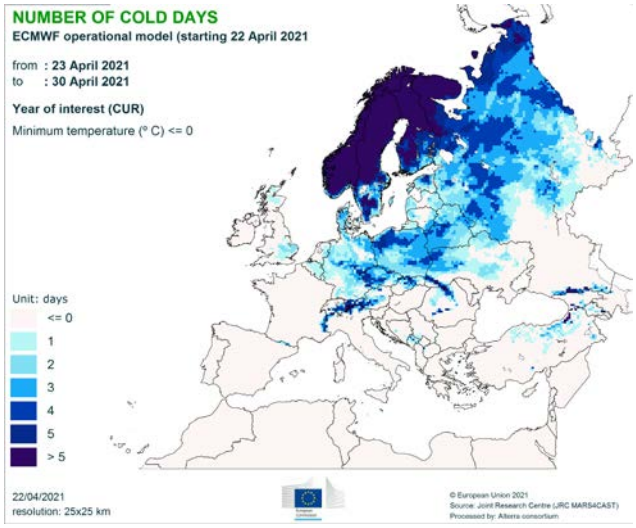





NUMBER OF COLD DAYS
ECMWF operational model (starting 22 April 2021
from : 23 April 2021
to : 30 April 2021
Year of interest (CUR)
Minimum temperature (° C) <= 0
Unit: days
<= 0
1
2
3
4
5
> 5
22/04/2021
resolution: 25x25 km
© European Union 2021
Source: Joint Research Centre (JRC MARS4CAST)
Processed by: Altera consortium

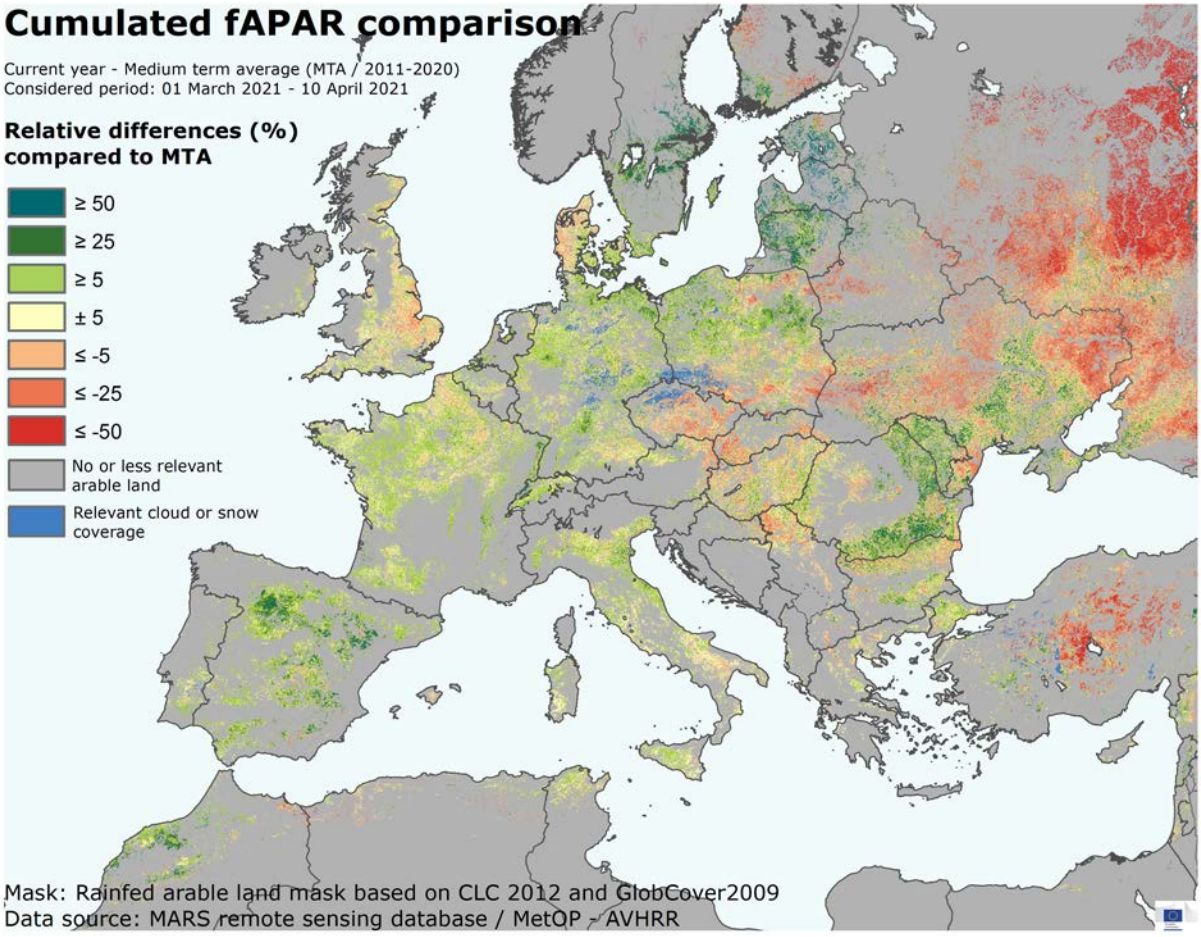

MAXIMUM DAILY TEMPERATURE
ECMWF operational model (starting 22 April 2021
Highest values
from : 23 April 2021
to : 30 April 2021
Year of interest (CUR)
Unit: degrees Celsius
< 4
>= 4 - < 6
>= 6 - < 8
>= 8 - < 10
>= 10 - < 12
>= 12 - < 14
>= 14 - < 16
>= 16 - < 18
>= 18 - < 20
>= 20 - < 22
>= 22 - < 24
>= 24 - < 26
>= 26 - < 28
>= 28
resolution: 25x25 km
© European Union 2021
Source: Joint Research Centre (JRC MARS4CAST)
Processed by: Altera consortium


RAINFALL
ECMWF operational model (starting 22 April 2021
Cumulated values
from : 23 April 2021
to : 30 April 2021
Year of interest (CUR)
Unit: mm
0 - 1
1 - 5
5 - 10
10 - 20
20 - 40
40 - 60
60 - 80
80 -100
22/04/2021
resolution: 25x25 km
© European Union 2021
Source: Joint Research Centre (JRC MARS4CAST)
Processed by: Altera consortium


NUMBER OF COLD DAYS
ECMWF operational model (starting 22 April 2021
from : 23 April 2021
to : 30 April 2021
Year of interest (CUR)
Minimum temperature (° C) <= 0
Unit: days
<= 0
1
2
3
4
5
> 5
22/04/2021
resolution: 25x25 km
© European Union 2021
Source: Joint Research Centre (JRC MARS4CAST)
Processed by: Altera consortium

2. Remote sensing – observed canopy conditions

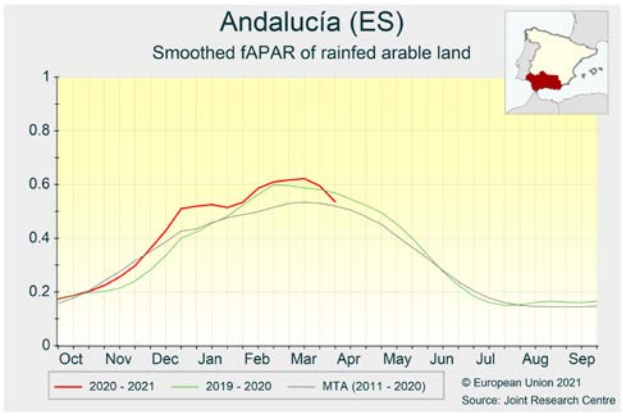
Early start to the season all over Europe

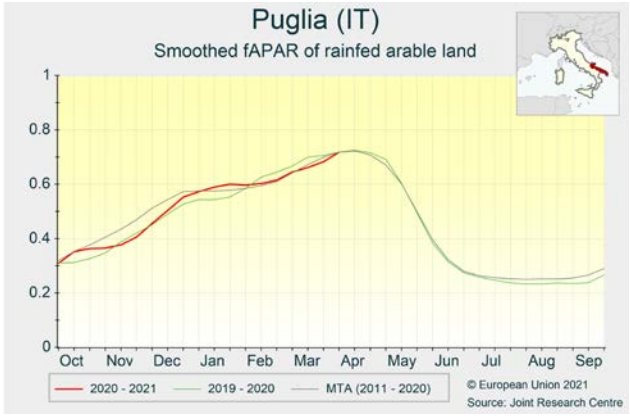


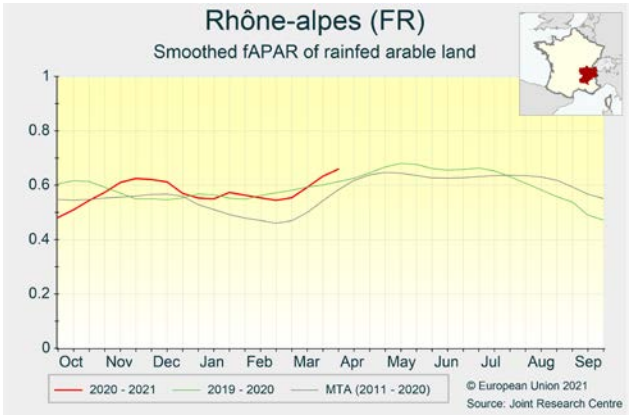
The map displays the differences between the fraction of Absorbed Photosynthetically Active Radiation (fAPAR) cumulated from 1 March to 10 April 2021 and the medium-term average (MTA, 2011-2020) for the same period. Positive anomalies (in green) reflect above-average canopy density or early crop development while negative anomalies (in red) reflect below-average biomass accumulation or late crop development.
Relevant cloud coverage in the analysis period – with unrealistically low fAPAR values – is highlighted in blue on the map (Germany, Czechia, southern Poland). Neighbouring regions may also be somewhat affected by undetected clouds.

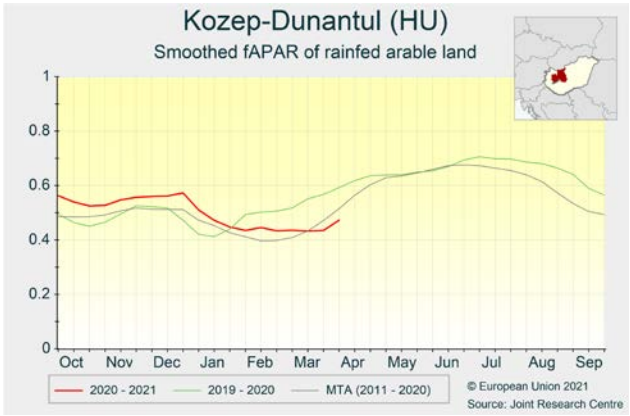
In **Spain**, crops benefited from rainy and warm weather during winter, resulting in advanced crop development. In central northern regions, winter crops are developing under favourable conditions. In southern regions (e.g. *Andalucía*) crop development is significantly advanced (by 30 to 40 days compared with the average); early-sown varieties have just passed flowering but more rain is needed to further sustain favourable crop development. In **southern Italy**, crop development and biomass accumulation are in line with the average, and winter crops are approaching flowering (e.g. *Puglia*). Crops in northern regions present advanced development and above-average biomass accumulation, sustained by abundant precipitation. Similar conditions are displayed in **France**, where winter crops experienced an early start to the season as a consequence of a mild winter. The advancement is most evident in southern regions (e.g. *Rhône-Alpes*). In **Germany** and **Poland**, the map shows widespread positive fAPAR anomalies (green), as a consequence of slightly early crop development driven by mild temperatures during early development (i.e. during November and December). It is noted, however, that in these regions the analysis lacks accuracy, due to persistent cloud coverage in the last 20 days of the analysis period. Clouds also interfered with the fAPAR data for central European regions (**Slovakia**, **Czechia**, **Austria** and **Hungary**), which registered a slight delay in the season with respect to the average (e.g. *Kozep-Dunantul*). In **Romania** and **Bulgaria,** the winter was warmer and wetter than usual, especially in January. Here, winter crop

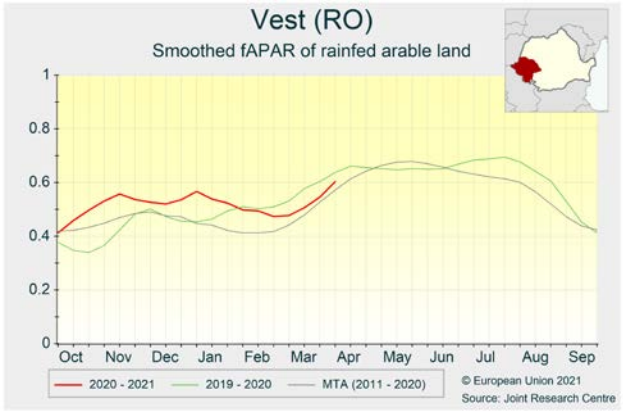
development is generally advanced (e.g. *Vest*), but with strong differences among regions (e.g. slightly delayed stages in eastern Bulgaria and very advanced stages in southern and western Romania). In **Ukraine**, after some days of rain in March, crop development started under fair conditions and fAPAR profiles are close to the average (e.g. *Khersons'ka*). The large areas with negative fAPAR anomalies in **Ukraine** and in **Russia** are associated with persistent cloud coverage. In the **United Kingdom**, the map shows predominantly below-average fAPAR values, which is attributed to persistent cloud coverage in the analysis period. In the **Maghreb** region, a favourable growing season – sustained by abundant precipitation – is coming to an end in **Morocco** (e.g. *Marrakech-Safi*), where crops are reaching maturity. In **Algeria,** dry conditions and warm temperatures led to below-average biomass accumulation. An extended negative anomaly (shown in red on the map) is displayed in central **Turkey**, where a strong delay in crop development is observed due to a very late sowing campaign caused by a very dry winter (e.g. *Konya*).

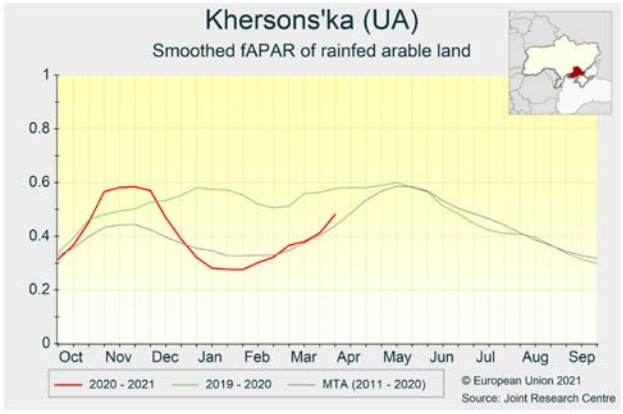


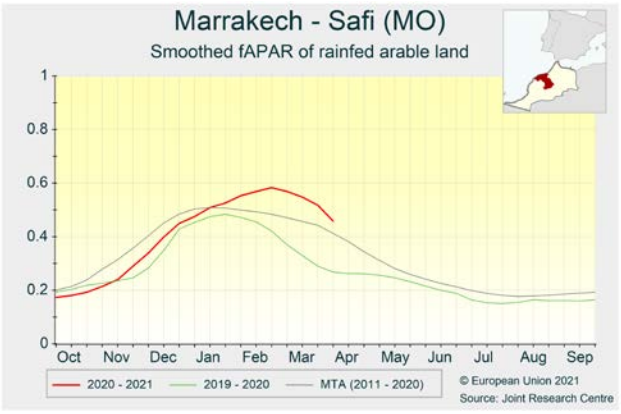


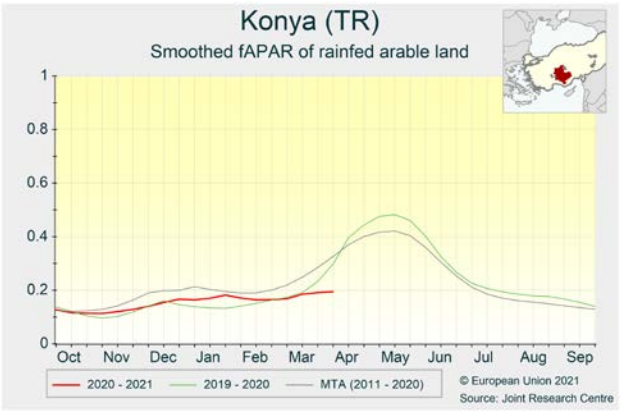








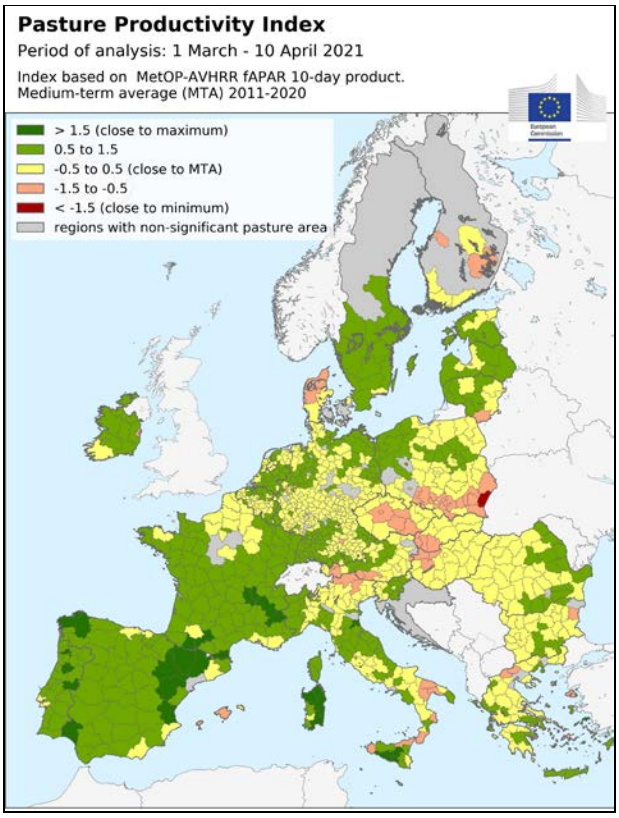

Marrakech - Safi (MO)
Smoothed fAPAR of rainfed arable land
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
2020 - 2021
2019 - 2020
MTA (2011 - 2020)
© European Union 2021
Source: Joint Research Centre


Konya (TR)
Smoothed fAPAR of rainfed arable land
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
2020 - 2021
2019 - 2020
MTA (2011 - 2020)
© European Union 2021
Source: Joint Research Centre

3. Pastures in Europe – regional monitoring

Favourable conditions in most of the EU

Pastures are in fair to good condition in most EU countries. In several regions, pasture growth was delayed due to limited water supply and/or one or more cold spells. The countries and regions most affected are Italy, Hungary, eastern France, Germany, Benelux, Austria, Czechia and Slovakia.



The pasture productivity index (PPI)[1] for the period 1 March to 10 April 2021 is shown on the map above.

Weather conditions during the review period were favourable for pasture growth in many parts of the EU. Adequate temperature and soil water conditions prevailed in most parts of **France, Finland, Latvia, Estonia, Lithuania, Denmark, Sweden, Slovenia, Croatia, Spain, Portugal, Greece, Bulgaria, Romania, Ireland**. Also in **Poland**, pastures in the main grassland areas are in good condition. Precipitation was below average during the review period, but soil water reserves built up over the wet preceding months was sufficient to sustain adequate growth.

In **Austria, Czechia** and **Slovakia**, temperatures and precipitation were slightly below the LTA, which resulted in below-average biomass accumulation. In **Hungary** (see fAPAR[2] graph for *Nyugat-Dunantul*), rainfall was far below average, resulting in stunted growth; substantial rainfall in the second half of April will have improved the situation.

Italy (see fAPAR graph for *Piemonte* and *Abruzzo*) experienced strong temperature oscillations, particularly in the south, which – combined with a dry start to spring – slowed growth and development.

Strong temperature fluctuations also affected pasture growth in **France** (e.g. *Franche-Comte*), the **Benelux** countries (e.g. *Overijssel*) and **Germany** (e.g. *Niederbayern* and *Schleswig-Holstein*), resulting in alternation between periods of accelerated growth and periods of strongly hampered growth. Overall, pasture growth has been around average to above average in these regions. The effect of the exceptional cold spell in the first half of April is not yet or only partly reflected in the map and graphs. No irreversible damage is expected to have occurred,

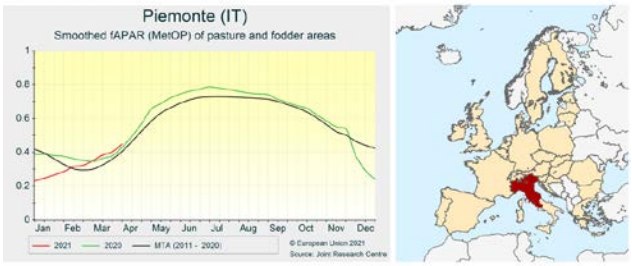
[1] PPI: the relative index of pasture productivity is an indicator of biomass formation based on the integration of the fAPAR remote sensing product of pasture areas (at NUTS3 level) over a period of interest. The index shows the relative position of the current season within the historical series from 2011 to 2020

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

however.

Italy - North and central

Reference period: 01 Mar to 10 Apr 2021



BULLETIN ISSUE

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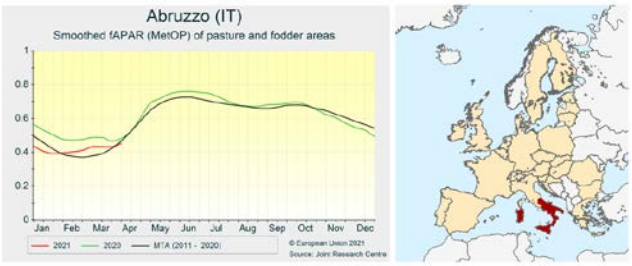
RAINFALL	N/A							
TEMPERATURE	N/A							
RADIATION	N/A							

Italy - South and islands

Reference period: 01 Mar to 10 Apr 2021



BULLETIN ISSUE

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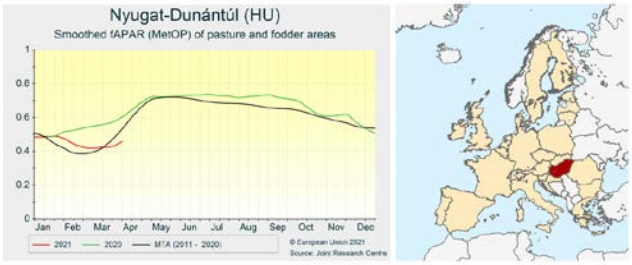
RADIATION	N/A							

Hungary

Reference period: 01 Mar to 10 Apr 2021



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RADIATION	N/A							

Austria, Czech Republic and Slovakia

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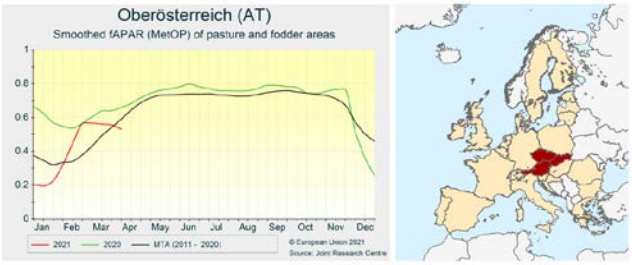

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Benelux

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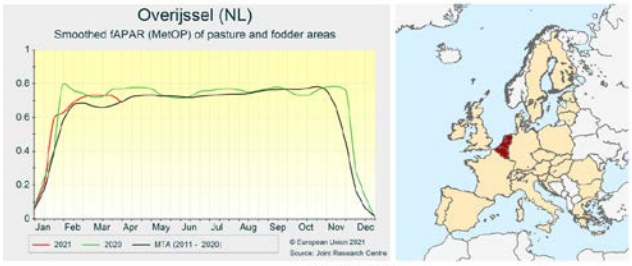

BULLETIN ISSUE

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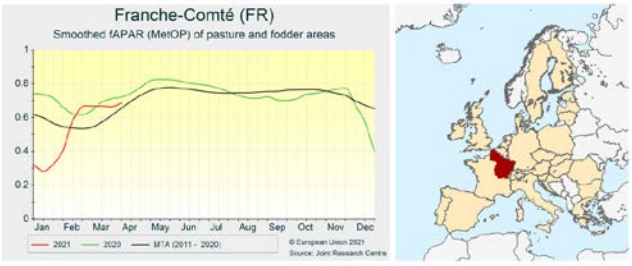
TEMPERATURE	N/A							
RADIATION	N/A							

France - East

Reference period: 01 Mar to 10 Apr 2021



BULLETIN ISSUE

	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT
RAINFALL	N/A							
TEMPERATURE	N/A							
RADIATION	N/A							

4. Sowing conditions

Spring barley

Good progress across Europe, with some delay in eastern regions

In Europe, sowing activities are mostly completed and crops have emerged well, but low temperatures slowed the campaign in eastern Europe.

In Spain, the largest spring barley-producing country in the European Union, sowing was completed by February and crops are in good condition. Spring barley sowings were also successfully completed in France, Benelux, Denmark, Germany and Poland, and were followed by good emergence. In Ireland and the United Kingdom, barley sowing activities are almost concluded, under adequate seed bed conditions and with no significant delays.

In Slovakia, Czechia and Hungary, spring barley sowings have been delayed by cold conditions, mostly combined with dry anomalies. In these countries, the earliest sown crops that emerged during the cold spell in early April suffered mostly during emergence.

In Romania, the sowing campaign has been progressing well, with some regional interruptions due to frequent rainfall events and cold temperatures in April.

While sowing usually starts in mid-April in the Baltic countries and Sweden, mild temperatures combined with adequate precipitation allowed the sowing campaign to be brought forward to early April.

In Ukraine, sowings progressed well and are nearly completed. The cold spell in mid-March prevented farmers from starting sowings until early April; however, this is only slightly delayed compared with an average season.

Sugar beet

Cold conditions caused delays to sowing and emergence

Colder-than-usual weather conditions have caused delays to sowing of sugar beet in many regions and slowed plant emergence.

Adequate thermal and topsoil moisture conditions allowed for a timely start to the sugar beet sowing campaign in France, around mid-March. However, freezing temperatures recorded during the first dekad of April had a very negative impact on plants during emergence and early development, especially in the central regions. As a consequence of frost damage, approximately 10% of the sown sugar beet area in France needs to be re-sown. In Germany and Poland, below-average daily temperatures during the first and second dekads of March led to delayed warming of the topsoil, and hence some delay in the sowing campaign (7-10 days, compared with last year). Favourable thermal conditions and dry weather allowed for good sowing progress during the third dekad of March, while in April, cold temperatures and rainfall events slowed the pace of field operations. Nevertheless, the sowing campaign is close to being finalised in Poland, where 90% of the area had been sown by 20 April. Similar agrometeorological conditions prevailed in the Benelux countries, where sugar beet sowing has almost been completed, as well as in Czechia, Slovakia and Austria. Across western and central Europe, cold spells during the first dekad of April prolonged the emergence and early development of sugar beet and raised concerns regarding the health of seedlings. In the UK, agrometeorological conditions were favourable for a timely start to sugar beet sowing during the second dekad of March, and the sowing campaign was conducted under adequate seed bed conditions.

Maize

Cold temperatures delaying the start of the sowing campaign

Cold conditions prevented early sowing in several of the main maize producing regions, but there is still sufficient time to complete the sowing campaign in a suitable window.

In Romania, Bulgaria, southern France, Italy and Greece, sowings started but emergence was slowed by suboptimal, lower-than-average air temperatures.
In Spain and Portugal, the sowing campaign was not hampered by cold conditions (temperatures were close to or above the LTA) but by the rainfall deficit, built up since the last dekad of February. Nevertheless, small rainfall events allowed sowing to progress and substantial rainfall forecast for the coming days is expected to provide optimal conditions for emergence and early growth.
In the other main producing countries further north, the negative air temperature anomalies observed from 1 April to 20 April, particularly pronounced in northern France, Belgium, Germany, Czechia, Austria and Poland (average temperatures 2-4 °C below the LTA), have so far prevented farmers from sowing because of too low soil temperatures.
While conditions in the past weeks prevented early sowing of maize under good conditions, as we are currently only at the start of the sowing window there is still sufficient time to benefit from better sowing conditions over coming weeks.

Sunflowers

Cold temperatures delay the sowing campaign

Sowing of sunflowers is generally delayed across Europe by cold temperatures. In some eastern regions, unfavourable temperatures were also combined with dry soils or frequent rainfall.

In Hungary and Croatia, the sowing campaign is delayed due to sub-optimal conditions for emergence – lower-than-usual soil temperatures and dry topsoils are not optimal for sprouting and early crop development, and can lead to uneven stands. However, sowing should be able to start later in April. In Romania and Bulgaria, sowings are progressing well, despite some delay due to cold temperatures combined with frequent rainfall which interrupted access to the fields. Sowing started on time in Greece, where cold temperatures mainly affected crop emergence.
The negative temperature anomalies in the review period also slightly delayed sowings in France, where the campaign is expected to be in full swing from the second half of April. Similarly in Italy, the low temperatures at the end of March and beginning of April delayed the earliest sowings. However, conditions are currently favourable in all regions and no further delays are expected.
In Spain and Portugal, recent rainfall created favourable conditions for soil preparation and sunflower sowing, which is currently ongoing.

5. Country analysis

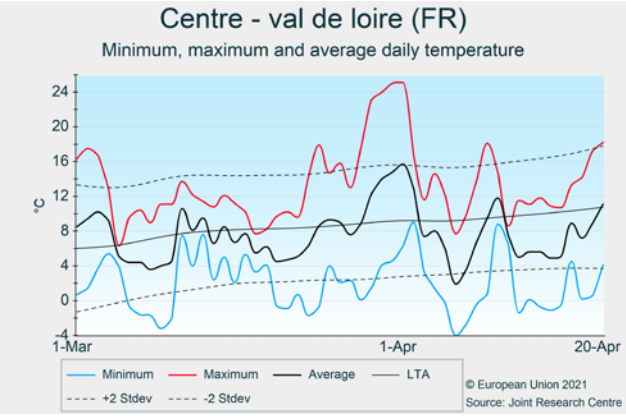
5.1. European Union

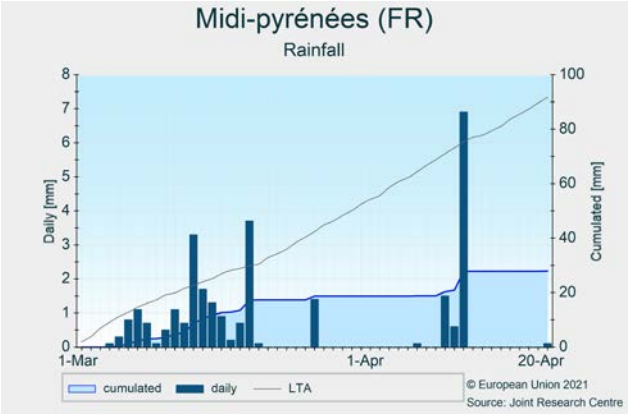
France

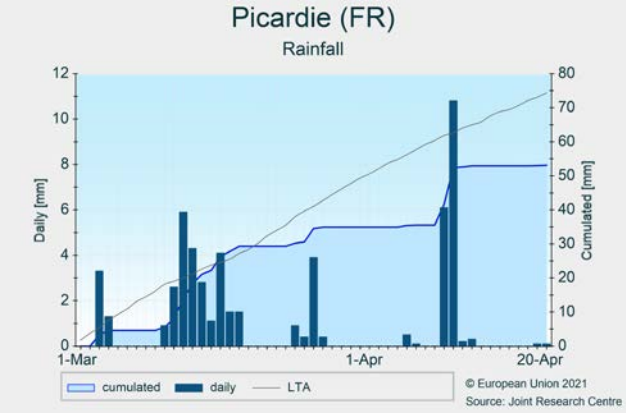
Harsh frosts have limited negative impacts on winter cereals

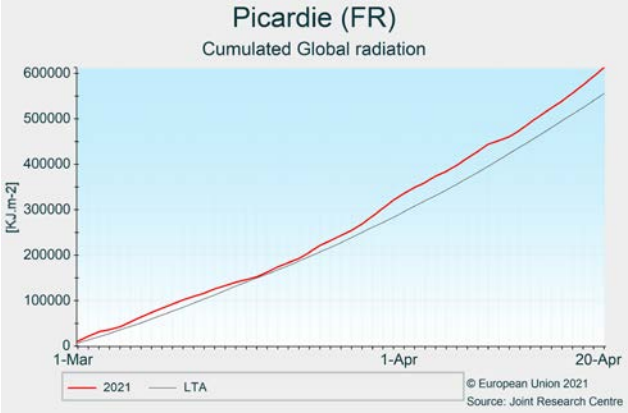
An exceptional thermal contrast was observed in the current analysis period: a pronounced warm anomaly with maximum temperatures reaching 23-25 °C on 31 March, suddenly followed by an exceptional cold spell with minimum temperatures reaching -3 °C to -7 °C on 6-7 April. A second cold snap, with several nights below 0 °C, added further stress to plants. In addition, a rain deficit is observed, which is particularly pronounced in the southern half of the country (50% below the LTA), aggravating the deficit already observed in the southernmost regions (*Aquitaine*, *Midi-Pyrénées*, *Languedoc-Roussillon*).

The cold spells substantially impacted fruit trees and vineyards, which were particularly advanced following the warm end to March. The impact on arable crops is expected to be much more limited. The most impacted crops are primarily early-sown sugar beet, which had emerged under good conditions. Here, some crops are expected to need ploughing up. Some partially reversible impacts are also expected for winter rapeseed, as the earliest varieties were already at the start of the flowering period. In light of the partially poor establishment that made rapeseed more vulnerable, the yield forecast has been revised downward. Durum wheat also suffered from the cold spell, as in southern regions plant fertility has been locally impacted. In addition, a lack of rain after the first application of fertiliser is lowering nitrogen availability. The yield forecast was consequently revised downward. Frost damage to soft wheat and winter barley is expected to be minimal. Spring barley sowings benefited from good conditions, although the frost damaged newly formed leaves, while the cold temperatures slowed early sowings of grain maize.









Germany

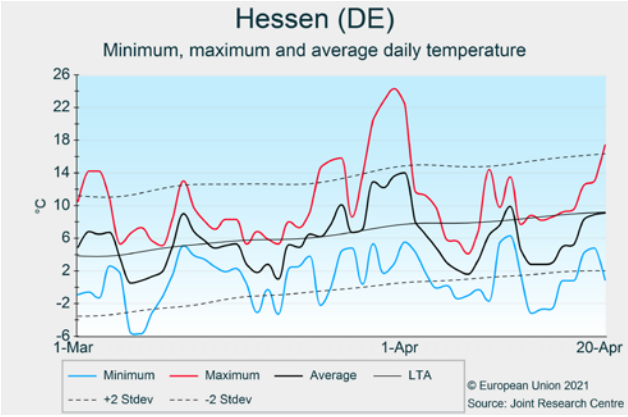
Promising yield expectations for winter cereals

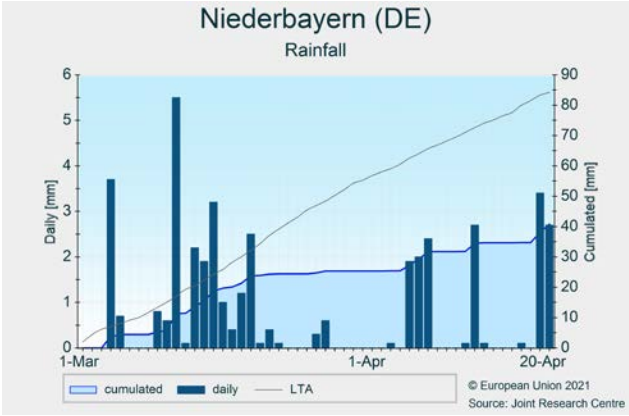
As elsewhere, the weather in Germany has been characterised by huge temperature variations since the beginning of March. After an exceptional warm weather period at the end of March and beginning of April, two distinct cold snaps slowed crop growth. Minimum temperatures dropped as low as -5 °C, with even more severe frost events in southern Germany, but winter crops are faring well and no substantial damage is expected. The most vulnerable crop at this stage is rapeseed: some frost damage is reported, primarily reversible stem damage.

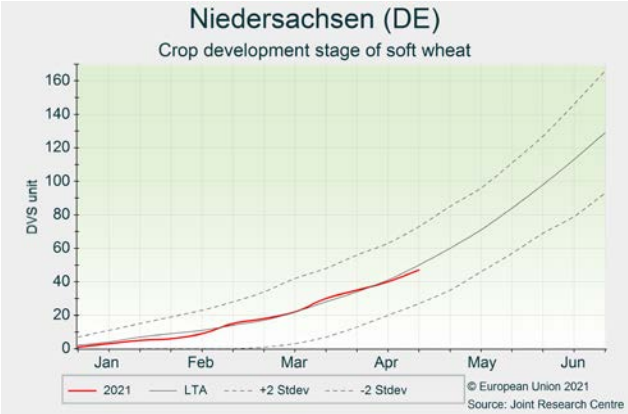
Rainfall cumulates during the review period show a clear gradient from the north – with a surplus in *Schleswig-Holstein, Mecklenburg-Vorpommern, Niedersachsen* and *Nordrhein-Westfalen* – to the south, which is exhibiting a deficit. In the south, some particularly dry spots are emerging, notably in *Ober-* and *Niederbayern* as well as in *Schwaben*, which will need to be closely monitored.

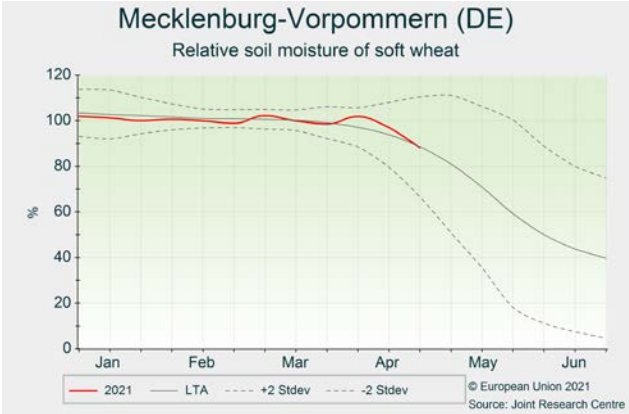
However, soil moisture levels are satisfactory across the country for early establishment of spring barley, for which the sowing campaign has just concluded. First sowings of potatoes and sugar beet started at the beginning of April, with some areas being damaged by the cold snap. The extent of the damage will only become apparent in the coming weeks.

In general, the somewhat cooler period and satisfactory soil moisture levels are allowing for steady growth and well established root systems, permitting good yields at the end of the season. We maintain our yield forecasts based on historical trends.









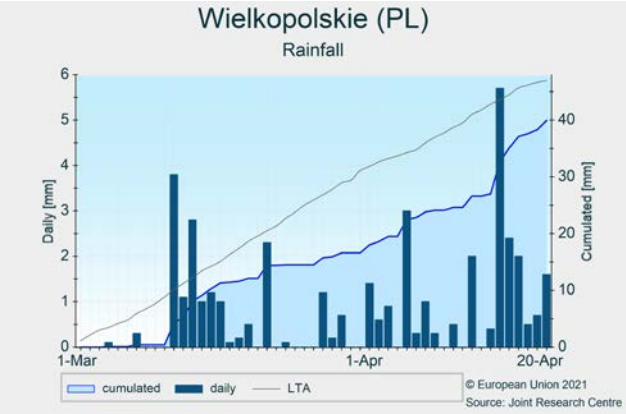
Poland

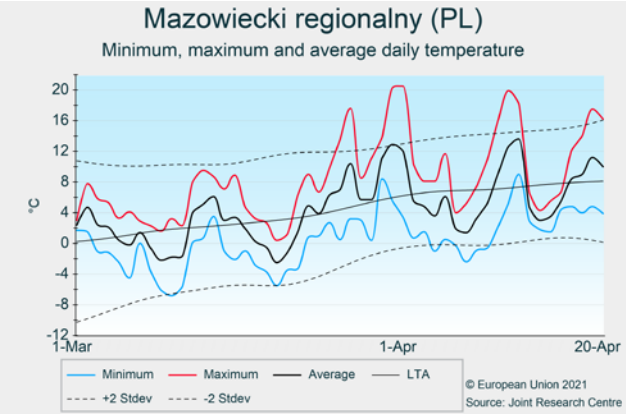
Cold spring slowed crop development

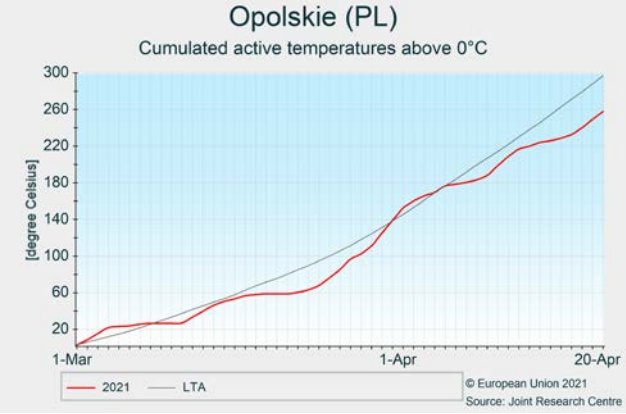
The review period was characterised by colder-than-usual conditions, with frequent frost events in March and during the first dekad of April. In March, precipitation remained significantly below average in most of the country. Precipitation events during the second dekad of April resulted in increased (locally excessive) soil moisture levels.

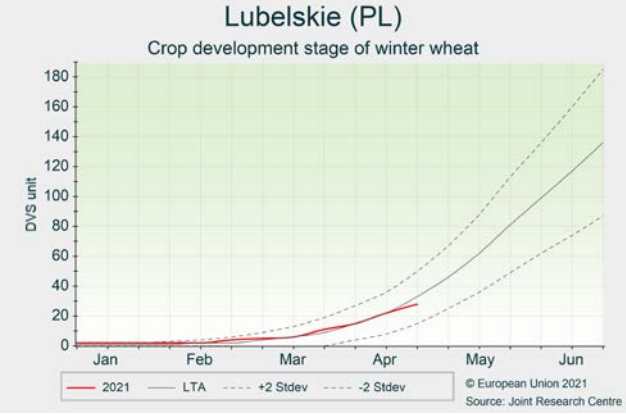
Winter crops are generally in good condition. As indicated by our model, development of winter crops has slowed and is currently close to average. While the April cold spells are expected to have no negative impact on yield potentials for winter cereals, they could result in local damage to rapeseed plants.

Sowing of most spring cereals has been completed within the optimal time windows, due to favourable thermal and soil moisture conditions at the end of March. The sowing campaign for sugar beet started during the third dekad of March and is currently close to being finalised. Emergence and early development of sugar beet may be impaired by low April temperatures. We maintain our yield forecasts based on historical trends.









Ireland

Spring cereal sowings are almost complete

After a relatively cold start, temperatures were mainly above the LTA during the rest of March, but dropped below seasonal levels from the beginning of April.

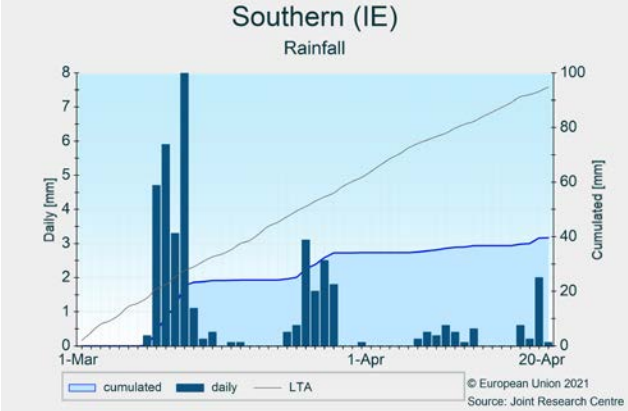
Precipitation was slightly more abundant than usual in the northern and western areas, but was scarce and mainly concentrated during the second week of March in other parts of the country. Sunshine levels were generally below average.

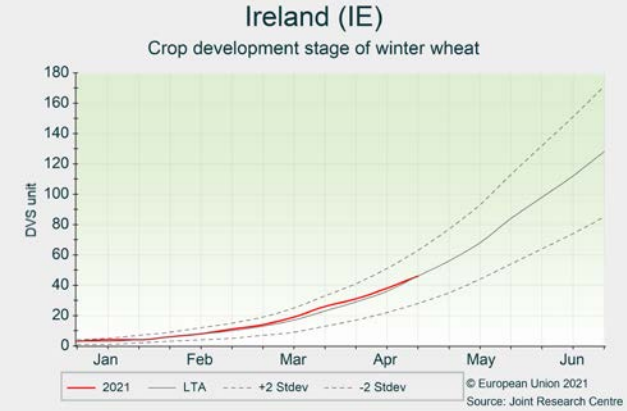
The phenological development of winter crops is in line with an average season Winter cereals are in good condition and generally at stem extension stage. Winter rapeseed crops have started to flower. Soil moisture levels

are still adequate for development and growth of winter cereals, including in the southern areas.

The dry April weather allowed field works to progress well: winter crops received fertiliser applications and sowing of spring cereals has almost been completed in the southern areas. However, spring planting is slightly delayed in the north due to wetter soil conditions. Sowing of sugar beet, potatoes and green maize is under way.

The yield forecasts are maintained close to the 5-year average.





Spain and Portugal

Conditions still favourable but rainfall needed soon

For the analysis period, temperatures were mostly in line with the LTA, with the exception of a warmer-than-usual period at the end of March/beginning of April. Rainfall was below average, and particularly scarce in Portugal, where *Alentejo* had no rainfall in the last two dekads of March. In Spain (*Castilla y León*), soil moisture levels under winter crops have decreased to near-critical.

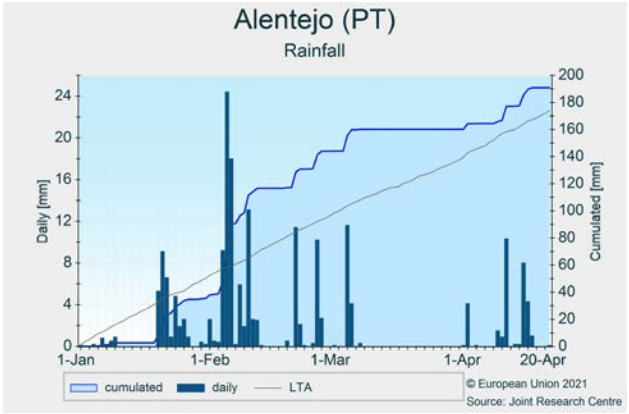
Despite the current water deficit, winter crops are generally still in good condition. Crop growth has been above average and development is advanced by about one dekad, in both Portugal and Spain. Frequent and abundant rainfall forecast for the coming days will be welcomed to avoid stress conditions.

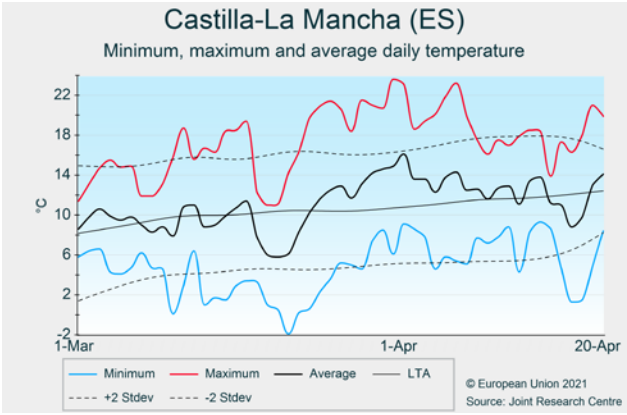
According to our models, soft wheat and spring barley have reached flowering in the south, but not yet in *Castilla y León*. Rapeseed reached flowering at the end of March or at the beginning of April.

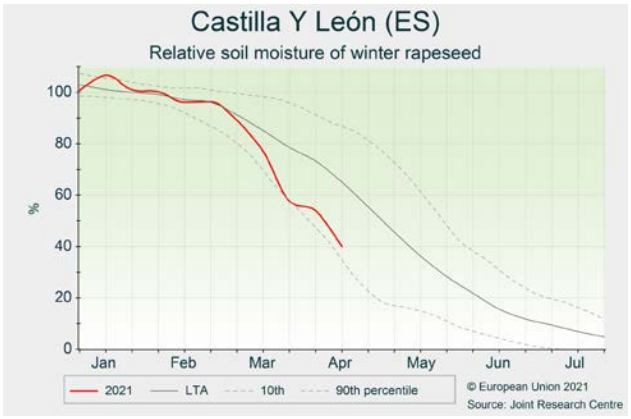
Given the marked water deficit and uncertainty concerning the expected rains at the time of analysis, the yield forecasts for winter crops and spring barley were kept essentially unchanged; the forecasts for rapeseed and winter barley were revised slightly downward but remain close to the 5-year average.

Conditions were favourable for the sowing of summer crops, as small rainfall events provided adequate soil moisture conditions. Sowing of maize is concluding in the north, and emergence will soon happen in the south.

Water reservoirs in Spain are estimated to be at 62% of full capacity (www.embalses.net), close to the lower levels in 2020.







Italy

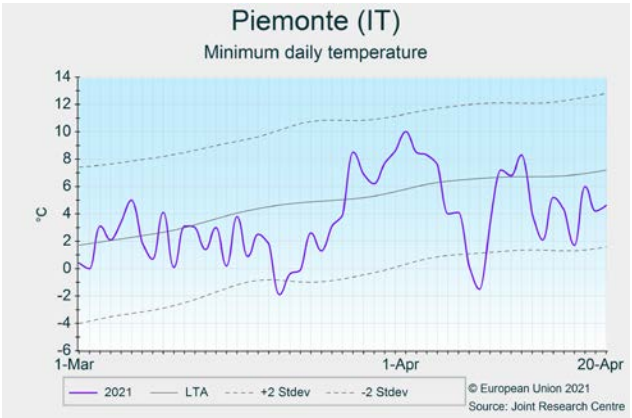
Unfavourable dry and cold spring

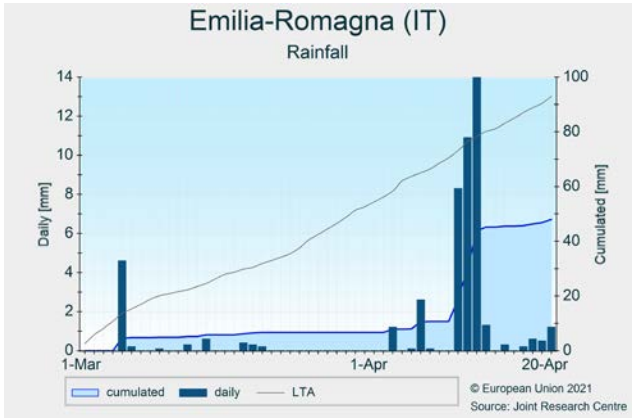
In northern and northern-central regions, a dry spell occurred in March – notably in *Piemonte* and *Umbria* (precipitation -60% to -70% compared with the LTA). Temperatures were mostly below the LTA, due to two cold periods (around 20 March and around 8 April).

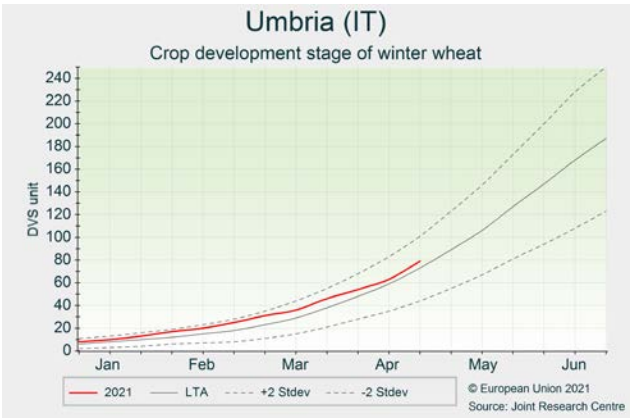
In southern Italy, the regions of *Puglia* and *Basilicata* are facing a dry period, with some provinces having received only half of the average precipitation. Since 15 March, temperatures have been predominantly below average. On one hand, this contributed to reducing water demand in the dry regions, but on the other hand it constrained biomass accumulation before flowering.

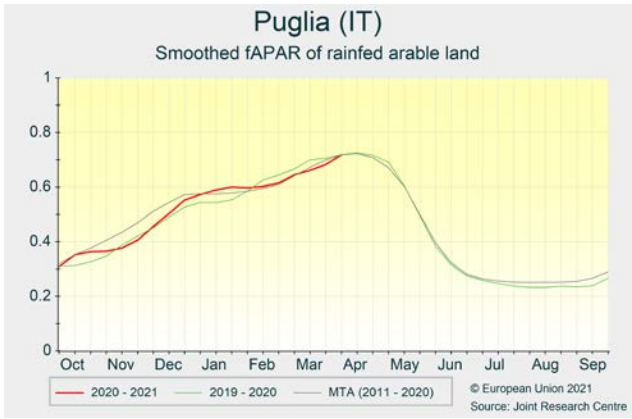
The unfavourable temperatures and concurrent dry conditions give rise to lower-than-average yield expectations, although a conclusive analysis is premature as the critical crop yield formation stages have not yet been reached.

Summer crop sowings started later than usual, only in April at the end of the dry spell.









Hungary

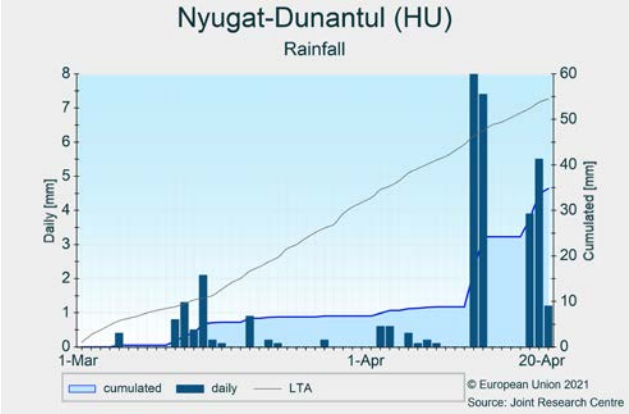
More rain needed to avoid a negative yield outlook for winter crops

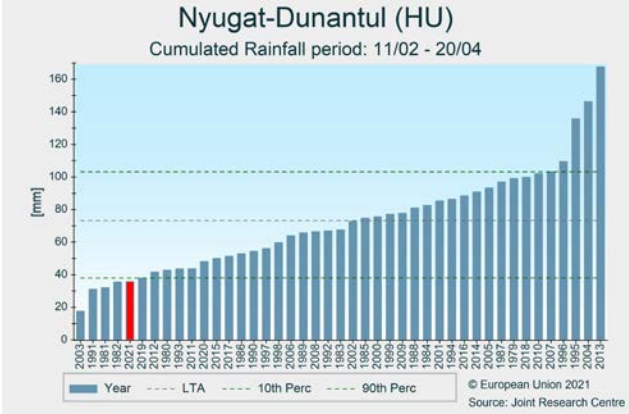
The water deficit from mid-February continued nationwide and was only partly mitigated by the rain events around mid-April. Slightly below-average temperatures predominated during March. An exceptional frost period, spanning about 4 days, occurred at the beginning of April, with minimum temperatures reaching -3.8 °C to -5.2 °C (from west to east) on the coldest days. No significant impacts on winter cereals are expected, but damage may have occurred to rapeseed crops, which had already reached flowering (it is too early to estimate a yield loss, given the capacity of this crop to recover). There was severe frost damage to flowering orchards.

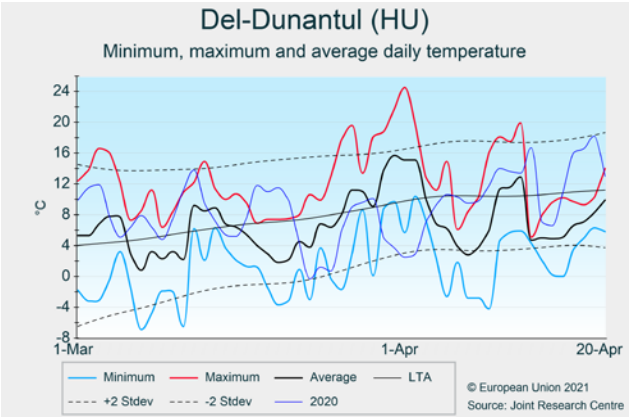
Analysis of remote sensing data shows a slight delay in canopy development on arable land, compared with the MTA.

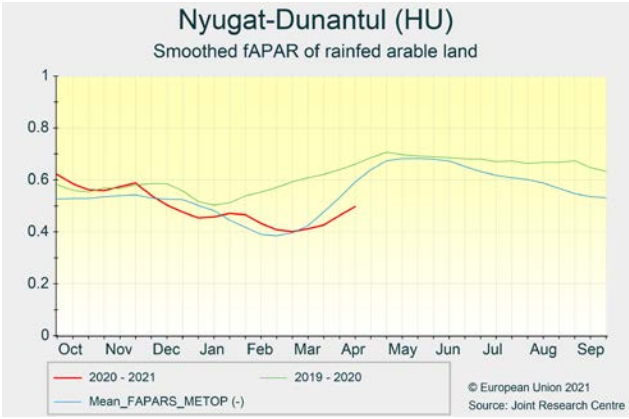
Due to the recent cold event and the dry soil conditions, sowing of sunflowers, maize and potatoes was delayed but should occur in the second half of April.

Overall, winter crops are in average condition. However, more rain is needed to avoid water stress during the sensitive flowering stage, principally in western parts of the country. Special attention will be given to rapeseed in the coming weeks, to analyse the impact of the recent frost event. We maintain our yield forecasts close to the historical trend.







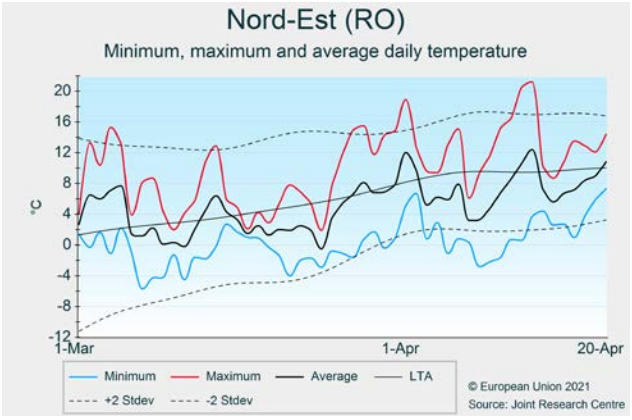


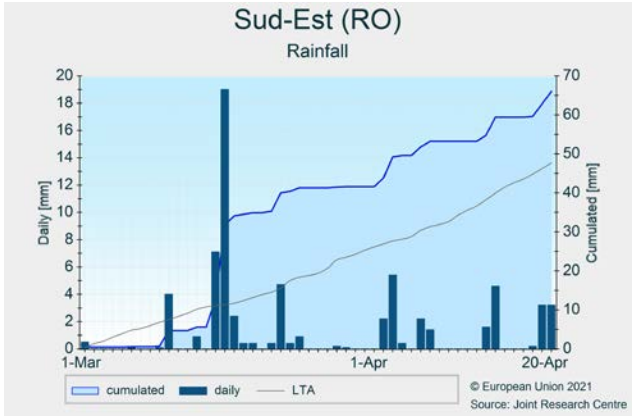
Romania

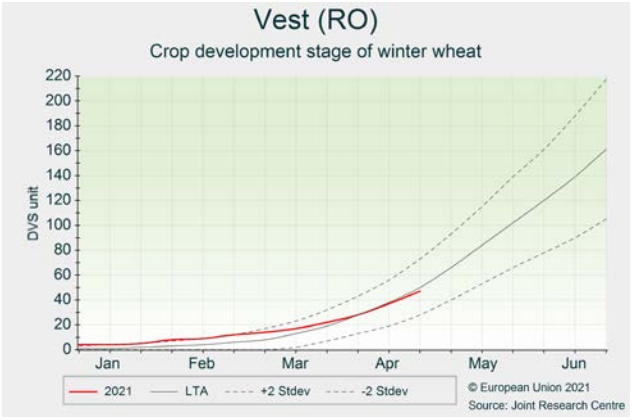
Winter crops in good condition

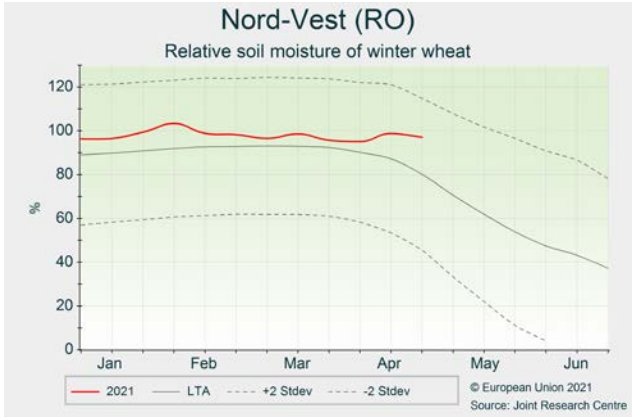
A mild winter has been followed by a colder-than-usual period since the beginning of March, with temperature anomalies roughly 1-2 °C below the LTA. The cold spell around mid-March was characterised by minimum temperatures down to -10 °C in western Romania, while slightly milder conditions occurred in the eastern part of the country. The cold spell at the beginning of April was milder, with minimum temperatures only regionally dropping below -5 °C. Rainfall cumulates were generally higher than usual in Romania, mainly caused by strong rainfall in mid-March. There were totals of up to 150 mm in central and south-eastern parts of the country, more than double the LTA.

The colder start to the spring slowed the phenological development of winter crops, which was advanced due to the mild winter but is currently close to average levels. Winter crops are generally in good condition, as a consequence of the mild winter and sufficient soil moisture levels. The sowing campaign for spring and summer crops is progressing well, with some regional interruptions due to frequent rainfall events and the recent cold spell. Our winter crop yield outlook remains in line with the long-term trend.







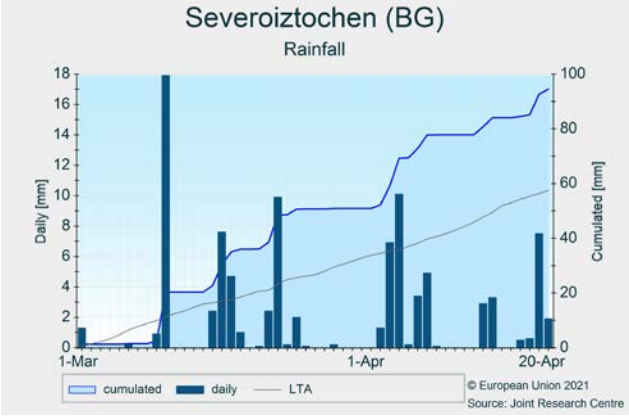


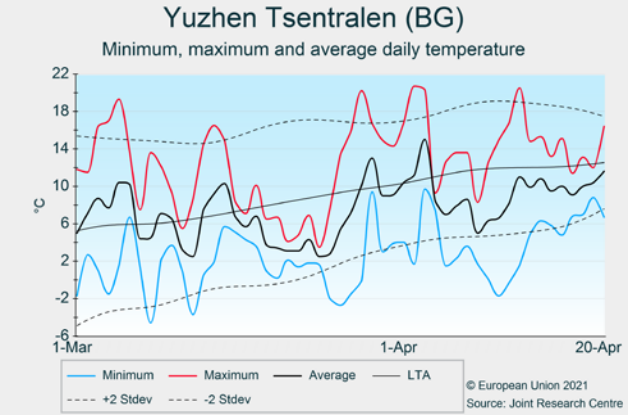
Bulgaria

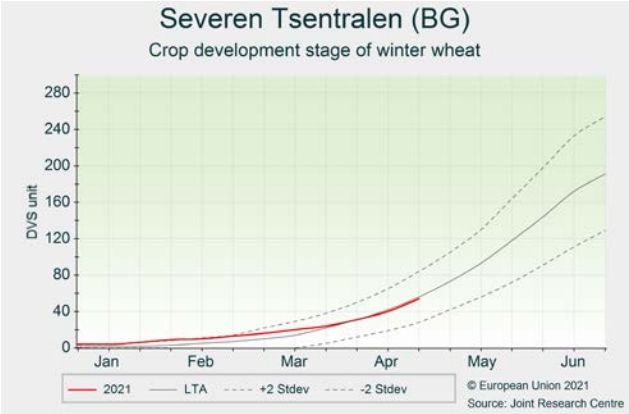
Cold start to the spring season

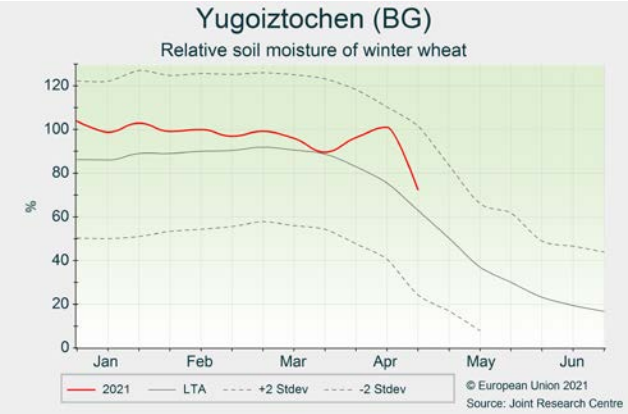
A mild winter was followed by a colder-than-usual first half of spring, with temperature anomalies down to 4 °C below the LTA. March was characterised by cold spells at the beginning and in the middle of the month, with minimum temperatures dropping down to -10 °C (regionally in western Bulgaria, even below -10 °C). A third (milder) cold spell occurred at the beginning of April, again mostly affecting the western and northern parts of the country. Abundant rainfall (up to 150 mm) was recorded in northern Bulgaria, generally exceeding the LTA by more than 50%.

The colder start to spring slightly delayed the development of winter crops, which were advanced due to the mild winter. Consequently, phenological development is currently close to the expected stages for this time of the year, i.e. close to heading for soft winter wheat. Winter crops are generally in good condition. The sowing campaign for spring and summer crops has been delayed due to the cold weather with frequent rainfall episodes. The recent cold wave at the beginning of April may have caused some localised damage to fruit trees that were already in the flowering phase (especially in northern Bulgaria), while winter crops have mostly not been affected. The crop yield outlook for winter crops remains in line with the long-term trend.









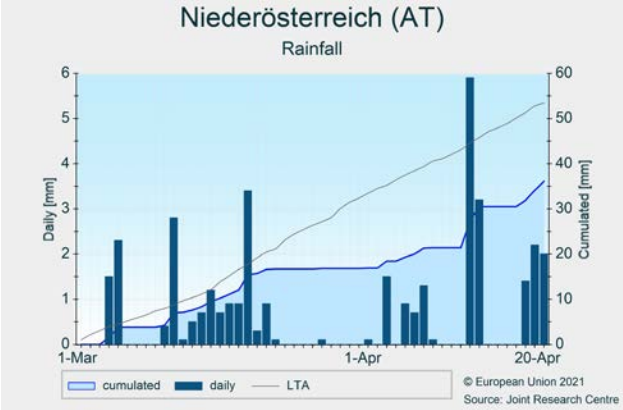
Austria, Czechia, and Slovakia

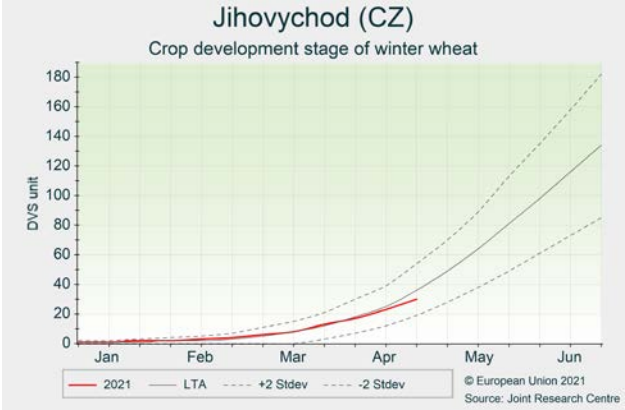
Winter crops in good condition

The review period was characterised by colder-than-usual conditions and frequent frost events. Total precipitation was significantly below average in March in the main agricultural areas of Austria, Slovakia and southern and north-western Czechia. However, abundant precipitation in the second dekad of April improved soil water conditions for winter and spring crops.

Winter crops are generally in good condition. As indicated by our model, winter crop development is close to average in Austria and western Slovakia, while it is slightly delayed in Czechia and eastern Slovakia. Low spring temperatures slowed crop development, but the cold spells are not expected to have had any serious impacts on yield potentials.

Winter crop yields are forecast to be close to the 5-year average, but with a large margin of uncertainty as it is still very early in the season. Yield potentials will be determined mainly by weather conditions during the coming month, when the most sensitive growth stages occur.





Denmark and Sweden

Positive outlook for winter cereals

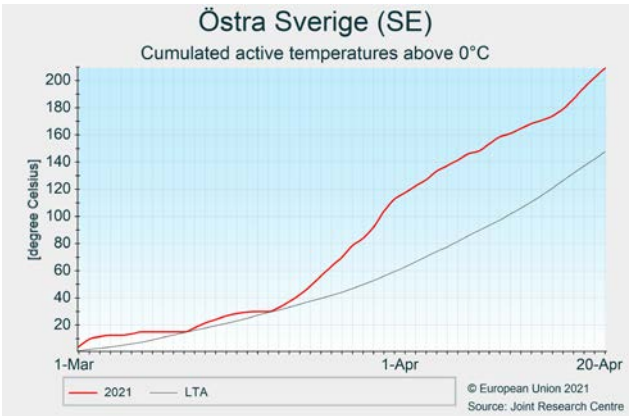
In Denmark and Sweden, temperatures were above average during the review period. In some regions of Sweden (*Östra Sverige* and *Norra Sverige*), temperatures were particularly high, with cumulative temperatures around 50% higher than the LTA. However, temperatures occasionally dropped, and night frost events were observed during the review period. After 2 April, overall temperatures decreased further and were close to 0 °C – about 3-4 °C below the LTA – in Denmark and western areas of Sweden. Cumulative radiation was above average in Denmark and close to average in Sweden.

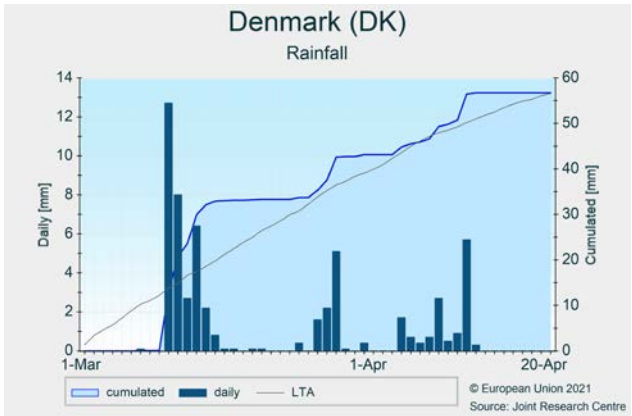
Precipitation mostly fell during the second dekad of March, reaching close-to-average cumulative values in Denmark while presenting a slight deficit in Sweden.

Winter crops are generally in good condition, with limited frost damage. The impact of freezing temperatures was limited to the leaves of rapeseed crops, generally at the beginning of the elongation phase.

In March, temperatures were favourable for spring crop sowing in both Denmark and Sweden.

Forecasts are maintained close to the historical trend. A good yield potential is expected for winter cereals.





Finland, Lithuania, Latvia and Estonia

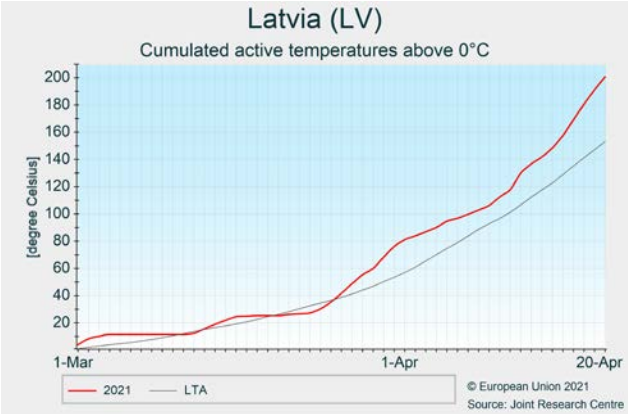
Adequate weather conditions allow early start to spring sowings

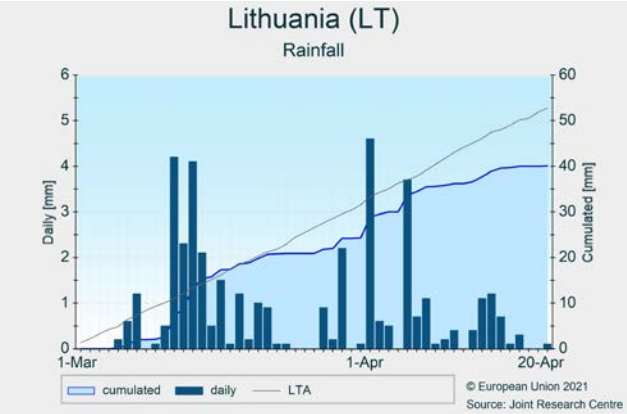
Temperatures in Finland and the Baltic countries hovered above average values during the review period. Nevertheless, two cold spells occurred during the first three weeks of March. The lowest minimum temperatures in Estonia (-15.7 °C) and Finland (-23 °C) were recorded on 9 and 10 March, respectively. Temperatures were slightly lower than usual for a few days during the first dekad of April, particularly in the Baltic countries.

Precipitation was close to or slightly below the average. In Latvia and Estonia, the second dekad of March was characterised by abundant rainfall, and these two countries reached above-average values within this short period. Cumulative global radiation was close to average.

In the Baltic countries, these weather conditions permitted regular management of winter crops and a start to spring sowings at the end of March, which is two weeks earlier than usual. In these countries, the fAPAR signal suggests that winter crops finished dormancy in good condition around the end of March, whereas regrowth has not yet started in Finland.

Our yield forecasts maintain the values in the March Bulletin, based on historical trends.



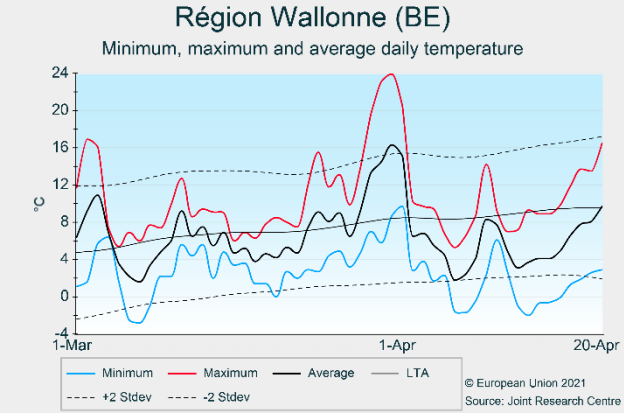


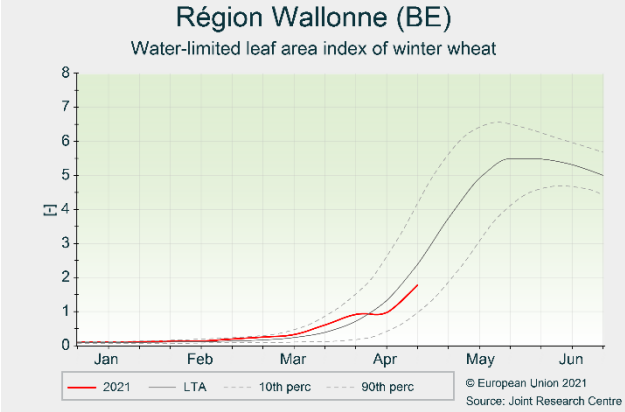
Belgium, Luxembourg and the Netherlands

Cold conditions slowed growth but negative impacts remain very limited

The current review period was – again – marked by strong temperature contrasts. Periods with substantially above-average temperatures, at the beginning of March and end of March/start of April, were both followed by cold spells. The cold spell in April was particularly unusual for this time of year, with minimum temperatures in inland areas reaching -4 °C on the coldest days. Average temperatures for the review period as a whole were slightly below the LTA. Rainfall anomalies (compared with the LTA) presented a clear gradient, from close to nil in the east, to -30% in the west, or even lower (close to -40%) in south-western parts of the Netherlands and Belgium. Rainfall was mainly concentrated in the first half of March and the second week of April.

Winter crops are generally in fair to good condition, but the previously advance crop development and biomass accumulation, are now behind compared with an average season, due to the cold spells. Favourable weather and sufficient soil moisture allowed spring sowings to progress well at the end of March and the beginning of April, but sowing slowed or stopped during the subsequent cold spell, before picking up again. Sugar beet sowing is almost finished within the suitable window, but potato sowing is delayed. Emergence and early growth have been slow because of the colder-than-usual temperatures, but frost damage is expected to be very limited. The relatively dry conditions in south-eastern regions have been of little concern so far, but could become so for emerging crops as little rain in foreseen until the end of the month. Our yield forecasts are maintained at or close to the historical trend.





Greece and Cyprus

Slightly reduced yield outlook for winter crops in Greece; fair expectations in Cyprus

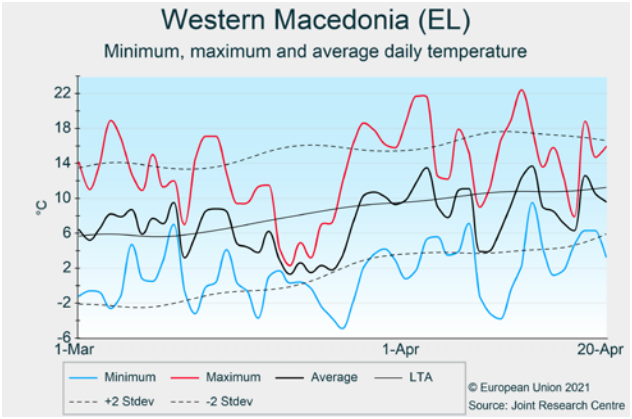
During the review period, beneficial rainfall events occurred at the end of March, particularly in Thessaly and West Macedonia, but a subsequent dry and cold period may have placed rainfed crops under moderate stress.

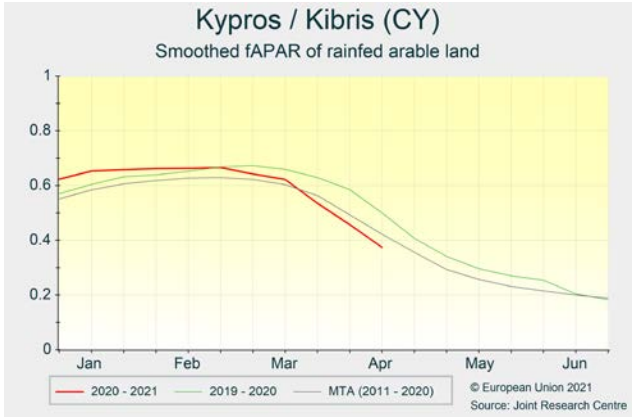
Remote sensing values for biomass accumulation of winter crops are average or slightly below-average. In terms of phenological development, winter crops are in the green-up phase.

Temperatures generally remained below average for the review period, although there were extensive fluctuations with two cases of freezing temperatures on 26 March and 10 April. It is still unclear how much frost damage may have hampered winter crops in the northern regions of Greece. Moreover, above-average temperatures in winter may have slightly compromised dormancy. Maize sowing started on time at the beginning of April.

In Cyprus, winter crops showed above-average cumulative biomass values. Cereals are approaching the harvesting period with fair expectations.

Our yield forecasts for Greece are slightly lowered for winter crops and follow the long-term trend for summer crops, while the outlook for winter crops in Cyprus is around average.





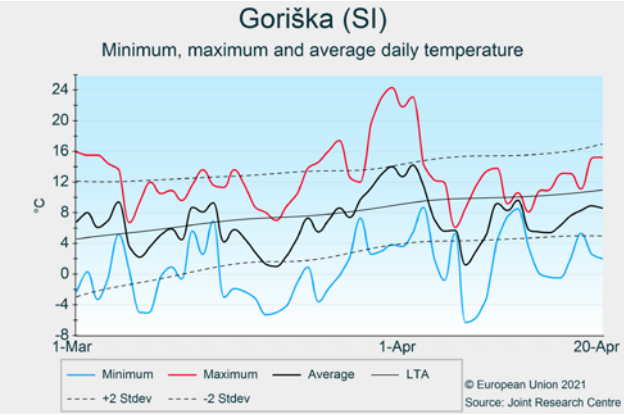
Slovenia and Croatia

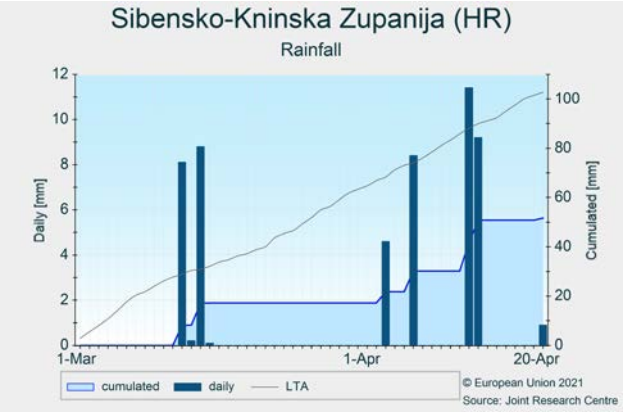
Extreme cold wave caused substantial damage to fruit trees and vineyards

A generally mild winter was followed by average temperature conditions in March. April began with an intense cold wave, which was characterised by unusually low minimum temperatures and by persistence. The minimum temperatures recorded were between -10 °C and -5 °C in large parts of Slovenia, but were regionally even well below -10 °C, especially in south-western Slovenia and western Croatia. In fact, major parts of Slovenia and western Croatia recorded the lowest minimum air temperatures on our records (since 1979) for

the first half of April. Furthermore, north-eastern and southern Croatia have regionally registered less than 60 mm of precipitation since the beginning of March, deepening the upper layer soil moisture deficit.

Winter crops are generally in good condition, except for southern Croatia, where the soil moisture deficit is limiting spring regrowth. Nevertheless, the crop yield outlook for winter crops currently remains in line with long-term trends. Cold weather and occasional rainfall events have been delaying the sowing campaign for spring crops, regionally in Slovenia and in central and north-western Croatia. In addition, the cold wave after 4 April – with record low temperatures – has caused major damage to vineyards and to orchards growing stone fruits (especially peach, apricot, cherry and plum), as well as apples and pears.



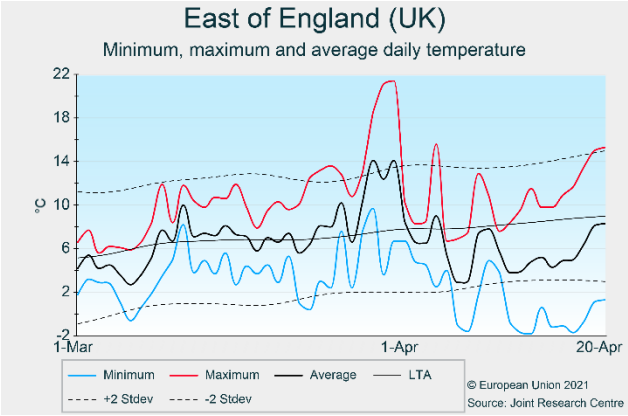


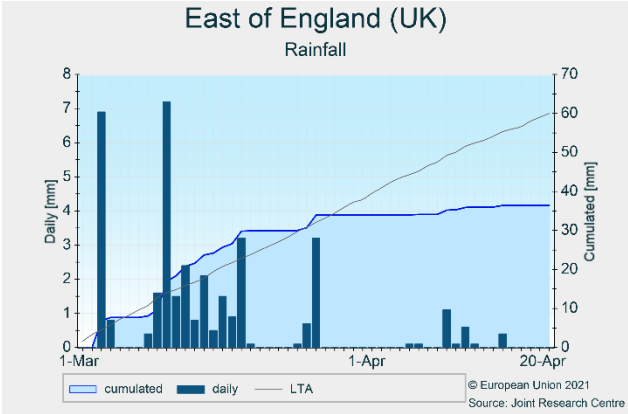
5.2. United Kingdom

Crops in fair condition despite cold and dry April weather

Weather conditions were characterised by a predominance of average to above-average temperatures in March, with a warm spell at the end of the month, followed by distinctly colder-than-usual temperatures in April, with frequent mild frost events. Rainfall was well below average; mainly concentrated in the first half of March; whereas April was almost dry.

Winter crops are generally in fair to good condition, but growth and development stalled in April due to the cold weather conditions. Phenological development, which was advanced, is now slightly delayed or in line with an average year. Rapeseed has entered the flowering phase in most regions. Spring barley sowing has been completed in the south and is almost completed in the north. Again, due to the cold weather, emergence and early growth have been slow. As a positive effect of the cold weather, pest and disease pressure is very low. So far, the dry weather conditions since mid-March have had no significant negative impacts, but they have started to become a concern for spring cereals and late-sown winter cereals, as little or no rain is expected until the end of April. Our yield forecasts have been maintained in line with the historical trend.





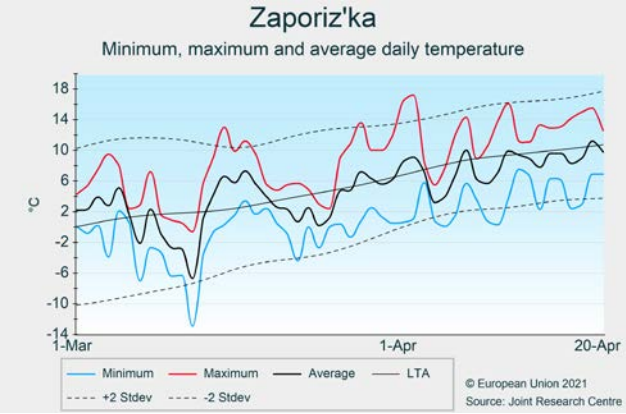
5.3. Black Sea Area

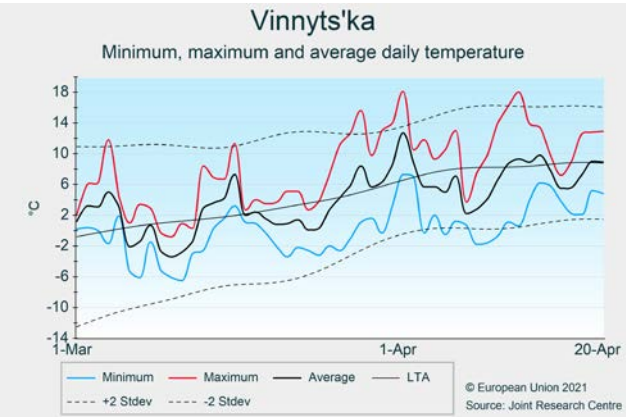
Ukraine

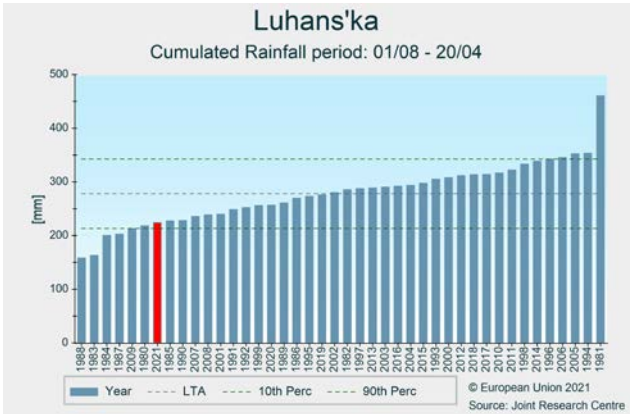
A promising season for winter cereals

Most of Ukraine received rainfall close to the LTA. Temperatures have been below average, with a more pronounced negative temperature anomaly in southern oblasts. The lower-than-average temperatures for the current review period are related to a cold spell observed around mid-March and a few cold snaps during the first dekad of April. Winter crops are currently in good condition in the main producing regions (*Zaporiz'ka*, *Vinnyts'ka*). Negative temperature anomalies in March usually cause a decrease in yield potentials for winter and spring grains. However, these anomalies have been relatively small and other conditions were highly favourable (e.g. rainfall regime that did not hamper field work and was optimal for nitrogen uptake; no frost damage during winter). Consequently, the yield forecast for winter cereals has been maintained in line with the historical trend.

Sowings of spring barley are almost complete. Although slightly delayed compared to the last 2 years (when temperatures were largely above average), this year the sowings are aligned with an average year. Sowings of sunflowers, grain maize and soybean are starting in southern oblasts and will be completed as soon as the soil temperature rises. The good conditions in the main winter cereal-producing regions are clearly confirmed on remote sensing images. A substantial negative anomaly in the remote sensing indicator is observed in eastern oblasts (*Luhans'ka*, *Donets'ka*, and to a lower degree *Kharkivs'ka*). This is related to the bad start to the winter crop season, due to the substantial rain deficit from August to October last year.







Turkey

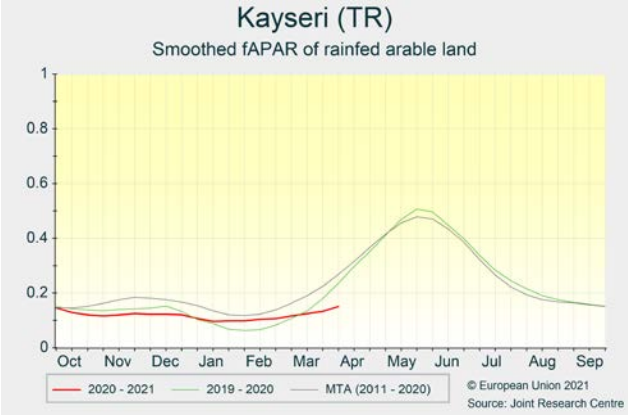
Winter drought mitigated by spring precipitation surplus

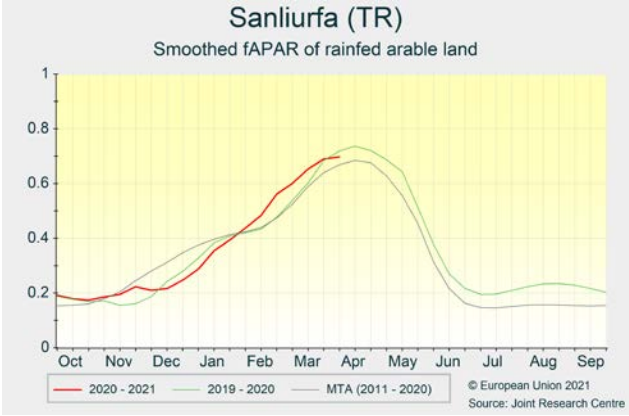
Western and Anatolian agricultural regions received favourable precipitation from the beginning of March. Precipitation surpluses, compared with the LTA, ranged from 10-20% (around +25 mm) in *Ankara* and *Konya* regions to 30-50% elsewhere. Throughout Anatolian regions, temperatures were marked by strong variability, with two cold spells (around 26 March and 10 April) occurring just after two periods of positive temperature anomalies (around 23 March and 5 April).

In south-eastern regions, the precipitation deficit built up since winter continues. These regions experienced only 20-40 mm of precipitation during the review period (-30% to -50% compared with the LTA).

Winter crops in south-eastern regions (e.g. *Sanliurfa*) present above-average biomass accumulation, as irrigation compensated for the precipitation deficit. In contrast, crops in Anatolian regions (e.g. *Kayseri*) present strongly delayed phenological development, due to late sowing and colder-than-usual temperatures. No water shortage is expected in the coming weeks, but the late development of crops in Anatolian regions implies an increased risk of heat stress during reproductive stages.

On balance, yield expectations for winter crops at country level remain around the historical trend and above the 5-year average.





5.4. European Russia and Belarus

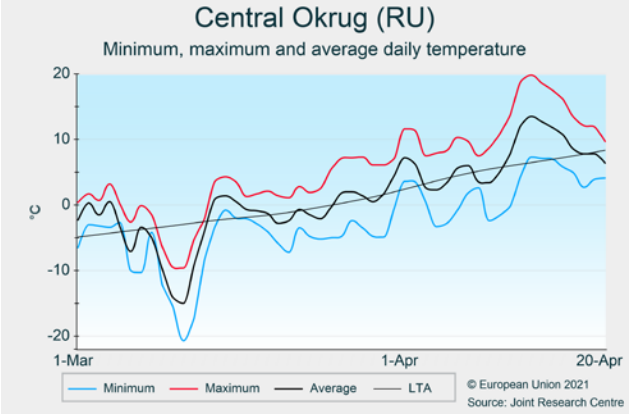
European Russia

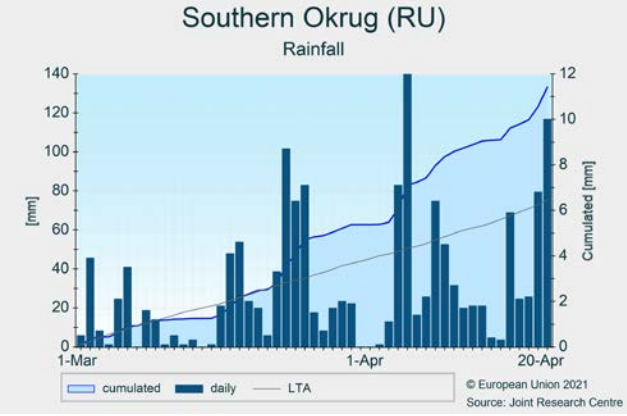
Minor frost kill and delayed sowings expected

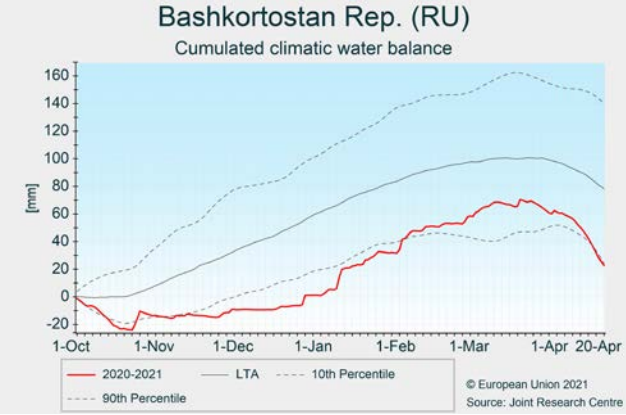
Temperatures were significantly above the LTA during the first dekad of March, and the snow almost melted in the southern and central parts of European Russia. A severe drop in temperatures occurred on 11 and 12 March, with daily minima reaching -21 °C in the Volga and Central okrugs, and -12 °C in the Southern okrug. As a consequence, minor to moderate frost damage is expected in these areas.

The cold spell was followed by a period of abundant precipitation from the last dekad of March over the Southern and Volga okrugs, finally refilling soil moisture levels which were depleted after the unusual rain deficit observed last autumn. Currently, only the Volga okrug is still showing a rain deficit (50 mm compared with the LTA, since last October). There was a substantial negative anomaly in radiation during the rainy period, which was unfavourable to crop growth. The succession of cold temperatures and rainfall caused a delay to sowings of spring cereals.

The delay in development of winter crops and sowings of spring cereals is also reflected in remote sensing data. It is most marked in the Southern and North Caucasian okrugs (e.g. *Rostov* and *Stavropol*). Fair yields are still achievable, but new records appear very unlikely.





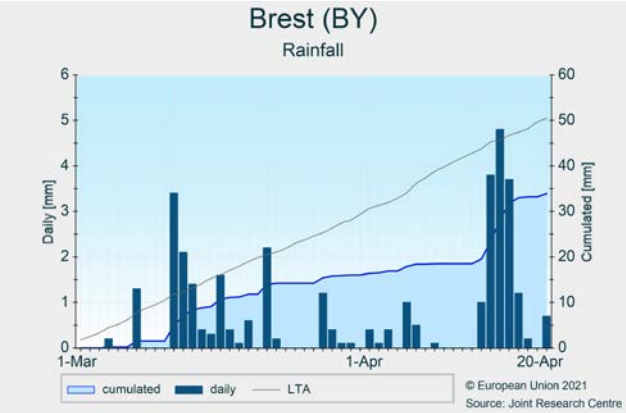


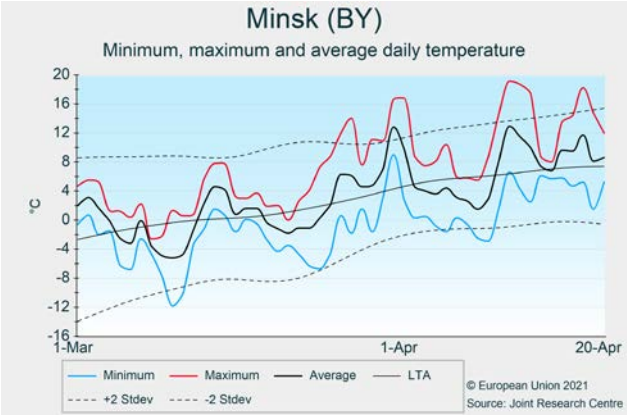
Belarus

Average outlook for winter and spring crops

The review period was characterised by mean daily temperatures oscillating around the LTA and by frequent frost events. Cold spells in March were associated with temperature minima below -10 °C. Total precipitation in March and in the first dekad of April was below average in most of the country, with the greatest deficits observed in eastern regions (*Brest* and *Grodno*). Significant precipitation during the second dekad of April resulted in increased (locally excessive) soil moisture levels.

Currently, there are no concerns for winter and spring cereals. As indicated by our model, winter wheat development and biomass accumulation are close to normal. Cold spells slowed the development of winter crops, but no serious impacts on yield potentials are expected. Sowing, germination and early development of spring cereals were impaired by freezing night temperatures, but should catch up with the onset of warmer weather. As it is still very early in the season, our yield outlook based on historical trends remains close to average.





5.5. Maghreb

Morocco, Algeria and Tunisia

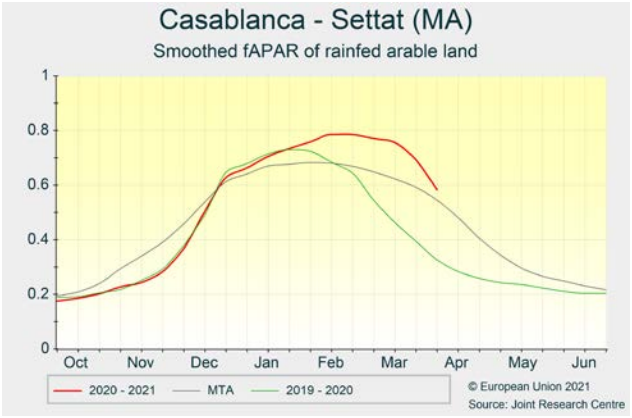
Poor recovery of cereals after winter drought in central Maghreb

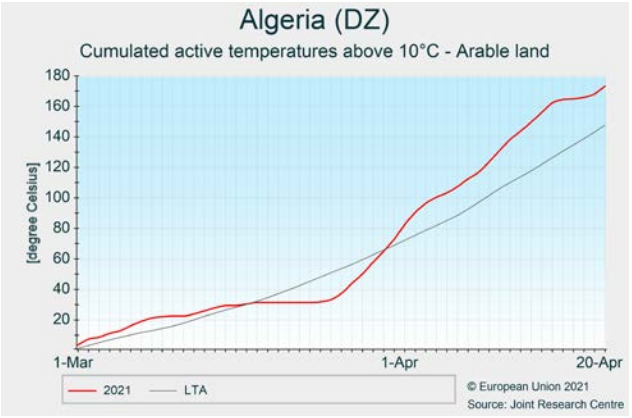
In **Morocco**, crops are at the end of the grain-filling stage. A positive trend in biomass accumulation, already observed since the beginning of the campaign, was further sustained by above-average precipitation and warm temperatures. Nevertheless, in regions such as *Oriental*, which was hampered by drought in the January-February period, cereals only slightly recovered.

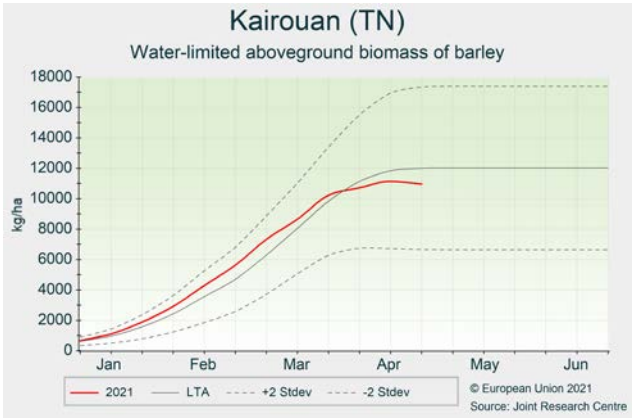
In **Algeria**, temperature sums (T_{base} 10 °C) remained 20-30% above the LTA, and favourable rainfall fell in central and eastern coastal regions. The resulting biomass accumulation followed average values in north-eastern regions (*Mila*, *Constantine* and *Guelma*), but was below the long-term reference in most western and central agricultural areas.

Soft and durum wheat crops are faring well in coastal and most inland regions of **Tunisia**. Positive weather conditions during the review period put biomass accumulation levels in line with the LTA. Moderate levels of stress are observed for barley in the regions of *Kasserine* and *Kairouan* (almost 20% of national production), due to below-average precipitation after the drought period in January and February.

Our crop yield forecasts are confirmed above the 5-year average for Morocco, below the 5-year average for Algeria, and slightly above the last 5-year average for Tunisia.

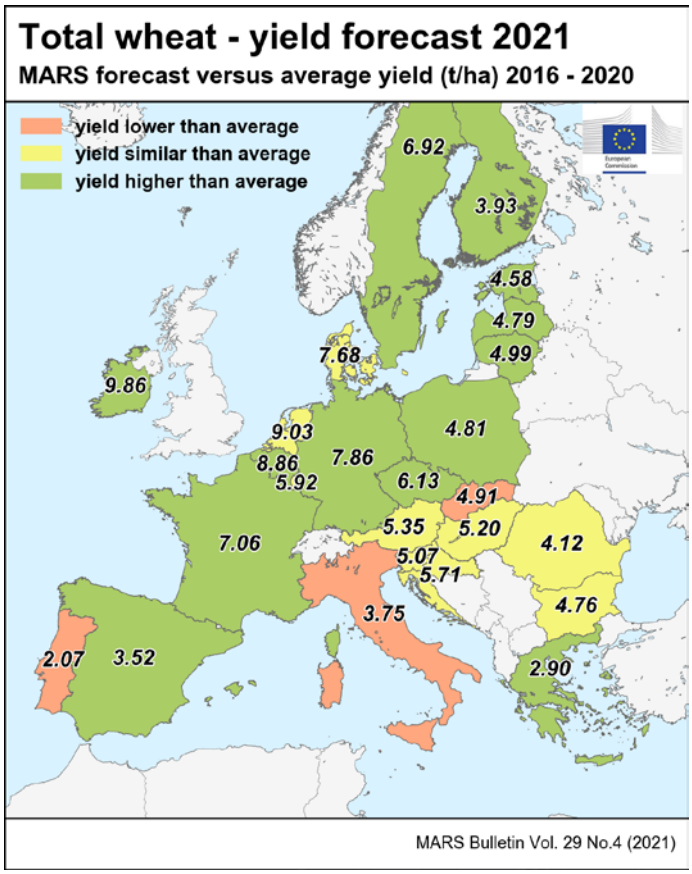




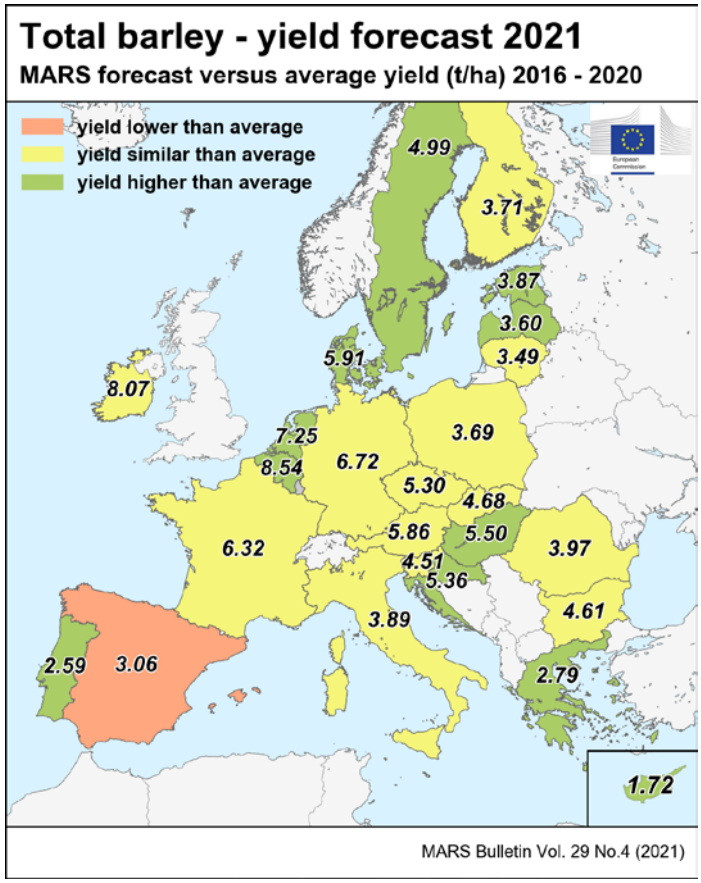


6. Crop yield forecast

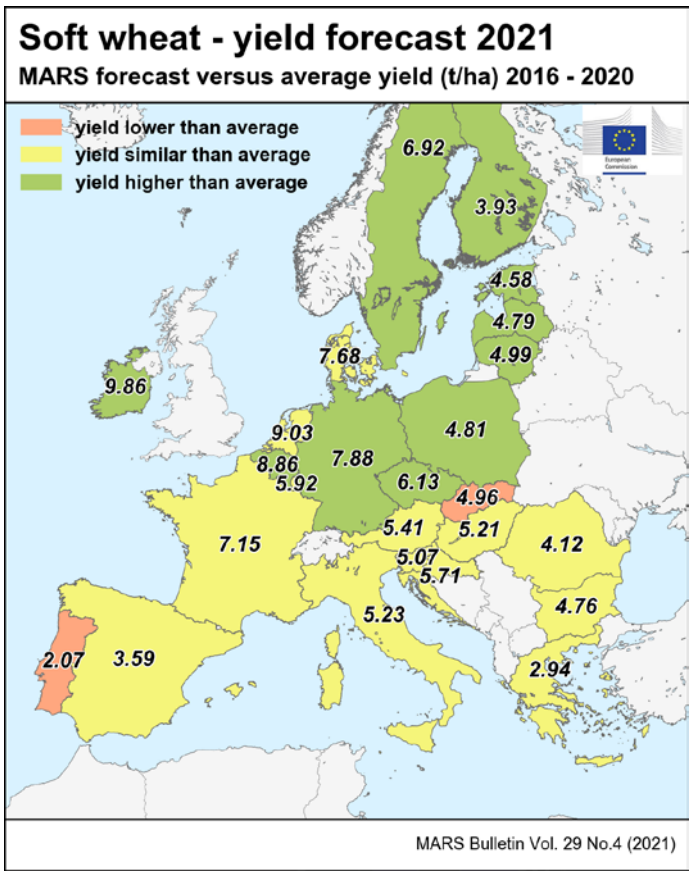
Country	Total wheat (t/ha)				
	Avg 5yrs	2020	MARS 2021 forecasts	%21/5yrs	%21/20
EU	5.47	5.50	**5.64**	+ 3.0	+ 2.5
AT	5.50	5.96	**5.35**	– 2.6	– 10
BE	8.35	8.80	**8.86**	+ 6.2	+ 0.7
BG	4.80	3.93	**4.76**	– 1.0	+ 21
CY	—	—	**—**	—	—
CZ	5.88	6.13	**6.13**	+ 4.1	– 0.1
DE	7.43	7.82	**7.86**	+ 5.7	+ 0.4
DK	7.67	8.18	**7.68**	+ 0.1	– 6.1
EE	4.01	5.00	**4.58**	+ 14	– 8.4
EL	2.70	2.54	**2.90**	+ 7.2	+ 14
ES	3.37	4.16	**3.52**	+ 4.6	– 15
FI	3.75	3.37	**3.93**	+ 4.5	+ 16
FR	6.78	6.73	**7.06**	+ 4.1	+ 4.9
HR	5.68	6.00	**5.71**	+ 0.5	– 4.8
HU	5.31	5.37	**5.20**	– 2.1	– 3.1
IE	9.45	8.35	**9.86**	+ 4.4	+ 18
IT	3.92	3.83	**3.75**	– 4.2	– 2.0
LT	4.53	5.39	**4.99**	+ 10	– 7.5
LU	5.70	5.97	**5.92**	+ 3.9	– 0.7
LV	4.57	5.34	**4.79**	+ 4.8	– 10
MT	—	—	**—**	—	—
NL	8.81	8.62	**9.03**	+ 2.5	+ 4.8
PL	4.55	4.90	**4.81**	+ 5.6	– 1.8
PT	2.21	2.03	**2.07**	– 6.7	+ 1.9
RO	4.27	2.99	**4.12**	– 3.4	+ 38
SE	6.53	7.15	**6.92**	+ 5.9	– 3.2
SI	4.98	5.04	**5.07**	+ 1.7	+ 0.5
SK	5.15	5.52	**4.91**	– 4.8	– 11



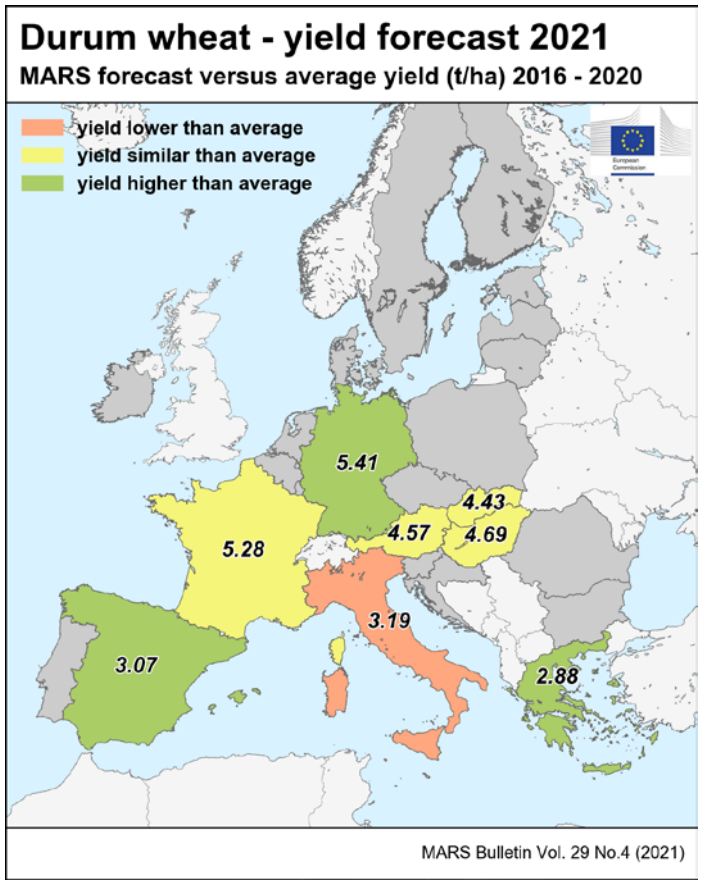
Country	Total barley (t/ha)				
	Avg 5yrs	2020	MARS 2021 forecasts	%21/5yrs	%21/20
EU	4.77	4.87	**4.86**	+ 1.7	– 0.3
AT	5.85	6.45	**5.86**	+ 0.2	– 9.2
BE	7.82	7.93	**8.54**	+ 9.3	+ 7.7
BG	4.43	4.07	**4.61**	+ 4.0	+ 13
CY	1.44	2.16	**1.72**	+ 19	– 21
CZ	5.34	5.47	**5.30**	– 0.8	– 3.2
DE	6.52	6.47	**6.72**	+ 3.0	+ 3.9
DK	5.67	6.43	**5.91**	+ 4.3	– 8.0
EE	3.39	4.04	**3.87**	+ 14	– 4.4
EL	2.68	2.54	**2.79**	+ 4.4	+ 10
ES	3.22	3.97	**3.06**	– 5.0	– 23
FI	3.73	3.47	**3.71**	– 0.6	+ 7.0
FR	6.09	5.32	**6.32**	+ 3.8	+ 19
HR	4.90	5.08	**5.36**	+ 9.4	+ 5.6
HU	5.23	5.52	**5.50**	+ 5.0	– 0.4
IE	7.77	7.42	**8.07**	+ 3.9	+ 8.7
IT	4.05	4.14	**3.89**	– 3.9	– 6.1
LT	3.39	4.29	**3.49**	+ 3.1	– 19
LU	—	—	**—**	—	—
LV	3.18	3.66	**3.60**	+ 13	– 1.5
MT	—	—	**—**	—	—
NL	6.83	6.44	**7.25**	+ 6.0	+ 13
PL	3.64	3.92	**3.69**	+ 1.5	– 5.8
PT	2.49	2.65	**2.59**	+ 4.2	– 2.3
RO	3.83	2.56	**3.97**	+ 3.6	+ 55
SE	4.66	5.19	**4.99**	+ 7.2	– 3.8
SI	4.63	4.51	**4.51**	– 2.5	+ 0.0
SK	4.74	5.18	**4.68**	– 1.3	– 9.7



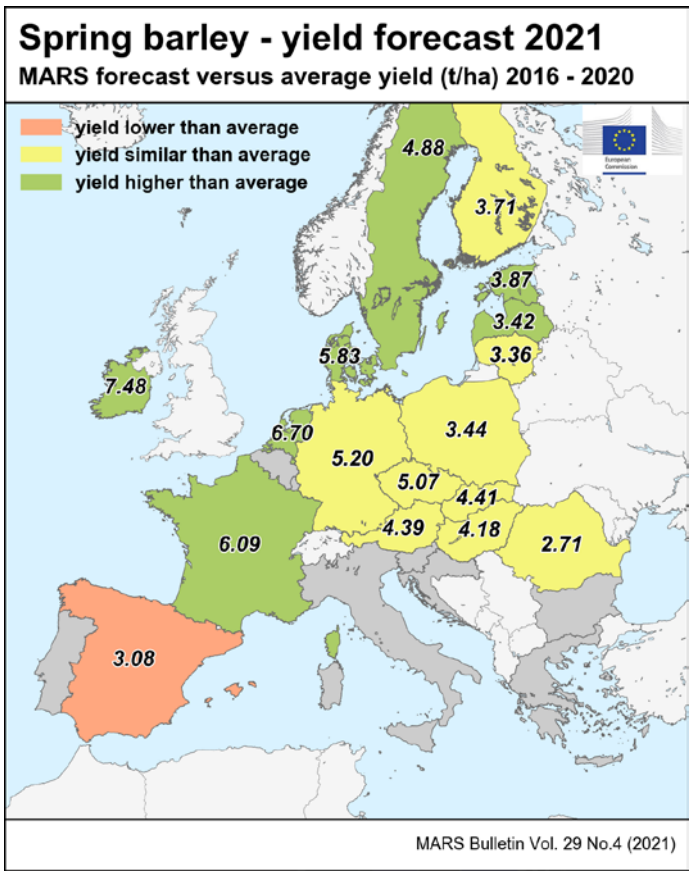
Country	Soft wheat (t/ha)				
	Avg 5yrs	2020	MARS 2021 forecasts	%21/5yrs	%21/20
EU	5.69	5.71	**5.86**	+ 2.9	+ 2.6
AT	5.56	6.03	**5.41**	– 2.8	– 10
BE	8.35	8.80	**8.86**	+ 6.2	+ 0.7
BG	4.80	3.93	**4.76**	– 1.0	+ 21
CY	—	—	—	—	—
CZ	5.88	6.13	**6.13**	+ 4.1	– 0.1
DE	7.46	7.86	**7.88**	+ 5.7	+ 0.4
DK	7.67	8.18	**7.68**	+ 0.1	– 6.1
EE	4.01	5.00	**4.58**	+ 14	– 8.4
EL	2.85	2.61	**2.94**	+ 3.1	+ 13
ES	3.49	4.29	**3.59**	+ 2.9	– 16
FI	3.75	3.37	**3.93**	+ 4.5	+ 16
FR	6.88	6.82	**7.15**	+ 3.8	+ 4.8
HR	5.68	6.00	**5.71**	+ 0.5	– 4.8
HU	5.34	5.40	**5.21**	– 2.3	– 3.4
IE	9.45	8.35	**9.86**	+ 4.4	+ 18
IT	5.37	5.33	**5.23**	– 2.8	– 1.9
LT	4.53	5.39	**4.99**	+ 10	– 7.5
LU	5.70	5.97	**5.92**	+ 3.9	– 0.7
LV	4.57	5.34	**4.79**	+ 4.8	– 10
MT	—	—	—	—	—
NL	8.81	8.62	**9.03**	+ 2.5	+ 4.8
PL	4.55	4.90	**4.81**	+ 5.6	– 1.8
PT	2.21	2.03	**2.07**	– 6.7	+ 1.9
RO	4.27	2.99	**4.12**	– 3.4	+ 38
SE	6.53	7.15	**6.92**	+ 5.9	– 3.2
SI	4.98	5.04	**5.07**	+ 1.7	+ 0.5
SK	5.22	5.56	**4.96**	– 5.0	– 11



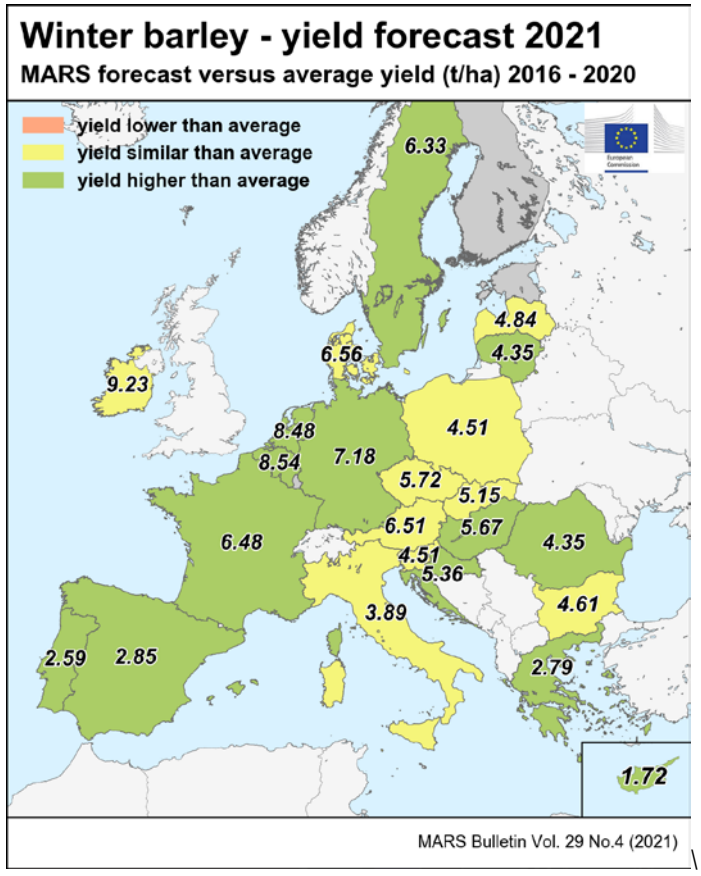
Country	Duram wheat (t/ha)				
	Avg 5yrs	2020	MARS 2021 forecasts	%21/5yrs	%21/20
EU	3.49	3.46	**3.47**	– 0.8	+ 0.2
AT	4.61	4.80	**4.57**	– 1.0	– 5.0
BE	—	—	—	—	—
BG	—	—	—	—	—
CY	—	—	—	—	—
CZ	—	—	—	—	—
DE	5.17	5.29	**5.41**	+ 4.8	+ 2.4
DK	—	—	—	—	—
EE	—	—	—	—	—
EL	2.65	2.51	**2.88**	+ 8.9	+ 15
ES	2.80	3.26	**3.07**	+ 9.5	– 5.9
FI	—	—	—	—	—
FR	5.19	5.11	**5.28**	+ 1.7	+ 3.3
HR	—	—	—	—	—
HU	4.66	4.41	**4.69**	+ 0.7	+ 6.4
IE	—	—	—	—	—
IT	3.33	3.21	**3.19**	– 4.3	– 0.7
LT	—	—	—	—	—
LU	—	—	—	—	—
LV	—	—	—	—	—
MT	—	—	—	—	—
NL	—	—	—	—	—
PL	—	—	—	—	—
PT	—	—	—	—	—
RO	—	—	—	—	—
SE	—	—	—	—	—
SI	—	—	—	—	—
SK	4.57	5.12	**4.43**	– 3.2	– 14



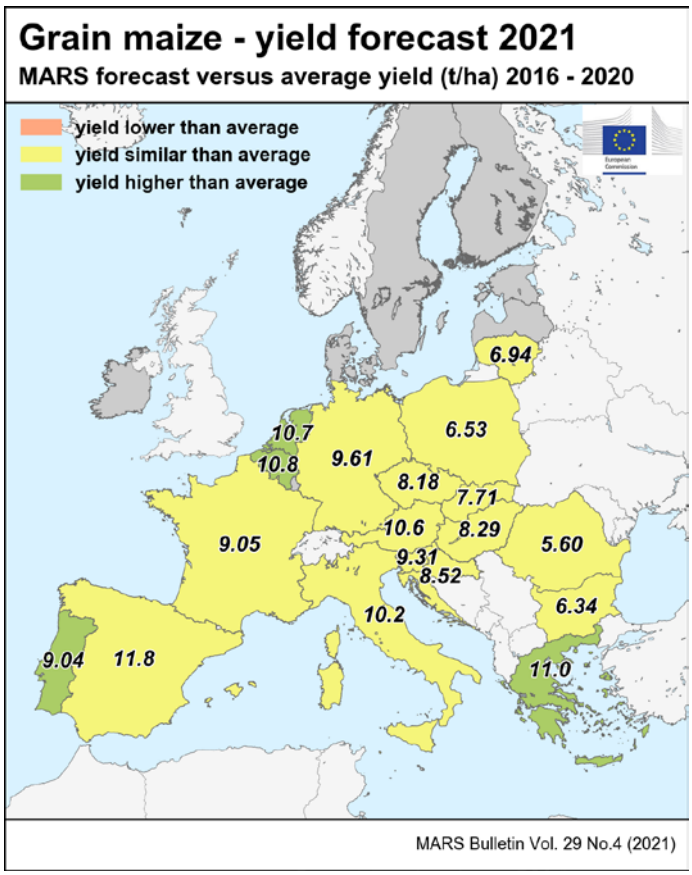
Country	Spring barley (t/ha)				
	Avg 5yrs	2020	MARS 2021 forecasts	%21/5yrs	%21/20
EU	4.12	4.49	**4.16**	+ 1.2	– 7.3
AT	4.36	4.90	**4.39**	+ 0.7	– 10
BE	—	—	**—**	—	—
BG	—	—	**—**	—	—
CY	—	—	**—**	—	—
CZ	5.11	5.15	**5.07**	– 0.7	– 1.4
DE	5.22	5.47	**5.20**	– 0.5	– 5.0
DK	5.52	6.32	**5.83**	+ 5.5	– 7.8
EE	3.39	4.04	**3.87**	+ 14	– 4.4
EL	—	—	**—**	—	—
ES	3.30	4.02	**3.08**	– 6.6	– 23
FI	3.73	3.47	**3.71**	– 0.6	+ 7.0
FR	5.83	4.95	**6.09**	+ 4.5	+ 23
HR	—	—	**—**	—	—
HU	4.06	4.32	**4.18**	+ 2.8	– 3.3
IE	7.14	7.11	**7.48**	+ 4.9	+ 5.3
IT	—	—	**—**	—	—
LT	3.33	4.23	**3.36**	+ 1.1	– 20
LU	—	—	**—**	—	—
LV	3.08	3.42	**3.42**	+ 11	– 0.1
MT	—	—	**—**	—	—
NL	6.36	6.10	**6.70**	+ 5.4	+ 9.9
PL	3.44	3.65	**3.44**	+ 0.0	– 5.9
PT	—	—	**—**	—	—
RO	2.76	2.08	**2.71**	– 1.8	+ 30
SE	4.57	5.08	**4.88**	+ 6.8	– 3.9
SI	—	—	**—**	—	—
SK	4.46	4.91	**4.41**	– 1.3	– 10



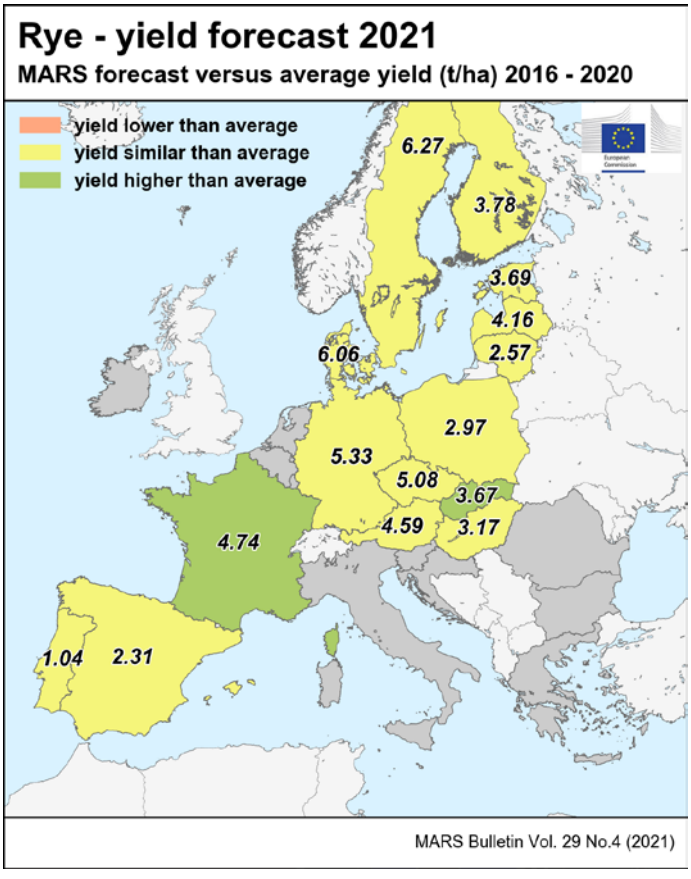
Country	Winter barley (t/ha)				
	Avg 5yrs	2020	MARS 2021 forecasts	%21/5yrs	%21/20
EU	5.62	5.38	**5.83**	+ 3.7	+ 8.3
AT	6.53	6.92	**6.51**	– 0.4	– 6.0
BE	7.82	7.93	**8.54**	+ 9.3	+ 7.7
BG	4.43	4.07	**4.61**	+ 4.0	+ 13
CY	1.44	2.16	**1.72**	+ 19	– 21
CZ	5.81	6.09	**5.72**	– 1.6	– 6.1
DE	6.90	6.75	**7.18**	+ 4.1	+ 6.4
DK	6.51	7.14	**6.56**	+ 0.8	– 8.1
EE	—	—	**—**	—	—
EL	2.68	2.54	**2.79**	+ 4.4	+ 10
ES	2.64	3.48	**2.85**	+ 7.7	– 18
FI	—	—	**—**	—	—
FR	6.21	5.56	**6.48**	+ 4.3	+ 17
HR	4.90	5.08	**5.36**	+ 9.4	+ 5.6
HU	5.40	5.65	**5.67**	+ 4.8	+ 0.3
IE	8.90	8.28	**9.23**	+ 3.7	+ 11
IT	4.05	4.14	**3.89**	– 3.9	– 6.1
LT	4.14	4.63	**4.35**	+ 4.9	– 6.1
LU	—	—	**—**	—	—
LV	4.83	5.55	**4.84**	+ 0.2	– 13
MT	—	—	**—**	—	—
NL	8.06	7.46	**8.48**	+ 5.2	+ 14
PL	4.40	4.73	**4.51**	+ 2.5	– 4.7
PT	2.49	2.65	**2.59**	+ 4.2	– 2.3
RO	4.13	2.65	**4.35**	+ 5.1	+ 64
SE	6.00	6.54	**6.33**	+ 5.5	– 3.2
SI	4.63	4.51	**4.51**	– 2.5	+ 0.0
SK	5.32	5.60	**5.15**	– 3.1	– 8.0



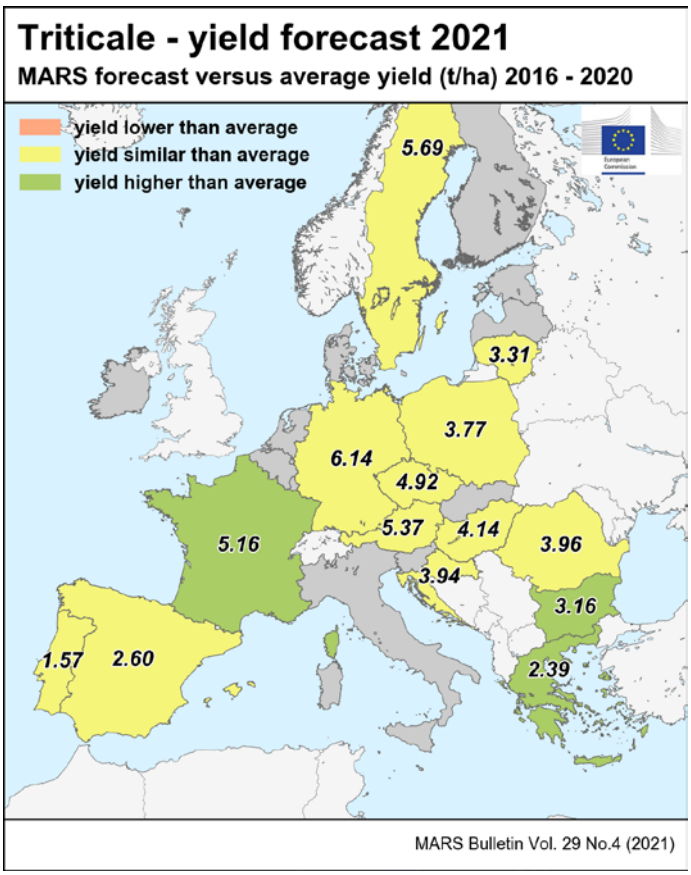
Country	Grain maize (t/ha)				
	Avg 5yrs	2020	MARS 2021 forecasts	%21/5yrs	%21/20
EU	7.75	7.30	**7.81**	+ 0.8	+ 7.1
AT	10.6	11.3	**10.6**	– 0.1	– 6.7
BE	10.2	10.5	**10.8**	+ 5.9	+ 3.0
BG	6.32	4.90	**6.34**	+ 0.3	+ 29
CY	—	—	**—**	—	—
CZ	8.08	9.38	**8.18**	+ 1.2	– 13
DE	9.27	9.14	**9.61**	+ 3.7	+ 5.1
DK	—	—	**—**	—	—
EE	—	—	**—**	—	—
EL	10.3	9.89	**11.0**	+ 6.7	+ 11
ES	11.6	11.9	**11.8**	+ 1.8	– 0.3
FI	—	—	**—**	—	—
FR	8.75	8.11	**9.05**	+ 3.4	+ 12
HR	8.39	8.96	**8.52**	+ 1.5	– 4.9
HU	8.12	8.62	**8.29**	+ 2.1	– 3.8
IE	—	—	**—**	—	—
IT	10.3	11.2	**10.2**	– 0.9	– 9.1
LT	6.83	6.95	**6.94**	+ 1.7	– 0.1
LU	—	—	**—**	—	—
LV	—	—	**—**	—	—
MT	—	—	**—**	—	—
NL	9.80	10.7	**10.7**	+ 9.5	+ 0.1
PL	6.59	7.10	**6.53**	– 0.9	– 8.0
PT	8.67	9.22	**9.04**	+ 4.3	– 2.0
RO	5.65	4.11	**5.60**	– 0.8	+ 36
SE	—	—	**—**	—	—
SI	9.23	10.8	**9.31**	+ 0.8	– 14
SK	7.52	8.29	**7.71**	+ 2.5	– 7.0



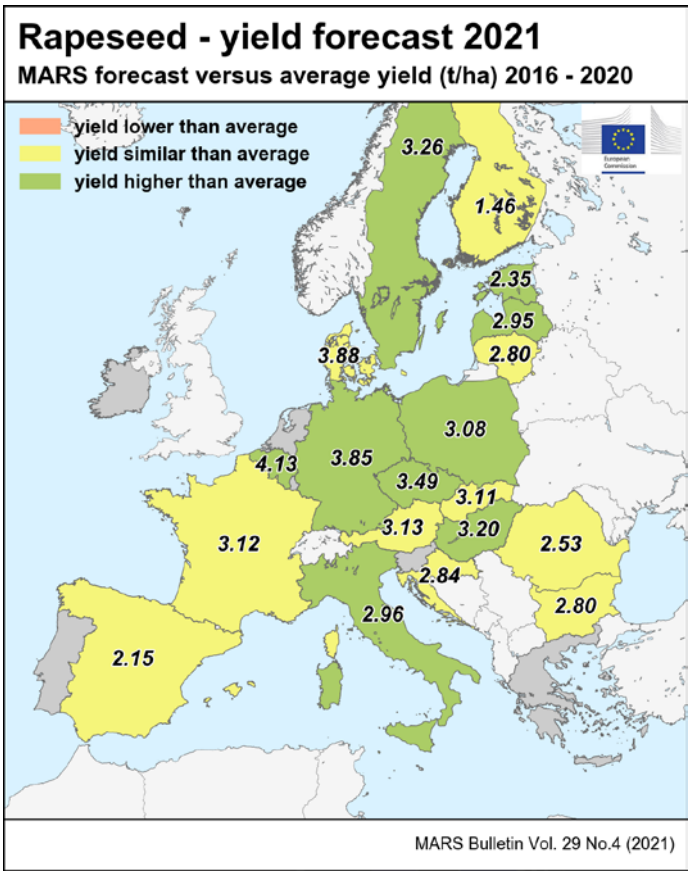
Country	Rye (t/ha)				
	Avg 5yrs	2020	MARS 2021 forecasts	%21/5yrs	%21/20
EU	3.83	4.19	**3.98**	+ 3.9	– 5.2
AT	4.60	5.13	**4.59**	– 0.2	– 11
BE	—	—	**—**	—	—
BG	—	—	**—**	—	—
CY	—	—	**—**	—	—
CZ	5.06	5.47	**5.08**	+ 0.3	– 7.2
DE	5.15	5.51	**5.33**	+ 3.5	– 3.2
DK	6.00	6.19	**6.06**	+ 1.1	– 2.1
EE	3.62	3.81	**3.69**	+ 1.9	– 3.0
EL	—	—	**—**	—	—
ES	2.29	2.83	**2.31**	+ 0.8	– 19
FI	3.85	3.58	**3.78**	– 1.8	+ 5.7
FR	4.49	4.59	**4.74**	+ 5.6	+ 3.3
HR	—	—	**—**	—	—
HU	3.29	3.20	**3.17**	– 3.7	– 1.0
IE	—	—	**—**	—	—
IT	—	—	**—**	—	—
LT	2.55	2.98	**2.57**	+ 0.6	– 14
LU	—	—	**—**	—	—
LV	4.15	4.32	**4.16**	+ 0.2	– 3.6
MT	—	—	**—**	—	—
NL	—	—	**—**	—	—
PL	2.87	3.25	**2.97**	+ 3.5	– 8.5
PT	1.01	1.17	**1.04**	+ 2.6	– 11
RO	—	—	**—**	—	—
SE	6.15	6.21	**6.27**	+ 1.9	+ 1.0
SI	—	—	**—**	—	—
SK	3.50	3.84	**3.67**	+ 5.0	– 4.4



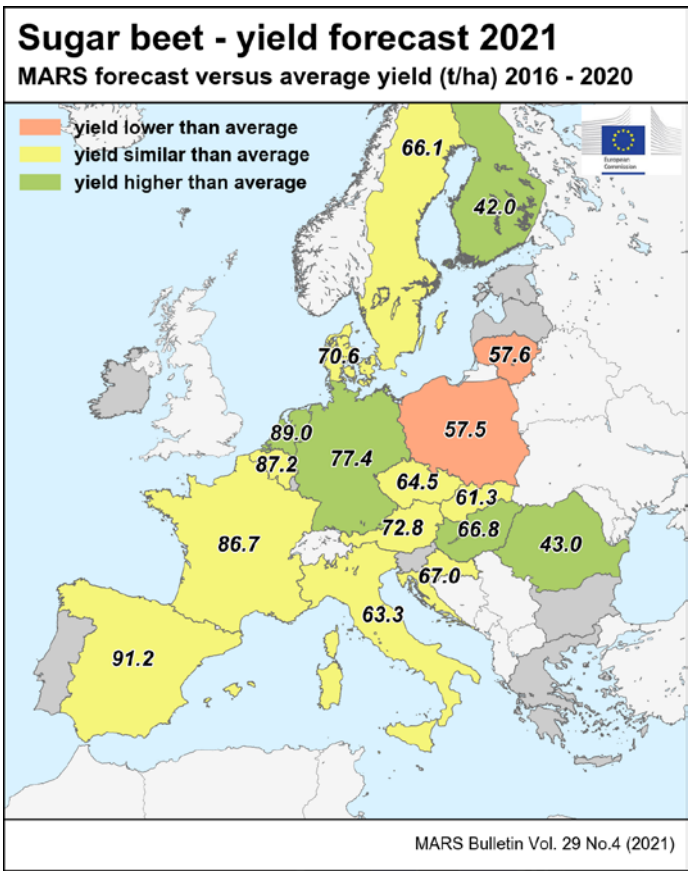
Country	Triticale (t/ha)				
	Avg 5yrs	2020	MARS 2021 forecasts	%21/5yrs	%21/20
EU	4.07	4.29	**4.20**	+ 3.2	– 2.2
AT	5.48	5.87	**5.37**	– 2.0	– 8.7
BE	—	—	—	—	—
BG	2.96	3.00	**3.16**	+ 6.9	+ 5.4
CY	—	—	—	—	—
CZ	4.87	5.06	**4.92**	+ 1.1	– 2.7
DE	5.91	5.98	**6.14**	+ 3.9	+ 2.7
DK	—	—	—	—	—
EE	—	—	—	—	—
EL	2.22	2.07	**2.39**	+ 7.6	+ 15
ES	2.53	2.96	**2.60**	+ 2.8	– 12
FI	—	—	—	—	—
FR	4.89	4.67	**5.16**	+ 5.6	+ 11
HR	4.00	4.35	**3.94**	– 1.5	– 9.5
HU	4.00	4.10	**4.14**	+ 3.5	+ 1.0
IE	—	—	—	—	—
IT	—	—	—	—	—
LT	3.34	3.80	**3.31**	– 0.8	– 13
LU	—	—	—	—	—
LV	—	—	—	—	—
MT	—	—	—	—	—
NL	—	—	—	—	—
PL	3.66	4.08	**3.77**	+ 3.1	– 7.4
PT	1.62	1.37	**1.57**	– 3.1	+ 15
RO	3.87	3.48	**3.96**	+ 2.3	+ 14
SE	5.60	6.04	**5.69**	+ 1.6	– 5.7
SI	—	—	—	—	—
SK	—	—	—	—	—



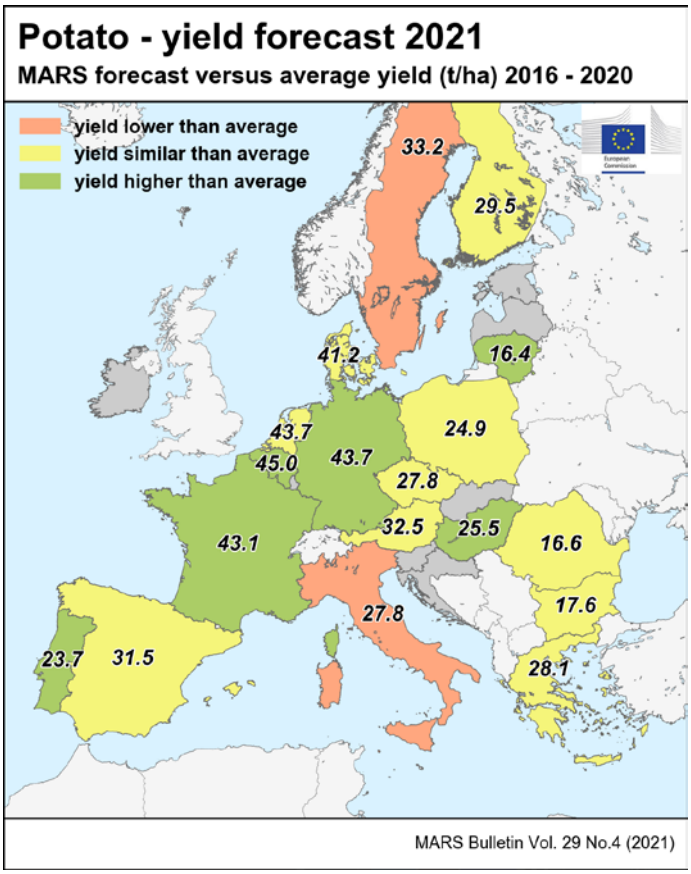
Country	Rape and turnip rape (t/ha)				
	Avg 5yrs	2020	MARS 2021 forecasts	%21/5yrs	%21/20
EU	3.05	3.12	**3.19**	+ 4.6	+ 2.2
AT	3.11	3.15	**3.13**	+ 0.5	– 0.8
BE	3.80	3.96	**4.13**	+ 8.6	+ 4.1
BG	2.75	2.23	**2.80**	+ 2.0	+ 25
CY	—	—	—	—	—
CZ	3.25	3.38	**3.49**	+ 7.5	+ 3.1
DE	3.32	3.68	**3.85**	+ 16	+ 4.8
DK	3.81	3.87	**3.88**	+ 1.6	+ 0.2
EE	2.15	2.85	**2.35**	+ 9.0	– 18
EL	—	—	—	—	—
ES	2.21	2.80	**2.15**	– 2.6	– 23
FI	1.46	1.27	**1.46**	– 0.1	+ 15
FR	3.21	2.90	**3.12**	– 2.9	+ 7.4
HR	2.83	2.94	**2.84**	+ 0.4	– 3.3
HU	3.03	2.53	**3.20**	+ 5.4	+ 27
IE	—	—	—	—	—
IT	2.70	2.86	**2.96**	+ 9.4	+ 3.4
LT	2.80	3.23	**2.80**	– 0.1	– 14
LU	—	—	—	—	—
LV	2.73	3.04	**2.95**	+ 7.9	– 3.1
MT	—	—	—	—	—
NL	—	—	—	—	—
PL	2.87	3.40	**3.08**	+ 7.3	– 9.5
PT	—	—	—	—	—
RO	2.54	1.94	**2.53**	– 0.5	+ 30
SE	3.12	3.46	**3.26**	+ 4.7	– 5.6
SI	—	—	—	—	—
SK	3.07	2.99	**3.11**	+ 1.5	+ 4.0



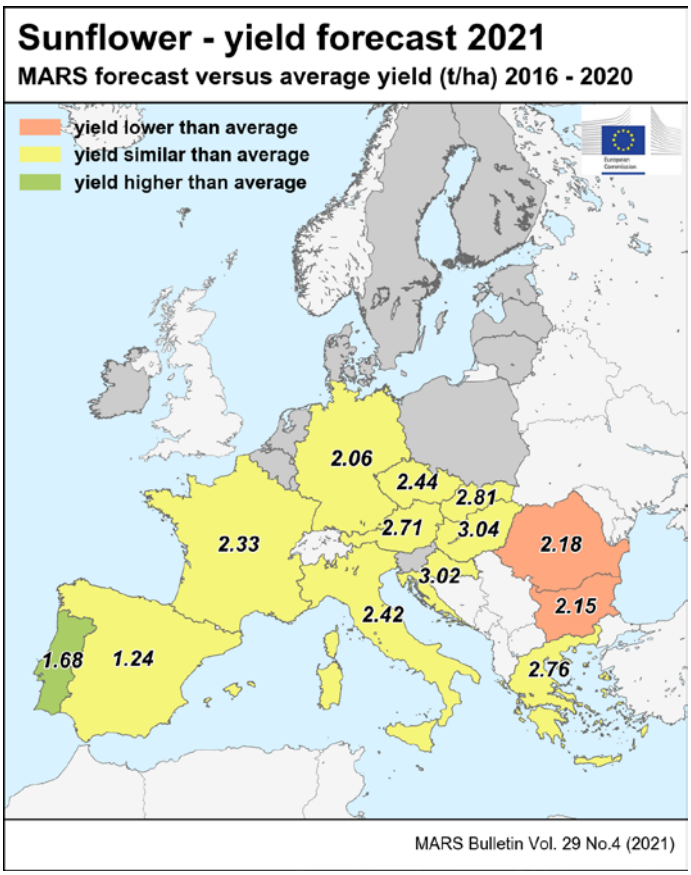
Country	Sugar beets (t/ha)				
	Avg 5yrs	2020	MARS 2021 forecasts	%21/5yrs	%21/20
EU	74.1	N/A	**75.6**	+ 1.9	N/A
AT	74.2	79.5	**72.8**	– 1.9	– 8.4
BE	84.8	84.4	**87.2**	+ 2.8	+ 3.2
BG	—	—	—	—	—
CY	—	—	—	—	—
CZ	63.1	61.5	**64.5**	+ 2.3	+ 4.9
DE	73.9	N/A	**77.4**	+ 4.9	N/A
DK	72.0	77.1	**70.6**	– 2.0	– 8.4
EE	—	—	—	—	—
EL	—	—	—	—	—
ES	89.2	93.6	**91.2**	+ 2.2	– 2.5
FI	39.2	38.5	**42.0**	+ 7.1	+ 9.1
FR	84.2	72.5	**86.7**	+ 3.0	+ 20
HR	66.3	73.8	**67.0**	+ 1.0	– 9.3
HU	63.2	N/A	**66.8**	+ 5.7	N/A
IE	—	—	—	—	—
IT	65.5	59.4	**63.3**	– 3.4	+ 6.6
LT	62.3	68.1	**57.6**	– 7.5	– 15
LU	—	—	—	—	—
LV	—	—	—	—	—
MT	—	—	—	—	—
NL	82.9	82.1	**89.0**	+ 7.4	+ 8.3
PL	61.4	56.8	**57.5**	– 6.5	+ 1.1
PT	—	—	—	—	—
RO	40.2	40.4	**43.0**	+ 7.0	+ 6.5
SE	64.9	68.0	**66.1**	+ 1.9	– 2.8
SI	—	—	—	—	—
SK	60.6	60.4	**61.3**	+ 1.2	+ 1.5



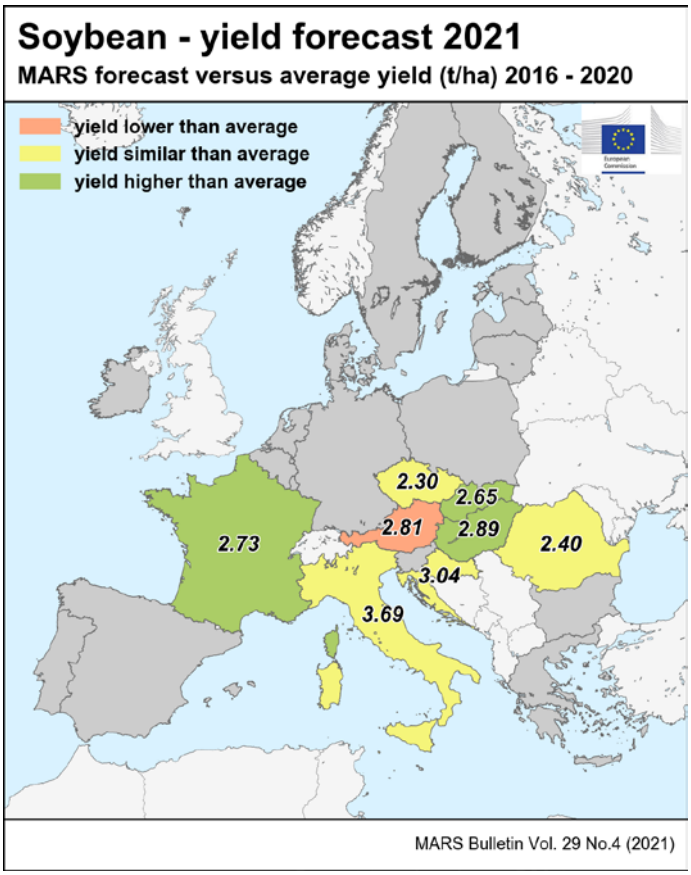
Country	Potato (t/ha)				
	Avg 5yrs	2020	MARS 2021 forecasts	%21/5yrs	%21/20
EU	32.8	N/A	**33.9**	+ 3.5	N/A
AT	32.3	36.5	**32.5**	+ 0.4	– 11
BE	40.1	40.8	**45.0**	+ 12	+ 10
BG	18.3	N/A	**17.6**	– 3.7	N/A
CY	—	—	—	—	—
CZ	28.3	29.2	**27.8**	– 1.5	– 4.6
DE	41.5	42.0	**43.7**	+ 5.5	+ 4.1
DK	41.6	44.0	**41.2**	– 0.8	– 6.3
EE	—	—	—	—	—
EL	28.4	29.9	**28.1**	– 0.8	– 5.9
ES	31.7	32.0	**31.5**	– 0.4	– 1.4
FI	28.6	30.2	**29.5**	+ 3.0	– 2.4
FR	41.0	N/A	**43.1**	+ 5.1	N/A
HR	—	—	—	—	—
HU	24.5	N/A	**25.5**	+ 4.1	N/A
IE	—	—	—	—	—
IT	29.1	30.3	**27.8**	– 4.5	– 8.3
LT	15.5	15.7	**16.4**	+ 5.7	+ 4.3
LU	—	—	—	—	—
LV	—	—	—	—	—
MT	—	—	—	—	—
NL	42.0	42.7	**43.7**	+ 4.0	+ 2.4
PL	25.4	24.3	**24.9**	– 2.1	+ 2.5
PT	21.6	23.5	**23.7**	+ 10	+ 1.1
RO	16.2	16.2	**16.6**	+ 2.0	+ 2.2
SE	34.5	36.3	**33.2**	– 4.0	– 8.8
SI	—	—	—	—	—
SK	—	—	—	—	—



Country	Sunflower (t/ha)				
	Avg 5yrs	2020	MARS 2021 forecasts	%21/5yrs	%21/20
EU	2.26	1.96	**2.21**	– 2.4	+ 13
AT	2.80	2.67	**2.71**	– 3.3	+ 1.4
BE	—	—	—	—	—
BG	2.27	2.02	**2.15**	– 5.4	+ 6.0
CY	—	—	—	—	—
CZ	2.54	2.67	**2.44**	– 3.8	– 8.7
DE	2.09	2.21	**2.06**	– 1.3	– 6.7
DK	—	—	—	—	—
EE	—	—	—	—	—
EL	2.81	2.97	**2.76**	– 1.9	– 7.2
ES	1.21	1.36	**1.24**	+ 2.0	– 9.2
FI	—	—	—	—	—
FR	2.28	2.08	**2.33**	+ 2.2	+ 12
HR	3.00	3.19	**3.02**	+ 0.7	– 5.4
HU	2.94	2.83	**3.04**	+ 3.4	+ 7.4
IE	—	—	—	—	—
IT	2.41	2.43	**2.42**	+ 0.3	– 0.5
LT	—	—	—	—	—
LU	—	—	—	—	—
LV	—	—	—	—	—
MT	—	—	—	—	—
NL	—	—	—	—	—
PL	—	—	—	—	—
PT	1.60	1.65	**1.68**	+ 5.1	+ 1.6
RO	2.41	1.48	**2.18**	– 10	+ 47
SE	—	—	—	—	—
SI	—	—	—	—	—
SK	2.76	2.80	**2.81**	+ 1.6	+ 0.4



Country	Soybean (t/ha)				
	Avg 5yrs	2020	MARS 2021 forecasts	%21/5yrs	%21/20
EU	2.92	2.79	**3.01**	+ 3.0	+ 8.0
AT	2.99	3.08	**2.81**	– 6.1	– 8.7
BE	—	—	—	—	—
BG	—	—	—	—	—
CY	—	—	—	—	—
CZ	2.23	2.30	**2.30**	+ 3.3	+ 0.1
DE	—	—	—	—	—
DK	—	—	—	—	—
EE	—	—	—	—	—
EL	—	—	—	—	—
ES	—	—	—	—	—
FI	—	—	—	—	—
FR	2.56	2.26	**2.73**	+ 6.5	+ 21
HR	3.01	3.25	**3.04**	+ 0.9	– 6.5
HU	2.78	2.75	**2.89**	+ 4.2	+ 5.2
IE	—	—	—	—	—
IT	3.55	3.77	**3.69**	+ 4.0	– 2.1
LT	—	—	—	—	—
LU	—	—	—	—	—
LV	—	—	—	—	—
MT	—	—	—	—	—
NL	—	—	—	—	—
PL	—	—	—	—	—
PT	—	—	—	—	—
RO	2.30	1.63	**2.40**	+ 4.0	+ 47
SE	—	—	—	—	—
SI	—	—	—	—	—
SK	2.46	2.56	**2.65**	+ 7.9	+ 3.4



Country	Wheat (t/ha)				
	Avg 5yrs	2020	MARS 2021 forecasts	%21/5yrs	%21/20
BY	3.27	3.29	**3.65**	+ 12	+ 11
DZ	1.66	1.61	**1.33**	– 20	– 17
MA	1.70	0.91	**1.91**	+ 12	+ 110
TN	1.83	1.77	**1.84**	+ 1.0	+ 3.9
TR	2.80	2.97	**2.87**	+ 2.4	– 3.4
UA	4.02	3.88	**4.24**	+ 5.6	+ 9.3
UK	8.05	7.16	**8.07**	+ 0.2	+ 13

Country	Barley (t/ha)				
	Avg 5yrs	2020	MARS 2021 forecasts	%21/5yrs	%21/20
BY	2.72	2.76	**3.23**	+ 19	+ 17
DZ	1.13	1.20	**0.97**	– 15	– 19
MA	1.06	0.43	**1.20**	+ 13	+ 178
TN	0.85	0.79	**1.01**	+ 18	+ 27
TR	2.66	2.65	**2.70**	+ 1.4	+ 1.8
UA	3.26	3.30	**3.25**	– 0.4	– 1.6
UK	6.11	5.91	**6.19**	+ 1.2	+ 4.6

Country	Grain maize (t/ha)				
	Avg 5yrs	2020	MARS 2021 forecasts	%21/5yrs	%21/20
BY	5.94	6.00	**5.79**	– 2.5	– 3.5
DZ	—	—	**—**	—	—
MA	—	—	**—**	—	—
TN	—	—	**—**	—	—
TR	9.42	9.41	**9.61**	+ 2.0	+ 2.1
UA	6.56	5.69	**7.14***	+ 8.9	+ 25
UK	—	—	**—**	—	—

Country	Soybean (t/ha)				
	Avg 5yrs	2020	MARS 2021 forecasts	%21/5yrs	%21/20
BY	—	—	**—**	—	—
DZ	—	—	**—**	—	—
MA	—	—	**—**	—	—
TN	—	—	**—**	—	—
TR	4.33	4.42	**4.62**	+ 6.6	+ 4.5
UA	2.25	2.09	**2.39**	+ 6.0	+ 14
UK	—	—	**—**	—	—

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

Sources: 2016-2021 data come from DG Agriculture and Rural Development short-term-outlook data (dated March 2021, received on 07.04.2021), Eurostat Eurobase (last update: 12.04.2021) and EES (last update: 15.11.2017).

Non-EU 2016-2020 data come from USDA, DSASI-MADR Algeria, INRA Maroc, ONICL Maroc, Ministère de l'agriculture des ressources hydrauliques et de la pêche Tunisie, MED-Amin baseline DB, Turkish Statistical Institute (TurkStat), Eurostat Eurobase (last update: 12.04.2021), State Statistics Service of Ukraine, FAO and PSD-online.

2021 yields come from MARS Crop Yield Forecasting System (output up to 20.04.2021).

EU aggregate after 1.2.2020 is reported.

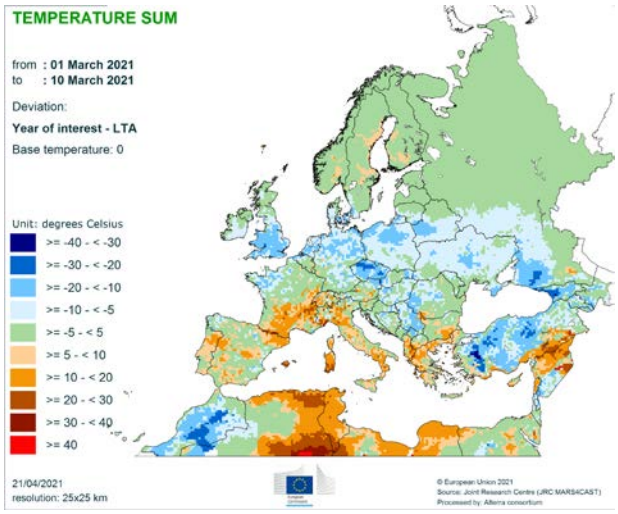
N/A = Data not available.

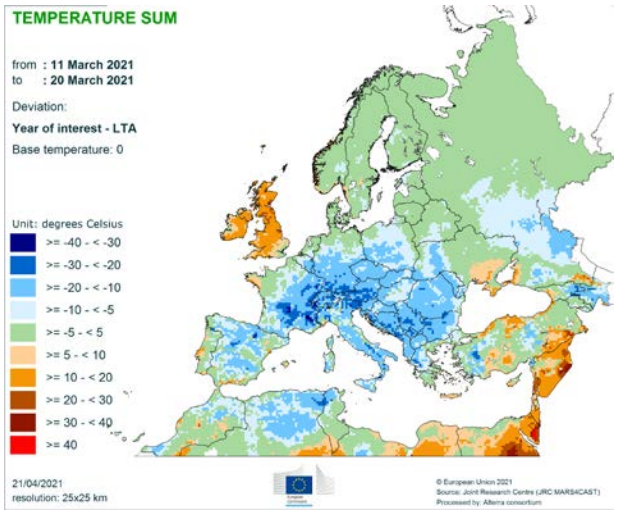
The column header '%21/5yrs' stands for the 2021 change with respect to the 5-year average(%). Similarly, '%21/20' stands for the 2021 change with respect to 2020(%).

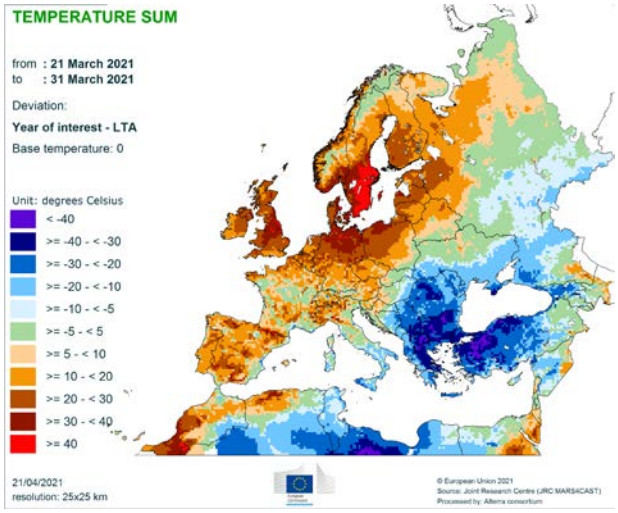
* The UA March grain maize forecast had been reported erroneously, instead of 3.25 it was supposed to be 7.14 t/ha.

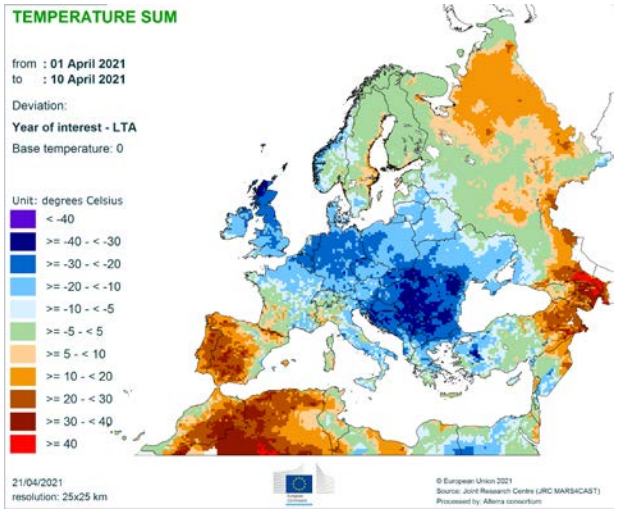
7. Atlas

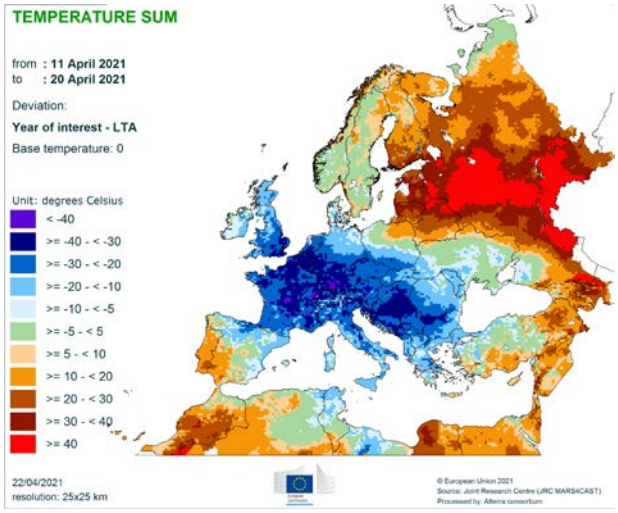
Temperature regime

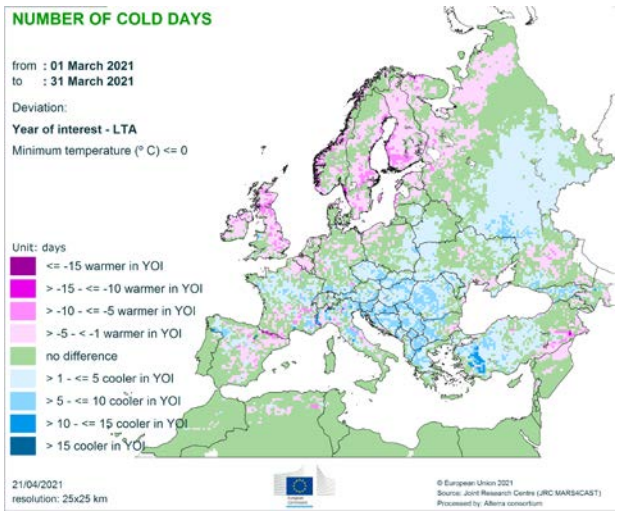


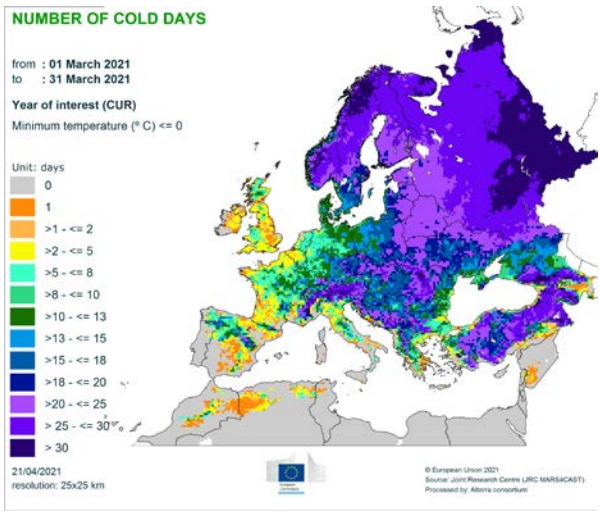


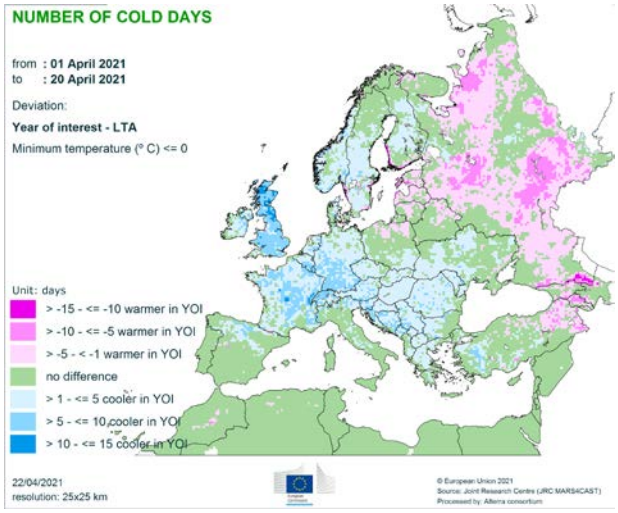


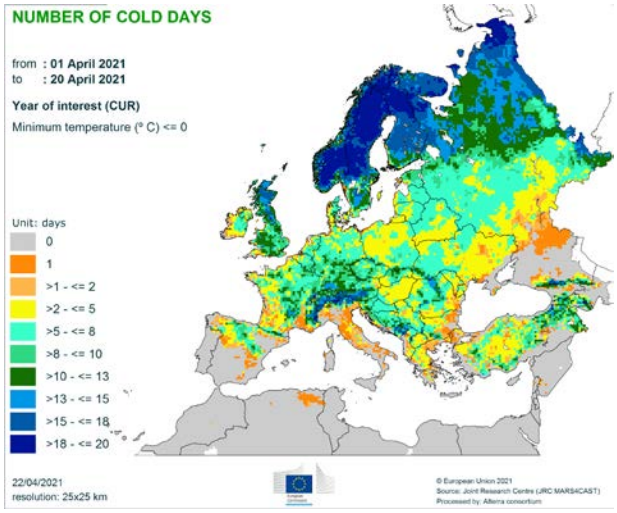




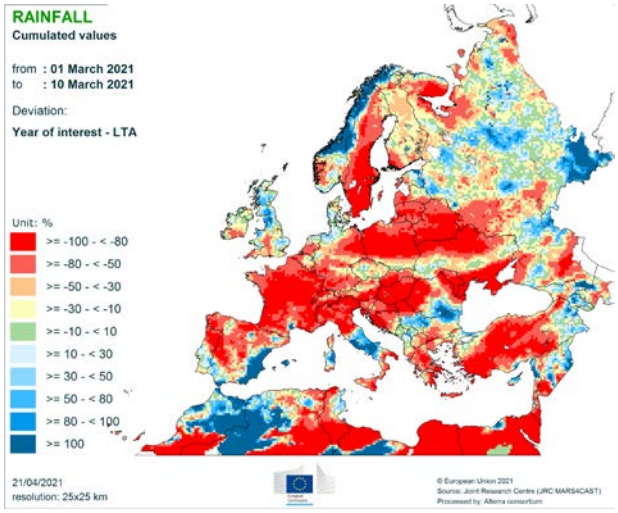


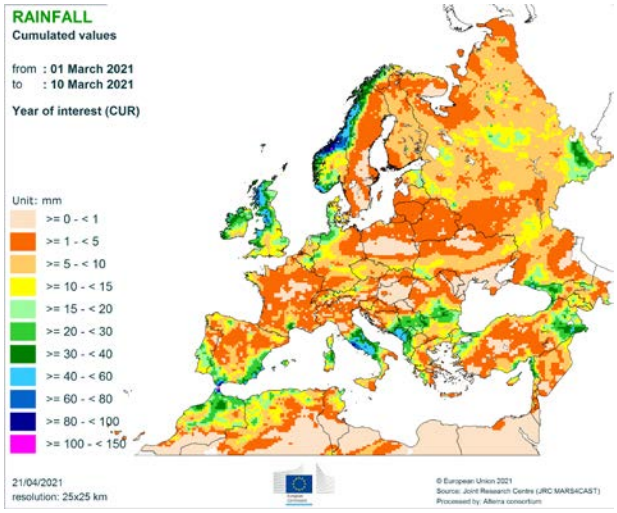


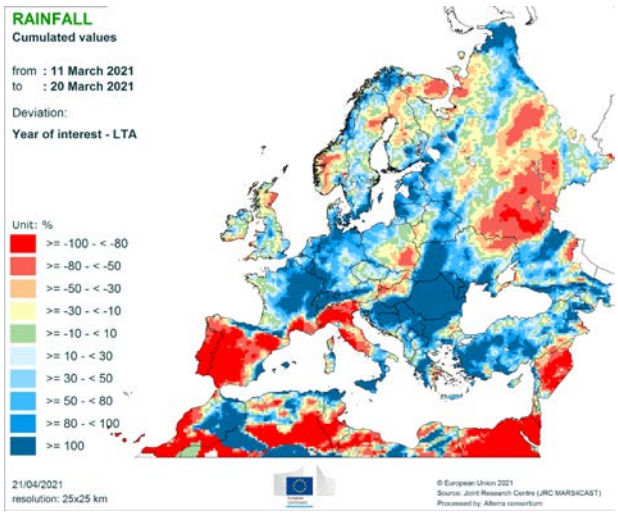




Precipitation



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to : 20 March 2021
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>= -50 - < -30
>= -30 - < -10
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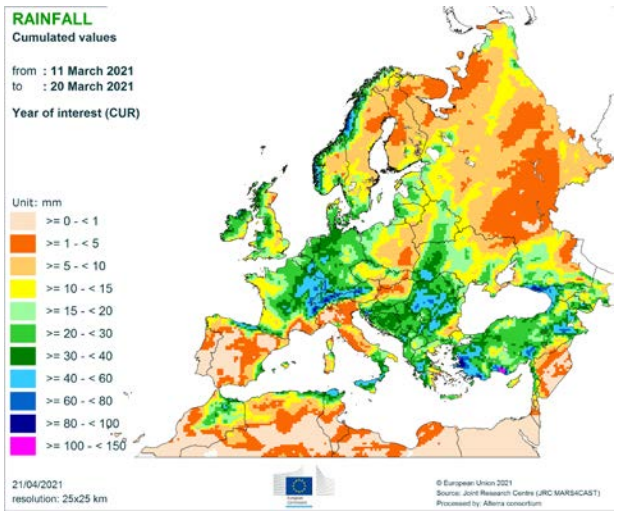
>= 50 - < 80
>= 80 - < 100
>= 100
21/04/2021
resolution: 25x25 km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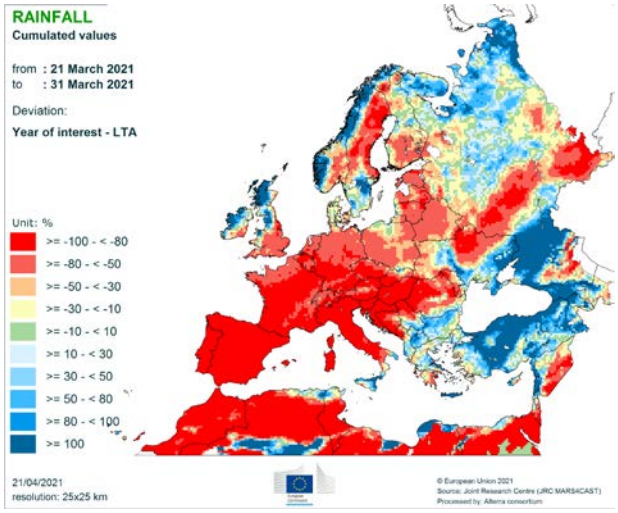
21/04/2021
resolution: 25x25 km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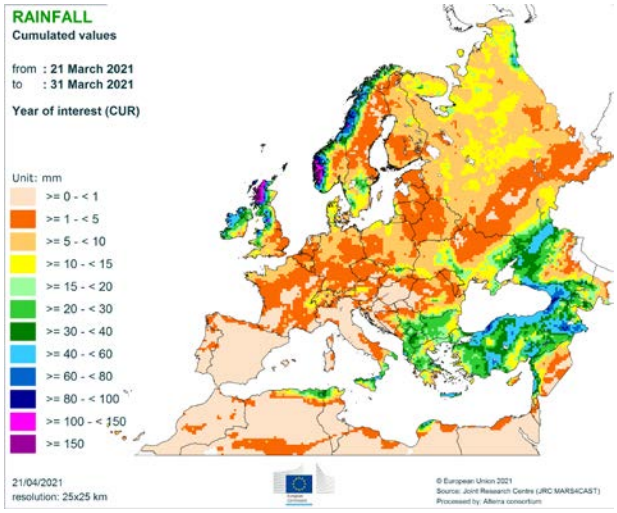
>= 100
21/04/2021
resolution: 25x25 km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Year of interest (CUR)
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21/04/2021
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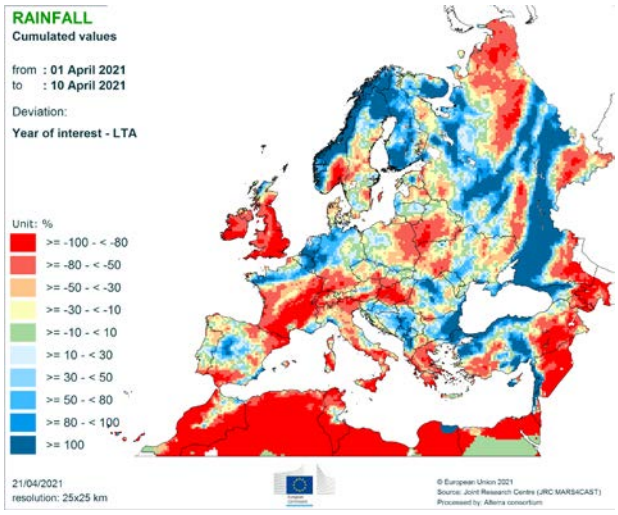
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Cumulated values
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to : 10 April 2021
Deviation:
Year of interest - LTA
Unit: %
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21/04/2021
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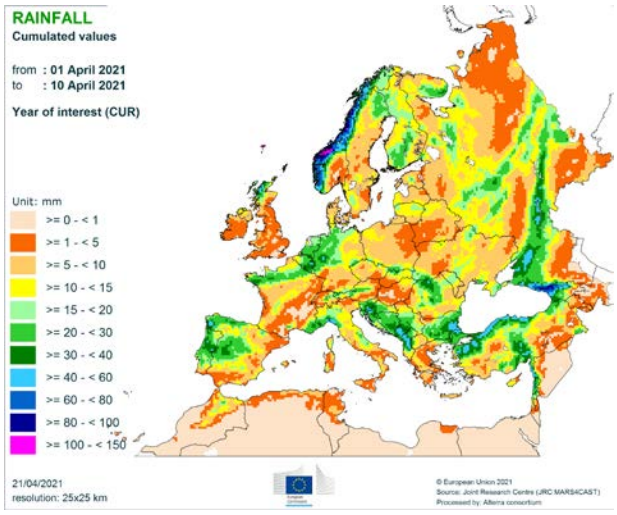
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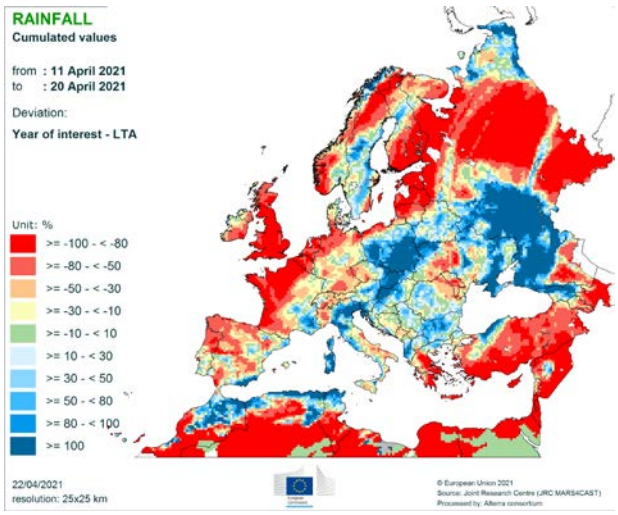
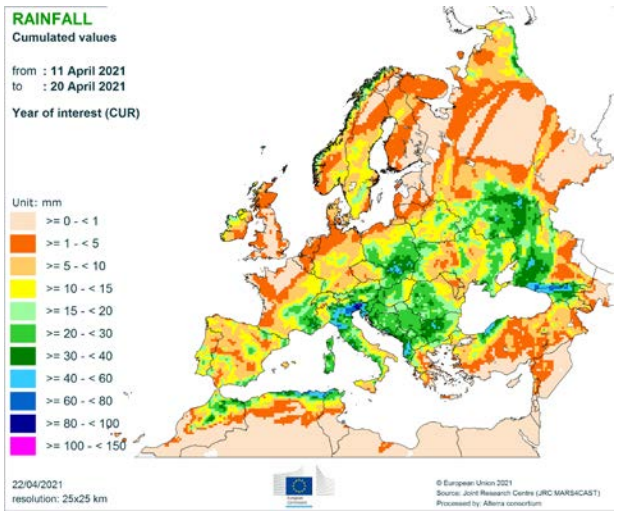
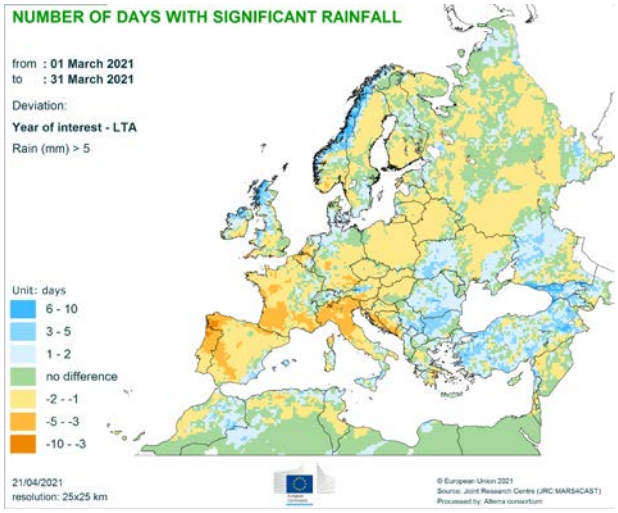
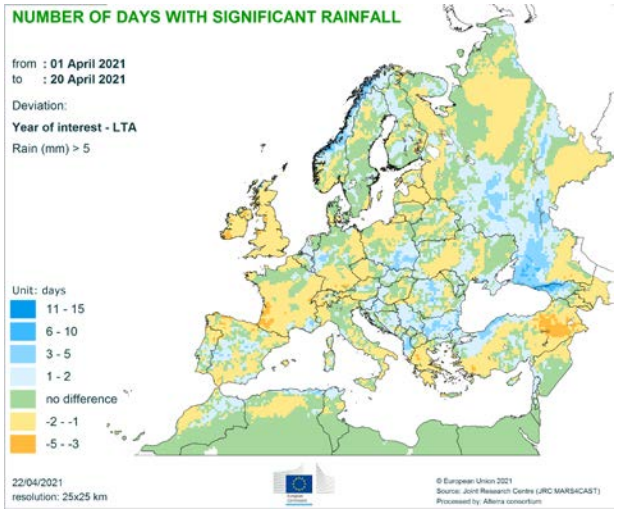
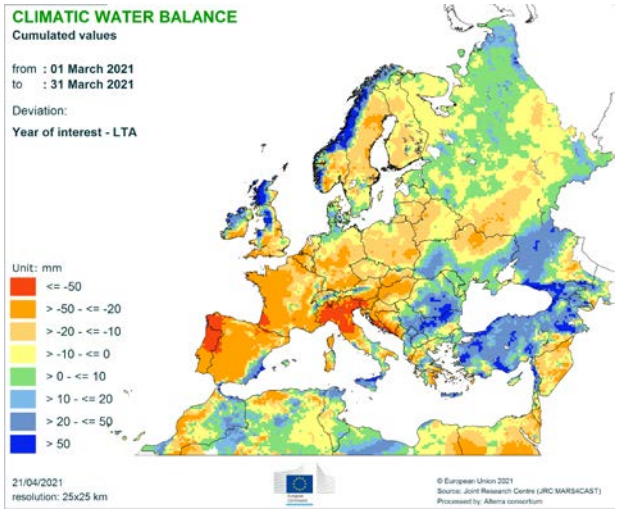


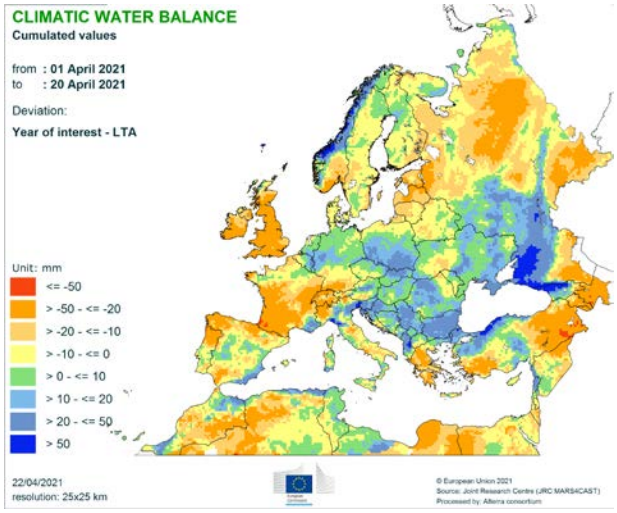




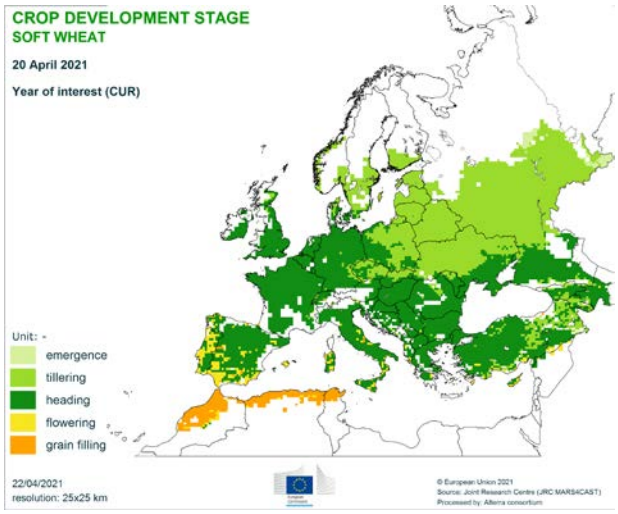


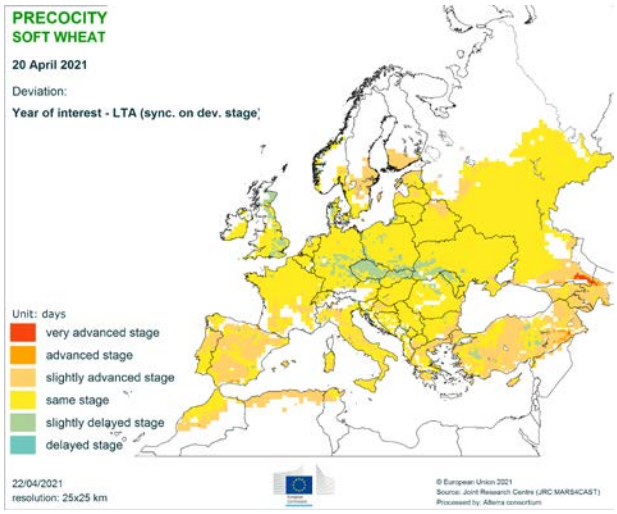
Climatic water balance

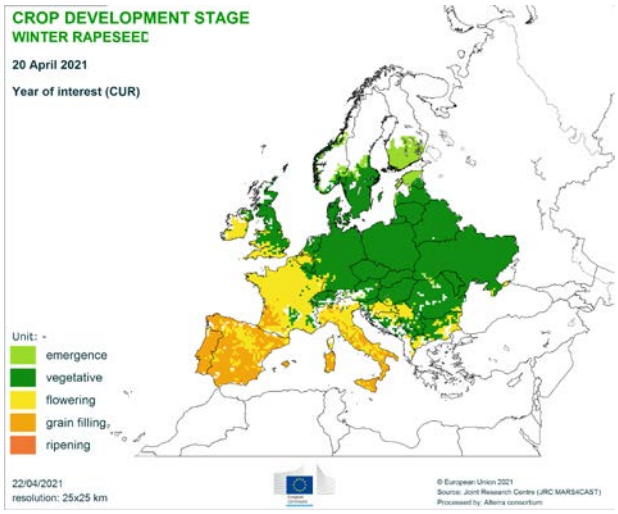


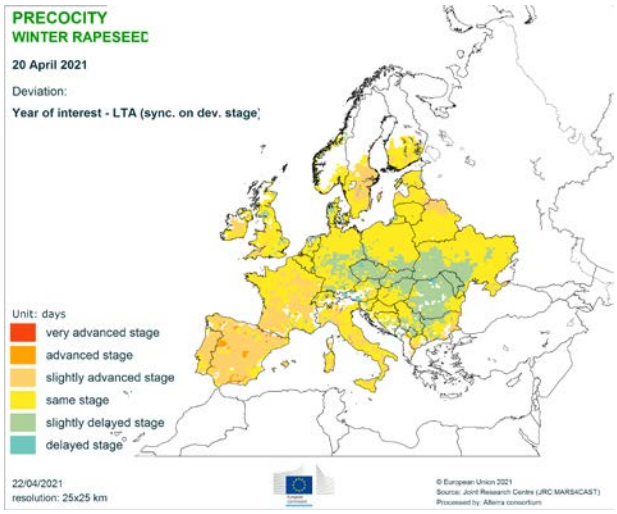


Crop development stages and precocity

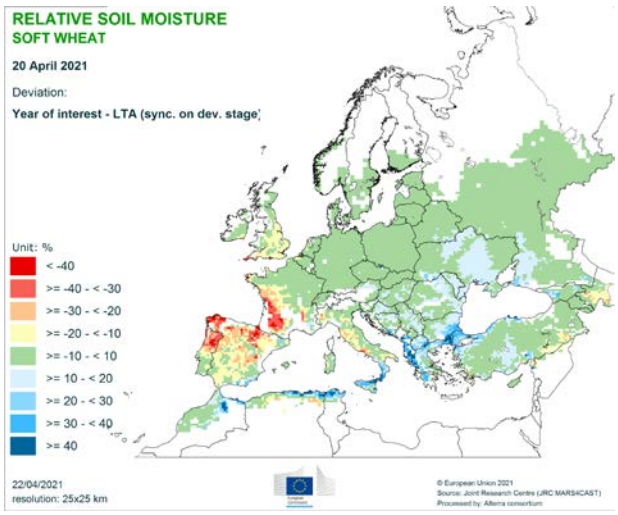


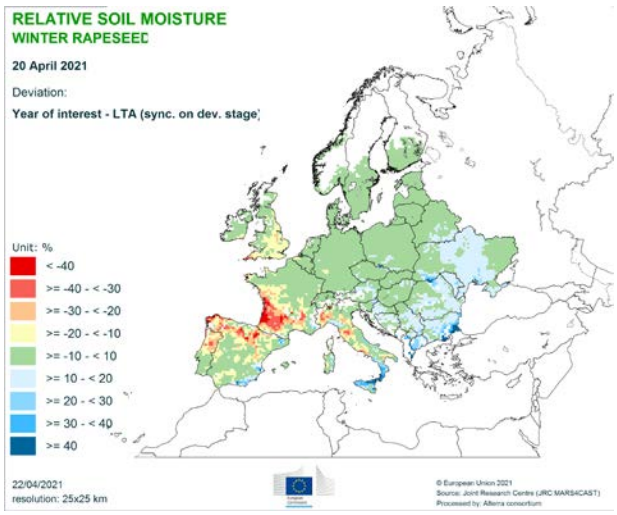






Relative soil moisture





JRC MARS Bulletins 2021

Date	Publication	Reference
25 Jan	Agromet analysis	Vol. 29 No 1
22 Feb	Agromet analysis	Vol. 29 No 2
15 Mar	Agromet analysis, yield forecast	Vol. 29 No 3
26 Apr	Agromet analysis, remote sensing, pasture analysis, sowing conditions, yield forecast	Vol. 29 No 4
25 May	Agromet analysis, remote sensing, pasture analysis, sowing update, yield forecast	Vol. 29 No 5
21 Jun	Agromet analysis, remote sensing, pasture analysis, rice analysis, yield forecast	Vol. 29 No 6
26 Jul	Agromet analysis, remote sensing, pasture analysis, harvesting conditions, yield forecast	Vol. 29 No 7
23 Aug	Agromet analysis, remote sensing, pasture update, harvesting update, yield forecast	Vol. 29 No 8
20 Sep	Agromet analysis, remote sensing, pasture analysis, rice analysis, harvesting update, yield forecast,	Vol. 29 No 9
25 Oct	Agromet analysis, pasture update, sowing conditions, harvesting update, yield forecast	Vol. 29 No 10
22 Nov	Agromet analysis, sowing update, harvesting update	Vol. 29 No 11
13 Dec	Agromet analysis	Vol. 29 No 12

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

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