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JRC MARS Bulletin – Global outlook
Turkey, September 2021

European Commission

JRC MARS Bulletin - Global outlook 2021

Crop monitoring European neighbourhood

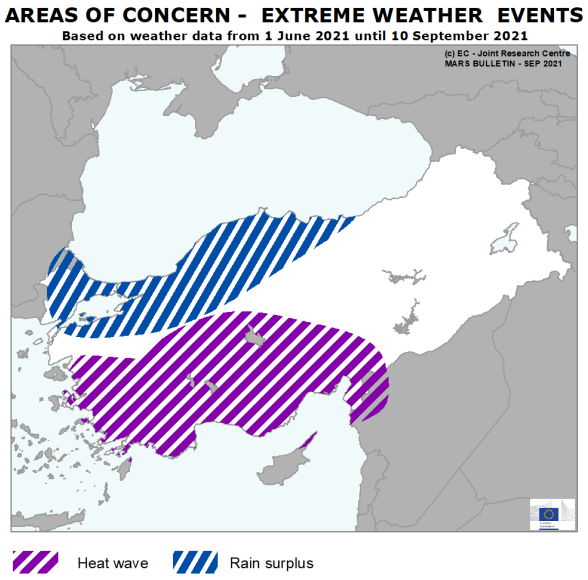
Turkey

September 2021

Mixed conditions for summer crops

Forecasts for winter cereal yields are slightly below the 5-year average, and below last year's yield. Maize, soybean and sugar beet yields are slightly above the 5-year average, despite the difficult season, sustained by good expectations in the northern regions.

In central Anatolian regions, the end of the winter crop season in June was marked by a heatwave that accelerated the last stages of grain filling and further reduced yield expectations. Summer crops in those regions had high irrigation demands because of four heatwaves between July and August. Hot and dry weather marked the summer crop season, even in the Mediterranean regions of *Adana* and *Hatay*. In those regions, the heatwaves of early July and early August weakened fertility and biomass accumulation, respectively. While in *Hatay* most of the damage was mitigated by irrigation, this was not the case in *Adana* and a shortening of the grain formation phase occurred as early as July. In *Marmara* regions and along the Black Sea coast, the frequent and abundant precipitation proved favourable for the formation of winter cereals and the development of summer crops. The latter matured in late August under favourable conditions.



Yield forecasts for Turkey - September 2021 Bulletin

Country	Crop	Yield (t/ha)				
		Avg 5yrs	2020	MARS 2021 forecasts	%21/5yrs	%21/20
Turkey	Wheat	2.80	2.97	**2.78**	- 0.7	- 6.3
	Soft wheat	2.75	2.92	**2.73**	- 0.9	- 6.5
	Durum wheat	3.02	3.18	**3.01**	- 0.7	- 5.5
	Barley	2.66	2.65	**2.62**	- 1.7	- 1.3
	Grain maize	9.42	9.41	**9.62**	+ 2.1	+ 2.2
	Sugar beet	62.1	68.5	**63.9**	+ 2.8	- 6.7
	Soybean	4.33	4.42	**4.53**	+ 4.6	+ 2.6

NB: Yields are forecast for crops with more than 10000 ha per country.

Sources: 2016-2020 data come from Turkish Statistical Institute (TurkStat) and Eurostat Eurobase (last update: 03.09.2021).

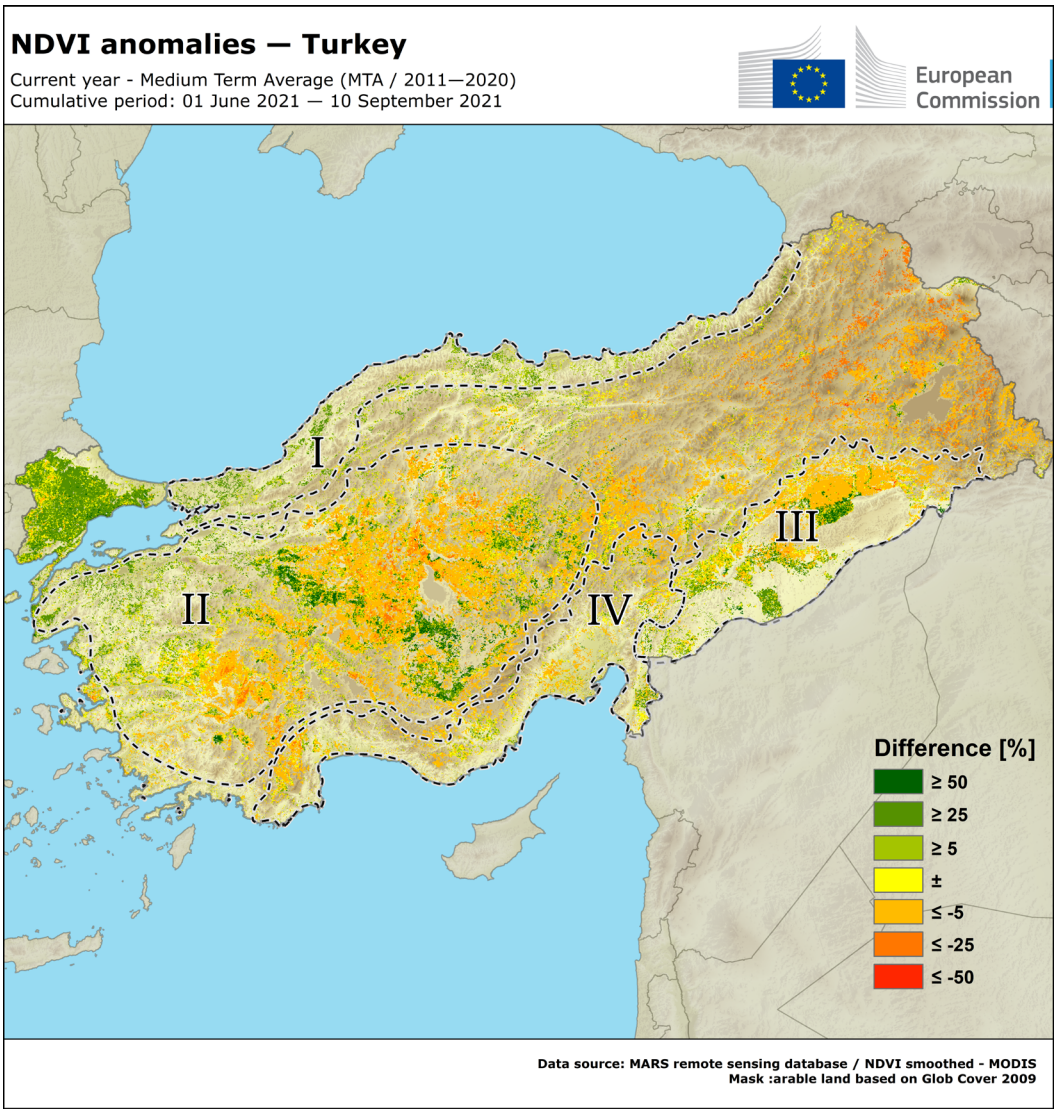
2021 yields come from MARS Crop Yield Forecasting System (output up to 10.09.2021).

The column header '%21/5yrs' stands for the 2021 change with respect to the 5-year average(%). Similarly, '%21/20' stands for the 2021 change with respect to 2020(%).

Joint Research Centre

Crop canopy conditions

In *Marmara* regions and along the Black Sea coast (I), abundant rainfall and well-developed irrigation systems, respectively, favoured grain filling of winter crops in July (e.g. *Kastamonu*) and optimal biomass accumulation of summer crops (e.g. *Tekirdag*). In central and western Anatolian regions (II), a dry spring caused low biomass accumulation for most winter crops, with consequent negative impacts on final yields (yellow and orange colours on the map). This contrasts with regions with a predominance of irrigated summer crops, which profited from high temperatures to accumulate more biomass than usual (green colours in the regions of *Konya* and *Bursa*). In eastern Anatolian regions (III), the summer crop season was sustained by irrigation and crops are in optimal shape (green colours). Summer crops in the Mediterranean regions (IV) suffered from a dry season. In those regions, crops rely more on rainfall – which was scarce – and experienced early senescence, resulting in mediocre yield expectations.



The NDVI anomalies map displays the differences between the Normalized Difference Vegetation Index (NDVI) cumulated from 1 June to 10 September 2021, and the medium term average (MTA, 2010-2020) for the same period. Positive anomalies (shown in green) reflect above-average biomass accumulation and/or early crop development, while negative anomalies (shown in red) reflect below-average biomass accumulation and/or late crop development.

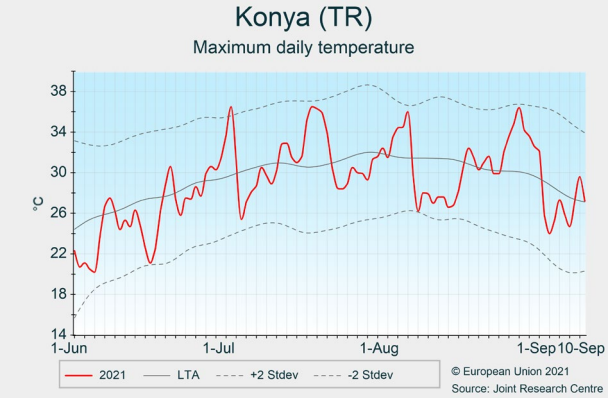
Region I: Kocaeli, Zonguldag, Kastamonu, Samsun, Trabzon
Region II: Konya, Ankara, Bursa, Manisa, Aydin, Izmir, Balikesir, Tekirdag, Istanbul, Kirikkale, Kayseri
Region III: Gaziantep, Sanliurfa, Mardin
Region IV: Antalya, Adata, Hatay

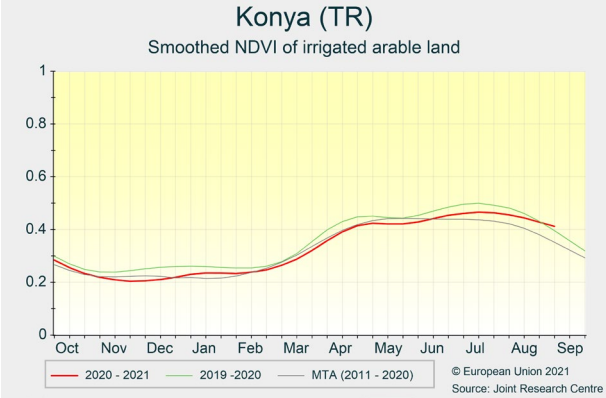
Crop growth conditions

Western and central Anatolian regions

Average outlook for summer crops

- At the beginning of June, winter crops entered grain filling, after a hot and dry spring, with fair (western regions) to weak conditions (central and eastern regions).
- After 20 June, the weather again turned dry and very hot, with maximum temperatures that peaked at 36 °C towards the end of June. Winter crop senescence accelerated, and yield expectations worsened in all regions (e.g. *Manisa*, *Konya* and *Kayseri*).
- The intensive irrigation that had occurred since spring had reduced water availability for summer irrigation. As a result, summer crop areas poorly served by irrigation faced early senescence by early July.
- Between July and August, four heatwaves (T_{max} >35°C) alternated with periods of fresher weather – notably in central and eastern Anatolian regions, where the first 15 days of August recorded temperatures from 2°C to 6 °C below the long-term average (LTA).
- Maize, sugar beet and soybean had biomass accumulation boosted by the high temperatures and sustained by irrigation, but the repeated periods of heat stress have somewhat reduced yield potential.
- Summer crops will reach maturity in the second half of September, with slightly unfavourable to average yield expectations.





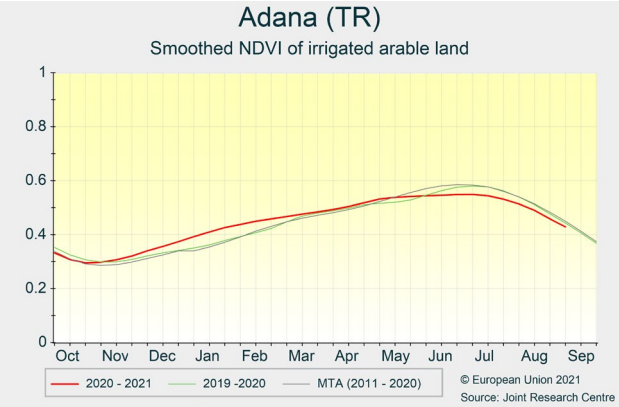
Mediterranean regions

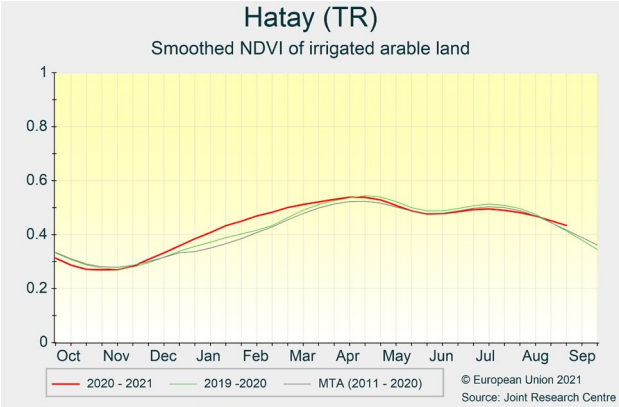
Mixed expectations for summer crops

- In the regions of *Adana* and *Hatay,* summer crops (mostly maize) experienced favourable development until the beginning of June, when it turned into a more difficult season.
- The heatwave at the beginning of July (T_{max} > 35°C) occurred just around maize flowering in *Adana* and just before flowering in *Hatay*.
- As a consequence, crop development in *Adana* accelerated and the grain formation stage was shortened, while in *Hatay* the heat stress hampered vegetative biomass accumulation.

due to the different mitigation effects from irrigation practices. Yield expectations are mediocre in *Adana,* while around average in *Hatay*.

- In *Hatay*, a second and a stronger heatwave occurred in late July, affecting the initial stages of grain filling.
- A third and a fourth heatwave in August caused early senescence of summer crops in the *Adana* region, while the irrigation activities in *Hatay* mitigated the impact of heat stress well (see fAPAR profile for *Hatay*).
- At the beginning of September, most crops were entering maturity.
- Although *Adana* and *Hatay* have experienced a similar hot summer, the yield expectations are different

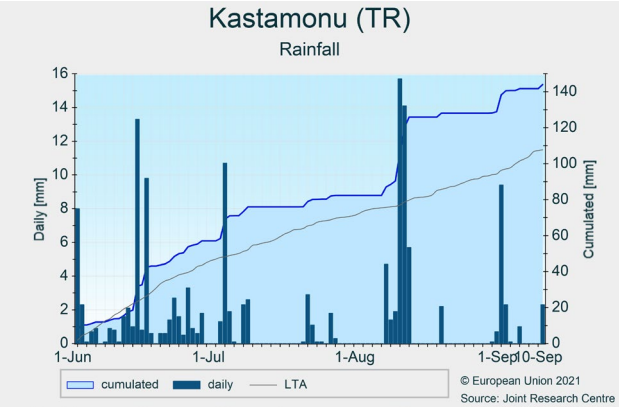


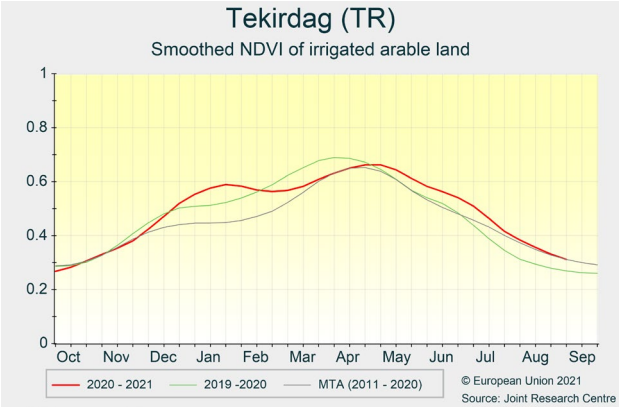


Marmara and Black Sea regions

Abundant and well distributed rainfall allows favourable yield expectations

- In the *Marmara* regions (e.g. *Tekirdag*) and along the Black Sea coast (e.g. *Kastamonu*), June was marked by more frequent and more abundant precipitation than usual. In the same period, the temperatures recorded were fresher than usual (-2°C compared to the LTA).
- Such weather conditions favoured the later stages of grain filling for winter crops.
- In July, when maximum temperatures moved steadily above 30°C, winter crops matured, while summer crops accelerated both biomass accumulation and development, reaching flowering before mid-July.
- At the beginning of August, a heatwave of seven days (T_{max}>35°C) accelerated grain filling of summer crops, but the heat stress was mitigated by 30 mm of precipitation recorded immediately after the heatwave period.
- In the *Marmara* regions, summer crops moved from delayed to normal stages, and entered maturity stage by 20 August with fair yield expectations.
- In the Black Sea regions, the harvest of winter crops occurred before the end of July, closing the main agricultural season.





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Technical note
The long-term average (LTA) used within this Bulletin as a reference is based on an archive of data covering 1991-2020.

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