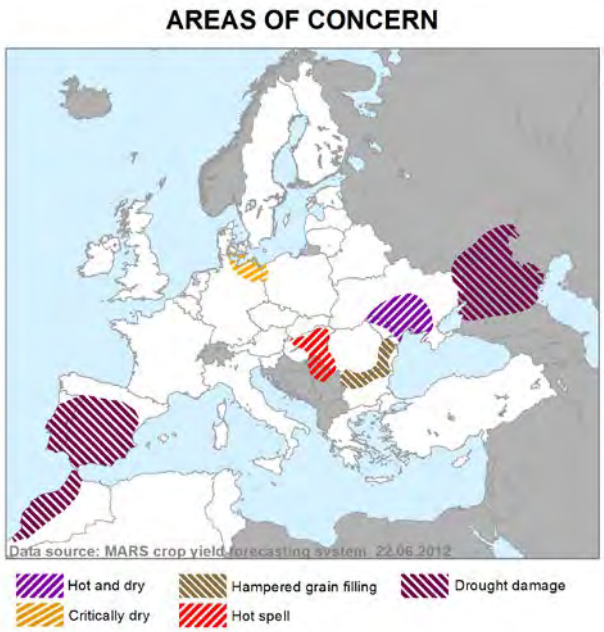
JRC **68565**– EUR 24736
ISNN 1018-5593 (print)
ISNN 1831-9424 (online)
Issued: 25 June 2012

MARS Bulletin

Crop Monitoring in Europe

Vol. 20 No 6 (2012)
DRAFT VERSION

IBERIAN PENINSULA FACES A DIFFICULT SEASON



Crop	Yield t/ha				
	2011	MARS 2012 forecasts	Avg 5yrs	%12/11	%12/5yrs
TOTAL CEREALS	5,13	**5,10**	4,99	-0,6	+2,2
Total Wheat	5,35	**5,32**	5,31	-0,5	+0,3
soft wheat	5,59	**5,60**	5,57	+0,2	+0,5
durum wheat	3,20	**2,99**	3,14	-6,7	-4,9
Total Barley	4,31	**4,41**	4,36	+2,3	+1,1
spring barley	3,86	**4,04**	3,83	+4,6	+5,5
winter barley	5,00	**5,06**	5,14	+1,1	-1,7
Grain maize	7,60	**7,38**	6,94	-2,8	+6,4
Rye	3,06	**3,20**	3,18	+4,7	+0,9
Triticale	3,90	**3,82**	3,98	-2,0	-3,9
Other cereals	2,96	**2,96**	3,26	-0,1	-9,2
Rape and turnip rape	2,86	**2,87**	3,00	+0,4	-4,2
Potato	31,59	**29,91**	29,78	-5,3	+0,4
Sugar beet	68,80	**69,67**	67,33	+1,3	+3,5
Sunflower	1,97	**1,86**	1,79	-5,8	+3,7

Average temperature accumulation in Europe north of 50 degrees latitude, with warm days at the end of May, followed by a fresh June. Persistent high temperatures and above-average temperature accumulation in June for all countries bordering the Black Sea, as well as Spain and Italy. Precipitation well above average in the British Isles, most of France, Austria, Romania and Bulgaria; dry conditions in Spain, Maghreb, eastern Italy, northern Germany and southern Ukraine.

Compared to our last Bulletin, there was an increase in the forecast for total cereals, mainly due to an increase in the maize yield on the back of favourable growing conditions in the main producing countries. At the same time, however, there are some concerns being raised with regard to Bulgaria and Romania, where heat waves are forecast. Despite the increased soft wheat yield for France and Germany, the forecast at EU 27 level is for a small decrease compared to the previous Bulletin, given that forecasts for Spain have been lowered considerably (by more than 10%).

Durum wheat yield is also lower at EU 27 level, mainly due to yields in Spain, which have posted a further 20 % decrease since the last Bulletin. Total barley shows a reduction at EU 27 level as a result of lower spring barley forecasts mainly in Spain, which is only partially compensated by the upwards revision of yields for Germany and France. The rye forecast for EU 27 rose, as a result of the upwards revision of the forecast for Poland.

Content

The Bulletin covers the period from 21 May until 20 June

1. AGRO-METEOROLOGICAL OVERVIEW

On the whole, average temperature accumulation in Europe north of 50 degree latitude with the last few warm days at the end of May followed by fresher temperatures in June. Persistently high temperatures and above-average temperature accumulation were recorded in June for all countries bordering the Black Sea, as well as Spain and Italy. Precipitation was well above average in the British Isles, most of France, Austria, Romania and Bulgaria, whereas Spain, Maghreb, eastern Italy, northern Germany and southern Ukraine experienced dry conditions.

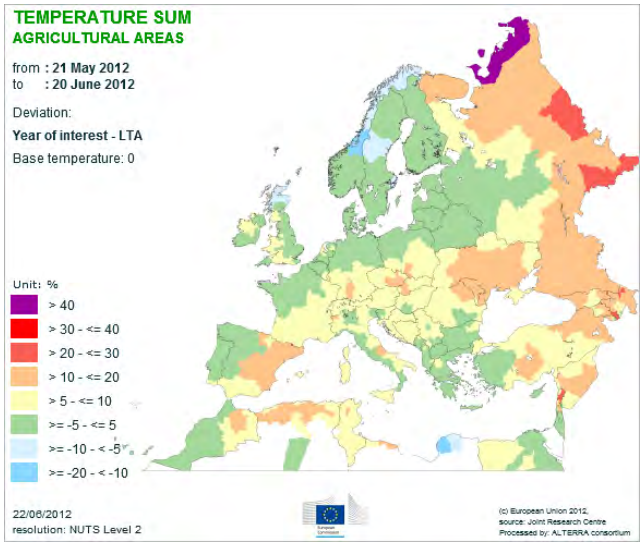
May brought a surplus of temperature accumulation on the whole in the Iberian Peninsula, France (with the exception of Bretagne), Benelux, Denmark, Germany, Poland, Czech Republic and the northern and southern parts of Romania; temperatures were hottest in Ukraine and southern Russia, where they coincided with a unusually high number of hot days which adversely affected the conditions for crop growth. The same is true for the Iberian Peninsula and Maghreb. Most of the temperature accumulation occurred in the first half of May for southern Europe and the Black Sea Area, whereas in the second half of May there was a significant cooling in most of Europe, except for the previously fresher regions around the North Sea which are now showing a surplus of accumulation. Between 15 and 18 May, night frosts were even recorded in Austria, France, Germany, Czech Republic and Poland, which caused damage mostly to vegetable crops and wine, but may also have had an adverse effect on cereals in the regions concerned.

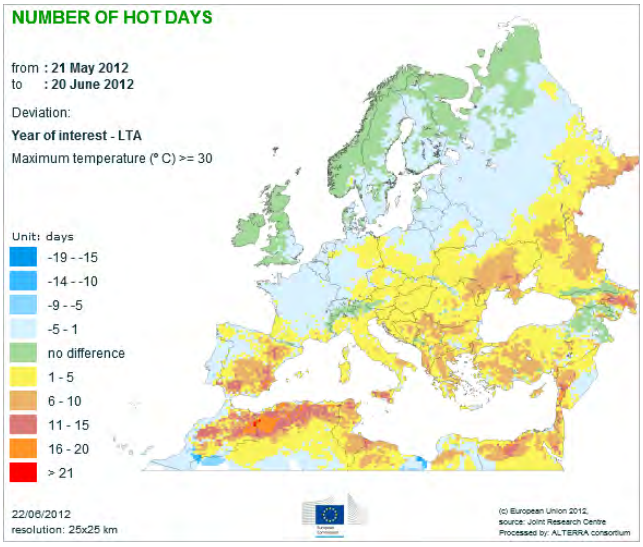
At the beginning of June, there was a significant drop in maximum and minimum temperatures in northern and central Europe, which slowed crop growth. High temperatures only persisted in Spain, Ukraine, Greece, Romania and Bulgaria, with 3 -5 consecutive days above 30 degrees. They climbed again in the second dekad of June in central and eastern Europe, Italy and the Balkans, as well as the Black Sea area, resulting in above average temperature accumulation and a number of consecutive hot days in those regions. North Portugal, northern France as well as the British Isles and northern Europe experienced a below average accumulation of temperatures. The dekadal maps of temperature and hot days concerning the period of analysis from 21 May to 20 June can be found under the “atlas maps” section.

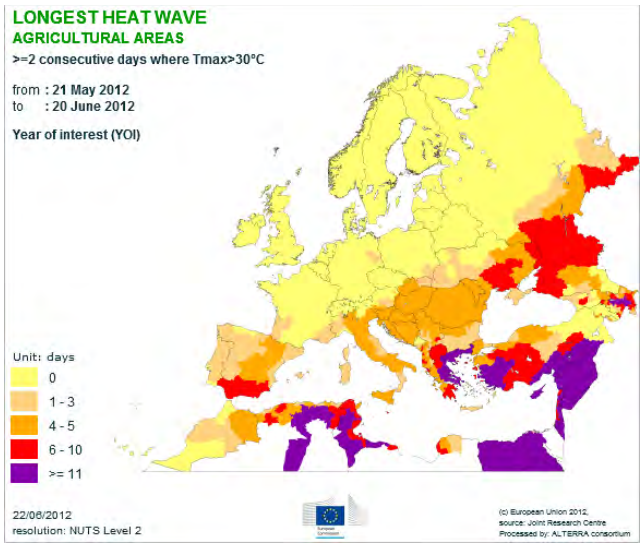
Precipitation in the period considered was plentiful in the British Isles, with the exception of *East Anglia*, which was drier. France posts average values, but has a clear surplus in the *Centre*, which is beneficial for crops. High rainfall levels have been recorded for Bulgaria and Romania, which have maintained their above average rainfall accumulation since April, along with high daily rainfall rates. In the south of Romania these rates coincided with the grain filling phases of wheat and barley. Concerns raised in the previous Bulletin due to dry conditions in Austria have been mitigated by recent rain, and there has now been a balanced accumulation of rainfall since April. This is not the case for the north of Germany, however; dry conditions continue and, in the period under consideration, a rainfall deficit of around 80% - 100 % has been recorded for *Mecklenburg Vorpommern*. The period was also dry for the main producing regions of Spain: *Castilla Y Leon* and *Castilla La Mancha,* as well as *Emilia Romagna* and *Marche* in Italy. Dry conditions persisted in *Mykolayivska* (Ukraine) and in southern Russia.

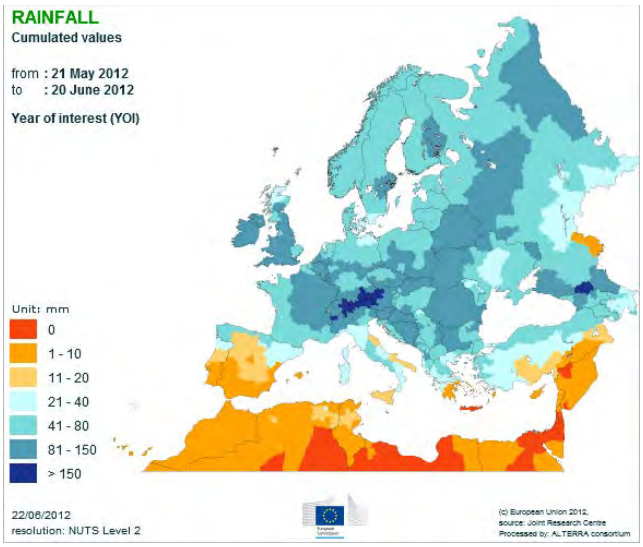
As a consequence of the recent weather patterns, the map showing areas of concern has changed, and new areas of concern have emerged (see first page), including the north of Germany due to a persistent rainfall deficit and alarmingly low soil moisture contents. Southern Russia is also experiencing worrying drought conditions.

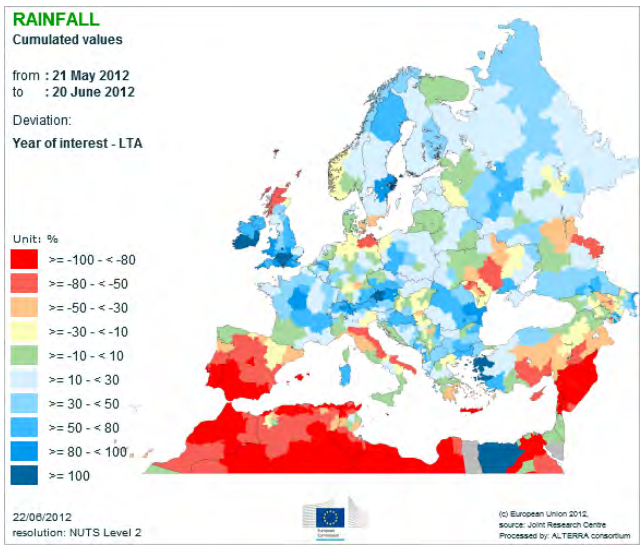
The dekadal maps of precipitation from 21 May until 20 June can be found in the atlas maps section.

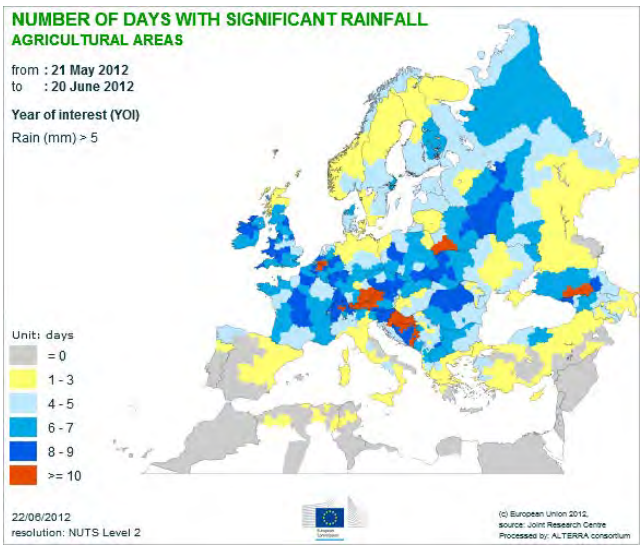

TEMPERATURE SUM
AGRICULTURAL AREAS
from : 21 May 2012
to : 20 June 2012
Deviation:
Year of interest - LTA
Base temperature: 0
Unit: %
> 40
> 30 - <= 40
> 20 - <= 30
> 10 - <= 20
> 5 - <= 10
>= -5 - <= 5
>= -10 - < -5
>= -20 - < -10
22/06/2012
resolution: NUTS Level 2
(c) European Union 2012, source: Joint Research Centre
Processed by: ALTERRA consortium


NUMBER OF HOT DAYS
from : 21 May 2012
to : 20 June 2012
Deviation:
Year of interest - LTA
Maximum temperature (° C) >= 30
Unit: days
-19 - -15
-14 - -10
-9 - -5
-5 - 1
no difference
1 - 5
6 - 10
11 - 15
16 - 20
> 21
22/06/2012
resolution: 25x25 km
(c) European Union 2012, source: Joint Research Centre
Processed by: ALTERRA consortium


LONGEST HEAT WAVE
AGRICULTURAL AREAS
>=2 consecutive days where Tmax>30°C
from : 21 May 2012
to : 20 June 2012
Year of interest (YOI)
Unit: days
0
1 - 3
4 - 5
6 - 10
>= 11
22/06/2012
resolution: NUTS Level 2
(c) European Union 2012, source: Joint Research Centre
Processed by: ALTERRA consortium


RAINFALL
Cumulated values
from : 21 May 2012
to : 20 June 2012
Year of interest (YOI)
Unit: mm
0
1 - 10
11 - 20
21 - 40
41 - 80
81 - 150
> 150
22/06/2012
resolution: NUTS Level 2
(c) European Union 2012, source: Joint Research Centre
Processed by: ALTERRA consortium


RAINFALL
Cumulated values
from : 21 May 2012
to : 20 June 2012
Deviation:
Year of interest - LTA
Unit: %
>= -100 - < -80
>= -80 - < -50
>= -50 - < -30
>= -30 - < -10
>= -10 - < 10
>= 10 - < 30
>= 30 - < 50
>= 50 - < 80
>= 80 - < 100
>= 100
22/06/2012
resolution: NUTS Level 2
(c) European Union 2012, source: Joint Research Centre
Processed by: ALTERRA consortium


NUMBER OF DAYS WITH SIGNIFICANT RAINFALL
AGRICULTURAL AREAS
from : 21 May 2012
to : 20 June 2012
Year of interest (YOI)
Rain (mm) > 5
Unit: days
= 0
1 - 3
4 - 5
6 - 7
8 - 9
>= 10
22/06/2012
resolution: NUTS Level 2
(c) European Union 2012, source: Joint Research Centre
Processed by: ALTERRA consortium

WEATHER FORECAST FOR THE COMING DAYS: 21 JUNE TO 30 JUNE

Warm weather with scarce rainfall will continue in the Black Sea basin, whereas northern areas will remain colder, with high rainfall.

Forecast Temperatures

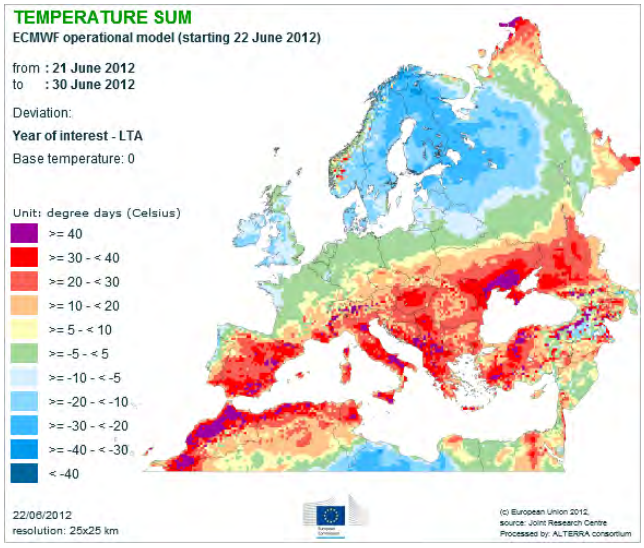
In the next few days temperatures will be distributed with a north (colder) and south (warmer) gradient. Initially, cold Atlantic air will influence temperatures over the British Isles, the Scandinavian Peninsula and Estonia, and then move southwards to all Baltic States, central Russia, eastern Belarus, and north to west Poland and north Germany. The accumulation of active temperatures (Tbase = 0°C) will be lower than usual, and maximum temperatures will not exceed 22/24°C in the northern latitudes.

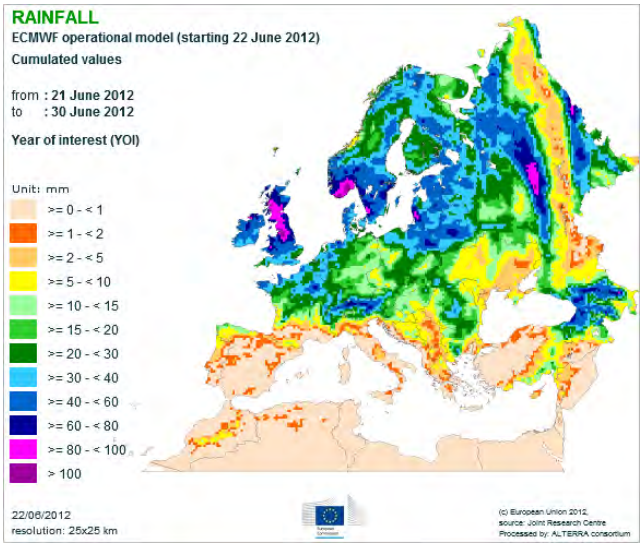
On the other hand the southern part of Europe, regions around the Black Sea and the Mediterranean Sea, temperatures will all remain high. In Spain, Italy and the area between Adriatic and Black Sea, western Turkey and Maghreb, the accumulation of active temperatures will exceed the long-term average by +30/+40 GDD, in southern Ukraine and Moldova, and by as much as +50 GDD (>+20%). Italy – with the exception of northern areas, most of Ukraine and Hungary towards Greece – will experience more than the usual number of days with maximum temperature above 30°C. In southern Russia and Ukraine, and eastern Hungary, 1-3 days with maximum temperatures above 35°C will be recorded. Temperatures above 40°C are forecast locally in southern Spain, Portugal and Morocco. All these areas will experience heat waves lasting at least five days and even up to 10 days in some areas of Italy and Turkey. The warm weather in the south-east of the continent could have a harmful impact on spring barley, which is at the stage between flowering and grain filling.

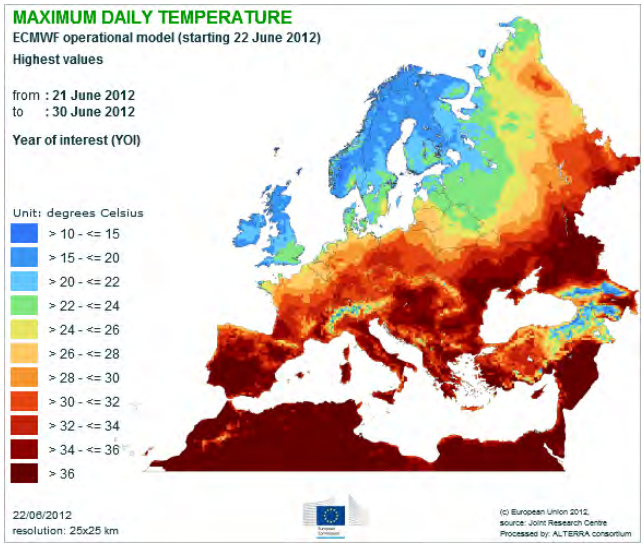
Forecast Precipitation

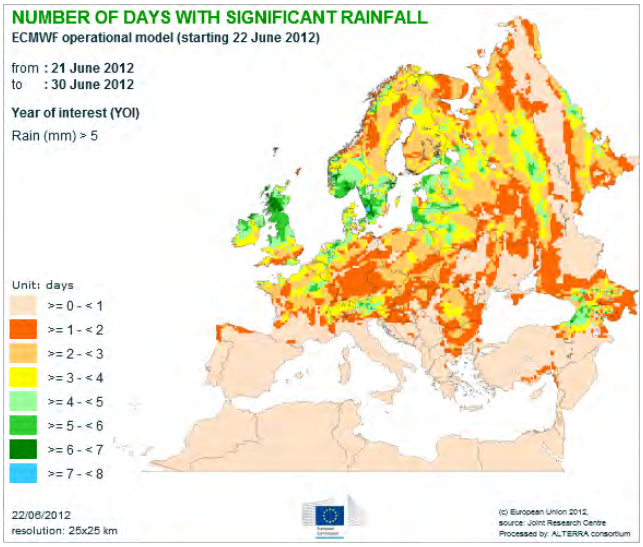
Abundant precipitation is forecast around the North Sea, mainly in United Kingdom, Ireland, southern Sweden and also the centre of Finland. The cumulated rainfall will exceed 60/80 mm, and local temporary excessive water levels are possible in these regions. The north of France, Denmark, north-eastern Poland, Belarus and some central areas in Russia will also receive amounts of rain that are higher than usual (by 20/30mm). In the above mentioned areas, as well in Benelux and across central Germany, total amounts of rain will be more than 40% above the long term average. Rain will be spread over 4-5 days, with maximum daily amounts of 10 mm across wide areas. The intense and abundant precipitation is likely to prevent the ripening of winter rapeseed.

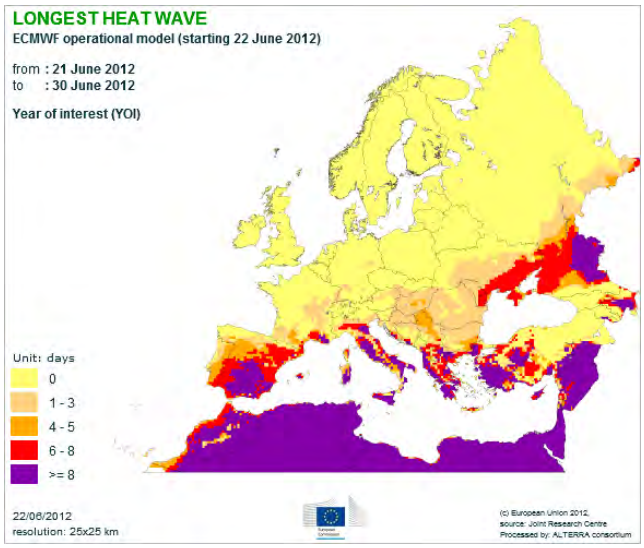
The warm weather conditions in south-eastern Europe, i.e. mainly western Romania and Italy, will be accompanied by scarce precipitation or the absence of rain. Very scarce rain is forecast in Ukraine, where the climatic water deficit will continue to worsen. The forecast is for -40/-50 mm in the period under review, as compared to the long-term average. These weather conditions will not be favourable for crop growth and the development cycle will be further shortened as a result.

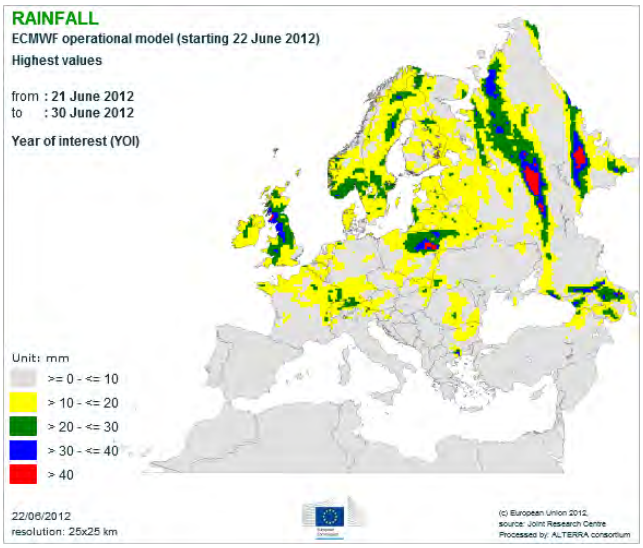





MAXIMUM DAILY TEMPERATURE
ECMWF operational model (starting 22 June 2012)
Highest values
from : 21 June 2012
to : 30 June 2012
Year of interest (YOI)
Unit: degrees Celsius
> 10 - <= 15
> 15 - <= 20
> 20 - <= 22
> 22 - <= 24
> 24 - <= 26
> 26 - <= 28
> 28 - <= 30
> 30 - <= 32
> 32 - <= 34
> 34 - <= 36
> 36
22/06/2012
resolution: 25x25 km
(c) European Union 2012,
source: Joint Research Centre
Processed by: ALTERRA consortium

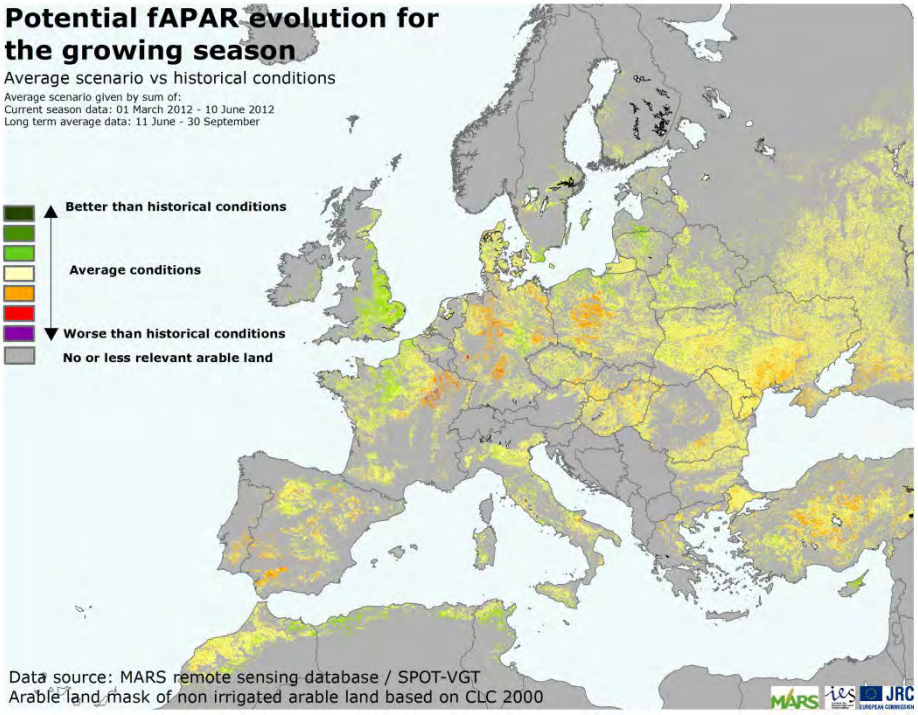

NUMBER OF DAYS WITH SIGNIFICANT RAINFALL
ECMWF operational model (starting 22 June 2012)
from : 21 June 2012
to : 30 June 2012
Year of interest (YOI)
Rain (mm) > 5
Unit: days
>= 0 - < 1
>= 1 - < 2
>= 2 - < 3
>= 3 - < 4
>= 4 - < 5
>= 5 - < 6
>= 6 - < 7
>= 7 - < 8
22/06/2012
resolution: 25x25 km
(c) European Union 2012,
source: Joint Research Centre
Processed by: ALTERRA consortium


LONGEST HEAT WAVE
ECMWF operational model (starting 22 June 2012)
from : 21 June 2012
to : 30 June 2012
Year of interest (YOI)
Unit: days
0
1 - 3
4 - 5
6 - 8
>= 8
22/06/2012
resolution: 25x25 km
(c) European Union 2012,
source: Joint Research Centre
Processed by: ALTERRA consortium


RAINFALL
ECMWF operational model (starting 22 June 2012)
Highest values
from : 21 June 2012
to : 30 June 2012
Year of interest (YOI)
Unit: mm
>= 0 - <= 10
> 10 - <= 20
> 20 - <= 30
> 30 - <= 40
> 40
22/06/2012
resolution: 25x25 km
(c) European Union 2012,
source: Joint Research Centre
Processed by: ALTERRA consortium

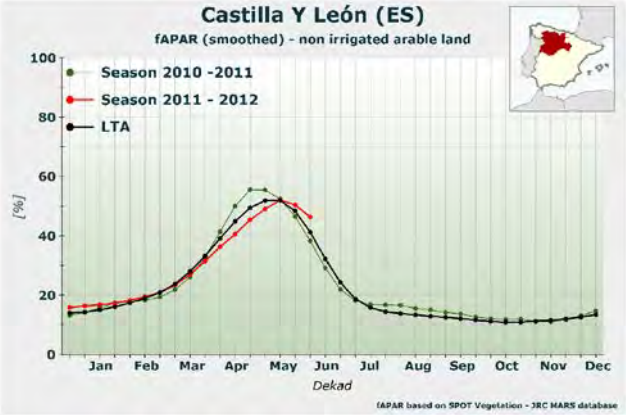
2. REMOTE SENSING — OBSERVED CANOPY CONDITIONS

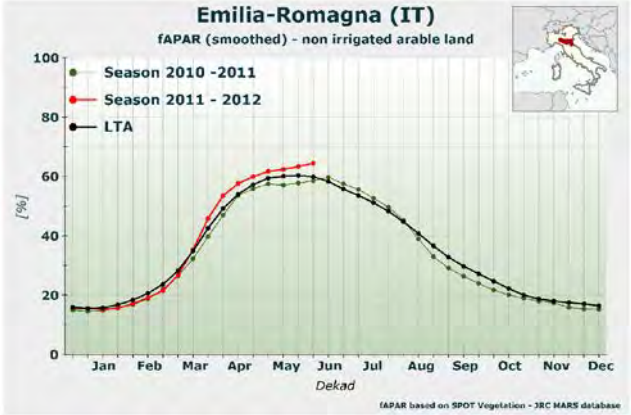
Dry in southern Ukraine are affecting crop development. The growth rate for spring and summer crops across Europe is only average.

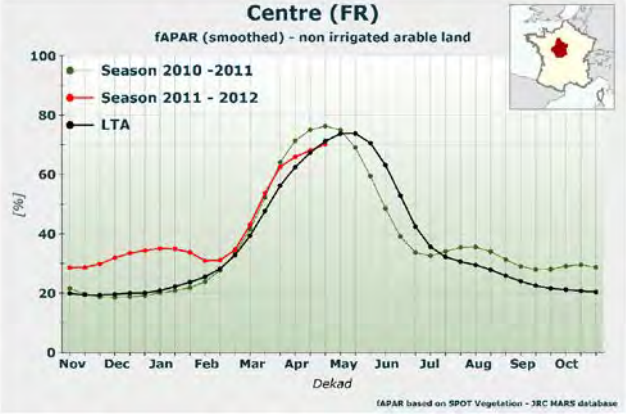


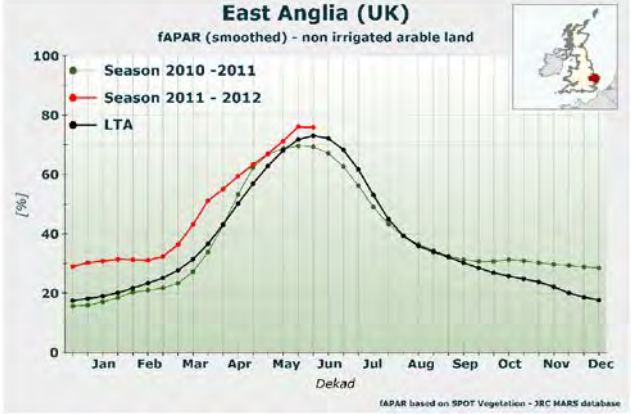
The map displays the global biomass accumulation until the end of the growing season, and therefore evaluates whether the on-going season is closer to normal values or to an extreme event. The cumulated fraction of absorbed photosynthetically active radiation (fAPAR) values for the end of the season were computed using the observed fAPAR values from March 1 2012 to June 10, and adding historical average fAPAR values from June 11 to September 30. The fAPAR cumulated values obtained were compared with the three historical series (minimum, maximum and average). In **southern Spain** and **Portugal,** the senescence of winter crops is almost complete. Conditions In the northern regions are around the average, with green biomass reaching the seasonal peak and senescence already starting in many regions (e.g. fAPAR graph for *Catalunia*). In **Italy,** the main arable lands in the Po plain have a biomass accumulation that is slightly positive compared to the average (e.g. *Emilia Romagna* fAPAR profile). Summer and spring crops in central regions of Italy received a boost in the recent weeks. In the southern regions of **France,** the development of summer crops is in line with the average. The fAPAR values for the northern regions are at or around the seasonal maximum values, which indicates that the flowering stages have been reached almost everywhere, as can be seen from the fAPAR graph for the *Centre* region. There has been a full recovery from the slowdown in the rate of growth in May, and overall biomass accumulation was likely to be above average. In the **United Kingdom,** the trend in crop development is similar to that described for northern France. Here, the low incoming radiation and the high precipitation levels of recent weeks have not affected the condition of the canopy, as the graph for the *East Anglia* region shows. In **Germany,** the trend of biomass is in line with that of the previous month, with suboptimal development being seen in western regions and average accumulation in the southern cropland. On the other hand, dry conditions in the eastern arable land could cause damage, even if canopy has not yet reacted to the water shortage, as the *Mecklenburg* fAPAR profile shows. A favourable trend in the spring crops canopy can be seen across **Central and Eastern Europe,** which is recovering from delays in many regions. In the agricultural plains on the border between **Bulgaria** and **Romania,** the abundant rainfall of recent weeks – coupled with good average temperatures – has given a boost to vegetation growth, as the fAPAR graphs of *Sud Muntenia* region (RO) show: the range of fAPAR values now tends to be well above the average. In **Ukraine,** the crop conditions are critical in the southern

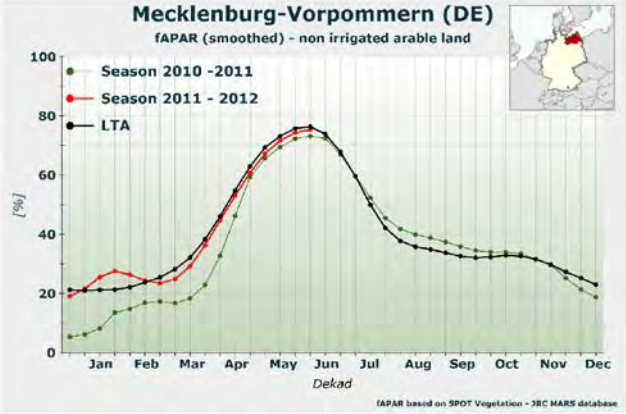
regions (e.g. *Mykolayivs'ka* fAPAR profile) due to the water scarcity, although they are close to the average for the rest of the country. The same applies in the case of **Russia's** cropland, with southern areas suffering from the lack of water (e.g. *Volgogradskaya* profile). In central **Turkey,** biomass accumulation is moving towards average values.

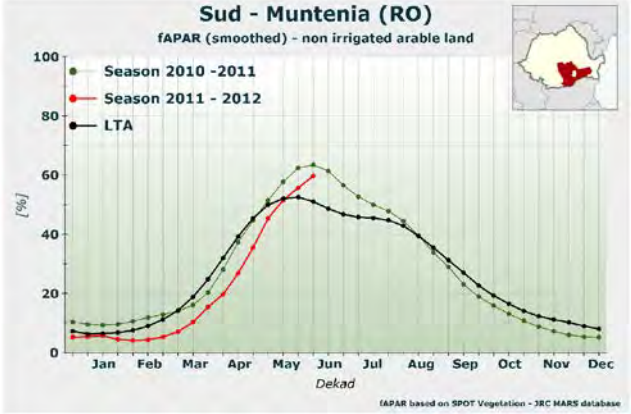


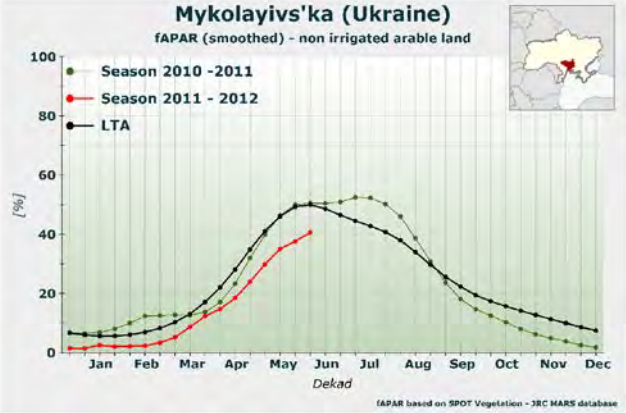












3. COUNTRY ANALYSIS

EUROPEAN UNION

Compared to our last Bulletin, there has been an increase in the forecast for total cereals, mainly as a result of the increase in the maize yield, with favourable growing conditions being observed in the main producing countries. At the same time, however, there is some concern about Bulgaria and Romania, where heat waves are forecast. Despite the increase in the soft wheat yield for France and Germany compared to the last Bulletin, there is likely to be a small decrease at EU 27 level, because forecasts for Spain have been lowered considerably (by more than 10%). Durum wheat yield is also down at EU 27 level, mainly as a result of a further 20 % decrease of the yield in Spain compared to the previous Bulletin. Total barley is lower at EU 27 level, due to a fall in spring barley forecasts mainly in Spain, and which is only partially offset by an overall higher yield for winter barley compared to the last Bulletin, as a result of yields being revised upwards for Germany and France. The EU 27 forecast for rye is increased, in line with the upwards revision of the forecast for Poland.

FRANCE – PROMISING OUTLOOK FOR WINTER CROPS

Abundant rainfall and higher temperatures during May and June set a promising scene for winter and spring cereals.

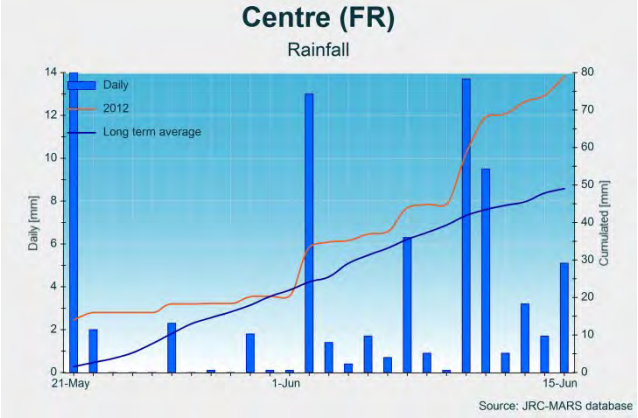
Meteorological conditions during the study period (May 15th to June 15th) have been beneficial for crops. Practically throughout the territory, cumulated rainfall slightly exceeded the seasonal values, with *Rhone-Alps*, *Centre*, *Auvergne* and *Limousin* being the regions having the highest precipitation rates. Moreover, average daily temperatures were 1 - 2 °C higher than average, presenting a fairly favourable scenario for winter and spring cereals, which are currently at the grain filling stage.

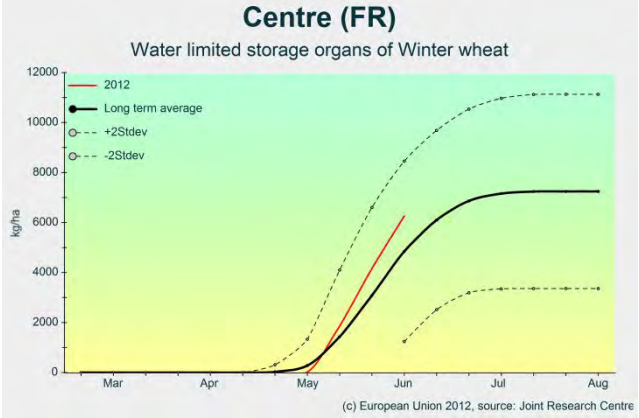
Consequently, the outlook for soft wheat is fairly positive. The agronomic indicators from crop models show an accumulation of biomass in the storage organs, which is significantly higher than average in the main producer regions. The amount of rainfall during grain formation has guaranteed an adequate water supply.

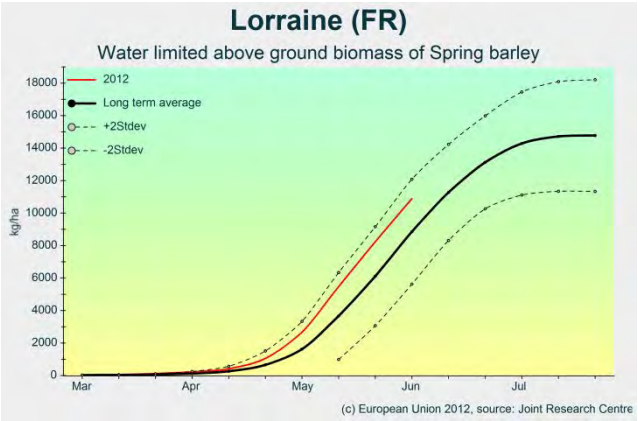
The scenario is also promising for spring barley, which is being grown on a record area this year, given that it was used in North East regions as a replacement for winter varieties after the frost kill in February.

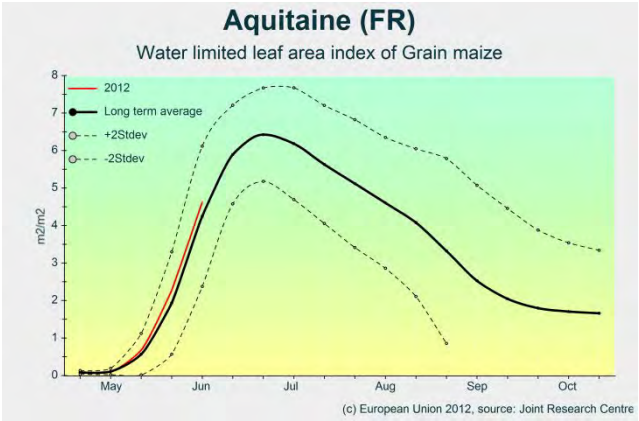
However, the final yield of cereals may still be considerably influenced by meteorological conditions (such as heavy rainfall events or extreme temperatures) around maturity and harvest. This means that the weather between the end of June and July will be critical in terms of confirming the positive developments observed so far.

Sunflower and maize are currently in the vegetative development phase, with leaf area production close to seasonal values for both crops. As a result of recent rain, water constraints are less likely in the weeks to come, and therefore conditions should be favourable for flowering to start.









GERMANY – AVERAGE GROWTH CONDITIONS BUT STILL LOW SOIL MOISTURE IN NORTH AND EAST

Demand for water for winter crops can be satisfied in most regions, as a result of the rainfall received, with the exception of north and east Germany. The drought is most pronounced in Mecklenburg-Vorpommern. Although forecasts generally have been revised up slightly, winter cereals – except for rye – are still below the 5-year average.

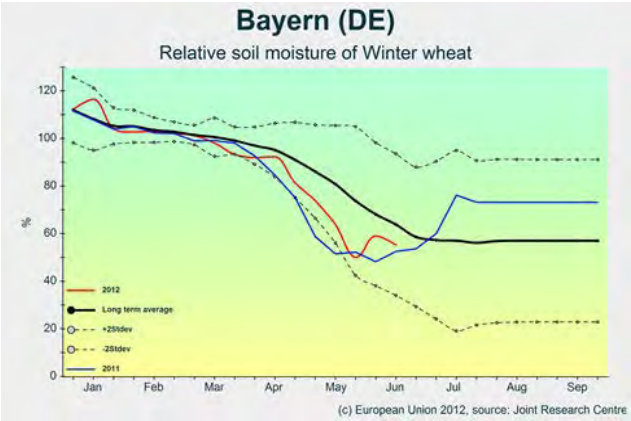
After temperature accumulation slowed down in mid-May, warmer weather returned for the last dekad of May in Germany, resulting in consistently high temperatures and favourable growth conditions. Temperatures even climbed above 30 degrees in Eastern Germany for one or two days, bringing summer conditions. Although some precipitation was recorded, the previously dry regions of *Mecklenburg-Vorpommern* and *Schleswig Holstein* received no rain. From the beginning of June, average temperatures fell significantly with the north (colder)/ south (warmer) gradient. Temperature accumulation stayed below the long-term average (at around –20% in northern and central Germany), slowing down crop growth, with maximum temperatures 4 – 6 degrees colder than the LTA. Also rainfall started to cross the country, with a clear surplus in the first dekad of June for *Nordrhein-Westfalen*, *Rheinland Pfalz* and *Saarland* as well as southern regions in *Hessen*, *Baden-Wuerttemberg* and *Bayern* with absolute values as high as 70 mm in 10 days in the region of *Tübingen*. This period happened to coincide with the flowering of winter wheat, and was also combined with fewer hours of sunshine, which may have reduced ear fertility. Once again, *Mecklenburg-Vorpommern* and northern *Brandenburg* remained dry. Here, the period from 1 March until 10 June has been the driest on record. The weather after 10 June remained variable, and temperatures in the south of country climbed steeply (to over 30°). Rainy days were recorded throughout the country, except, again, for *Mecklenburg Vorpommern*.

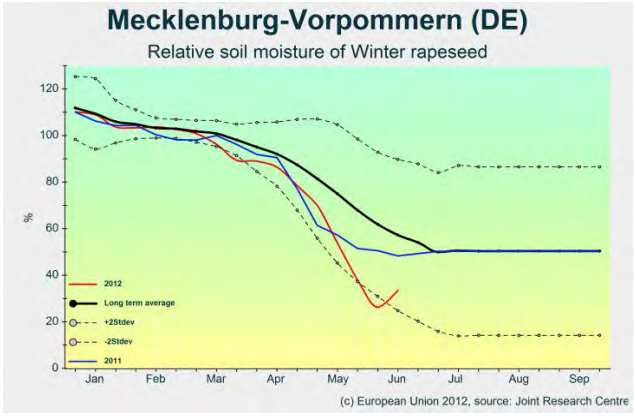
Winter wheat passed the flowering stage and is now at the grain filling stage, whereas in the most northerly

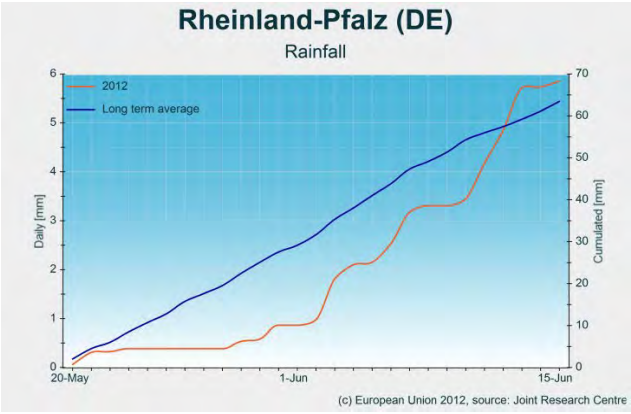
parts of the country the model simulates flowering. Growth conditions have been satisfactory in the south , but were hampered by a serious water shortage in the north-east of the country. This is only partially reflected by a below average simulated accumulation of biomass. The forecast for winter wheat has been slightly increased.

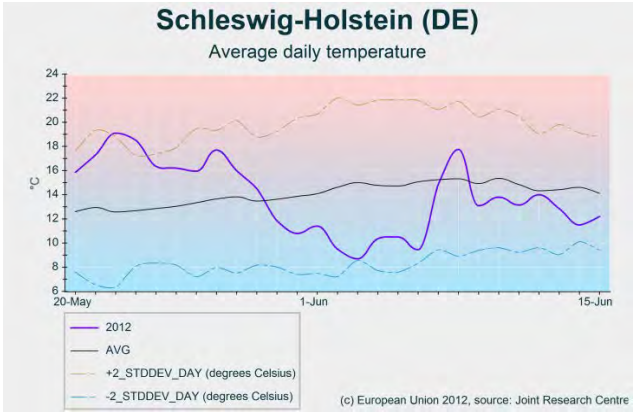
Rape seed is mostly at the ripening stage, being slightly advanced throughout the country. Large amounts of rainfall during flowering were recorded in *Rheinland Pfalz*. In general, high values of water limited storage organs are simulated with the exception of *Unterfranken*, *Mittelfranken* and *Hessen,* where values are closer to the average level of simulation. The yield forecast has been revised upwards and the forecast is now based on the simulated storage organ weight.

Grain maize is at the vegetative stage; the low temperatures have slowed growth and very little biomass accumulation has been observed so far, i.e. no deviation from the long term average. So far, the full yield potential is being maintained.









POLAND – FAVOURABLE WEATHER FOR SPRING CROPS

Soil moisture has recovered in the west, but more rain is needed in some areas. The outlook is positive for winter crops in eastern areas and for spring crops across the whole country.

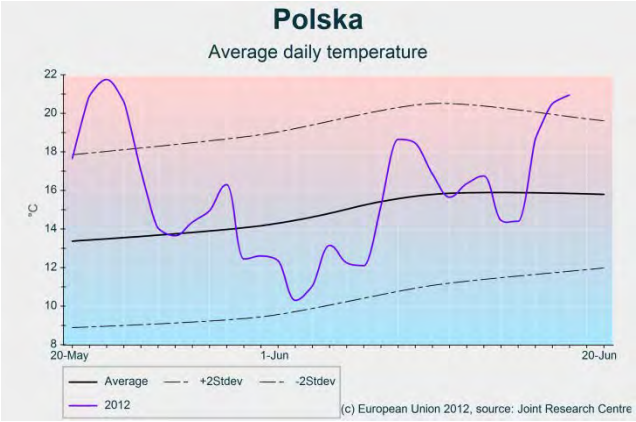
The period under review (May 20 - June 15) started with high temperatures, followed by a cold spell between May 30 and June 6. The end of the observation period was in the seasonal thermal range. Western areas recorded one or two days with a maximum temperature above 30°C. The accumulation of active temperatures (Tbase = 0°C) was seasonal; crop development slowed down slightly towards the end of the period.

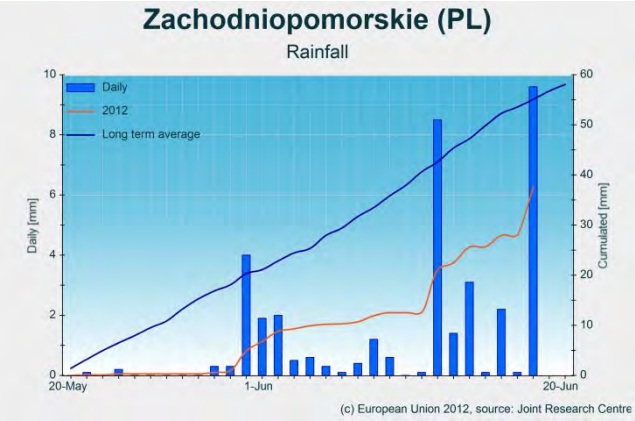
After scant rainfall, mainly in the north-west and the west in May, June started with beneficial and well distributed amounts of rainfall. Within two weeks most of the country recorded a slight surplus of cumulated rainfall, compared to the long-term average. The exception was north-western Poland, mainly *Zachodniopomorskie*, where the rainfall deficit was as high as 40%.

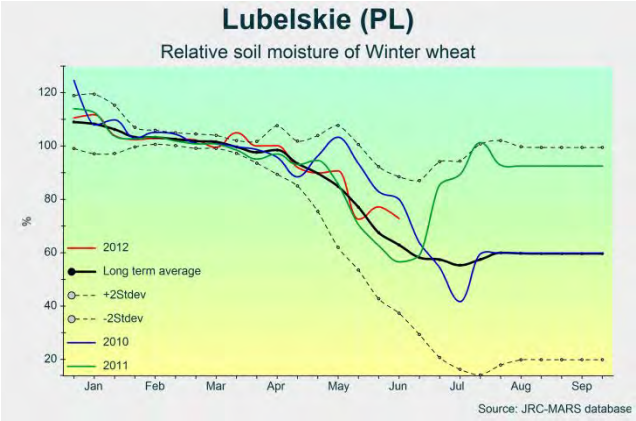
Winter wheat started grain filling in the south and is flowering in the north few days in advance compared to LTA. Winter rapeseed in the south-west is ripening, whereas in the other regions it is finishing grain filling and starting to ripen. Water limited storage organs accumulation is above LTA and the last two years. Spring barley is flowering throughout the country. Soil moisture has recovered in western areas, which received more rain, thereby benefiting crop yields. Rye is filling grains in most of the country and has started ripening in some places throughout the west and south slightly in advance. Weather conditions were favourable for storage organ accumulation. Grain maize and sugar beet are in vegetative development.

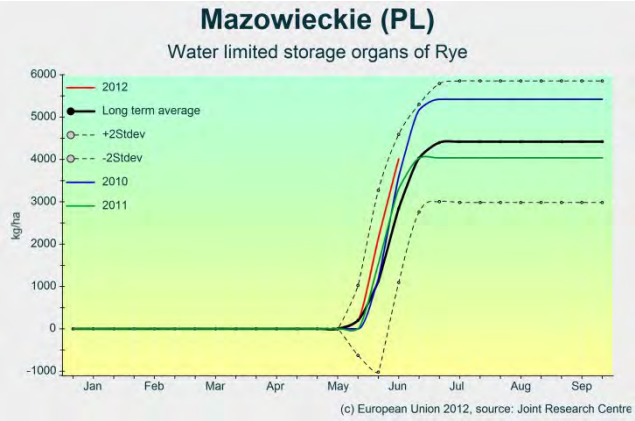
Model outputs point to a forecast of a good yield for all crops, although yield forecasts for soft wheat and rapeseed have not been increased due to the adverse impact of abnormal winter weather conditions on winter crops (except rye). More than 30% of the acreage was re-sown into spring varieties and other crops. In *Kujawsko-Pomorskie, Lodzkie, Wielkopolskie* and *Lubuskie* the percentage actually doubled.

Remote sensing indicators (fAPAR) reached LTA values in the first ten-day period of June due to the favourable development of spring crops. Previous values were lower than average because of the rather poor growth of winter crops in the abovementioned regions.









UNITED KINGDOM AND IRELAND – WINTER CEREAL CROPS IN UK ARE DOING WELL DESPITE AN UNUSUAL YEAR, WHILE IN IRELAND THEY LACK SUNSHINE

Cereals in major regions of the UK are maintaining a higher-than-normal level of green biomass despite the tough weather conditions to which they have been subjected. However, disease pressure is expected to be high, given the continued rainfall, and the added uncertainty as to how it will be managed. In Ireland, the relative lack of sunshine throughout the season may be limiting the potential of winter crops.

Overall, the period from May 20th to June 15th has been characterized by a period of ten hot and relatively dry

days, followed by a much wetter 10-day period. The considerable amount of rainfall in Ireland has helped to bring cumulated rainfall levels back up since the beginning of the year, close to the long-term average. However, cumulated global radiation remains considerably below average, which may be the reason why the simulated potential leaf area index (LAI) for winter cereals is below average. In the UK, cumulated rainfall, temperatures and radiation are all above average. The crop growth model simulations point to winter crops being slightly in advance compared to normal conditions, and with the peak of potential LAI reaching higher values than normal in most of *England* (except for the South-West). The end of May provided an opportunity to carry out cloud-free remote sensing observations which confirmed an above-average peak in green biomass. The lush vegetation, in combination with considerable precipitation and the previous warm winter, is indicative of the strong pressure of disease on the winter crops. Since there have been many days of heavy rainfall, spraying against diseases is bound to be uneven from farm to farm, which may result in highly variable yields. Nevertheless, the yield outlook remains positive. Winter rapeseed appears to have had an extended flowering period that will lead to a spread in maturity dates, which will complicate the harvest. Flowering was dominated by rain, hampering pollination and further increasing the uncertainty of yields, despite favourable biomass accumulation. Potatoes and sugar beet, which are within the normal range of growth and development according to crop simulations, could benefit from more sunshine in this early phase

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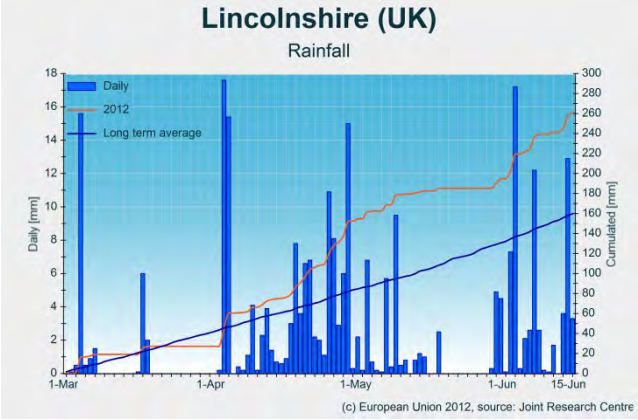
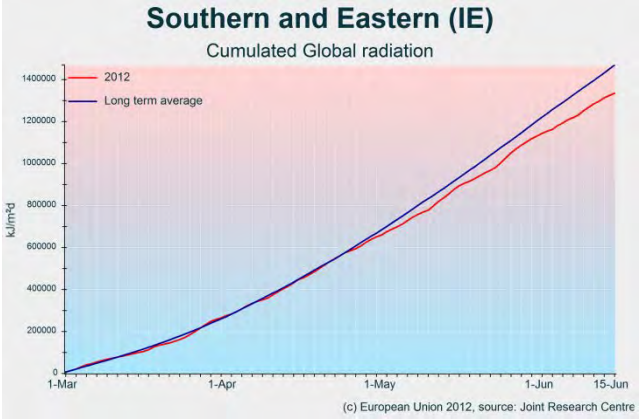
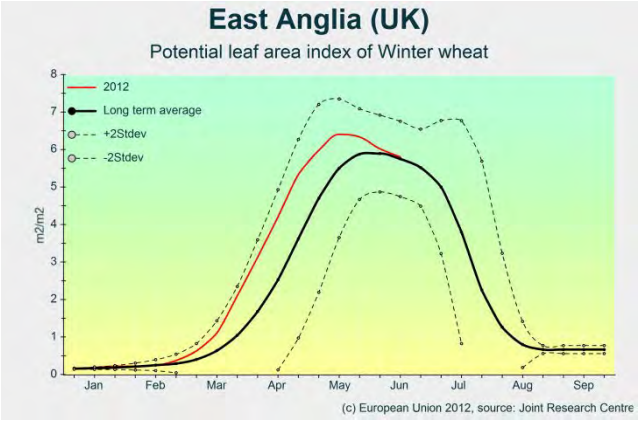
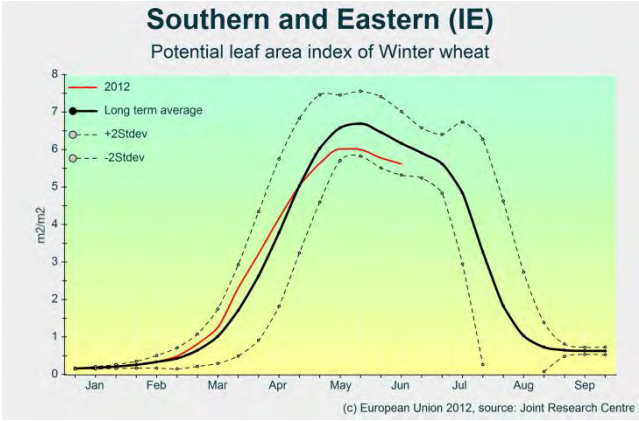








SPAIN AND PORTUGAL –NEGATIVE OUTLOOK DUE TO LACK OF RAIN

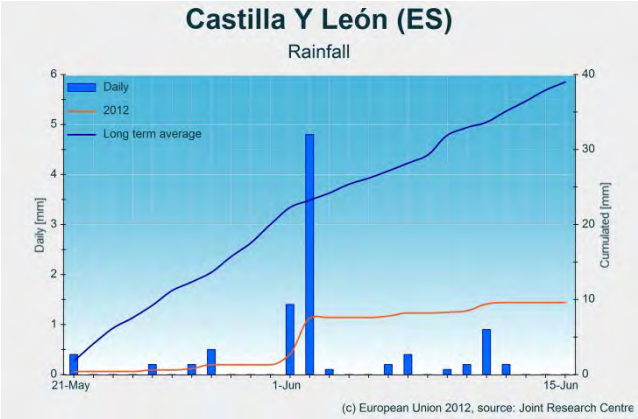
Dry conditions on the Iberian Peninsula persist during the first half of June, with no rainfall in most of the regions. This will adversely affect the yields of winter and spring crops.

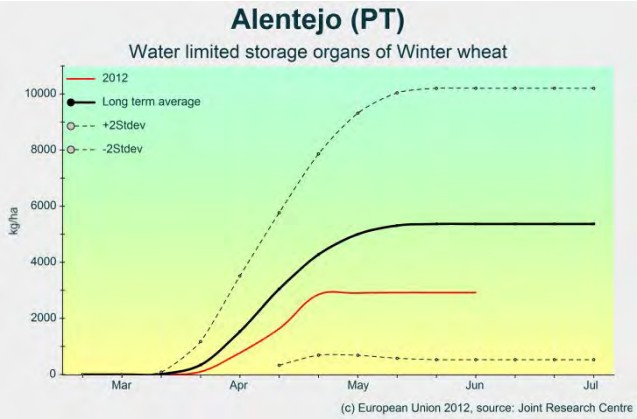
The lack of rainfall has been a constant feature in most of the regions from the second half of May to mid June. Winter cereals, which are currently between grain filling (*Castilla y Leon*) and maturity (*Andalucía*), suffered from these water constraints, which resulted in a reduction in their potential yield. Durum wheat is currently harvested

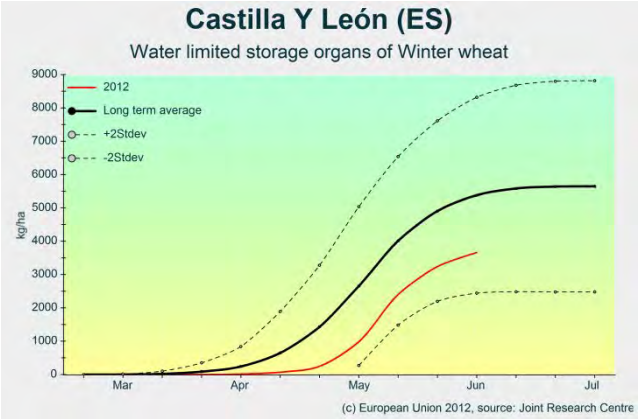
in *Andalucía*, and the expected yields, according to remote sensing and crop indicators, will be close to year 2005 – which was one of the lowest in the past decade. Similar conditions have been observed in *Alentejo*, the largest producer of winter cereals in Portugal, with low yields forecast for winter barley, soft wheat and triticale.

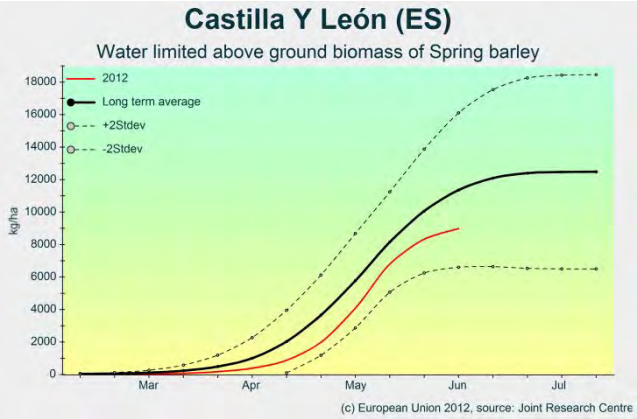
A fall in the soft wheat yield in Spain, compared to the average of the last five years, is also forecast. So far, the analysis of agronomic indicators suggests that the decrease will not be as dramatic as in the case of durum wheat. However, the crop is currently in the critical stage of grain filling, and the final yield will be determined by the meteorological conditions in the weeks ahead. Expectations for spring barley – which is currently in the flowering phase – point to yields that are close to the results in the 2010 and 2011 seasons, because dry conditions affect spring barley less than wheat.

Sunflowers are currently reaching the flowering stage, and the lack of rainfall – especially in the South – could affect the yield potential during the grain filling period which is due to start shortly. However, summer crops, continue to develop and no irrigation restrictions are planned in the coming month.







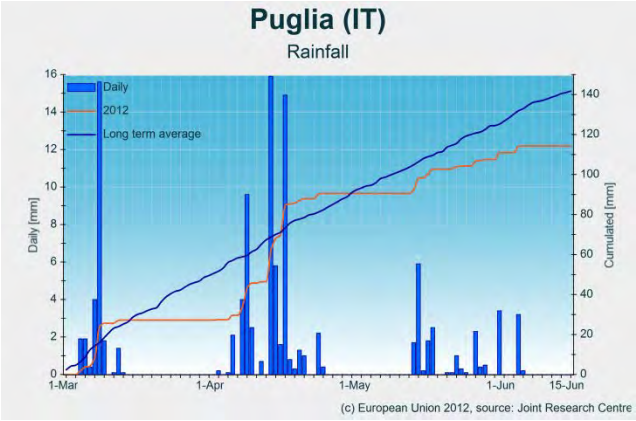


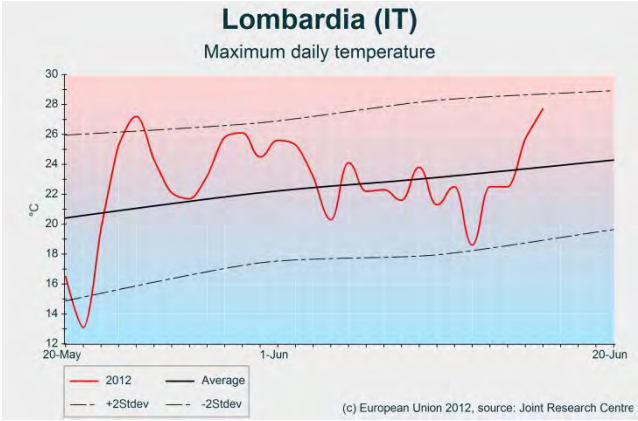
ITALY AND SLOVENIA – GOOD YIELD FORECAST FOR WINTER CROPS

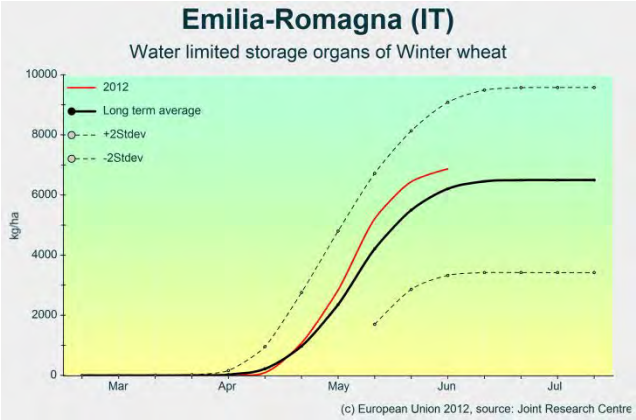
Yields are revised upwards for winter crops. The conditions for summer crops are also positive due to water storage and temperatures that are close to the seasonal values.

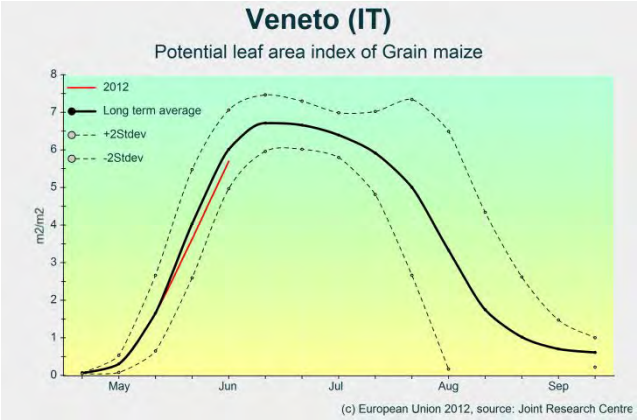
During the observation period, from 20 May until 15 June, the accumulation of active temperatures was recorded above the average. Maximum daily temperatures did not exceed 30 °C in most parts of northern Italy and Slovenia; temperatures close to 30 °C were recorded in southern Italy, but for a few days only. The rainfall accumulated during the observation period has been substantially lower (-80 %) than the long-term average in the East part of Italy (*Marche*, *Abruzzo*, *Puglia*) and below the LTA in *Sicily* and in *Emilia Romagna* (-30%). However, thanks to the previous plentiful water supply, winter crop yield will not be reduced, except in some areas of *Puglia,* where significant water stress is being observed. However, in central and eastern Italy,

rain is also needed in order to maintain the high yield potential for spring and summer crops. In northern Italy, *Toscana* and Slovenia, a good water supply has provided optimum conditions for grain filling in winter crops and the development of spring crops. Soft wheat and barley are at the end of the grain filling period in northern and central regions, and the crop growth model shows storage organ content above the average. In southern regions, the harvest of durum wheat has already started and, according to our models, the expectation of a satisfactory yield has been confirmed and there is even an expectation that the wheat quality will also be good. The forecast is slightly up for winter cereals, as the model now uses storage organ content as a predictor. Rapeseed has reached maturity and is being harvested. The stormy weather at flowering could affect expectations of a good yield, mainly in *Piemonte*. Grain maize development has been around the average or subject to a slight delay in north-east Italy. Yield forecasts are close to the average of recent years, but the weather conditions during the next month will be a determining factor. Sugar beet is now in the yield formation growth stage in almost all regions of production, heralding a good start to biomass accumulation and root enlargement in northern regions; however, the forecasts of high temperatures and lack of precipitation during the coming days, could create the risk of water stress especially in *Marche, Emilia Romagna* and *Veneto*.









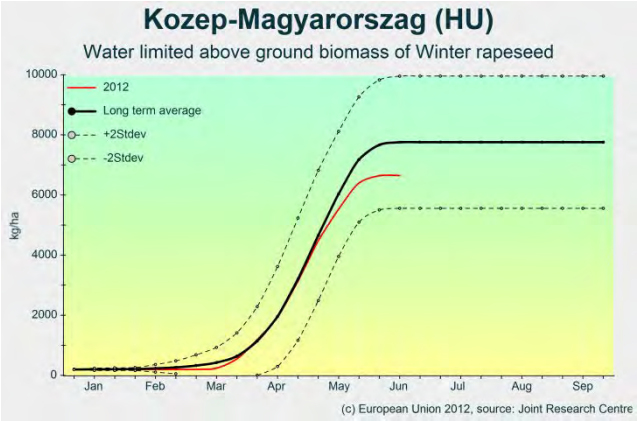
HUNGARY – MODERATE YIELD OUTLOOK FOR WINTER CROPS

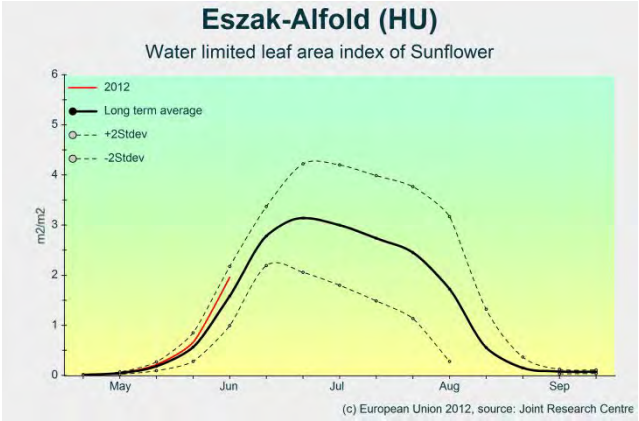
This period was characterised by near-normal thermal conditions and above-average irradiation. Rain in May was crucial to the partial recovery of winter cereals, keeping alive expectations of a moderate yield. Further rainfall and moderate temperatures are needed in order to keep the yield potential at its current level during the grain filling period of cereals. The main development of spring crops is at the seasonal average, with promising leaf area and biomass accumulation.

The period since 20 May has been characterized by highly fluctuating temperatures, resulting in average temperature accumulation. Although the phenological status of spring crops is seasonal, winter crops –

especially rapeseed – are showing an advanced development of one or two weeks, which was accumulated earlier in the season and maintained during the analysis period. Following the trend already discussed for the previous month, the cumulated rainfall followed its seasonal course and showed a moderate surplus which was above average in eastern and southern areas, and a deficiency in northern and western territories – predominantly in the *Nyugat-Dunántúl* and *Észak-Magyarország* regions, where the water shortage worsened. Precipitation arrived in the form of heavy showers, resulting in high precipitation intensities and accompanying storms and damaging hail locally.

The spatial variability in development and biomass accumulation is significant and much larger than usual. Soil moisture in areas under wheat, barley and rapeseed is normal along the southern border in *Dél-Dunántúl* and *Dél-Alföld* regions, but model simulations point to significant moisture deficits in northern parts of Hungary (i.e. 20-30% below average). Water limited biomass accumulation and leaf area index of winter wheat are lower than usual, leading to forecasts of moderate yield levels. Rapeseed was not only affected by a dry autumn and bad wintering; spring-time was also unfavourable. Consequently, low yields are forecast and production is expected to be low. A good yield potential is simulated for the first part of the sunflower and maize cycle.





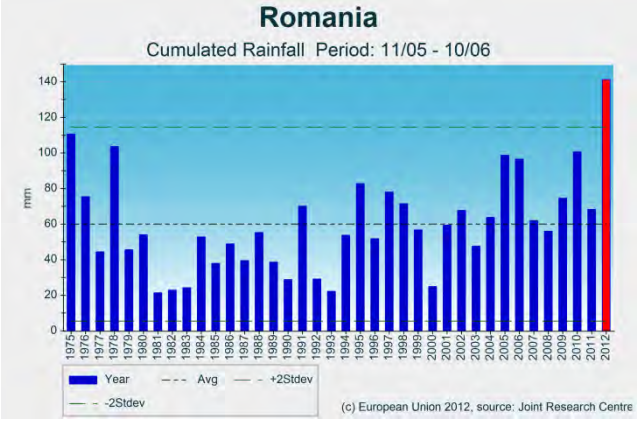
ROMANIA – TORRENTIAL RAINS

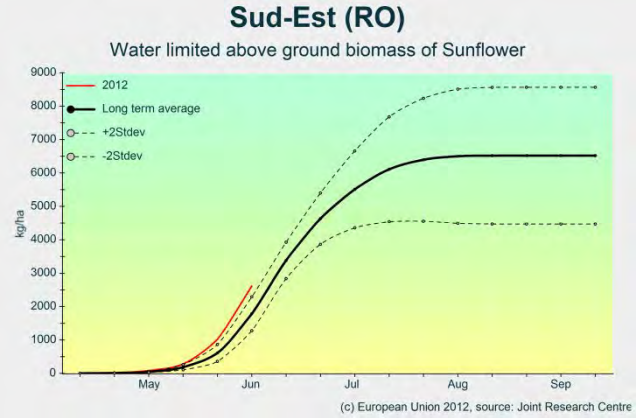
Agricultural areas in Romania received abundant precipitation from mid-May onwards. Cumulated rainfall exceeded the long-term average by between 50 and 300%. In June, hot days (Tmax>30°C) occurred more often than normal in South Romania, causing problems with the grain filling of winter wheat and barley. The warm, moist weather created conditions which were conducive to a range different plant diseases. A decrease in the grain quantity and quality for winter wheat and barley is expected.

Cumulated precipitation was generally higher than 80 mm during the period of analysis, with typical values of 100-150 mm, and even exceeding 200 mm in some places. A few limited areas with below-average rainfall along the south-western and north-eastern border of Romania were the exceptions. The abundant precipitation saturated the soil and provided good conditions for the growth of maize and sunflower, although the excess of water caused damage locally and led to the decay and destruction of crops. The wet soils also hampered access to fields and delayed spraying and weed treatment. The lack of adequate pest control increased the rate of fungal infections, which could create further problems.

Thermal conditions were below average in the last dekad of May, but improved considerably in June. Daily maximum temperatures frequently exceeded 30°C in the southern regions such as *Sud-Est*, *Sud-Muntenia* and *Marcoregiunea Patru* regions, resulting in periods of between 3 and 10 hot days in the first half of June, which created unfavourable conditions for those cereals which were in the grain-filling phenological stage.

Spring crops - primarily maize and sunflower - have well-developed dense canopies, indicating above-average biomass accumulation and a high yield potential. The crop development of sunflower, potato, spring barley, and winter wheat has occurred much earlier, while maize is at the seasonal average. The current yield forecast is less reliable than usual at this time of the year, because the distribution and patterns of precipitation have been so uncommon, that it is hard to find any other year in the statistical scenario analysis that was similar.



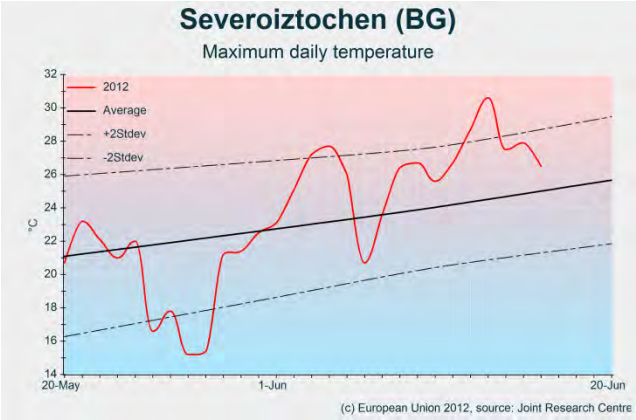


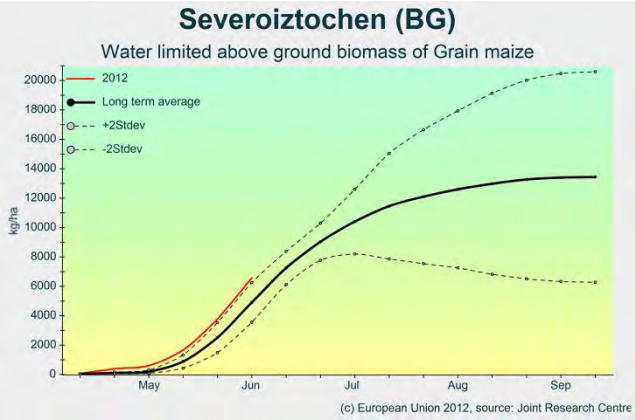
BULGARIA – WET SOILS PROVIDE GOOD CONDITIONS FOR CROP GROWTH

The period under review was very variable, with alternating periods of cold and heat. Due to the abundant May rainfall, the soil moisture content was replenished, providing favourable water supply conditions for spring crops. The outlook for rape-seed production is projected to be modest due to bad wintering. The expected winter wheat yield is likely to be moderately good, although somewhat below last year's result.

Significant falls in temperatures were recorded in Bulgaria in mid-May. Colder than usual thermal conditions were experienced everywhere in the country. In some cases, the daily mean temperatures remained approximately two standard deviations below the long term average. Plentiful precipitation did fall in the last two dekads of May. The precipitation patterns were patchy, but the cumulated rainfall mostly exceeded the average by 50-100 mm. With the exception of some small areas in North-Bulgaria, the soils became saturated. At the end of May, temperatures warmed up considerably and June saw the return of real summer weather conditions. Between 11 and 16 June, maximum temperatures rose to extreme levels, i.e. between +33 and +36°C. The precipitation tendency decreased, and only one to three days with significant rainfall were recorded until mid-June. During this drier spell, total precipitation was less than 50% of the normal climatological values.

Crop phenological development is generally seasonal, and just slightly early in the *Severoiztochen* and *Yugoiztochen* regions. The water limited biomass accumulation of sunflower and potato according to the model exceeds the usual level by more than 30%, and the simulated maize also seems to be quite fair in South and East-Bulgaria. The current forecast of the spring crops yield is very promising, as long as the favourable weather continues to keep the yield potential at this exceptional level. There is actually no single year in our data-base that features such an extraordinary crop growth and development situation.



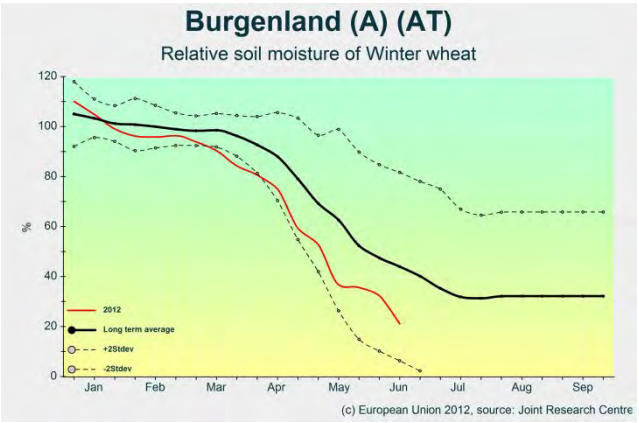


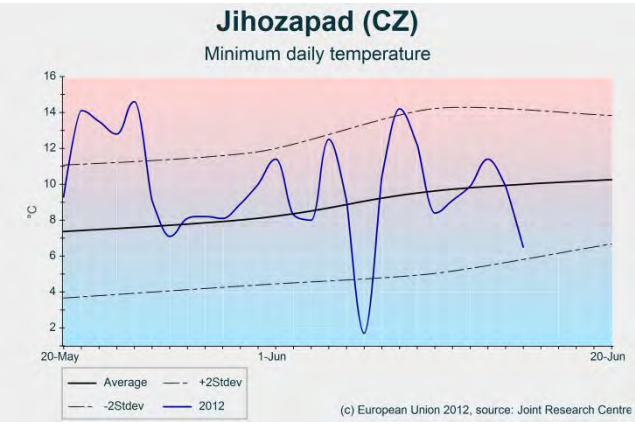
AUSTRIA, CZECH REPUBLIC AND SLOVAKIA – CONDITIONS UNTIL END OF MAY FOLLOWED BY SIGNIFICANT RAINFALL

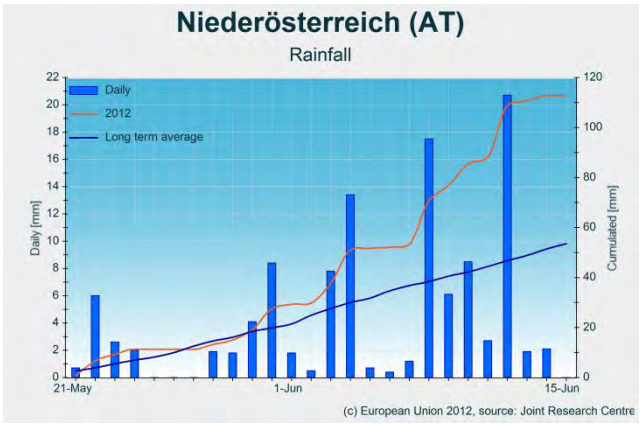
Persistent drought until the end of May created stressful conditions for winter crops at heading. Significant rainfall beginning in June alleviated water stress, but may have created environmental conditions conducive to fungal infections in winter cereals at the beginning of flowering. Winter crop forecasts are revised downwards, but are generally around the average. No change for spring crops.

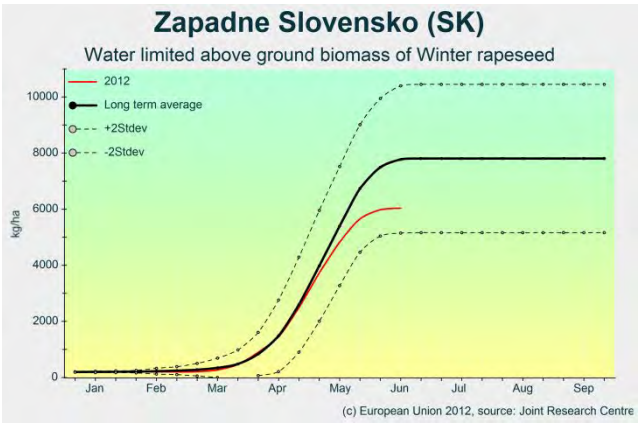
The last ten days of May were characterized by higher than normal temperatures: maxima were around twice the standard deviation values and the minima were even above this threshold. The period that followed was characterized by temperatures around the long-term average (LTA). As a consequence, cumulated active temperatures were slightly higher than LTA. The persistent drought conditions of recent months came to an end in late May, when the rain arrived. This rainfall partially replenished soil moisture and alleviated the stressful conditions for the winter crops during the delicate stage of flowering. At the same time, rainfall may have created environmental conditions that were conducive to fungal infections in winter cereals. This could be especially the case for Czech Republic and Austria, with the exception of the Burgenland region. This region and Slovakia received only very little rainfall, which was not sufficient to end water stress to crops, which could result in serious reductions in winter crop yields.

Crop yield forecasts have generally been revised slightly downwards due to the combination of high temperatures and drought conditions in the second half of May. Nevertheless, the rainfall received in the following period should have arrived in time to stabilize the yields around average. The drought conditions of the past months should not have affected spring crops, and no changes were made to their forecast yields.





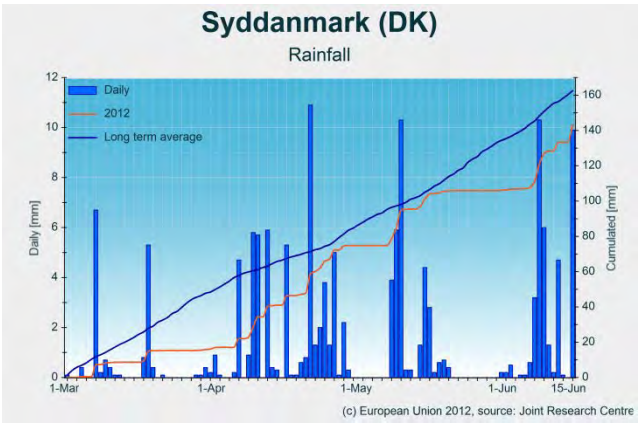


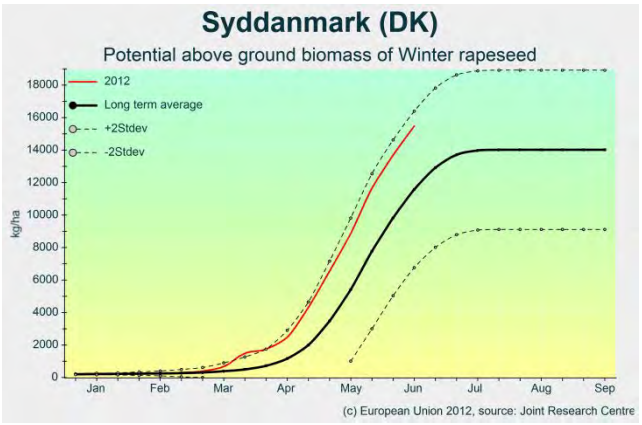


DENMARK AND SWEDEN – GOOD POTENTIAL SIMULATED FOR WINTER CROPS

Yields for rapeseed are revised upwards. Good conditions for spring crops offer potentially positive yield prospects, but drier conditions are needed for good grain filling and ripening.

Wet conditions and temperatures below the long-term average (LTA) were recorded during the first half of June. In this period, rainfall was more than 80 % above LTA in Denmark, and more than 100% above LTA in most of Sweden, mainly in *Östra Mellansverige*. However, during the entire observation period from May 20th until June 15th, cumulated active temperatures (Tbase = 0^{o}C) were higher than the average in Denmark and Sweden, and winter crop development stages are slightly ahead in Denmark and in *Södra Sverige*. Winter crop growing conditions have remained favourable, thereby ensuring an above-average accumulation of biomass. Wheat and barley are beginning the grain filling period, and drier conditions are needed in order to maintain positive forecasts. According to our model, rapeseed shows above-average storage organ accumulation; plus, the delicate period of flowering arrived before the rain, mainly in *Syddanmark.* Therefore, the yield forecast for rapeseed has been revised up slightly. Spring barley is at the heading stage in Sweden and northern Denmark, while flowering is starting in *Syddanmark and Sjaelland,* with growth conditions around the average of recent years. The growth conditions seem to favour potato and sugar beet, but it is still too early to anticipate any deviations from the statistical trend.





FINLAND AND BALTIC STATES – INTENSIVE CANOPY DEVELOPMENT CAN RESULT IN GOOD YIELD FORMATION

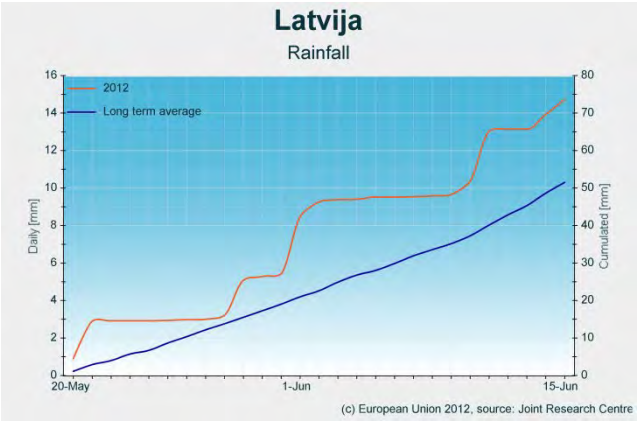
Temperature accumulation close to average, supplemented by higher than usual rainfall, promotes very good canopy development and a further increase in forecast yield.

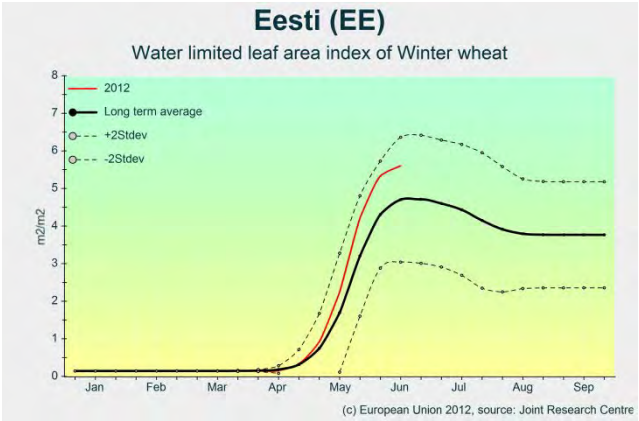
The period from the end of May until the end of the first week of June was characterised by temperatures below the long-term average (LTA), lowering accumulated temperatures (Tbase = 0°C) just at the average for all countries except Lithuania, with a somewhat higher temperature accumulation from the beginning of the season to the present. This cold spell slowed down the intensive crop growth for a while. The higher than usual accumulation of rainfall is a feature of the region, particularly in Estonia and Latvia. The total amount of rainfall from the beginning of the year in Estonia is around 50% higher than LTA value and is the highest in our historical series that dates back to 1975.

Winter crops are still growing well and there is a higher than usual canopy density and a vastly increased leaf area index (LAI). The above-mentioned situation is confirmed by our crop model, as well as by a higher than usual fraction of absorbed photosynthetically active radiation (fAPAR) as observed via remote sensing. Proper plant protection will be important in order to maintain the increased leaf area in good condition.

The stage of development of winter cereals is about average. They are about to start flowering in the southern part of the region. The development of spring cereals is still very early in the season, with tilling in the northern part and heading in the southern part of the region. The weather conditions and the very good canopy development have resulted in improved yield forecasts.

The yield forecasts for all crops are now based on the output of the crop growth model. A further increase in the yield forecast is expected later in the season, if similar conditions prevail during the next few weeks when yield formation will take place.





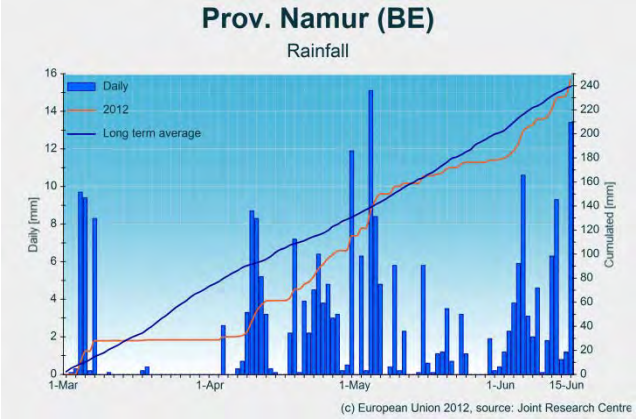
BELGIUM, THE NETHERLANDS AND LUXEMBURG – WET CONDITIONS PREVAIL

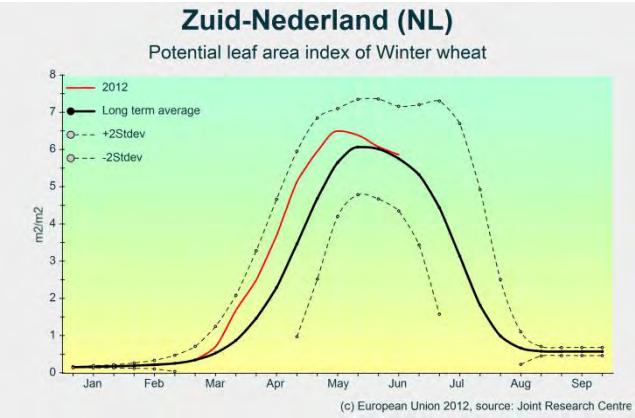
Except for a small window in May, rain is still dominating the weather in the Benelux countries, thereby hampering the beginning of maize and potato growth. Winter crops may expect favourable yields if drier weather settles in for grain-filling and ripening.

The period of analysis is characterised by the predominantly wet conditions that have prevailed since mid-April. Despite the high frequency of rainy days, the cumulated rainfall is close to the long-term average, since the current rainfall is compensating for the deficit that occurred in March (with the exception of Northern Netherlands, where cumulated rainfall is still below average). The last week of May did provide a window with little precipitation, and temperatures that were much warmer than average, giving a much-needed boost

to summer crops. The yield potential for potatoes and maize is already compromised by delayed and sub-optimal sowing, as a result of adverse weather conditions.

For now, the outlook for winter crops favours above average yields. In fact, simulations of these crops show a slight advance in development compared to normal years, along with higher green biomass. However, realizing this yield potential for cereals will require a grain-filling phase with more sun and less rain than the current conditions. For winter rapeseed, which is already transitioning from grain-filling to ripening in several areas, high yields may have been compromised by sub-optimal pollination due to higher-than-normal rainfall during the flowering phase.

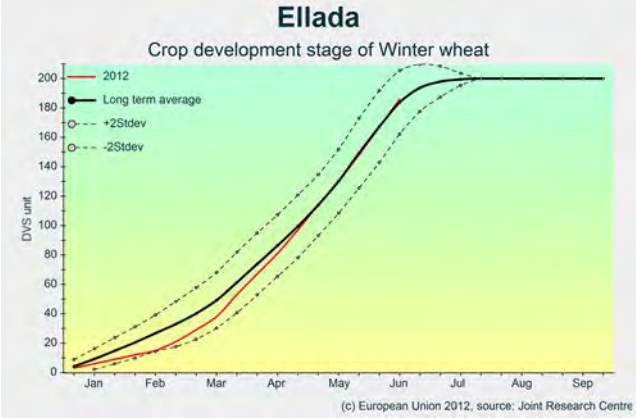


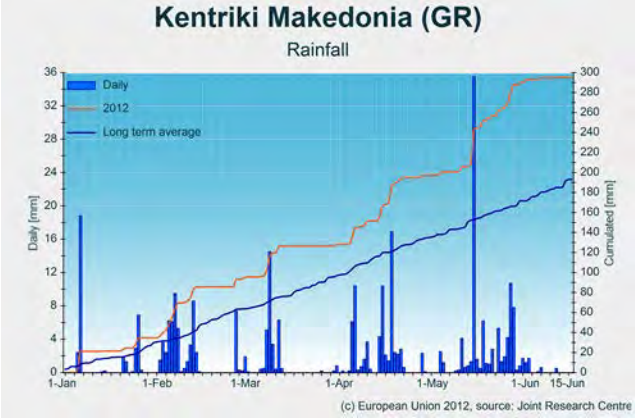


GREECE – GROWING CONDITIONS BACK TO NORMAL

Starting with dry weather conditions, the rainfall in recent months and high cumulated global radiation is now creating favourable growing conditions. This leads in turn to good yields of durum wheat, soft wheat and winter barley. The favourable seasonal start for spring crops ensures a good year.

The analysis period is characterised by ample rainfall and a favourable temperature regime, restoring the soil moisture content to its average level. The crops also benefit from the high levels of solar radiation. This is shown in the crop development stage recouped to long-term average values. The same situation appears in the barley-producing areas in the north (*Kentriki Makedonia*). Therefore, such a background suggests that the crop yields are likely to be average. In Cyprus, the fAPAR values are close to the long-term average, combined with plentiful rainfall, high temperatures and global radiation. Yields are expected to be close to the 5-year average.



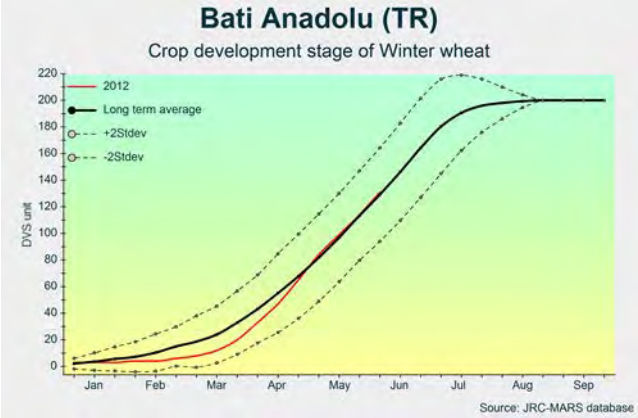


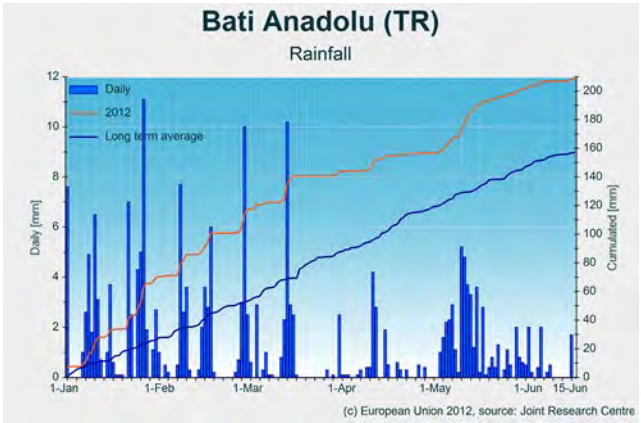
BLACK SEA AREA

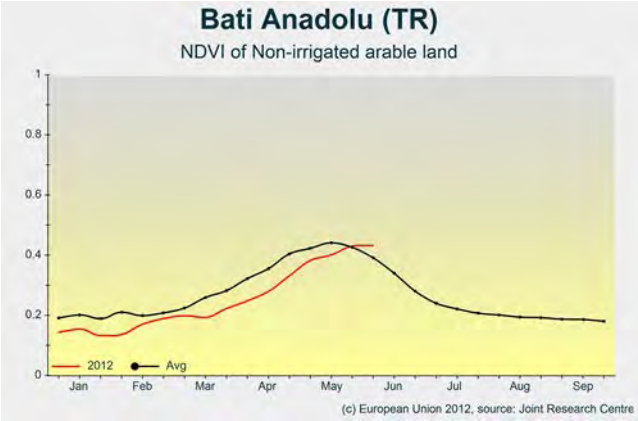
TURKEY – NORMAL CROP GROWTH ACHIEVED

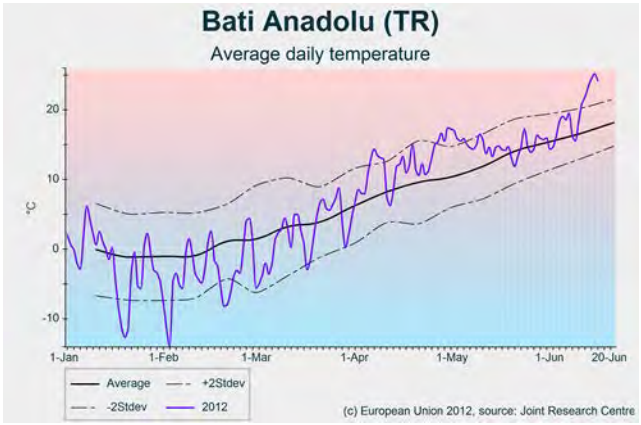
Yields are benefiting from the return of favourable temperatures and rainfall that is well above average. Given good biomass development of winter wheat and barley, yield forecasts for these crops are in line with the most recent forecasts. Maize yield, on the other hand, is expected to be average.

The current analysis period until June 15 sets favourable growth and development conditions for the crop in terms of cumulated rainfall, temperature regime and cumulated global radiation. Finally, cross-observed in NDVI values as well, especially in the main wheat-producing areas of the country (i.e. the central Anatolian regions), the forecast is expected to be close to the five-year average values. An average yield is anticipated for maize, as the prevailing weather conditions appear to be favourable.







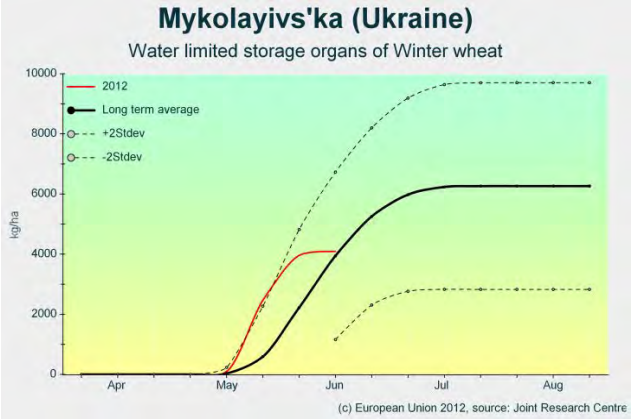


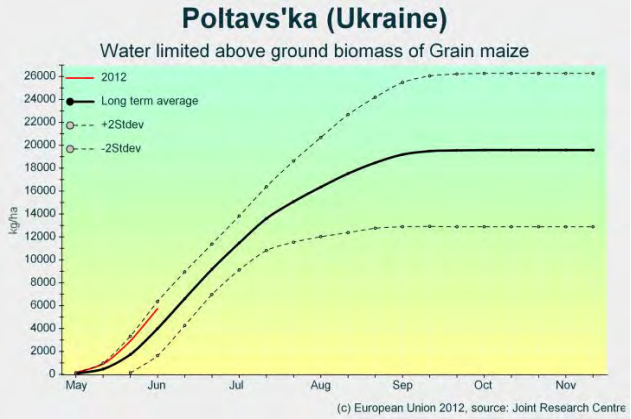
UKRAINE – HOT AND DRY IN THE SOUTH AND EAST, OVER WET SOILS IN THE WEST

Hot and dry conditions in the southern and eastern oblasts shorten the winter crop cycle, which can reduce yields and lower grain quality. Maize started promisingly, with expectations of high yields.

In the period under review, the air temperature was higher throughout the country, with two peaks in the third dekad of May and second dekad of June. The South-Eastern oblasts: *Mykolayivska*, *Kirovohradska* and *Dnipropetrovska* experienced a heat wave lasting a week, with temperatures above 30°C, which is not typical of this period of the season. The distribution of precipitation was mixed. Western oblasts received up to +30% more rain than the long-term average. Concurrently, the central part of the country was

suffering from a water shortage, due to precipitation levels that were 50% lower than usual. The hot and dry period in the central and eastern oblasts caused the relative soil moisture to fall to unusually low levels, while in the western oblasts, due to higher precipitation and close to average temperatures, soil moisture was higher than in the optimal conditions. In the main winter wheat areas, located in the central and southern oblasts, the crop cycle was shortened, which could have a negative impact on the yield. High temperature with low humidity could affect the formation of grains and can result in lower grain quality. Unfavourable weather conditions during the relevant period lead to a continuing difficult season for winter crops. Yield forecasts for wheat and barley are kept on the low side. Maize started the season in favourable conditions. The above ground biomass is 30-50% higher than the long term average, which promises a high yield this season.





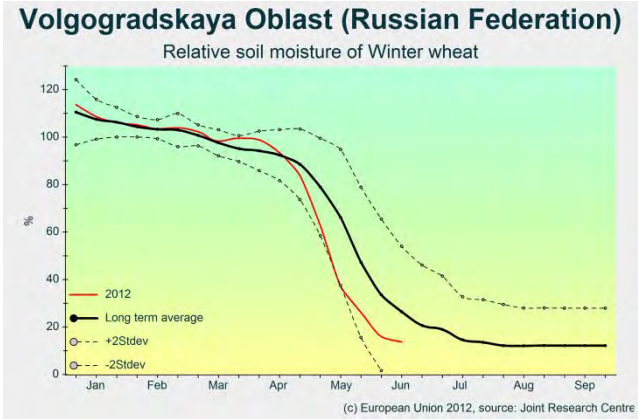
EUROPEAN RUSSIA AND BELARUS

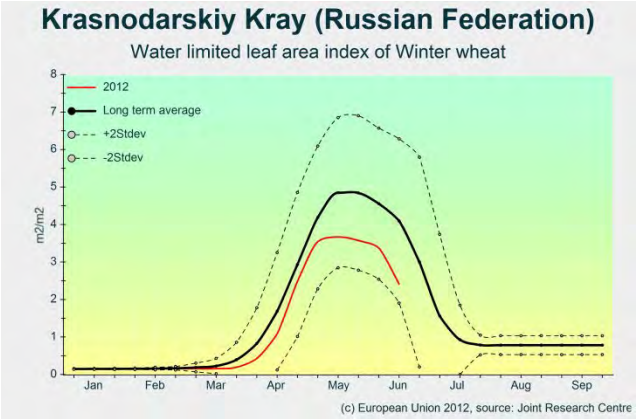
EUROPEAN RUSSIA – SERIOUS DROUGHT STRIKES MAIN WINTER WHEAT PRODUCING REGION IN THE SOUTH

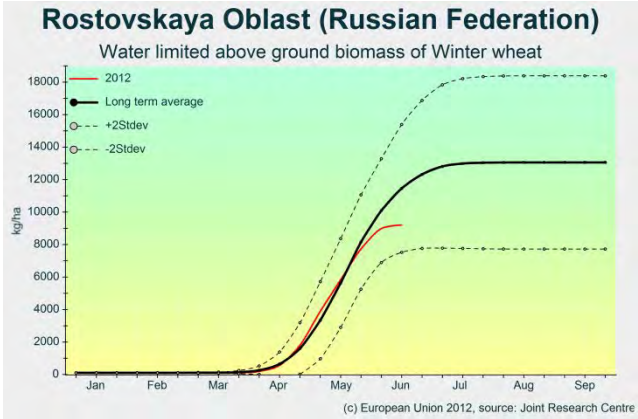
The long-lasting dry weather conditions of spring 2012, combined with above average temperatures, led to a serious deficiency of soil moisture in South-Russia. The water shortage affected the winter crops in the most sensitive growing period, lowering the yield potential in particular. Although precipitation arrived in the last dekad of May and in June, thereby easing the drought situation somewhat, primarily in the western side of the Southern district, there are still likely to be significant losses in yield. The crop development is seasonal, with good leaf area index and biomass accumulation in the northern territories.

South Russia has been experiencing an extremely warm and dry period since 1st April, which has led to a serious drought situation in the *Southern*, *Central*, and *Volga* district. This was characterised by a rapid and dramatic drying out of the soil due to the lack of precipitation and very high evapotranspiration. In mid-May the soil moisture content fell to critically low values during the flowering stage and first half of the grain filling stage of winter wheat. The very warm weather intensified the effect of water stress. In the last dekad of May the thermal conditions became more seasonal, but in June the temperatures once again exceeded the average. The phenological development is indicative of an advance of one to two weeks in the wide southern areas for both spring and winter crops. In the last dekad of May and in June, the rains finally came to the western part of the *Southern Federal District,* normalizing the situation here to some extent. The eastern regions remained dry. Most probably this precipitation arrived too late for winter crops to avoid significant yield losses, since there are no more changes for crop recovery. Nevertheless, any further decrease in yield potential was halted, and this

will also benefit spring crops. The drought led to a sharp decrease in biomass accumulation in *Rostovskaya* and *Volgogradskaya Oblasts,* as well as in *Kransnodarskiy* and *Stavropolskiy Krays,* which are among the biggest wheat producing districts of Russia. To a lesser extent the effect of water scarcity can be seen in the Central Black Earth Region, particularly in *Belgorodskaya*, *Voronezhskaya, Lipetskay* and *Tambovskaya,* as well as the *Saratovskaya Oblasts*. The reduced biomass and photosynthetic activity is easy to detect on the remote sensing images. In the northern regions the crop development is more or less normal, and wide areas from Moscow to St. Petersburg are achieving above average crop growth.







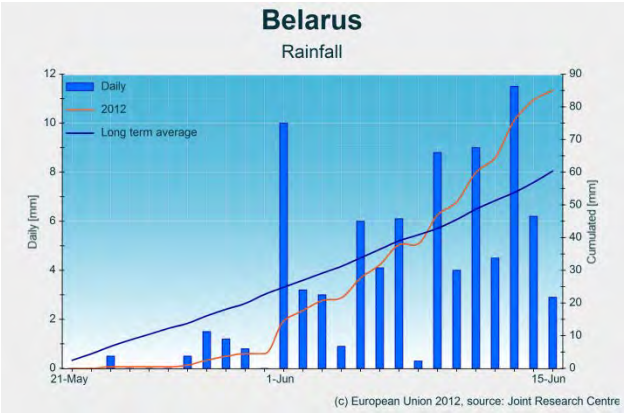
BELARUS – SEASONAL WEATHER AND AVERAGE YIELD OUTLOOK

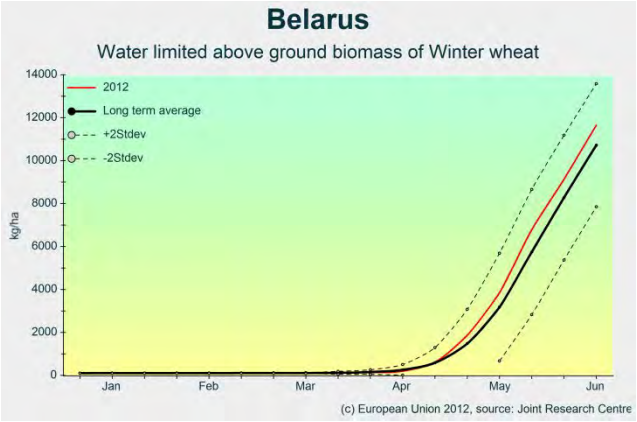
The weather from May 20 to June 15, which was characterised by normal temperature conditions and plentiful rain, provided ideal conditions for crop growth and development. The actual crop status is better than usual and consequently our yield forecast is slightly above the 5-year average. The analysis of remote sensing images confirms these moderately positive expectations.

Although the southern regions were slightly warmer, the northern areas were colder than average during the period under review. Temperatures fluctuated considerably. in the first days of June, in particular; it was also significantly colder than usual, as the minimum temperatures fell to +2- +4°C, although fortunately no frost was reported. The last dekad of May was dry with little or no rain (<5 mm) in the wide central areas, and with only some areas along the border experiencing 10-20 mm precipitation. The first half of June was rainy, compensating for the lower water income of the previous dekad. The precipitation pattern is indicative of a high spatial variability. The cumulated rainfall reached 50 mm everywhere, and exceeded 100 mm in some spots in the *Brest*, *Minsk* and *Mogilev* regions. The global radiation was mostly seasonal, although remaining below average in *Mogilev* and *Gomel* regions.

Soil moisture is higher than usual for all crops. The phenological development of spring barley and winter wheat is almost one week early in the southern regions,

whilst in the northern half of the country the precocity is also positive, but less so. Our model simulations point to above-average water limited biomass values and leaf area index values for all crops, but the advantages of this asset seems to be decreasing with time, so our yield outlook was revised downwards accordingly. The current yield forecast is based on the determination of most similar years, considering the main crop parameters modelled.



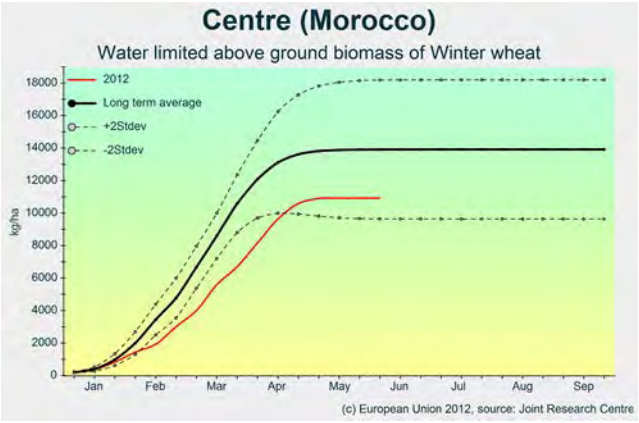


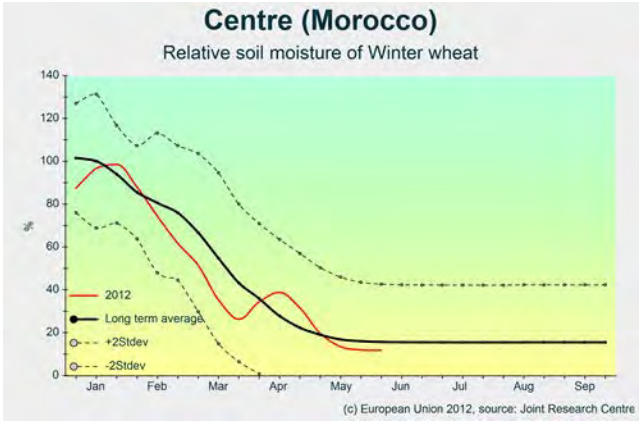
MAGHREB COUNTRIES

MOROCCO, ALGERIA AND TUNISIA – CROPS SLIGHTLY RECOVERED FROM DROUGHT

The yield forecast for soft and durum wheat in Morocco is still low compared to the five-year average. Barley also shows the same trend. In Tunisia and Algeria, on the other hand, wheat and barley yields are expected to be either close to or above the five-year average values.

The period analysed until 15 June shows improved biomass development, suggesting that the crops are slightly outside the drought stress that affected earlier stages of crop growth in Morocco. Better yield could have been anticipated if there had been more rainfall in recent months, which unfortunately was not the case. In view of the prevailing weather scenarios and crop performances, the forecast is still below the five-year average values for both wheat and barley. Conversely, good yields are anticipated by Algeria and Tunisia – especially Tunisia, which has yields well above the five-year average values.





4. CROP YIELD FORECASTS EU 27 AND NEIGHBOURING COUNTRIES

AGRI4CAST crop yield forecast at national level for EU-27 (22 June 2012)

Country	TOTAL WHEAT (t/ha)					SOFT WHEAT (t/ha)					DURUM WHEAT (t/ha)				
	2011	2012	Avg 5yrs	%12/11	%12/5yrs	2011	2012	Avg 5yrs	%12/11	%12/5yrs	2011	2012	Avg 5yrs	%12/11	%12/5yrs
EU27	5,35	5,32	5,31	-0,5	+0,3	5,59	5,60	5,57	+0,2	+0,5	3,20	2,99	3,14	-6,7	-4,9
AT	5,85	5,33	5,25	-9,0	+1,4	5,90	5,37	5,30	-8,9	+1,3	5,09	4,53	4,42	-11,0	+2,6
BE	8,14	8,77	8,60	+7,6	+2,0	8,14	8,77	8,60	+7,6	+2,0	-	-	-	-	-
BG	3,86	3,55	3,37	-7,9	+5,3	3,84	3,54	3,37	-7,9	+5,1	4,30	4,03	3,80	-6,3	+6,0
CY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CZ	5,78	5,34	5,34	-7,7	-0,1	5,78	5,34	5,34	-7,7	-0,1	-	-	-	-	-
DE	7,01	7,31	7,42	+4,2	-1,5	7,02	7,32	7,43	+4,2	-1,5	4,88	5,18	5,40	+5,9	-4,1
DK	6,52	7,31	7,12	+12,1	+2,6	6,52	7,31	7,12	+12,1	+2,6	-	-	-	-	-
EE	2,65	2,81	3,01	+5,8	-6,9	2,65	2,81	3,01	+5,8	-6,9	-	-	-	-	-
ES	3,46	2,52	3,21	-27,3	-21,6	3,70	2,85	3,46	-22,9	-17,6	2,48	1,20	2,45	-51,7	-51,2
FI	3,85	3,73	3,77	-3,2	-1,1	3,85	3,73	3,77	-3,2	-1,1	-	-	-	-	-
FR	6,66	7,22	6,87	+8,4	+5,1	6,81	7,42	7,05	+9,0	+5,3	4,84	4,89	4,85	+1,0	+0,8
GR	2,26	2,34	2,53	+3,6	-7,5	2,66	2,82	2,80	+6,1	+0,9	2,12	2,17	2,43	+2,5	-10,7
HU	4,21	3,85	4,07	-8,6	-5,6	4,21	3,85	4,08	-8,7	-5,6	4,04	3,82	3,81	-5,4	+0,4
IE	9,87	8,69	8,82	-11,9	-1,4	9,87	8,69	8,82	-11,9	-1,4	-	-	-	-	-
IT	3,84	3,89	3,67	+1,3	+5,9	5,33	5,42	5,16	+1,8	+5,2	3,17	3,14	3,01	-1,2	+4,2
LT	3,39	3,80	3,82	+11,9	-0,6	3,39	3,80	3,82	+11,9	-0,6	-	-	-	-	-
LU	5,54	6,14	6,07	+10,9	+1,3	5,54	6,14	6,07	+10,9	+1,3	-	-	-	-	-
LV	3,06	3,54	3,48	+15,6	+1,5	3,06	3,54	3,48	+15,6	+1,5	-	-	-	-	-
MT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NL	7,85	8,86	8,40	+12,8	+5,5	7,85	8,86	8,40	+12,8	+5,5	-	-	-	-	-
PL	4,14	3,91	4,05	-5,5	-3,5	4,14	3,91	4,05	-5,5	-3,5	-	-	-	-	-
PT	1,36	0,86	1,71	-37,1	-50,1	1,36	0,86	1,71	-37,1	-50,1	-	-	-	-	-
RO	3,63	2,89	2,76	-20,5	+4,7	3,63	2,89	2,76	-20,5	+4,7	-	-	-	-	-
SE	5,60	6,00	5,89	+7,0	+1,7	5,60	6,00	5,89	+7,0	+1,7	-	-	-	-	-
SI	5,17	4,88	4,52	-5,6	+7,9	5,17	4,88	4,52	-5,6	+7,9	-	-	-	-	-
SK	4,52	3,85	4,15	-14,9	-7,3	4,53	3,84	4,14	-15,2	-7,2	4,20	3,89	4,28	-7,2	-9,2
UK	7,75	8,16	7,76	+5,3	+5,2	7,75	8,16	7,76	+5,3	+5,2	-	-	-	-	-

Country	TOTAL BARLEY (t/ha)					SPRING BARLEY (t/ha)					WINTER BARLEY (t/ha)				
	2011	2012	Avg 5yrs	%12/11	%12/5yrs	2011	2012	Avg 5yrs	%12/11	%12/5yrs	2011	2012	Avg 5yrs	%12/11	%12/5yrs
EU27	4,31	4,41	4,36	+2,3	+1,1	3,86	4,04	3,83	+4,6	+5,5	5,00	5,06	5,14	+1,1	-1,7
AT	5,61	5,18	4,83	-7,6	+7,2	4,98	4,46	4,10	-10,5	+8,9	6,21	5,86	5,68	-5,6	+3,2
BE	8,32	8,53	8,33	+2,6	+2,4	-	-	-	-	-	8,32	8,53	8,33	+2,6	+2,4
BG	4,10	3,50	3,44	-14,8	+1,7	-	-	-	-	-	4,10	3,50	3,44	-14,8	+1,7
CY	1,49	1,13	1,34	-24,4	-15,8	-	-	-	-	-	1,49	1,13	1,34	-24,4	-15,8
CZ	4,51	4,32	4,31	-4,2	+0,2	4,43	4,15	4,15	-6,3	+0,0	4,72	4,76	4,72	+0,8	+0,8
DE	5,46	5,80	5,96	+6,1	-2,7	4,90	5,04	4,81	+3,0	+4,8	5,67	6,18	6,34	+9,1	-2,5
DK	5,43	5,29	5,19	-2,5	+2,0	5,38	5,19	5,04	-3,6	+2,9	5,60	5,91	5,68	+5,6	+4,1
EE	2,44	2,63	2,55	+7,5	+3,0	2,44	2,63	2,55	+7,5	+3,0	-	-	-	-	-
ES	2,98	2,80	3,03	-6,0	-7,8	3,01	2,87	3,11	-4,7	-7,9	2,79	2,40	2,66	-14,2	-9,9
FI	3,41	3,52	3,43	+3,5	+2,6	3,41	3,52	3,43	+3,5	+2,6	-	-	-	-	-
FR	5,68	6,44	6,25	+13,2	+2,9	5,04	6,32	5,94	+25,6	+6,5	5,98	6,54	6,38	+9,3	+2,4
GR	2,38	2,47	2,42	+3,9	+2,1	-	-	-	-	-	2,38	2,47	2,42	+3,9	+2,1
HU	3,84	3,66	3,63	-4,6	+0,8	3,46	3,48	3,18	+0,8	+9,7	4,08	3,76	3,93	-7,8	-4,3
IE	7,80	7,24	6,95	-7,2	+4,2	7,50	6,92	6,72	-7,7	+3,1	9,00	8,22	8,44	-8,7	-2,7
IT	3,64	3,64	3,59	-0,1	+1,2	-	-	-	-	-	3,64	3,64	3,59	-0,1	+1,2
LT	2,90	2,74	2,83	-5,4	-3,1	2,90	2,74	2,83	-5,4	-3,1	-	-	-	-	-
LU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LV	2,40	2,63	2,46	+9,5	+6,6	2,40	2,63	2,46	+9,5	+6,6	-	-	-	-	-
MT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NL	5,93	5,97	5,99	+0,6	-0,4	5,93	5,97	5,99	+0,6	-0,4	-	-	-	-	-
PL	3,27	3,25	3,22	-0,7	+0,7	3,13	3,16	3,07	+1,1	+3,0	3,75	3,55	3,95	-5,4	-10,2
PT	1,26	0,89	1,77	-29,7	-50,0	-	-	-	-	-	1,26	0,89	1,77	-29,7	-50,0
RO	3,35	2,79	2,53	-16,8	+10,1	2,35	2,36	1,87	+0,2	+25,7	3,91	3,02	2,94	-22,6	+3,0
SE	4,35	4,45	4,30	+2,3	+3,5	4,35	4,45	4,30	+2,3	+3,5	-	-	-	-	-
SI	4,54	4,34	4,00	-4,5	+8,4	-	-	-	-	-	4,54	4,34	4,00	-4,5	+8,4
SK	3,93	3,56	3,49	-9,5	+2,1	3,94	3,56	3,46	-9,8	+2,7	3,86	3,60	3,72	-6,9	-3,2
UK	5,66	5,81	5,76	+2,6	+1,0	5,39	5,41	5,38	+0,4	+0,7	6,13	6,51	6,35	+6,3	+2,6

Country	GRAIN MAIZE (t/ha)					RYE (t/ha)					TRITICALE (t/ha)				
	2011	2012	Avg 5yrs	%12/11	%12/5yrs	2011	2012	Avg 5yrs	%12/11	%12/5yrs	2011	2012	Avg 5yrs	%12/11	%12/5yrs
EU27	7,60	**7,38**	6,94	-2,8	+6,4	3,06	**3,20**	3,18	+4,7	+0,9	3,90	**3,82**	3,98	-2,0	-3,9
AT	11,30	**10,61**	10,43	-6,1	+1,7	4,40	**4,10**	3,98	-6,8	+3,0	5,00	**5,15**	5,13	+3,0	+0,5
BE	11,75	**12,30**	11,95	+4,7	+3,0	-	-	-	-	-	-	-	-	-	-
BG	5,19	**4,87**	4,26	-6,2	+14,3	2,10	**2,01**	1,86	-4,1	+8,4	3,09	**3,36**	3,01	+9,0	+11,7
CY	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
CZ	8,12	**7,73**	7,49	-4,8	+3,2	4,69	**4,71**	4,59	+0,5	+2,7	4,63	**4,15**	4,24	-10,3	-2,2
DE	10,62	**9,96**	9,68	-6,2	+2,9	4,11	**4,77**	4,70	+16,2	+1,5	5,24	**5,62**	5,67	+7,2	-0,9
DK	5,32	-	5,07*	-	-	5,12	**5,29**	5,00	+3,4	+5,8	5,12	**5,18**	5,01	+1,1	+3,3
EE	-	-	-	-	-	2,40	**2,58**	2,73	+7,1	-5,6	-	-	-	-	-
ES	10,47	**10,16**	10,21	-2,9	-0,5	2,46	**1,90**	2,12	-22,8	-10,5	2,51	**1,30**	2,46	-48,2	-47,2
FI	-	-	-	-	-	2,90	**2,76**	2,69	-4,8	+2,6	-	-	-	-	-
FR	10,19	**9,41**	9,33	-7,7	+0,9	4,50	**4,94**	4,78	+9,6	+3,2	5,08	**5,39**	5,20	+6,1	+3,7
GR	11,09	**11,32**	10,53	+2,1	+7,5	2,14	**2,07**	2,07	-3,2	-0,2	-	-	-	-	-
HU	6,60	**7,31**	6,16	+10,9	+18,6	2,33	**2,15**	2,19	-7,8	-1,7	3,44	**3,44**	3,24	+0,1	+6,3
IE	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IT	9,80	**9,46**	9,36	-3,5	+1,0	-	-	-	-	-	-	-	-	-	-
LT	-	-	-	-	-	2,02	**2,30**	2,34	+13,8	-1,4	2,51	**2,80**	2,78	+11,4	+0,4
LU	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
LV	-	-	-	-	-	2,35	**2,81**	2,91	+19,5	-3,4	2,28	**2,48**	2,55	+8,7	-3,0
MT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NL	11,52	**11,52**	11,52	-0,1	+0,0	-	-	-	-	-	-	-	-	-	-
PL	7,18	**6,51**	6,31	-9,3	+3,1	2,40	**2,40**	2,45	+0,0	-2,0	3,34	**3,02**	3,36	-9,4	-10,0
PT	7,91	**6,98**	6,73	-11,8	+3,7	0,85	**0,92**	0,94	+7,9	-2,9	0,93	**0,92**	1,42	-0,1	-34,8
RO	4,48	**4,41**	3,37	-1,5	+30,9	2,63	**2,40**	2,24	-9,0	+6,7	3,60	**3,01**	2,91	-16,5	+3,5
SE	-	-	-	-	-	5,31	**5,78**	5,57	+8,8	+3,7	4,44	**5,02**	4,88	+13,2	+3,0
SI	8,10	**8,28**	7,87	+2,2	+5,2	-	-	-	-	-	-	-	-	-	-
SK	7,15	**6,13**	6,38	-14,3	-3,9	3,10	**2,76**	2,77	-11,0	-0,5	-	-	-	-	-
UK	-	-	-	-	-	-	-	-	-	-	4,00	**4,22**	4,04	+5,5	+4,4

Country	RAPE AND TURNIP RAPE (t/ha)					POTATO (t/ha)				
	2011	2012	Avg 5yrs	%12/11	%12/5yrs	2011	2012	Avg 5yrs	%12/11	%12/5yrs
EU27	2,86	**2,87**	3,00	+0,4	-4,2	31,59	**29,91**	29,78	-5,3	+0,4
AT	3,35	**3,11**	3,12	-7,2	-0,4	34,05	**32,18**	31,96	-5,5	+0,7
BE	4,61	**4,06**	4,11	-11,9	-1,1	46,45	**45,36**	45,30	-2,3	+0,1
BG	2,37	**2,30**	2,29	-3,3	+0,0	14,34	**17,71**	15,73	+23,5	+12,6
CY	-	-	-	-	-	-	-	-	-	-
CZ	2,88	**2,89**	2,98	+0,1	-3,1	29,72	**26,53**	26,40	-10,7	+0,5
DE	2,91	**3,48**	3,66	+19,6	-4,8	46,00	**43,02**	43,28	-6,5	-0,6
DK	3,34	**3,66**	3,54	+9,5	+3,3	33,00	**39,38**	38,23	+19,3	+3,0
EE	1,52	**1,65**	1,55	+8,6	+6,4	-	-	-	-	-
ES	2,06	**1,80**	1,82	-12,7	-1,2	28,55	**29,94**	29,01	+4,9	+3,2
FI	1,44	**1,39**	1,39	-3,2	+0,1	25,20	**27,34**	26,24	+8,5	+4,2
FR	3,45	**3,35**	3,35	-3,0	+0,0	42,29	**42,30**	43,29	+0,0	-2,3
GR	2,37	-	2,49*	-	-	28,21	**26,96**	25,83	-4,4	+4,4
HU	2,24	**2,06**	2,29	-7,9	-10,2	26,37	**26,94**	24,51	+2,2	+9,9
IE	-	-	-	-	-	32,36	**34,05**	31,99	+5,2	+6,4
IT	2,58	**2,45**	2,28	-5,2	+7,5	25,63	**25,55**	25,12	-0,3	+1,7
LT	1,88	**1,93**	1,91	+2,4	+1,0	14,00	**14,04**	13,39	+0,3	+4,9
LU	-	-	-	-	-	-	-	-	-	-
LV	1,88	**2,10**	2,14	+11,6	-2,1	17,00	**15,73**	16,80	-7,5	-6,3
MT	-	-	-	-	-	-	-	-	-	-
NL	-	-	-	-	-	46,05	**44,84**	45,15	-2,6	-0,7
PL	2,26	**2,39**	2,69	+5,8	-11,1	20,47	**20,35**	19,62	-0,6	+3,7
PT	-	-	-	-	-	15,60	**15,49**	15,18	-0,7	+2,0
RO	1,98	**1,48**	1,59	-24,9	-6,8	17,20	**15,20**	14,90	-11,6	+2,0
SE	2,64	**2,79**	2,72	+5,6	+2,5	31,84	**31,19**	30,65	-2,0	+1,8
SI	-	-	-	-	-	-	-	-	-	-
SK	2,33	**2,15**	2,26	-7,8	-4,8	22,37	**17,41**	17,06	-22,2	+2,1
UK	3,91	**3,34**	3,49	-14,5	-4,3	42,30	**42,60**	42,61	+0,7	+0,0

Country	SUGAR BEETS (t/ha)					SUNFLOWER (t/ha)				
	2011	2012	Avg 5yrs	%12/11	%12/5yrs	2011	2012	Avg 5yrs	%12/11	%12/5yrs
EU27	68,80	**69,67**	67,33	+1,3	+3,5	1,97	**1,86**	1,79	-5,8	+3,7
AT	67,33	**69,52**	68,43	+3,2	+1,6	2,83	**2,69**	2,68	-4,9	+0,3
BE	75,63	**75,49**	75,25	-0,2	+0,3	-	-	-	-	-
BG	-	-	-	-	-	2,03	**1,99**	1,76	-2,0	+13,1
CY	-	-	-	-	-	-	-	-	-	-
CZ	59,51	**59,08**	56,46	-0,7	+4,6	2,54	**2,39**	2,33	-5,7	+2,8
DE	62,87	**65,62**	64,03	+4,4	+2,5	1,98	**2,30**	2,22	+15,8	+3,4
DK	60,10	**60,44**	57,49	+0,6	+5,1	-	-	-	-	-
EE	-	-	-	-	-	-	-	-	-	-
ES	88,80	**88,95**	80,43	+0,2	+10,6	1,20	**1,08**	1,18	-10,6	-8,9
FI	38,23	**38,24**	37,92	+0,0	+0,8	-	-	-	-	-
FR	91,24	**90,97**	87,65	-0,3	+3,8	2,54	**2,40**	2,46	-5,7	-2,6
GR	63,44	**65,26**	66,43	+2,9	-1,8	1,24	**1,31**	1,45	+5,6	-9,4
HU	51,40	**59,05**	52,81	+14,9	+11,8	2,39	**2,52**	2,29	+5,2	+10,0
IE	-	-	-	-	-	-	-	-	-	-
IT	53,75	**55,38**	55,32	+3,0	+0,1	2,35	**2,25**	2,24	-4,1	+0,5
LT	49,00	**49,12**	45,54	+0,2	+7,9	-	-	-	-	-
LU	-	-	-	-	-	-	-	-	-	-
LV	-	-	-	-	-	-	-	-	-	-
MT	-	-	-	-	-	-	-	-	-	-
NL	80,65	**77,32**	74,66	-4,1	+3,6	-	-	-	-	-
PL	50,64	**52,20**	50,35	+3,1	+3,7	-	-	-	-	-
PT	-	-	-	-	-	0,83	**0,57**	0,67	-31,7	-15,9
RO	34,61	**40,76**	34,38	+17,8	+18,6	1,87	**1,54**	1,39	-17,6	+10,8
SE	52,76	**52,77**	54,31	+0,0	-2,8	-	-	-	-	-
SI	-	-	-	-	-	-	-	-	-	-
SK	56,01	**55,63**	54,56	-0,7	+2,0	2,29	**2,24**	2,19	-2,4	+2,3
UK	65,00	**64,88**	62,28	-0,2	+4,2	-	-	-	-	-

*In the range of the 5-yrs (2006-2011) only 2011 and 2010 figures available for computation

Notes: Yields are forecast for crops with more than 10000 ha per country; figures are rounded to 100 kg

Sources: 2007-2012 data come from DG AGRICULTURE short term Outlook (dated May 2012), EUROSTAT Eurobase (last update: 05/06/2012) and EES (last update: 15/05/2012)
2012 yields come from MARS CROP YIELD FORECASTING SYSTEM (CGMS output up to 20/06/2012)

AGRI4CAST crop yield forecast at national level for Maghreb and Black Sea countries (22 June 2012)

Country	WHEAT (t/ha)					BARLEY (t/ha)					GRAIN MAIZE (t/ha)				
	2011	2012	Avg 5yrs	%12/11	%12/5yrs	2011	2012	Avg 5yrs	%12/11	%12/5yrs	2011	2012	Avg 5yrs	%12/11	%12/5yrs
BY	3,53	3,47	3,44	-1,6	+0,9	3,29	3,30	3,23	+0,4	+2,2	5,37	5,44	4,89	1,30	+11,3
DZ	1,47	1,44	1,39	-2,2	+3,5	1,23	1,18	1,26	-4,4	-7,0	-	-	-	-	-
MA	1,95	1,28	1,55	-34,3	-17,3	1,15	0,84	1,04	-27,3	-20,0	-	-	-	-	-
TN	1,57	2,03	1,58	+29,0	+28,0	1,94	2,06	1,33	+6,1	+55,3	-	-	-	-	-
TR	2,38	2,21	2,35	-7,0	-5,8	2,54	2,39	2,30	-6,0	+3,6	7,48	7,19	7,19	-3,90	+0,0
UA	3,22	2,51	3,00	-22,2	-16,5	2,34	2,18	2,23	-7,0	-2,5	4,85	5,00	4,60	3,00	+8,7

Notes: Yields are forecast for crops with more than 10000 ha per country; figures are rounded to 100 kg

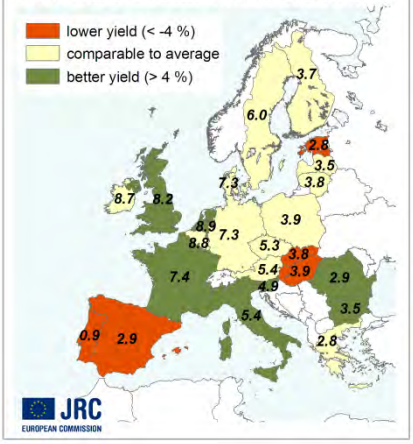
Sources: FAO database, INRA-Maroc

YIELD FORECAST MAPS FOR SELECTED CROPS

Soft wheat - yield forecast 2012

Actual yield versus average yield 2007- 2011

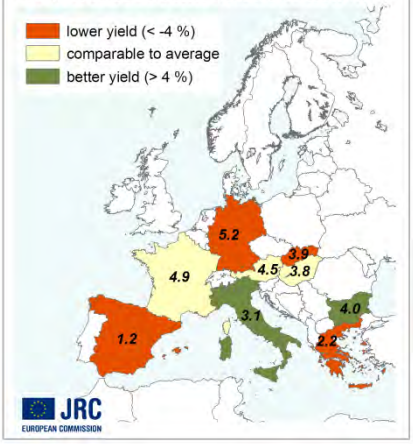
Yield figures 2012 are expressed in t/ha and rounded to 100 kg



Durum wheat - yield forecast 2012

Actual yield versus average yield 2007- 2011

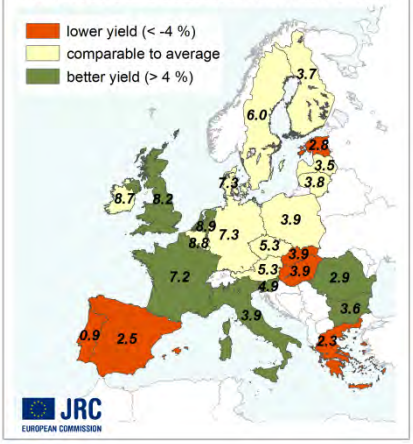
Yield figures 2012 are expressed in t/ha and rounded to 100 kg



Total wheat - yield forecast 2012

Actual yield versus average yield 2007- 2011

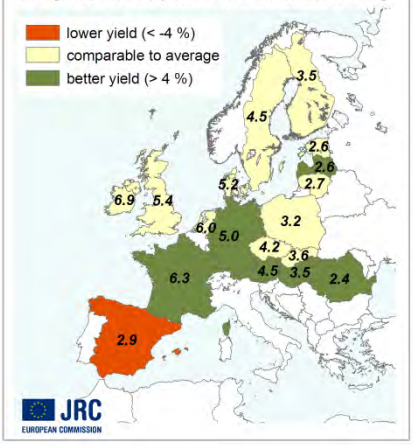
Yield figures 2012 are expressed in t/ha and rounded to 100 kg



Spring barley - yield forecast 2012

Actual yield versus average yield 2007- 2011

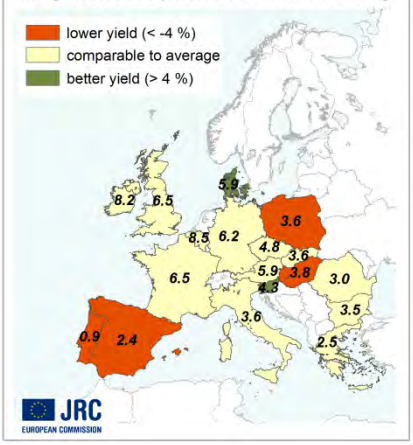
Yield figures 2012 are expressed in t/ha and rounded to 100 kg



Winter barley - yield forecast 2012

Actual yield versus average yield 2007- 2011

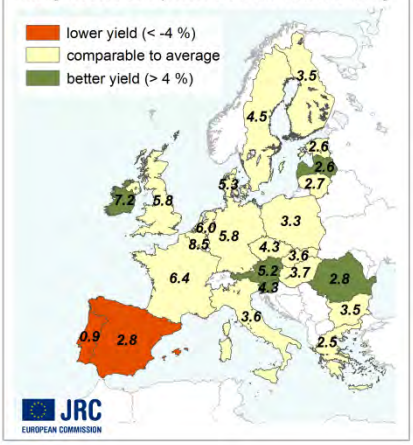
Yield figures 2012 are expressed in t/ha and rounded to 100 kg



Total barley - yield forecast 2012

Actual yield versus average yield 2007- 2011

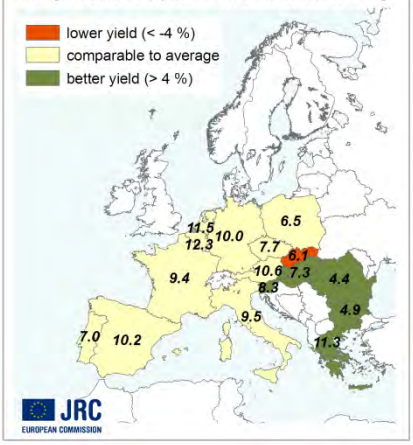
Yield figures 2012 are expressed in t/ha and rounded to 100 kg



Grain maize - yield forecast 2012

Actual yield versus average yield 2007- 2011

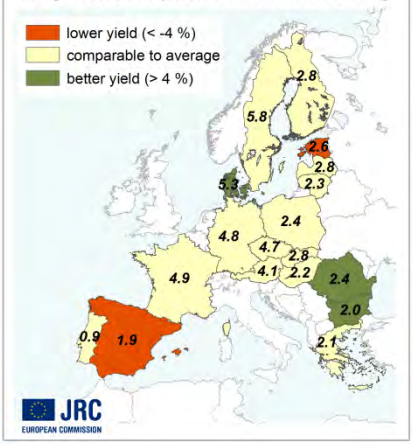
Yield figures 2012 are expressed in t/ha and rounded to 100 kg



Rye - yield forecast 2012

Actual yield versus average yield 2007- 2011

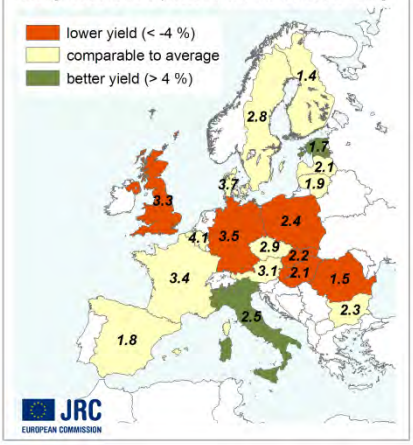
Yield figures 2012 are expressed in t/ha and rounded to 100 kg



Turnips (rape) - yield forecast 2012

Actual yield versus average yield 2007- 2011

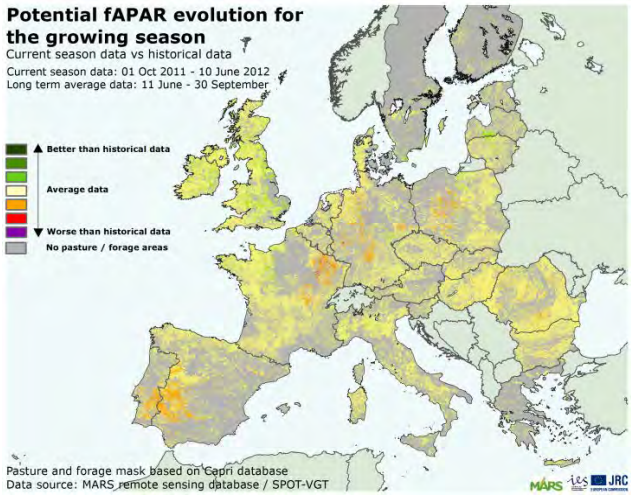
Yield figures 2012 are expressed in t/ha and rounded to 100 kg

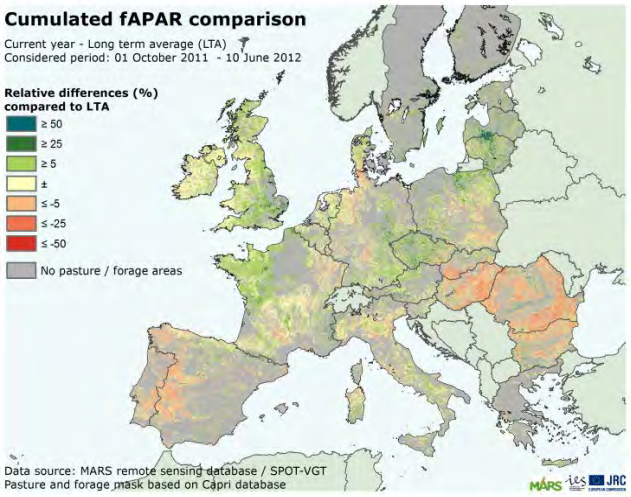


5. PASTURES IN EUROPE – UPDATE REMOTE SENSING MONITORING

POSITIVE OUTLOOK FOR MOST OF EUROPE, EXCEPT THE IBERIAN PENINSULA

The scarce precipitation in the Iberian Peninsula continues to limit pasture development. In most of Europe, recent rainfall and increased temperatures are creating a positive scenario for biomass production. Conditions are improving significantly in south east Europe as a result of the rainfall in recent weeks.



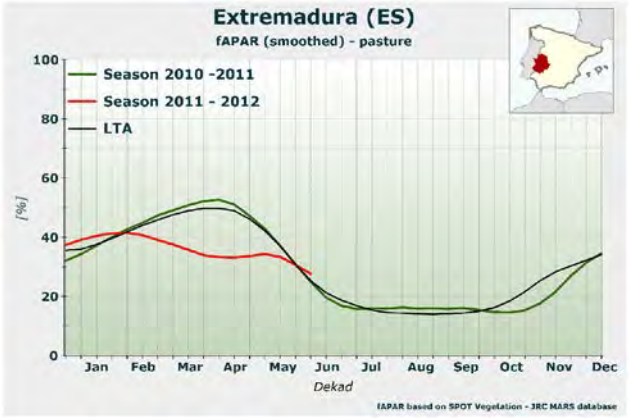


In western **Spain** and **Portugal,** the dry spell also extends to May and June, limiting production to levels that are substantially below those of an average year, particularly in the *Dehesa* area. In **Italy,** the overall outlook is fairly positive. The rise in temperatures during the first week of June, plus the significant precipitation– especially in the North – is boosting biomass production.

Production levels remain above the average in **UK**, **Ireland** and **France**, with the exception of *Champagne-Ardenne* and *Lorraine*, and are gradually recovering their seasonal values after a rather cold winter. Biomass production for **Benelux** is expected to be average. In North-Western **Germany,** low daily temperatures are limiting pasture growth at the beginning of June, whereas in *Bayern* and the rest of the South, biomass production remains high. **Austria**, **Czech Republic** and **Slovakia** exhibit conditions that are similar to those of southern Germany.

The South of **Poland** is gradually achieving seasonal production levels, thanks to an increment in average temperatures during May. In the north of the country, as well as in **Estonia**, **Latvia** and **Lithuania,** the positive trend in pasture growth that was experienced during the spring is continuing in June, with abundant rainfall that will increase biomass production in the weeks to come Expectations also remain above average in **Denmark**, **Sweden** and **Finland**.

May has been excellent for **Romania** from a meteorological point of view, with abundant rainfall that will benefit pasture production in this early period of the summer. The current production rates are quite high compared to seasonal values, favoured by the mild temperatures at the beginning of June. This mitigates to some extent the serious biomass deficit accumulated since the beginning of the season, by comparison with an average year. The trend with regard to pastures in the second half of the season is expected to be fairly positive.


Extremadura (ES)
fAPAR (smoothed) - pasture
Season 2010 -2011
Season 2011 - 2012
LTA
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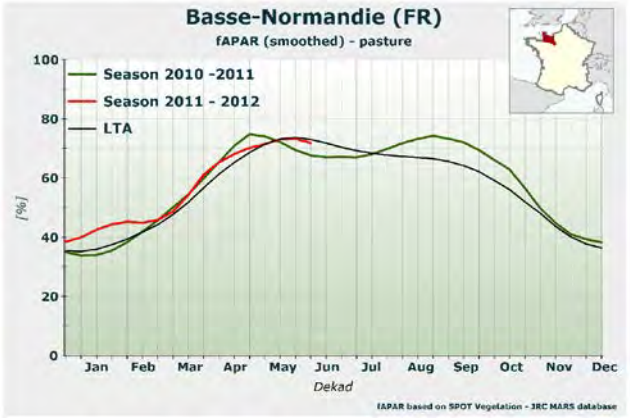
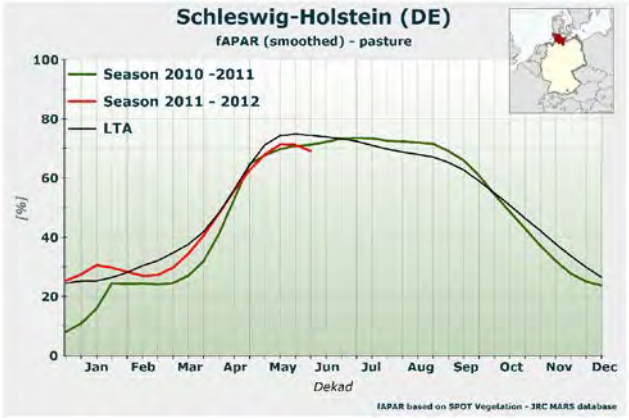
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Dekad
fAPAR based on SPOT Vegetation - JRC MARS database


Basse-Normandie (FR)
fAPAR (smoothed) - pasture
Season 2010 -2011
Season 2011 - 2012
LTA
[%]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Dekad
fAPAR based on SPOT Vegetation - JRC MARS database


Schleswig-Holstein (DE)
fAPAR (smoothed) - pasture
Season 2010 -2011
Season 2011 - 2012
LTA
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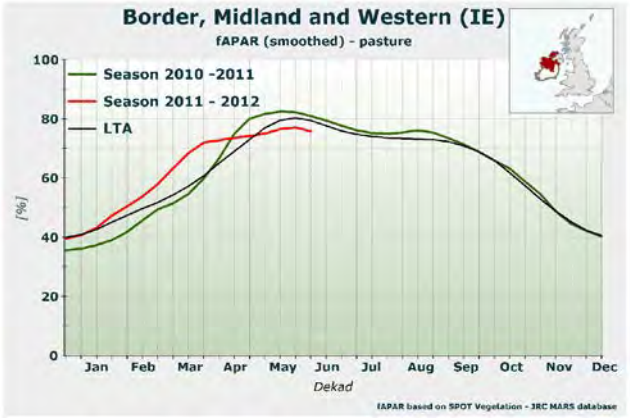
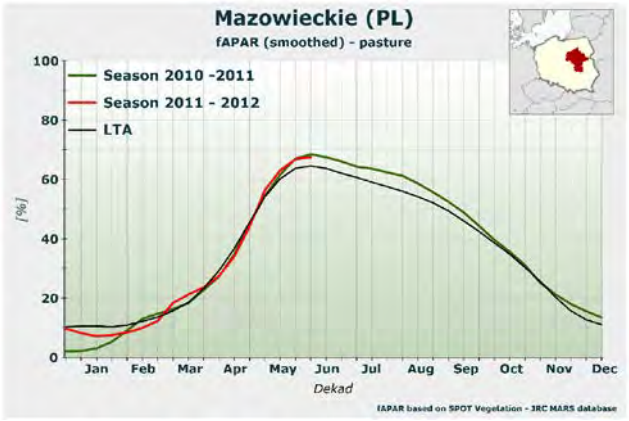
Dekad
fAPAR based on SPOT Vegetation - JRC MARS database


Border, Midland and Western (IE)
fAPAR (smoothed) - pasture
Season 2010 -2011
Season 2011 - 2012
LTA
[%]
Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
Dekad
fAPAR based on SPOT Vegetation - JRC MARS database


Mazowieckie (PL)
fAPAR (smoothed) - pasture
Season 2010 -2011
Season 2011 - 2012
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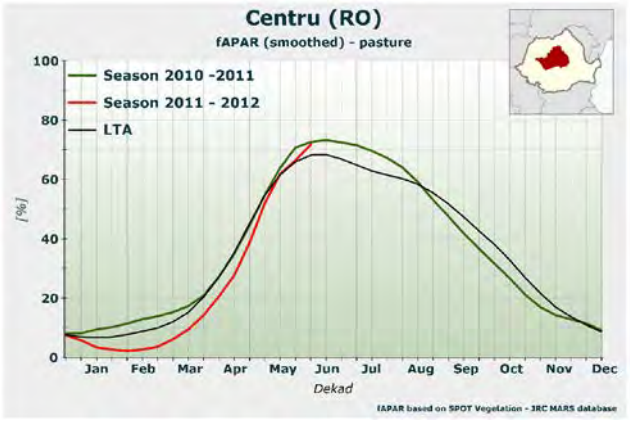
fAPAR based on SPOT Vegetation - JRC MARS database


Centru (RO)
fAPAR (smoothed) - pasture
Season 2010 -2011
Season 2011 - 2012
LTA
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Jan Feb Mar Apr May Jun Jul Aug Sep Oct Nov Dec
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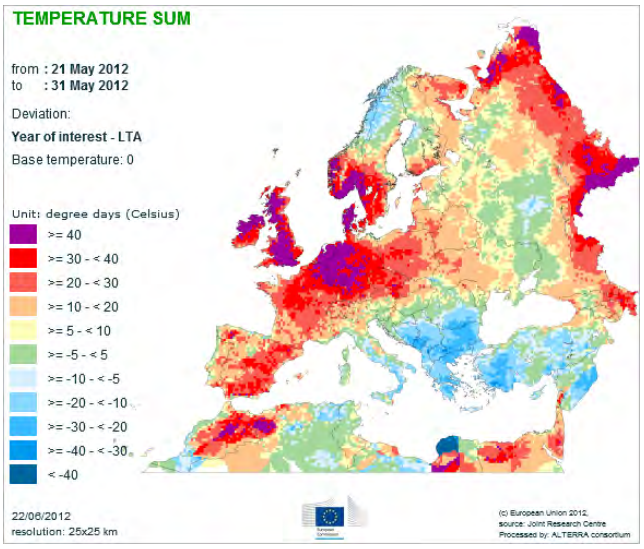
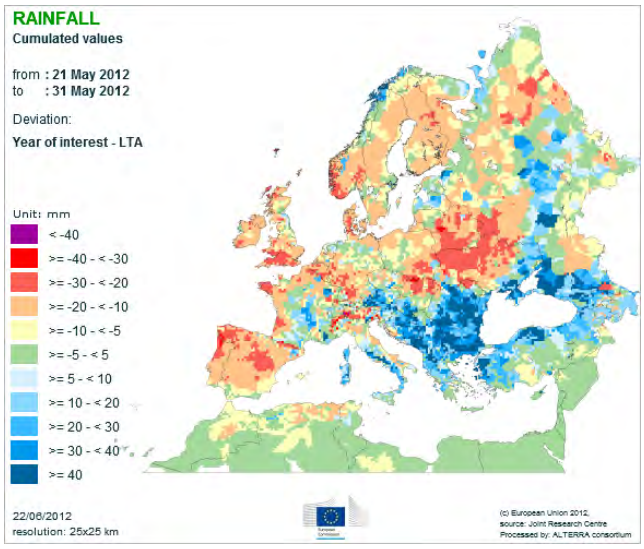
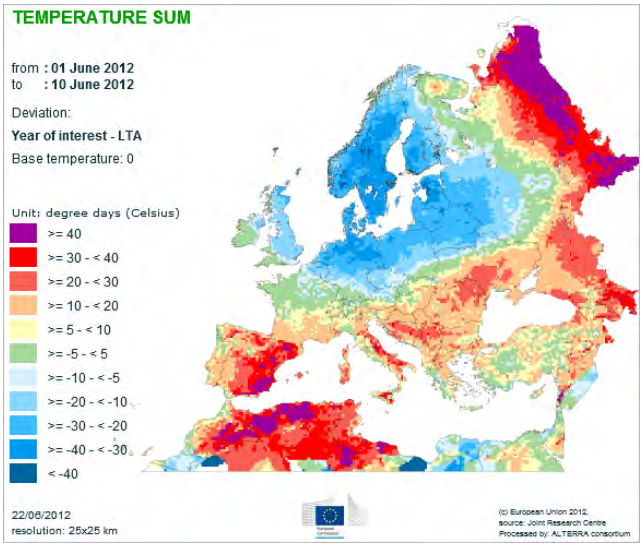
fAPAR based on SPOT Vegetation - JRC MARS database

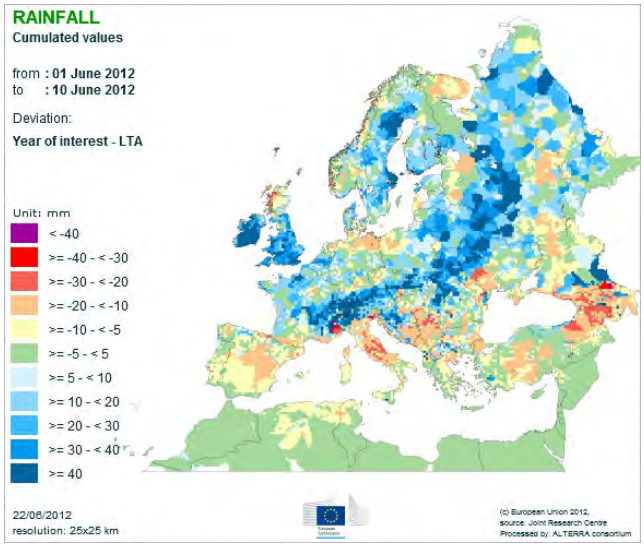
6. CROP ATLAS MAPS

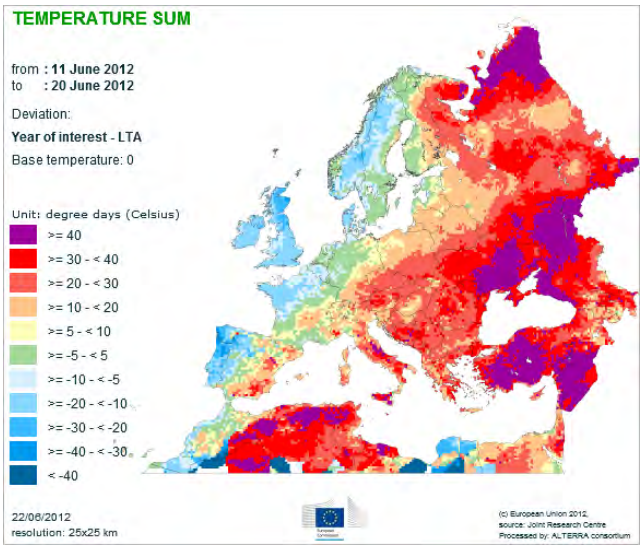
TEMPERATURE AND PRECIPITATION

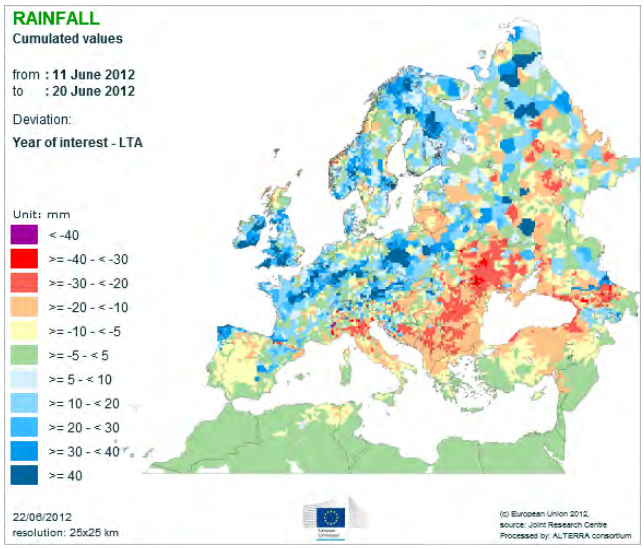




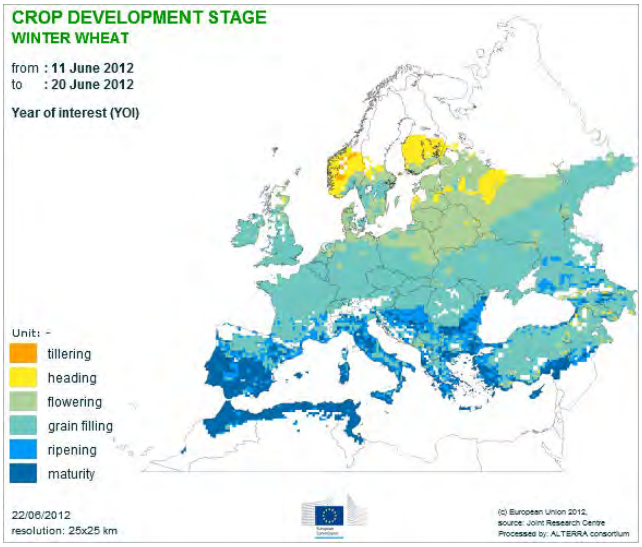


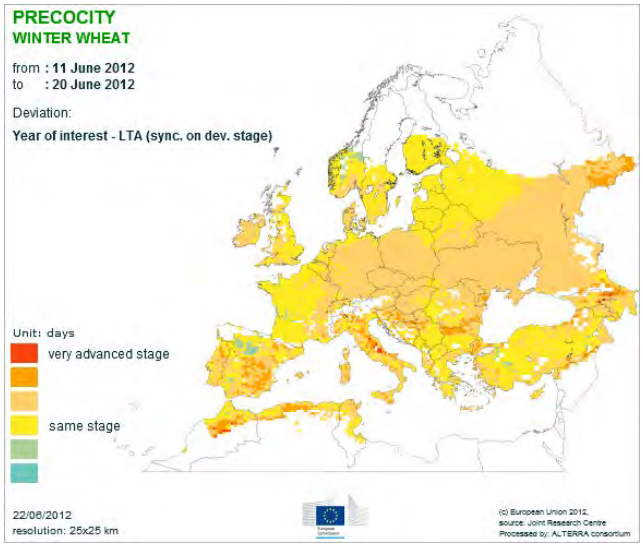


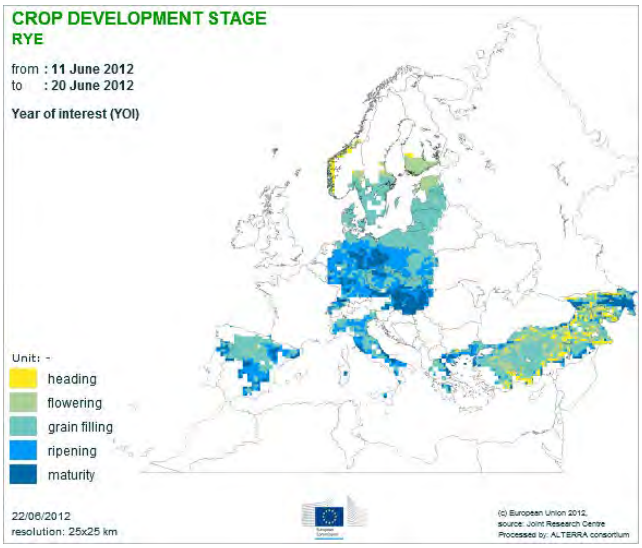


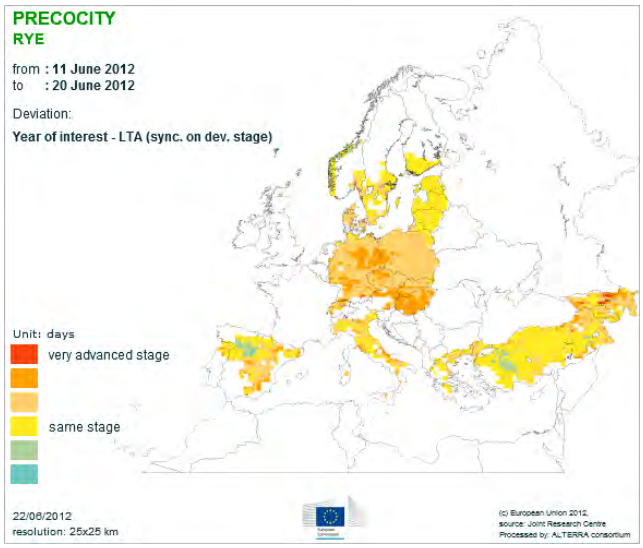


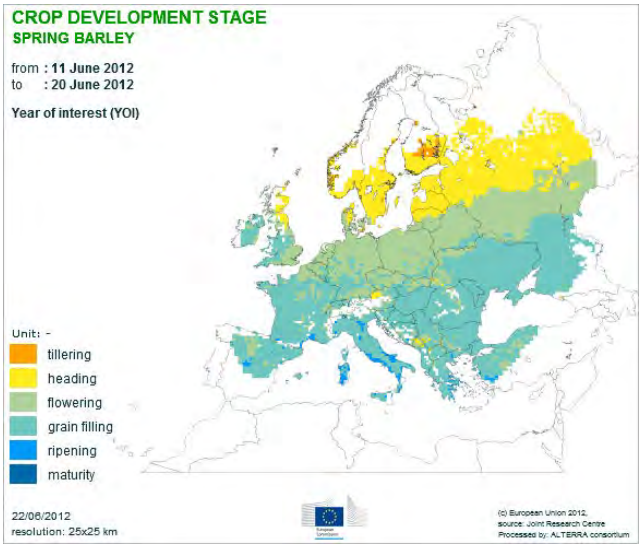
CROP DEVELOPMENT STAGE/PRECOCITY

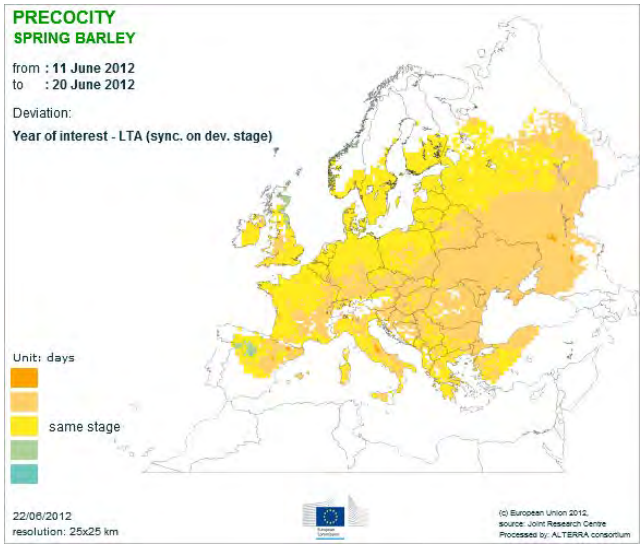




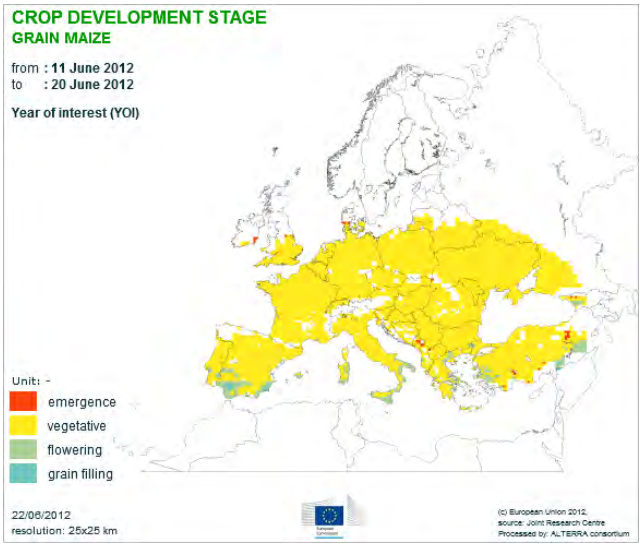


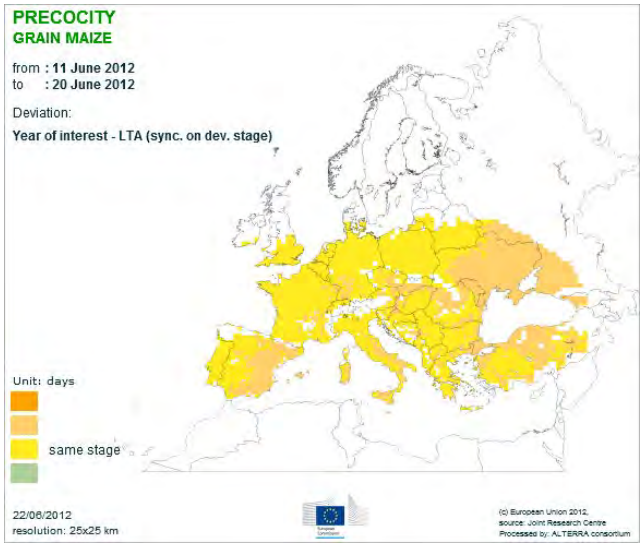


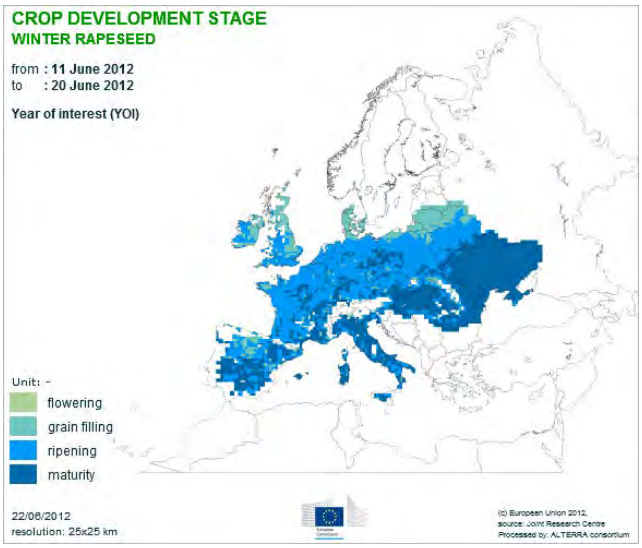


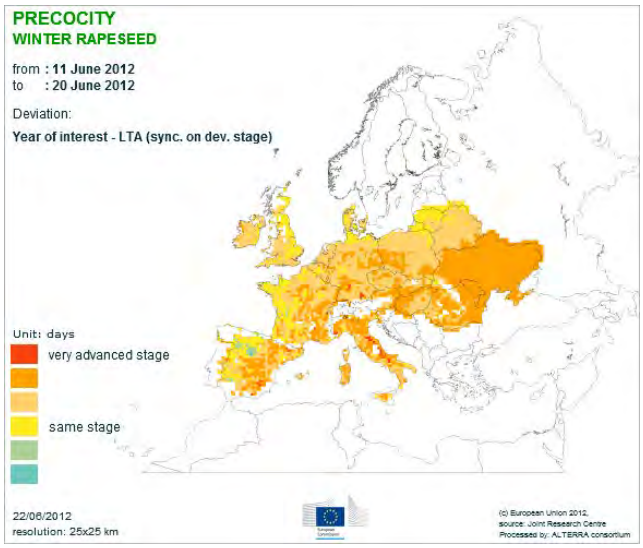


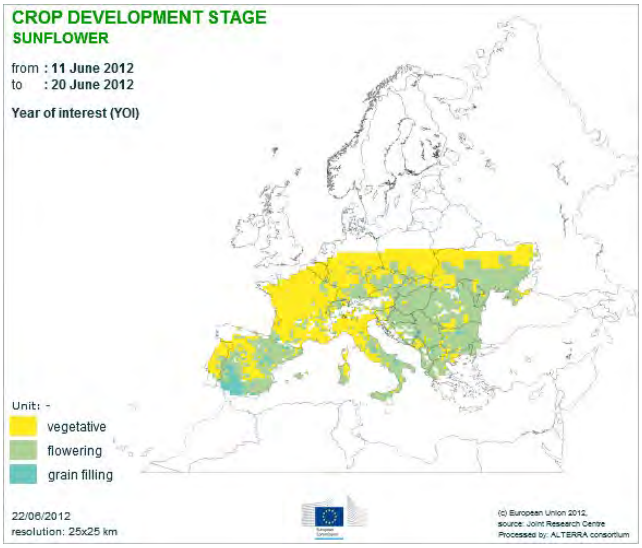
CROP DEVELOPMENT STAGE/PRECOCITY

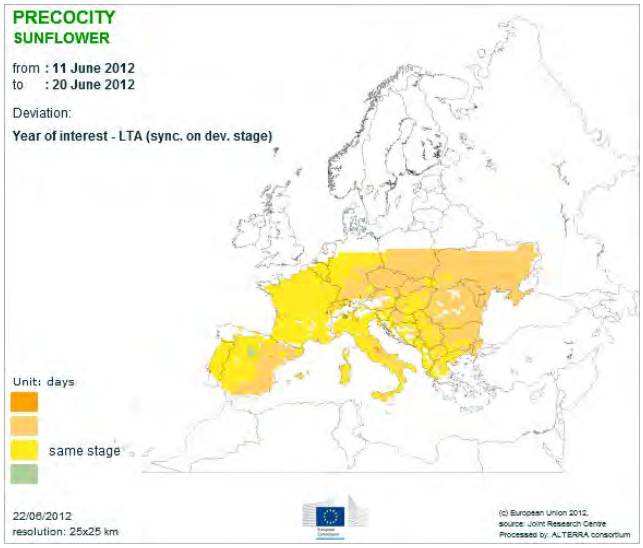




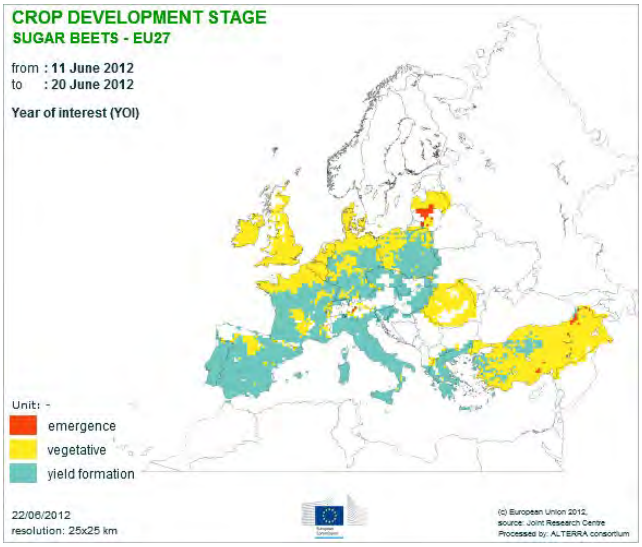


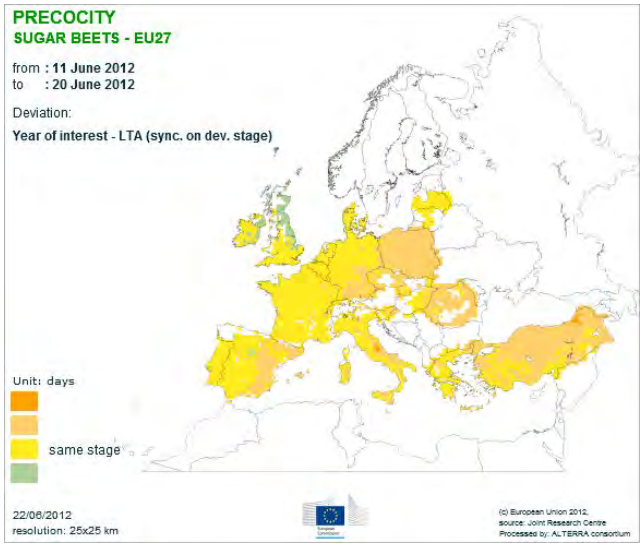


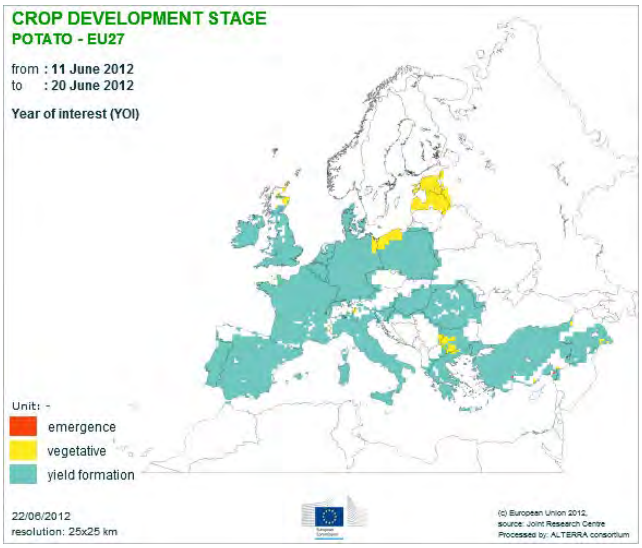


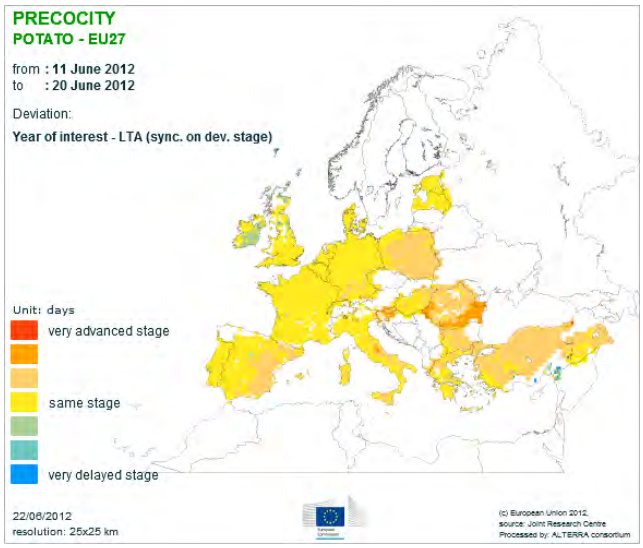


CROP DEVELOPMENT STAGE/PRECOCITY









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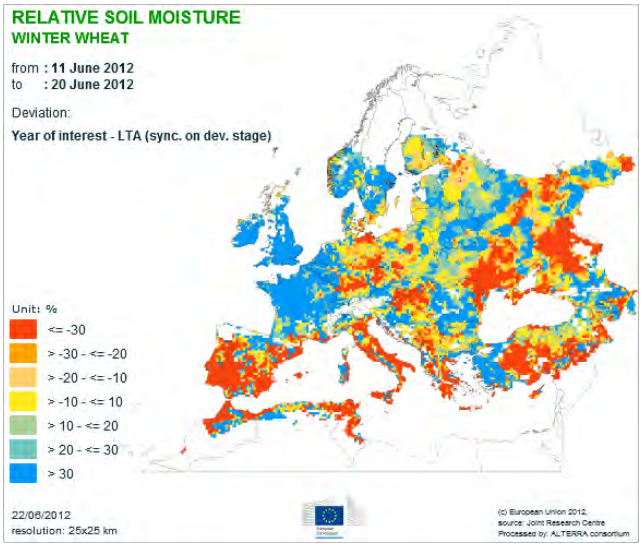
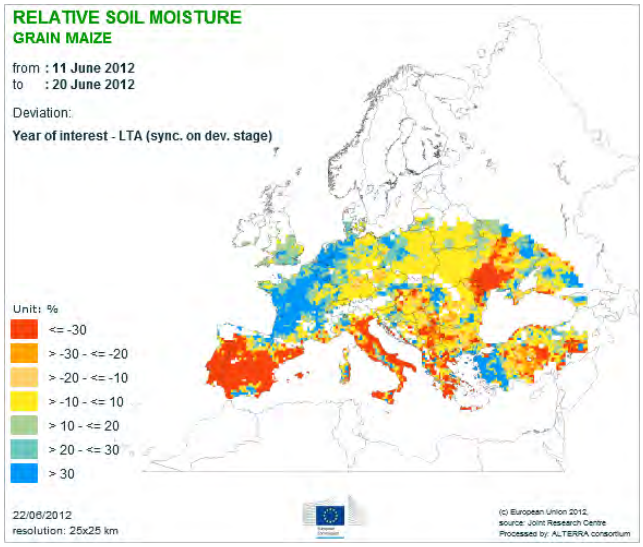
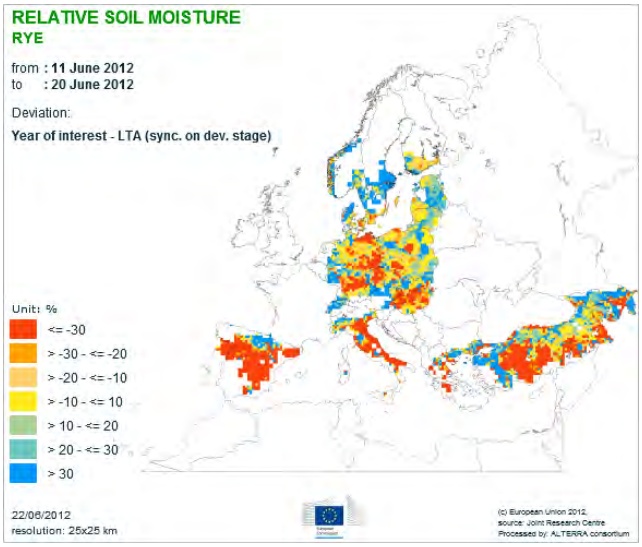
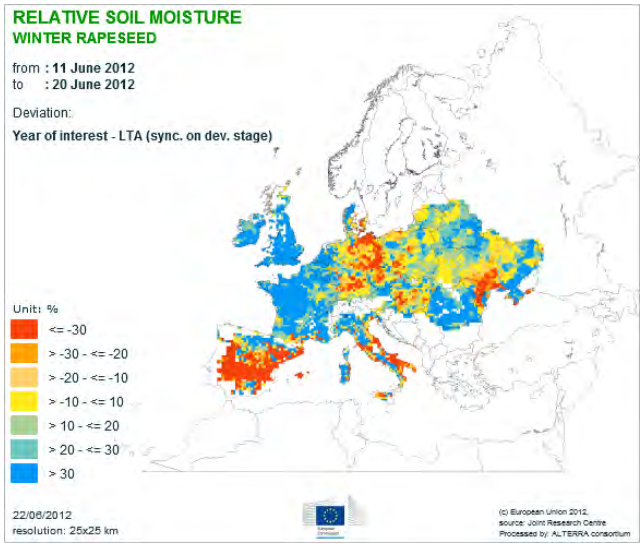
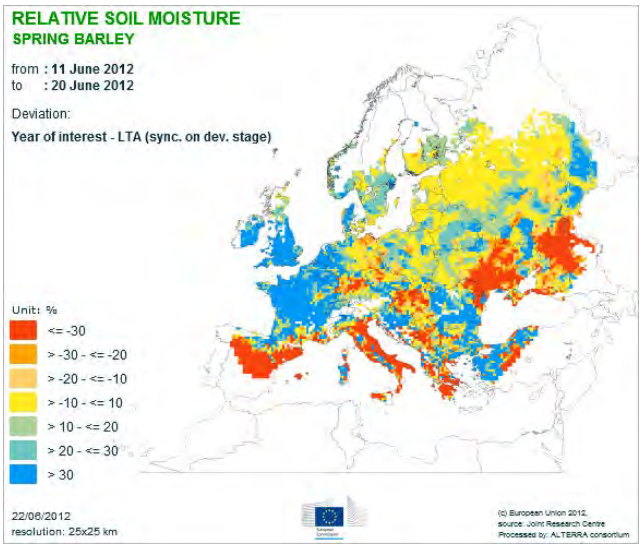


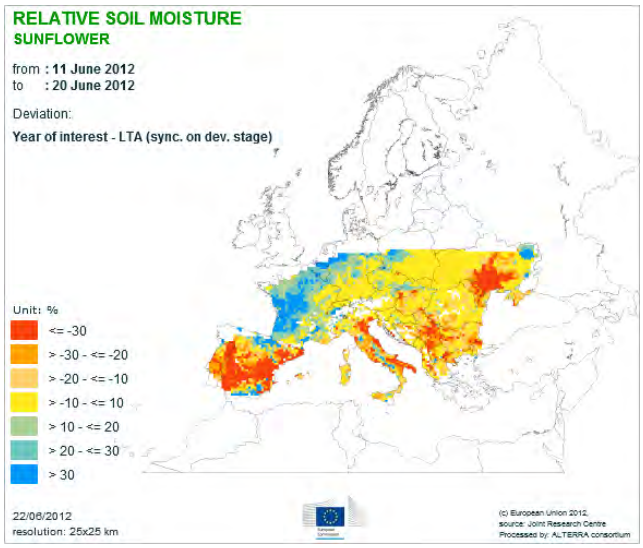


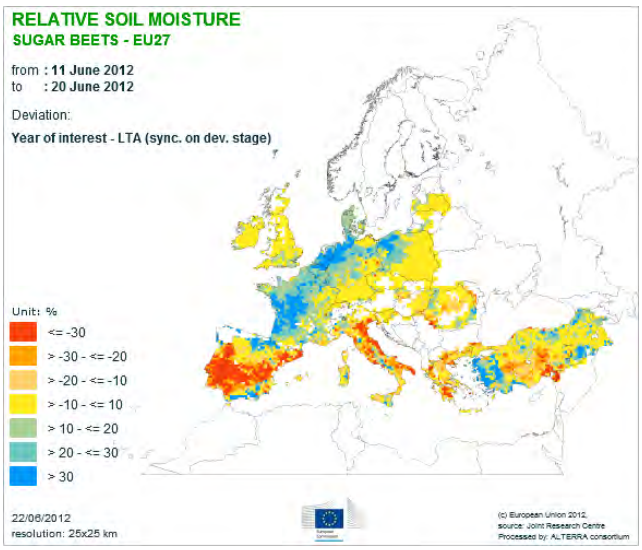
RELATIVE SOIL MOISTURE

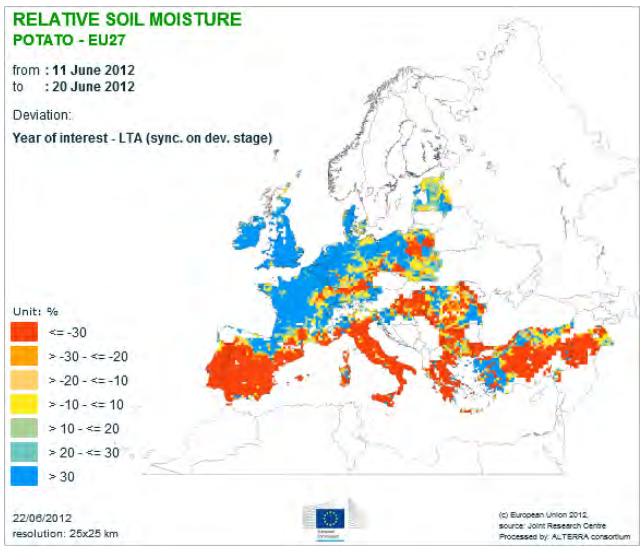




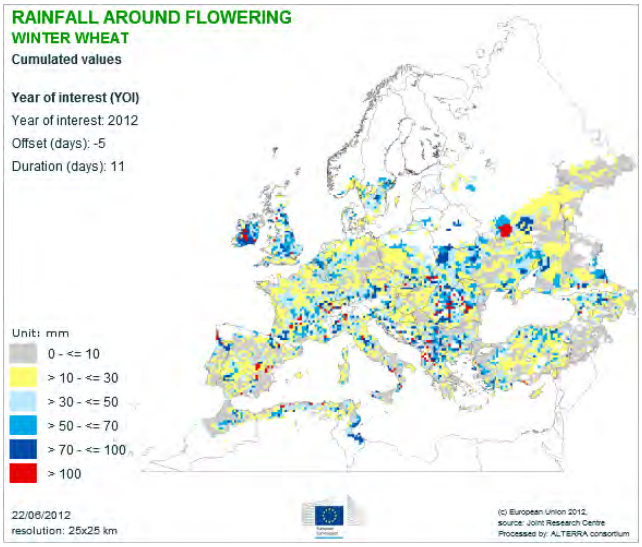


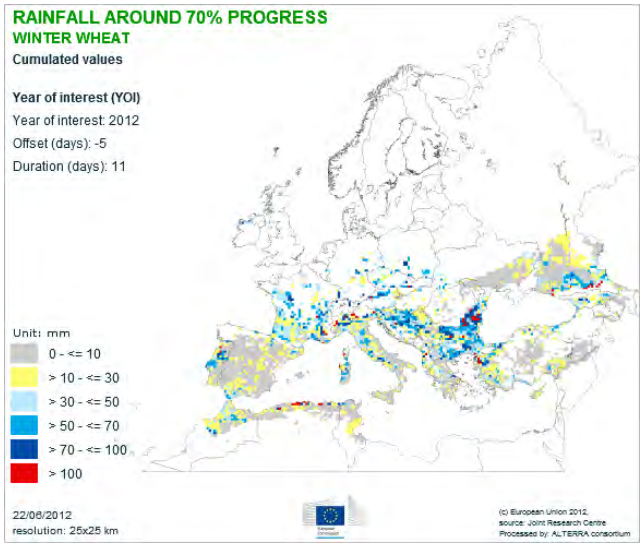


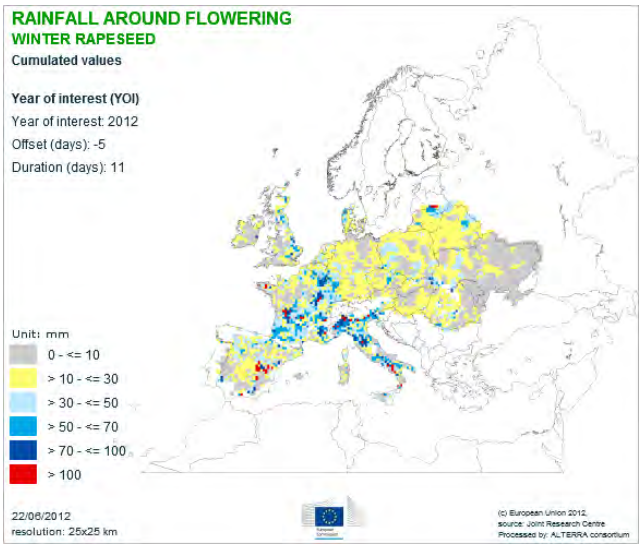


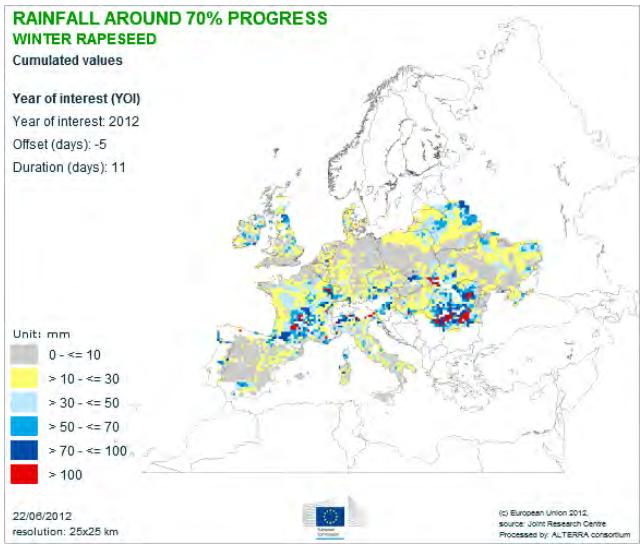


RAIN AROUND CROP DEVELOPMENT STAGES

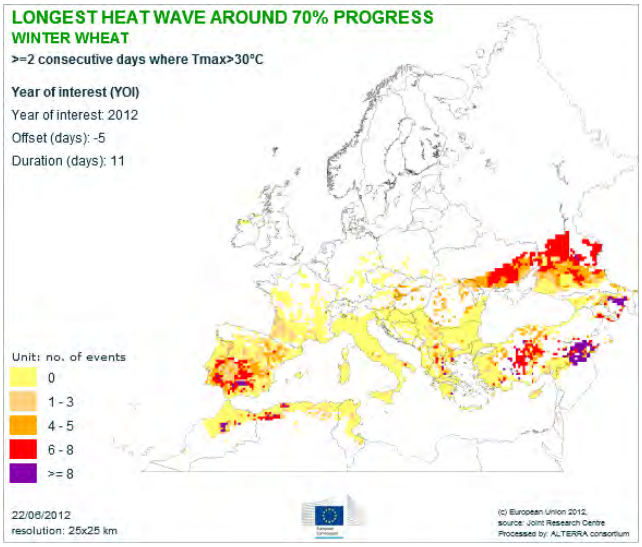


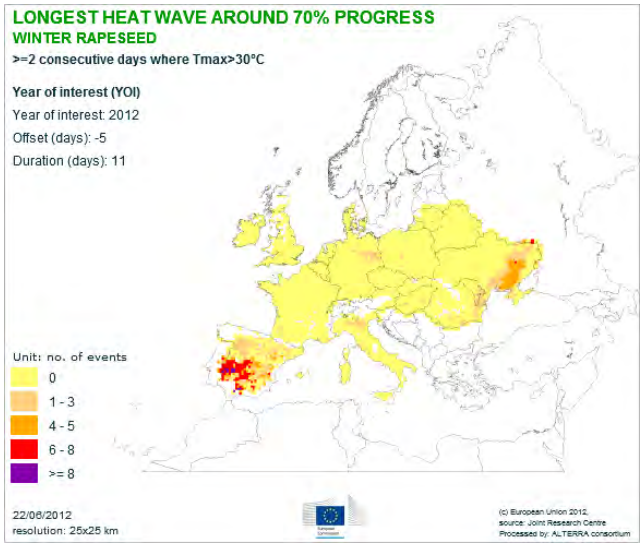






LONGEST HEAT WAVE AROUND CROP DEVELOPMENT





2012 MARS Bulletin

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

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Analysis and reports

B. Baruth, M. Bettio, O. Chukaliev, J. Bojanowski, A. Bussay, G. Duveiller, G. Fontana, W. Kasperska-Wolowicz, R. Lopez, A. Maiorano, L. Seguini, A. Srivastava

Reporting support:

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Edition

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Data production

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