All crops are forecast above the five-year average, as well as above last year’s yields, following a mostly favourable season.

The winter crop season closed with favourable yields at national level. Some crop variability was observed: in eastern Anatolian regions, a favourable spring was followed by high temperatures in June, leading to shortened grain filling. In the south-eastern regions of Gaziantep and Sanliurfa, an overly wet spring was followed by a favourable end of season, while in Mardin the season was exceptionally good throughout. Summer crops experienced a sowing delay but successive crop recovery, sustained by adequate rainfall and above-average temperature profiles in the June-July period. The above-average biomass accumulation is supporting positive expectations for the incoming harvest. There are possibilities of negative impacts on green maize due to intense rain along the northern coastline.

### Turkey yield forecasts - September 2019 Bulletin

<table>
<thead>
<tr>
<th>Crop</th>
<th>Avg 5yrs</th>
<th>2018</th>
<th>MARS 2019 forecasts</th>
<th>%19/5yrs</th>
<th>%19/18</th>
</tr>
</thead>
<tbody>
<tr>
<td>wheat</td>
<td>2.71</td>
<td>2.74</td>
<td>2.96</td>
<td>+9.2</td>
<td>+8.0</td>
</tr>
<tr>
<td>soft wheat</td>
<td>2.66</td>
<td>2.71</td>
<td>2.90</td>
<td>+8.9</td>
<td>+7.0</td>
</tr>
<tr>
<td>durum wheat</td>
<td>2.97</td>
<td>2.91</td>
<td>3.29</td>
<td>+11</td>
<td>+13</td>
</tr>
<tr>
<td>barley</td>
<td>2.63</td>
<td>2.67</td>
<td>2.84</td>
<td>+8.2</td>
<td>+6.5</td>
</tr>
<tr>
<td>grain maize</td>
<td>9.34</td>
<td>9.64</td>
<td>9.69</td>
<td>+3.8</td>
<td>+0.5</td>
</tr>
<tr>
<td>sugar beet</td>
<td>60.4</td>
<td>61.6</td>
<td>64.5</td>
<td>+6.8</td>
<td>+4.8</td>
</tr>
<tr>
<td>soybean</td>
<td>4.35</td>
<td>4.26</td>
<td>4.57</td>
<td>+4.9</td>
<td>+7.2</td>
</tr>
</tbody>
</table>

**Note:** Yields are forecast for crops with more than 10000 ha per country; figures are rounded to 10 kg.

**Sources:**
- 2014-2018 data come from Turkish Statistical Institute (TurkStat) and EUROSTAT Eurobase (last update: 22/08/2019)
- 2019 yields come from MARS CROP YIELD FORECASTING SYSTEM (output up to 31/08/2019)
Country highlights

Positive biomass accumulation levels can be depicted in region IV and south-eastern regions of Turkey (III), where most of the summer crop districts are located. Moderate (-5%) negative fAPAR anomalies can be observed along the Syrian border; these are mainly caused by changes in agricultural land use. Mixed conditions are characterising central Turkey (II), with a prevalence of areas of positive biomass accumulation. Average to favourable biomass accumulation is observed in all western regions. Above-average relative anomalies can also be observed for the fragmented and non-intensive agricultural areas of eastern Turkey.

The fAPAR anomalies map displays the differences between the fraction of Absorbed Photosynthetically Active Radiation (fAPAR) cumulated from 1 March to 31 August 2019 and the medium-term average (MTA, 2007-2018) for the same period. Positive anomalies (in green) reflect above-average biomass accumulation or early crop development while negative anomalies (in red) reflect below-average biomass accumulation or late crop development.

Northern coastline (I)

Possibilities of negative impact on green maize due to intense rain events.

- Abundant cumulates of rainfall were observed throughout the review period in most areas: 30-40 mm/month of rain above the monthly LTA values.
- Considering the May-August period, we observe cumulative rainfall almost twice the historical values.
- Exceptional rainfall events were observed in Sakarya and Kocaeli districts (50-55 mm on 17 August) and in Zonguldak district (45 mm on 11 July) in north-western Turkey.
- The events are likely to have negatively impacted green maize, accounting here for almost 25% of national production.
Western and central Anatolian regions (II)

Favourable winter crop yields, despite high temperatures inducing shortened grain filling in central regions. Favourable outlook for maize.

- May and June were warmer (+2°C in western regions to +6°C in central regions) and drier than usual.
- Winter crops mostly profited from this dry and warm period, reaching flowering around mid-May in Konya and Ankara and by the end of May in Kirikkale and Kayseri, generally in line with average phenological development.
- However, hot temperatures in June reduced yield potential in central regions, shortening grain formation and grain filling.
- This also applies to the last part of the grain-filling period in western regions.
- Around mid-June, temperatures moved to seasonal values and favourable rainfall (50 mm) was recorded for all Anatolian regions.
- Winter crop harvest occurred after the end of the rainy period, starting in western regions and finishing during the first 15 days of July in eastern regions.
- Summer crops, mostly grown in Konya, developed favourably, with good responses to the high temperatures.
- Most summer crops are under irrigation; no shortage is occurring or foreseen, thanks to the wet spring.
- The yield outlook for summer crops is favourable.

South-eastern regions (III)

Mostly good winter crop season, although locally some poor results occurred. Above-average biomass accumulation for summer crops throughout the agronomic season.

- The rainy season was unusually short, with the last frequent rains at the beginning of May.
- After a cool start to May, temperatures increased from mid-May, with 3-5 days of $T_{\text{max}} \approx 35^\circ\text{C}$ at the end of June.
- In Gaziantep, poor winter crop conditions, due to over-wet spring conditions (floods and anoxia), were worsened by the hot temperatures that accelerated grain filling.
- In Sanliurfa and in Mardin, the high temperatures reduced yield potential, but overall crop conditions were optimal at this point of the season and final yields are still favourable.
- Winter crop harvest started in late May and was completed in most regions by the second dekad of June.
- From the beginning of June, a series of heatwaves occurred, with 20-25 days of $T_{\text{max}} > 35^\circ\text{C}$ in Sanliurfa and Mardin (almost double the LTA).
- In July, maximum temperature remained around 35°C, as average for the season. The last seasonal heatwave occurred in mid-August.
- The summer crop season is proceeding, with biomass accumulation values above the LTA and the previous year. High temperatures boosted canopy growth, especially in late July and August.
- South-eastern regions account for almost 20% of national summer crop production (five-year average) and are fully irrigated.
Southern mediterranean regions (IV)

Late start to the season is now recovered and yield expectations for summer crops are above the five-year average.

- Onset of summer crop season in Mediterranean regions (Antalya, Adana and Hatay) was delayed in spring by abundant rains and cool temperatures occurring in April and the beginning of May ($T_{\text{min}} \approx 2^\circ\text{C}$).
- From mid-May to mid-July, average daily temperatures were predominantly above average and often above our archive 90th percentile.
- Temperature profiles triggered crop recovery, accelerating summer crop growth and development, supported by irrigation.
- In August, flowering occurred under favourable conditions and biomass accumulation levels resulted in above-average values.
- Summer crops are in general at the senescence stage. Yield expectations for these regions are above the results for the previous five years.
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MARS stands for Monitoring Agricultural Resources

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