Favourable summer conditions

Yield forecasts for winter crops remain very favourable: wheat is forecast at 7.7% above the five-year average and barley at +3.5%. The summer crops season has also been favourable and yield formation has been supported by abundant irrigation. Yield forecasts remain above average: +3.2% for maize, +4.2% for sugar beet and +4.9% for soybean.

In central Anatolia, above-average precipitation in May sustained grain formation and mitigated the shortening of the grain-filling period caused by the warm anomalies (+2°C to +4°C). Warm and wet conditions continued until harvest, which took place between the end of June and mid-July. Summer crops development and growth was optimal thanks to the favourable temperatures and wide availability of irrigation water throughout summer. In the Aegean region, average rainfall and temperature conditions lasted until June and fostered normal development of the summer crops. Precipitation in June, restored irrigation reservoirs, but from July onwards precipitation was low and temperatures remained above average (+2°C). Thanks to the extensive use of irrigation, crops did not suffer specific stress and continued to develop favourably until the end of the growth cycle. In south-eastern regions, maize is performing well, as there is sufficient water for irrigation. Indeed, maize did not present any sign of heat or water stress in spite of the anomalous very hot weather observed during August, when maximum temperatures fluctuated around 40°C.

<table>
<thead>
<tr>
<th>Country</th>
<th>Crop</th>
<th>Yield (t/ha)</th>
<th>2017</th>
<th>MARS 2018 forecasts</th>
<th>%18/17</th>
<th>%18/17</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>wheat</td>
<td>2.71</td>
<td>2.78</td>
<td>2.92</td>
<td>+7.7</td>
<td>+5.1</td>
</tr>
<tr>
<td></td>
<td>soft wheat</td>
<td>2.65</td>
<td>2.70</td>
<td>2.84</td>
<td>+6.9</td>
<td>+5.1</td>
</tr>
<tr>
<td></td>
<td>durum wheat</td>
<td>3.03</td>
<td>3.20</td>
<td>3.37</td>
<td>+11</td>
<td>+5.3</td>
</tr>
<tr>
<td>Turkey</td>
<td>barley</td>
<td>2.67</td>
<td>2.90</td>
<td>2.76</td>
<td>+3.5</td>
<td>-4.9</td>
</tr>
<tr>
<td></td>
<td>grain maize</td>
<td>9.17</td>
<td>9.23</td>
<td>9.47</td>
<td>+3.2</td>
<td>+2.6</td>
</tr>
<tr>
<td></td>
<td>sugar beet</td>
<td>59.4</td>
<td>62.3</td>
<td>61.9</td>
<td>+4.2</td>
<td>-0.7</td>
</tr>
<tr>
<td></td>
<td>soybean</td>
<td>4.34</td>
<td>4.42</td>
<td>4.55</td>
<td>+4.9</td>
<td>+3.0</td>
</tr>
</tbody>
</table>
1. Meteorological overview

In May and June, precipitation was above the seasonal average in most of the country and at the same time temperature presented constant warm anomalies. The south-eastern regions experienced drier conditions. During July and August, temperatures tended to be slightly above average, especially in western and south-eastern regions.

In western (Tekirdag, Manisa, Bursa, Balikesir, Izmir, Aydin) Black Sea (Kocaeli, Kastamonu) and central Turkey (Konya, Ankara, Kirikkale and Kaysen) above-average rainfall characterised May with total rainfall up to 120 mm and anomalies of +30% (south Konya) to +80% (Ankara) compared with the long-term average (LTA). In June, frequent precipitation continued, especially in the first and last dekads of the month. Total precipitation in June was above average in Ankara, Konya and Kirikkale (+50% to +100% against the LTA) whereas drier-than-usual conditions were observed in eastern Kaysen. In western regions, total precipitation ranged between 40 mm and 150 mm. Extended warm weather anomalies persisted during most of the period under analysis. During May, average daily temperatures were constantly +2°C/3°C compared with the LTA in all the main agricultural regions. During June, the extension of the warm anomaly slowly decreased but still maintained its influence in the central belt from the Black Sea (Kastamonu, Samsun) south to the Aegean Coast (Adana). Average precipitation occurred in July and August in all the provinces, ±20 mm compared with the LTA. Western and Black Sea provinces received 20 mm (Aydin), 100 mm (Tekirdag) or 50 mm (Kastamonu), central provinces around 5 mm (Konya, Kaysen). In July and August, hot but not very hot conditions prevailed in central Turkey (e.g. Konya, Kaysen). Towards the end of August, temperatures increased and maximum temperature values increased sharply above 35°C.

In the Aegean provinces (Adana, Hatay, Antalia) in May and in June weather conditions present around average precipitation (70 mm) and two periods of warm anomaly (+2°C/+4°C): one in the last ten days of May and the other around 15 June. From July, almost no precipitation occurred but temperatures remained almost average, until mid-August. From then, temperature increased and remained above the average until the end of August.

In the south-eastern regions (Gaziantep, Şanlıurfa and Mardin) wet conditions were observed in May. The precipitation sum was between 70 mm and 120 mm (±100% compared with the LTA). In June, some precipitation occurred during a period that is usually quite dry, with more marked anomalies in the western regions of Gaziantep, +25 mm to +50 mm compared with the LTA. During July south-eastern regions received 0 mm (Şanlıurfa) to 5 mm (Gaziantep, Mardin). Such regions experienced warm anomalies – again +2°C/+3°C compared with the LTA – in May and in June. Since July, much hotter temperatures were recorded with several consecutive days with maximum temperatures around 40°C in the first ten days of July and in the last ten of August.
2. Winter crop conditions

The wet weather conditions observed in May favoured the grain filling of wheat and barley in most of the regions, especially in central Turkey. At the beginning of June, the warm temperatures slightly shortened the end of the grain-filling period. Yield expectations remain favourable. In south-eastern regions, the crop cycle was more advanced than in the rest of the country and harvest took place by the end of May. Yields of irrigated crops were particularly high in these regions. In the southernmost rainfed regions, the rainfall in May only partially mitigated the losses due to the dry spring.

In central-western Turkey (Konya and Ankara), where most of the winter crops are grown, winter crops’ grain filling developed in May under favourable conditions. In early June, the warmer-than-usual weather slightly accelerated canopy senescence. The grain-filling period therefore shortened slightly, but the impact on yield was marginal, as this affected only the latest stages of yield formation.

In central-eastern regions (Kirikkale and Kayseri), winter crops underwent optimal biomass accumulation in late spring and completed flowering in mid-May, and grain filling started under favourable conditions. At the beginning of June, a dry and hot period shortened the grain-filling process of both wheat and barley. These negative effects were counterbalanced in the second part of June, when favourable rains and average temperatures prevailed, which lasted until the end of the month. From the beginning of July, winter crops started to mature.

In the south-eastern regions relevant for durum wheat and soft wheat cultivation (Gaziantep, Sanliurfa and Mardin), May was much wetter than usual, with 70 mm to 120 mm of rain (> +100% compared with the LTA), while temperatures were average for the season. Winter cereals had already entered the grain-filling phase and yield formation profited from these very favourable weather conditions in Sanliurfa and Gaziantep. In late May, crops entered the ripening phase under favourable dry and warmer-than-usual conditions. In the southernmost regions of Sanliurfa and Mardin, where dry spring weather had already affected the unirrigated crops, yield losses were partially mitigated by the unseasonal rains. Rainfed fields in the region cover < 40% of the total average wheat area (average of 2013-2017 data, Turkish Statistical Institute).

Harvest conditions

In central-western Turkey, the harvest of winter cereals started around 15 June before being slowed down by the rainy weather. From July, the weather turned dry again and favoured the drying of seeds and the conclusion of harvesting activities.

In eastern Turkey, the harvest started at the beginning of July, when rains stopped, and continued for a couple of weeks under optimal weather conditions.

In south-eastern regions, the winter crops cycle ended in early June. Even though in May and at the beginning of June the rains were frequent and above the average, harvest activities were not significantly hampered.
3. Summer crop conditions

Summer crops, which are irrigated almost everywhere in Turkey, reached flowering in August in favourable conditions. Water levels in reservoirs throughout the country have been sufficient to ensure water supply for irrigation thanks to the surplus of precipitation recorded up to the second dekad of June. Irrigation compensated for the strong evapotranspiration caused by the generally hot temperatures, and it mitigated heat stress damage, allowing good yield expectations.

Early summer crops development was optimal thanks to the warm temperatures in the main producing regions: central Turkey (sugar beet and maize), the Aegean coast (Adana) (soybean and maize) and Sanliurfa (maize).

In central Turkey, the somewhat drier-than-usual conditions of early spring were compensated for by abundant precipitation during May and the first 20 days of June. These conditions replenished irrigation reservoirs and maintained soil moisture at favourable levels. The moderately positive temperature anomalies (+2°C/+3°C) favoured biomass accumulation and accelerated phenological development. During July and August, the western provinces received some sparse precipitation, whereas in central-eastern provinces all the water came from irrigation. Temperatures, although higher than average, continued to be favourable, and crops suffered no heat stress around flowering or during the main stages of grain filling of maize. A sharp increase in temperatures was observed since 20 August (+4°C/+6°C) but maximum temperatures remained generally below 35°C, and grain filling was only slightly affected, if this was not totally mitigated by irrigation. Maturity is expected to be reached around mid-September.

In Adana region, conditions were favourable for maize and soybean, with average weather conditions in spring. In May and June, precipitation was slightly above the LTA and temperatures oscillated between average and +4°C. From July, almost no precipitation occurred but temperatures remained average, favouring crops' flowering and grain formation, which took place before mid-August. From then, temperatures increased, which could have shortened the grain-filling period if they had not been properly compensated for through irrigation.

In Sanliurfa, in south-eastern Turkey, the maize season is generally late compared with the other regions, and irrigation is fundamental to sustain crop growth. In the northern provinces, as observed from remote sensing data, maize flowering ended at the beginning of August with crops presenting favourable, dense leaf canopy. In southern regions, flowering occurred around 15 August or later and green biomass accumulation has been above average. Temperatures in August were hot, with 15 to 30 days with $T_{\text{max}} \geq 40°C$. The negative effects of such temperatures on crops have been mitigated by irrigation, and remote sensing data do not display any relevant sign of heat stress. Yield expectations are favourable.
4. Remote sensing map

**fAPAR anomalies - Turkey**

Current year - Medium Term Average (MTA / 1999-2014)
Cumulative period: 01 June 2018 - 31 August 2018

Data source: MARS remote sensing database / fAPAR smoothed - Copernicus
Mask: arable land based on GlobCover 2009

N.B.: the negative anomalies are related to an earlier-than-usual end to the winter crops season.
4. Crop yield forecasts

<table>
<thead>
<tr>
<th>Country</th>
<th>Crop</th>
<th>Yield (t/ha)</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Avg 5yrs</td>
<td>2017</td>
<td>MARS 2018 forecasts</td>
<td>%18/5yrs</td>
<td>%18/17</td>
</tr>
<tr>
<td>Turkey</td>
<td>wheat</td>
<td>2.71</td>
<td>2.78</td>
<td>2.92</td>
<td>+7.7</td>
<td>+5.1</td>
</tr>
<tr>
<td></td>
<td>soft wheat</td>
<td>2.65</td>
<td>2.70</td>
<td>2.84</td>
<td>+6.9</td>
<td>+5.1</td>
</tr>
<tr>
<td></td>
<td>durum wheat</td>
<td>3.03</td>
<td>3.20</td>
<td>3.37</td>
<td>+11</td>
<td>+5.3</td>
</tr>
<tr>
<td></td>
<td>barley</td>
<td>2.67</td>
<td>2.90</td>
<td>2.76</td>
<td>+3.5</td>
<td>-4.9</td>
</tr>
<tr>
<td></td>
<td>grain maize</td>
<td>9.17</td>
<td>9.23</td>
<td>9.47</td>
<td>+3.2</td>
<td>+2.6</td>
</tr>
<tr>
<td></td>
<td>sugar beet</td>
<td>59.4</td>
<td>62.3</td>
<td>61.9</td>
<td>+4.2</td>
<td>-0.7</td>
</tr>
<tr>
<td></td>
<td>soybean</td>
<td>4.34</td>
<td>4.42</td>
<td>4.55</td>
<td>+4.9</td>
<td>+3.0</td>
</tr>
</tbody>
</table>
5. Atlas
The current JRC MARS Bulletin — Crop monitoring European neighbourhood is a JRC—EC publication from AGRI4CAST (JRC/DS unit – Directorate Sustainable Resources)

MARS Bulletins are available under: https://ec.europa.eu/jrc/en/mars/bulletins

Analysis and reports
L. Seguini, L. Nisini, L. Panarello

Reporting support
Prepress Projects Ltd

Editing
L. Seguini, M. van den Berg

Data production
MARS4CAST — JRC DS-unit, ALTERRA (NL), MeteoGroup (NL), VITO (BE) and CMCC (IT)

Contact
JRC—DS / AGRI4CAST
info-agri4cast@jrc.ec.europa.eu

MARS stands for Monitoring Agricultural Resources

Legal Notice:
Neither the European Commission nor any person acting on behalf of the Commission is responsible for the use which might be made of this publication.

Disclaimer:
The geographic borders are purely a graphical representation and are only intended to be indicative. The boundaries do not necessarily reflect the official EC position.

Technical note:
The LTA used within this Bulletin as reference is based on an archive of data covering 1975-2017.

Mission statement: As the science and knowledge service of the European Commission, the Joint Research Centre’s mission is to support EU policies with independent evidence throughout the whole policy cycle.