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Period covered: 1 March–20 April
Issued: 26 April 2016

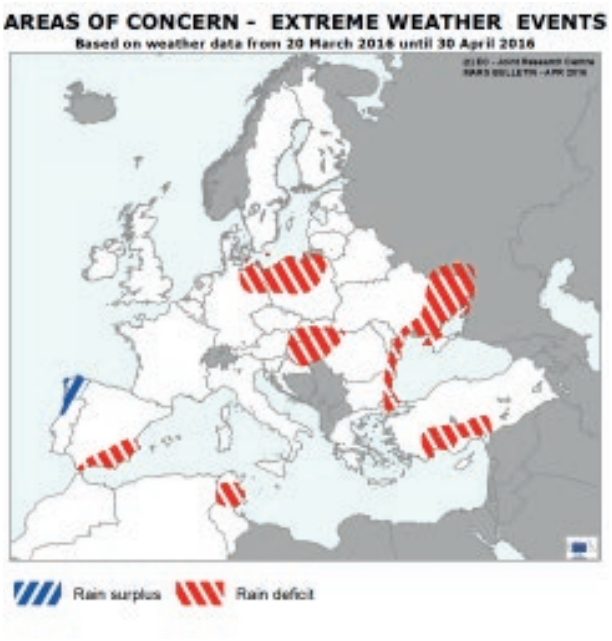
JRC MARS Bulletin
Crop monitoring in Europe
April 2016

Good start to the season and sowing progress

Concerns in Poland and Ukraine after an unfavourable winter

In most regions, weather conditions have been favourable for winter crop growth and spring sowings. In general, the current prospects for EU-28 yields are above the five-year average, and the forecast for total cereals has increased compared to our last Bulletin, reflecting the generally good growth conditions.

Temperatures from Germany to the British Isles, France and western Spain were close to the long-term average. Above-average temperatures persisted in eastern Europe. Rainfall was also above average in most of Europe, but some regions presented markedly drier-than-usual weather conditions.
Concerns remain about Poland and Ukraine, where sparse rainfall was registered in regions in which crops are already poorly developed due to unfavourable winter conditions. Water stress is also a concern in southern Turkey and southern Tunisia. In Morocco, last month's rains came too late and did little to improve the very poor status of winter crops.
Compared to our previous forecasts, which were based on trends and averages, forecasts are now partially produced using the results of the crop model simulations.



Crop	Yield t/ha				
	Avg 5yrs	March Bulletin	MARS 2016 forecasts	% Diff 16/5yrs	% Diff March
TOTAL CEREALS	5.32	5.42	**5.49**	+ 3.3	+ 1.3
Total Wheat	5.60	5.70	**5.85**	+ 4.5	+ 2.6
soft wheat	5.83	5.96	**6.11**	+ 4.9	+ 2.5
durum wheat	3.33	3.33	**3.38**	+ 1.6	+ 1.5
Total Barley	4.72	4.87	**4.94**	+ 4.6	+ 1.4
spring barley	4.13	4.17	**4.17**	+ 1.2	+ 0.0
winter barley	5.58	5.82	**5.97**	+ 7.0	+ 2.6
Grain maize	6.87	7.12	**7.06**	+ 2.7	- 0.8
Rye	3.76	3.85	**3.90**	+ 3.8	+ 1.3
Triticale	4.21	4.26	**4.30**	+ 2.2	+ 0.9
Rape and turnip rape	3.21	3.31	**3.35**	+ 4.5	+ 1.2
Potato	32.02	33.39	**32.96**	+ 2.9	- 1.3
Sugar beet	71.78	73.98	**73.49**	+ 2.4	- 0.7
Sunflower	1.90	1.95	**1.95**	+ 2.7	+ 0.0

Issued: 22 April 2016

Joint Research Centre

1. Agro-meteorological overview

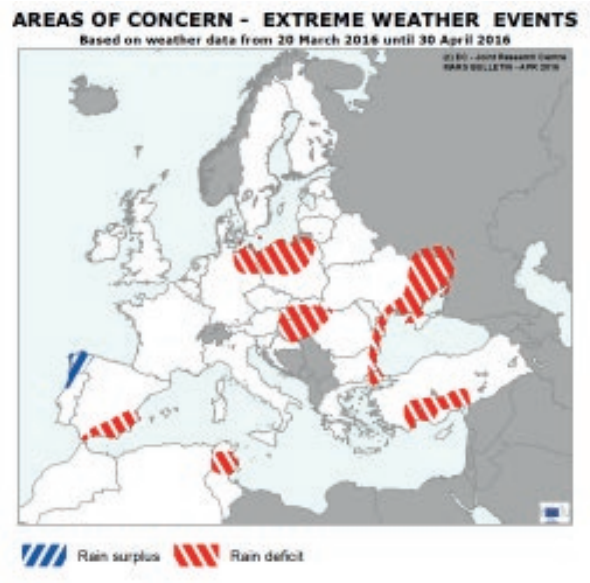
1.1. Areas of concern

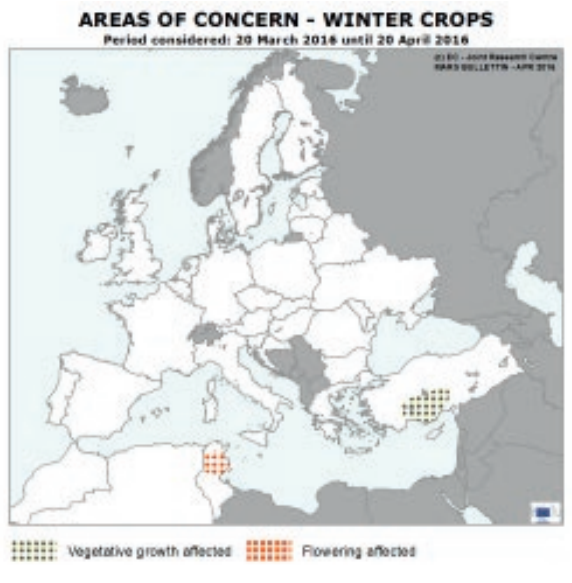
Crop growth conditions have been good in most regions of Europe. However, negative conditions impacted crop development in a few regions, which are represented in the maps 'Areas of concern — Winter crops' and 'Areas of concern — Canopy status'. The regions displayed in the 'Winter crops' map are those that were impacted by the weather from 20 March until 20 April.

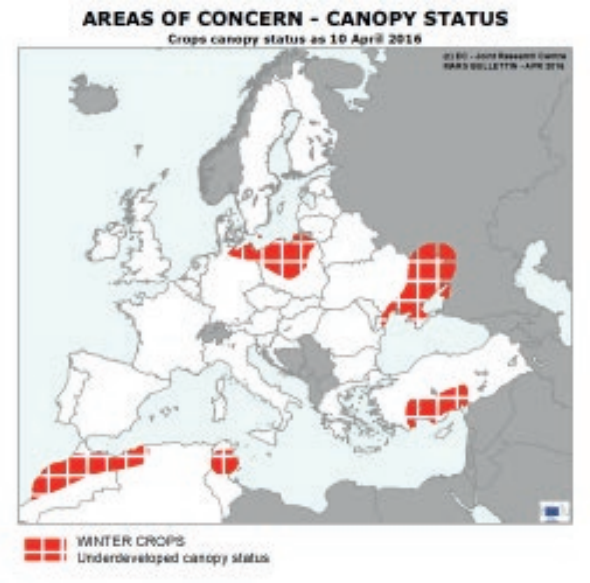
The regions highlighted in the 'Canopy status' map are those with underdeveloped crops, as identified by remote sensing information from 10 April. These regions experienced unfavourable growth conditions since the start of the season.

During the period under review, sparse rainfall was registered in **north-eastern Germany** and **northern Poland**, where crop conditions are suboptimal due to a dry winter and some frost damage. In southern and eastern **Ukraine**, scarce precipitation persisted in regions where crops had already been jeopardised by the unfavourably dry winter conditions. In southern **Turkey**, crop growth after the winter dormancy period was affected by reduced precipitation. In southern **Tunisia**, crop yield potential is impacted by water-stress during the flowering and the beginning of the grain filling stages. In **Morocco** last month's rains came too late and did not significantly improve the very poor status of winter crops.

In southern **Spain**, despite ongoing dry conditions, soil moisture levels were optimal until the beginning of March and are still sufficient to sustain yield formation in winter crops. Similarly, in **Hungary**, the sparse rains recorded since March are not cause for concern, as soil moisture levels are still adequate thanks to the abundant rains of February.







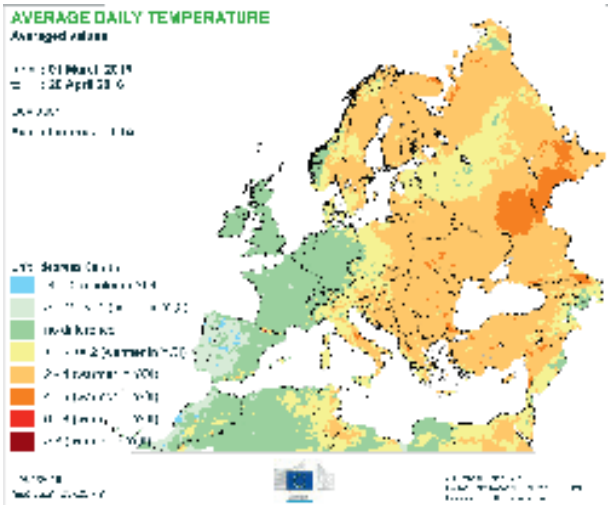
1.2. Meteorological review (1 March-20 April)

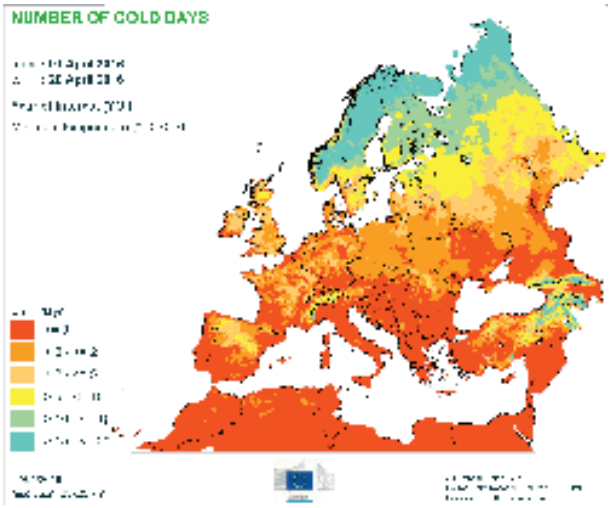
Temperature anomalies increased from West to East. For the review period as a whole, temperatures from Germany to the British Isles, France and western Spain were close to the long-term average. The Iberian Peninsula and western Morocco were 1-3 °C colder than usual, whereas air temperatures in the eastern half of Europe were 1-4 °C higher than the long-term average. In southern Russia, the thermal anomaly reached 5-6 °C. In several regions of eastern Europe, this year is among the warmest on our records. The first two dekads of April were particularly warm in central and south-eastern Europe; on the hottest days, the daily maxima exceeded the long-term average by 10-12 °C, locally reaching 25-32 °C.

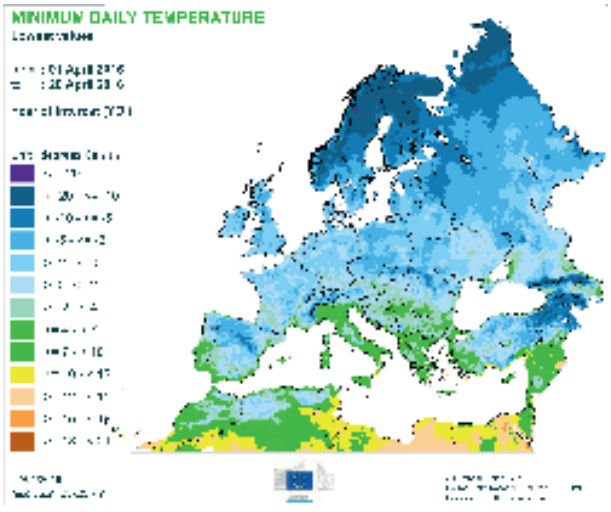
In most of Europe, frost events were sparse and mild. During March, the number of cold days (T min < 0 °C) in central and south-eastern Europe was 5-15 days less than in an average year. Only moderate (T min > – 8 °C) frost events were experienced in the region comprising the British Isles, continental Europe south of the North and the Baltic Seas, Ukraine and southern Russia. In April, there were no or only one or two very slight frosts (T min > – 3 °C) in this region.

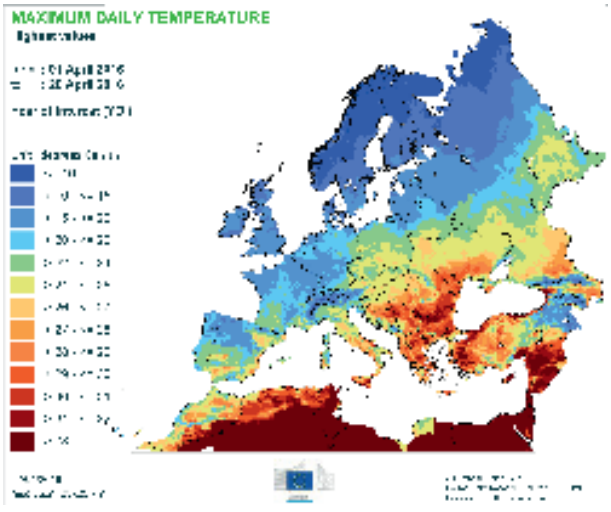
Above-average rainfall in most of Europe. Recurrent low-pressure weather systems arriving from the Atlantic caused ample rainfall (> 90 mm) in Ireland, the UK, France, southern Scandinavia and the northern half of the Iberian Peninsula. The Balkan Peninsula, southern Italy, western Turkey, southern Belarus, some central regions of Russia and the coastal areas of Algeria and Tunisia also received plentiful precipitation.

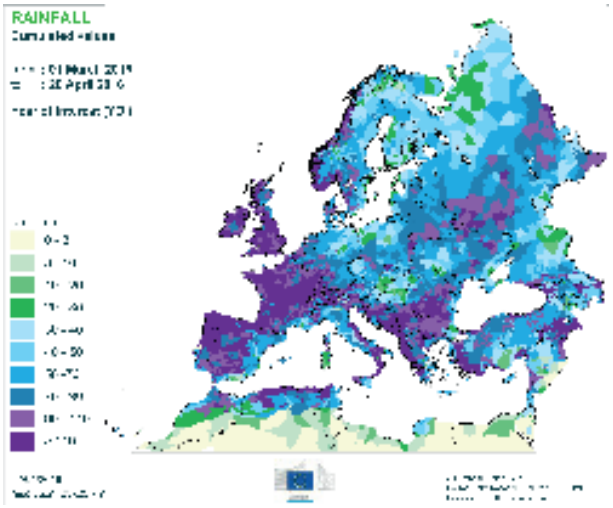
Markedly drier-than-usual weather conditions occurred in a few regions. Rainfall was significantly below the seasonal average along the north-western coastline of the Mediterranean Sea, in northern Italy, the Carpathian Basin, the southern and eastern coastlines of the Baltic Sea, north-eastern Germany and northern Poland, south-eastern Ukraine and some smaller spots of southern Turkey and Russia. In April, days with significant rainfall (> 3 mm) were scarce in Italy and in south-eastern Europe.
In the Maghreb region, there was finally some rainfall in Morocco and north-western Algeria. However, the dry conditions that have been building up since last autumn are badly affecting large wheat-producing areas of the Maghreb region.

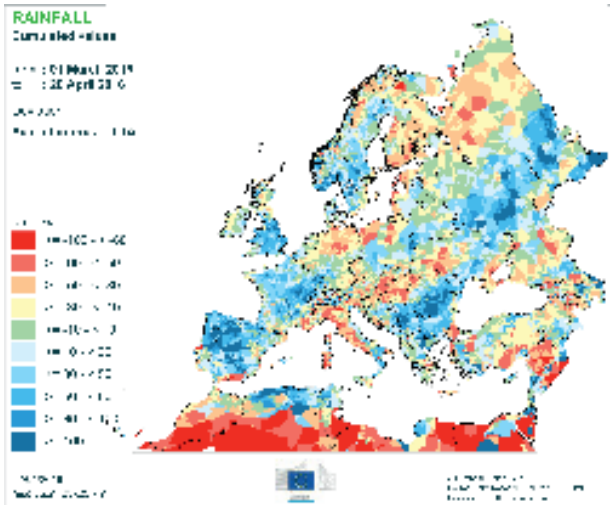




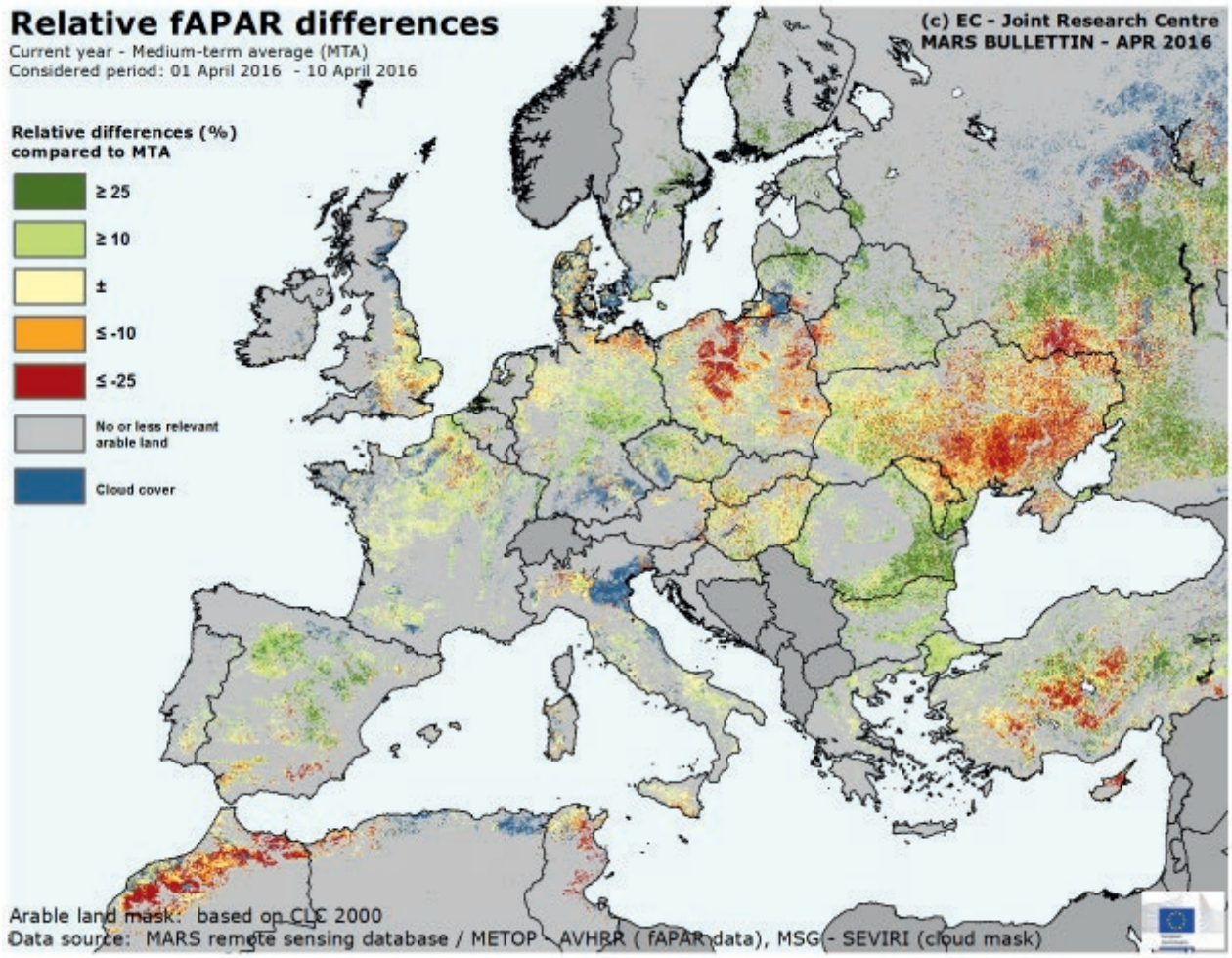





RAINFALL


RAINFALL

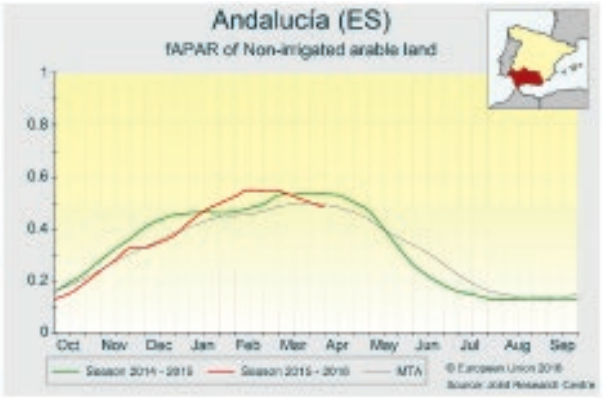
2. Remote Sensing — Observed canopy conditions

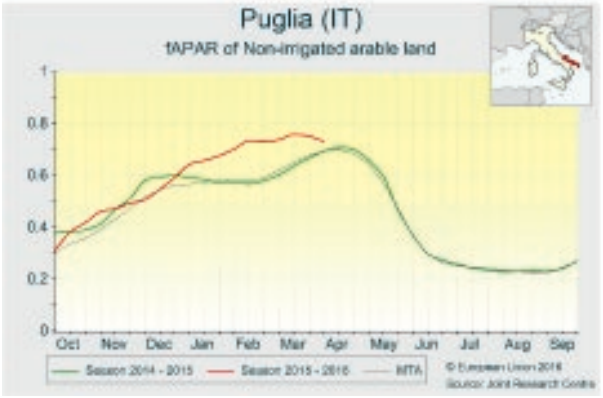


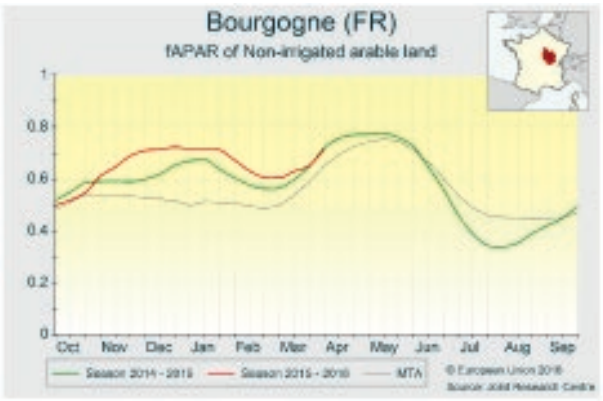
The map displays the differences between the fraction of Absorbed Photosynthetically Active Radiation (fAPAR) from the beginning of April 2016 and the medium-term average (MTA, 2007-2015).

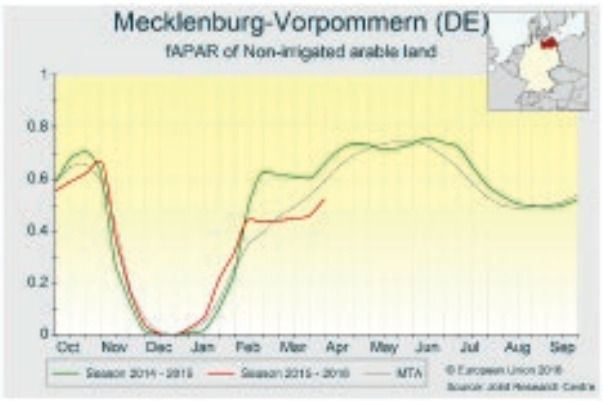
Spain presents strong positive anomalies in northern regions, where the winter canopy is well developed. Cooler-than-usual temperatures in March slowed the development of the previously fast-growing winter crops. In southern regions (e.g. *Andalucia*), crops reached the flowering phase in April, after a dry three-week period. Grain filling has therefore begun under suboptimal conditions, and more rain is needed in the coming weeks to maintain good yield expectations. In southern **Italy**, the flowering of winter crops (e.g. *Puglia*) occurred under optimal conditions. However, the weather was quite warm and dry from mid-March to mid-April, slightly hampering the grain formation. In **France**, winter crops remain strongly advanced despite the slowdown in March due to cool temperatures. Positive canopy density anomalies are now mainly visible in eastern regions (e.g. *Bourgogne*). Similar weather and crop conditions are observed in the main agricultural regions of the **United Kingdom**. In **Germany** and for most of central Europe, the weather was favourable and winter crop-growing areas present positive fAPAR anomalies. North-eastern Germany (e.g. *Mecklenburg-Vorpommern*) presents an exception, as frost damages and sparse precipitation determined a suboptimal growth of winter crops. In **Poland**, broad areas present negative fAPAR anomalies. This is the result of dry sowing conditions and frost damages (e.g. *Wielkopolskie*), which led to below-average canopy expansion. The low fAPAR values are also a consequence of areas that were re-sown to substitute underdeveloped winter crops with spring crops. In the remain-

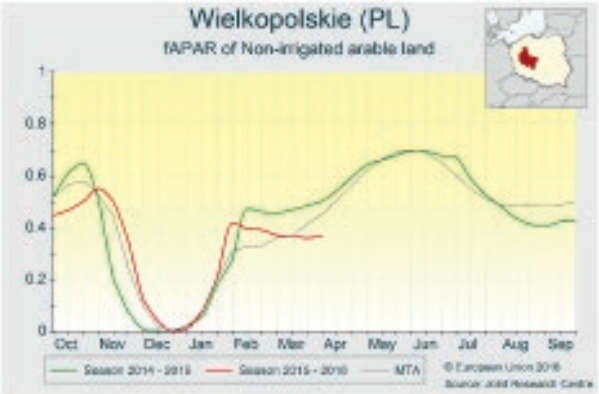
ing growing regions of Europe, the crop development status ranges from around average (**Austria, Hungary**) to well-developed canopies with advanced development stages as in Romania (e.g. *Sud-Muntenia*), **Bulgaria** and **Greece**. In southern Ukraine (e.g. *Dnipropetrovs'ka*), areas that were re-sown as a consequence of frost damages determine the current below-average fAPAR values in wider areas compared to our analysis in March. In **Turkey**, crops present advanced stages, with positive fAPAR anomalies in the northern highlands. By contrast, southern agricultural regions present negative fAPAR anomalies. As these anomalies can be only partially related to the reduced leaf area expansion due to sparse precipitation, factors such as different cultivation patterns should also be considered.

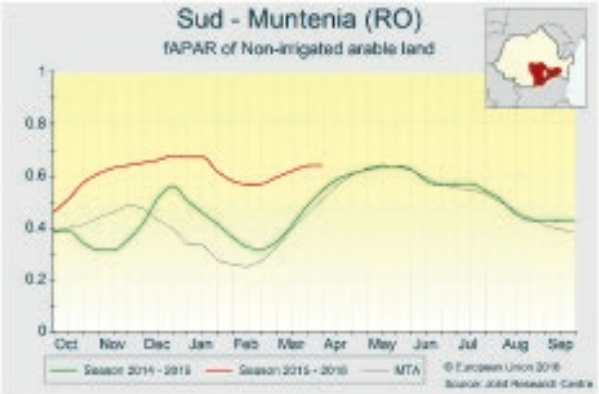


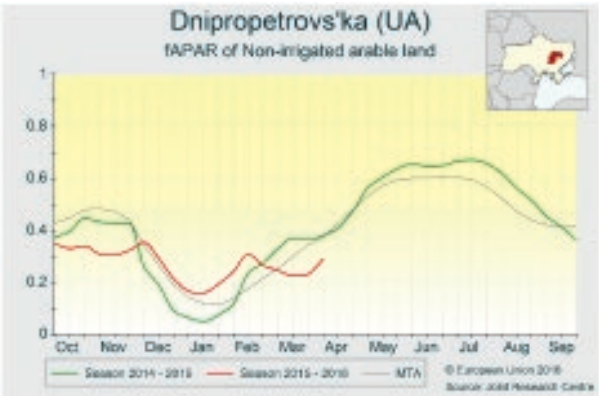


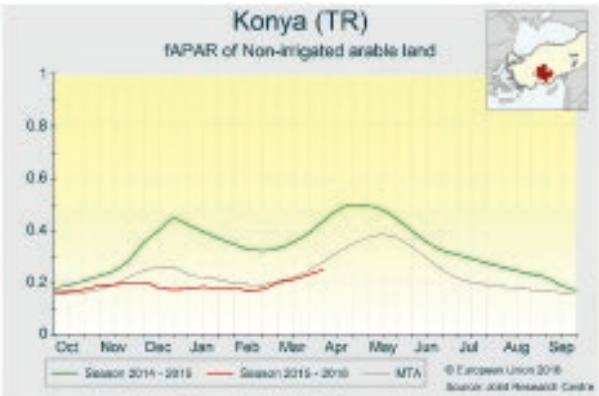





Wielkopolskie (PL)
fAPAR of Non-irrigated arable land
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2014 - 2015
Season 2015 - 2016
MTA
© European Union 2016


Sud - Muntenia (RO)
fAPAR of Non-irrigated arable land
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2014 - 2015
Season 2015 - 2016
MTA
© European Union 2016


Dnipropetrovs'ka (UA)
fAPAR of Non-irrigated arable land
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2014 - 2015
Season 2015 - 2016
MTA
© European Union 2016


Konya (TR)
fAPAR of Non-irrigated arable land
1
0.8
0.6
0.4
0.2
0
Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Sep
Season 2014 - 2015
Season 2015 - 2016
MTA
© European Union 2016

3. Country analysis

3.1. Sowing conditions

Sowing conditions

Sowing conditions are reported for spring barley, sugar beet and potatoes. The May bulletin will have a complete overview, including grain maize and sunflowers

Spring barley

Spring barley has been sown in the southern half of Europe and the UK under generally favourable conditions. Sowing activities are still progressing in central Europe and the Baltic Sea countries

Spring barley sowing activities finished in Spain during the first half of March. After a rather humid January, precipitation levels in February were close to the norm, and this favoured the rapid progression of sowing activities across all regions. However, temperatures from March have been below average, and this led to a slight delay in crop development. Similarly, meteorological conditions in France favoured spring barley sowing activities, which were completed by the end of March with no major delays. The crop is currently in the tillering stage, with adequate vegetative growth thanks to sufficient rainfall and temperatures that are slightly above seasonal values.

The sowing of barley got underway in the second and third weeks of March in the UK and Ireland, during a period with no significant rainfall, and was completed by the end of that month. Mild temperatures in the first week of April favoured quick crop emergence. Barley has reached the tillering phase in practically all regions, and crop status is positive.

In Ukraine and western Russia, rainfall levels have been slightly above the long-term average from mid-March, the period during which spring barley sowing activities get underway. However, they have not caused any important delays to sowing activities. Barley entered the tillering phase under satisfactory conditions in most regions, thanks to the higher-than-usual temperatures in the past month and a half.

Sowing activities are nearing completion in the Czech Republic, Denmark, Germany and Poland under generally very positive conditions. Rainfall since March has been rather scarce in northern Germany and Poland, with an absence of heavy rainfall permitting sowing activities to progress with no significant interruptions. Temperatures in the first half of April were unusually mild, and this favoured the rapid emergence of crops that had been sown early.

In the Baltic Sea area, sowing activities got underway in April. Until now, precipitation has been close to the long-term average, and sowing activities are progressing adequately.

Sugar beet and potatoes

In general, weather conditions have been adequate for the sowing of sugar beets in most of Europe. Thanks to the near- or above-average temperatures and rainfall frequency, sowing activities have been carried out within the normal window or with only a slight delay. In the main EU sugar-beet-producing regions of Germany and Poland, the progress of sowing activities was normal or even advanced compared to an average year due to the scarcity of rainfall. The sowing campaign of sugar beet has not been free of difficulties in France, the UK and the Benelux region, where sowing activities were temporarily interrupted by the frequent and ample rainfall of late March and early April. In Hungary and Romania, the wet topsoil conditions locally hampered sowing activities in the last dekad of March, but sowing conditions became more favourable in April. In Italy and Turkey, extensive dry periods supported the timely or even early completion of the sowing of sugar beets, but germination is expected to be delayed in some areas due to low soil moisture levels. Weather conditions have also facilitated the timely start of sowing activities in major non-EU producers, such as Ukraine and Russia. As frost events were very mild and infrequent until the end of the reporting period (20 April), no post-emergence damage is expected to have occurred so far.

The planting of potatoes has only just started in the main producing areas of Poland, Germany, France, the Benelux region and the UK. Conditions in Poland and Germany are generally favourable, but frequent rains have caused delays to the start of the sowing campaign in northern France, the Benelux region and the UK. Conditions have been favourable in other parts of the EU.

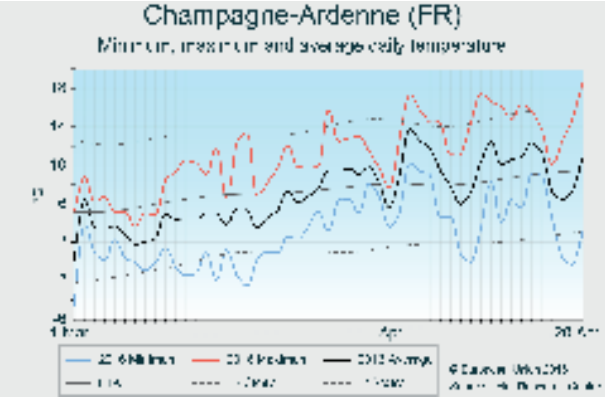
3.2. European Union

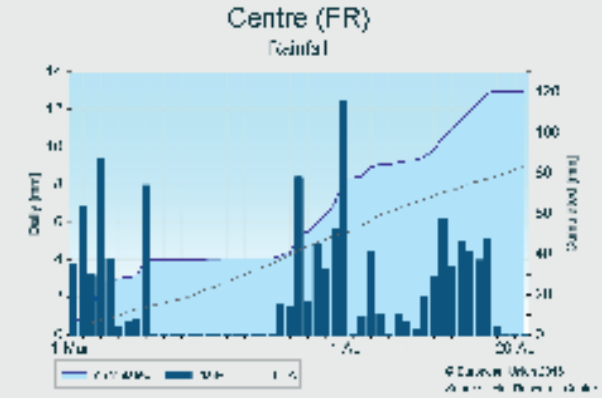
France

Winter crops benefit from average thermal conditions and adequate water supply

While weather conditions during the first half of March were favourable for sowing spring crops, early sowings of summer crops are delayed due to recent rainfall events. Winter crops are benefiting from good conditions, and their development is slightly advanced. The yield forecasts for winter crops are slightly higher than the trend.

After a mild winter with temperatures remaining 25 °C above the average, thermal conditions returned to close to the seasonal average in the beginning of March. Temperatures were slightly below 0 °C on only a few days during the first half of March. Rainfall was slightly above average in most regions from 1 March, following a winter which also presented slightly above-average rainfall. *Rhône-Alpes* and *Languedoc-Roussillon* received average precipitation, whereas *Provence-Alpes-Côte d'Azur* shows a slight deficit with only a few rainfall events since mid-March. While the development stage of winter crops was advanced at the end of February, the near-average temperatures observed since then tended to diminish this advance. The development of winter crops is now closer to that of an average year, except for durum wheat, which is 10 days advanced in southern regions. The humid conditions and mild temperatures favoured pest and disease pressures, but are not expected to impact crop yields substantially[1]. The good conditions during the second half of March were favourable for the sowing of spring crops. Above-average rainfall slightly hampered the early sowings of summer crops during the first half of April. The progress of the summer crop sowing campaign will depend on the weather during the coming days. Yield forecasts of winter crops are below those of last year for soft wheat, winter barley and durum wheat, but slightly higher than the trend.





Germany

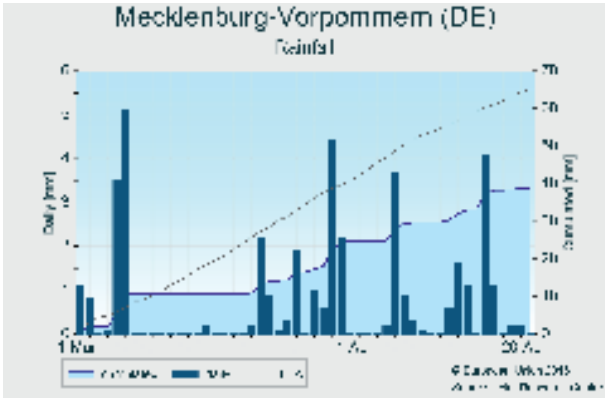
Favourable outlook, somewhat less positive in the North-East

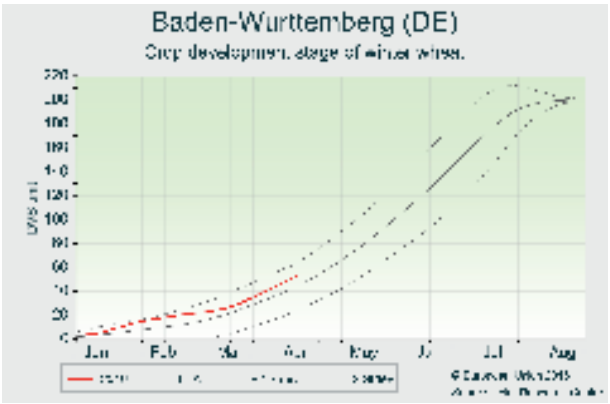
Weather conditions from March to mid-April were generally favourable. Crop growth is mostly advanced, and good yields are expected

Crop growth conditions continue to be generally favourable. On average, temperatures in March were below the climatological norm, with eastern Germany a bit milder than the western part of the country. Compared to the average, there was a higher number of days with temperatures below 0 °C, but no frost damages are expected. Average maximum temperatures were between 5 °C and 10 °C, much fresher than the climatological norm. Temperature accumulation in April is above average, and temperatures peaked at the beginning of April (reaching above 22 °C in some areas). Precipitation for the period under review was less than usual in the North (Niedersachsen, Schleswig-Holstein, Mecklenburg-Vorpommern) and plentiful towards the South (Hessen, Baden-Württemberg). Overall, soil moisture levels are satisfactory.

With the exception of Mecklenburg-Vorpommern (which suffered some winterkill in January), canopy development is good and winter crops are slightly advanced throughout the country. The yield outlook for winter crops is favourable, as also indicated by our crop model simulations. Spring sowings so far occurred under good conditions and are expected to end within the optimal sowing window.

(1) https://cereobs.franceagrimer.fr/Publications/CO_France_2016-S14.pdf



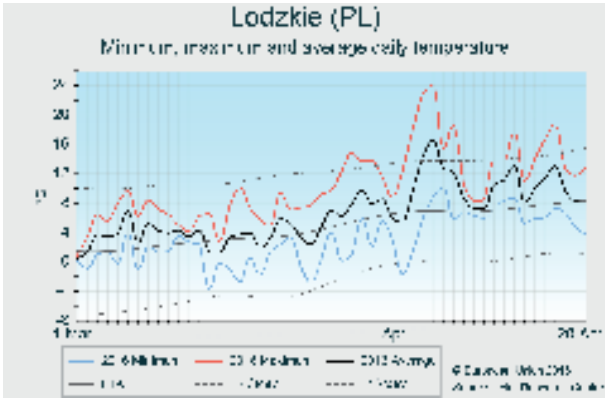


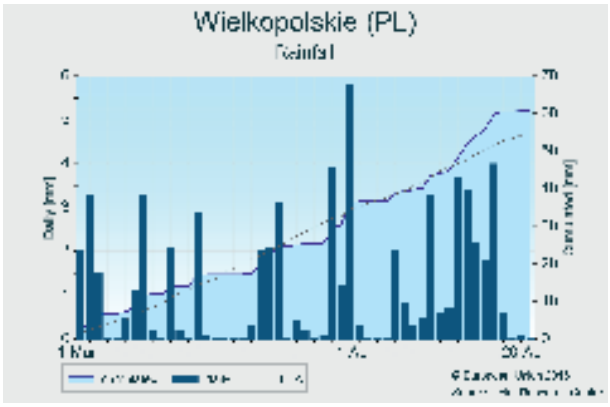
Poland

Recovery of winter crops remains uncertain

Conditions since March have been generally favourable for crops. Nevertheless, the recovery of winter crops that were impacted by frost kill and dry conditions during the sowing period remains uncertain. Substantial changes in the cultivated area are expected. Conditions are currently favourable for spring crops.

Temperatures since 1 March were slightly above the average, ranging from an anomaly of + 1.5 °C in western regions to + 2.5 °C in eastern regions. While cumulated rainfall for the period under review was close to the average in the South, half of the average rainfall was recorded in the northernmost regions and *Kujawsko-Pomorskie*. Last summer was particularly dry in central-western Poland, with long periods without substantial rainfall during and after the sowing period, which negatively impacted the emergence of winter crops. Winter crops were also impacted by the cold spell observed at the beginning of January that caused considerable frost kill damage. Thus, substantial negative anomalies in biomass accumulation are observed on remotely sensed images. The area of winter crops affected will be partly converted to spring/summer crops, as sowing activities are just starting. The cultivated area of winter wheat, rapeseed and triticale is therefore expected to decrease substantially in favour of spring/summer crops. Consequently, the yield of winter crops will also depend on the area converted. Frosts forecast for the coming days could negatively impact yields, particularly of rapeseed that has started flowering.





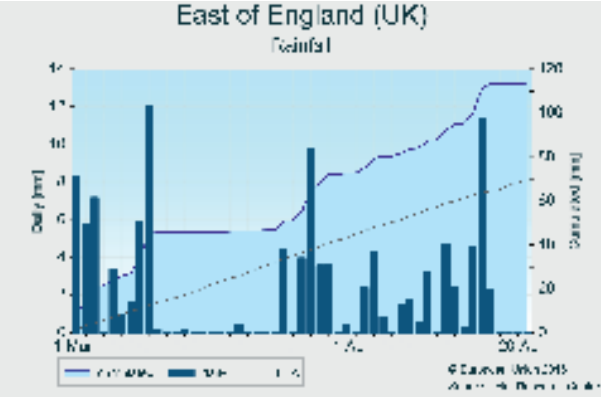
United Kingdom and Ireland

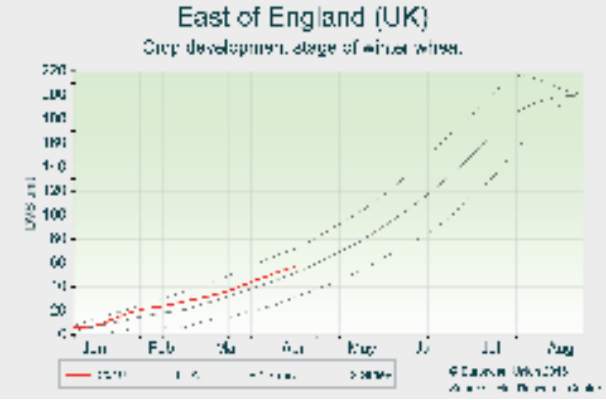
A fairly normal start to the season

Near-average temperature conditions and above-average rainfall prevailed in the UK and Ireland. Winter crops are faring well. Spring crop sowing proceeded well in March but has since progressed slowly due to frequent rainfall events.

Temperatures in the British Isles fluctuated around the long-term average, with no extreme anomalies. Frosts were infrequent and mild, and minimum temperatures did not drop below – 4 °C. March presented above-average rainfall in most of England and Wales, and near-average rainfall in Scotland and Ireland. The first two dekads of April were wetter than usual throughout the region. Rainfall events were frequent throughout the period of review, with the exception of a dry period from 10 to 24 March.

Winter crops are faring well. Crop development remains slightly advanced in the UK and average in Ireland. The dry conditions and relatively cool temperatures in mid-March have helped to mitigate disease pressure, but aphids and the incidence of oilseed rape cabbage stem flea beetles are above seasonal levels[2]. Conditions for spring crops have been less than ideal. Weather and soil moisture conditions were favourable for planting in mid-March, but the emergence and development of early sown crops have been slow due to low soil temperatures. Since the last dekad of March, planting and other field activities have been hampered by frequent rainfall events. As it is still early in the season, yield outlooks are maintained as being close to the long-term trend or the five-year average.





Spain and Portugal

Favourable crop conditions

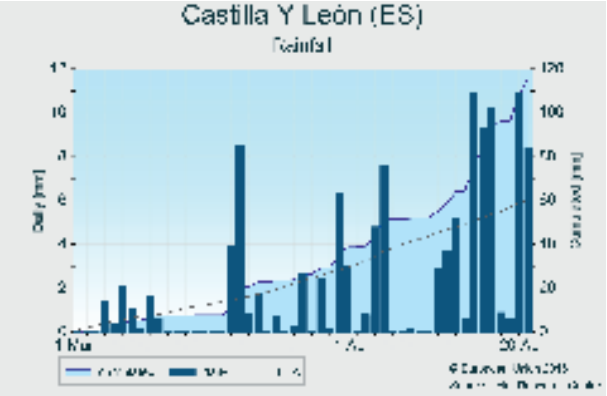
After a rather dry winter, rainfall in early spring has facilitated the adequate growth of winter cereals in most of the Iberian Peninsula. Only in the south (Andalucia, Alentejo) — where wheat is reaching the grain-filling phase — is there any evidence of water stress.

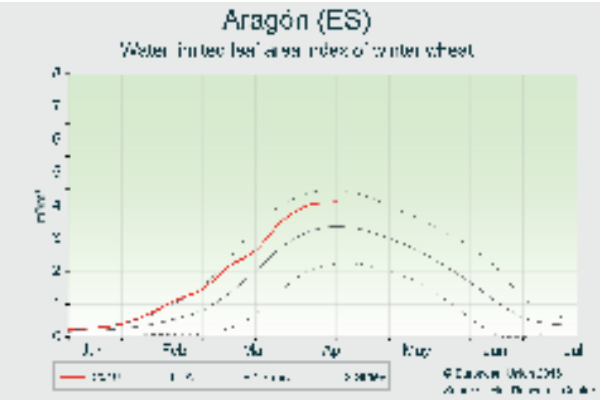
Weather conditions from March to mid-April have been chillier than usual in most of the Iberian Peninsula. The unusually mild conditions experienced during practically the entire winter period have changed drastically. Temperatures decreased substantially in the past month and a half, with daily average temperatures about 2 °C below the long-term average in March and April. During that period, precipitation was greater than usual in the centre and north of Spain (*Castilla y León* and *Aragón*). In Andalucía and Alentejo (in the south of the Peninsula) total rainfall from March to mid-April was close to the average, albeit highly concentrated in a single rainfall event in the first week of April.

Winter cereals are in the heading phase in *Castilla y León* and are finishing flowering in *Aragón*. Crop conditions in the northern half of Spain are rather favourable. Thanks to the abundant precipitation registered since January, leaf-area expansion presents higher values than the long-term average. In *Andalucía* and *Alentejo*, wheat and barley are already in the grain-filling stage. In these regions, weather conditions from November to March were unusually dry. Despite the rainfall registered in the first two weeks of April, winter cereals present an incipient water stress.

Yield expectations for winter crops are average for both countries. Particularly in Spain, the positive crop conditions in most of country may lead to high yields if the favourable weather continues in May.

(2) http://www.cropmonitor.co.uk/cmsReport.cfm?id=42



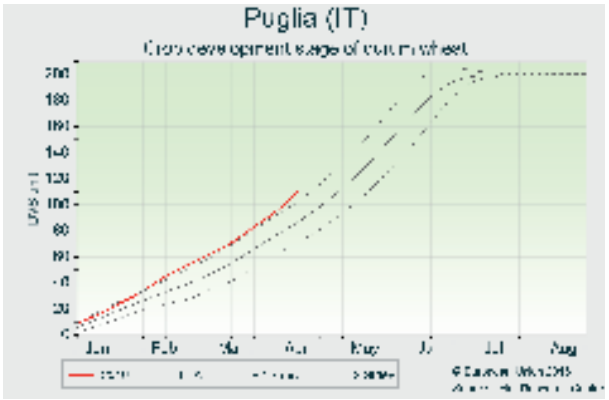


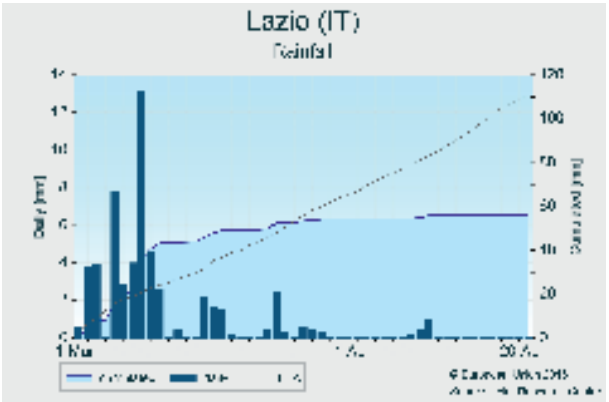
Italy

Positive outlook for winter crops

Winter crops present an advanced development stage due to the favourable thermal conditions experienced across Italy. Rainfall was concentrated in the first half of March in central and southern Italy. As a consequence, the yield forecasts for winter crops are in line with the trends and slightly above the five-year average.

March was characterised by near-average temperatures, whereas April was particularly warm in south-central Italy. As a consequence, the period under review (from 1 March to 20 April) was among the warmest since 1975 for *Sicilia, Puglia, Campania* and *Lazio*. The favourable thermal conditions boosted crop growth, which presents a significant advanced development: winter crops are at the end of the heading stage in northern regions, while flowering has already occurred under good conditions in southern Italy. However, following a dry winter, some local concerns remain with respect to soil water availability. Since 1 March, cumulated precipitation has been close to the average in northern Italy and the Adriatic coast, while western regions received only 50 % to 60 % of the normal levels of precipitation. In addition, following a rainy first half of March, dry and warm conditions persisted in central and southern Italy, leading to decreased soil water contents. This is particularly true for the regions of *Sardinia*, *Toscana* and *Lazio*. Nevertheless, as winter cereals have already established extended roots that can take water from deeper layers, the water deficit has not yet limited crop development. While the forecast yield for winter crops is slightly above the five-year average, weather conditions over the coming weeks will be crucial to maintaining this positive outlook.





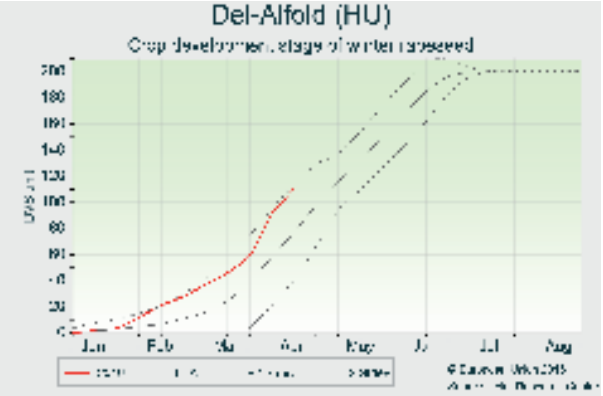
Hungary

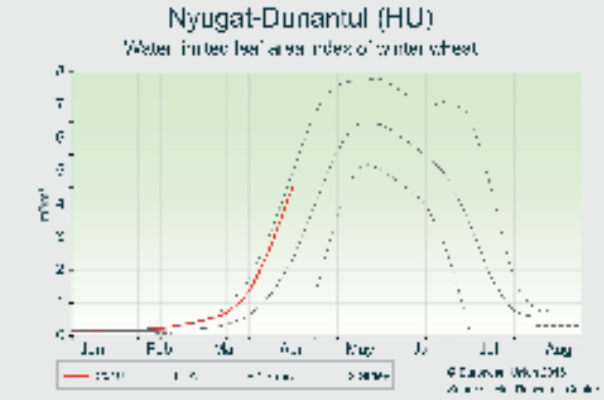
Promising winter crop conditions

The review period was characterised by predominantly above-average temperatures and below-average precipitation. Soil moisture in March caused some delay to the sowing of spring barley and sugar beets. The sowing of sunflowers and maize started and proceeded well in early April. Winter crops are in good shape thanks to the mild temperature conditions and adequate water supply so far.

During the first dekad of March and the first half of April, daily temperatures exceeded the long-term average by 4-5 °C, speeding up crop development, whereas the second and third dekads of March were characterised by near-average thermal conditions. Early April was exceptionally warm, with daily maxima around 20 °C and exceeding 25 °C on the hottest days. Frequent rainfall events until mid-March, following the wet winter, resulted in widespread waterlogging problems. After mid-March, precipitation became sparse, and total rainfall from 16 March to 20 April was less than one third of the long-term average. In March, the sowing of spring barley and sugar beet suffered one-two weeks' delay in several places due to the high soil moisture levels. In April, topsoil conditions for field preparations improved and facilitated the start of the sunflower and maize sowing campaign.

Winter crops are performing exceptionally well. Development is advanced by at least two weeks. Rapeseed, for example, started flowering in late March-early April. Biomass accumulation and leaf area expansion are among those of the best years. The yield forecast for winter crops is well above the trend, but continued sufficient water supply will be crucial to achieve the high actual yield potential.





Romania

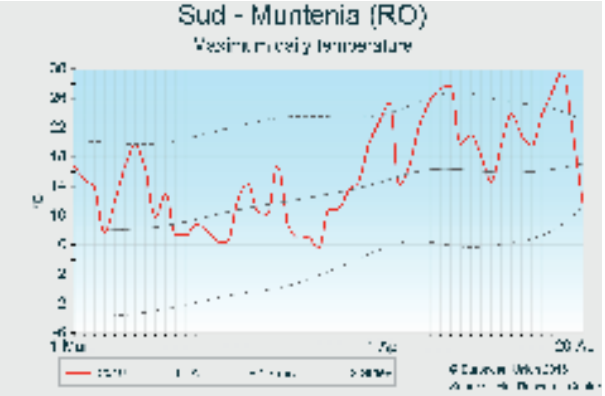
Good winter crop conditions and yield expectations

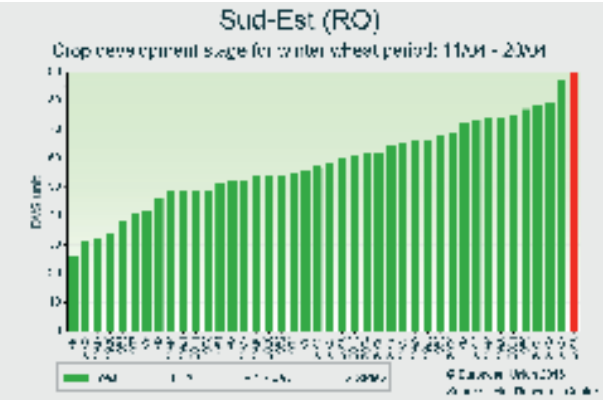
Temperatures mostly fluctuated well above the long-term average, further accelerating crop development. Precipitation was plentiful in the southern half of the country, but sparse in the western- and easternmost regions. Winter crops are in a good shape. The sowing of early spring crops may suffer some delay due to wet soils, primarily in southern Romania.

Daily temperatures fluctuated significantly above the long-term average during the first dekad of March, following which near- or below-average thermal conditions prevailed until 28 March, when a perceptible warming started pushing daily temperatures 10 °C higher. In April, the positive thermal anomaly reached 5-8 °C throughout the country, leading April 2016 to be ranked as the warmest in our climatological records. Considering the period as a whole, precipitation proved to be abundant (90-160 mm) in southern areas and was near average (50-80 mm) in central and northern regions, but remained at moderate levels (25–50 mm) in the west and east of the country.

Winter crop development is extremely advanced. The frequent and substantial rainfall may have caused some problems during the sowing of spring barley and sugar beets in southern regions, but the overall weather conditions for the maize and sunflower campaign seem to be quite favourable so far.

Crop model simulations depict above-average biomass accumulation in winter crops, particularly for wheat, which is approaching its best ever level. The canopy development is also very promising, and soil moisture content is still adequate. The yield forecast for winter crops, which was performed using scenario analysis, was revised upwards given all the positive factors involved.





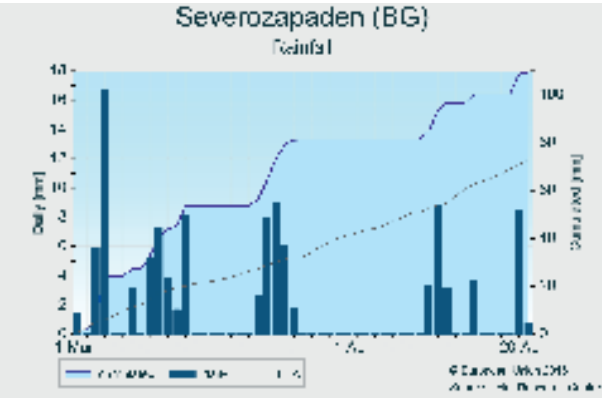
Bulgaria

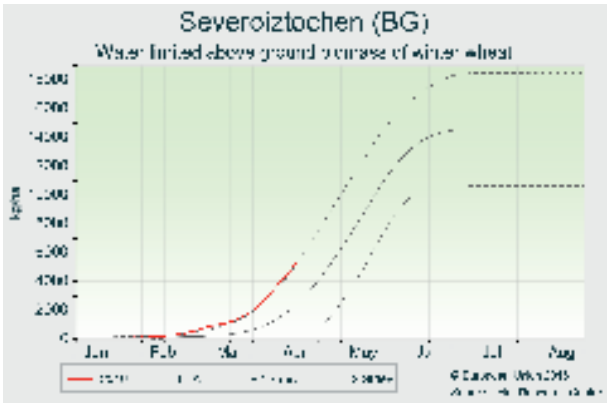
Winter crops present advanced development and high biomass accumulation

Since early March, weather conditions in Bulgaria have been characterised by mild thermal conditions and above-average precipitation. The start of the spring sowing campaign suffered some delay due to wet conditions in March, but the situation became more settled in April. Winter cereals are in very good condition, presenting well-advanced development and high biomass accumulation.

Bulgaria experienced a particularly mild period from late January until mid-March. The second half of March was cooler, with temperatures mostly fluctuating around the average. In April, daily temperatures were once again above average by 4-6 °C. The warmer-than-usual thermal conditions led to an acceleration in the development of winter crops. In March, precipitation was plentiful and reached double the long-term average, except in coastal areas. The incidence of rainfall decreased to near or below average in April. The wet topsoil conditions hampered seasonal field activities and delayed the start of the spring sowing campaign in March. In April, however, soil conditions were adequate, allowing to resume spring activities at full speed. The current thermal and water supply conditions are favourable for the sprouting and emergence of spring crops.

The development of winter cereals and rapeseed is advanced by up to two to three weeks. Winter crops are very well established. Our crop-model simulations suggest exceptional high biomass accumulation, approaching or reaching the historical record. Soil moisture reserves have been properly replenished. The yield outlook for winter cereals is positive. As it is early in the crop season, the yield forecast for summer crops is based on the trend.



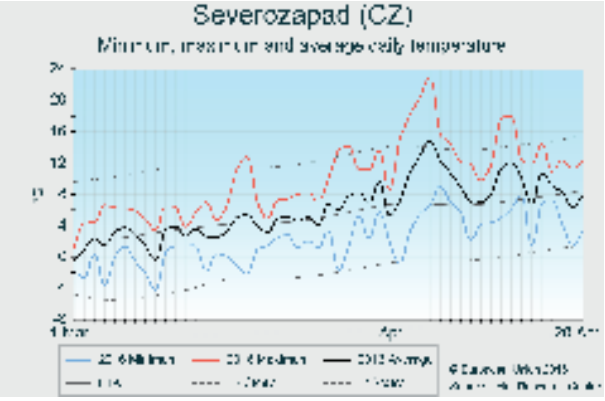


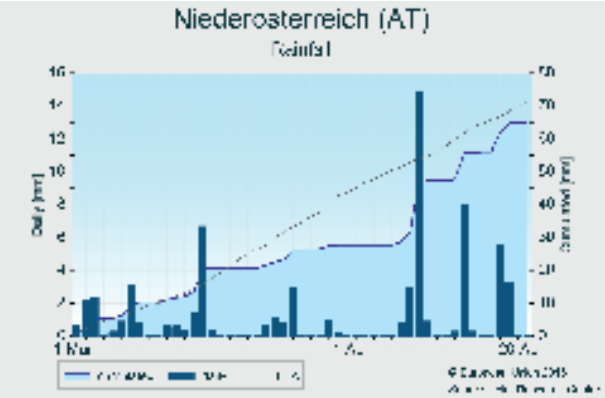
Austria, Slovakia and the Czech Republic

Winter crops in good condition, sowing of spring and summer crops ongoing

Warmer-than-seasonal weather continues, following an exceptionally warm winter period. Winter crops present advanced development and are generally in good condition. The sowing of spring and summer crops was anticipated and is currently ongoing.

After one of the warmest winters on our records, positive temperature anomalies continued in March and the first two dekads of April. March was generally 0.5 °C-2 °C warmer than usual. Air temperatures during the first two dekads of April were 2 °C-4 °C above the long-term average in the Czech Republic, northern Austria and western Slovakia, whereas temperatures that were 4 °C to 6 °C warmer than usual were recorded elsewhere. Maximum daily temperatures of up to 26 °C were recorded during the first two dekads of April. Rainfall conditions were spatially highly variable, with wetter-than-usual conditions prevailing in the eastern part of the Czech Republic, and a rainfall deficit in *Steiermark* in Austria. Exceptionally warm weather in April accelerated the development of winter crops and led to the early sowing of spring and summer crops which is currently ongoing. Winter crops are generally in good condition, also due to the fact that the mild nature of cold-spell events this winter did not cause any damage.



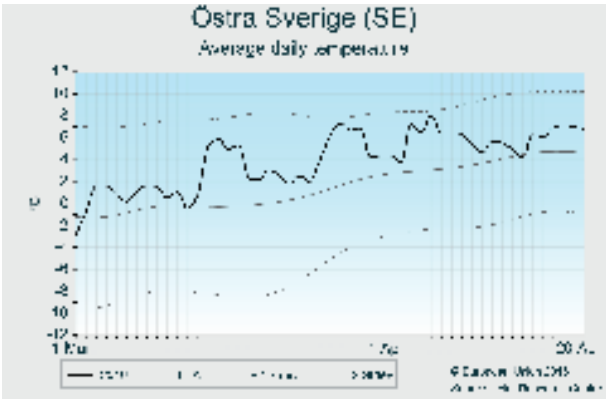


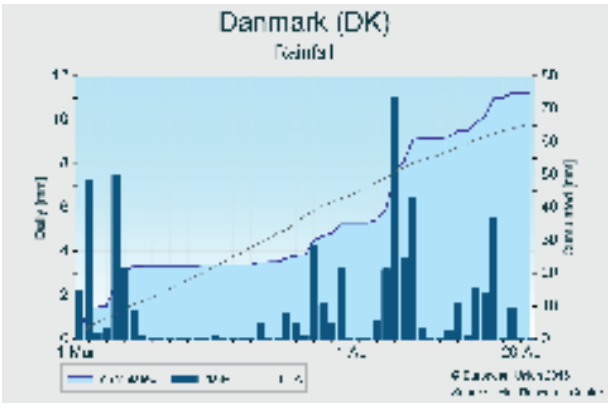
Denmark and Sweden

Favourable conditions

Warmer-than-usual conditions and generally average rainfall levels prevailed during the period under review in both countries. These conditions favoured the growth of winter crops, leading to expectations of good yields.

Favourable crop growth conditions prevailed in both countries since 1 March. More specifically, average daily temperatures were consistently above the long-term average, with the maximum temperature in Denmark and southern Sweden reaching 14 °C. Cumulated active temperatures above 0 °C were 58 % higher than usual, particularly in southern Sweden (e.g. *Ostra Sverige*). Some rainfall events occurred during the first dekad of March, while the second dekad was almost dry. Since then, frequent rainfall maintained soil moisture at average levels. These conditions were beneficial for winter crops and, according to our models, crop development and biomass accumulation are slightly above the long-term average. However, the aforementioned frequent rainfall events during the third dekad of March and early and mid-April hampered field preparations for the spring sowing activities. Even though some early sowing occurred during the dry dekad of March, much remains to be done. Therefore, the weather conditions of the coming days will be crucial for the completion of spring sowing activities, which are already slightly delayed. Yield forecasts for winter cereals, which were made based on scenario analyses, are above the five-year average. Trends and averages have been used to forecast spring crops at this early stage.





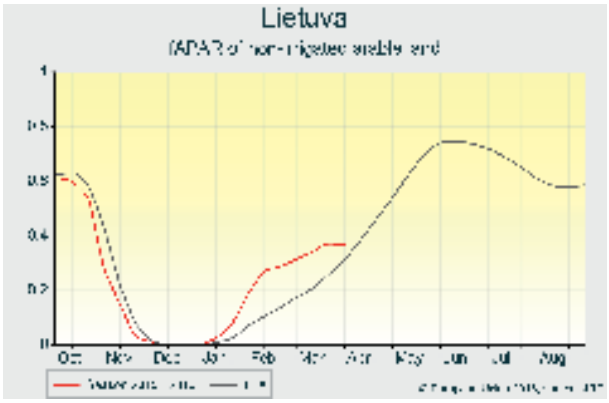
Finland, Lithuania, Latvia and Estonia

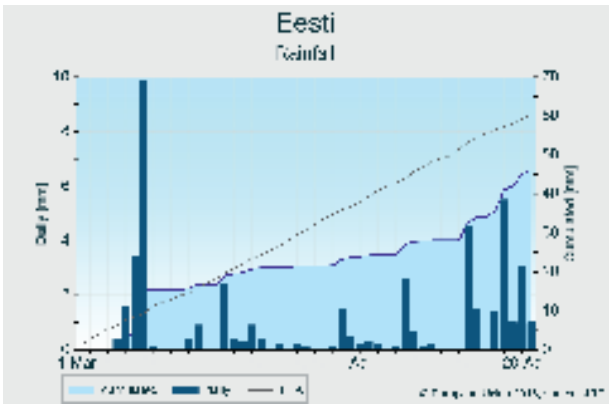
Mild temperatures accelerated winter crop development

The period under review (1 March-20 April) was characterised by warmer-than-usual temperatures, creating good conditions for the growth and development of winter crops and for the start of spring sowing activities.

Apart from a very short cold period at the end of March, during which minimum temperatures did not present any risk of frost damages (values > – 18 °C), average daily temperatures remained between 2 °C and 4 °C above average. While the precipitation regime was slightly below seasonal values in most of Latvia and Lithuania, precipitation was sparse in Estonia and Finland, which helped to balance the overly wet soil conditions after the record-breaking rainy February. These improved soil conditions will benefit spring crop sowing activities, which could start in the coming days in Estonia and a bit later in Finland.

Overall, weather conditions led to accelerated growth and the good development of winter crops (which were slightly affected by frost kill in the Baltic States). Remote sensing information confirmed this fact, showing above-average absorption of photosynthetic active radiation in all countries. This positive fAPAR anomaly is more marked in Lithuania (which has a larger share of winter crops), where the main spring-sowing activities started around 10 days earlier than usual (last dekad of April). Sowing activities in Lithuania are progressing without any constraints (despite a heavy storm that occurred in *Siauliu Apskritis* in the second dekad of April, which has not had any relevant consequences so far). It is still too early to provide yield forecast estimations other than those based on average or statistical trends of previous years.





Belgium, the Netherlands and Luxembourg

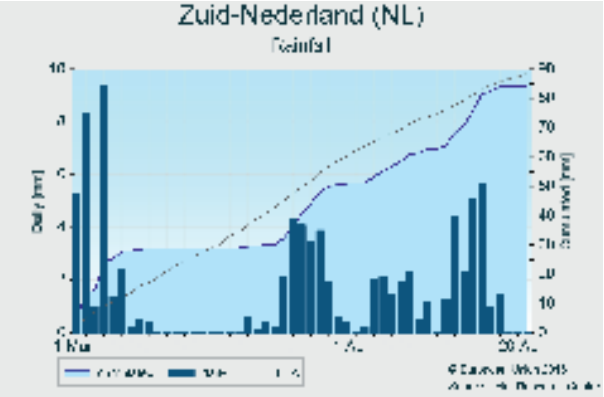
Frequent rains delay the sowing of spring crops

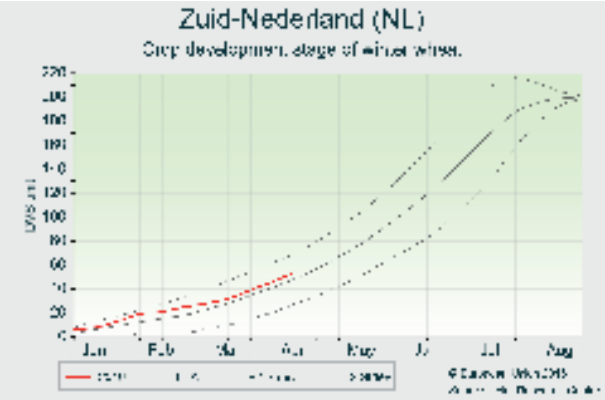
Near-average temperature and rainfall conditions prevailed in the Benelux countries. Winter crops are faring well. Spring crop sowing has progressed slowly due to frequent rainfall events.

Colder-than-usual temperatures, especially in the inland regions, predominated during the first two dekads of March. Somewhat warmer-than-usual temperatures predominated since then. For the period as a whole, the average temperature was very close to the long-term average. Frosts were mild, with minimum temperatures not dropping below – 5 °C. Apart from one or two events in April (the last one on 18 April), these events were mainly confined to the first two dekads of March.

Rainfall events, mostly of low intensity, were very frequent, occurring almost every day, with the marked exception of a dry period from 10 to 24 March.

Winter crops are faring well. Crop development remains slightly advanced. The significant cool and dry period in March helped to mitigate pest and disease pressure and offered good conditions for field work. Conditions for spring crops have been less than ideal. Weather and soil moisture conditions were favourable for field preparation and planting in mid-March, and early-sown crops are generally performing well. Since then, however, planting and other field work has been hampered by frequent rainfall events, leading to delays, particularly compared to the past two years. As it is still early in the season, yield outlooks are maintained close to the long-term trend.





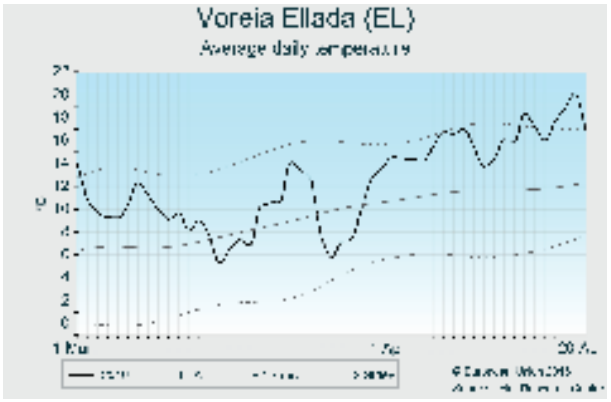
Greece and Cyprus

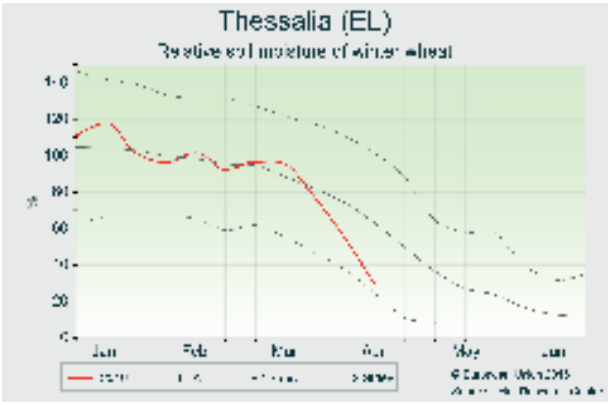
Very warm; rainfall is needed in both countries

Winter cereals in Greece present high biomass accumulation and advanced development stages. April has been warm and dry, and rainfall is needed to maintain a good outlook for winter cereals and the emergence of spring crops. The warm and dry conditions in Cyprus are unfavourable for winter cereals.

In Greece, favourable crop growth conditions since the beginning of the year resulted in above-average development stages and high biomass accumulation for winter cereals. However, the above-average temperatures and lack of precipitation since the beginning of April have led to soil moisture levels fluctuating below the long-term average. While these conditions have triggered some fungal diseases, mainly in central Greece (i.e. *Larissa*), it is too early to estimate their impact on yields. The dry conditions of April allowed for the preparation of fields and the sowing of grain maize, which is progressing rapidly. However, rain is now needed to maintain a good outlook for winter cereals and the emergence of grain maize.

In Cyprus, temperatures have been fluctuating above or greatly above average since 1 March, following an already warm period. Indeed, the period from 1 January to 20 April is the warmest in our database. Rainfall events have been evenly distributed, but cumulated rainfall is below average. The outlook is negative, as these conditions have negatively impacted crops, and biomass accumulation values are below average. Forecasts are based on scenario analyses for winter cereals, and on trends and averages for spring crops.



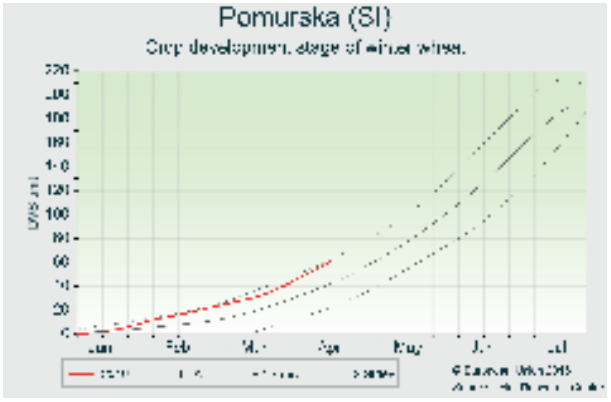


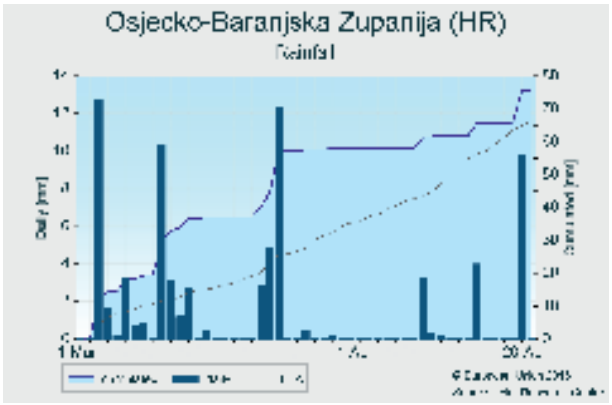
Slovenia and Croatia

Winter crops development advanced

Above-average temperatures continue after an exceptionally warm winter. Drier-than-seasonal weather has been observed in Slovenia and western Croatia. Warm weather has accelerated the development of winter crops and led to the early sowing of spring and summer crops.

Positive temperature anomalies were recorded in March and the first two dekads of April. March was generally 0.5 °C to 2 °C warmer than usual, whereas air temperatures during the first two dekads of April generally exceeded the long-term average by between 4 °C and 6 °C. Maximum air temperatures close to 28 °C were recorded in eastern Slovenia and Croatia in April. Rainfall conditions were spatially highly variable during March. Wetter-than-seasonal weather was recorded *in Sredisnja i Istocna* and *Zapadna Hrvatska* regions, with rainfall cumulates generally above 50 mm; more than 100 mm were recorded regionally. Drier-than-usual conditions prevailed in April, with rainfall cumulates below 30 mm in the eastern part of Croatia and Slovenia. Warm weather conditions accelerated the development of winter crops and allowed for the early sowing of spring and summer crops. Winter cereals in general already entered the stem elongation period during the first dekad of April. High air temperatures and windy conditions caused soil moisture depletion in upper soil layers, exposing the winter crops to mild drought stress in north-eastern Slovenia and affecting the seedbed preparation for spring crops.





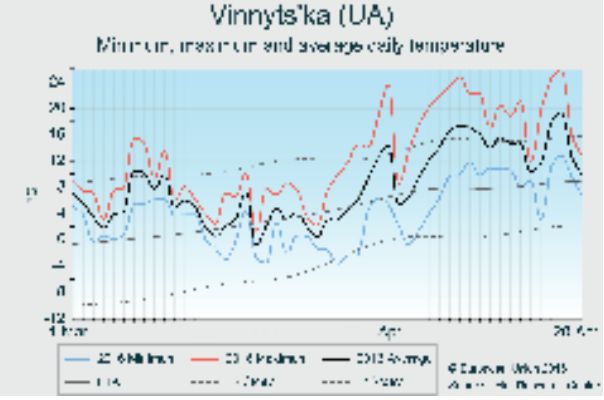
3.3. Black Sea Area

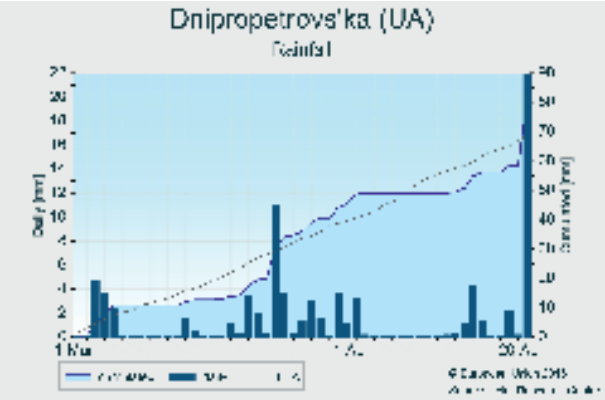
Ukraine

Little recovery of winter crops impacted by poor conditions at start of season

Conditions are favourable, with temperatures largely higher than the average. However, winter crops present little regrowth; they were heavily impacted by the dry conditions during the sowing period and suffered frost kill in January. There will be substantial changes in the cultivated area, with winter crops being replaced by spring and summer crops, which are currently benefiting from very good weather conditions.

Temperatures since 1 March have been particularly mild (3.5 °C above the long-term average), and cumulated rainfall is close to the average throughout the country. The mild temperatures combined with average rainfall should have favoured the regrowth of winter crops, but remote sensing indicators are showing an exceptionally negative pattern. This is due to the weather situation early in the season, which started in autumn with long dry periods of no rainfall from September until the first dekad of November, and was unfavourable to sowing and emergence. Farmers delayed their sowing activities when possible, which reduced the vegetative growth period before winter. Weather conditions during emergence were unsatisfactory given the lack of rainfall. January presented a cold spell with minimum temperatures reaching – 20 °C, while the snow cover was shallow (3-4 cm). Frost kill has reportedly impacted winter crops in the most productive regions. The area of winter cereals is expected to be significantly reduced, and will be replaced by spring and summer crops. The sowing conditions for spring crops and early summer crops are currently favourable. The yield of winter crops largely depends on which areas will be re-sown. Some of the remaining winter crops may recover due to the good weather conditions observed during the current period of analysis.



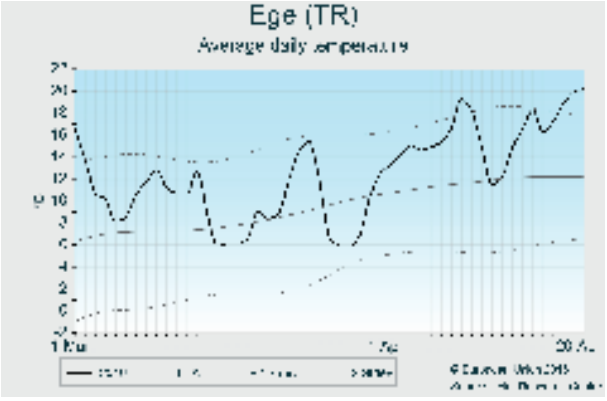


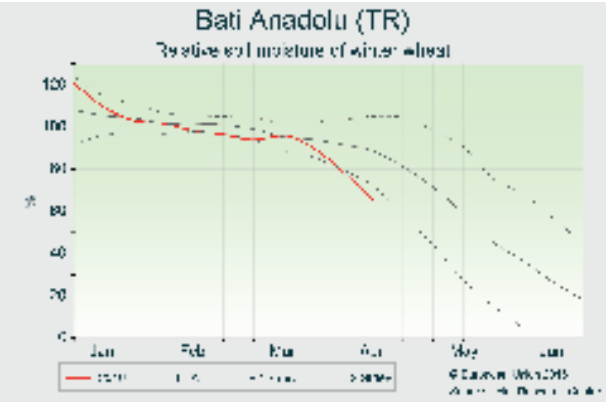
Turkey

Concerns are emerging for winter cereals

Winter cereals present advanced development stages, but the warm and dry conditions throughout the country in April are giving cause for concern regarding their future development. However, these dry conditions allowed for the preparation and the sowing of grain maize without difficulties.

Weather conditions for the period under review (i.e. from 1 March to 20 April) were characterised by temperatures that were above the long-term average. The period is ranked among the five warmest corresponding periods in our database (i.e. since 1975). Evenly distributed rainfall events until the end of March helped to maintain average soil moisture levels. However, the almost dry conditions throughout the country in April, combined with warm temperatures, have resulted in increased levels of evapotranspiration. Soil moisture is fluctuating below average values, and is clearly depleting in *Bati Anadolu*. Currently, winter cereals present high biomass accumulation and advanced development stages. However, concerns are emerging regarding their future development, as water demands increase when crops enter the grain-filling stages. On the other hand, dry conditions in April allowed farmers to accomplish the preparation of grain maize fields and to start sowing within the first dekad of April. At present, the sowing of grain maize is in its final stages. Forecasts for winter cereals are slightly below average, and are based on scenario analyses. The trend has been used to forecast grain maize yields at this early stage.





3.4. European Russia and Belarus

European Russia

Spring sowing campaign off to a good start

During the period under review (1 March-20 April), daily temperatures almost constantly exceeded the long-term average in the southern half of European Russia, resulting in a positive thermal anomaly of 3–6 °C. Precipitation was plentiful until the first days of April, but then decreased, allowing for good progress of the spring sowing campaign. The mild and wet weather conditions facilitated the recovery of the winter wheat stands that had suffered from water scarcity during emergence last autumn, but remote sensing indicators still delineate poor crop conditions along the Ukrainian border (e.g. the *Kurskaya, Belgorodskaya* and part of the *Rostovskaya oblasts*). Winter cereal development is advanced by two to three weeks, and biomass accumulation and crop canopy expansion are also better than in an average year.

Belarus

Positive outlook for cereals

During the review period (1 March-20 April 2016), temperatures were about 2 °C above the long-term average. Rainfall was close to average and well distributed across the country. Nevertheless, as soil temperatures were less favourable than last year at the end of March, the sowing of spring crops started about one week later with respect to 2015[3] . Since 1 January 2016, cumulated active temperatures (T base > 0) are well above the long-term average, so winter cereals show an advanced crop development similar to that of last year. In brief, the overall outlook is positive. Trend values have been used to forecast yields at this early stage.

3.5. Magrehb

Morocco, Algeria and Tunisia

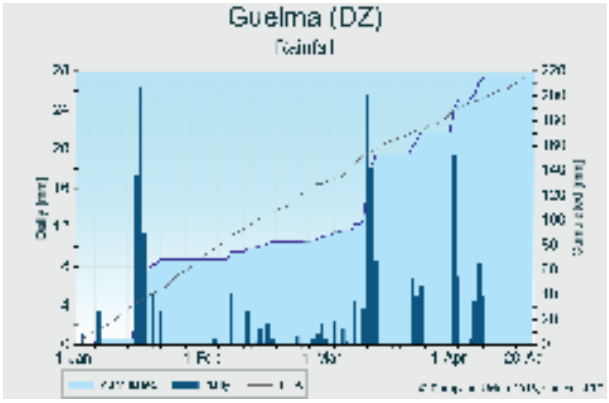
Compromised season in Morocco, mixed prospects in Algeria and Tunisia

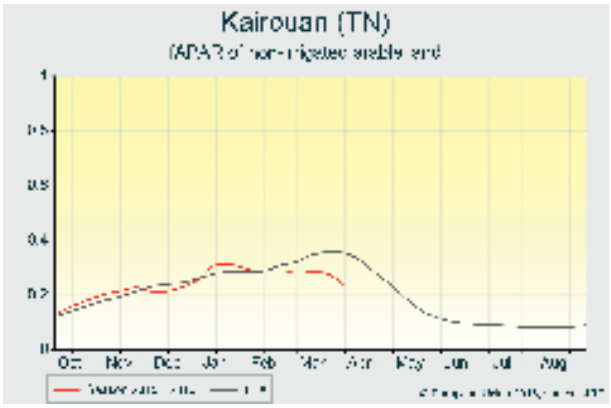
The compromised season in Morocco and western Algeria is corroborated. Eastern Algeria benefited from high precipitation levels, suggesting acceptable growth conditions. So far, moderate to positive prospects could be expected in northern coastal areas in Tunisia, while southern areas were negatively affected by the persistent drought since January.

During the review period (1 March-20 April) Morocco experienced colder-than-usual temperatures and, apart from some rains in March and April, cumulated precipitation remained below average. As the adverse weather conditions have compromised yields in Morocco, yield forecasts remain substantially below average.

A similarly pessimistic outlook is expected for winter cereals in western Algeria, while north-eastern *willayas* (e.g *Guelma*, *Souk-Ahras*) benefited from high levels of precipitation during the whole period under review. These rainfall events provided good to moderate soil moisture levels to sustain the flowering stages and the heading period in regions at higher altitudes. To date, weather conditions suggest a positive outlook in these regions. As a consequence, national yield levels are currently expected to be in line with seasonal values.

In Tunisia, following a dry February, very beneficial rains arrived in the first dekad of March, but they were heterogeneously distributed. In northern coastal areas (e.g *Beja*, *Bizerte*, *Jendouba*) above-average precipitation replenished soil moisture during the pre-anthesis phase, and more substantial rains in April coupled with warm conditions accelerated the flowering stages of winter crops. This suggests moderate to good prospects in these areas. By contrast, in southern sowing governorates (*Sousse*, *Kairouan*, *Zaghouan*, *Kasserine*), very low precipitation persisted from January to April (to date), and fAPAR profiles corroborate a negative outlook at the start of the grain-filling phase.





(3) http://www.apk-inform.com/en/harvest/1065838#.VxdcKfiNhaQ

4. Crop yield forecasts

Country	TOTAL WHEAT t/ha					TOTAL BARLEY t/ha				
	2015	2016	Avg 5yrs	%16/15	%16/5yrs	2015	2016	Avg 5yrs	%16/15	%16/5yrs
EU-28	6.02	**5.85**	5.60	- 2.9	+ 4.5	5.03	**4.94**	4.72	- 1.7	+ 4.6
AT	5.70	**5.40**	5.39	- 5.2	+ 0.1	5.54	**5.39**	5.38	- 2.6	+ 0.2
BE	9.98	**9.17**	8.96	- 8.1	+ 2.3	10.46	**9.31**	8.86	- 11.0	+ 5.0
BG	4.47	**4.80**	4.10	+ 7.4	+ 17.0	4.10	**4.23**	3.88	+ 3.3	+ 9.1
CY	2.79	**2.08**	2.23	- 25.5	- 6.7	3.05	**1.91**	1.96	- 37.3	- 2.3
CZ	6.36	**6.07**	5.71	- 4.5	+ 6.2	5.44	**4.94**	4.93	- 9.2	+ 0.2
DE	8.09	**8.21**	7.81	+ 1.5	+ 5.0	7.17	**6.94**	6.61	- 3.2	+ 5.1
DK	7.93	**7.69**	7.34	- 3.0	+ 4.8	6.12	**5.82**	5.79	- 4.9	+ 0.7
EE	4.79	**3.75**	3.82	- 21.6	- 1.9	4.23	**3.36**	3.38	- 20.6	- 0.7
ES	2.92	**3.22**	3.07	+ 10.1	+ 4.9	2.46	**2.83**	2.73	+ 15.1	+ 3.6
FI	4.11	**3.82**	3.82	- 7.1	- 0.0	3.49	**3.54**	3.54	+ 1.4	- 0.2
FR	7.79	**7.45**	7.20	- 4.3	+ 3.5	7.09	**6.74**	6.49	- 4.9	+ 3.8
GR	3.02	**2.85**	3.00	- 5.6	- 4.9	2.60	**2.56**	2.81	- 1.6	- 8.8
HR	5.39	**5.04**	4.96	- 6.5	+ 1.6	4.39	**4.73**	4.36	+ 7.8	+ 8.6
HU	5.14	**5.43**	4.49	+ 5.7	+ 21.0	4.82	**5.25**	4.24	+ 8.8	+ 23.9
IE	10.63	**9.67**	9.22	- 9.0	+ 4.9	8.56	**7.92**	7.77	- 7.4	+ 1.9
IT	3.93	**3.91**	3.89	- 0.5	+ 0.5	3.91	**3.78**	3.72	- 3.3	+ 1.8
LT	5.24	**4.45**	4.53	- 15.0	- 1.6	4.00	**3.48**	3.46	- 13.2	+ 0.3
LU	6.28	**6.33**	6.05	+ 0.7	+ 4.6	-	**-**	-	-	-
LV	5.03	**3.83**	3.90	- 23.8	- 1.6	3.83	**2.92**	2.93	- 23.8	- 0.3
MT	-	**-**	-	-	-	-	**-**	-	-	-
NL	8.99	**9.19**	8.87	+ 2.2	+ 3.6	6.27	**6.66**	6.63	+ 6.1	+ 0.4
PL	4.57	**4.43**	4.44	- 3.2	- 0.2	3.53	**3.71**	3.62	+ 5.2	+ 2.5
PT	2.16	**1.86**	1.62	- 13.9	+ 14.6	2.32	**2.08**	1.76	- 10.5	+ 17.6
RO	3.82	**4.02**	3.42	+ 5.3	+ 17.4	3.45	**3.89**	3.17	+ 12.6	+ 22.6
SE	7.22	**6.61**	6.34	- 8.5	+ 4.2	5.25	**4.89**	4.80	- 6.9	+ 1.7
SI	5.11	**5.07**	5.08	- 0.8	- 0.1	4.63	**4.54**	4.56	- 2.0	- 0.3
SK	5.53	**4.31**	4.68	- 22.2	- 8.0	4.82	**3.98**	4.10	- 17.4	- 2.9
UK	8.83	**8.15**	7.86	- 7.7	+ 3.7	6.61	**6.25**	6.11	- 5.4	+ 2.4

Country	SOFT WHEAT t/ha					DURUM WHEAT t/ha				
	2015	2016	Avg 5yrs	%16/15	%16/5yrs	2015	2016	Avg 5yrs	%16/15	%16/5yrs
EU-28	6.28	**6.11**	5.83	- 2.7	+ 4.9	3.49	**3.38**	3.33	- 3.1	+ 1.6
AT	5.77	**5.45**	5.44	- 5.5	+ 0.2	4.64	**4.64**	4.53	+ 0.1	+ 2.4
BE	9.98	**9.17**	8.96	- 8.1	+ 2.3	-	**-**	-	-	-
BG	4.47	**4.80**	4.10	+ 7.4	+ 17.0	-	**-**	-	-	-
CY	-	**-**	-	-	-	2.79	**2.08**	2.23	- 25.5	- 6.7
CZ	6.36	**6.07**	5.71	- 4.5	+ 6.2	-	**-**	-	-	-
DE	8.11	**8.22**	7.83	+ 1.4	+ 5.0	4.64	**5.43**	5.23	+ 16.9	+ 3.7
DK	7.93	**7.69**	7.34	- 3.0	+ 4.8	-	**-**	-	-	-
EE	4.79	**3.75**	3.82	- 21.6	- 1.9	-	**-**	-	-	-
ES	2.99	**3.34**	3.24	+ 11.9	+ 3.3	2.59	**2.55**	2.18	- 1.4	+ 17.1
FI	4.11	**3.82**	3.82	- 7.1	- 0.0	-	**-**	-	-	-
FR	7.92	**7.60**	7.34	- 4.0	+ 3.6	5.62	**5.19**	5.25	- 7.7	- 1.3
GR	3.30	**2.94**	3.21	- 10.8	- 8.2	2.88	**2.81**	2.90	- 2.4	- 3.3
HR	5.39	**5.04**	4.96	- 6.5	+ 1.6	-	**-**	-	-	-
HU	5.14	**5.44**	4.49	+ 5.7	+ 21.0	4.83	**5.24**	4.39	+ 8.4	+ 19.2
IE	10.63	**9.67**	9.22	- 9.0	+ 4.9	-	**-**	-	-	-
IT	5.41	**5.56**	5.43	+ 2.6	+ 2.3	3.31	**3.23**	3.18	- 2.5	+ 1.4
LT	5.24	**4.45**	4.53	- 15.0	- 1.6	-	**-**	-	-	-
LU	6.28	**6.33**	6.05	+ 0.7	+ 4.6	-	**-**	-	-	-
LV	5.03	**3.83**	3.90	- 23.8	- 1.6	-	**-**	-	-	-
MT	-	**-**	-	-	-	-	**-**	-	-	-
NL	8.99	**9.19**	8.87	+ 2.2	+ 3.6	-	**-**	-	-	-
PL	4.57	**4.43**	4.44	- 3.2	-0.2	-	**-**	-	-	-
PT	2.16	**1.86**	1.62	- 13.9	+ 14.6	-	**-**	-	-	-
RO	3.82	**4.02**	3.42	+ 5.3	+ 17.4	-	**-**	-	-	-
SE	7.22	**6.61**	6.34	- 8.5	+ 4.2	-	**-**	-	-	-
SI	5.11	**5.07**	5.08	- 0.8	- 0.1	-	**-**	-	-	-
SK	5.56	**4.30**	4.70	- 22.6	- 8.4	5.14	**4.39**	4.25	- 14.5	+ 3.3
UK	8.83	**8.15**	7.86	- 7.7	+ 3.7	-	**-**	-	-	-

Country	SPRING BARLEY t/ha					WINTER BARLEY t/ha				
	2015	2016	Avg 5yrs	%16/15	%16/5yrs	2015	2016	Avg 5yrs	%16/15	%16/5yrs
EU-28	4.17	**4.17**	4.13	+ 0.0	+ 1.2	6.14	**5.97**	5.58	- 2.7	+ 7.0
AT	4.92	**4.32**	4.66	- 12.2	- 7.3	5.99	**6.23**	5.99	+ 4.0	+ 3.9
BE	-	**-**	-	-	-	10.46	**9.31**	8.86	- 11.0	+ 5.0
BG	-	**-**	-	-	-	4.10	**4.23**	3.88	+ 3.3	+ 9.1
CY	-	**-**	-	-	-	3.05	**1.91**	1.96	- 37.3	- 2.3
CZ	5.43	**4.93**	4.96	- 9.3	- 0.6	5.46	**4.97**	4.87	- 8.9	+ 2.2
DE	5.42	**5.68**	5.70	+ 4.9	- 0.2	7.69	**7.31**	6.92	- 4.8	+ 5.6
DK	5.97	**5.67**	5.67	- 5.1	- 0.0	6.76	**6.50**	6.31	- 3.8	+ 3.0
EE	4.23	**3.36**	3.38	- 20.6	- 0.7	-	**-**	-	-	-
ES	2.51	**2.86**	2.79	+ 13.9	+ 2.6	2.11	**2.62**	2.40	+ 24.0	+ 9.0
FI	3.49	**3.54**	3.54	+ 1.4	- 0.2	-	**-**	-	-	-
FR	6.50	**6.30**	5.97	- 3.1	+ 5.6	7.30	**6.90**	6.69	- 5.4	+ 3.2
GR	-	**-**	-	-	-	2.60	**2.56**	2.81	- 1.6	- 8.8
HR	-	**-**	-	-	-	4.39	**4.73**	4.36	+ 7.8	+ 8.6
HU	3.89	**4.07**	3.68	+ 4.8	+ 10.6	5.14	**5.69**	4.49	+ 10.6	+ 26.8
IE	7.70	**7.29**	7.29	- 5.3	+ 0.0	10.20	**9.20**	9.31	- 9.8	- 1.1
IT	-	**-**	-	-	-	3.91	**3.78**	3.72	- 3.3	+ 1.8
LT	4.00	**3.48**	3.46	- 13.2	+ 0.3	-	**-**	-	-	-
LU	-	**-**	-	-	-	-	**-**	-	-	-
LV	3.83	**2.92**	2.93	- 23.8	- 0.3	-	**-**	-	-	-
MT	-	**-**	-	-	-	-	**-**	-	-	-
NL	6.27	**6.66**	6.63	+ 6.1	+ 0.4	-	**-**	-	-	-
PL	3.30	**3.57**	3.49	+ 8.1	+ 2.1	4.13	**4.21**	4.10	+ 2.1	+ 2.7
PT	-	**-**	-	-	-	2.32	**2.08**	1.76	- 10.5	+ 17.6
RO	2.38	**2.57**	2.50	+ 8.1	+ 2.9	3.90	**4.37**	3.45	+ 11.9	+ 26.7
SE	5.20	**4.83**	4.76	- 7.1	+ 1.4	6.18	**5.95**	5.86	- 3.8	+ 1.5
SI	-	**-**	-	-	-	4.63	**4.54**	4.56	- 2.0	- 0.3
SK	4.74	**3.95**	4.04	- 16.7	- 2.3	5.08	**4.09**	4.41	- 19.4	- 7.3
UK	6.00	**5.81**	5.70	- 3.1	+ 1.9	7.52	**6.91**	6.83	- 8.2	+ 1.1

Country	GRAIN MAIZE t/ha					RYE t/ha				
	2015	2016	Avg 5yrs	%16/15	%16/5yrs	2015	2016	Avg 5yrs	%16/15	%16/5yrs
EU-28	6.28	**7.06**	6.87	+ 12.5	+2.7	4.00	**3.90**	3.76	- 2.6	+ 3.8
AT	8.68	**10.25**	9.98	+ 18.1	+2.7	4.32	**4.36**	4.40	+ 0.8	- 0.9
BE	10.20	**11.02**	10.67	+ 8.0	+3.3	-	**-**	-	-	-
BG	5.13	**5.93**	5.56	+ 15.4	+6.5	-	**-**	-	-	-
CY	-	**-**	-	-	-	-	**-**	-	-	-
CZ	4.73	**7.72**	7.44	+ 63.1	+3.7	4.91	**5.47**	4.84	+ 11.4	+ 12.9
DE	8.72	**10.06**	9.95	+ 15.3	+1.1	5.66	**5.66**	5.50	- 0.1	+ 2.9
DK	6.38	**6.10**	6.05	- 4.3	+0.8	6.32	**6.11**	6.08	- 3.3	+ 0.5
EE	-	**-**	-	-	-	3.83	**2.93**	3.00	- 23.4	- 2.3
ES	11.30	**11.27**	11.08	- 0.3	+1.6	1.91	**2.21**	1.99	+ 15.7	+ 10.7
FI	-	**-**	-	-	-	3.46	**2.98**	3.03	-1 3.8	- 1.8
FR	8.36	**9.27**	9.11	+ 10.9	+1.7	4.71	**4.93**	4.84	+ 4.5	+ 1.8
GR	11.12	**11.00**	11.34	- 1.1	-3.0	2.04	**1.92**	2.03	- 6.0	- 5.4
HR	6.49	**6.59**	6.01	+ 1.5	+9.6	-	**-**	-	-	-
HU	5.69	**6.48**	5.77	+ 13.9	+12.2	2.79	**3.00**	2.66	+ 7.4	+ 12.8
IE	-	**-**	-	-	-	-	**-**	-	-	-
IT	9.72	**9.53**	9.28	- 2.0	+2.7	-	**-**	-	-	-
LT	4.81	**6.37**	6.38	+ 32.4	-0.2	2.78	**2.36**	2.37	- 15.2	- 0.4
LU	-	**-**	-	-	-	-	**-**	-	-	-
LV	-	**-**	-	-	-	4.28	**3.15**	3.22	- 26.4	- 2.1
MT	-	**-**	-	-	-	-	**-**	-	-	-
NL	10.83	**11.60**	10.79	+ 7.1	+7.5	-	**-**	-	-	-
PL	4.71	**6.22**	6.15	+ 32.0	+1.0	2.78	**2.93**	2.82	+ 5.5	+ 3.7
PT	8.39	**8.42**	8.29	+ 0.4	+1.6	0.84	**0.91**	0.86	+ 7.4	+ 5.6
RO	3.19	**3.74**	3.61	+ 17.1	+3.6	-	**-**	-	-	-
SE	-	**-**	-	-	-	6.35	**6.16**	6.02	- 3.0	+ 2.3
SI	8.96	**8.20**	7.85	- 8.4	+4.4	-	**-**	-	-	-
SK	4.84	**6.08**	6.04	+25.6	+0.6	3.63	**3.21**	3.60	- 11.6	-1 0.8
UK	-	**-**	-	-	-	-	**-**	-	-	-

Country	TRITICALE t/ha					RAPE AND TURNIP RAPE t/ha				
	2015	2016	Avg 5yrs	%16/15	%16/5yrs	2015	2016	Avg 5yrs	%16/15	%16/5yrs
EU-28	4.15	**4.30**	4.21	+ 3.6	+ 2.2	3.37	**3.35**	3.21	- 0.4	+ 4.5
AT	5.29	**5.42**	5.26	+ 2.6	+ 3.1	2.98	**3.22**	3.23	+ 8.2	- 0.3
BE	-	-	-	-	-	4.60	**4.51**	4.43	- 1.8	+ 1.9
BG	3.00	**3.48**	2.94	+ 15.9	+ 18.3	2.55	**2.71**	2.46	+ 6.2	+ 10.1
CY	-	-	-	-	-	-	-	-	-	-
CZ	4.72	**4.61**	4.64	- 2.4	- 0.6	3.43	**3.41**	3.28	- 0.5	+ 4.0
DE	6.47	**6.49**	6.33	+ 0.3	+ 2.5	3.90	**4.17**	3.80	+ 6.9	+ 9.9
DK	5.31	**5.56**	5.44	+ 4.6	+ 2.1	4.25	**3.91**	3.93	- 8.2	- 0.7
EE	-	-	-	-	-	2.51	**2.01**	1.98	- 19.9	+ 1.1
ES	2.08	**2.37**	2.22	+ 13.8	+ 6.7	2.03	**2.58**	2.20	+ 26.9	+ 17.5
FI	-	-	-	-	-	1.54	**1.47**	1.46	- 4.7	+ 0.5
FR	5.41	**5.39**	5.30	- 0.4	+ 1.6	3.56	**3.46**	3.43	- 2.6	+ 0.9
GR	-	-	-	-	-	-	-	-	-	-
HR	3.82	**3.77**	3.93	- 1.3	- 4.0	2.59	**2.73**	2.78	+ 5.2	- 1.9
HU	3.99	**4.25**	3.75	+ 6.6	+ 13.6	2.24	**3.00**	2.57	+ 34.0	+ 16.8
IE	-	-	-	-	-	-	-	-	-	-
IT	-	-	-	-	-	2.60	**2.54**	2.37	- 2.0	+ 7.2
LT	3.84	**3.28**	3.31	- 14.5	- 0.8	3.08	**2.30**	2.25	- 25.4	+ 2.2
LU	-	-	-	-	-	-	-	-	-	-
LV	-	-	-	-	-	2.89	**2.26**	2.24	- 21.8	+ 1.2
MT	-	-	-	-	-	-	-	-	-	-
NL	-	-	-	-	-	-	-	-	-	-
PL	3.52	**3.70**	3.58	+ 5.2	+ 3.5	3.26	**3.13**	2.88	- 4.0	+ 8.7
PT	1.72	**1.50**	1.39	- 12.7	+ 7.6	-	-	-	-	-
RO	3.48	**3.63**	3.43	+ 4.2	+ 5.6	2.36	**2.81**	2.30	+ 18.8	+ 22.2
SE	5.80	**5.80**	5.49	- 0.0	+ 5.6	3.80	**3.27**	3.06	-13.9	+ 6.9
SI	-	-	-	-	-	-	-	-	-	-
SK	3.60	**3.46**	3.47	- 4.1	- 0.4	2.72	**2.64**	2.65	- 3.0	- 0.3
UK	NA	**4.09**	3.99	- 28.8	- 4.1	3.56	**3.68**	3.49	+ 3.5	+ 5.4

Country	SUGAR BEETS t/ha					POTATO t/ha				
	2015	2016	Avg 5yrs	%16/15	%16/5yrs	2015	2016	Avg 5yrs	%16/15	%16/5yrs
EU-28	71.70	**73.49**	71.78	+ 2.5	+ 2.4	31.78	**32.96**	32.02	+ 3.7	+ 2.9
AT	62.80	**70.40**	70.59	+ 12.1	- 0.3	26.34	**31.68**	31.37	+ 20.3	+ 1.0
BE	84.94	**79.39**	77.78	- 6.5	+ 2.1	46.34	**47.47**	47.77	+ 2.4	- 0.6
BG	-	-	-	-	-	13.80	**15.33**	13.33	+ 11.1	+ 14.9
CY	-	-	-	-	-	-	-	-	-	-
CZ	59.38	**66.40**	64.00	+ 11.8	+ 3.7	22.26	**25.92**	26.72	+ 16.4	- 3.0
DE	72.17	**71.77**	71.85	- 0.6	- 0.1	43.81	**45.36**	44.29	+ 3.5	+ 2.4
DK	61.24	**62.81**	63.01	+ 2.6	- 0.3	40.44	**40.91**	40.64	+ 1.2	+ 0.7
EE	-	-	-	-	-	-	-	-	-	-
ES	95.30	**95.64**	89.32	+ 0.4	+ 7.1	31.14	**32.00**	30.59	+ 2.8	+ 4.6
FI	32.74	**36.56**	36.65	+1 1.7	- 0.2	24.31	**26.32**	26.30	+ 8.3	+ 0.1
FR	87.50	**90.12**	89.15	+ 3.0	+ 1.1	42.50	**44.56**	44.25	+ 4.8	+ 0.7
GR	-	-	-	-	-	25.24	**25.71**	25.50	+ 1.9	+ 0.8
HR	59.00	**56.36**	53.05	- 4.5	+ 6.2	15.90	**17.50**	16.59	+ 10.1	+ 5.5
HU	57.66	**61.42**	53.96	+ 6.5	+ 13.8	22.65	**25.94**	24.19	+ 14.5	+ 7.2
IE	-	-	-	-	-	-	-	-	-	-
IT	57.01	**56.76**	55.93	- 0.4	+ 1.5	27.55	**26.30**	26.09	- 4.5	+ 0.8
LT	58.00	**53.13**	52.79	- 8.4	+ 0.7	16.00	**16.18**	16.07	+ 1.1	+ 0.6
LU	-	-	-	-	-	-	-	-	-	-
LV	-	-	-	-	-	18.00	**18.00**	17.97	+ 0.0	+ 0.2
MT	-	-	-	-	-	-	-	-	-	-
NL	83.30	**84.39**	81.21	+ 1.3	+ 3.9	42.69	**44.84**	44.08	+ 5.0	+ 1.7
PL	52.00	**55.16**	52.79	+ 6.1	+ 4.5	21.70	**22.01**	22.26	+ 1.4	- 1.1
PT	-	-	-	-	-	18.62	**18.99**	17.85	+ 2.0	+ 6.4
RO	39.40	**38.54**	35.72	- 2.2	+ 7.9	14.37	**15.22**	14.94	+ 6.0	+ 1.9
SE	60.80	**63.45**	63.46	+ 4.4	- 0.0	34.65	**34.41**	33.41	- 0.7	+ 3.0
SI	-	-	-	-	-	-	-	-	-	-
SK	51.17	**53.27**	54.26	+ 4.1	- 1.8	-	-	-	-	-
UK	66.50	**71.03**	70.19	+ 6.8	+ 1.2	40.20	**41.69**	39.91	+ 3.7	+ 4.5

Country	SUNFLOWER t/ha				
	2015	2016	Avg 5yrs	%16/15	%16/5yrs
EU-28	1.74	**1.95**	1.90	+ 12.0	+ 2.7
AT	2.00	**2.61**	2.47	+ 30.5	+ 5.6
BE	-	-	-	-	-
BG	2.02	**2.33**	2.10	+ 15.4	+ 10.8
CY	-	-	-	-	-
CZ	2.05	**2.33**	2.29	+ 13.8	+ 1.8
DE	1.92	**2.14**	2.14	+ 11.5	- 0.2
DK	-	-	-	-	-
EE	-	-	-	-	-
ES	0.94	**1.08**	1.07	+ 14.7	+ 0.3
FI	-	-	-	-	-
FR	2.00	**2.33**	2.26	+ 16.6	+ 2.9
GR	2.74	**2.55**	2.52	- 6.8	+ 1.1
HR	2.66	**2.62**	2.53	- 1.4	+ 3.7
HU	2.45	**2.53**	2.41	+ 3.3	+ 4.7
IE	-	-	-	-	-
IT	2.26	**2.24**	2.25	- 1.0	- 0.2
LT	-	-	-	-	-
LU	-	-	-	-	-
LV	-	-	-	-	-
MT	-	-	-	-	-
NL	-	-	-	-	-
PL	-	-	-	-	-
PT	1.10	**0.82**	0.76	- 25.1	+ 8.1
RO	1.35	**1.65**	1.67	+ 21.5	- 1.7
SE	-	-	-	-	-
SI	-	-	-	-	-
SK	2.27	**2.39**	2.32	+ 5.4	+ 2.9
UK	-	-	-	-	-

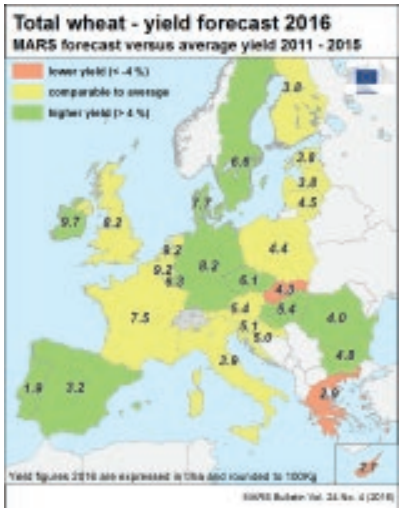
Note: Yields are forecast for crops with more than 10000 ha per country. Total cereals includes the 'other cereals' class.
Sources: 2011-2016 data come from DG AGRICULTURE short term Outlook data (dated March 2016, received on 12.04.2016), EUROSTAT Eurobase (last update: 12.04.2016) and EECP (last update: 15.10.2015)
2016 yields come from MARS CROP YIELD FORECASTING SYSTEM (output up to 20.04.2016)

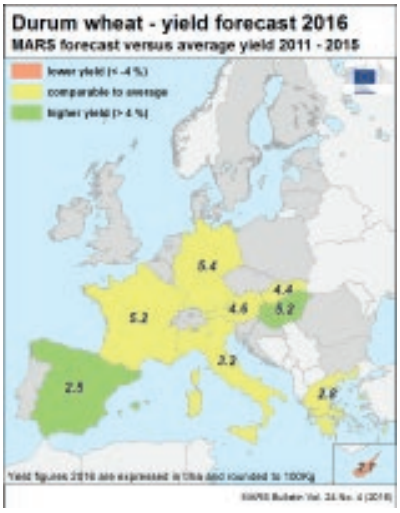
Country	WHEAT (t/ha)				
	2015	2016	Avg 5yrs	%16/15	%16/5yrs
BY	3.43	**3.67**	3.48	+ 7.0	+ 5.4
DZ	1.48	**1.34**	1.60	- 9.5	- 16.3
MA	2.36	**0.61**	1.86	- 74.2	- 67.2
TN	2.15	**1.74**	2.05	- 19.0	- 15.0
TR	2.90	**2.66**	2.69	- 8.2	- 1.0
UA	3.99	**3.52**	3.54	- 11.7	- 0.4

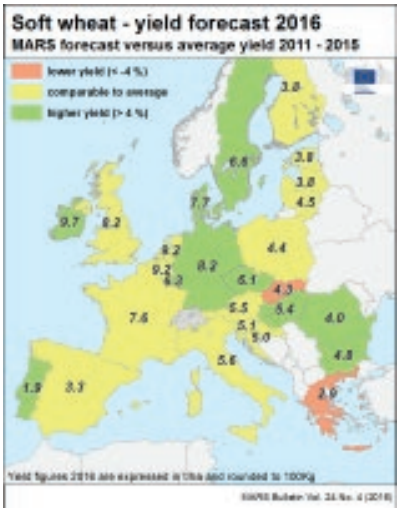
Country	BARLEY (t/ha)				
	2015	2016	Avg 5yrs	%16/15	%16/5yrs
BY	3.33	**3.44**	3.25	+ 3.2	+ 5.8
DZ	1.18	**1.27**	1.39	+ 7.6	- 8.6
MA	1.62	**0.44**	1.16	- 72.8	- 62.2
TN	1.44	**1.30**	1.30	- 9.5	+ 0.0
TR	2.9	**2.54**	2.65	- 12.4	- 4.2
UA	3.07	**2.71**	2.59	- 11.8	+ 4.7

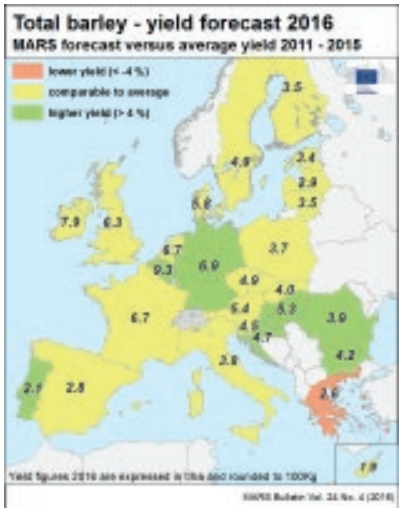
Country	GRAIN MAIZE (t/ha)				
	2015	2016	Avg 5yrs	%16/15	%16/5yrs
BY	5.33	**5.47**	5.62	+ 2.6	- 2.6
DZ	-	-	-	-	-
MA	-	-	-	-	-
TN	-	-	-	-	-
TR	9.30	**9.19**	8.39	- 1.2	+ 9.5
UA	5.56	**5.99**	5.74	+ 7.6	+ 4.2

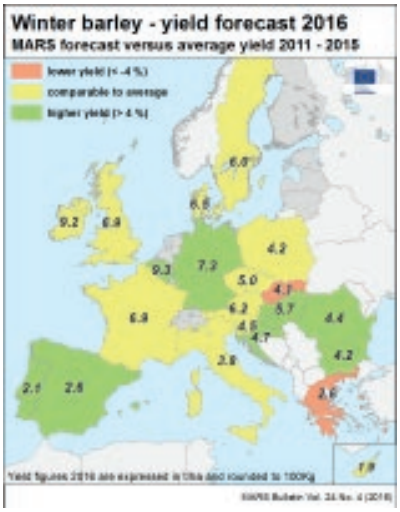
Note: Yields are forecast for crops with more than 10 000 ha per country.
Sources: 2011-2015 data come from USDA, State Statistics Service of Ukraine, FAO, Turkish Statistical Office, PSD-online, INRA Maroc, Min AGRI Tunisia and DSASI Algeria.
2016 yields come from MARS Crop Yield Forecasting System (output up to 20.04.2016)

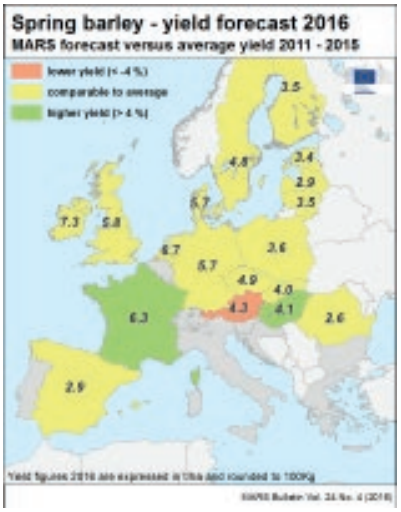

Total wheat - yield forecast 2016
MARS forecast versus average yield 2011 - 2015
lower yield (< -4 %)
comparable to average
higher yield (> 4 %)

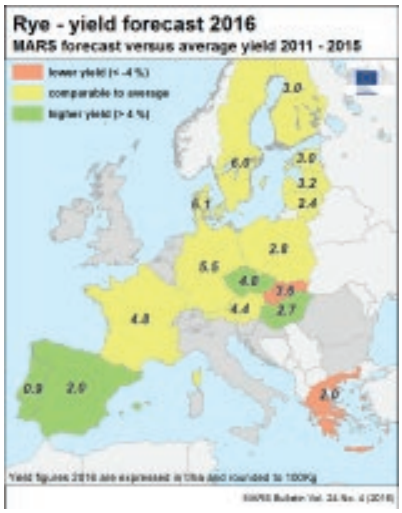

Durum wheat - yield forecast 2016
MARS forecast versus average yield 2011 - 2015
lower yield (< -4 %)
comparable to average
higher yield (> 4 %)

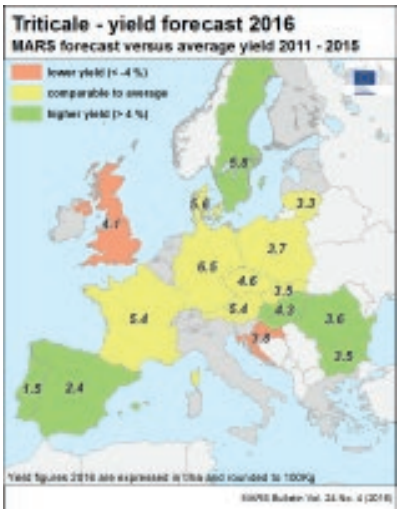

Soft wheat - yield forecast 2016
MARS forecast versus average yield 2011 - 2015
lower yield (< -4 %)
comparable to average
higher yield (> 4 %)

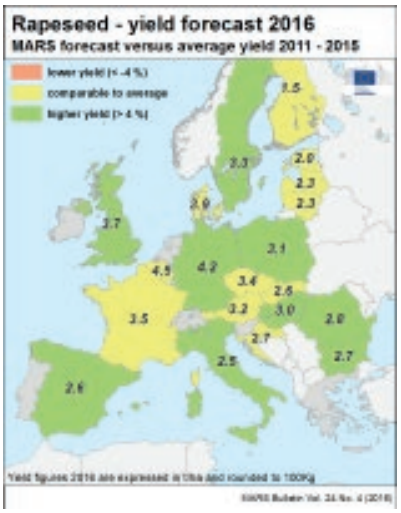

Total barley - yield forecast 2016
MARS forecast versus average yield 2011 - 2015
lower yield (< -4 %)
comparable to average
higher yield (> 4 %)


Winter barley - yield forecast 2016
MARS forecast versus average yield 2011 - 2015
lower yield (< -4 %)
comparable to average
higher yield (> 4 %)


Spring barley - yield forecast 2016
MARS forecast versus average yield 2011 - 2015
lower yield (< -4 %)
comparable to average
higher yield (> 4 %)

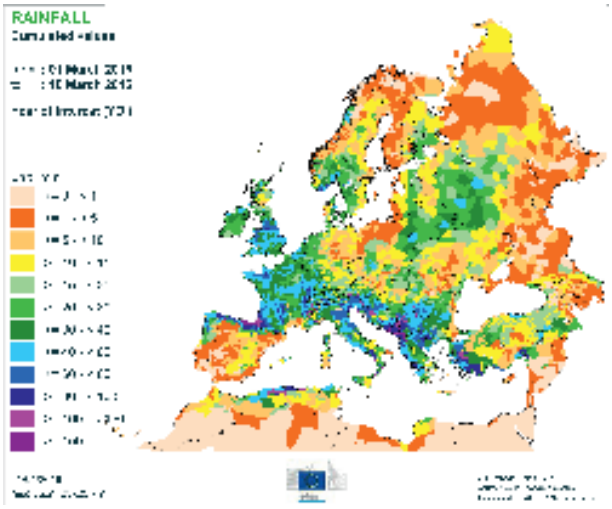

Rye - yield forecast 2016
MARS forecast versus average yield 2011 - 2015
lower yield (< -4 %)
comparable to average
higher yield (> 4 %)

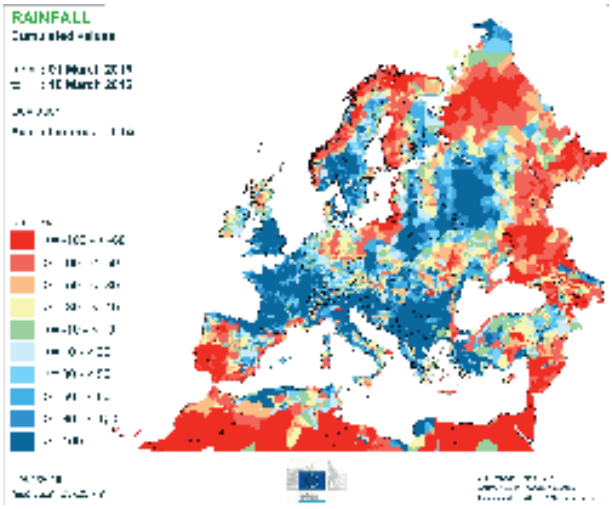

Triticale - yield forecast 2016
MARS forecast versus average yield 2011 - 2015
lower yield (< -4 %)
comparable to average
higher yield (> 4 %)

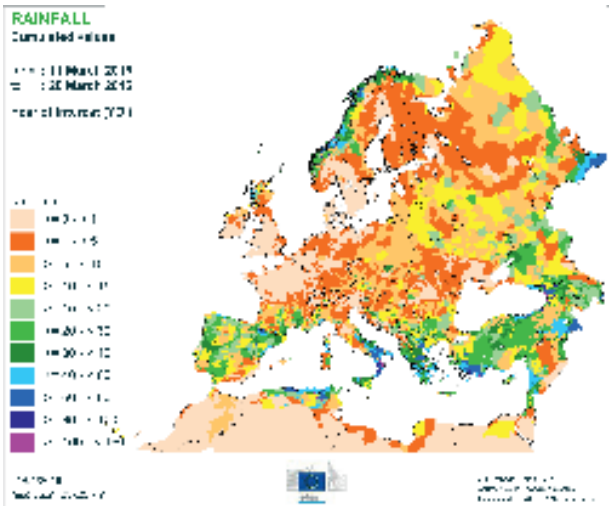

Rapeseed - yield forecast 2016
MARS forecast versus average yield 2011 - 2015
lower yield (< -4 %)
comparable to average
higher yield (> 4 %)

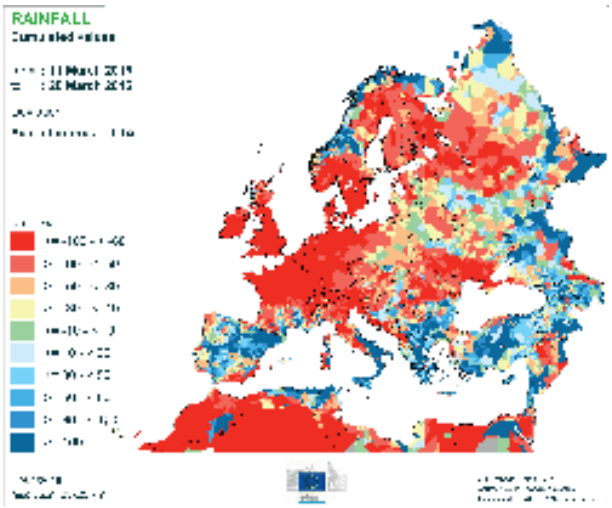
5. Atlas

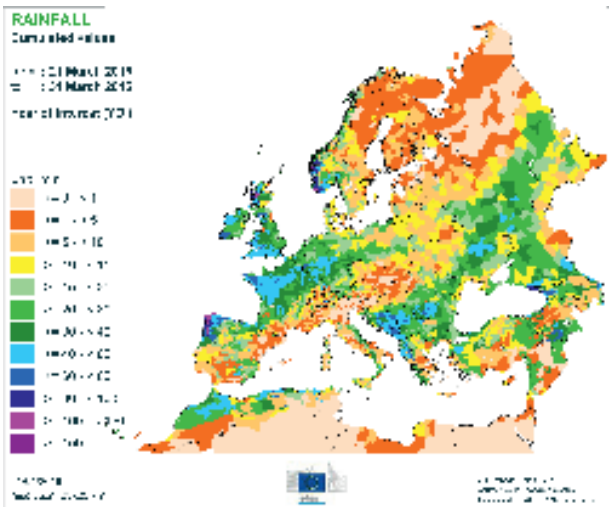
Precipitation

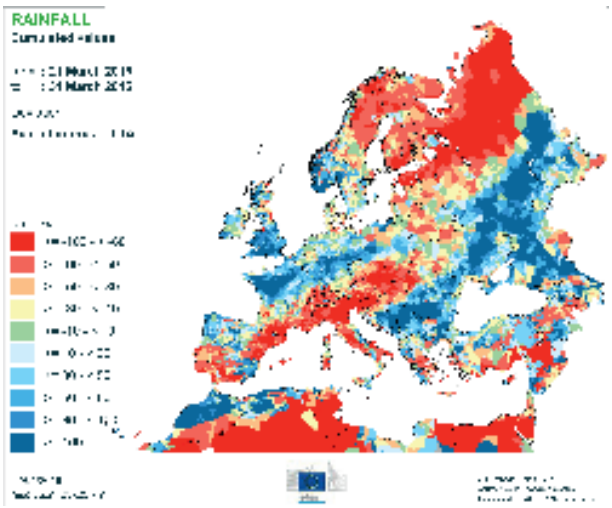


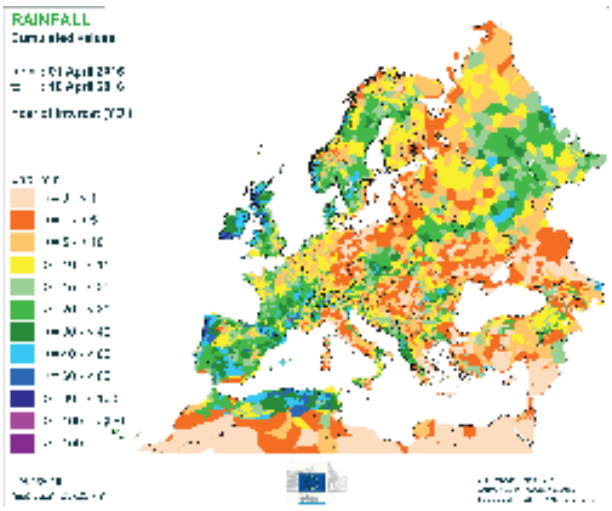








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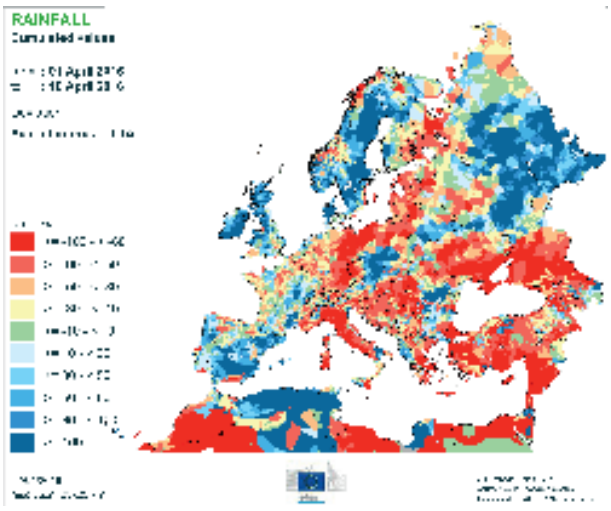
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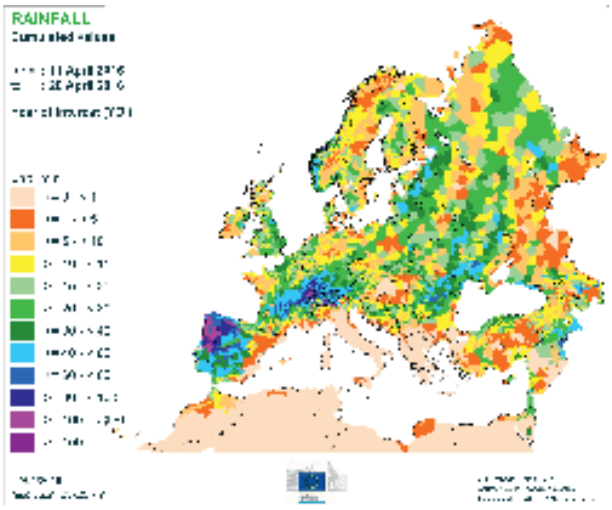
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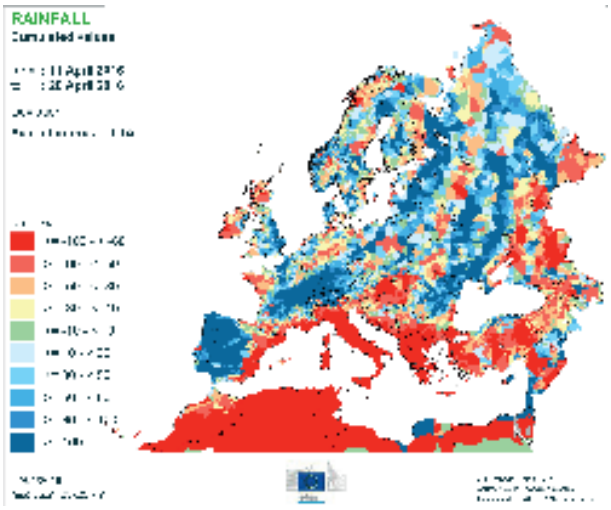
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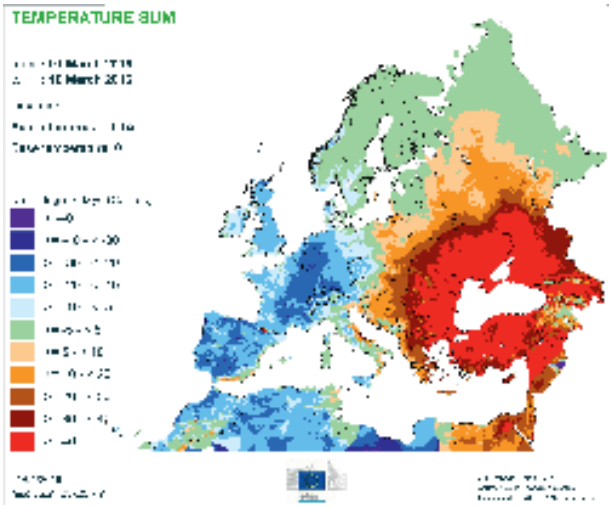
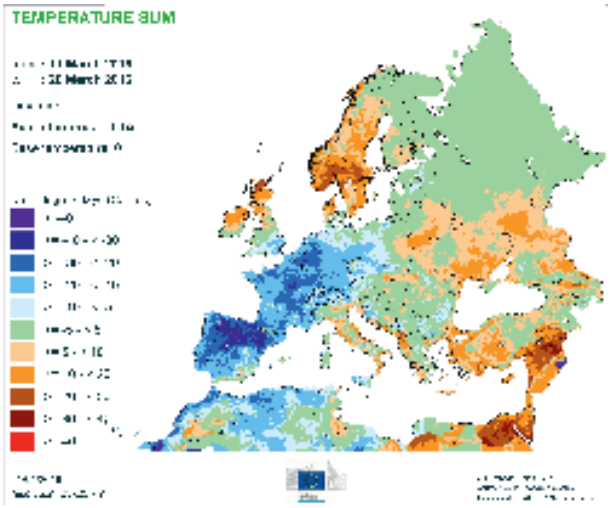
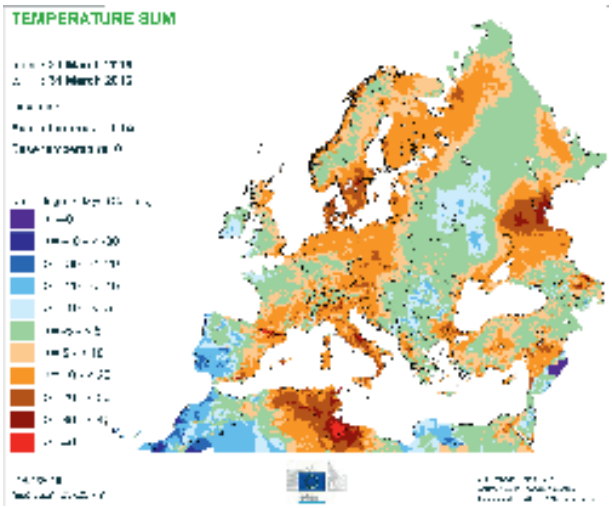
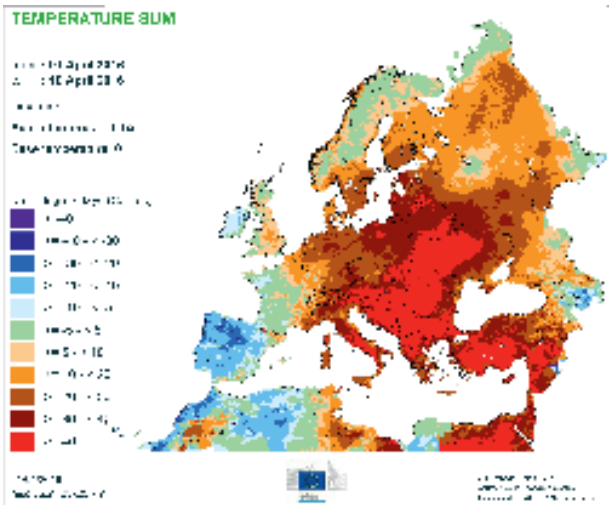
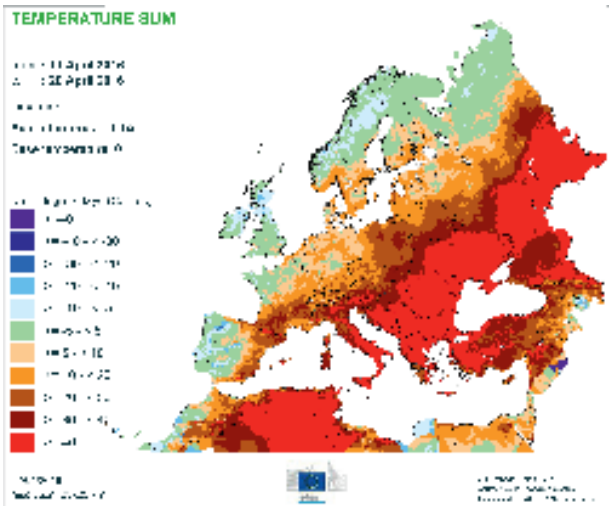
Temperature regime

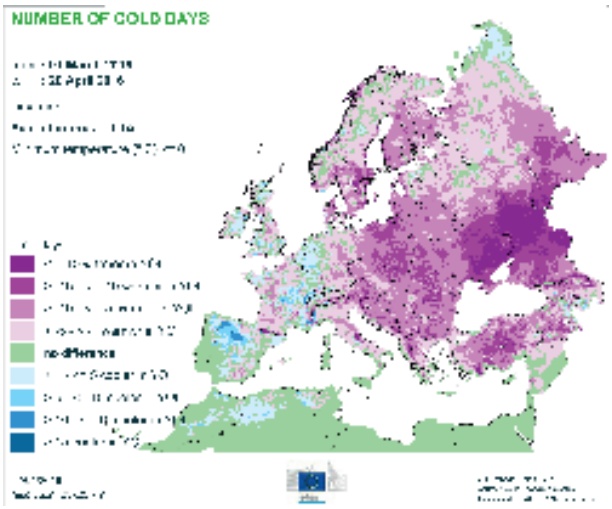




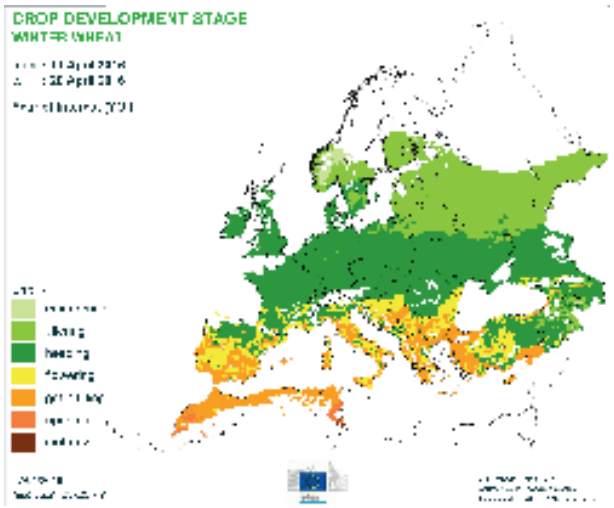


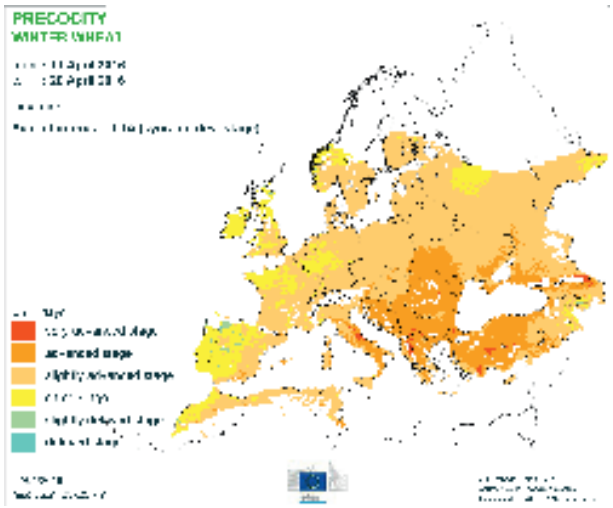


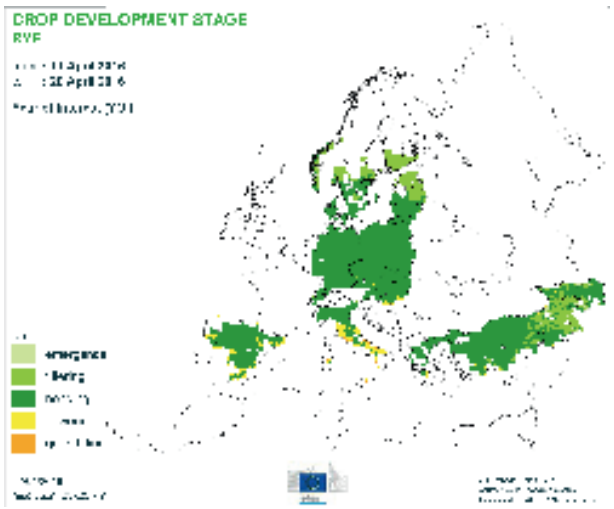


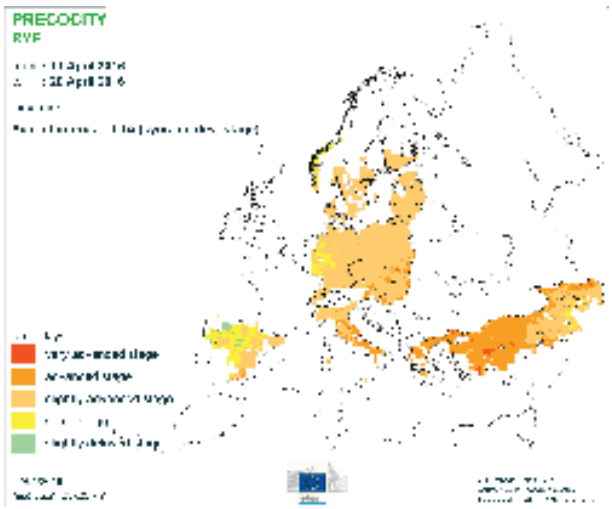


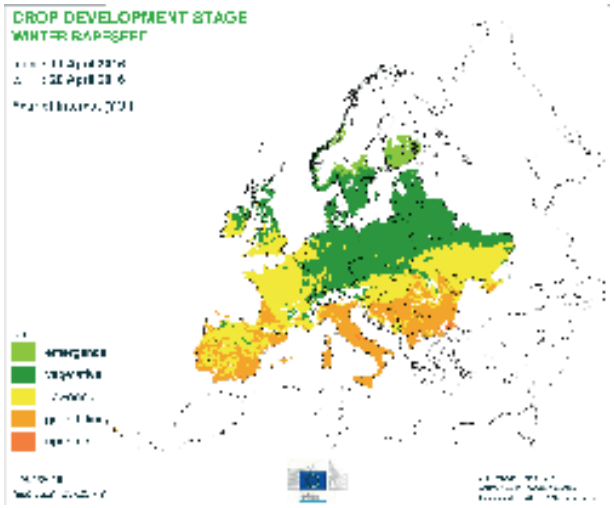
Crop development stages and precocity

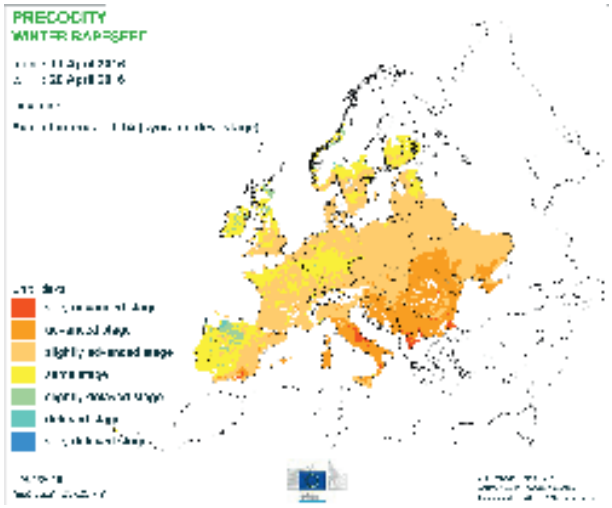




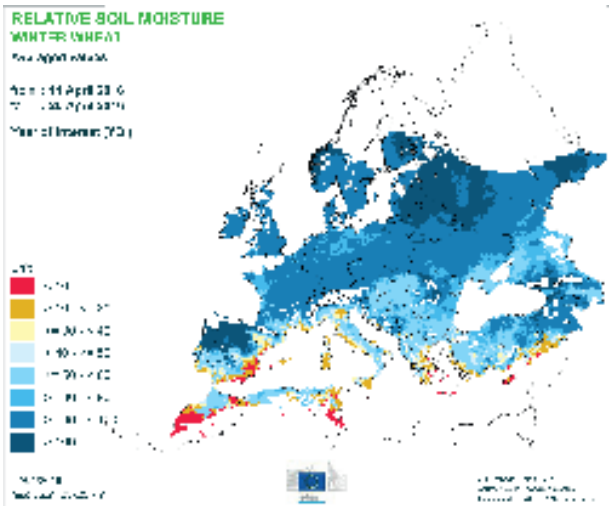


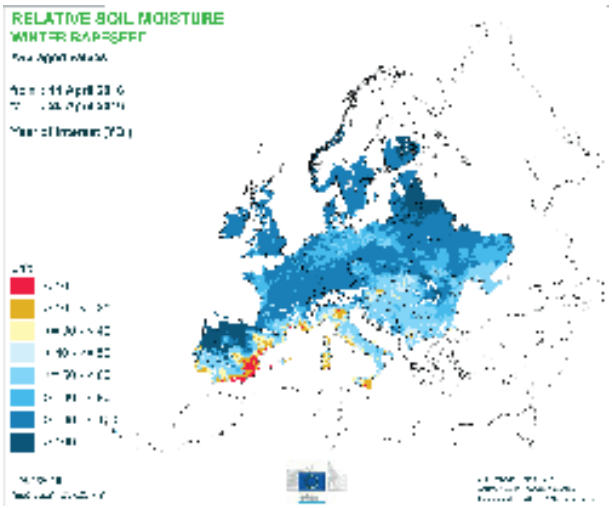






Relative soil moisture





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JRC MARS Bulletins 2016

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

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B. Baruth, I. Biavetti, A. Bussay, A. Ceglar, G. De Sanctis, S. Garcia Condado, S. Karetsos, R. Lecerf, R. Lopez, L. Nisini, L. Seguini, A. Toreti, M. Van den Berg, M. Van der Velde.

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