Issued: 26 April 2022
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European Commission

JRC MARS Bulletin

Crop monitoring in Europe

April 2022

Overall favourable conditions in most of Europe

Dry conditions in southern regions slightly reduce yield forecasts

In most parts of western, northern, and northern central Europe, weather conditions during this review period were adequate for winter crop development, and allowed good progress with spring sowings and other field operations. As it is still early in the season, crop yield forecasts for these regions are maintained in the light of historical trends. Several parts of southern and southern central Europe, experienced unfavourable weather conditions, which result in an overall slight downward revision of the yield forecasts for winter crops.

Intense rain in southern Spain and Portugal brought relief from the preceding drought, but arrived too late to fully restore yield potentials and caused some physical damage to plants. Precipitation in central Spain was insufficient to avoid a worsening of soil moisture conditions. Continued drought conditions in northern, central, and south-western Italy negatively impacted winter crop growth, and delayed summer crop sowing. Unfavourable dry conditions – so far with limited negative impacts on winter crops - are also present in Hungary, Slovenia, Croatia, Romania, and southern Ukraine.

In south-eastern Italy and Turkey, crop growth and development lag behind due to persistently below-average temperatures.

Contents:

Covers the period from 1 March until 18 April

AREAS OF CONCERN - SUMMER/WINTER CROPS

Crop	Yield t/ha				
	Avg 5yrs	March Bulletin	MARS 2022 forecasts	%22/5yrs	% Diff March
Total cereals	5.49	5.67	**5.63**	+ 2.5	—
Total wheat	5.62	5.80	**5.74**	+ 2.3	- 1.0
Soft wheat	5.84	6.02	**5.95**	+ 2.0	- 1.2
Durum wheat	3.52	3.60	**3.55**	+ 0.8	- 1.4
Total barley	4.84	5.02	**4.97**	+ 2.6	—
Spring barley	4.13	4.33	**4.31**	+ 4.3	—
Winter barley	5.75	5.83	**5.79**	+ 0.8	- 0.7
Grain maize	7.86	7.91	**7.91**	+ 0.6	—
Rye	3.90	4.19	**4.11**	+ 5.4	- 1.9
Triticale	4.19	4.37	**4.34**	+ 3.5	- 0.7
Rape and turnip rape	3.07	3.22	**3.19**	+ 3.8	- 0.9
Potato	33.7	34.5	**34.4**	+ 2.3	—
Sugar beet	73.9	77.8	**77.8**	+ 5.3	—
Sunflower	2.33	2.38	**2.38**	+ 2.4	—
Soybean	2.89	2.99	**2.99**	+ 3.4	—

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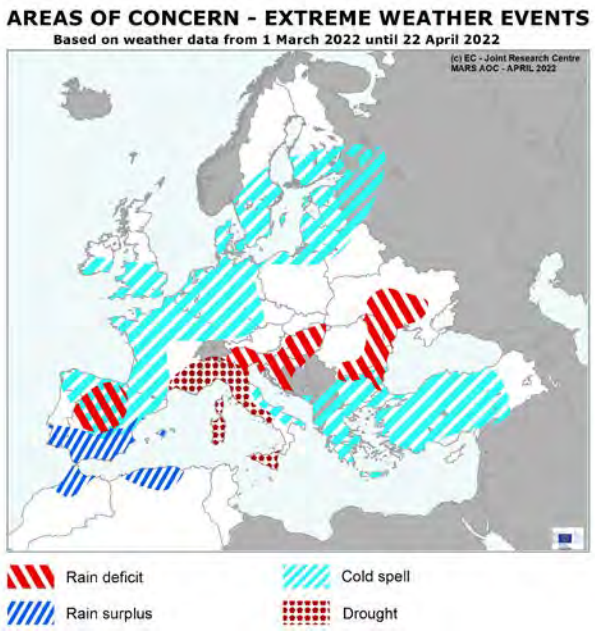
Joint Research Centre

1. Agrometeorological overview

1.1. Areas of concern



In the first days of April, a large region, extending from central Spain to the Baltic region, experienced exceptional cold weather. Temperatures on the coldest days were as low as -6°C to -8°C in parts of central Spain, central France and Germany. However, impacts on cereal crops are likely to be very limited, as the sensitive stages around flowering had not yet been reached when the cold weather occurred. There will be some negative impact on flowering rapeseed, but yield potentials are only expected to be slightly reduced. Limited impacts are also reported on recently emerged stands of early sown sugar beet.

However, severe irreversible damage was reported to blooming fruit crops; particularly in Spain.

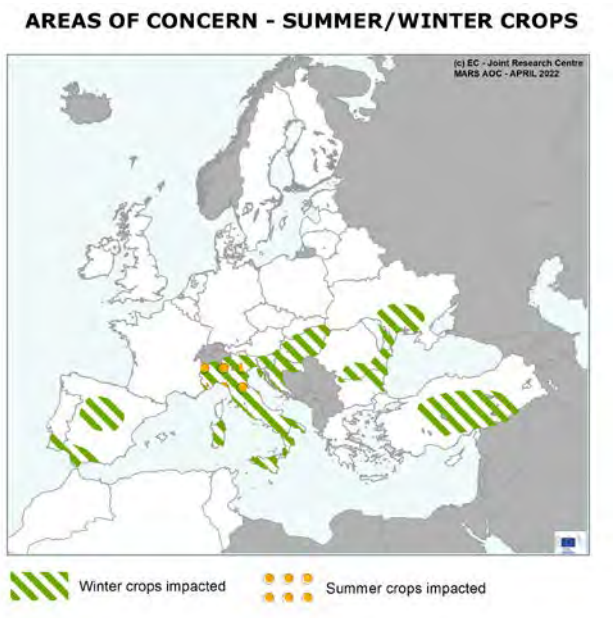
Persistently lower-than-usual temperatures mark this spring in Bulgaria, Greece and Turkey. Conditions are delaying crop development, but there are no actual concerns regarding final yields at this time.

In southern parts of the Iberian Peninsula, intense rains brought relief from the preceding drought, but caused some physical damage to plants. In central Spain, precipitation in the first half of March initially improved soil moisture conditions, but deficits persist and rains were insufficient to stave off worsening of crops conditions.

Drought conditions continued in south-eastern France, and in northern, central, and south-western Italy. In the Italian regions this both negatively affects winter crop growth and delays summer crop sowing. Light rain at the end of March / beginning of April allowed limited summer crop sowing to take place. Slightly better conditions are evident in north-eastern Italy. Here the soils are less dry, and winter crop biomass accumulation is only moderately below the average. In south-eastern Italy, persistently lower-than-usual temperatures are delaying crop development and have resulted in below -average biomass accumulation.

Unfavourable dry conditions are also present in central Europe (Hungary, Slovenia and Croatia), Romania, and southern Ukraine, but to date this has limited negative impact on winter crops, and fair yields are still possible if conditions improve.

In the Maghreb region, the recent abundant rains in Morocco and Algeria arrived too late to trigger any recovery of winter crops. The season is almost at an end, and yield expectations remain very low.



1.2. Meteorological review (1 March –18 April 2022)

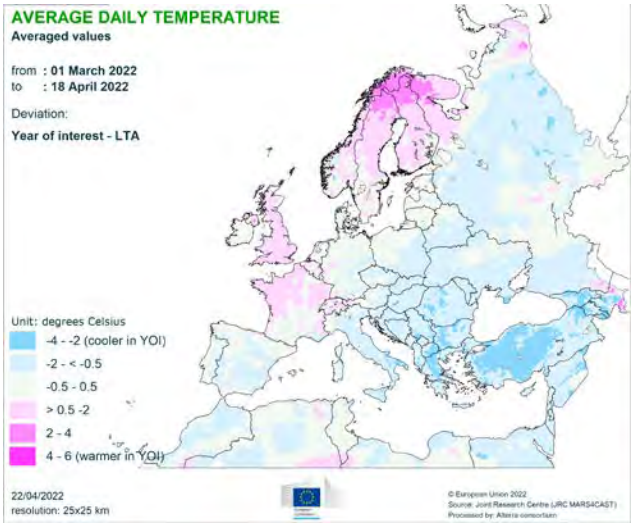
Slightly warmer than usual conditions, with daily mean temperature anomalies (with respect to the LTA) from 0.5 °C to 2 °C. were observed in France, the Benelux countries, the British Isles and the Scandinavian Peninsula.

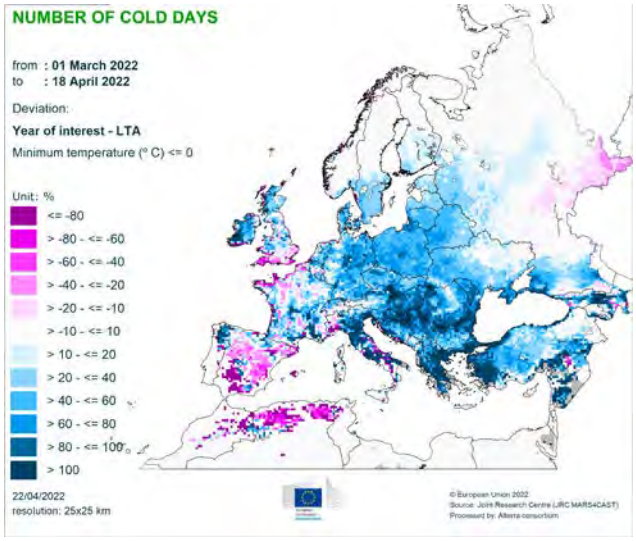
Slightly colder than usual conditions , with daily mean temperature anomalies (with respect to the LTA) from --2 °C to -0.5 °C, were observed in most parts of southern, central, and eastern Europe. More distinct negative anomalies (from -4 °C to -2 °C) were observed in some parts of Romania and Bulgaria, and major parts of Greece and Turkey. The number of cold days (with minimum temperature below 0 °C) exceeded the LTA in almost all parts of Europe, with the exception of Spain, and some parts in northern France and southern parts of the British Isles.

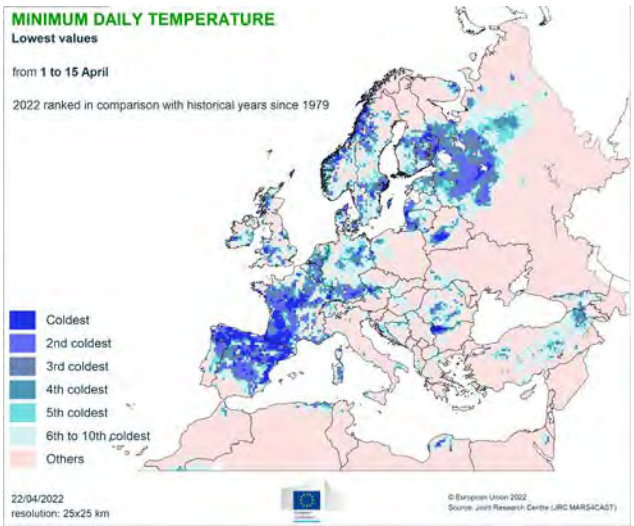
Whereas the cold anomalies in eastern and (more markedly) south-eastern Europe were mainly due to persistent **cold spells** during the first three weeks of March, the first days of April were exceptionally cold in a large region, extending from central Spain to the Baltic region.

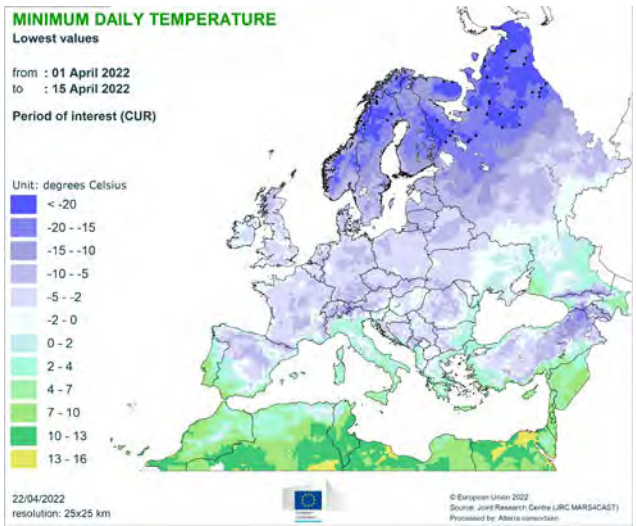
Wetter than usual conditions were observed in central and southern Spain and southern Portugal. Precipitation anomalies in these regions ranged from +50% to more than +100% with respect to the LTA. In southern Spain and southern Portugal this marked the end of a period of drought that had built up since autumn 2021. Less distinct wet anomalies occurred in western Russia and along the Atlantic coast of the Scandinavian Peninsula.

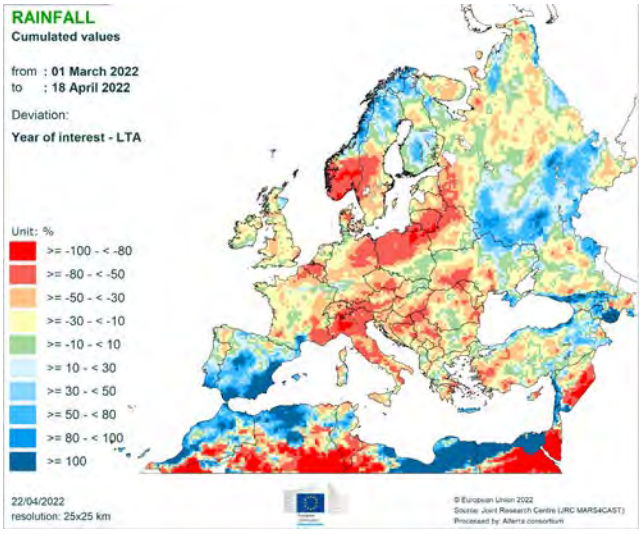
Drier than usual conditions, with precipitation anomalies from -30% to less than -50% with respect to the LTA, were observed in a large belt extending from northern France to the Baltic region, as well as in central and northern Italy, southern France, and large parts of Austria, Czechia, Slovenia, Croatia, Hungary, Romania and western Ukraine.

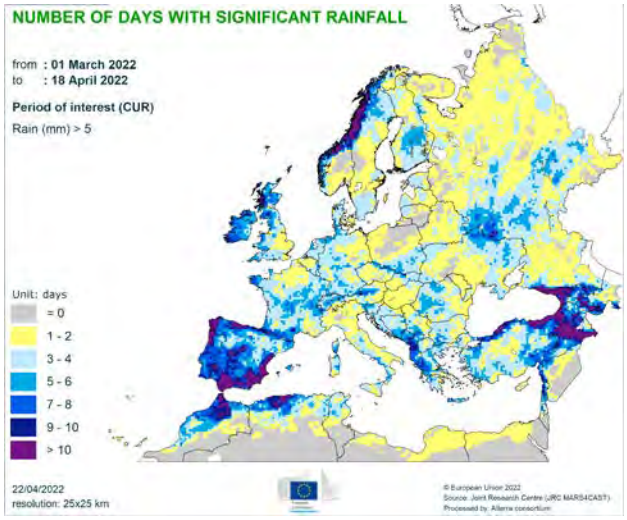












1.3. Weather forecast (23 April - 1 May)

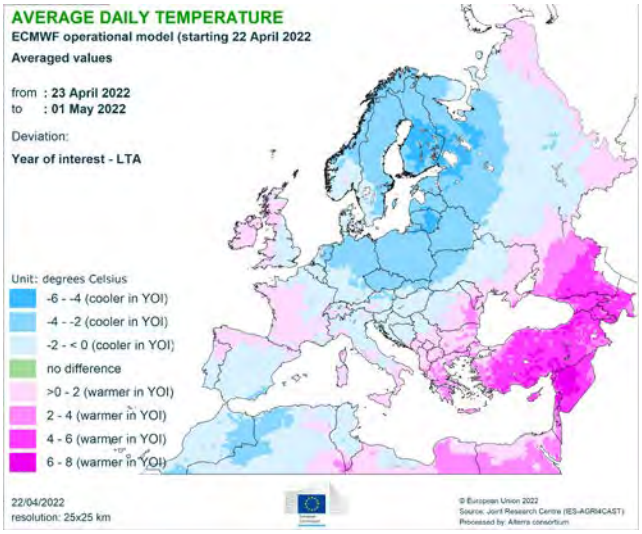
Weather conditions will be mainly determined by cyclonic disturbances affecting central and eastern Europe in the first half of the week. These atmospheric patterns will link with north-westerly colder flow over north-eastern Europe. These large-scale atmospheric conditions will favour atmospheric instability and precipitation. Towards the end of the forecast period, a cyclonic pattern will also approach the Iberian Peninsula favouring precipitation events.

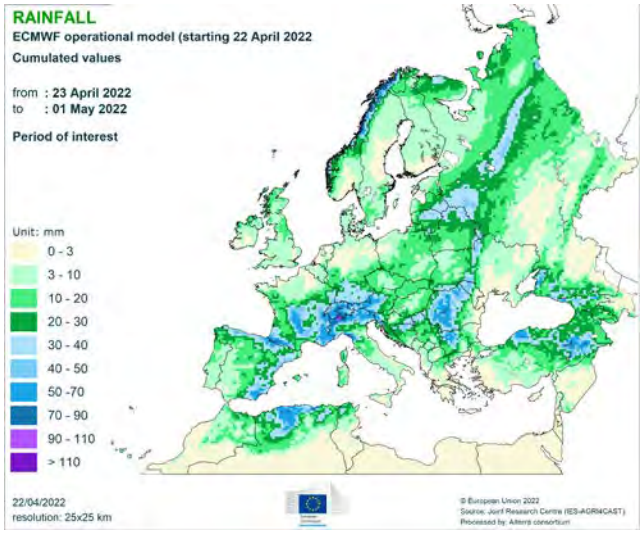
Colder-than-usual conditions are expected over most of central, eastern and northern Europe. Daily mean temperature anomalies from -4 °C to -2 °C are forecast in a large region extending from Germany to north-western Russia.

Warmer-than-usual conditions are expected in large regions of south-eastern Europe, Turkey, and along the eastern part of the Black Sea. In those areas, daily mean temperature anomalies from 4 °C to 6 °C are forecast.

Total precipitation of **30 mm to 70 mm** is forecast over large areas in Spain and France, in a broad region centred over the Alps, in most or Romania, and in large areas of Bulgaria and Turkey.

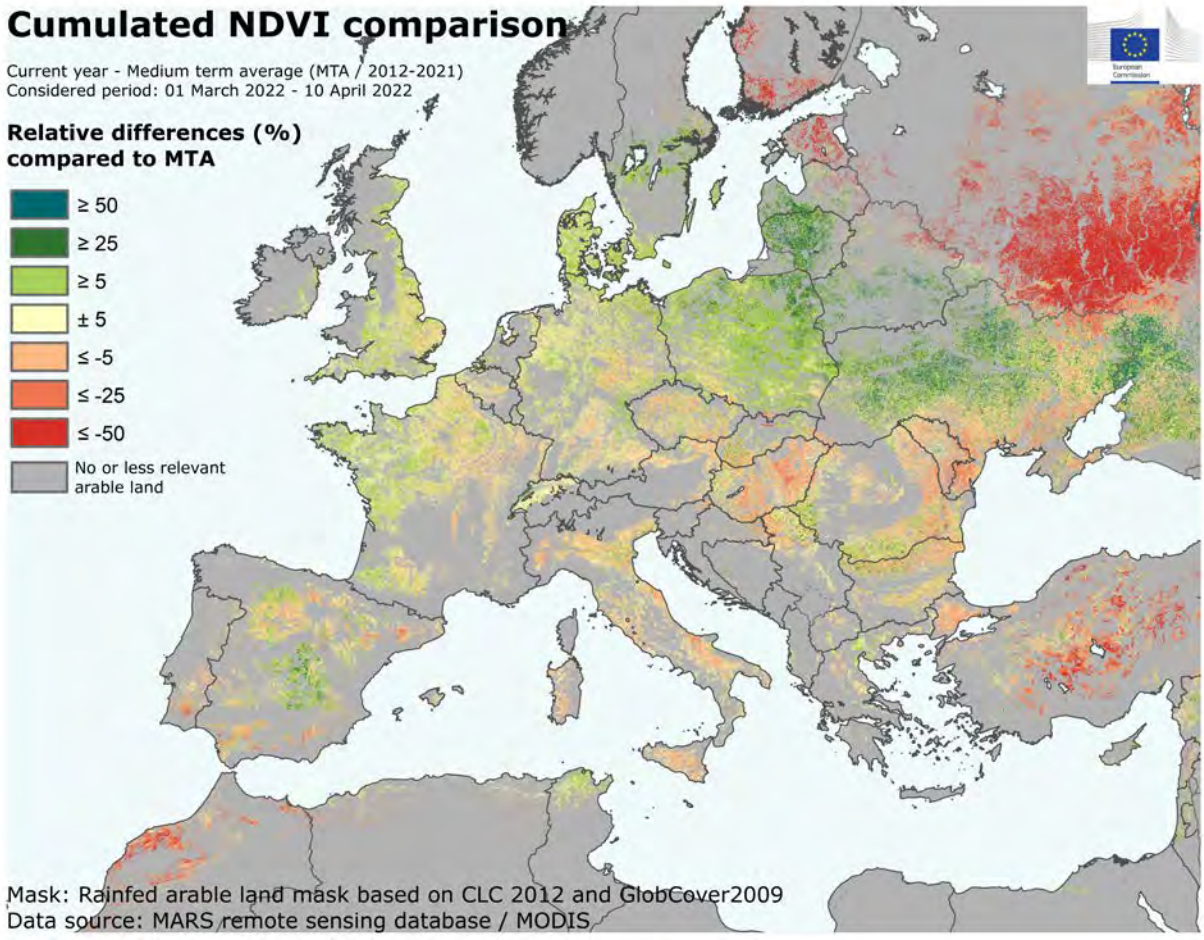
The long-range weather forecast for May, June and July points to extremely likely warmer-than-usual conditions in southern Europe associated with likely to very likely drier-than-usual conditions. In northern Europe likely to very likely warmer-than-usual conditions are forecast.





2. Remote sensing – observed canopy conditions

Dry and cold conditions hampered crops in Southern Europe



The map displays the differences between the Normalised Difference Vegetation Index (NDVI) cumulated from 1 March to 10 April 2022 and the medium-term average (MTA, 2012-2021) 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.

The map above displays predominately winter crop conditions, as summer crops have just been sown and thus contribute only little to NDVI values. Dry conditions affected crop biomass accumulation in the Iberian Peninsula, Italy, Hungary and Morocco. In March, a cold spell hampered crop development especially in the Black Sea area, where crop growth was already delayed. Average to advanced crop development is predominantly observed in northern and eastern regions, thanks to a warm and wet winter. In Russia, Estonia and Finland, the extended negative anomaly is not relevant to this analysis as crops have not fully started the spring growth yet and/or the NDVI values are distorted due to snow cover.

In southern regions of the **Iberian Peninsula**, winter was relatively warm and extremely dry, resulting in poor biomass accumulation for crops. Abundant rainfall arrived only in March, too late to fully recover cereals biomass accumulation (e.g. *Andalucía*). In northern and central regions crops are in fair condition. In **Italy**, the start to the season was characterised by drought in northern and central regions, while south-eastern regions were marked by cold weather. As a result, winter cereals in the south present delayed development and below-average biomass accumulation (e.g. *Puglia*).

Mild temperatures in February and March favoured an early start to the season for winter crops in **France** (e.g. *Centre-Val de Loire*). Nonetheless, precipitation remained below the long-term average and more rain is needed to further support crop development.

In **Germany**, after the initial early start to the season thanks to a warmer-than-usual winter, the NDVI profiles now display average development, as a consequence of dry weather in March and cold days in April that slowed down crop development (e.g. *Brandenburg*).

In **Poland, Denmark, Sweden, Latvia and Lithuania** the map shows positive NDVI anomalies (green colours), reflecting an early development of crops driven by mild temperatures in January and February. Although no rainfall was observed in March, the abundant precipitation recorded in February was sufficient to provide adequate water supply to crops.

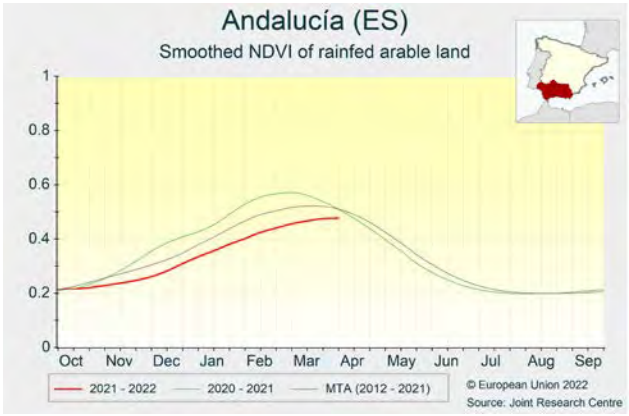
In central European regions (including **Slovakia**, **Czechia**, **Austria** and **Hungary**), the lack of precipitation and colder–than-usual temperatures in March, delayed the start to the season. Notably, in **Hungary** winter crops are in poor condition because of the persistence of dry weather (e.g. *Del-Alfold*).

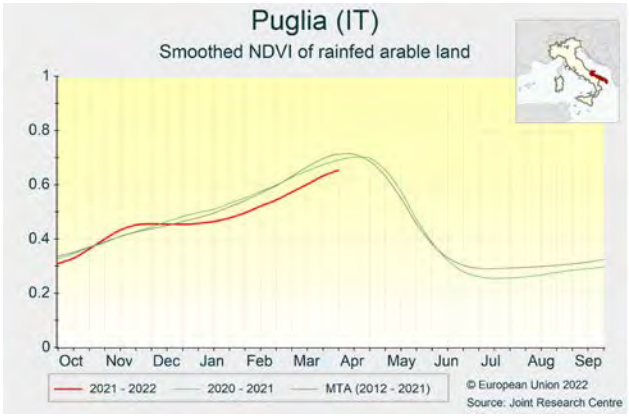
In **Romania**, winter was dry and warmer than usual, favouring an advanced and fair start to the season for crops. A cold March delayed crop development, which is now from average (in the west) to well delayed stages (in the east) (e.g. *Macroregiunea Patru*). Similarly, in **Bulgaria**, a cold spell in March caused a slowdown in winter crop development, particularly in eastern areas where the lowest minimum temperatures were recorded.

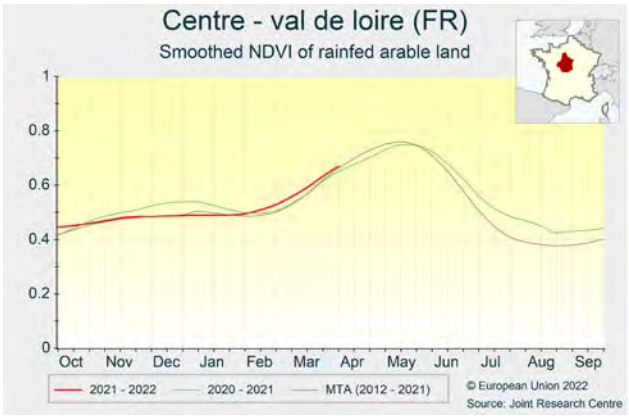
Mixed conditions are observed in **Ukraine**: positive NDVI anomalies are displayed in northern regions where advanced crop development was supported by a mild and wet winter, while negative anomalies in southern regions present delayed development, due to cold and dry weather in March (e.g. *Zaporiz'ka*).

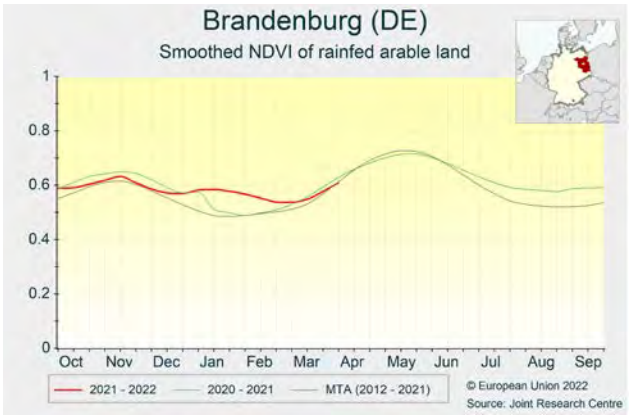
In the **United Kingdom**, above-average temperatures and fair precipitations during winter led to a positive biomass accumulation.

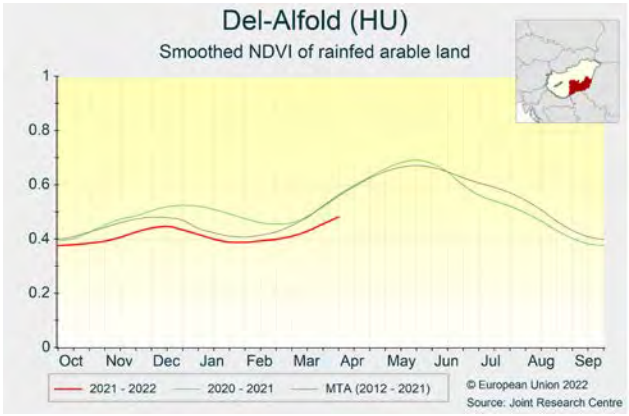
In the **Maghreb** region, long-lasting drought compromised the winter cereals season. Intense rainfall in March, was favourable to crops in **Tunisia** and eastern **Algeria**, which partially recovered biomass accumulation, but not in **Morocco** where cereals had already reached the grain filling stage (*e.g. Marrakech – Safi*). In **Turkey**, the negative anomaly in the map (red colours) indicates a strong delay in crop development, due to low temperatures with respect to the seasonal average.

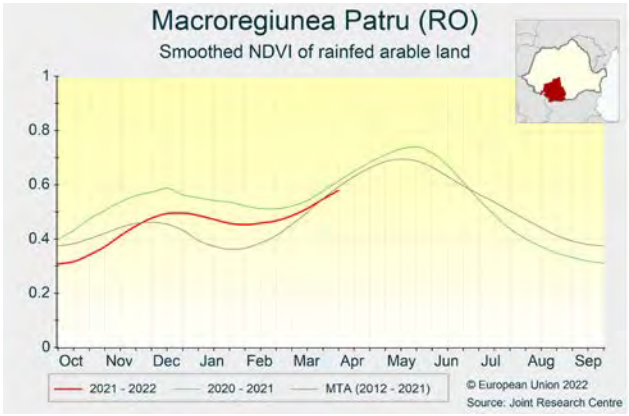


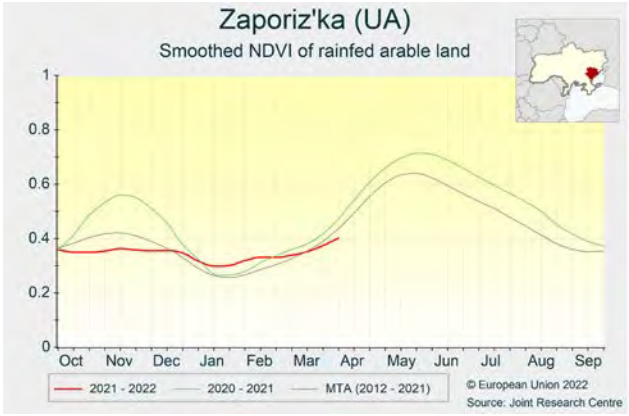


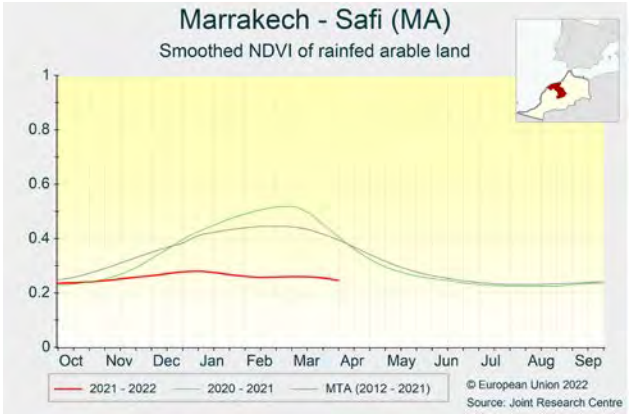





Del-Alfold (HU)
Smoothed NDVI of rainfed arable land
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
2021 - 2022
2020 - 2021
MTA (2012 - 2021)
© European Union 2022
Source: Joint Research Centre


Macroregiunea Patru (RO)
Smoothed NDVI 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
2021 - 2022
2020 - 2021
MTA (2012 - 2021)
© European Union 2022
Source: Joint Research Centre

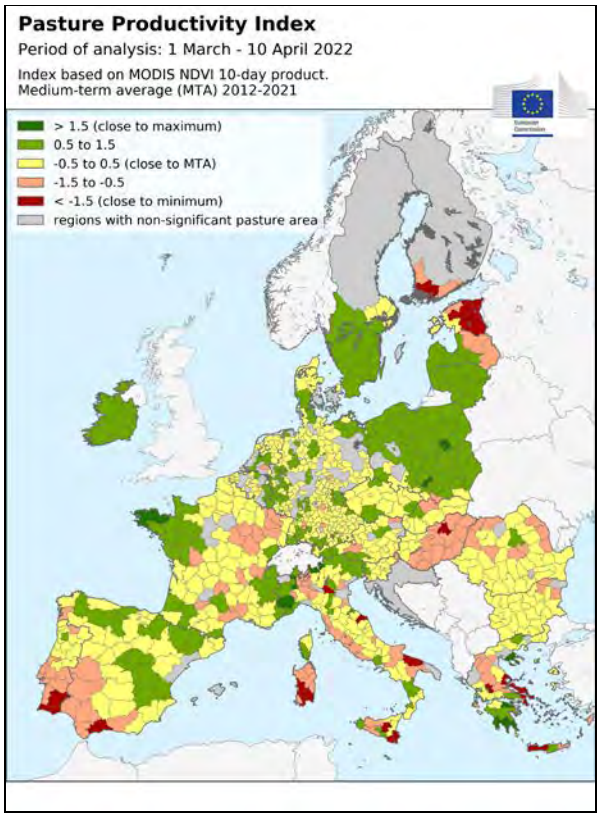

Zaporiz'ka (UA)
Smoothed NDVI of rainfed arable land
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
2021 - 2022
2020 - 2021
MTA (2012 - 2021)
© European Union 2022
Source: Joint Research Centre


Marrakech - Safi (MA)
Smoothed NDVI 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
2021 - 2022
2020 - 2021
MTA (2012 - 2021)
© European Union 2022
Source: Joint Research Centre

3. Pastures in Europe – regional monitoring

Favourable conditions in most EU regions

Pastures are overall in fair condition in most EU countries. In some southern regions, pasture growth lagged behind due to limited water supply and/or colder-than-usual conditions. The regions most affected are Greece, Italy, Hungary, and southern Portugal and Spain. In Finland and Estonia, pasture regrowth after winter dormancy has only just started.



The pasture productivity index (PPI[1]) for the period from 1 March to 10 April 2022 is shown in the map above.

Temperatures and soil moisture conditions were adequate for pasture growth in most parts of northern **Spain**, **France** (except the East), the **Benelux** countries, **Germany**, and **Poland**. In early April, pasture growth was temporarily reduced due to a distinct cold spell, but returned to good levels afterwards.

Because of cold conditions, regrowth has not yet - or only just - started in **Finland** and **Estonia**.

In **Ireland**, **Denmark** and southern **Sweden**, pasture development has been above average, but slowed down due to recent drier and colder-than-usual conditions.

In **Austria, Czechia**, **Slovakia**, and **Hungary**, prevailing dry conditions and below-average temperatures made it more difficult to reach average levels of pasture development. Southern **Italy** and islands experienced dry and warm conditions which limited biomass accumulation. In northern and central **Italy,** colder than usual temperatures reduced pasture development, but also water demand, which was favourable due to the persistent lack of precipitation.

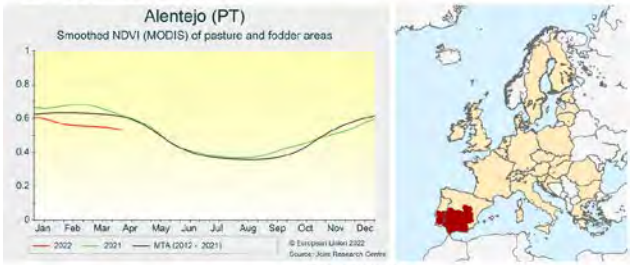
The southern part of the Iberian Peninsula (southern **Spain** and **Portugal**) experienced heavy rainfall after a very long dry period. Pastures have not recovered yet in most of the rangelands.

In **Greece**, drier and colder-than-usual conditions prevailed. Biomass accumulation level is slightly below the MTA in most of the country. In some regions, it is much below average (*Western Macedonia*, *Thessaly*, *Crete* and *Attica*).

[1] PPI: the relative index of pasture productivity is an indicator of biomass formation based on the integration of the NDVI 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 2012 to 2021.

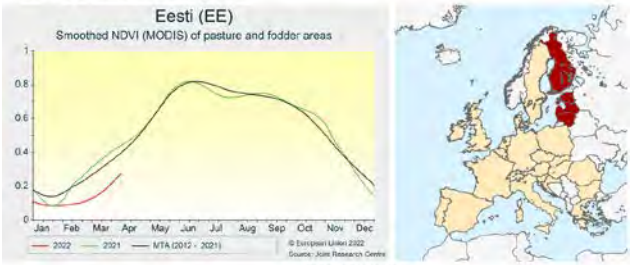
Spain and Portugal - South

Reference period: 01 Mar to 10 Apr 2022



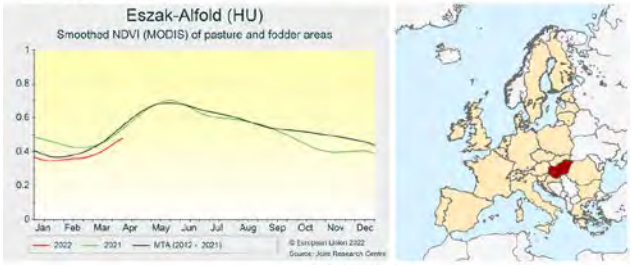
Finland and Baltic countries

Reference period: 01 Mar to 10 Apr 2022



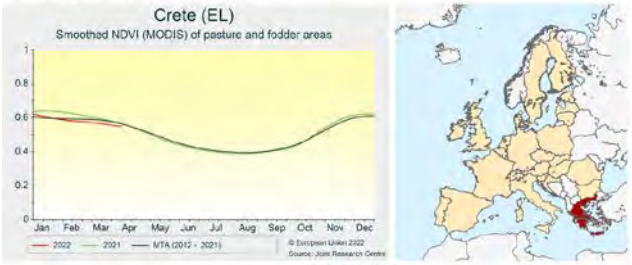
Hungary

Reference period: 01 Mar to 10 Apr 2022



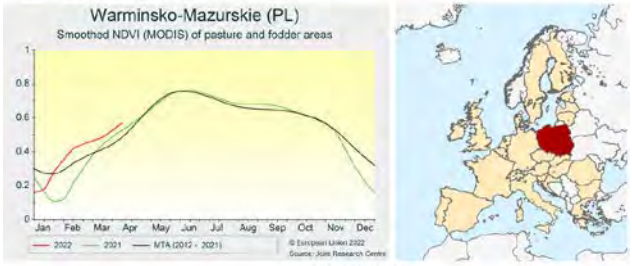
Greece

Reference period: 01 Mar to 10 Apr 2022



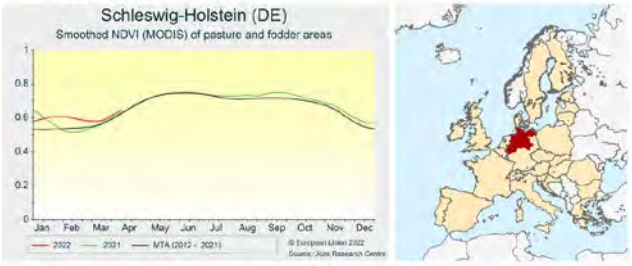
Poland

Reference period: 01 Mar to 10 Apr 2022



Germany - North

Reference period: 01 Mar to 10 Apr 2022



4. Sowing conditions

Spring barley

Good progress under dry conditions

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, Sweden, Germany, Ireland and United Kingdom, where dry conditions allowed a good progress at the end of March and the rainfall of the beginning of April ensured an adequate emergence.

In Poland, Romania, Hungary, Ukraine sowings progressed well thanks to the dry weather, but low soil moisture levels in the top soil delayed germination. More rainfall is needed to ensure an optimal emergence and an uniform crop establishment.

In the Baltic Sea region, spring sowing usually starts from the second half of April, and low minimum temperatures prevent an earlier start.

Sugar beet

Cold conditions at the start of the growing season

Adequate temperature and top soil moisture conditions allowed for a timely start to the sugar beet sowing campaign in France during the second dekad of March, and for rapid progress and finalisation of sowings (most of the fields were sown within a 10-day period). However, freezing temperatures recorded during the first days of April locally caused damage to plants at the early stages of emergence, and some fields are required to be re-sown. Similar agrometeorological conditions prevailed in the Benelux countries. In Belgium and the Netherlands the sowing campaign that started during the second dekad of March progressed well until early April, when it was hampered by rainfall. Nevertheless the majority of plantations were sown by the end of March under optimal conditions. Conditions improved again in the second dekad of April and sowings are expected to be completed in the coming days. Like in France, frost damage occurred due to an early April cold spell, and some fields will need to be re-sown (e.g. 500 ha in the Netherlands, so far2).

In Germany and Poland, the sowing campaign started within an optimal time window (in the middle of March). Overly dry topsoils and freezing night conditions slowed down the pace of the field operations. Nevertheless more than 60% and 40% of the area in Poland and Germany, respectively, had been sown by mid-April. Low intensity rains during the first dekad of April improved soil moisture conditions for seed germination and early seedling development.

Across Czechia, Slovakia and Austria, colder than usual, and regionally overly dry, conditions during the first two dekads of March hampered the emergence and early development of sugar beet. The early April cold spell is expected to have caused no significant damage to seedlings.

Maize

Favourable conditions after a delayed start

In western Europe, the sowing campaign was initiated at the end of March / early April, with some delays as compared to previous years. In France and Germany, the ongoing sowing campaign is benefiting from the warm and moist conditions after the first week of April.
In Italy and Spain, the sowing campaign started later than usual on dry soils. The situation is very mixed, depending on the rain distributions and the strategies adopted by the farmers to maintain adequate soil moisture. In Italy, the level of water reservoirs is very low and water for irrigation will not be sufficient to meet demands, causing major concerns about the growing season. In Spain, the level of water reservoirs improved in March, but remains low, and water use restrictions can be expected.
In Hungary, Bulgaria and Romania, cold temperatures and dry soils caused delays to the sowing campaign, which started in the last week of March. The early April rainfalls and the warm temperatures were beneficial for a good emergence.

Sunflowers

Dry conditions delay the beginning of the sowing campaign

In Romania, Hungary and Ukraine dry conditions slightly delayed the beginning of the sowing campaign, and more rainfall is needed to ensure optimal emergence. Similarly, in Bulgaria dry soils, combined with cold temperatures, delayed sowings in the western regions; in eastern areas, the campaign is in full swings since the beginning of April. However, more rainfall is needed to ensure an adequate crop emergence. The sowing started regularly in Greece, but there are concerns regarding the impact of dry conditions on crop emergence.
In France and Germany the dry conditions of the end of March created favourable conditions for soil preparation and sunflower sowing, which started in early April and is currently ongoing.
In southern Spain the campaign progresses well, whereas it should be about to start without significant delay in northern Spain and in Italy.
A significant increase in the area sown is expected in Italy, Spain, Greece, and Bulgaria, partially at the expense of grain maize.

5. Country analysis

5.1. European Union

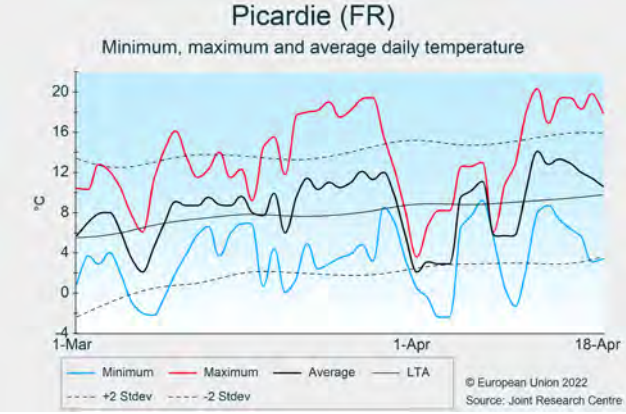
France

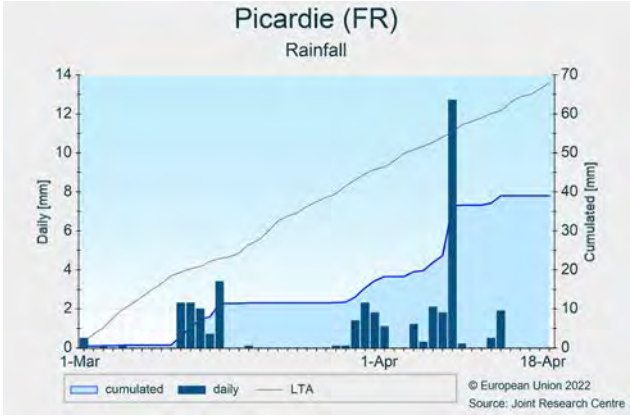
Good overall conditions

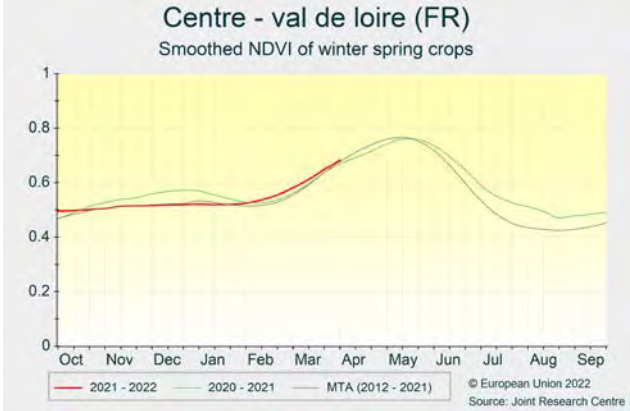
March was warmer than usual, with the most distinct temperature anomalies in the last dekad of the month. This was followed by an intensive cold event during the first four days of April. Minimum temperatures of up to –8 °C were recorded locally in central France. Following a drier-than-usual winter, several intensive rain periods provided between 60 and 110 mm during the review period in central and western parts of the country. However, a rain deficit up to 50%, as compared with the LTA, was recorded in Picardie and Nord-Pas-de-Calais.

The winter crop outlook is good as the soil moisture contents are still above critical levels, but rain is needed soon to preserve the yield potential. Neither the winter cereals, nor the rapeseed in flowering stage, were significantly impacted by the cold event of early April. However, negative impacts to blooming fruit trees were reported, to the south of the line from Aquitaine to Alsace. Vineyards were less affected thanks to farmers' measures to locally raise the temperature.

The sowing campaign for spring cereals, sugar beet and potatoes ended in March. Some sugar beet fields at emergence stage may have been impacted locally by the early April frost event, but re-sowing may avoid a loss, if necessary.







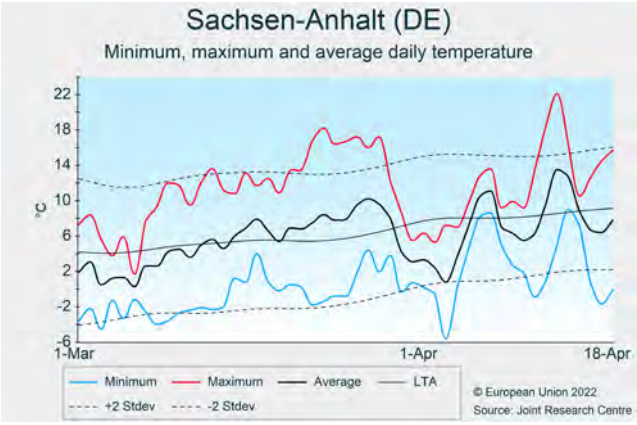
Germany

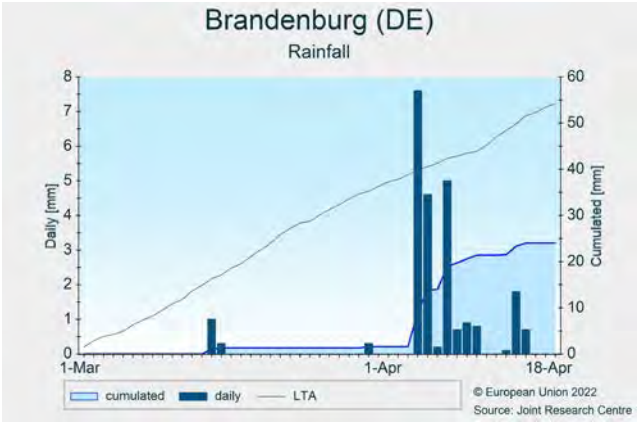
Continued favourable conditions, overall

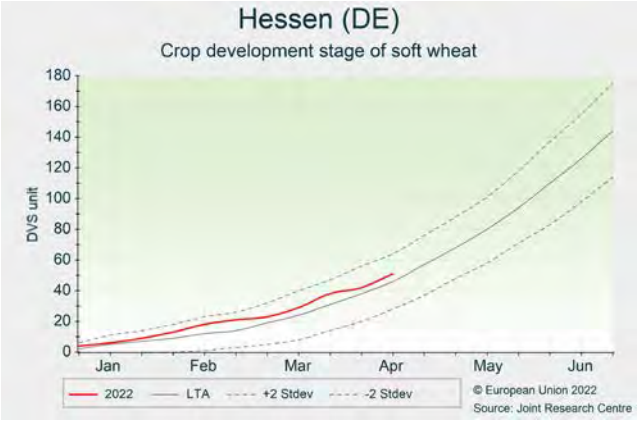
March was one of the driest and sunniest in our archive (since 1979). April presented more unsettled weather. Temperatures fluctuated strongly. Below-average temperatures prevailed during the first dekad of March and the first days of April, whereas average to above-average temperatures predominated for the remainder of the period. The first days of April were particularly cold, with minimum temperatures reaching −5 °C to −7 °C (locally −8 °C) in large parts of *Bayern*, *Thüringen* and *Sachsen-Anhalt*. Mean daily average temperatures – considering the period as a whole - were average to slightly below the LTA. Rainfall was below the LTA, and mostly concentrated within the first 10 days of April. The most distinct deficits occurred in *Brandenburg* and *Sachsen-Anhalt*, where rainfall was less than 50% of the LTA.

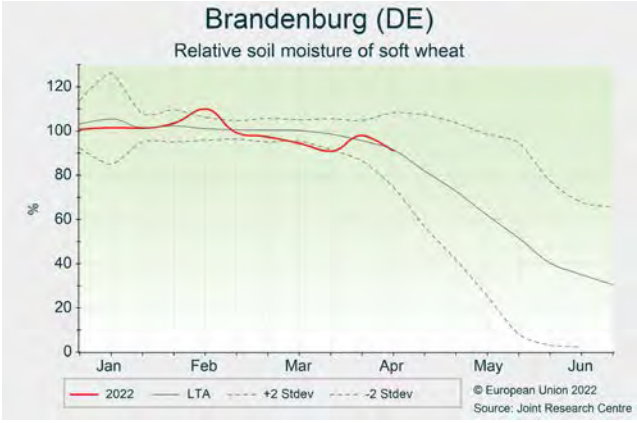
Overall, winter crops are in good condition. The cold spell in early April slowed crop development and growth but only for a short period, and without causing significant damage. Despite the dry weather, soil water contents remain close to average due to the relatively low crop water demands. Weather and terrain conditions were also favourable for field operations for most of the period. Maize sowing has made a slow start due to the adverse weather conditions, but the sowings of sugar beet and potatoes progressed well. Some emerging stands were damaged by frost; but overall, damage is expected to be very limited.

As it is still very early in the season, the current crop yield forecasts are still based on historical trends.









Poland

Dry and cold start to the season for spring crops

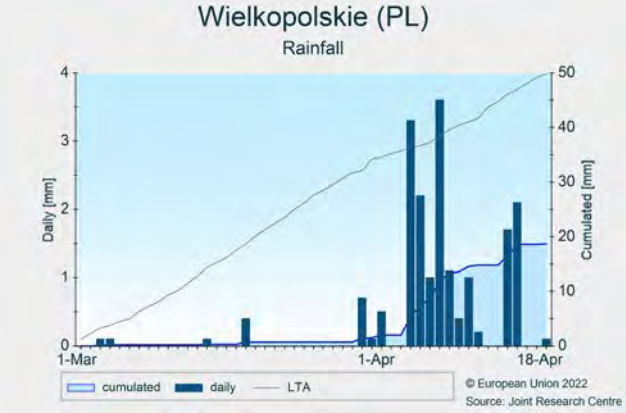
The review period was characterised by below-average temperatures, with the exception of the last dekad of March, which was warmer than usual due to high maximum temperatures (reaching 20 °C). Night frosts occurred throughout the review period.

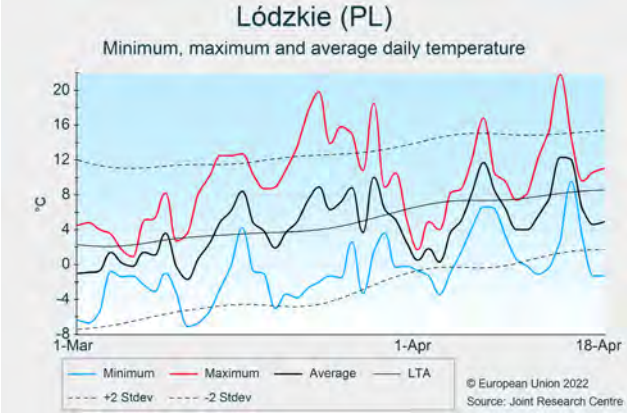
Precipitation in March was record-low in many regions, which, combined with strong winds and the warm end of March, resulted in the development of dry soil conditions in most of the country. Low intensity rainfall and snow events during the first dekad of April increased topsoil moisture levels.

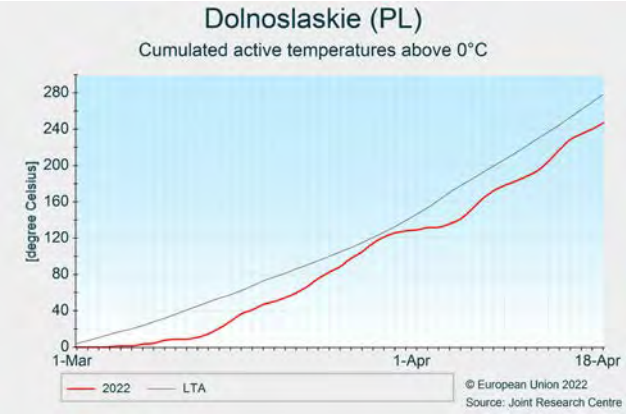
Winter cereals are generally in fair shape. Soil moisture reserves were adequate after the winter, and April precipitation alleviated dry topsoil conditions for shooting winter crops. Crop development slowed during the review period (due to below-average temperatures) and is now around seasonal average levels.

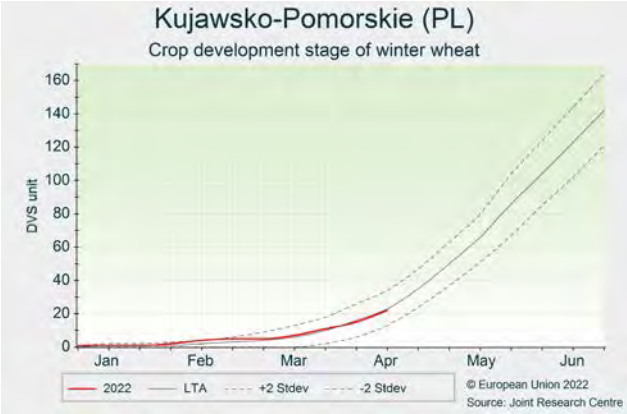
The sowing campaign for spring cereals and sugar beet started around the usual time in March. However, field works, seed germination and the early development of plants were impaired by dry (and locally crusted topsoils) and cold conditions. This situation improved in April thanks to beneficial precipitation. Early planting of potatoes started during the first dekad of April.

Currently, our yield forecasts are based on historical trends.









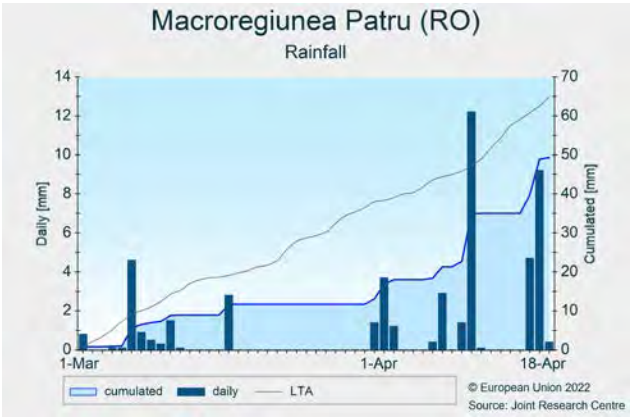
Romania

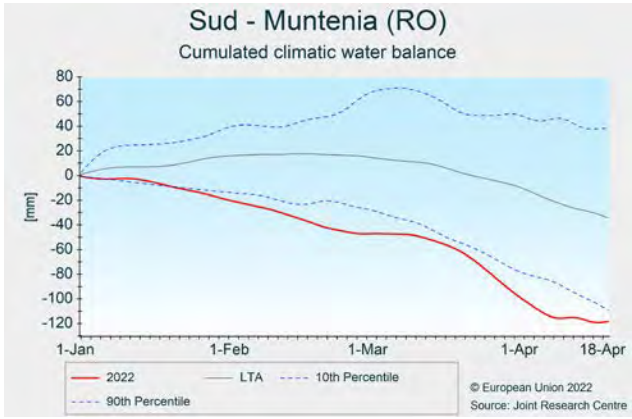
More rainfall needed

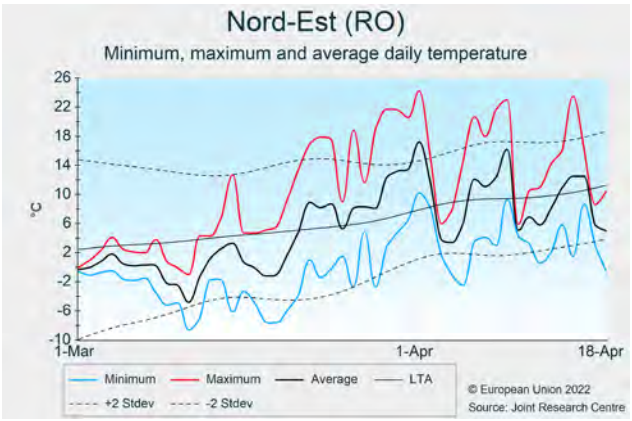
Colder-than-usual conditions prevailed during the period under review and resulted in a delayed development of winter crops. During the first two dekads of March, temperatures were up to 6 °C below the LTA in the southern and eastern parts of the country. Since then, warmer-than-usual conditions allowed the start of the spring and summer crops sowing campaign.

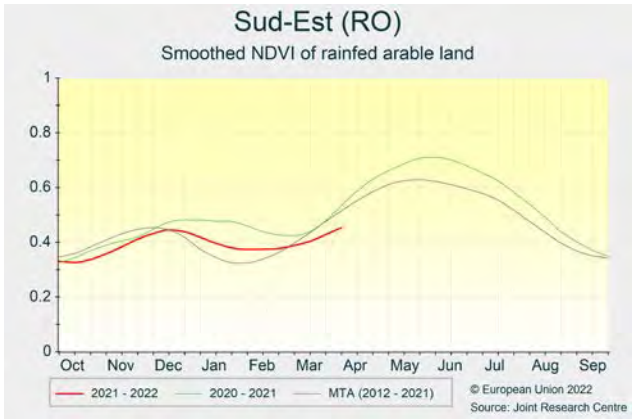
Romania experienced the driest month of March on our records (since 1979). A rain deficit ranging from 50 to 80% of LTA was recorded in most of the crop land areas and rainfall was absent during the last two dekads of the month. The relatively wet conditions experienced since early April were beneficial but not sufficient for a full restoration of the soil moisture reserves, particularly in the south and in the eastern parts of the country, where rainfall has been below average since the beginning of the year.

Being delayed and under water stress, winter crops are expected to be negatively affected and their yield forecast was revised downwards.









Spain and Portugal

Conditions still unfavourable for winter crops

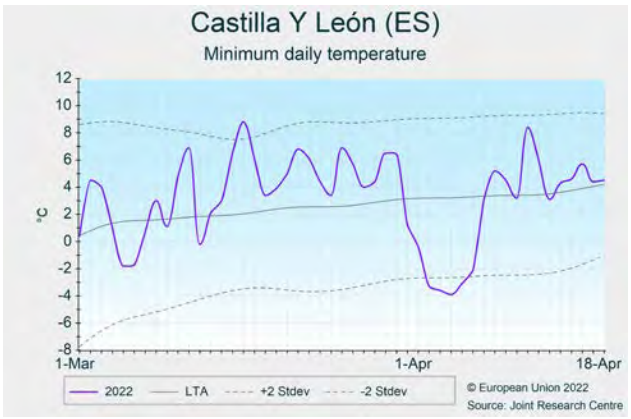
Spain experienced an exceptional cold spell in early April (e.g. *Castilla la Macha*: 3 consecutive days with minimum temperature below 0 °C; -2.4 °C on 3 April; Castilla y Leon: 5 consecutive days with minimum temperature below 0 °C, -3.9 °C on 4 April). Rainfall returned everywhere, but arrived too late to restore yield potentials in *Andalucia* and *Alentejo*. Only in *Andalucia* and *Castilla la Mancha* total rainfall since the beginning of the year has reached the LTA. In *Castilla-y-León*, soil moisture conditions remain a concern.

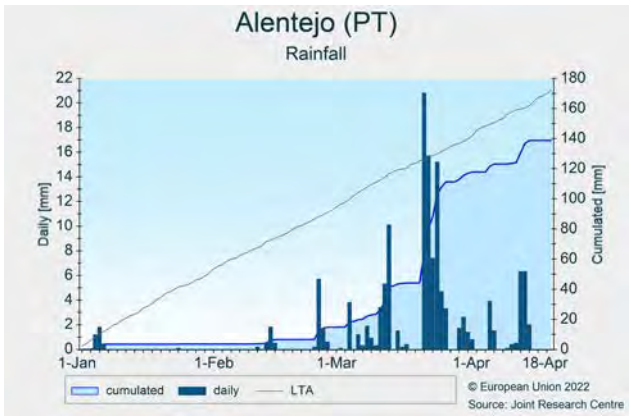
Soft wheat and spring barley have reached flowering in the south, but not yet in *Castilla y Leon*. Rapeseed reached flowering at the end of March or beginning of April. Close to flowering, winter cereals are very sensitive to cold temperatures (even below -2 to -3 °C), which can result in the death of growing points, damage to stems and leaves and, after booting, damage to spikes and floret sterility, with significant impacts on yield potentials. Winter rapeseed is less sensitive as it has the capability to form new flowers after damaging conditions. Serious irreversible damage is reported to have occurred to blooming fruit trees.

The yield forecasts for winter cereals were revised downward and are now well below the 5-year average. The outlook for spring barley is maintained, in line with the 5-year average; though the cold spell slowed down crop development, it is still in the early stages of development with good resistance.

Conditions for sowing summer crops have been favourable as rainfall provided optimal soil moisture conditions.

Water reservoirs in Spain are estimated at 47% of their full capacity (www.embalses.net), this is a small improvement from the March bulletin, yet it is still ~25% less than in April 2021, which was already a dry year. Water restrictions for irrigation already apply in southern parts, and this is expected to impact irrigated summer crops.



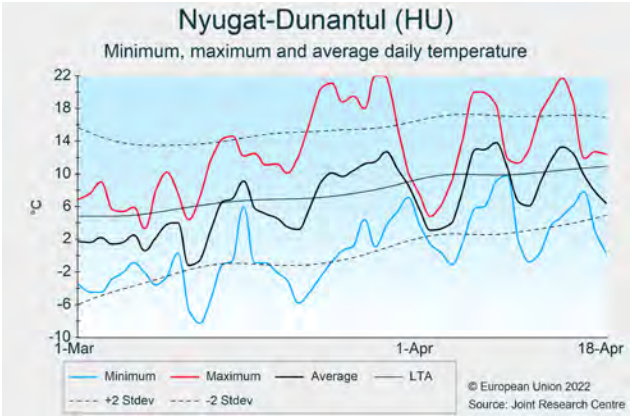


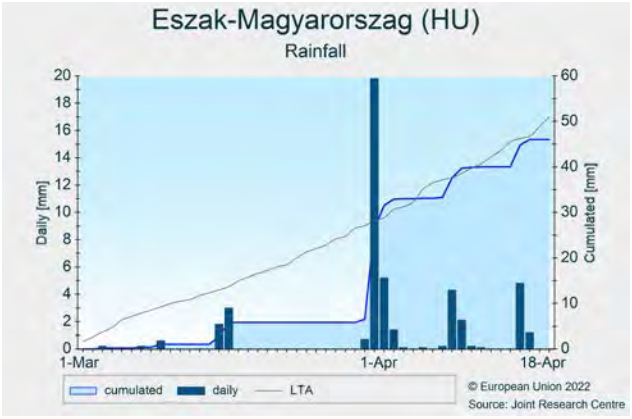
Hungary

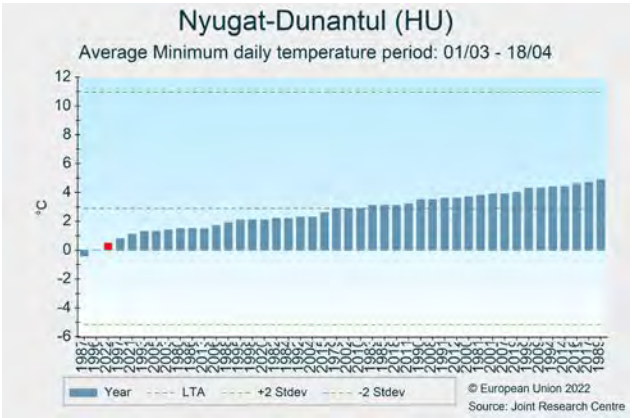
Slow start of season due to a dry winter

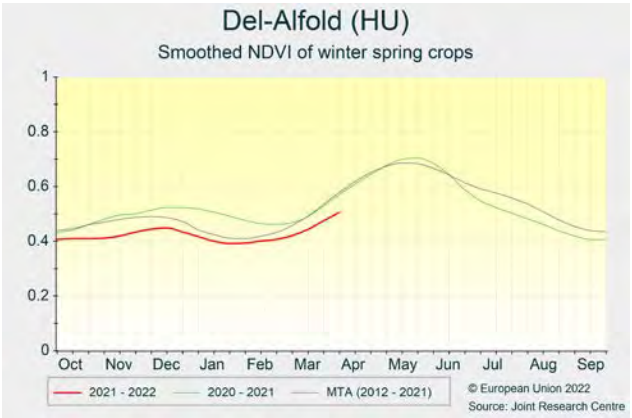
Colder-than-usual temperatures prevailed during the month of March, with temperature differences compared with the LTA from -0.5 °C in the east to -1.5 °C in the west. Following the drier-than-usual winter, the month of March was also extremely dry to 30 March (from 0 mm to 10 mm). Two heavy rain events around 1 and 10 April reduced the water deficit over a large band from *Dél-Dunántúl* to *Észak-Magyarország*.

The dry conditions during winter hampered the regrowth of winter crops. Nonetheless, the early April rainfalls may have preserved the yield potential. The accumulated rain deficit in the south-east of the country remains concerning and the loss of biomass is already depicted by satellite observations. The rain events were also highly welcomed to support spring sowing which were delayed compared to previous years. The yield forecasts are maintained on trend.









Italy

Drought continues; water reservoirs critically low

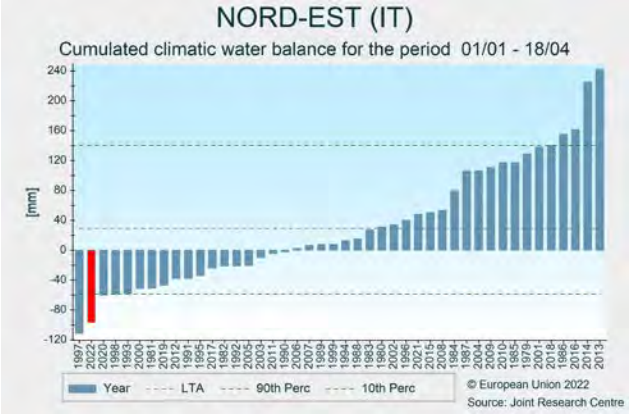
Northern and central Italian regions continue to suffer from drought conditions. In north-western regions, total rainfall since December has been less than 20% of the LTA. In Emilia Romagna and north-eastern regions rainfall was between 20% and 50% of the LTA; and it was around 50% in central Italy.

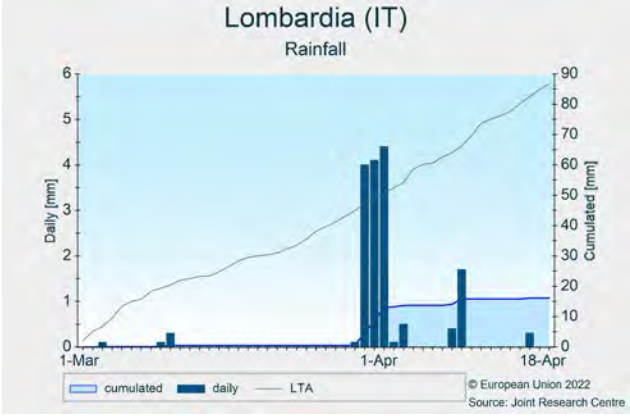
Temperatures in March and April were predominantly cooler than usual, but increased from the beginning of April.

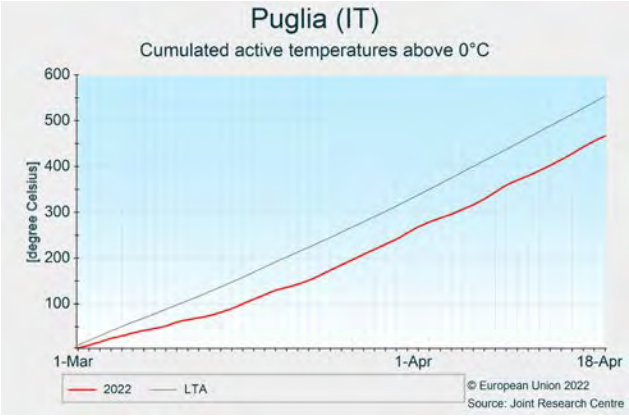
Winter crops were negatively affected by the drought conditions but the impacts were mitigated by the light rains at the end of March, and by the cool temperatures of early April that reduced water demand. Nonetheless they are still exposed to high risk of further reduction of yield potential when temperatures increase. Summer crops sowings (as well as crop emergence) benefited from the light rains earlier mentioned, but are generally delayed due to the dry soils and low temperatures. Water reservoirs are still critically low, casting more concerns about the summer season.

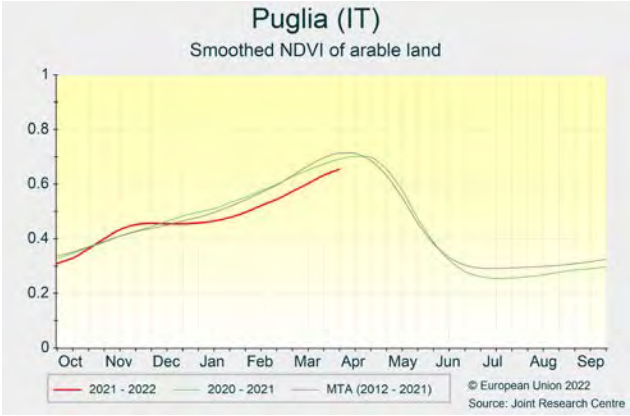
Even in southern regions, weather conditions in March and April were drier (rainfall -30% to -50% compared with LTA) and cooler than usual (average temperature anomaly < -2 °C). Even though rainfall deficit is of no concern yet (with the exception of some regions in Sicilia), cold weather caused further delays to crop development (already late) and now more favourable temperatures are needed to enhance biomass accumulation before flowering and not reducing the yield potential.

Crop yield forecasts are now below the 5-year average for soft wheat and barley, and in line with the 5-year average for durum wheat









Czechia, Austria and Slovakia

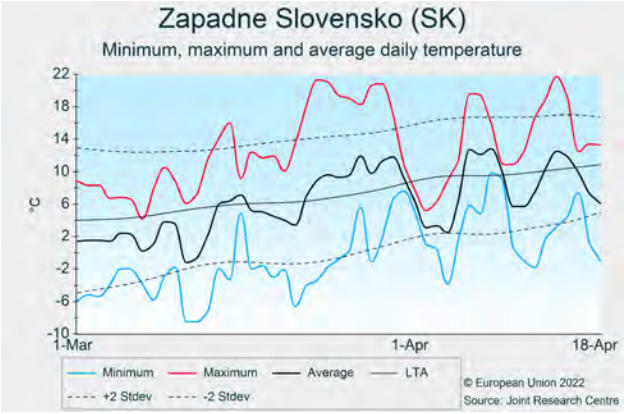
Dry and cold start of spring crop season

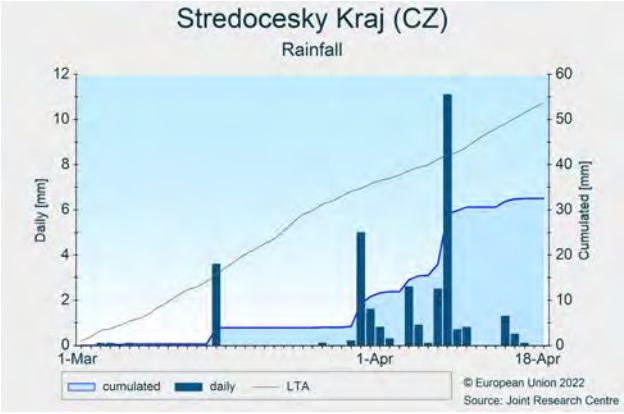
The review period was characterised by colder-than-usual conditions with frequent frost events. Only during the third dekad of March were average temperatures above the LTA. Total precipitation was significantly lower than average in March in the main agricultural areas of Austria, Czechia and western Slovakia. Prolonged rain deficit and high day-time temperatures during the last dekad of March resulted in the depletion of soil moisture reserves and started impacting winter crops in some regions. Beneficial precipitation during the first dekad of April improved soil water conditions for winter and spring crops to some extent.

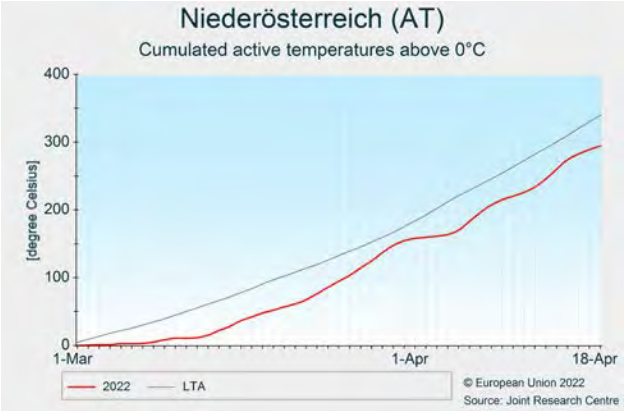
Winter crops are generally in fair condition. As indicated by our crop model simulations, the development of winter crops slowed during the review period due to colder weather, but currently remains close to the seasonal average. Soil moisture contents remain below seasonal values.

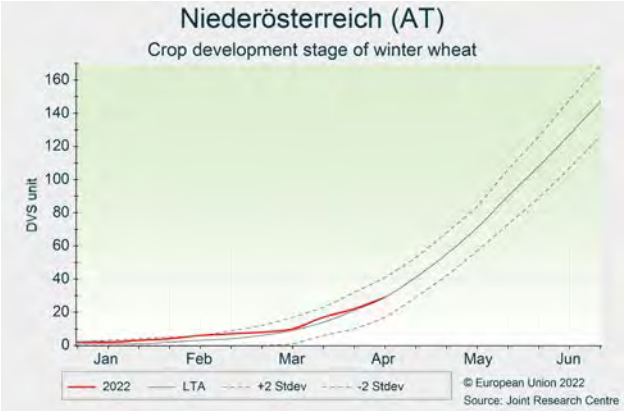
Dry and cold conditions were unfavourable for spring sowing and other field operations, and hampered the germination and early development of spring crops.

Our crop yield forecasts are still based on historical trends; with a large margin of uncertainty, as it is still very early in the season. Yield potentials of winter crops will primarily be determined by weather conditions during the coming month, when the most sensitive growth stages occur.









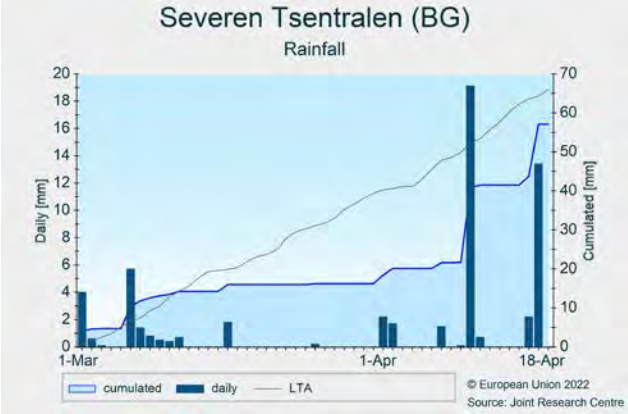
Bulgaria

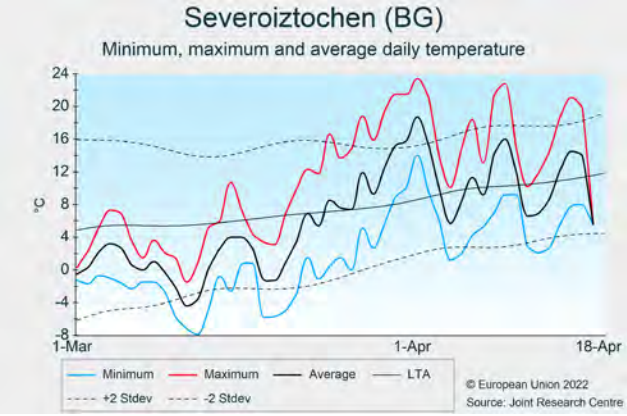
Beneficial rainfall arrived in April after a cold and dry March

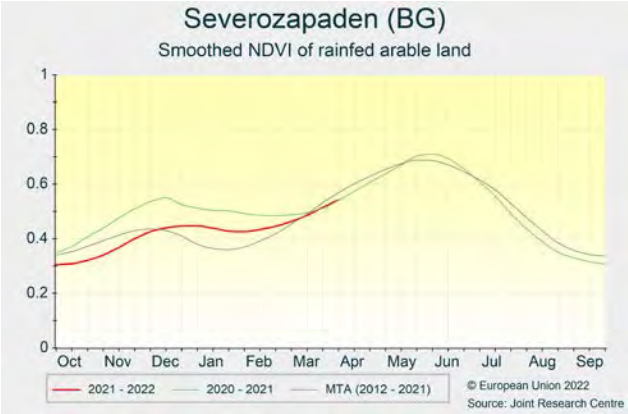
After a mild winter, March was characterised by dry and colder-than-usual weather, with average daily temperatures from 2 °C to 4 °C below the LTA. The lowest values were recorded in eastern regions, where temperatures dropped to -8 °C around 10 March. Temperatures increased to seasonal levels toward the end of the month, but dry conditions continued until the second dekad of April. However, the two abundant rain events that followed resulted in cumulative precipitation levels – for the review period as a whole - close to the LTA.

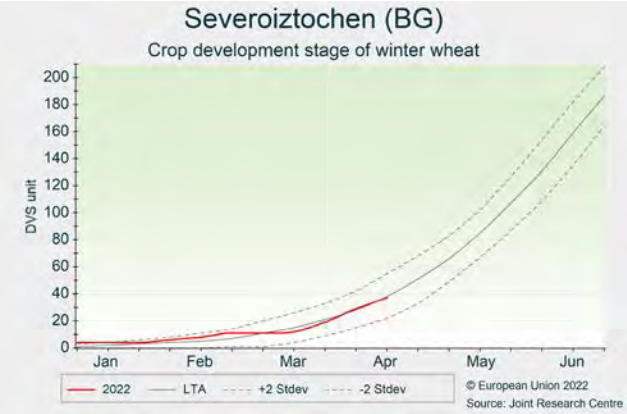
The cold weather in March slowed down winter crop growth and development, but biomass accumulation benefited from warmer temperatures and the significant rainy days in April. The yield forecast for soft wheat was revised slightly downwards, but remains in line with historical trends.

The sowing campaign for spring and summer crops has started with a slight delay due to cold temperatures and dry soils but it is currently progressing rapidly. The cold weather might have damaged fruit trees, mainly stone fruits, that were already in the flowering stage.







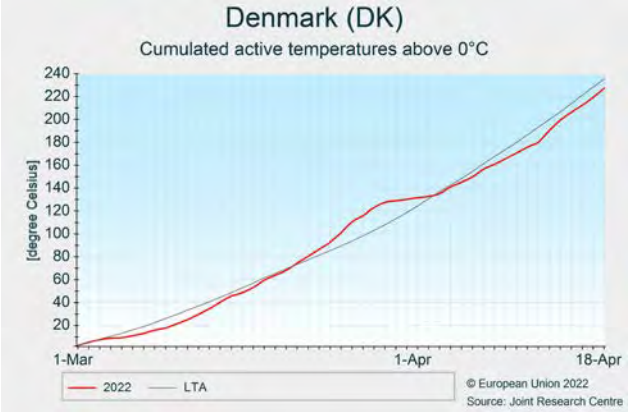


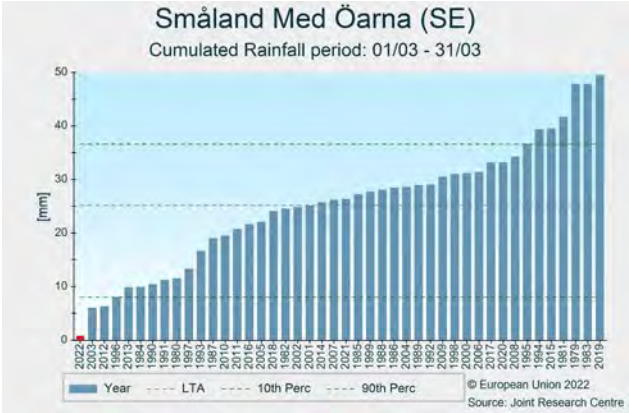
Denmark and Sweden

Spring barley sowing completed in dry conditions

Average to slightly above-average temperatures prevailed until the end of March, after which they dropped to 4-5 °C below the LTA until the beginning of April, and then returned to close to the LTA until the end of the review period. March was the driest and sunniest in our records (since 1979), but precipitation increased in April.

The dry conditions in March helped to quickly complete the planting of spring cereals. The rainfall at the beginning of April created favourable soil moisture conditions for emergence; this, however, was hampered by the low temperatures. Sowing began for sugar beet and potatoes. Winter crops are in good condition and slightly advanced in their development. Soil moisture levels improved after the rainfall in April, and, according to our model simulations, are close to the LTA. Our yield forecasts remain in line with the historical trend.



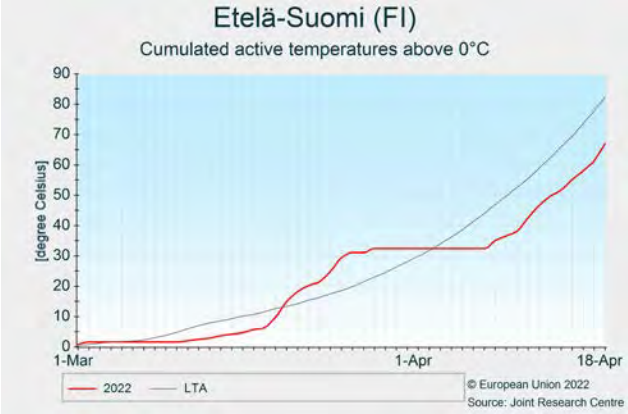


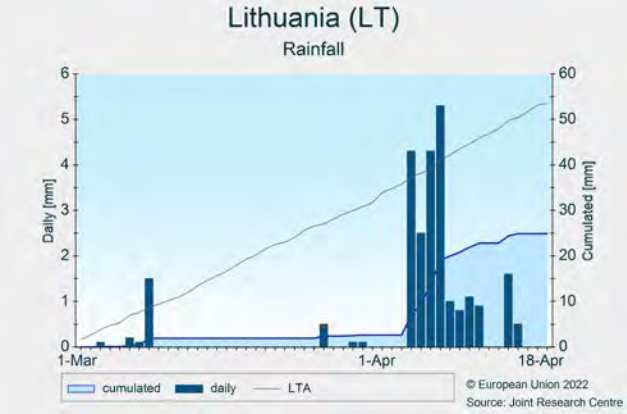
Estonia, Latvia, Lithuania, Finland

Cold spell and scarce rainfall hampered an early start for spring sowing

Mild temperatures prevailed until the end of March, when a distinct cold spell occurred, and temperatures dropped to around 3-4 °C below the LTA. After the second week of April, temperatures returned to close to the average until the end of the review period. All of the countries experienced a substantial rainfall deficit in March, most distinctly in Lithuania where there was almost no precipitation. However, the rainfall in April improved soil water conditions. Sunshine levels were well above the LTA. Despite the prevailing mild average temperatures in March, snow was still present in many regions due to low minimum temperatures. Spring field works, such as the maintenance of winter crops, began in the southern regions at the end of March, but the sowing of spring crops started during the second dekad of April.

Satellite observations (FAPAR) suggest that winter crops exited dormancy in good condition around the beginning of March in Lithuania and Latvia, whereas regrowth has not yet started in Estonia and Finland. Our yield forecasts maintain the values in the March issue of the Bulletin, based on historical trends.





Greece and Cyprus

Unseasonal dry and cold weather conditions

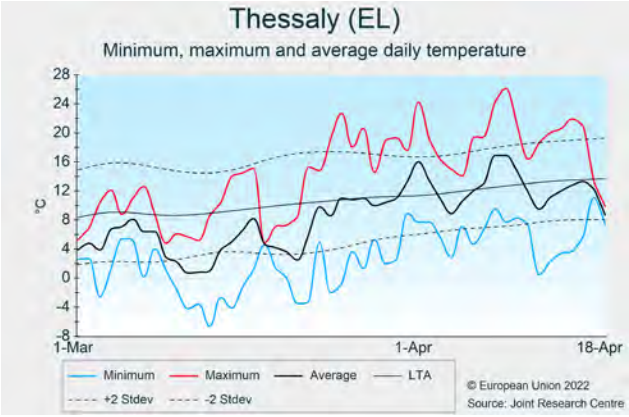
Greece and Cyprus recorded overall colder than usual weather conditions during the period under review in all the main winter crop producing regions, with temperatures plummeting down to more than -8 °C during the coldest nights, around mid-March.

In the second half of March, temperatures increased sharply; particularly daytime temperatures, resulting in temperature fluctuations of up to 20 °C during the same day. The same transition marked the start of a period with little or no precipitation, which had been around average or above average until then.

The analyses of remote sensing indicators suggest for this period around-average biomass formation in winter crops. Wheat development is delayed rather than damaged by the overall unstable weather conditions, whereas barley and triticale are on a seasonal development course (early booting).

Our April yield forecast is maintained close to the 5-year average in both countries. It is noted though, that due to current warm and dry weather conditions, combined with high input costs, some farmers might not have been able to apply all recommended agronomic measures, as overnight watering had to be added to the list of production costs (fuel, electricity and fertilisers).

The sowing of summer crops started on time at the beginning of April, and it is due to be completed by the end of the month for most of the crops.



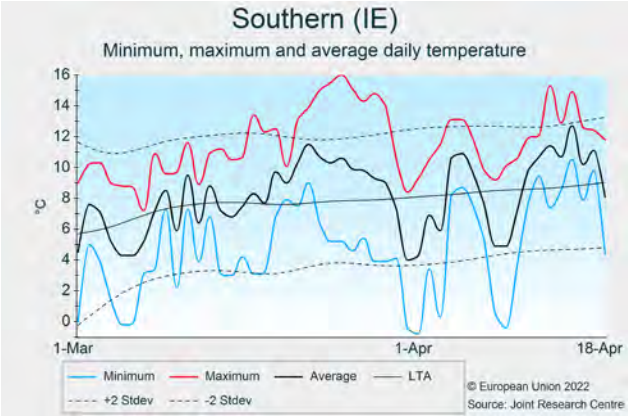
Ireland

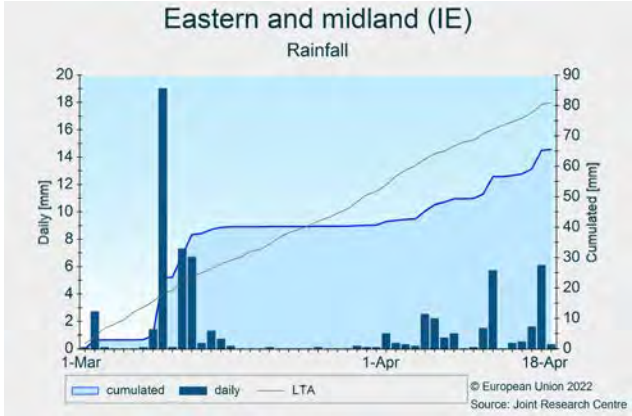
Favourable conditions for winter crops and spring sowing

Temperatures fluctuated around seasonal values until mid-March and then remained above the LTA until the end of the month. April started out colder than usual, but the end of the review period was again warmer than usual.

Precipitation mostly occurred during the second dekad of March and was generally absent in the eastern and southern areas during the rest of the month. Precipitation increased in April, particularly in the north. Sunshine levels were above average.

The dry weather in March allowed winter crops to be fertilised, and to make good progress with spring planting according to the usual time schedule. Soil moisture levels were adequate for sowing and crop emergence. Winter crops reached stem extension and are in good condition with limited incidence of diseases. Winter rapeseed crops have started to flower. The yield forecasts are maintained close to the 5-year average.





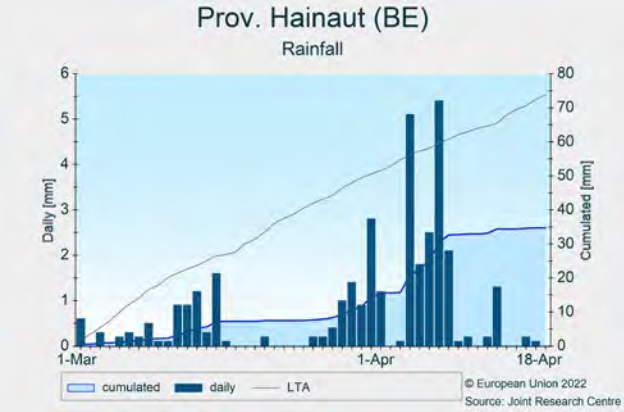
Belgium, Luxembourg and the Netherlands

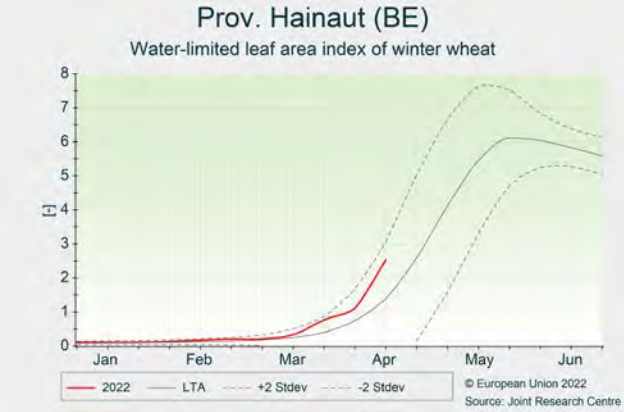
Continued favourable conditions for crop growth and field operations

March was the sunniest, and one of the driest in our archive (since 1979). April presented more unsettled weather. The first days of April were particularly cold, with minimum temperatures reaching −6 °C in some inland areas. However, March also experienced a substantial number of frost events. Nevertheless, mean daily average temperatures were slightly above the long-term average. Rainfall was below the LTA, and mostly concentrated within the first dekad of April; the most distinct deficits occurred in central Belgium, where rainfall was less than 50% of the LTA.

Overall, these conditions were favourable for winter crops. The cold spell in early April slowed crop development but only for a short period. Leaf area development and biomass accumulation are above average. Soil water content is below average in southern regions, but well above critical levels. Weather and terrain conditions were also favourable for field operations for most of the period. Sugar beet sowing is almost complete. Some emerging stands were damaged by frost; but overall, damage is expected to be very limited.

As it is still very early in the season, the current crop yield forecasts are still based on historical trends.





Slovenia and Croatia

Dry and cold start to spring

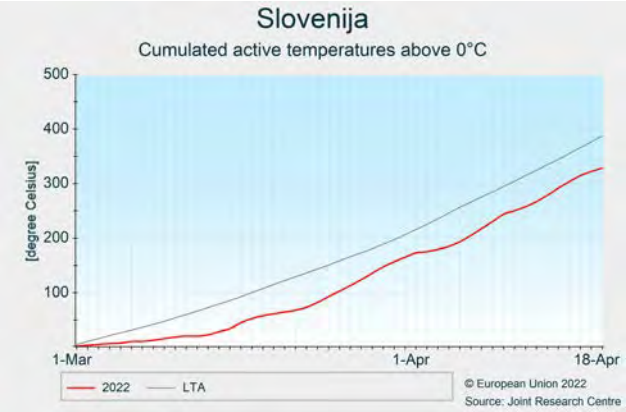
The first dekad of March was colder than usual, with temperatures approximately 3°C below the LTA. The rest of the period of interest shows temperatures closer to the LTA; yet cumulated temperatures remain below average for both countries.

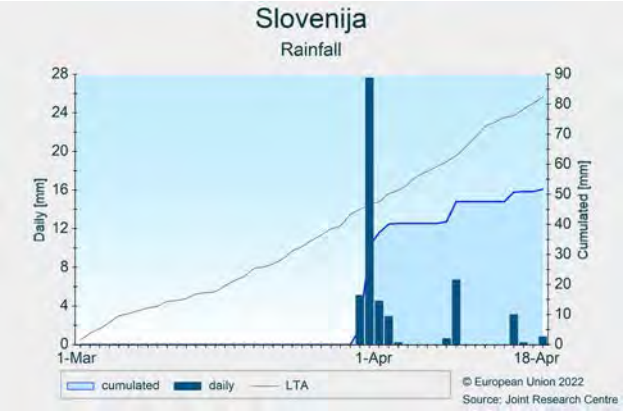
The month of March was very dry in both countries, with only a few light rainfall events in the beginning of the month. Significant rainfall in early April mitigated the precipitation deficit. However, rainfall totals during the review period are below the LTA by approximately 50%.

A positive radiation anomaly was observed for both countries during the period of review.

Early April precipitation had a positive impact on winter crops.

Yield forecasts are maintained close to the historical trends. However, soil water contents are below average and more rainfall will be needed to sustain the yield potential.





5.2 United Kingdom

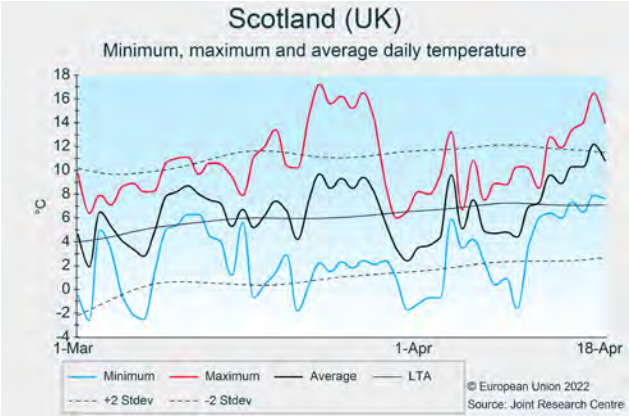
Spring sowings are almost completed

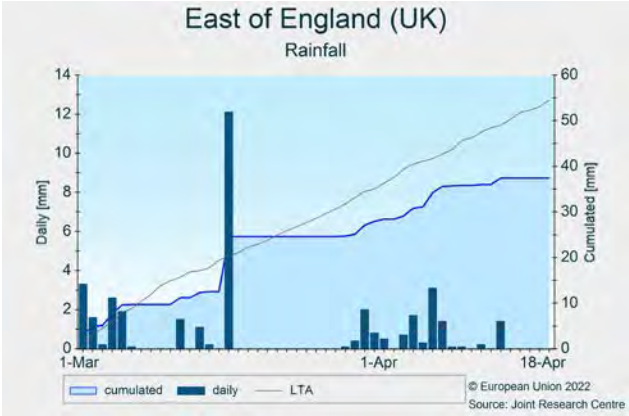
Temperatures fluctuated predominantly above the LTA. The most noteworthy exception was a significant cold spell at the beginning of April, with average temperatures 4-6 °C below the LTA and minimum temperatures below 0°C. Precipitation was below average and mainly occurred during the first half of March. Sunshine levels were above average.

The dry weather allowed a good progress of spring planting, which was in full swing during the last dekad of March. The rainfall of the beginning of April favoured adequate emergence.

Overall, winter crops are in good condition, with phenological development in line with the LTA. Winter cereals have reached the tillering stage. Soil moisture levels in the southern areas are below the LTA, but well above critical levels. Disease pressure is relatively low, thanks to the relatively dry conditions and frost events.

Our yield forecasts have been maintained in line with the historical trend.





5.3 Black Sea Area

Ukraine

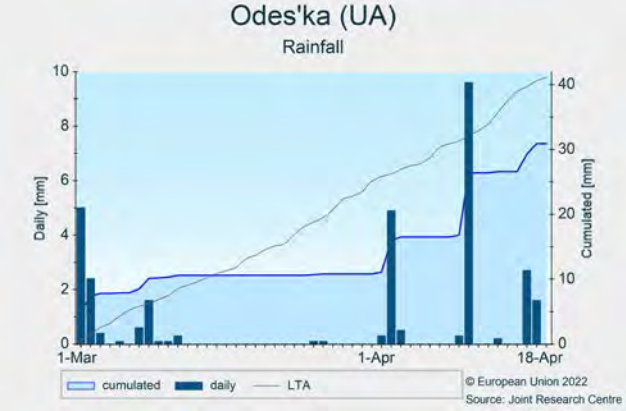
Dry and cold conditions reduced the yield potential of winter crops

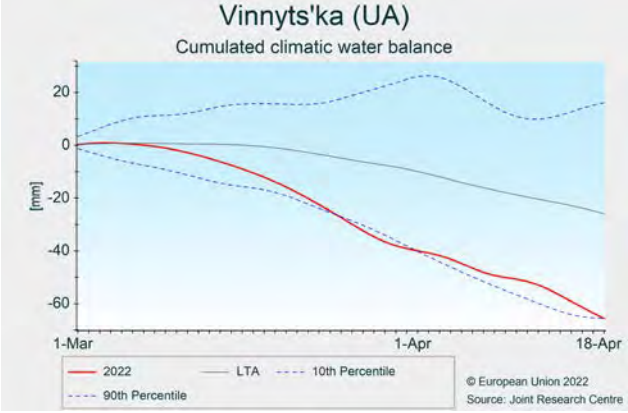
A significantly colder-than-usual start to the spring was observed in Ukraine. In the first two dekads of March, temperatures were 2 to 4 °C below the LTA in most of the country, which resulted in a delayed development of winter crops. Since then, slightly warmer-than-usual conditions prevailed until the end of the period under review.

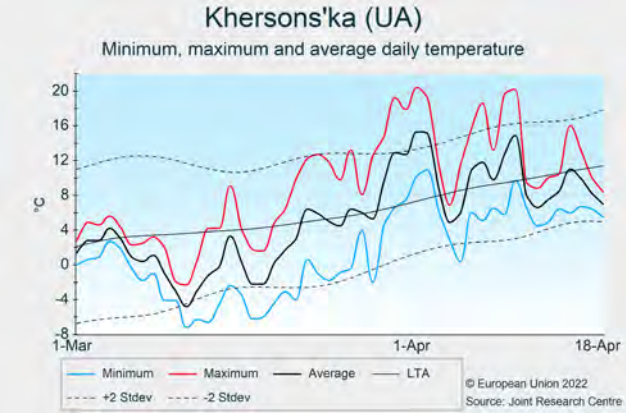
March was much drier than usual. A rain deficit ranging from 50 to 80% compared with the LTA was recorded in the major winter crop growing regions, most distinctly in the oblasts in the south. Since early April, frequent and abundant rainfall prevailed in the eastern half of the country while near seasonal rainfall was recorded in the west.

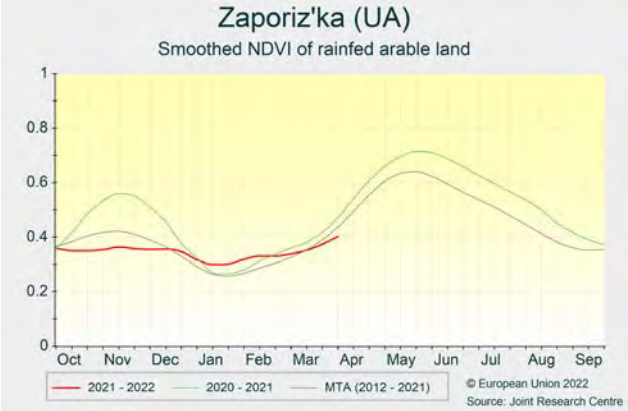
In response to the delayed crop development combined with the drier-than-usual conditions, the yield forecasts for winter crops were revised slightly downwards. Our forecasts assume regular field operations such as nitrogen fertilisation and disease control, which as a matter of fact remain uncertain due to the Russian invasion on Ukraine's territory.

According to the Ukrainian Ministry of Agriculture, the sowing campaign of spring and summer crops started on time and currently follows a normal path; however, the achievement of sowings over the entire projected areas remains uncertain.







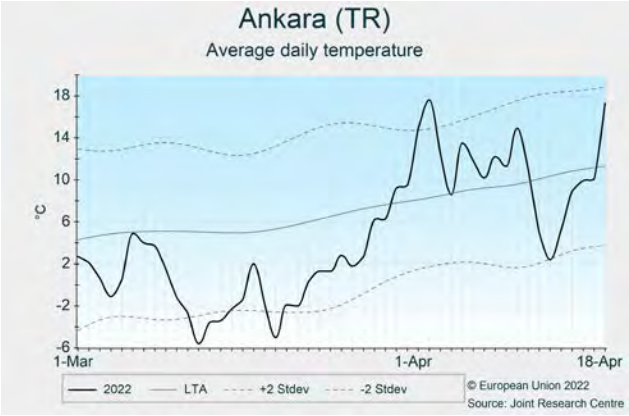


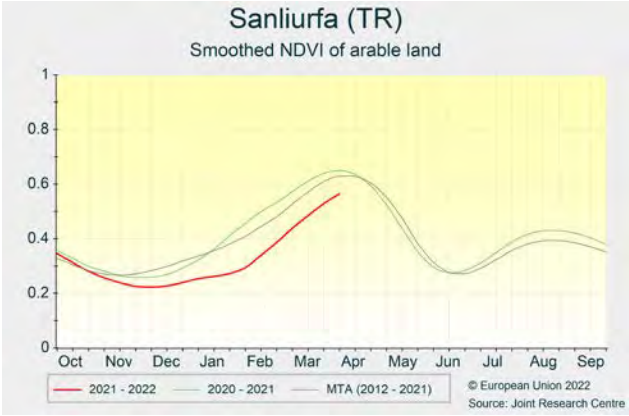
Turkey

Winter crops still delayed

In central Turkey, March was mostly colder than usual with average temperature anomalies down to -6 °C. Such weather conditions were overturned in April, when temperatures peaked at up to +8 °C compared with the LTA in the first ten days, and then returned to seasonal values. Precipitation was average to slightly below the average. The vegetative development of winter crops is markedly delayed but this is no cause for concern, so far.

In south-eastern Turkey, the weather conditions were similar with a cold March (with average temperatures only slightly above 0 °C between 10 and 20 March) and a very warm start to April with average temperatures generally above 15 °C. Rainfall, usually the yield limiting factor, was average to slightly (40 to 80 mm) above the average . Winter crops are delayed but present fair biomass accumulation.





5.4 European Russia and Belarus

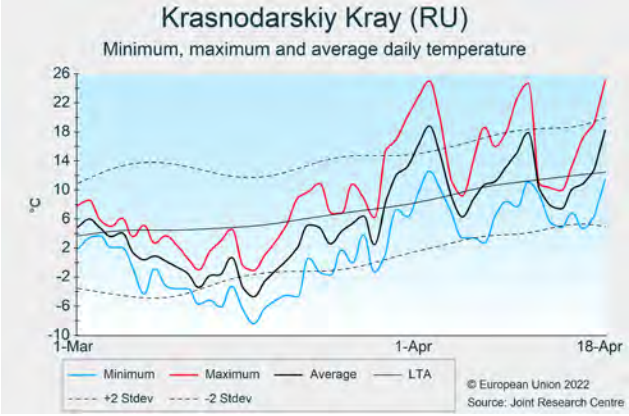
European Russia

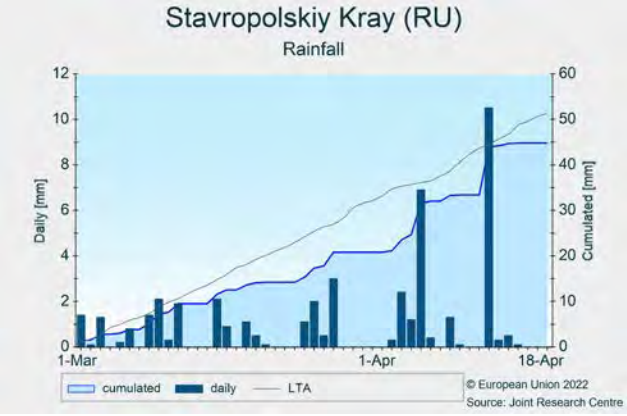
Fair conditions so far

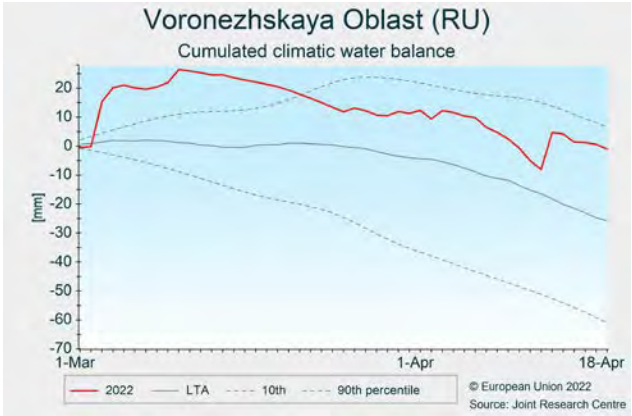
Following a significantly milder-than-usual winter, temperatures dropped sharply in March, which temporarily hampered the regrowth of winter crops. Up to 2 °C below-average temperatures prevailed, except for the southernmost areas where even colder temperatures were observed. In early April, temperatures returned to above-average levels; an average positive thermal anomaly of up to 4 °C was observed in the Central okrug and in the Volga okrug.

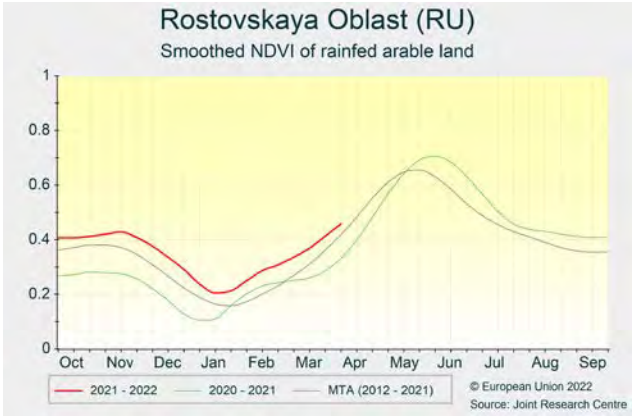
Frequent rainfall occurred during the period under review, with near seasonal levels. Only the western half of the Central okrug and the eastern parts of the Volga okrug experienced wetter-than-usual conditions, with locally up to 50% above-average precipitation.

Overall, winter crops are in fair to good condition. In the Central okrug and the Volga okrug, snow started melting in early April and winter crops are expected to have normally restarted their growth. In the Southern okrug and the North-Caucasian okrug, the yield potential is maintained thanks to the favourable weather conditions since the start of the season.









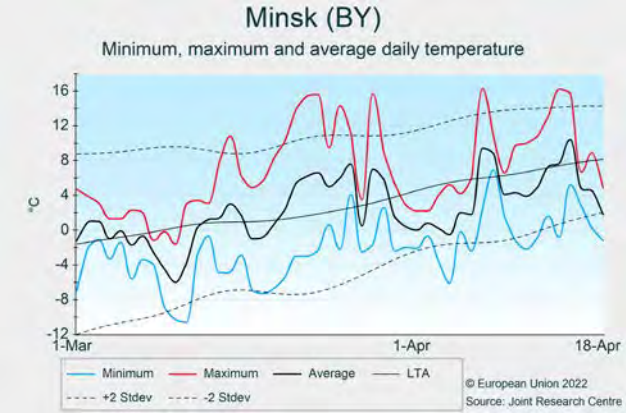
Belarus

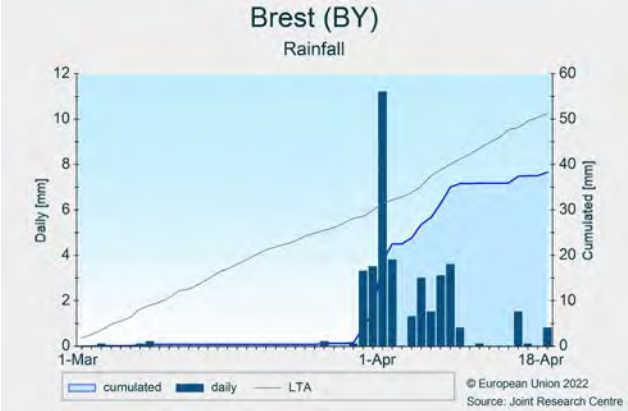
Fair conditions for winter wheat

The period of review was characterised by below-average temperatures, with the exception of the last dekad of March which was warmer than average. Frost events were very frequent but temperature minima dropped below -8 °C only during a brief cold spell around 10 March.

March was very dry with no significant rainfall recorded. Since the beginning of April low-intensity but frequent rain and snow events increased precipitation totals to average levels for the period of analysis in SE regions, but in the rest of the country total precipitation remained significantly (< 30%) below the LTA.

Winter wheat is generally in fair condition and no frost damage was simulated by our model on this crop. As indicated by our crop model simulations, the development of winter wheat is in line with seasonal averages, and soil moisture levels are generally adequate. The sowing campaign of spring cereals started in southern regions in the last dekad of March, but progress has been hampered by freezing night temperatures and locally by snow cover. Our crop yield forecasts are still based on historical trends, as it is still early in the season.





5.1. Maghreb

Morocco, Algeria and Tunisia

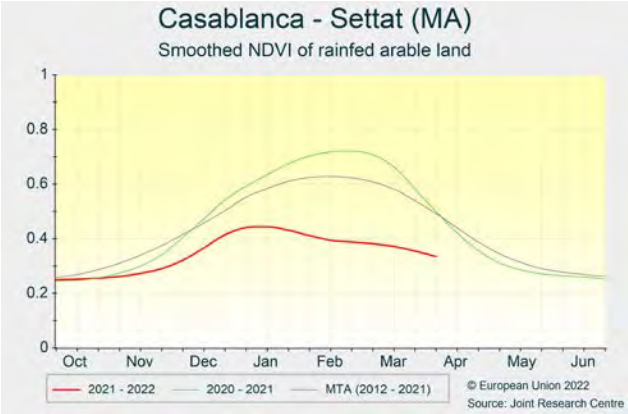
Dire outlook for cereals in Morocco and Algeria, crop recovery in Tunisia

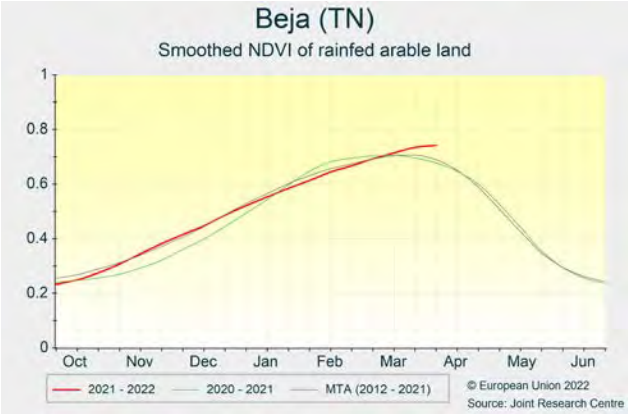
Above-average rainfall (+40-60 mm compared with LTA) and below-average daily temperature (-2 - -4 °C) occurred in **Morocco** during the period of review. Rain events arrived too late to trigger any winter crop recovery. At the grain filling stage, remote sensing indicators continue to confirm crop failure in the regions of *Casablanca-Settat*, *Marrakech-Safi*, *Béni Mellal-Khénifra*, *Souss-Massa* and *Oriental*.

Also in central and eastern **Algeria** rain arrived too late to trigger any crop recovery. Well below-average crop biomass accumulation is observed in most of the main western (e.g. *Tiaret*, *Tlemcen*, *Sidi Bel Abbes* and *Saida*) agricultural areas due to the seasonal drought. Some crop recovery is observed toward eastern regions (e.g. *Mila*, *Constantine* and *Guelma*).

In **Tunisia**, despite more abundant rain events in the inland regions, crop recovery - up to moderately-above LTA levels - was observed in the (northern) littoral regions. However, the condition of crops in the inland regions of *Kasserine* and *Kairouan* remains below average. This is related to the seasonal drought conditions and to the late arrival of rains in March and will most likely have an impact on seasonal barley production.

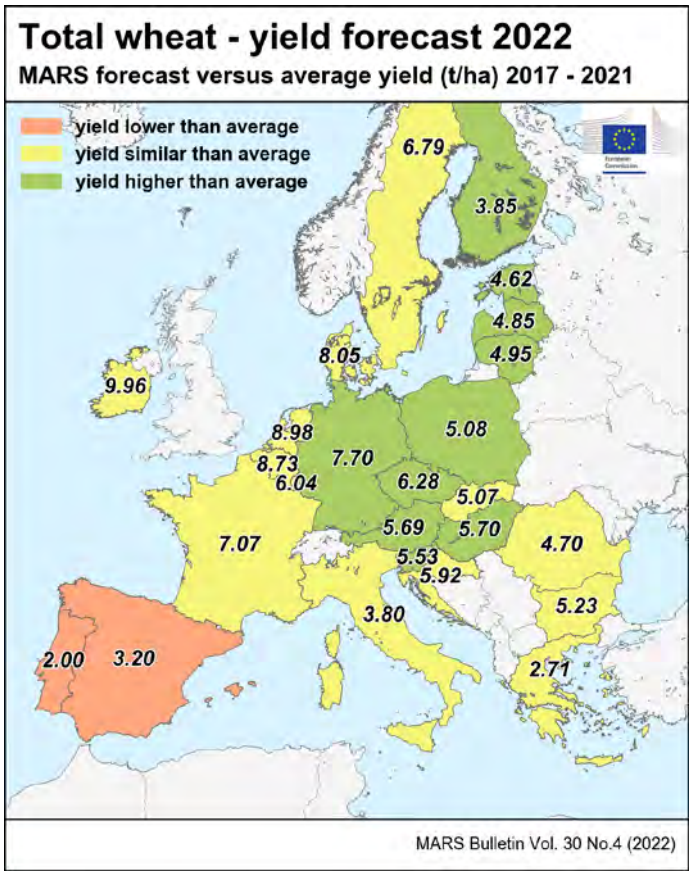
Our yield forecasts were revised downward compared with March and are (well) below the historical trends for Morocco and Algeria and, with the exception of barley, in-line-with an average season for Tunisia.



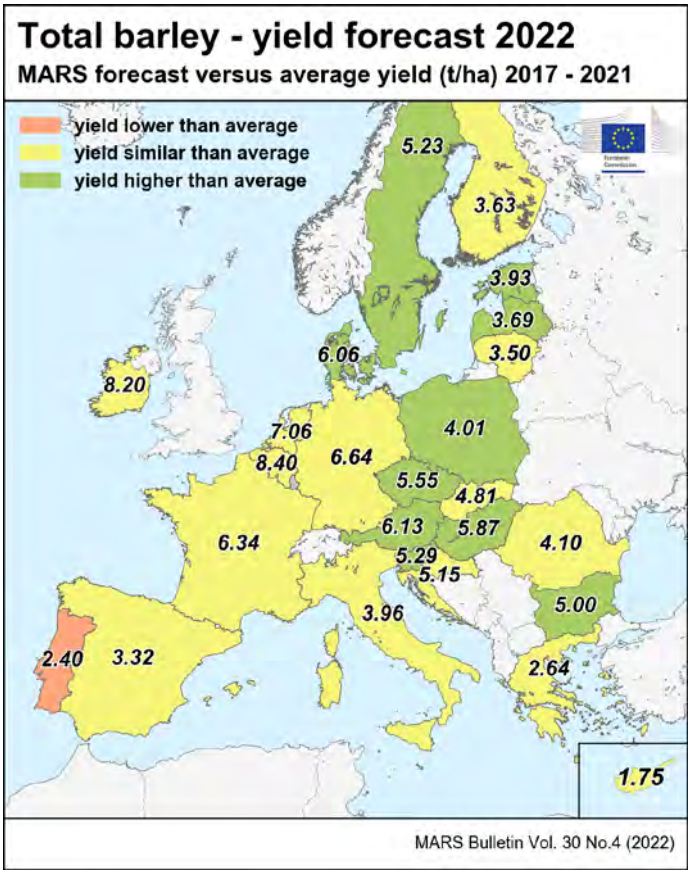


6. Crop yield forecast

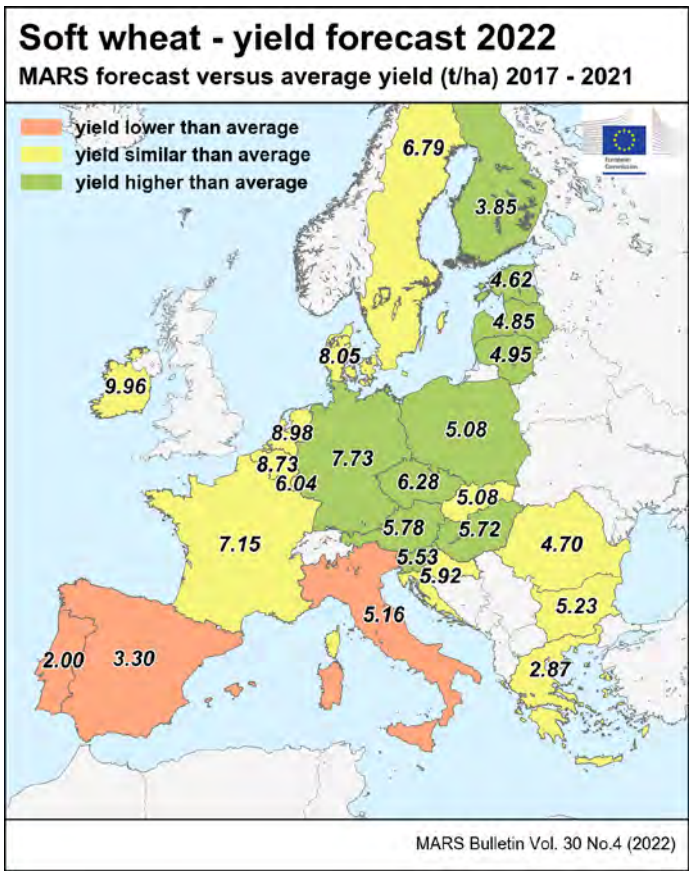
Country	Total wheat (t/ha)				
	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21
EU	5.62	5.82	**5.74**	+ 2.3	– 1.2
AT	5.34	5.50	**5.69**	+ 6.6	+ 3.5
BE	8.61	7.80	**8.73**	+ 1.4	+ 12
BG	5.04	5.96	**5.23**	+ 3.7	– 12
CY	—	—	**—**	—	—
CZ	5.84	6.33	**6.28**	+ 7.5	– 0.7
DE	7.36	7.30	**7.70**	+ 4.5	+ 5.4
DK	7.77	7.62	**8.05**	+ 3.6	+ 5.6
EE	4.27	4.09	**4.62**	+ 8.2	+ 13
EL	2.73	2.73	**2.71**	– 0.7	– 0.6
ES	3.45	3.93	**3.20**	– 7.3	– 19
FI	3.63	3.21	**3.85**	+ 6.0	+ 20
FR	7.16	7.02	**7.07**	– 1.2	+ 0.7
HR	5.84	6.63	**5.92**	+ 1.4	– 11
HU	5.44	5.97	**5.70**	+ 4.8	– 4.5
IE	9.65	10.6	**9.96**	+ 3.2	– 5.6
IT	3.90	4.12	**3.80**	– 2.4	– 7.8
LT	4.55	4.50	**4.95**	+ 8.8	+ 10
LU	5.89	5.96	**6.04**	+ 2.7	+ 1.4
LV	4.60	4.48	**4.85**	+ 5.3	+ 8.1
MT	—	—	**—**	—	—
NL	8.86	8.20	**8.98**	+ 1.3	+ 9.5
PL	4.74	5.07	**5.08**	+ 7.0	+ 0.1
PT	2.48	2.65	**2.00**	– 19	– 24
RO	4.52	5.30	**4.70**	+ 4.0	– 11
SE	6.53	6.31	**6.79**	+ 4.0	+ 7.6
SI	5.09	5.77	**5.53**	+ 8.5	– 4.1
SK	5.08	5.63	**5.07**	– 0.3	– 10



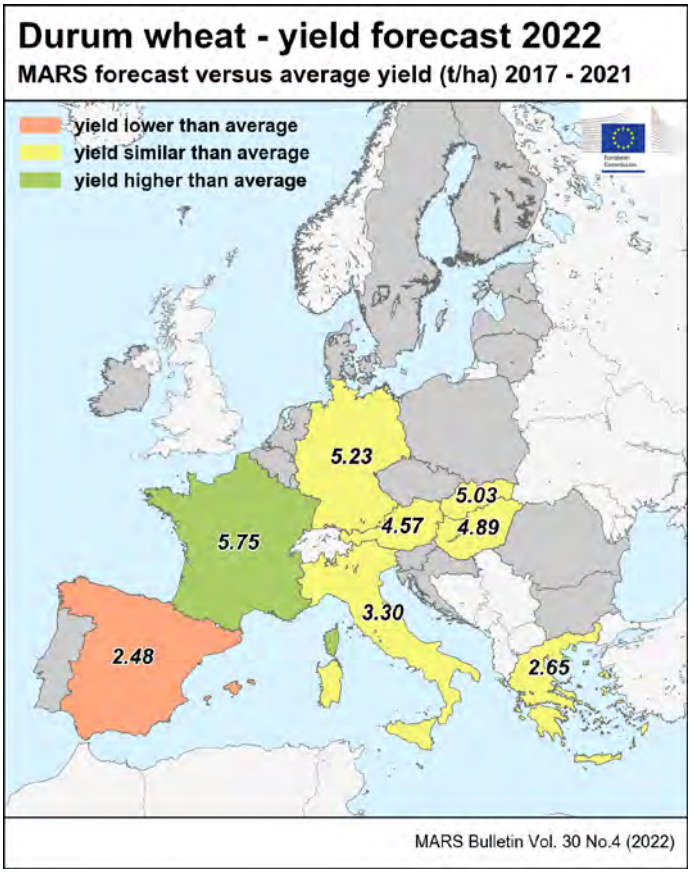
Country	Total barley (t/ha)				
	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21
EU	4.84	5.08	**4.97**	+ 2.6	– 2.2
AT	5.81	5.97	**6.13**	+ 5.5	+ 2.7
BE	8.15	7.79	**8.40**	+ 3.0	+ 7.8
BG	4.69	5.38	**5.00**	+ 6.6	– 7.0
CY	1.79	1.83	**1.75**	– 1.9	– 4.3
CZ	5.28	5.35	**5.55**	+ 5.2	+ 3.7
DE	6.53	6.76	**6.64**	+ 1.6	– 1.9
DK	5.68	5.65	**6.06**	+ 6.6	+ 7.3
EE	3.66	3.26	**3.93**	+ 7.4	+ 20
EL	2.67	2.47	**2.64**	– 1.0	+ 6.8
ES	3.22	3.55	**3.32**	+ 3.3	– 6.4
FI	3.54	2.63	**3.63**	+ 2.4	+ 38
FR	6.31	6.62	**6.34**	+ 0.4	– 4.3
HR	5.01	5.49	**5.15**	+ 2.7	– 6.2
HU	5.54	6.39	**5.87**	+ 6.1	– 8.1
IE	7.89	8.45	**8.20**	+ 4.0	– 3.0
IT	4.09	4.21	**3.96**	– 3.2	– 5.8
LT	3.45	3.46	**3.50**	+ 1.6	+ 1.2
LU	—	—	**—**	—	—
LV	3.17	2.89	**3.69**	+ 16	+ 28
MT	—	—	**—**	—	—
NL	6.82	6.71	**7.06**	+ 3.5	+ 5.1
PL	3.77	4.18	**4.01**	+ 6.3	– 4.1
PT	2.96	3.35	**2.40**	– 19	– 28
RO	4.14	5.26	**4.10**	– 0.9	– 22
SE	4.49	3.92	**5.23**	+ 17	+ 33
SI	4.97	5.45	**5.29**	+ 6.4	– 2.9
SK	4.70	5.07	**4.81**	+ 2.4	– 5.1



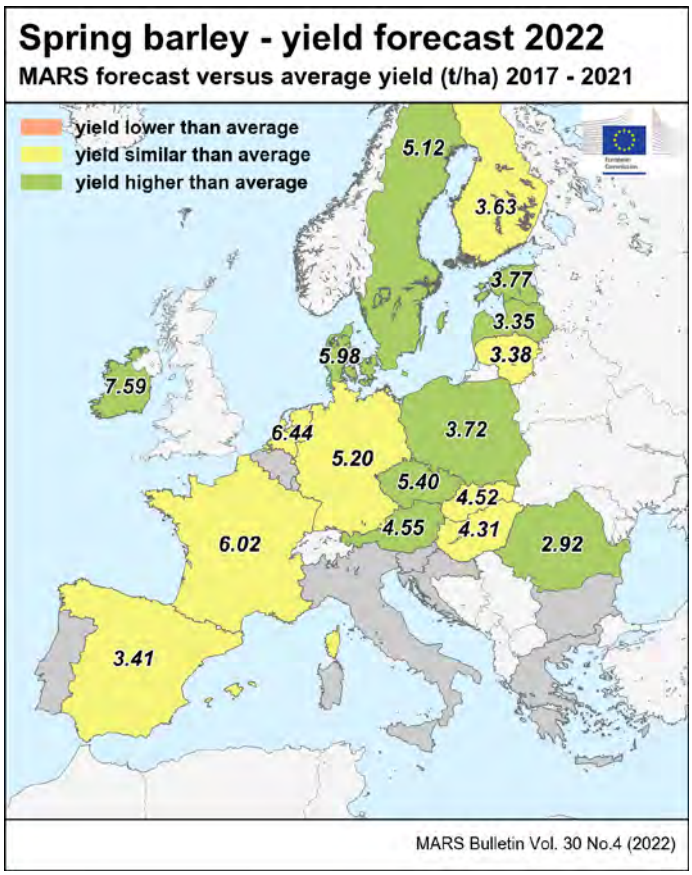
Country	Soft wheat (t/ha)				
	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21
EU	5.84	6.04	**5.95**	+ 2.0	– 1.5
AT	5.40	5.57	**5.78**	+ 6.9	+ 3.7
BE	8.61	7.80	**8.73**	+ 1.4	+ 12
BG	5.04	5.96	**5.23**	+ 3.7	– 12
CY	—	—	**—**	—	—
CZ	5.84	6.33	**6.28**	+ 7.5	– 0.7
DE	7.39	7.32	**7.73**	+ 4.6	+ 5.5
DK	7.77	7.62	**8.05**	+ 3.6	+ 5.6
EE	4.27	4.09	**4.62**	+ 8.2	+ 13
EL	2.90	3.02	**2.87**	– 1.2	– 5.3
ES	3.56	4.17	**3.30**	– 7.4	– 21
FI	3.63	3.21	**3.85**	+ 6.0	+ 20
FR	7.26	7.12	**7.15**	– 1.6	+ 0.4
HR	5.84	6.63	**5.92**	+ 1.4	– 11
HU	5.47	5.99	**5.72**	+ 4.6	– 4.5
IE	9.65	10.6	**9.96**	+ 3.2	– 5.6
IT	5.49	6.33	**5.16**	– 6.0	– 19
LT	4.55	4.50	**4.95**	+ 8.8	+ 10
LU	5.89	5.96	**6.04**	+ 2.7	+ 1.4
LV	4.60	4.48	**4.85**	+ 5.3	+ 8.1
MT	—	—	**—**	—	—
NL	8.86	8.20	**8.98**	+ 1.3	+ 9.5
PL	4.74	5.07	**5.08**	+ 7.0	+ 0.1
PT	2.48	2.65	**2.00**	– 19	– 24
RO	4.52	5.30	**4.70**	+ 4.0	– 11
SE	6.53	6.31	**6.79**	+ 4.0	+ 7.6
SI	5.09	5.77	**5.53**	+ 8.5	– 4.1
SK	5.11	5.59	**5.08**	– 0.6	– 9.1



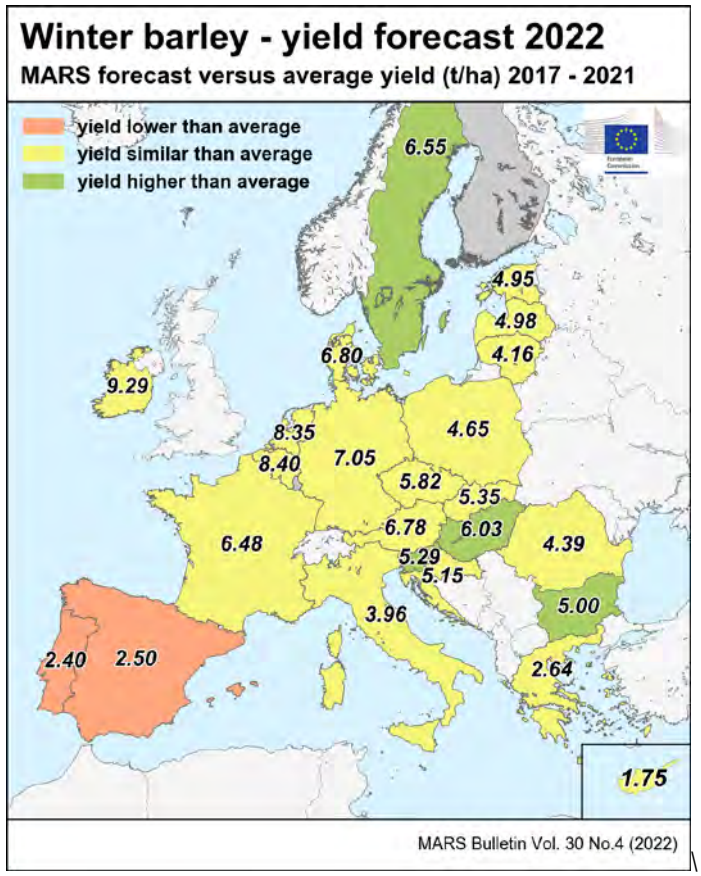
Country	Durum wheat (t/ha)				
	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21
EU	3.52	3.54	**3.55**	+ 0.8	+ 0.1
AT	4.42	4.51	**4.57**	+ 3.5	+ 1.4
BE	—	—	**—**	—	—
BG	—	—	**—**	—	—
CY	—	—	**—**	—	—
CZ	—	—	**—**	—	—
DE	5.24	5.52	**5.23**	– 0.2	– 5.2
DK	—	—	**—**	—	—
EE	—	—	**—**	—	—
EL	2.67	2.60	**2.65**	– 0.6	+ 1.7
ES	2.85	2.49	**2.48**	– 13	– 0.7
FI	—	—	**—**	—	—
FR	5.52	5.41	**5.75**	+ 4.2	+ 6.3
HR	—	—	**—**	—	—
HU	4.74	5.42	**4.89**	+ 3.2	– 10
IE	—	—	**—**	—	—
IT	3.25	3.31	**3.30**	+ 1.4	– 0.3
LT	—	—	**—**	—	—
LU	—	—	**—**	—	—
LV	—	—	**—**	—	—
MT	—	—	**—**	—	—
NL	—	—	**—**	—	—
PL	—	—	**—**	—	—
PT	—	—	**—**	—	—
RO	—	—	**—**	—	—
SE	—	—	**—**	—	—
SI	—	—	**—**	—	—
SK	4.91	5.91	**5.03**	+ 2.4	– 15



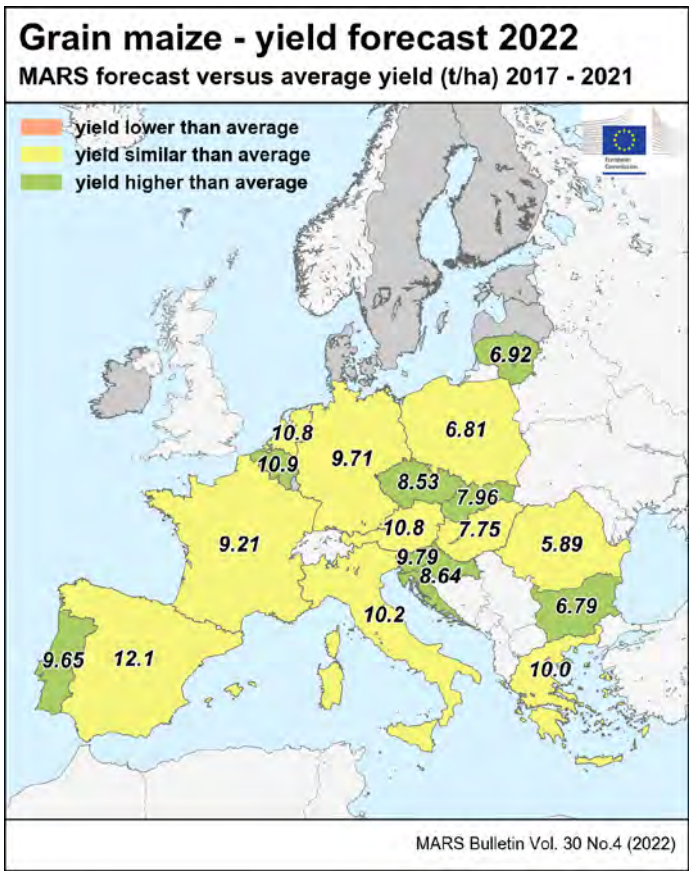
Country	Spring barley (t/ha)				
	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21
EU	4.13	4.22	**4.31**	+ 4.3	+ 2.2
AT	4.12	4.36	**4.55**	+ 11	+ 4.3
BE	—	—	**—**	—	—
BG	—	—	**—**	—	—
CY	—	—	**—**	—	—
CZ	5.04	5.09	**5.40**	+ 7.2	+ 6.2
DE	5.20	5.09	**5.20**	+ 0.0	+ 2.1
DK	5.53	5.51	**5.98**	+ 8.0	+ 8.5
EE	3.46	2.79	**3.77**	+ 8.8	+ 35
EL	—	—	**—**	—	—
ES	3.29	3.61	**3.41**	+ 3.8	– 5.6
FI	3.54	2.63	**3.63**	+ 2.4	+ 38
FR	5.97	6.10	**6.02**	+ 0.8	– 1.3
HR	—	—	**—**	—	—
HU	4.16	4.72	**4.31**	+ 3.8	– 8.7
IE	7.25	7.89	**7.59**	+ 4.7	– 3.8
IT	—	—	**—**	—	—
LT	3.36	3.30	**3.38**	+ 0.4	+ 2.2
LU	—	—	**—**	—	—
LV	3.01	2.46	**3.35**	+ 11	+ 36
MT	—	—	**—**	—	—
NL	6.29	6.17	**6.44**	+ 2.3	+ 4.3
PL	3.47	3.78	**3.72**	+ 7.2	– 1.6
PT	—	—	**—**	—	—
RO	2.78	3.42	**2.92**	+ 5.0	– 15
SE	4.39	3.77	**5.12**	+ 17	+ 36
SI	—	—	**—**	—	—
SK	4.40	4.72	**4.52**	+ 2.7	– 4.2



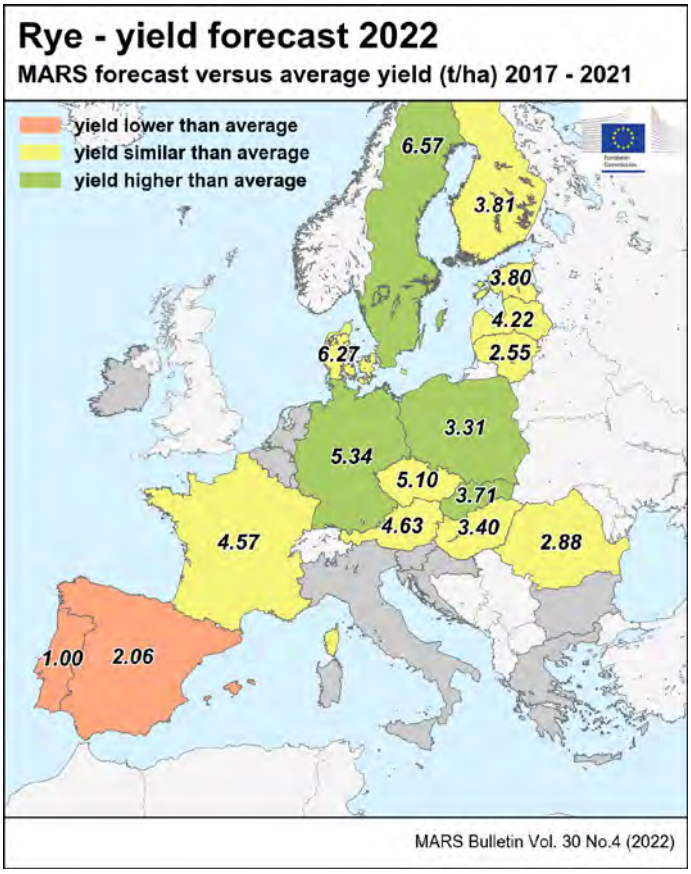
Country	Winter barley (t/ha)				
	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21
EU	5.75	6.09	**5.79**	+ 0.8	– 4.8
AT	6.52	6.53	**6.78**	+ 4.0	+ 3.8
BE	8.15	7.79	**8.40**	+ 3.0	+ 7.8
BG	4.69	5.38	**5.00**	+ 6.6	– 7.0
CY	1.79	1.83	**1.75**	– 1.9	– 4.3
CZ	5.76	5.87	**5.82**	+ 1.0	– 0.9
DE	6.91	7.16	**7.05**	+ 2.0	– 1.6
DK	6.60	6.64	**6.80**	+ 3.1	+ 2.5
EE	5.02	5.11	**4.95**	– 1.4	– 3.1
EL	2.67	2.47	**2.64**	– 1.0	+ 6.8
ES	2.69	2.98	**2.50**	– 7.2	– 16
FI	—	—	**—**	—	—
FR	6.47	6.85	**6.48**	+ 0.1	– 5.4
HR	5.01	5.49	**5.15**	+ 2.7	– 6.2
HU	5.72	6.58	**6.03**	+ 5.5	– 8.3
IE	9.07	9.42	**9.29**	+ 2.5	– 1.4
IT	4.09	4.21	**3.96**	– 3.2	– 5.8
LT	4.15	4.17	**4.16**	+ 0.1	– 0.2
LU	—	—	**—**	—	—
LV	4.86	4.95	**4.98**	+ 2.5	+ 0.8
MT	—	—	**—**	—	—
NL	8.12	7.83	**8.35**	+ 2.7	+ 6.6
PL	4.58	4.77	**4.65**	+ 1.6	– 2.5
PT	2.96	3.35	**2.40**	– 19	– 28
RO	4.50	5.54	**4.39**	– 2.3	– 21
SE	5.94	5.58	**6.55**	+ 10	+ 17
SI	4.97	5.45	**5.29**	+ 6.4	– 2.9
SK	5.30	5.72	**5.35**	+ 1.1	– 6.4



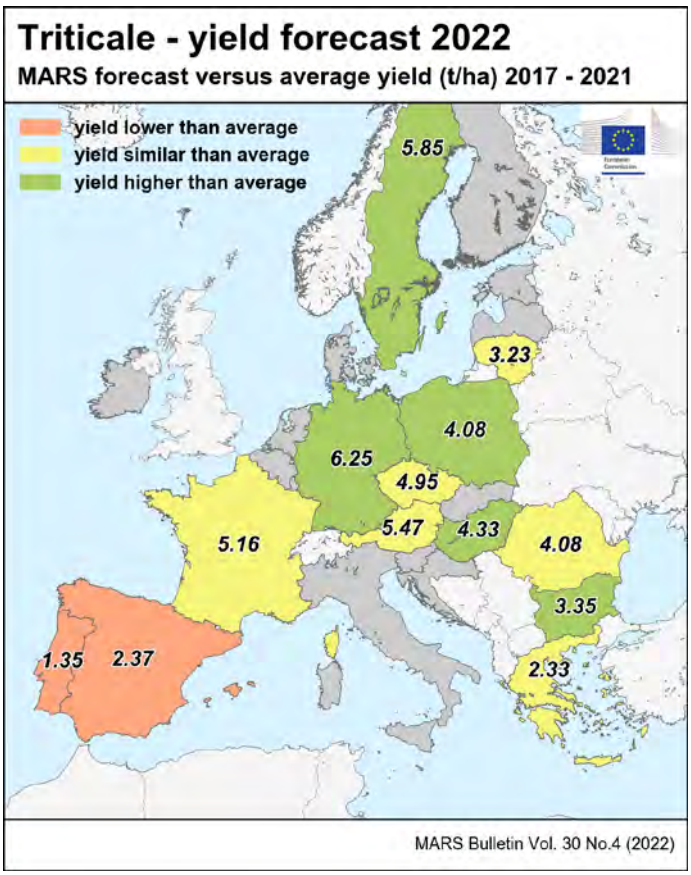
Country	Grain maize (t/ha)				
	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21
EU	7.86	7.91	**7.91**	+ 0.6	+ 0.0
AT	10.6	11.2	**10.8**	+ 1.6	– 3.5
BE	10.4	10.7	**10.9**	+ 4.6	+ 1.7
BG	6.38	5.79	**6.79**	+ 6.5	+ 17
CY	—	—	—	—	—
CZ	8.18	9.88	**8.53**	+ 4.3	– 14
DE	9.50	10.4	**9.71**	+ 2.2	– 6.3
DK	—	—	—	—	—
EE	—	—	—	—	—
EL	10.2	9.91	**10.0**	– 1.8	+ 1.3
ES	11.9	12.3	**12.1**	+ 1.2	– 1.9
FI	—	—	—	—	—
FR	9.10	10.1	**9.21**	+ 1.2	– 8.5
HR	8.12	7.77	**8.64**	+ 6.3	+ 11
HU	7.57	6.04	**7.75**	+ 2.4	+ 28
IE	—	—	—	—	—
IT	10.3	10.3	**10.2**	– 1.1	– 1.1
LT	6.59	5.86	**6.92**	+ 4.9	+ 18
LU	—	—	—	—	—
LV	—	—	—	—	—
MT	—	—	—	—	—
NL	10.8	12.9	**10.8**	+ 0.1	– 17
PL	6.79	7.47	**6.81**	+ 0.3	– 8.9
PT	9.18	9.75	**9.65**	+ 5.0	– 1.1
RO	5.99	5.90	**5.89**	– 1.6	– 0.2
SE	—	—	—	—	—
SI	9.22	9.39	**9.79**	+ 6.2	+ 4.2
SK	7.54	7.86	**7.96**	+ 5.5	+ 1.2



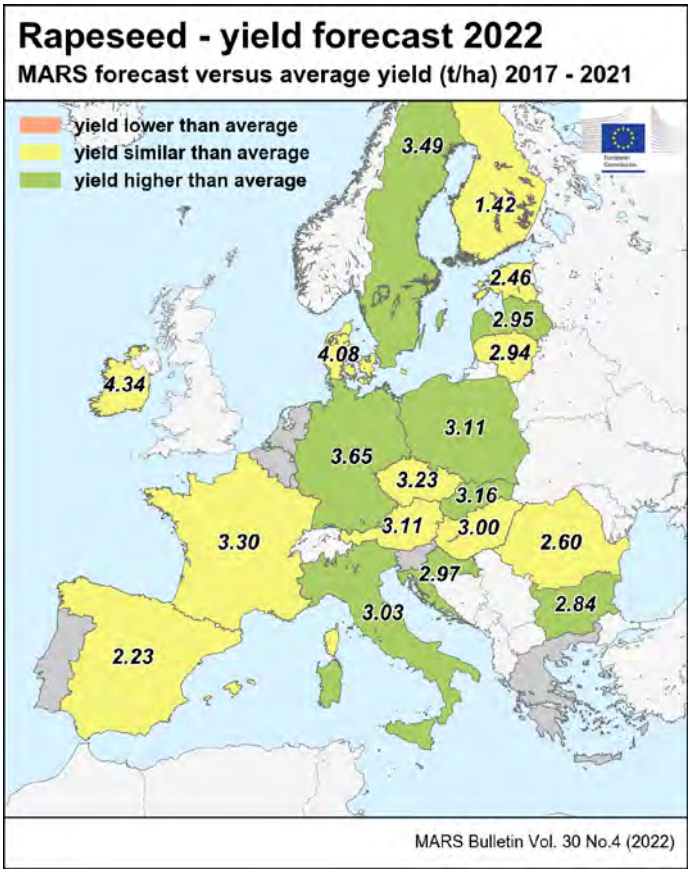
Country	Rye (t/ha)				
	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21
EU	3.90	4.17	**4.11**	+ 5.4	– 1.5
AT	4.52	4.61	**4.63**	+ 2.5	+ 0.4
BE	—	—	—	—	—
BG	—	—	—	—	—
CY	—	—	—	—	—
CZ	5.07	5.03	**5.10**	+ 0.6	+ 1.3
DE	5.10	5.27	**5.34**	+ 4.7	+ 1.4
DK	6.08	6.34	**6.27**	+ 3.0	– 1.2
EE	3.77	3.61	**3.80**	+ 0.7	+ 5.1
EL	—	—	—	—	—
ES	2.31	2.56	**2.06**	– 11	– 20
FI	3.91	3.54	**3.81**	– 2.6	+ 7.8
FR	4.46	4.38	**4.57**	+ 2.4	+ 4.2
HR	—	—	—	—	—
HU	3.31	3.18	**3.40**	+ 2.8	+ 6.8
IE	—	—	—	—	—
IT	—	—	—	—	—
LT	2.57	2.43	**2.55**	– 0.7	+ 5.0
LU	—	—	—	—	—
LV	4.13	3.84	**4.22**	+ 2.0	+ 9.7
MT	—	—	—	—	—
NL	—	—	—	—	—
PL	2.99	3.31	**3.31**	+ 11	+ 0.1
PT	1.07	1.14	**1.00**	– 7.0	– 13
RO	2.88	3.37	**2.88**	– 0.1	– 15
SE	6.06	5.66	**6.57**	+ 8.5	+ 16
SI	—	—	—	—	—
SK	3.50	3.55	**3.71**	+ 6.0	+ 4.7



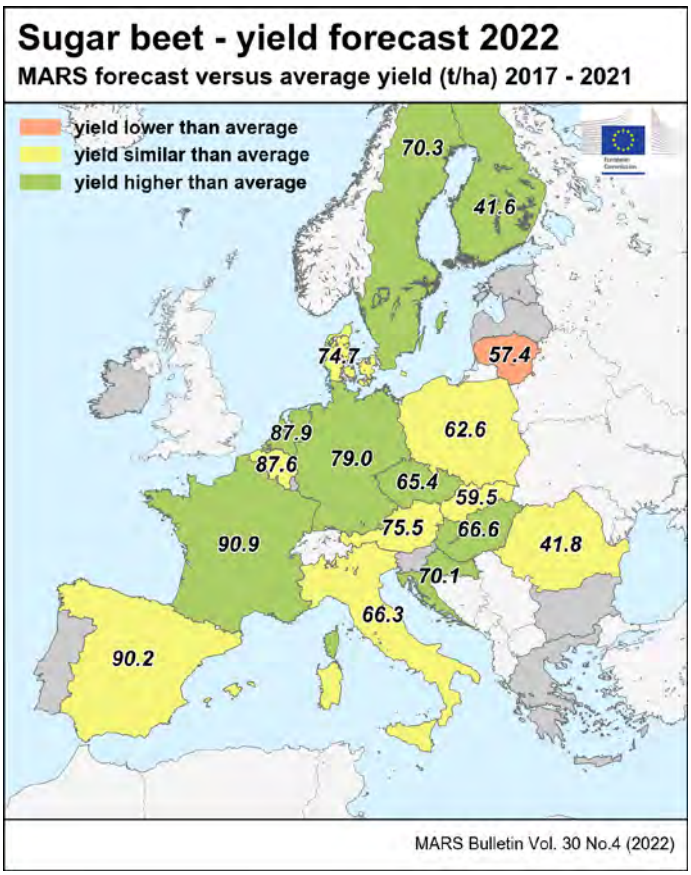
Country	Triticale (t/ha)				
	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21
EU	4.19	4.42	**4.34**	+ 3.5	– 1.9
AT	5.36	5.29	**5.47**	+ 2.1	+ 3.5
BE	—	—	—	—	—
BG	3.13	3.83	**3.35**	+ 7.1	– 13
CY	—	—	—	—	—
CZ	4.84	4.74	**4.95**	+ 2.2	+ 4.2
DE	5.86	5.81	**6.25**	+ 6.6	+ 7.5
DK	—	—	—	—	—
EE	—	—	—	—	—
EL	2.37	2.46	**2.33**	– 1.3	– 5.0
ES	2.64	2.94	**2.37**	– 10	– 19
FI	—	—	—	—	—
FR	5.09	5.20	**5.16**	+ 1.3	– 0.7
HR	—	—	—	—	—
HU	4.02	4.36	**4.33**	+ 7.7	– 0.7
IE	—	—	—	—	—
IT	—	—	—	—	—
LT	3.25	2.77	**3.23**	– 0.5	+ 17
LU	—	—	—	—	—
LV	—	—	—	—	—
MT	—	—	—	—	—
NL	—	—	—	—	—
PL	3.87	4.25	**4.08**	+ 5.6	– 4.0
PT	1.60	1.54	**1.35**	– 16	– 12
RO	4.03	4.55	**4.08**	+ 1.2	– 10
SE	5.57	5.14	**5.85**	+ 5.1	+ 14
SI	—	—	—	—	—
SK	—	—	—	—	—



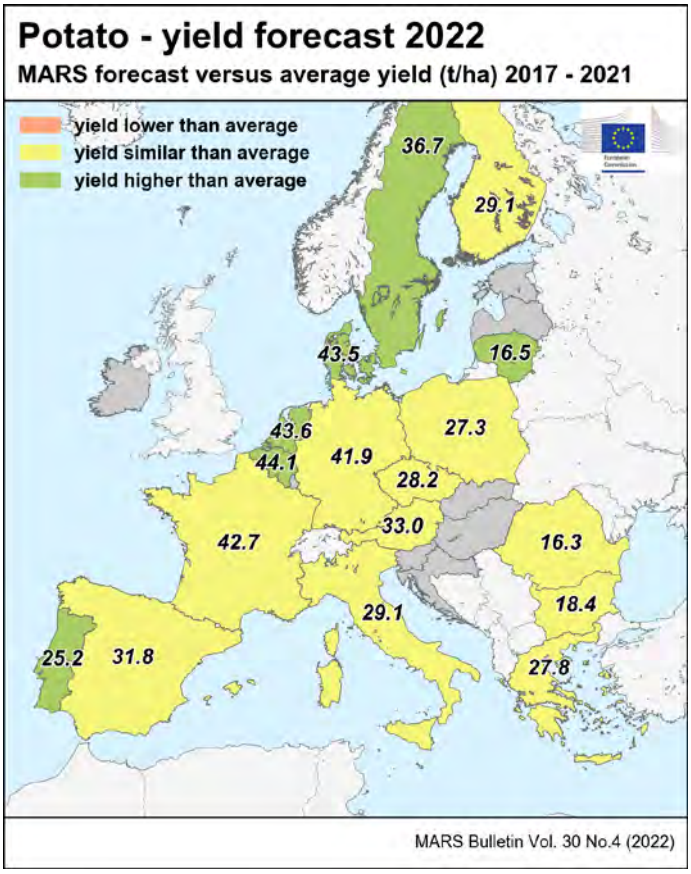
Country	Rape and turnip rape (t/ha)				
	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21
EU	3.07	3.20	**3.19**	+ 3.8	– 0.2
AT	3.00	3.04	**3.11**	+ 3.6	+ 2.2
BE	—	—	—	—	—
BG	2.72	2.82	**2.84**	+ 4.6	+ 0.6
CY	—	—	—	—	—
CZ	3.16	3.00	**3.23**	+ 2.3	+ 7.7
DE	3.33	3.50	**3.65**	+ 10	+ 4.3
DK	4.00	4.01	**4.08**	+ 2.1	+ 1.7
EE	2.42	2.81	**2.46**	+ 1.6	– 12
EL	—	—	—	—	—
ES	2.22	2.61	**2.23**	+ 0.3	– 14
FI	1.39	1.18	**1.42**	+ 2.4	+ 20
FR	3.28	3.34	**3.30**	+ 0.5	– 1.3
HR	2.76	2.43	**2.97**	+ 7.8	+ 22
HU	2.95	2.73	**3.00**	+ 1.8	+ 10
IE	4.22	4.58	**4.34**	+ 2.8	– 5.2
IT	2.80	3.05	**3.03**	+ 8.1	– 0.7
LT	2.97	3.20	**2.94**	– 1.1	– 8.3
LU	—	—	—	—	—
LV	2.68	2.53	**2.95**	+ 9.9	+ 17
MT	—	—	—	—	—
NL	—	—	—	—	—
PL	2.95	3.21	**3.11**	+ 5.5	– 3.1
PT	—	—	—	—	—
RO	2.60	3.02	**2.60**	+ 0.2	– 14
SE	3.18	3.24	**3.49**	+ 10	+ 7.7
SI	—	—	—	—	—
SK	3.00	3.06	**3.16**	+ 5.3	+ 3.3



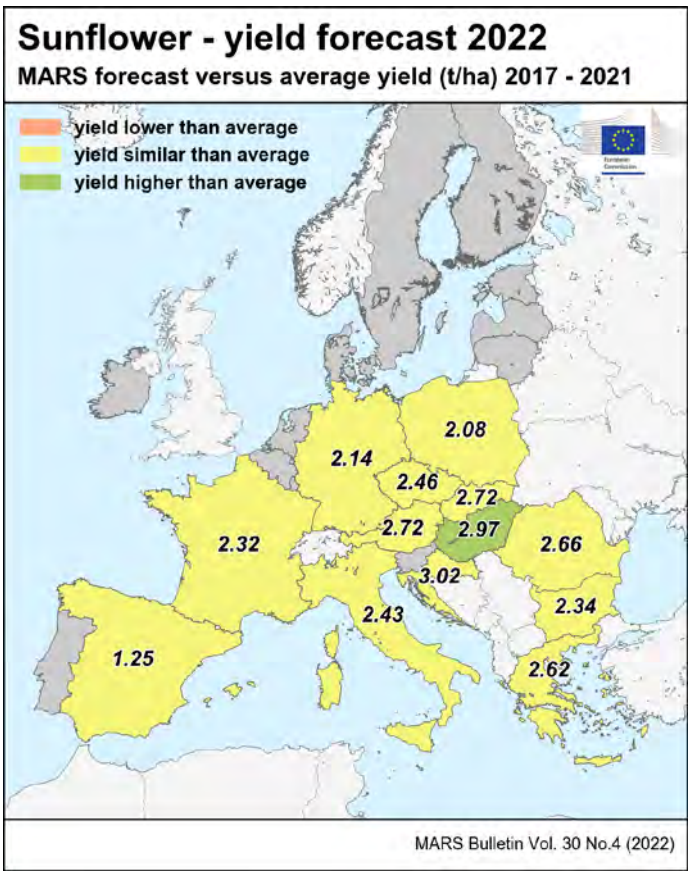
Country	Sugar beets (t/ha)				
	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21
EU	73.9	N/A	**77.8**	+ 5.3	N/A
AT	73.6	79.7	**75.5**	+ 2.6	– 5.3
BE	87.4	86.2	**87.6**	+ 0.2	+ 1.6
BG	—	—	—	—	—
CY	—	—	—	—	—
CZ	62.6	65.3	**65.4**	+ 4.6	+ 0.3
DE	75.1	81.8	**79.0**	+ 5.2	– 3.4
DK	72.1	71.4	**74.7**	+ 3.6	+ 4.6
EE	—	—	—	—	—
EL	—	—	—	—	—
ES	87.5	87.5	**90.2**	+ 3.1	+ 3.1
FI	39.2	37.2	**41.6**	+ 6.2	+ 12
FR	82.3	85.7	**90.9**	+ 11	+ 6.1
HR	62.7	63.8	**70.1**	+ 12	+ 10
HU	60.8	N/A	**66.6**	+ 9.5	N/A
IE	—	—	—	—	—
IT	67.6	N/A	**66.3**	– 1.9	N/A
LT	59.9	50.0	**57.4**	– 4.2	+ 15
LU	—	—	—	—	—
LV	—	—	—	—	—
MT	—	—	—	—	—
NL	84.0	N/A	**87.9**	+ 4.7	N/A
PL	61.6	61.9	**62.6**	+ 1.7	+ 1.0
PT	—	—	—	—	—
RO	40.4	48.0	**41.8**	+ 3.6	– 13
SE	64.8	N/A	**70.3**	+ 8.4	N/A
SI	—	—	—	—	—
SK	58.4	59.2	**59.5**	+ 1.9	+ 0.6



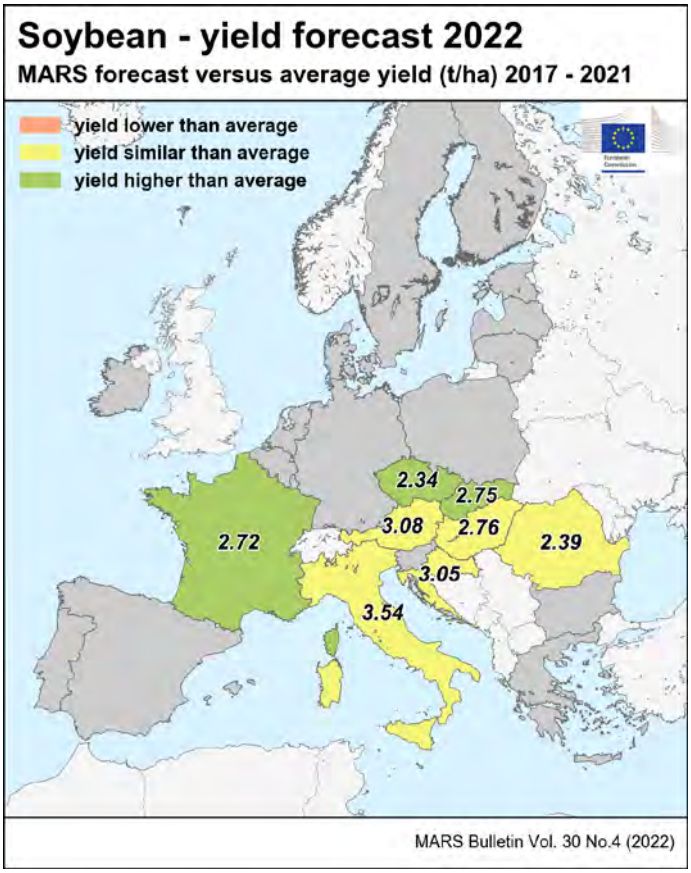
Country	Potato (t/ha)				
	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21
EU	33.7	N/A	**34.4**	+ 2.3	N/A
AT	32.0	34.1	**33.0**	+ 3.1	– 3.4
BE	40.9	43.0	**44.1**	+ 7.8	+ 2.5
BG	18.9	18.0	**18.4**	– 2.4	+ 2.3
CY	—	—	—	—	—
CZ	28.2	29.4	**28.2**	+ 0.3	– 4.0
DE	41.6	43.8	**41.9**	+ 0.8	– 4.4
DK	41.7	43.1	**43.5**	+ 4.3	+ 0.9
EE	—	—	—	—	—
EL	28.0	25.5	**27.8**	– 0.5	+ 9.0
ES	31.8	32.5	**31.8**	+ 0.0	– 2.0
FI	28.7	27.3	**29.1**	+ 1.5	+ 6.8
FR	41.3	N/A	**42.7**	+ 3.4	N/A
HR	—	—	—	—	—
HU	—	—	—	—	—
IE	—	—	—	—	—
IT	29.2	29.2	**29.1**	– 0.3	– 0.1
LT	15.5	16.0	**16.5**	+ 6.4	+ 3.0
LU	—	—	—	—	—
LV	—	—	—	—	—
MT	—	—	—	—	—
NL	41.8	N/A	**43.6**	+ 4.4	N/A
PL	27.4	30.0	**27.3**	– 0.2	– 9.0
PT	22.7	25.0	**25.2**	+ 11	+ 0.8
RO	16.5	16.1	**16.3**	– 0.9	+ 1.1
SE	34.4	34.8	**36.7**	+ 6.5	+ 5.3
SI	—	—	—	—	—
SK	—	—	—	—	—



Country	Sunflower (t/ha)				
	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21
EU	2.33	2.35	**2.38**	+ 2.4	+ 1.5
AT	2.72	3.05	**2.72**	+ 0.1	– 11
BE	—	—	—	—	—
BG	2.31	2.38	**2.34**	+ 1.0	– 2.0
CY	—	—	—	—	—
CZ	2.48	2.62	**2.46**	– 1.1	– 6.2
DE	2.20	2.60	**2.14**	– 3.0	– 18
DK	—	—	—	—	—
EE	—	—	—	—	—
EL	2.66	2.58	**2.62**	– 1.3	+ 1.7
ES	1.25	1.26	**1.25**	+ 0.3	– 0.5
FI	—	—	—	—	—
FR	2.39	2.76	**2.32**	– 3.2	– 16
HR	3.04	3.00	**3.02**	– 0.5	+ 0.7
HU	2.85	2.60	**2.97**	+ 4.1	+ 14
IE	—	—	—	—	—
IT	2.40	2.40	**2.43**	+ 1.0	+ 1.3
LT	—	—	—	—	—
LU	—	—	—	—	—
LV	—	—	—	—	—
MT	—	—	—	—	—
NL	—	—	—	—	—
PL	2.12	2.35	**2.08**	– 2.1	– 12
PT	—	—	—	—	—
RO	2.58	2.43	**2.66**	+ 3.3	+ 10
SE	—	—	—	—	—
SI	—	—	—	—	—
SK	2.66	2.71	**2.72**	+ 2.2	+ 0.4



Country	Soybean (t/ha)				
	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21
EU	2.89	2.83	**2.99**	+ 3.4	+ 5.6
AT	2.97	3.04	**3.08**	+ 3.7	+ 1.4
BE	—	—	—	—	—
BG	—	—	—	—	—
CY	—	—	—	—	—
CZ	2.24	2.49	**2.34**	+ 4.4	– 5.8
DE	—	—	—	—	—
DK	—	—	—	—	—
EE	—	—	—	—	—
EL	—	—	—	—	—
ES	—	—	—	—	—
FI	—	—	—	—	—
FR	2.61	2.83	**2.72**	+ 4.4	– 3.9
HR	2.96	3.00	**3.05**	+ 3.1	+ 1.7
HU	2.71	2.61	**2.76**	+ 1.9	+ 5.8
IE	—	—	—	—	—
IT	3.42	3.11	**3.54**	+ 3.5	+ 14
LT	—	—	—	—	—
LU	—	—	—	—	—
LV	—	—	—	—	—
MT	—	—	—	—	—
NL	—	—	—	—	—
PL	—	—	—	—	—
PT	—	—	—	—	—
RO	2.39	2.29	**2.39**	+ 0.1	+ 4.4
SE	—	—	—	—	—
SI	—	—	—	—	—
SK	2.48	2.66	**2.75**	+ 11	+ 3.2



Country	Wheat (t/ha)				
	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21
BY	3.45	3.54	**3.72**	+ 7.8	+ 5.1
DZ	1.65	N/A	**0.90**	– 45	N/A
MA	1.98	2.63	**0.89**	– 55	– 66
TN	1.82	N/A	**1.81**	– 0.6	N/A
TR	2.79	2.66	**3.03**	+ 8.4	+ 14
UA	4.10	4.64	**4.21**	+ 2.8	– 9.3
UK	8.03	7.80	**8.04**	+ 0.1	+ 3.1

Country	Barley (t/ha)				
	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21
BY	2.85	2.86	**3.29**	+ 16	+ 15
DZ	1.24	N/A	**0.91**	– 27	N/A
MA	1.30	1.87	**0.54**	– 58	– 71
TN	0.96	N/A	**0.92**	– 3.7	N/A
TR	2.53	1.87	**2.83**	+ 12	+ 51
UA	3.37	3.92	**3.31**	– 1.7	– 16
UK	6.15	6.09	**6.37**	+ 3.6	+ 4.6

Country	Grain maize (t/ha)				
	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21
BY	5.58	5.31	**5.80**	+ 3.8	+ 9.1
DZ	—	—	**—**	—	—
MA	—	—	**—**	—	—
TN	—	—	**—**	—	—
TR	9.30	8.90	**9.36**	+ 0.6	+ 5.2
UA	6.72	7.47	**7.29**	+ 8.4	– 2.5
UK	—	—	**—**	—	—

Country	Soybean (t/ha)				
	Avg 5yrs	2021	MARS 2022 forecasts	%22/5yrs	%22/21
BY	—	—	**—**	—	—
DZ	—	—	**—**	—	—
MA	—	—	**—**	—	—
TN	—	—	**—**	—	—
TR	4.29	4.15	**4.60**	+ 7.2	+ 11
UA	2.29	2.68	**2.56**	+ 11	– 4.6
UK	—	—	**—**	—	—

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

Sources: 2017-2022 data come from DG Agriculture and Rural Development short-term-outlook data (dated March 2022, received on 07.04.2022), Eurostat Eurobase (last update: 08.04.2022) and EES (last update: 15.11.2017).

Non-EU 2017-2021 data come from USDA, Turkish Statistical Institute (TurkStat), Eurostat Eurobase (last update: 08.04.2022), Department for Environment, Food & Rural Affairs of UK (DEFRA), Ministry for Development of Economy, Trade and Agriculture of Ukraine, FAO and PSD-online.

2022 yields come from MARS Crop Yield Forecasting System (output up to 20.04.2022).

EU aggregate after 1.2.2020 is reported.

N/A = Data not available.

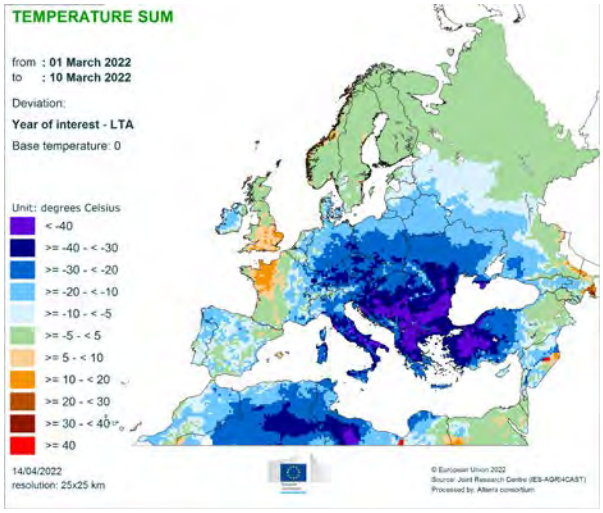
The column header '%22/5yrs' stands for the 2022 change with respect to the 5-year average(%). Similarly, '%22/21' stands for the 2022 change with respect to 2021(%).

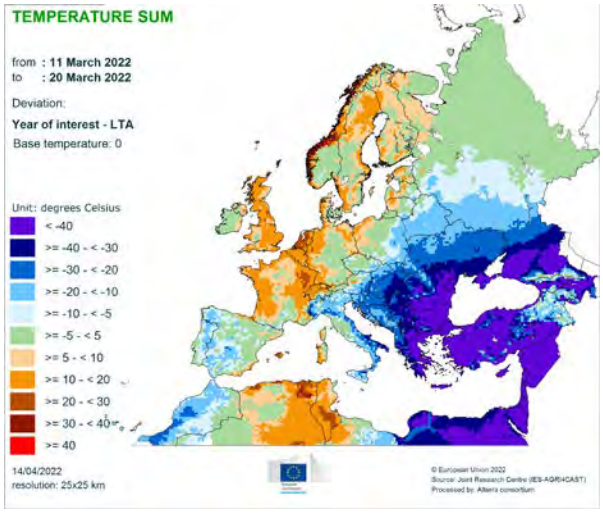
Cop name	Eurostat Crop name	Eurostat Crop Code	Official Eurostat Crop definition*
Total wheat	Wheat and spelt	C1100	Common wheat (*Triticum aestivum* L. emend. Fiori et Paol.), spelt (*Triticum spelta* L.), einkorn wheat (*Triticum monococcum* L.) and durum wheat (*Triticum durum* Desf.).
Total barley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

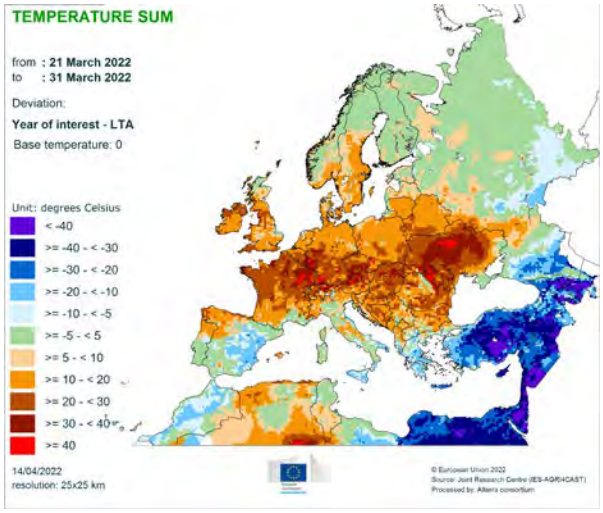
* *Source:* Eurostat - Annual crop statistics (Handbook 2020 Edition)

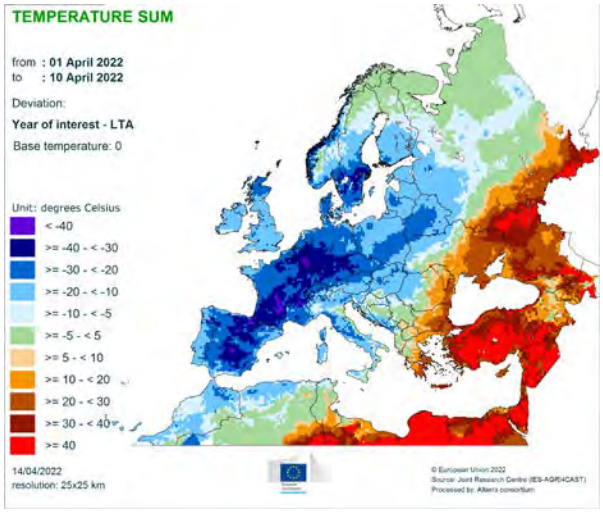
7. Atlas

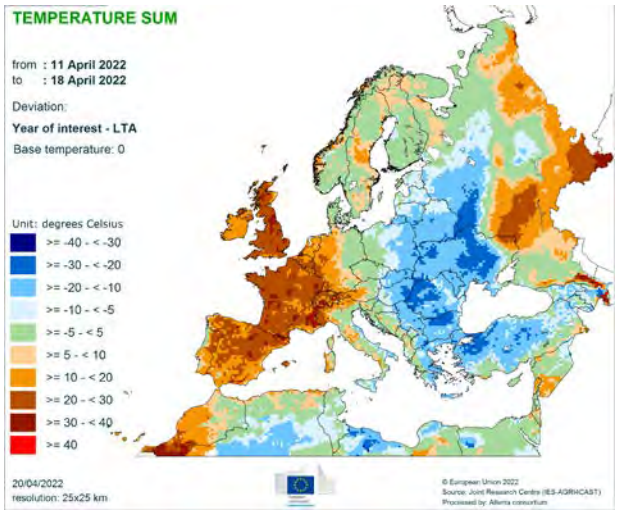
Temperature regime

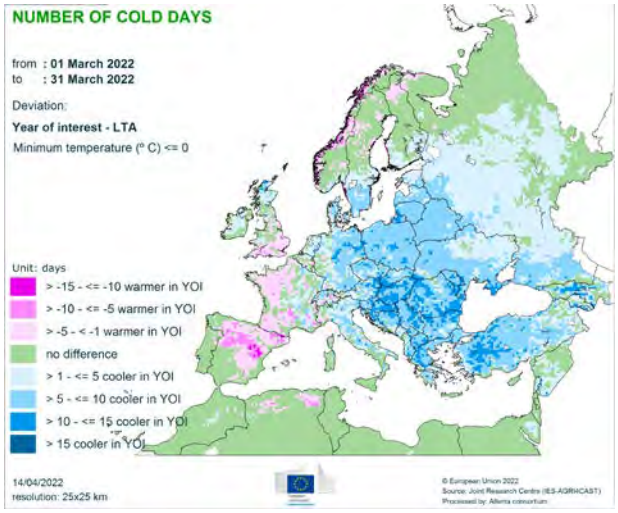


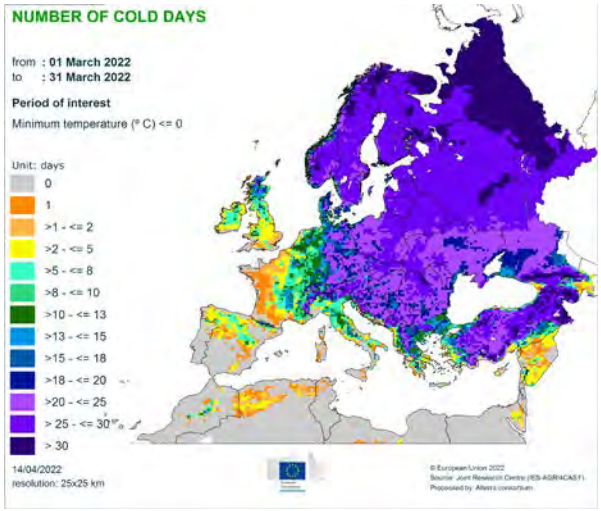


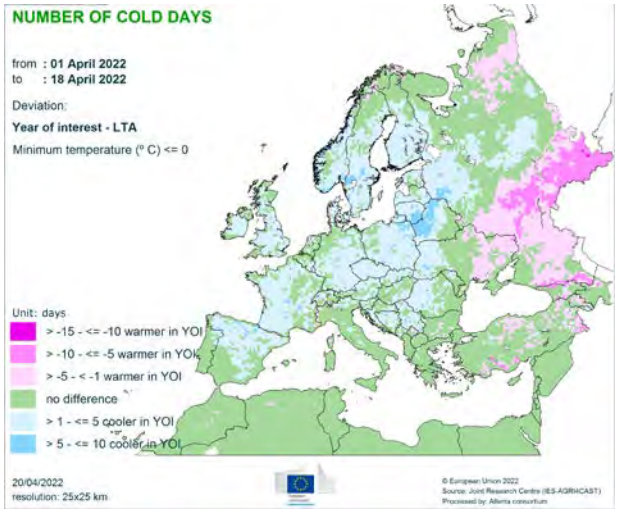


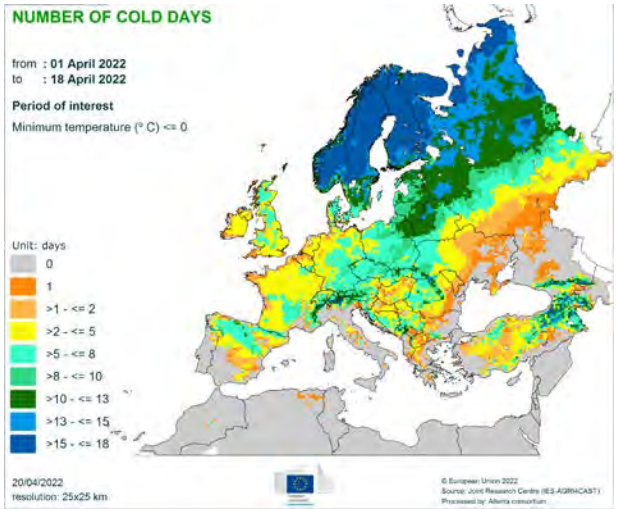












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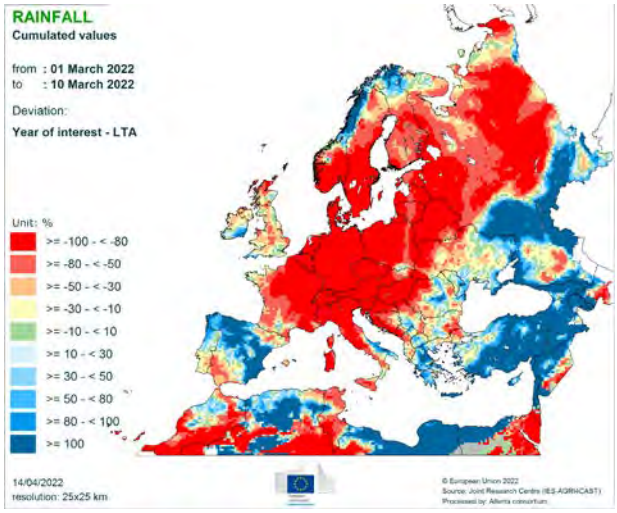

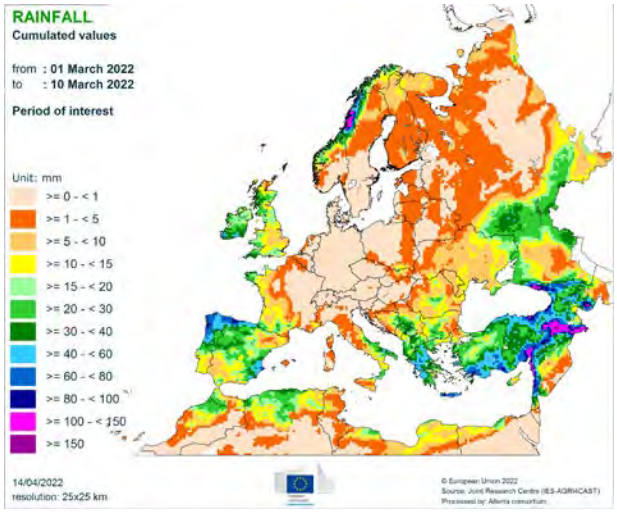

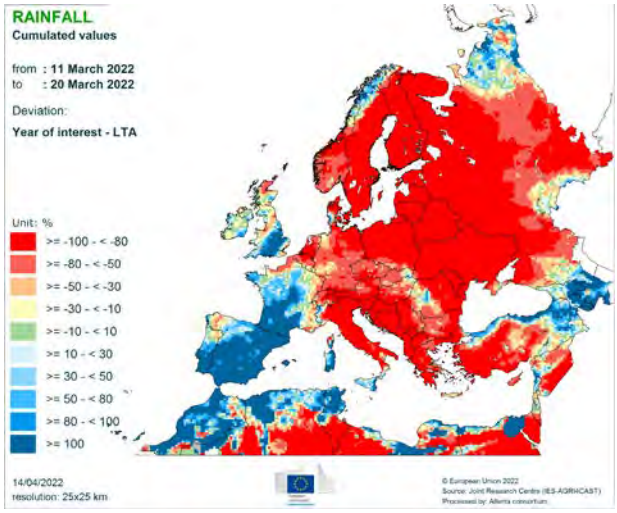
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to : 20 March 2022
Deviation:
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Unit: %
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>= -50 - < -30
>= -30 - < -10
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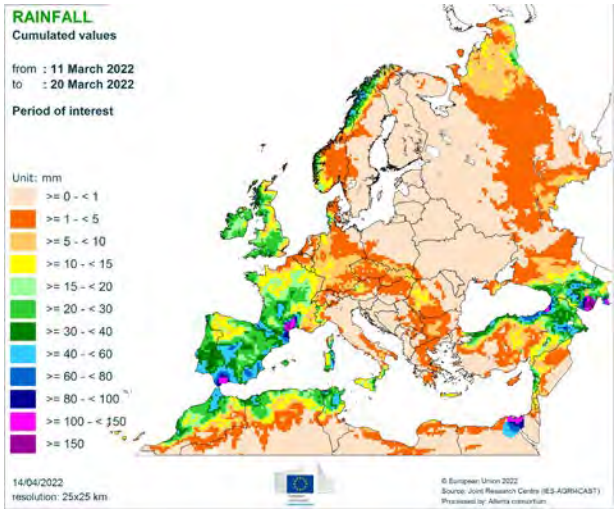
>= 100
14/04/2022
resolution: 25x25 km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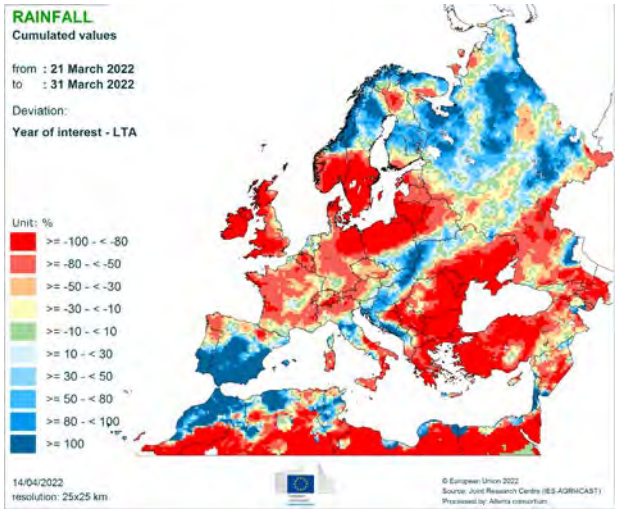
>= 150
14/04/2022
resolution: 25x25 km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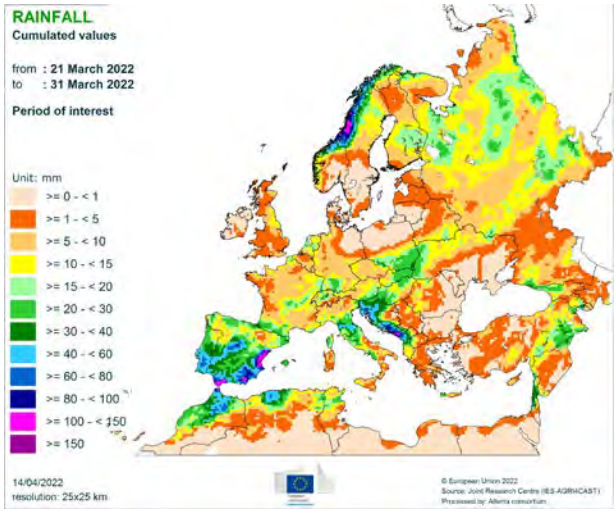
>= 50 - < 80
>= 80 - < 100
>= 100
14/04/2022
resolution: 25x25 km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Cumulated values
from : 21 March 2022
to : 31 March 2022
Period of interest
Unit: mm
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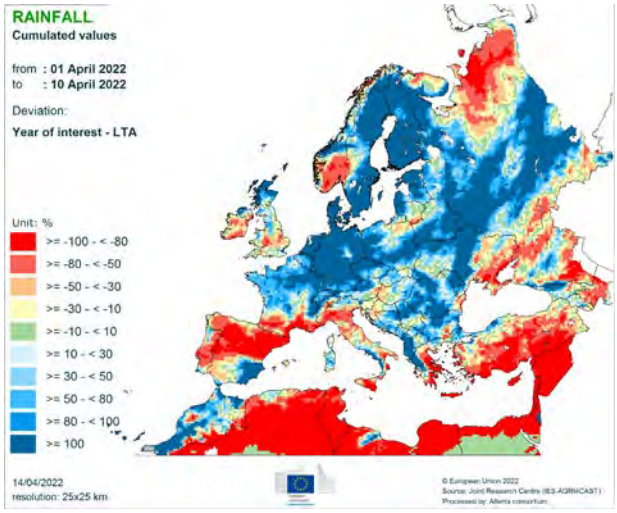
>= 1 - < 5
>= 5 - < 10
>= 10 - < 15
>= 15 - < 20
>= 20 - < 30
>= 30 - < 40
>= 40 - < 60
>= 60 - < 80
>= 80 - < 100
>= 100 - < 150
>= 150
14/04/2022
resolution: 25x25 km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Deviation:
Year of interest - LTA
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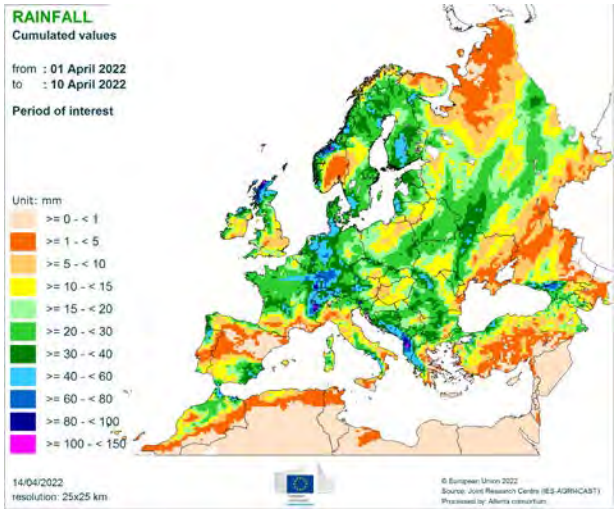
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14/04/2022
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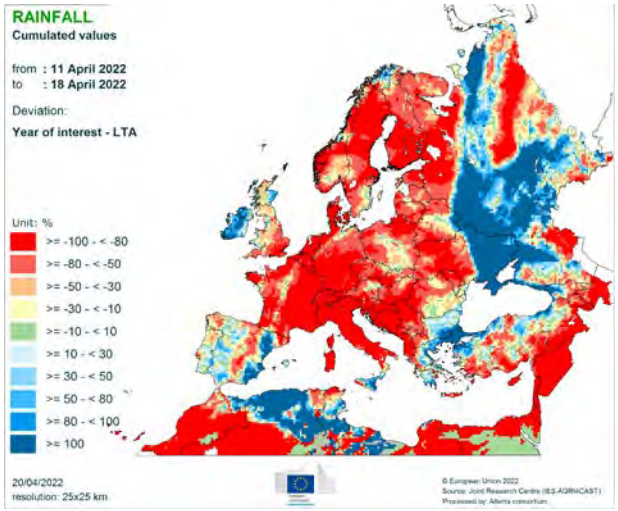
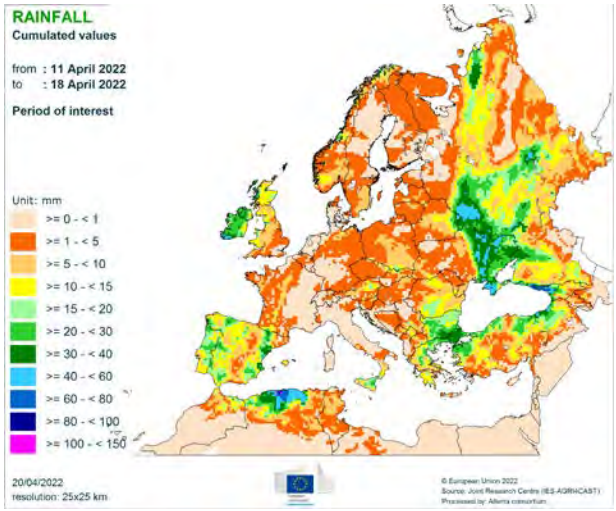
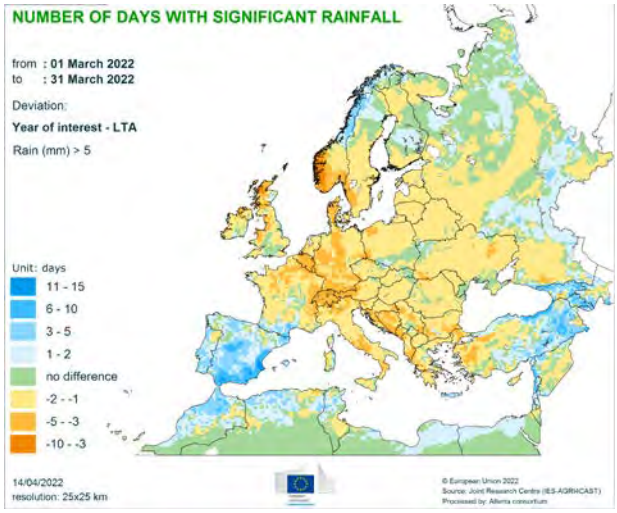
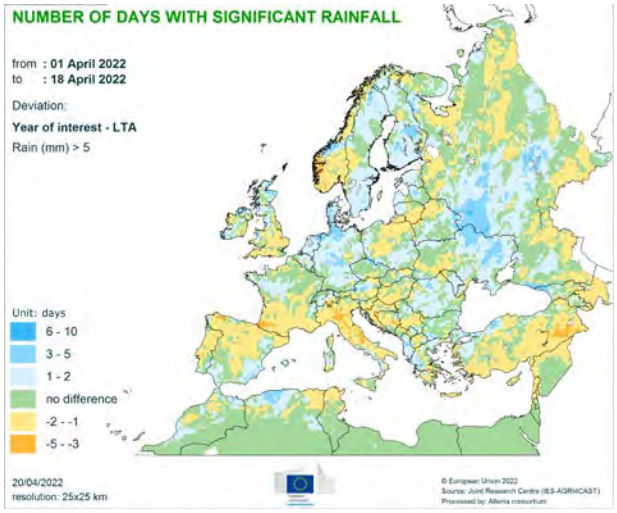
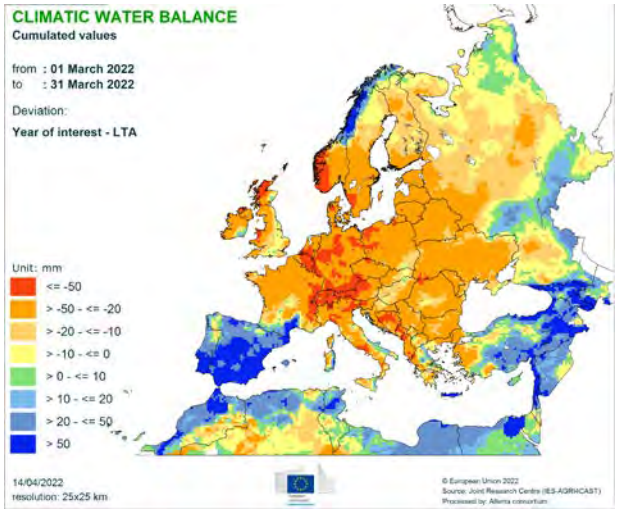


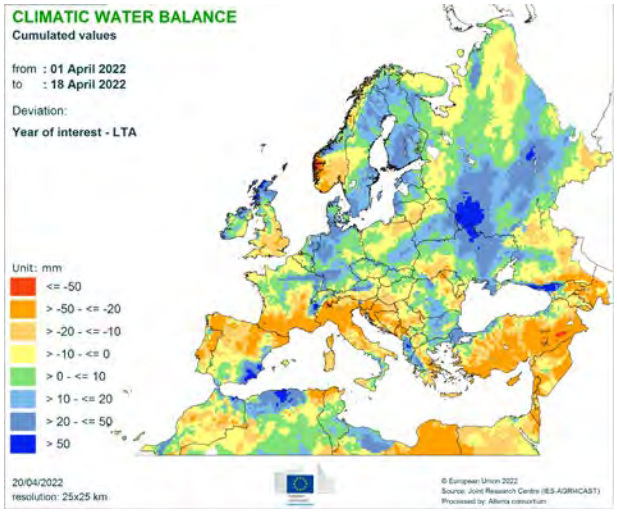




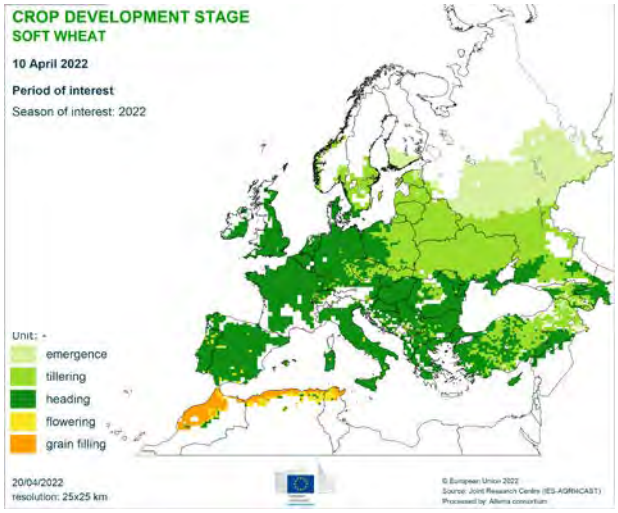


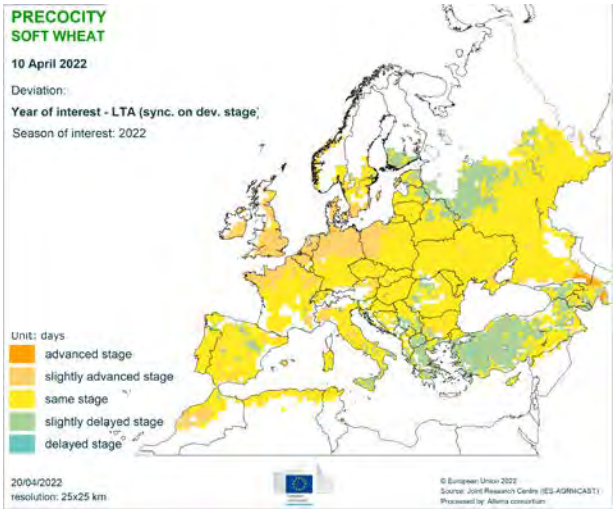
Climatic water balance

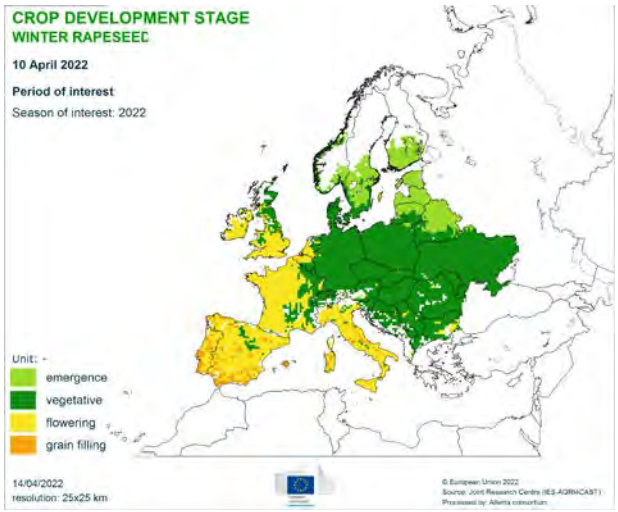


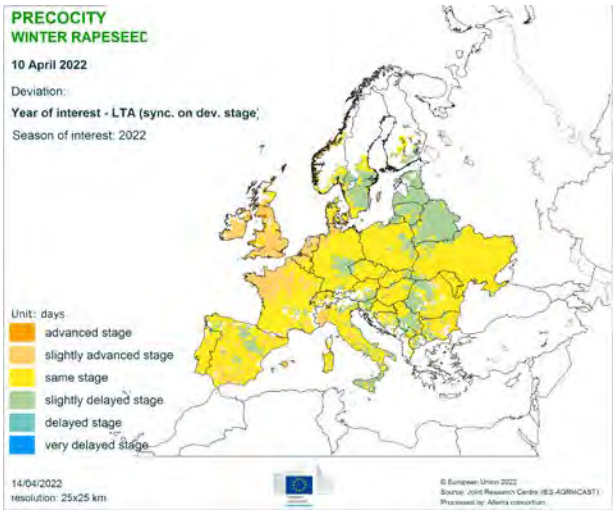


Crop development stages and precocity









JRC MARS Bulletins 2022

Date	Publication	Reference
24 Jan	Agromet analysis	Vol. 30 No 1
21 Feb	Agromet analysis	Vol. 30 No 2
21 Mar	Agromet analysis, pasture analysis, yield forecast	Vol. 30 No 3
26 Apr	Agromet analysis, remote sensing, pasture analysis, sowing conditions, yield forecast	Vol. 30 No 4
23 May	Agromet analysis, remote sensing, pasture analysis, sowing update, yield forecast	Vol. 30 No 5
20 Jun	Agromet analysis, remote sensing, pasture analysis, rice analysis, yield forecast	Vol. 30 No 6
25 Jul	Agromet analysis, remote sensing, pasture analysis, harvesting conditions, yield forecast	Vol. 30 No 7
22 Aug	Agromet analysis, remote sensing, pasture update, harvesting update, yield forecast	Vol. 30 No 8
19 Sep	Agromet analysis, remote sensing, pasture analysis, rice analysis, harvesting update, yield forecast	Vol. 30 No 9
24 Oct	Agromet analysis, pasture update, sowing conditions, harvesting update, yield forecast	Vol. 30 No 10
21 Nov	Agromet analysis, sowing update, harvesting update	Vol. 30 No 11
19 Dec	Agromet analysis	Vol. 30 No 12

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Technical note
The long-term average (LTA) used within this Bulletin as a reference is calculated on the basis of weather data from 1991-2020.

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