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JRC MARS Bulletin – Global outlook
North Africa, February 2024

European Commission

JRC MARS Bulletin - Global outlook

Crop monitoring European neighbourhood

Morocco, Algeria, Tunisia, Libya and Egypt

February 2024

Persistent drought hampered crops in the western and central Maghreb

In the western countries of North Africa, cereal yield potentials have been negatively affected by drought. Our analyses show well-below-average crop biomass accumulation in most of the main cereal-growing regions of Morocco and the north-western and central regions of Algeria. A marked delay in winter crop sowing was recorded in Algeria, Tunisia and western Libya. Rainfall events in December and January triggered a steep recovery during the vegetative phase in eastern Algeria and Tunisia. In Libya, at the country level, the positive yield expectations in Cyrenaica are expected to compensate for the below-average expectations in Tripolitania. Favourable growing conditions have prevailed in the main cereal-producing regions of Egypt. Our yield forecasts for cereals in Morocco and Algeria are 15–19% below the 5-year average, while the forecasts for Tunisia, Libya and Egypt are close (from – 3 % to +3 %) to the 5-year average.

Morocco (MA). There was well-below-average crop growth in most of the main cereal-producing regions, with minimal possibility of crops fully recovering. Cereals are in the advanced vegetative stages.

Algeria (DZ). Persistent dry conditions delayed sowing. Damage to crops seems to be irreversible in many western continental regions, while a rapid recovery of growth is observed in eastern central continental regions.

Tunisia (TN). The drought in autumn caused a delay to sowing of 20–30 days. After a rapid recovery, biomass accumulation levels are in line with or slightly below the average. Crops are in the late vegetative development stages.

Libya (LY). Libya faced average to positive growing conditions, despite sowing delays in the north-western coastal regions. Cereals are generally approaching the flowering stage.

Egypt (EG). In the current flowering period, biomass accumulation is above average in all the main cereal-producing regions thanks to favourable weather conditions and predominantly irrigated arable land.

North-Africa yield forecasts - February 2024 Bulletin

Country	Crop	Yield (t/ha)				
		Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23
DZ	wheat	1.64	N/A	**1.40**	– 15	N/A
	barley	1.13	N/A	**1.04**	– 8	N/A
EG	wheat	6.61	N/A	**6.83**	+ 3	N/A
	barley	3.84	N/A	**3.92**	+ 2	N/A
LY	wheat	0.77	N/A	**0.76**	– 1	N/A
	barley	0.51	N/A	**0.52**	+ 1	N/A
MA	wheat	1.58	N/A	**1.32**	– 16	N/A
	barley	1.02	N/A	**0.83**	– 19	N/A
TN	wheat	2.07	N/A	**2.00**	– 3	N/A
	barley	1.18	N/A	**1.18**	– 0	N/A

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

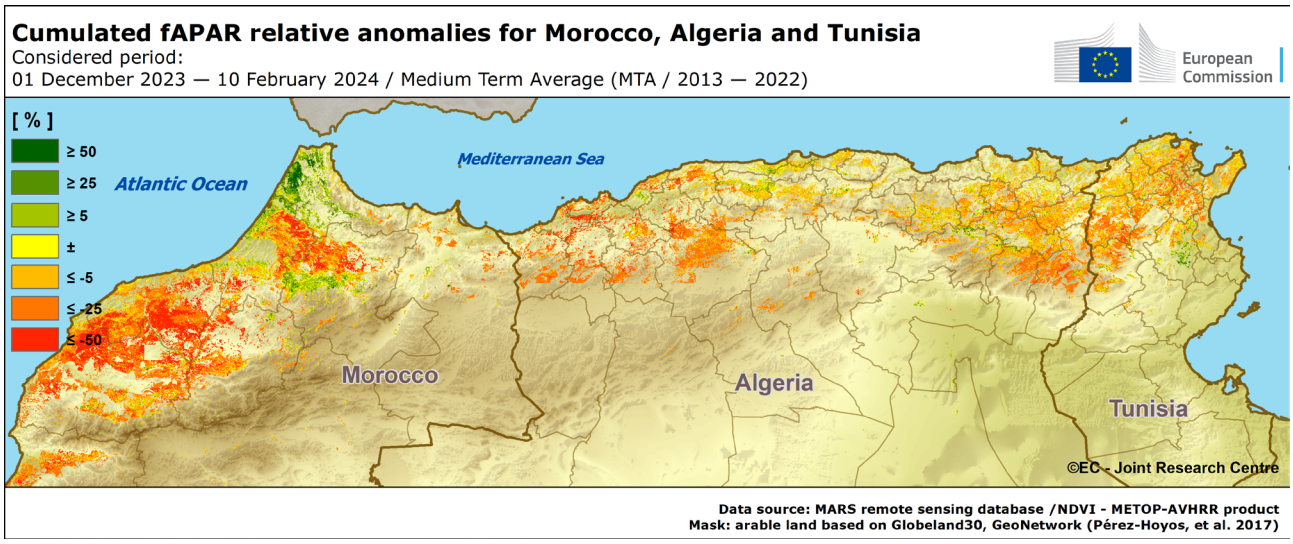
Sources: 2019-2023 data come from FAO, INRA Maroc, ONICL Maroc, Ministère de l'agriculture des ressources hydrauliques et de la pêche Tunisie, MED-Amin baseline DB, DSASI-MADR Algeria and the Egyptian Arab Republic - Ministry of Agriculture and Land Reclamation.

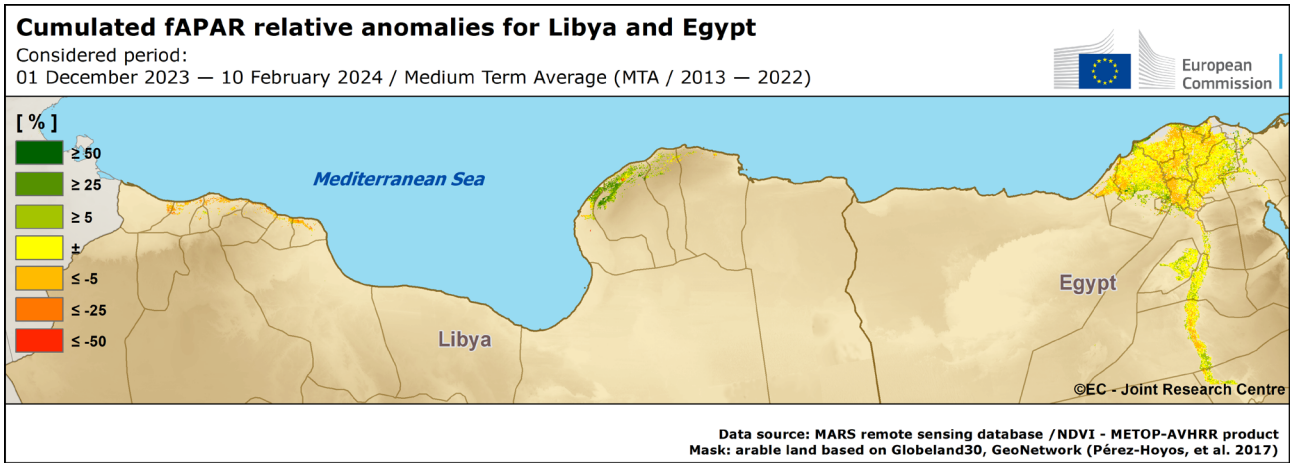
The column header '%24/5yrs' stands for the 2024 change with respect to the 5-year average (%). Similarly, '%24/23' stands for the 2024 change with respect to 2023 (%).

N/A = Data not available.

Joint Research Centre

Country highlights





The maps display – for arable land – the relative differences between the fraction of absorbed photosynthetically active radiation (fAPAR), computed from remote sensing imagery from 1 December 2023 to 10 February 2024, and the medium-term average (MTA) (2013–2022) for the same period. Positive anomalies (in green) reflect above-average canopy density or early crop development, while negative anomalies (in red) reflect below-average canopy density or late crop development.

The period under review was marked by the impact of drought conditions in large parts of the Maghreb. An extended negative anomaly is depicted in **Morocco**, with the exception of the north-western agricultural areas of *Tanger* and parts of *Fès*. Prolonged drought conditions since autumn have hampered crop growth during the vegetative phases, resulting in well-below-average biomass accumulation levels and a risk of crop failure.

Marked negative anomalies are also seen in the agricultural regions of western **Algeria**, where dry conditions and exceptionally high temperatures delayed sowing and hampered crop growth during vegetative development. The agricultural districts of the *Aïn Témouchent*, *Saïda*, *Sidi Bel Abbès* and *Tlemcen* areas are subject to high probabilities of crop failure.

More moderate negative fAPAR anomalies are observed in a belt of coastal and continental regions in central and eastern Algeria, and in the Mediterranean and western continental regions of **Tunisia**. The negative anomalies here are attributed to a seasonal delay in crop growth due to late sowing as a consequence of dry conditions in autumn, which were followed by a prompt recovery as of December, with biomass accumulation levels coming in line with the MTA.

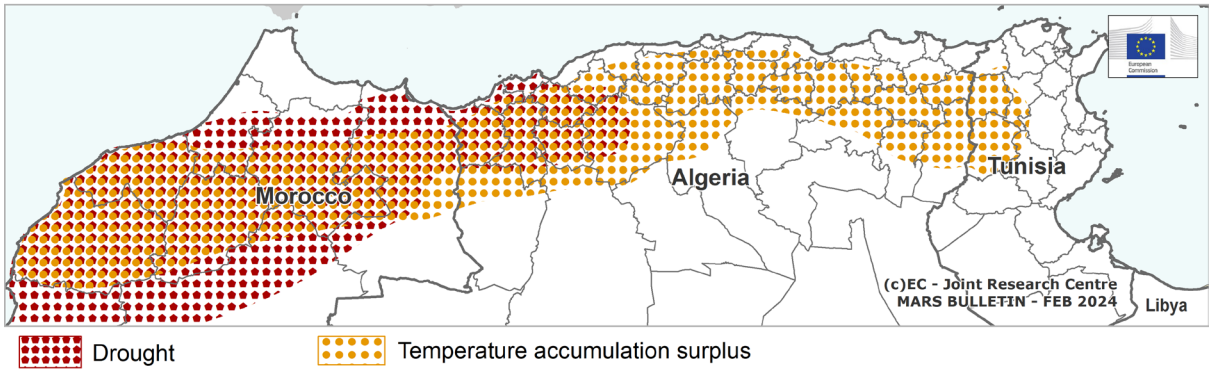
Mixed positive and (moderately) negative fAPAR anomalies are shown along the Mediterranean coasts of **Libya**. In *Tripolitania* (on the north-western coastline),

scarce rainfall in October and November caused delays in crop development, after which crops recovered thanks to substantial rain in December. In *Cyrenaica* (on the north-eastern coastline), where agriculture is predominantly irrigated, more-favourable-than-usual conditions have prevailed since the beginning of the season.

In **Egypt**, winter cereals are exhibiting an average to positive season, thanks to relatively warm winter conditions and the sufficient water supply through irrigation. Positive anomalies are particularly clear in the outer areas of the Nile Delta and along the Nile banks in the regions of *Giza* and *Beni Suef*.

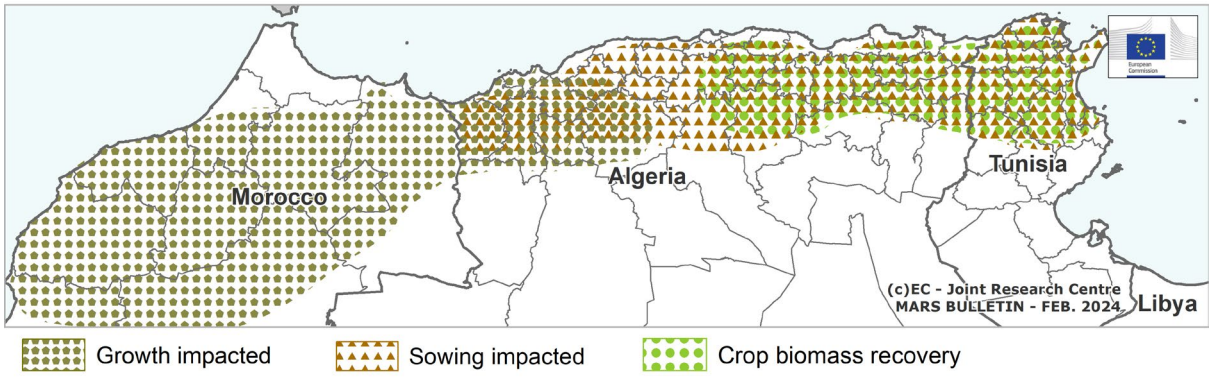
AREAS OF CONCERN - EXTREME WEATHER EVENTS

Based on observed data from 01 December 2023 until 10 February 2024



AREAS OF CONCERN - CROP IMPACT

Based on observed data from 01 December 2023 until 10 February 2024



AREAS OF CONCERN - CROP IMPACT

Based on observed data from 01 December 2023 until 10 February 2024

Morocco (MA)

Negative yield outlook due to persisting drought

Unusually warm and very dry conditions led to below-average biomass accumulation for cereals in Morocco, with minimal possibility of crops fully recovering. The season will be further compromised or even start to turning into crop failure if rain does not arrive in the coming weeks.

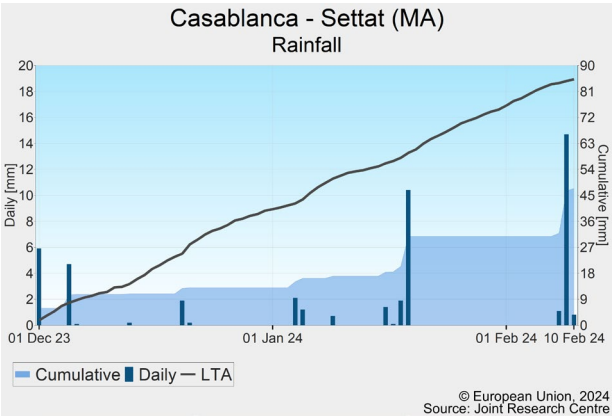
The review period (1 December to 10 February) in Morocco was predominantly dry. Rainfall occurred almost exclusively in the first half of January and, overall, was insufficient to support winter crop growth during the vegetative stages. Cumulative rainfall over the analysis period was well below the long-term average (LTA) in most of the agricultural areas (e.g. *Casablanca*, 45 mm against an LTA of 85 mm, or *Marrakech*, 35 mm against an LTA of 60 mm). These records make the current season one of the driest since 1979. In terms of rainfall amount and distribution, the agronomic season is (so far) similar to that of 2015–2016, which was one of the least productive of the past 15 years.

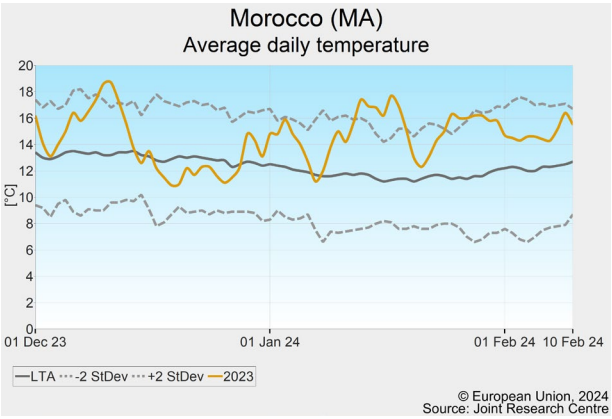
Average daily temperatures were 1–2 °C above the LTA in December and 3–4 °C above the LTA in January and February. Maximum temperatures were unusually high around mid December and mid January, when temperatures of 26–28 °C (8–10 °C above the LTA) were reached in most regions for 2–4 days in total.

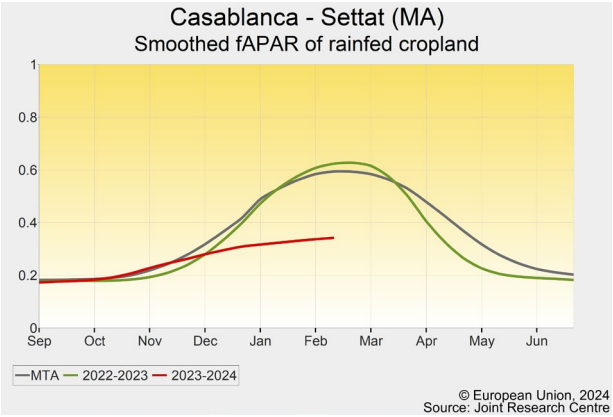
Even though the pre-sowing period (1 September to 30 November) was already dry, with cumulative rainfall in the agricultural areas 40–65 % below the LTA (35–65 mm of deficit), satellite imagery does not indicate a noticeable delay in seasonal sowing; however, biomass accumulation is well below the MTA and is below that of the previous (2022–2023) season. The only exception is *Tanger*, which accounts for 11–13 % of the national production of winter cereals, where the weather brought more frequent and evenly distributed rain events.

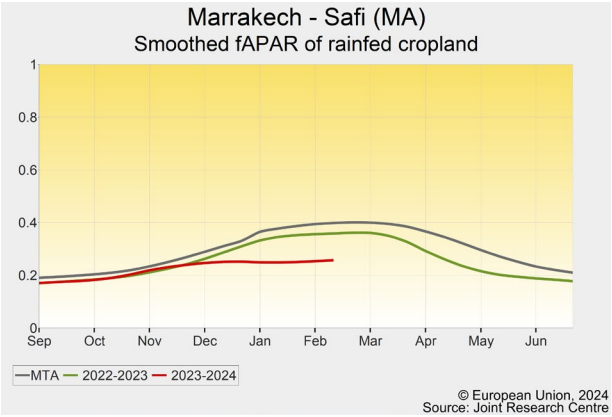
Concerning crop phenological development, cereals in Morocco are now in the advanced vegetative stages and the flowering period is about to begin.

Overall, yield prospects at the country level range from 16 % (wheat) to 19 % (barley) below the 5-year average. There are minimal expectations of crops fully recovering, even if substantial rainfall occurs in the coming weeks.









Algeria (DZ)

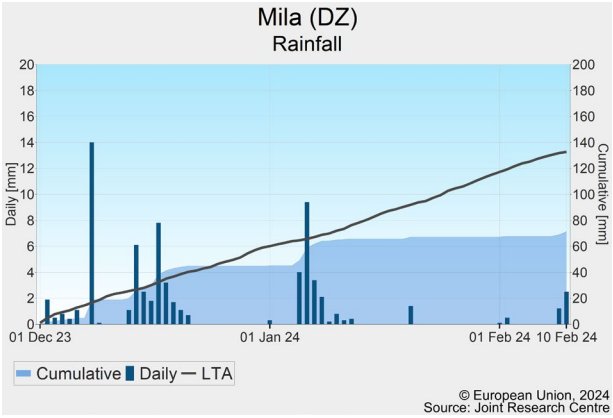
Drought causes difficult start to the cropping season

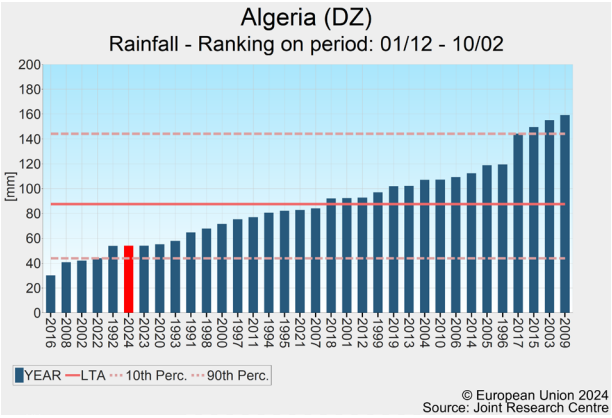
Persistent dry conditions have caused delays in sowing and the start of the cropping season in Algeria. Crop biomass accumulation has been negatively affected in the westerns regions, with some cases of crop failure, but is showing signs of recovery in the central and eastern regions. Urgent rain is needed to sustain crops. Our yield outlook is below the 5-year average.

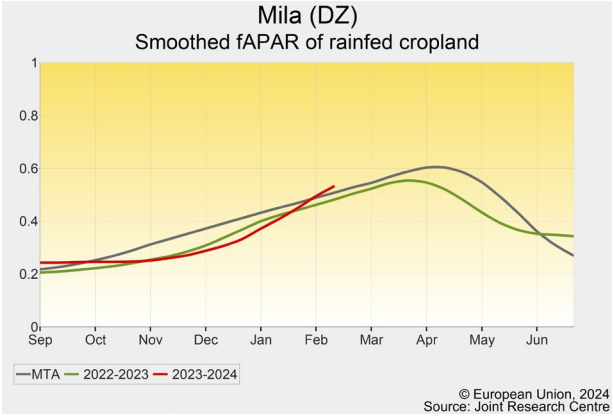
During the first part of the winter crop season in Algeria, as well as in the broader Maghreb region, the country experienced dry and warmer-than-usual weather conditions across its agricultural area.

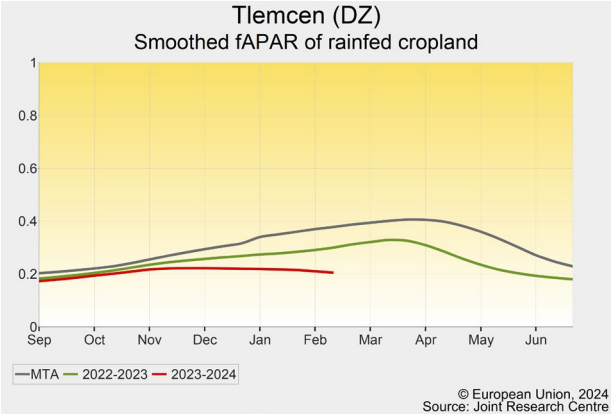
Western regions, including *Tlemcen*, *Sidi Bel Abbes*, *Mascara* and *Saida*) experienced severe rainfall shortages throughout the analysis period (1 December to 10 February), with only one event exceeding 5 mm/day, occurring in early January. In *Tiaret*, as well as in the central regions of *Medea*, *M'sila*, *Batna* and *Setif*, rainfall was close to the LTA until 5 January, but have been nearly absent since then. In the easternmost regions of the country (e.g. *Mila*, *Oum El Bouaghi* and *Constantine*), weather conditions were similar, but cropping systems are less vulnerable due to a higher proportion of irrigated land. Satellite observations indicate that winter crop sowings in the western-continental regions were delayed compared to the average season, and depicted below-average biomass accumulation due to the prevailing dry conditions. Of particular concern are the regions of *Tlemcen*, *Sidi Bel Abbes*, *Saida* and *Ain Témouchent*, where crop damage appears to be irreversible, and crops are at risk of failure. In a belt of eastern (e.g. *Mila*) and central (e.g. *Bouira*) continental regions, satellite indicators highlight the delay in sowing due to the autumn drought, but also show a rapid biomass recovery to medium-term average levels. This can be attributed to the higher share in irrigated arable land but also to the beneficial rains that occurred in December and the beginning of January. However, additional rainfall is needed to support crops during the flowering stage in the coming weeks.

Our yield forecast for all winter cereals in Algeria is set below the 5-year average.









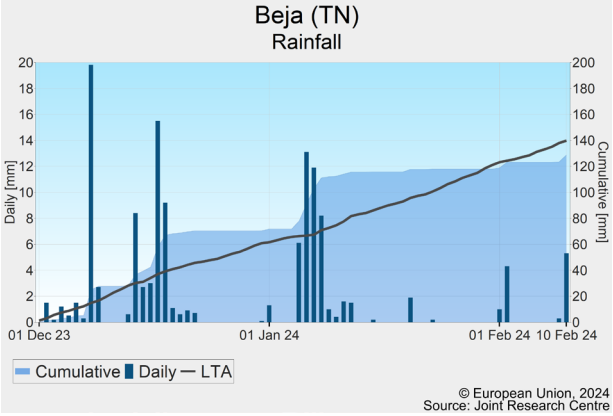
Tunisia (TN)

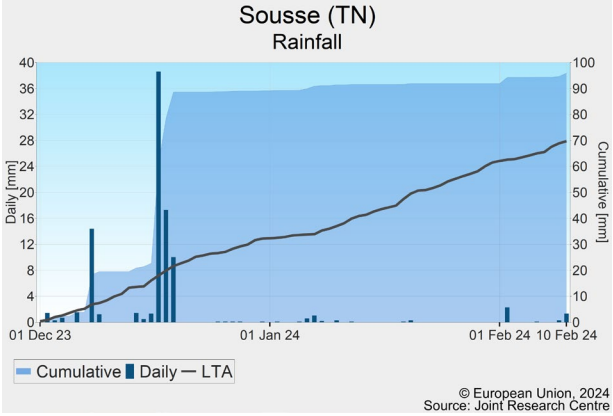
Rapid crop recovery after a dry start to the cropping season

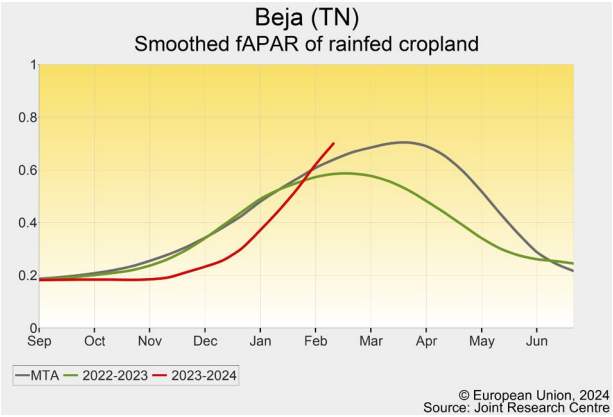
Rainfall in December and January replenished soil moisture after a drought in autumn. After a marked delay in sowing, winter cereals are promptly recovering. Yield expectations are positive, but more rainfall is needed to sustain crops in the flowering stage.

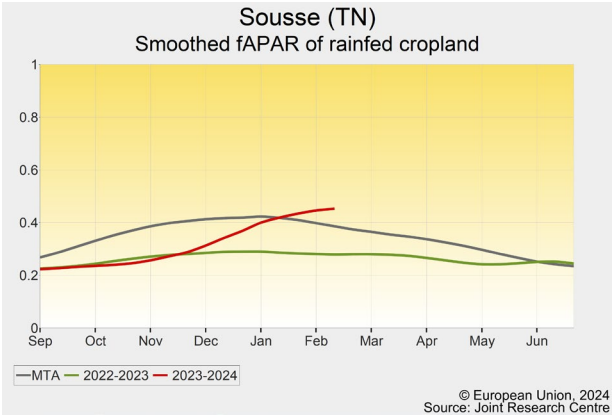
The winter crop season in Tunisia was marked by drought in September–November, followed by seasonal rain events in December and early January. Cumulative rainfall during the review period (1 December to 10 February) ranged from slightly below to in line with the LTA in the coastal and continental regions of the north, and moderately above average in the central Mediterranean regions. Average daily temperatures were between 0.5 °C and 2 °C above the LTA; between 15 and 20 January, they were 6–8 °C above the LTA. Thermal sums (T_{base} = 0 °C) were 10–20 % above the LTA.

The drought in the autumn period caused a delay of 20–30 days in the sowing of winter cereals. The rainfall events in December and January replenished soil moisture and triggered a steep recovery during germination and the whole vegetative phase. At present, biomass accumulation levels are in line with or slightly below the MTA and the phenological development of winter cereals is, on average, in the late vegetative stages. Yield and production expectations are positive; however, no significant rainfall has been observed since 15 January and more rainfall is needed to sustain growth during the upcoming flowering and grain-filling stages. Our yield forecast for winter crops is in line with the 5-year average.









Libya (LY)

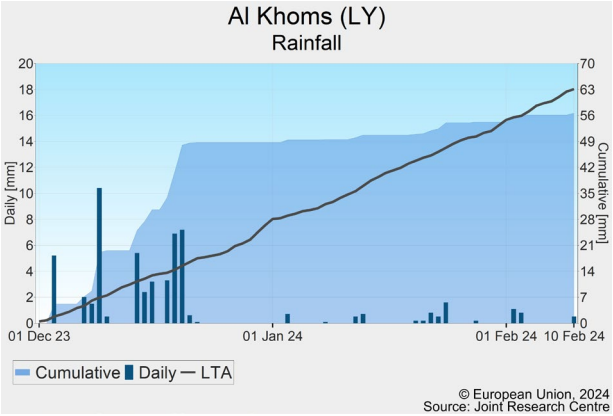
Above-average yield expectations

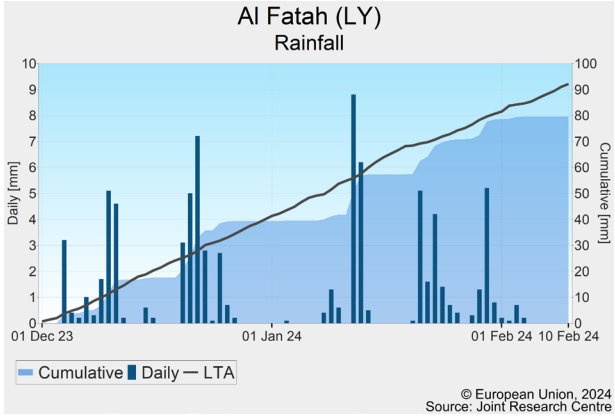
The season has been characterised by above-average daily temperatures. Rainfall was scarce at the beginning of the season in Tripolitania, leading to sowing delays, but was evenly distributed and therefore beneficial for crops in Cyrenaica. Average to above-average yields are expected.

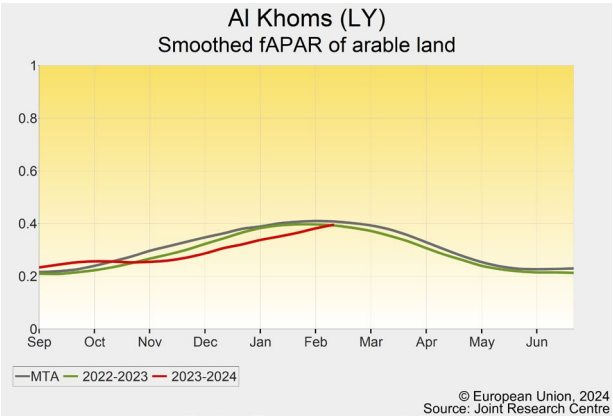
In the agricultural regions of *Tripolitania* (on the north-western coastline), the beginning of the agricultural season was marked by temperatures 1–2 °C above the LTA, with the exception of 15–20 January, when daily temperatures exceeded the LTA by 6–8 °C. Rainfall accumulation was in line with the LTA, with rain events occurring almost exclusively in the first half of December. However, the rain events that typically precede and accompany sowing from September to November were scarce, causing delays in winter crop sowing of about 3 weeks compared with an average season. During the vegetative phase (December–January), in some regions (e.g. *Az Zāwiyah* and *Al 'Azīzīyah*) biomass accumulation in winter cereals recovered up to the MTA, whereas in other regions (e.g. *Al Khums*, *Tripoli* and *Misrata*) a 10-day delay in growth is still observed.

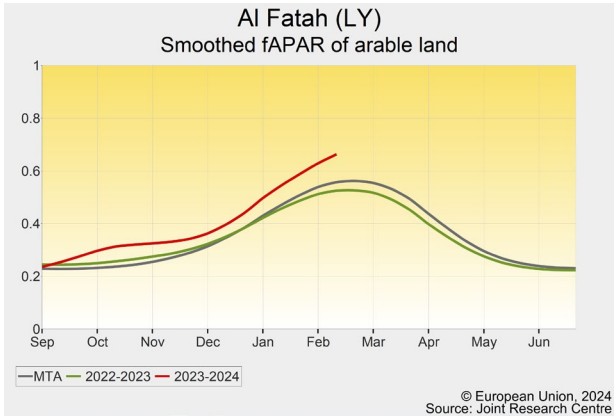
In *Cyrenaica* (on the north-eastern coastline), average daily temperatures were 1–3 °C above the LTA. Cumulative rainfall was close to the LTA, and rainfall events were beneficial for crops, as they were frequent and evenly distributed. In these regions, sowing was timely this year and the analysis of remote sensing profiles shows that, overall, cereal biomass accumulation is in line with the MTA. In the agricultural areas of *Al Fatah*, satellite images indicate above-average to well-above-average biomass accumulation. This is most likely due to the strong presence of irrigated cropland.

At present, cereals in Libya are generally approaching flowering. Our yield forecasts are based on the historical trend and are above the 5-year average.









Egypt (EG)

Yield expectations moderately above the 5-year average

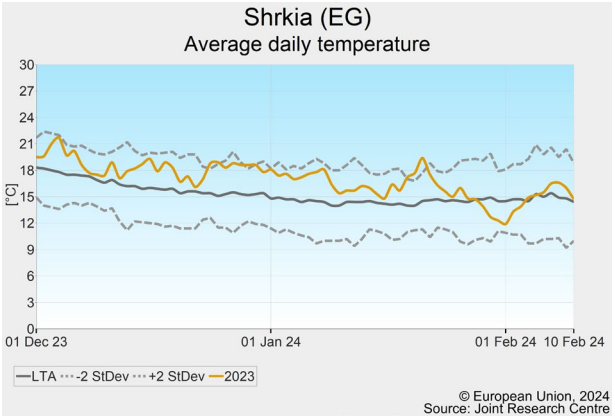
Above-average thermal conditions have prevailed across the major cereal-producing regions of Egypt. Crops are faring well thanks to the water supplied through irrigation. Winter crops are now at the beginning of flowering. Our forecasts for the country are moderately above the 5-year average.

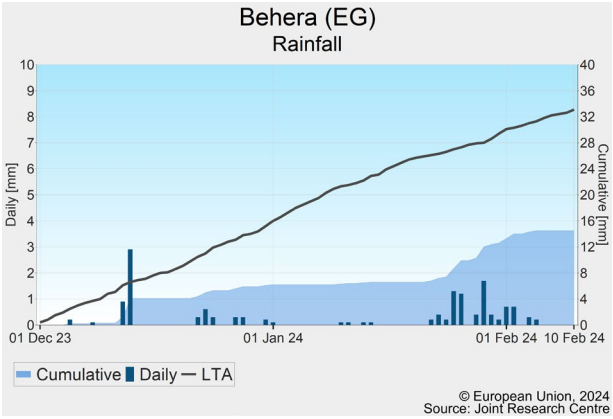
Above-average temperatures (1–2 °C above the LTA) have sustained crop growth in Egypt since the beginning of the season. In the Nile Delta, temperatures were 3–4 °C above the LTA from 25 December to 10 January. Similar temperature profiles were observed in the Nile Valley region.

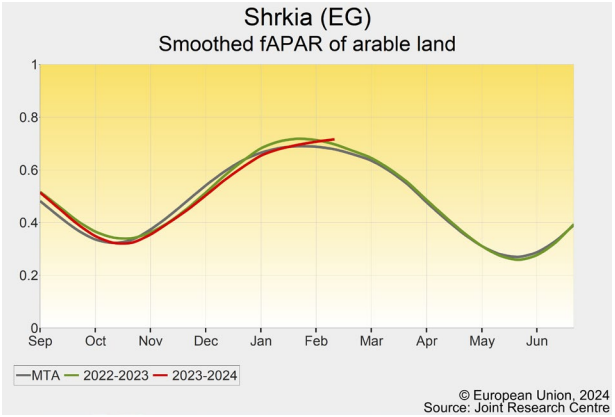
Rainfall during the review period was below the LTA in the Nile Delta (deficit of 10–20 mm) and in line with the LTA in the Nile Valley region. However, most cereal production in Egypt is not influenced by rainfall variations since it relies on the irrigated fields of the Nile Valley and the Nile Delta.

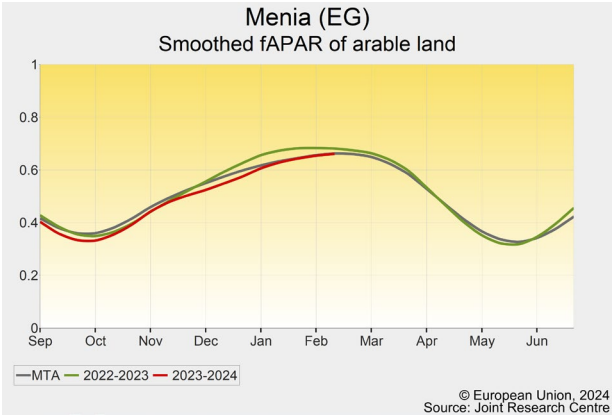
The predominance of warmer-than-usual conditions boosted the germination of crops sown from the end of September through October (the standard sowing window) and biomass accumulation during crop vegetative development (November–January). No abiotic stress conditions were observed for crops at the beginning of flowering in February and no limitations due to biotic disease stresses were reported.

The analyses of satellite imagery confirm average to above-average growing conditions for cereals. Our yield forecasts are based on historical trends and are above the 5-year average.









Crop yield forecast

North-Africa yield forecasts for wheat - February 2024 Bulletin

Country	Area (x 1000 ha)					Yield (t/ha)					Production (x 1000 t)				
	Avg 5yrs	2023	2024	%24/5yrs	%24/23	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	Avg 5yrs	2023	2024	%24/5yrs	%24/23
DZ	1 655	1 389	**1 389**	– 16	+ 0	1.64	N/A	**1.40**	– 15	N/A	2 999	N/A	**1 941**	– 35	N/A
EG	1 335	1 339	**1 339**	+ 0	+ 0	6.61	N/A	**6.83**	+ 3	N/A	8 801	N/A	**9 147**	+ 4	N/A
LY	172	170	**170**	– 1	+ 0	0.77	N/A	**0.76**	– 1	N/A	132	N/A	**129**	– 3	N/A
MA	2 611	2 433	**2 433**	– 7	+ 0	1.58	N/A	**1.32**	– 16	N/A	4 208	N/A	**3 223**	– 23	N/A
TN	565	517	**517**	– 8	+ 0	2.07	N/A	**2.00**	– 3	N/A	1 194	N/A	**1 035**	– 13	N/A

North-Africa yield forecasts for barley - February 2024 Bulletin

Country	Area (x 1000 ha)					Yield (t/ha)					Production (x 1000 t)				
	Avg 5yrs	2023	2024	%24/5yrs	%24/23	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	Avg 5yrs	2023	2024	%24/5yrs	%24/23
DZ	1 098	1 025	**1 025**	– 7	+ 0	1.13	N/A	**1.04**	– 8	N/A	1 295	N/A	**1 069**	– 17	N/A
EG	26	25	**25**	– 5	+ 0	3.84	N/A	**3.92**	+ 2	N/A	100	N/A	**96**	– 4	N/A
LY	137	138	**138**	+ 0	+ 0	0.51	N/A	**0.52**	+ 1	N/A	70	N/A	**71**	+ 1	N/A
MA	1 262	1 137	**1 137**	– 10	+ 0	1.02	N/A	**0.83**	– 19	N/A	1 322	N/A	**944**	– 29	N/A
TN	440	303	**303**	– 31	+ 0	1.18	N/A	**1.18**	– 0	N/A	562	N/A	**358**	– 36	N/A

North-Africa yield forecasts for soft wheat - February 2024 Bulletin

Country	Area (x 1000 ha)					Yield (t/ha)					Production (x 1000 t)				
	Avg 5yrs	2023	2024	%24/5yrs	%24/23	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	Avg 5yrs	2023	2024	%24/5yrs	%24/23
DZ	306	241	**241**	– 21	+ 0	1.44	N/A	**1.27**	– 12	N/A	503	N/A	**306**	– 39	N/A
EG	1 149	1 148	**1 148**	– 0	+ 0	6.56	N/A	**6.80**	+ 4	N/A	7 550	N/A	**7 810**	+ 3	N/A
LY	—	—	**—**	—	—	—	—	**—**	—	—	—	—	**—**	—	—
MA	1 721	1 602	**1 602**	– 7	+ 0	1.63	N/A	**1.36**	– 16	N/A	2 850	N/A	**2 179**	– 24	N/A
TN	65	61	**61**	– 7	+ 0	1.88	N/A	**1.84**	– 2	N/A	125	N/A	**112**	– 11	N/A

North-Africa yield forecasts for durum wheat - February 2024 Bulletin

Country	Area (x 1000 ha)					Yield (t/ha)					Production (x 1000 t)				
	Avg 5yrs	2023	2024	%24/5yrs	%24/23	Avg 5yrs	2023	MARS 2024 forecasts	%24/5yrs	%24/23	Avg 5yrs	2023	2024	%24/5yrs	%24/23
DZ	1 349	1 148	**1 148**	– 15	+ 0	1.68	N/A	**1.42**	– 15	N/A	2 496	N/A	**1 635**	– 34	N/A
EG	185	190	**190**	+ 3	+ 0	6.87	N/A	**7.03**	+ 2	N/A	1 252	N/A	**1 337**	+ 7	N/A
LY	—	—	**—**	—	—	—	—	**—**	—	—	—	—	**—**	—	—
MA	891	831	**831**	– 7	+ 0	1.50	N/A	**1.26**	– 16	N/A	1 357	N/A	**1 045**	– 23	N/A
TN	500	457	**457**	– 9	+ 0	2.09	N/A	**2.02**	– 3	N/A	1 069	N/A	**923**	– 14	N/A

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

Sources: 2019-2024 data come from FAO, INRA Maroc, ONICL Maroc, Ministère de l'agriculture des ressources hydrauliques et de la pêche Tunisie, MED-Amin baseline DB, DSASI-MADR Algeria and the Egyptian Arab Republic - Ministry of Agriculture and Land Reclamation.

2024 yields come from MARS Crop Yield Forecasting System (output up to 20.02.2024).

The column header '%24/5yrs' stands for the 2024 change with respect to the 5-year average (%). Similarly, '%24/23' stands for the 2024 change with respect to 2023 (%).

N/A = Data not available.

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Technical note
The long-term average (LTA) used within this Bulletin as a reference is calculated on the basis of weather data from 1991-2023. The medium-term average (MTA) used within this Bulletin as a reference is based on an archive of data covering 2013-2023.

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