



MED-Amin Bulletin 2023 – 1

Winter crops outlook at 10 March 2023

The start into the 2023 cereal campaign was mainly influenced by dry conditions with uneven impacts across the Mediterranean region. In Northern and Eastern Mediterranean, despite relatively dry conditions in January and February 2023, crops are progressing well, with areas to watch in Southern France, Eastern Spain, Northern Italy and Central Anatolia (Türkiye), where impacts could occur in the absence of rainfalls in the coming weeks.

In Maghreb countries, severe droughts are already hampering cereal growth with conditions considered poor in Western and Eastern Algeria, Central and Southern Morocco, and Central Tunisia.

In the North-Western Mediterranean, heavy rainfalls in the fall (October-December 2022) and high input prices led to delayed sowing and reduced areas cultivated in winter cereal (Portugal) or reduction in early fertilization (Spain).

To date, the positive crop growing conditions observed in France (the main soft wheat and barley producer in the MED-Amin area) are expected to compensate below-average cereal expectations in the Maghreb region.

The present **bulletin** gives an outlook about the progress of cereal crops in the Mediterranean region. It provides **early qualitative forecasting** of the **2022-2023 campaign**, with particular focus on soft wheat, durum wheat and barley. This **first outlook** reviews crop conditions from the sowing up to **10 March 2023**, with a specific **focus on the 1 December - 10 March period**.

This crop monitoring and early warning initiative was progressively **developed since 2016 by the MED-Amin network in collaboration with the Joint Research Centre (JRC) of the European Commission**, providing an **early qualitative** assessment of crop condition and yield potential of **three winter cereals** (soft wheat, durum wheat, barley) based on a GEOGLAM-like approach but with a **two-steps methodology** using remote sensing and feedback from national Focal Points which enabled to identify **hot-spots** of concerns at **subnational** level using nomenclature and pie-charts similar to GEOGLAM for AMIS (Agricultural Market Information System) and to disseminate corresponding **warnings**.¹

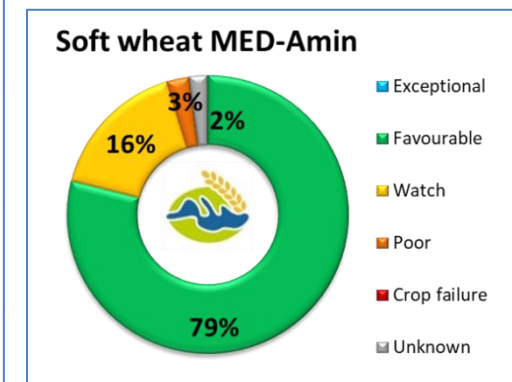
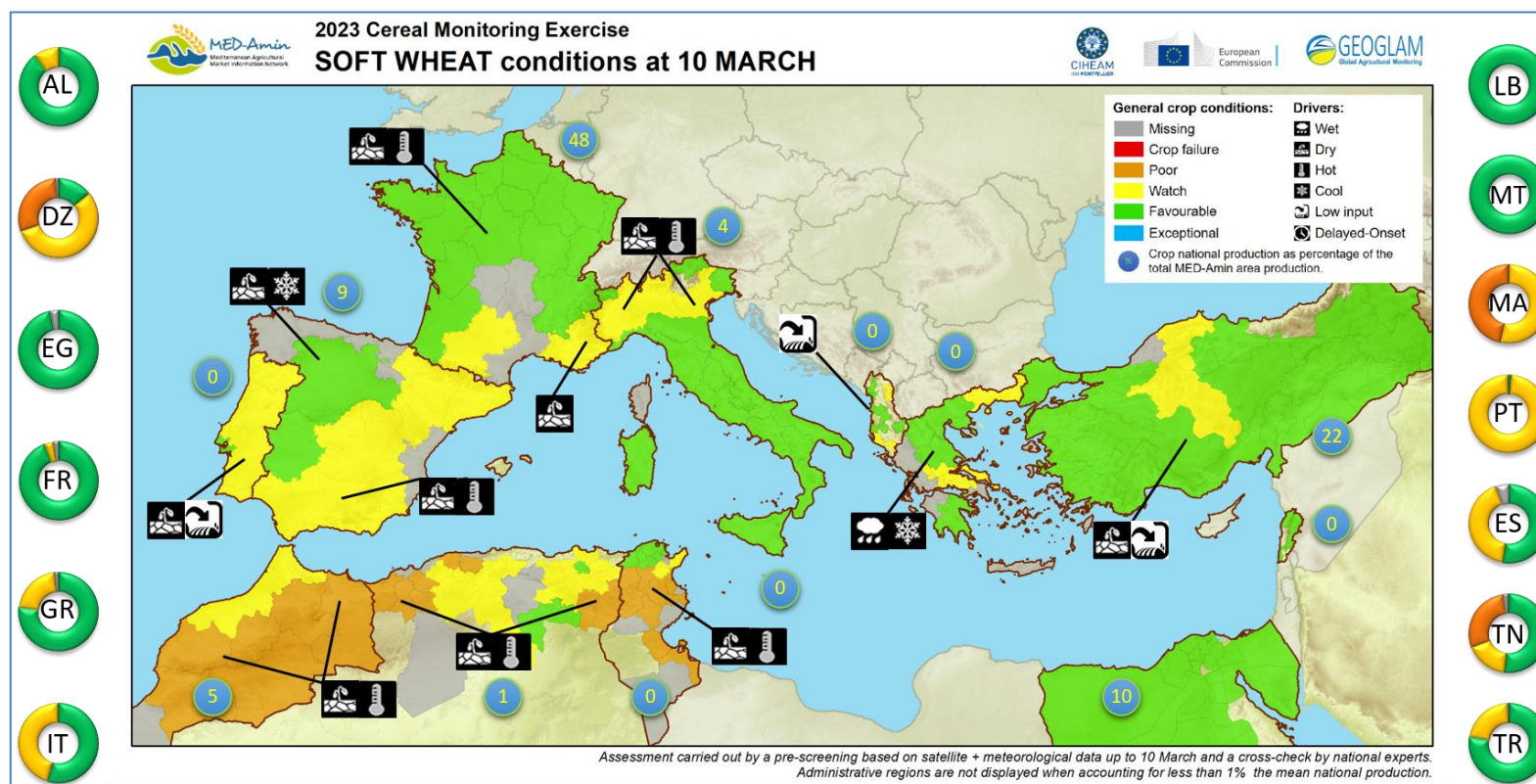
In a context of **rapid market changes** at global and notably Mediterranean level, boosted by the war in Ukraine, a new driver 'low input' can be displayed among the other abiotic drivers of future production.

¹ MED-Amin network, gathering 13 Mediterranean countries and coordinated by the CIHEAM (International Centre for Advanced Mediterranean Agronomic Studies), aims to reduce prices volatility in agricultural markets. This initiative lays the foundation for an early warning system strengthening food security in the region. For more info: <http://www.med-amin.org>, <http://ec.europa.eu/jrc/en/mars> and <http://cropmonitor.org>

The regional outlook for **Soft Wheat** is positive **with crops developing under more favourable conditions** than durum wheat and barley, with a large majority of the MED-Amin planted area under ‘favourable’ conditions (79% of the monitored area, see pie chart below; which is below the 89% of last year at the same date).

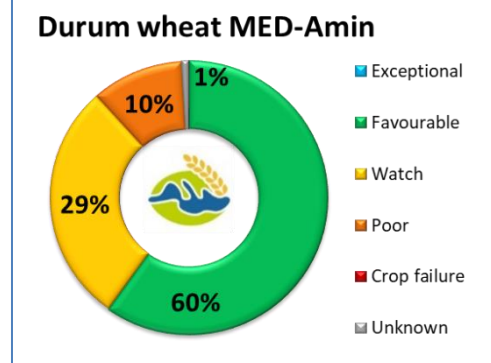
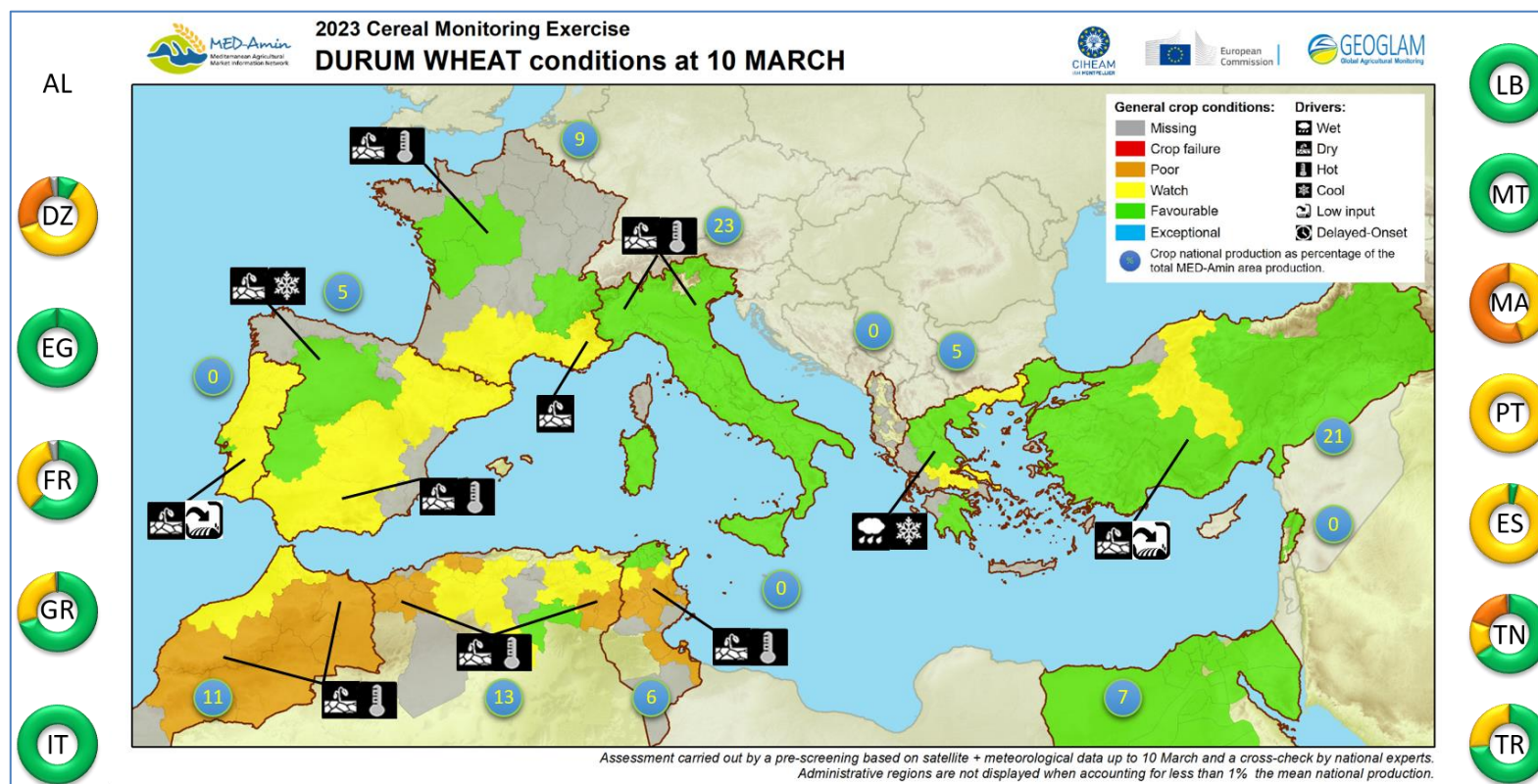
Soft wheat is growing well both in **France** (FR) and **Türkiye** (TR), the most productive countries of the region (accounting for 48% and 22% of MED-Amin production respectively). In **Morocco** (5% of MED-Amin production), the outlook for soft wheat is already cause of concern, with all cropping area under ‘watch’ or ‘poor’ situation due to a persistent drought. In **Italy** (4% of Med-Amin production), northern regions dry conditions may impact crops in the absence of rain in upcoming weeks.

Please see the National Highlights section of this bulletin.



Durum Wheat is a typical Mediterranean commodity and crop (47% of World production). 60% of the Durum wheat area planted in the MED-Amin region is developing under 'favourable' conditions, in particular in Italy (IT) and Türkiye (TR) which accounts respectively for 23% and 21% of the MED-Amin production. However, 39% of crops are developing under 'watch' or 'poor' conditions (29% and 10% respectively, see pie chart below), in particular in Maghreb countries (Algeria, Morocco and Tunisia) which together represent 30% of regional durum wheat production. In Southern France and South-Eastern Spain (countries representing respectively 9% and 5% of regional production), crops will be affected by drought in the absence of significant rainfall in the upcoming weeks (under 'watch' status). Globally, crop conditions are favourable over slightly larger areas than last year.

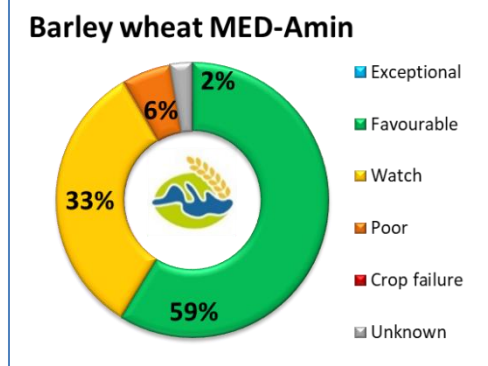
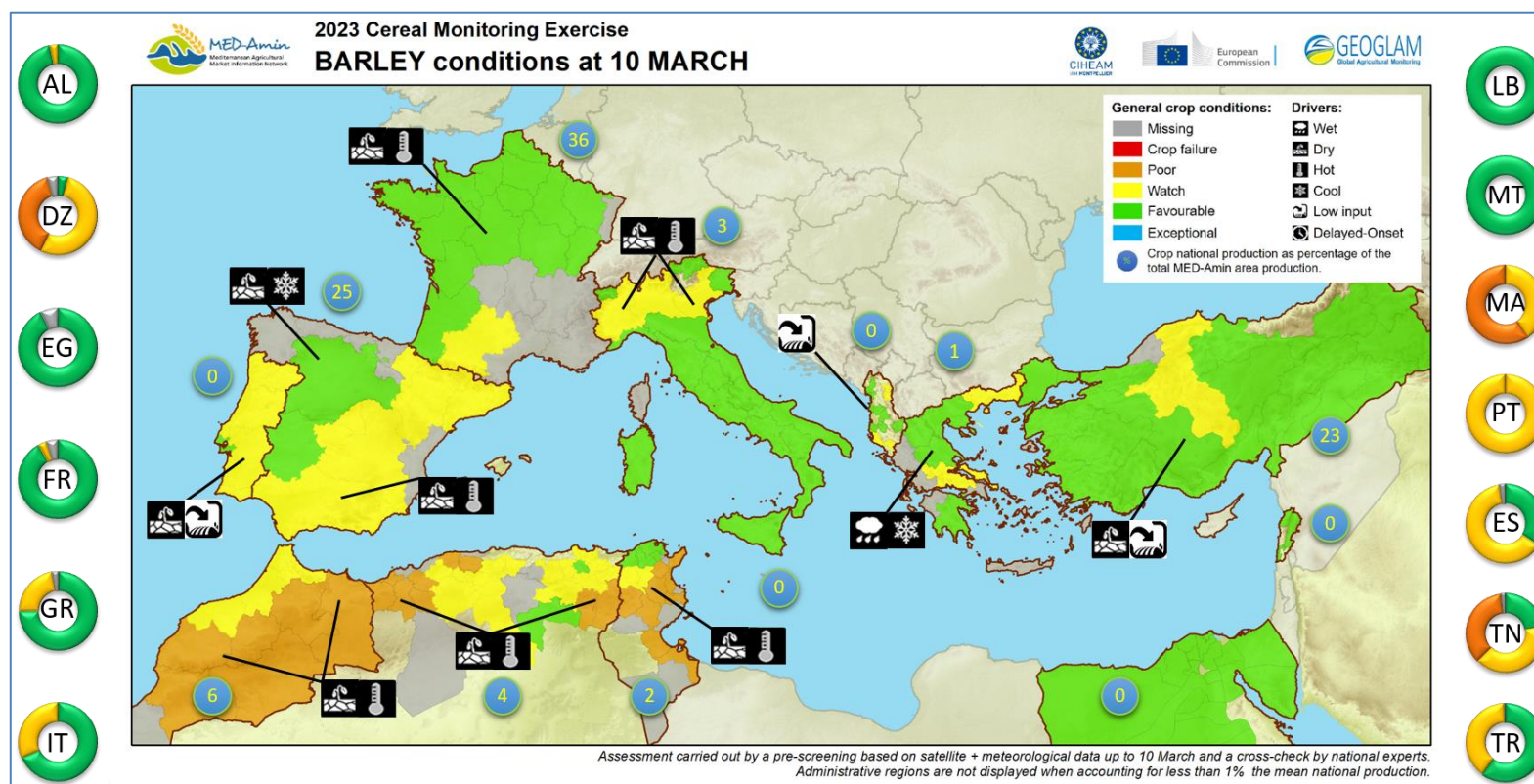
Please refer to the National Highlights section of this bulletin.



Barley crop conditions are globally similar to those of durum wheat at this early stage in the season. A third of the MED-Amin planted area is under scrutiny ('watch' status), while 6% are already considered 'poor' with harvest likely to be significantly impacted (see pie-chart below on the right). In several countries, barley is the winter crop most affected by weather anomalies (dry, hot) of the campaign. With only 59% of the areas considered 'favourable', the situation is raising more concern than last year at the same date (72% were favourable at this stage).

For instance, in **Morocco** (MA) accounting for 6% of MED-Amin barley production (based on the last 5-Y average), almost 60% of planted areas are 'poor'. In **Algeria** (DZ) accounting for 4% of MED-Amin area barley supply, more than 1/3 of planted areas are 'poor', in particular in the most eastern and western wilayas (see pie chart on the left side of the map below).

Please refer also to the National Highlights section.



National highlights



Albania: The planting season was completed on time and in optimal conditions on almost the entire territory (with some delay in *Durrës*, due to heavy December rainfall). Planted area is moderately larger than in recent years in *Berat*, *Dibër* and *Fier*, and significantly larger in *Tiranë*. In the main winter grain producing areas (*Berat*, *Elbasan*, *Fier*, *Korçë*, *Tiranë*), warm and relatively dry meteorological conditions with well-distributed precipitation events (accumulated precipitation below the long term average (LTA) of reference) have been globally **favourable**, resulting in **above average crop development**. Locally, above average rainfall resulted in flooding with no significant damage (*Shkodër*, *Tiranë*). A cold spell in mid-February had no significant impact on crop conditions. Crop biomass accumulation for winter cereals is moderately above-average and crop development advanced with respect to the average season.



Algeria: The start into the cereal campaign in Algeria was marked by **persistent dry conditions** and **above-average temperature** sums. In the period September–November, the country experienced severe rainfall deficits with rainfall cumulates ranging from -50% to -80% compared to the long term reference, especially in the northwestern regions of the country (e.g. *Tlemcen*, *Mascara*, *Saida* and *Sidi Bel Abbès*). In those regions, sowings were delayed by 2-3 weeks and biomass accumulation resulted below the medium-term average since the early vegetative stages. During the period from the beginning of December to mid-February, the drought worsened and expanded to the central and particularly to the eastern regions of the country (e.g. *Oum El Bouaghi*, *Batna* and *Tebessa*). Rainfall cumulates in this period have set the lowest record in many important agricultural regions. The climatic condition this season led to **delays in sowings**, **slow development** and **below-average biomass accumulation** during vegetative stages. Rain is urgently needed to sustain crops and avoid further losses in the Algerian cereal campaign.



Egypt: **Colder-than-usual** thermal conditions, with drop in temperature at night and wind, have characterised the season in Egypt so far, especially during the second half of January. Satellite imagery shows average to above-average conditions for cereals, which indicates that there was **sufficient water supply** from irrigation, and from rain in coastal areas, to support **adequate crop growth** during the vegetative and reproductive stages of development. Crops are currently at the flowering stage. A fair increase in cereal production is associated with a moderate increase in the seasonal planted area.



France: Overall, growing conditions are **good or very good**. Sowing took place in adequate conditions thanks to a mild autumn which allowed the vegetative phase to take a slight lead compared previous year averages. However, **Mediterranean regions have received less water** than the rest of the territory and need to be closely monitored.

France experienced a **very dry winter** characterized by a rainfall deficit that exceeded 75%, with an unprecedented sequence of 32 days without precipitation from January 21 to February 21. The average temperature has been abnormally mild since mid-December, 2 to 7°C above normal, with a record average of 14°C on December 31. At the end of February, the abnormally dry soil situation corresponded to a normal situation in mid-April, with yellowing of the crops sowed in autumn, especially barley. The return of the rains at the beginning of March improved crop conditions and allowed crops to use the first nitrogen inputs. Wheat changed colour and stages advanced. However, after the rainfall deficit at the start of the year and a very dry 2022 season, **groundwater levels remain very low**. Recharging is still possible until the beginning of April; then rainfalls will mainly be used by the spring vegetation without recharging the water tables. A few diseases such as *septoria* and *powdery mildew* have been reported.

The Mediterranean regions did not benefit in the same way as the rest of the national territory from the rains in early March and are impacted by the lack of water (*Occitanie, PACA*). The water deficit may affect crop conditions (yellowing of cereals, development of diseases due to a deficiency or limited use of nitrogen by the crops), yields and the quality of the harvest, in particular in shallow soils; crops in deep soils generally resist better.



Greece: Conditions are **generally favourable**. The sowing of winter cereals started 20 days before the average season (beginning in November in several regions) under mild conditions and progressed well throughout the sowing campaign on most of the territory. In January, crop benefitted from colder-than-usual conditions and favourable rain events. In February, crops slightly slowed down in biomass accumulation due to a cold spell occurring in 5-12 February. Remote sensing profiles suggest advance in crop development and above-average biomass formation. Winter crops are in fair to good conditions, **except in Eastern Macedonia and Thraki** (particularly *Evros*) where sowing started on time under optimal conditions, but a **prolonged drought** resulted in delayed growth and non-utilization of nitrogen fertilization. In Central Macedonia (*Pieria*) seed quality has improved and fertilizer use has been sufficient (motivated by the highest producer prices) despite high input costs. In Western Macedonia (*Grevena*), winter has been mild, without snow or low temperatures, which triggered an early vegetative growth, accompanied by an increase in fungal and insect infestation (*Zabrus tenebrionides*), currently managed with the use of fungicides and the application of spring fertilizers. In *Drama*, conditions are more favourable than 5-y average despite fungal attacks and stress due to frost. In *Xanthi* (Eastern Macedonia and Thraki) an

increase of 20% in areas winter cereal cultivated area is noted, with good weather conditions and seeds quality. In Thessaly (*Larissa*), the main issue is associated with high costs of production (energy, fertilization, crop protection products, etc.). In *Karditsa* (Thessaly) no extreme weather events or damage to production were observed. In Central Greece (*Fthiotida*), conditions are very favourable, with grain harvest likely to be ahead of normal dates, and production above average. However, crop development will depend on spring weather conditions (in particular in *Drama* and *Xanthi*, Eastern Macedonia and Thraki). In addition, later events may impact crops, as observed in Central Macedonia (*Imathia*) in the last 2 years, where significant rainfall during the harvest season resulted in quality degradation of the final products.



Italy: In Northern regions, snow accumulation on the Alps is lower than last year and water **reservoirs** (northern lakes) **present already at very low levels**. Warm temperatures in the 1 December – 13 March period, ranked among the top 3 warmest winters in our records. Very dry conditions are particularly observed in Piemonte (North-West). Northern regions are prevailing soft wheat and barley producers. Winter crops' phenological cycle is anticipated and in **overall good conditions**, however, there are increasing concerns about the actual conditions of soil moisture and irrigation water availability for spring. In Southern and central regions, where most of the durum wheat is grown, warm temperatures and around-average precipitation led to favourable and anticipated development of winter crops, with **positive expectation**, especially for durum wheat.



Lebanon: Seasonal temperatures took place from beginning of December to mid-January while heatwaves took place around 20-January and at beginning of March. Rainfall cumulate was below-average thorough the period of interest, while rain events took mainly place at beginning of February. Crop **biomass accumulation is advanced** and moderately-above the average season. In a context of high input and crop prices, **planted areas have moderately increased** compared to a 5-y average, but farmers are more dependent on locally produced seeds by regional research organizations such as ICARDA and ASCSAD.



Malta: **Average progress** of winter cereals despite scarce rainfall events in December and January, and an extreme rainfall event in the first half of February.



Morocco: The **autumn drought** caused **sowing delays** of nearly 20 days, a reduced sown area and below-average biomass accumulation. The first half of December saw frequent rain events, but since January a precipitation deficit has been recorded in most of the agricultural areas. Moderate-to-full crop recovery is registered in the regions of *Casablanca*, *Rabat* and *Tanger*, which benefited from the rainfall in December. However, below-average biomass accumulation is observed in all the other regions. In particular, remote sensing indicators confirmed moderately below-average biomass accumulation levels in the regions of *Rabat-Salé-Kénitra*, *Tanger-Tétouan-Al Hoceima* and *Casablanca-Settat* while resulted from below to well below the MTA in the regions of *Marrakech-Safi*, *Béni Mellal-Khénifra*, *Souss-Massa*, *Oriental*, *Fés-Meknés*, and *Drâa-Tafilalet*. Overall, cereals production prospects at country level are **below average**, albeit above last year's levels. The season will be further compromised if rains do not arrive in the coming weeks.



Portugal: Rainfalls have been abundant in the fall and early winter, in particular in December. Rain cumulates are in line with the LTA reference and well-above the previous (negative) seasons. However, heavy rainfall from October to December soaked the soil and prevented cereal sowing, leading to some **delayed sowing** in January and a **reduction in winter cereal areas**. High prices of production factors in September and October 2022, when most producers take the final decision on the campaign's cultural options, contributed to the decrease in winter crop areas. Warm daily temperature (2-4 °C above AVG) were observed in December and beginning of January, followed by a cold-spell occurring in the second half of January. This latter agro-meteorological condition, on one hand favoured crop tillering but on the other led to moderate slowdown in crops vegetative development. Fertilization was affected by the **lack of humidity**, with some crops showing yellow spots due to the lack of nitrogen. Despite those limiting factors, an increase in productivity is expected compared to the previous season, which was strongly marked by severe drought condition. Overall, conditions are considered Favourable in the Western Littoral regions and on Watch due to delayed onset in the interior Eastern regions. In *Alentejo* and *Algarve*, plants sowed in December start to show good germination but the sowing carried out in January shows a poor development due to the scarce precipitation and low temperatures in February. The lack of water also begins to be reflected in earlier sowings where water needs are more pronounced. Soil water content decreased in a large part of the territory, with values below 60% in practically the entire territory and some locations in *Baixo Alentejo* with values below 20%. In the irrigated areas, crops had a normal vegetative development.



Spain: After a rainless start to the season in the autumn planting period, rainfall was abundant in November and December. Warm daily temperature (2-4 °C above AVG) were observed in December and January and were followed by a cold-spell in mid-February. As of March 10, 2023, cereal development and biomass accumulation are **in-line-with the average season**. No variation in the cereal planted areas was observed compared to 5-year average. However, producer organisations estimated a **reduction in pre-seeding fertilization**, due to high input costs. In the Northern and Western regions, rainfall was moderate but well-distributed in the January-March period, with relatively cold weather limiting the impact of the lack of rainfall (*Castilla y León, Extremadura*). Crop conditions are considered favourable. In Eastern and Southern regions, the lack of rainfall and temperatures higher than average are starting to affect crop development. In *Castilla La Mancha*, areas planted late are suffering from the lack of water. In the *Ebro Valley, Cataluña, Aragón, Navarra*, and in some provinces of *Andalucía* (*Almería, Granada, Jaén, Málaga*), some areas are on **alert due to the lack of rainfall**, with conditions considered on Watch, pending the evolution of rainfall in the coming weeks. In some of those areas, soil conditions have worsened in the second half of March due to the persistent lack of rainfall.



Tunisia: The **hot and dry conditions** that marked the start of the cereal season in the Maghreb region were particularly pronounced in Tunisia, with very little rain from September to mid-November (as in 2021) and almost no rain from early December in the first decade of January. The lack of rain during sowing led in particular to a reduction in cultivated areas. All governorates suffered from the lack of rain, particularly the central governorates which are in charge for almost 35% the national barley production; with a progressive degradation of crop conditions. The remote sensing indicator and field analyzes suggest below average cropping conditions and biomass accumulation in the *Kef* and *Nabeul* regions (to be monitored) and much below average with possibilities of crop failures in the regions of *Kairouan, Kasserine, Siliana* and *Zaghouan*. The northern regions of *Bizerte, Jendouba, Beja and Manouba*, where irrigated crops have so far been less exposed to drought, have accumulated average to above-average biomass and present favorable conditions to date, despite rain deficit.



Türkiye: The early planting and growing season has been dry compared to seasonal averages, with different consequences over the country. In Central Anatolia, in the regions of *Konya, Kayseri, Kirikkale and Ankara*, rainfall was scarce (nearly 50% the LTA reference) and temperature fluctuated significantly, with some warm anomalies in December and January, and cold conditions in the second decade of February. Winter cereals resulted delayed from both late sowings and the cold spell, which slowed down crop growth of nearly 2 weeks. Temperatures slightly below seasonal average in February, and late planting led to a slight delay in winter crop development, in particular in Konya. However, it is too early in the plant vegetative period to foresee a damage or yield-lost. Although there are colour changes in some barleys and wheats due to cold/snow, there is currently no significant cold damage. On the other hand, field top fertilization activities have started, and enough precipitation will be important in the upcoming weeks to carry fertilizer to the root zone. In South-Eastern regions (*Mardin, Sanliurfa and Gaziantep*), the season started very early, in November, thanks to well distributed precipitations; and warm anomalies led to a slight early boost of winter crops' biomass accumulation compared to 5-y average. Conditions are considered Favourable. The **7.7 and 7.6 magnitude earthquakes** that struck *Kahramanmaraş* and the surrounding provinces on February 6 deeply affected the provinces of *Adana, Adiyaman, Diyarbakır, Gaziantep, Hatay, Kahramanmaraş, Kilis, Malatya, Osmaniye and Şanlıurfa*. According to the Presidency Strategy and Budget Department Post-earthquake Evaluation Report, 9.5% of the 18 warehouses belonging to the Turkish Grain Board with a total capacity of 315,100 tons are demolished, and 26.1 % of the 12 private product warehouses with a capacity of 558,250 tons in *Adana, Diyarbakır, Gaziantep, Kahramanmaraş and Hatay* are heavily damaged. Slight damage has also been detected in irrigation units.

General methodology: The forecasting methodology is based on the monitoring of crop conditions using indicators derived from Earth observation (e.g. fAPAR or NDVI), carried out jointly by the CIHEAM-IAMM and the Joint Research Centre of the European Commission (EC-JRC). Reflecting out-of-average biomass accumulation vs the medium-term average (2013-2022) allows us detecting areas of concern, which are characterized using the GEOGLAM scale and nomenclature (see below). These pre-screened areas of concern, defined at a sub-national level, are then analyzed, validated or completed by each National Focal-points of the MED-Amin network, taking into account feedbacks from field observation and local experts.

Crop conditions legend (GEOGLAM scale and nomenclature):

- **Exceptional:** Conditions are much better than average at the time of reporting. This label can only be used between the grain-filling stages to the harvest stage.
- **Favourable:** Conditions range from slightly below to slightly above average at the time of reporting.
- **Watch:** Conditions are not far from average but there is a potential risk to final production. However, at this time it is considered that crops might still recover if conditions improve. This label may only be used between planting/early-vegetative stage and vegetative/reproductive stages.
- **Poor:** Conditions are well below average and are very likely to impact production with a harvest clearly below average.
- **Crop failure:** Crops have been strongly damaged, low yield and area reduction will strongly impact the production.

Crop conditions Drivers (adapted from GEOGLAM nomenclature):

- **Wet:** Above-average accumulated total precipitation;
- **Dry:** Little or no rainfall period;
- **Hot:** Unusually above-average temperatures;
- **Cold:** Unusually below-average temperatures;
- **Extreme events:** Occurrence of extreme weather events;
- **Delayed onset:** Delayed onset and operations of the crop year;
- **Biotic stress:** Crop impact caused by living organisms, specifically viruses, bacteria, fungi, nematodes, insects, and weeds;
- **Low Input:** limited use of inputs (fertilizers, pesticides, etc.) that could end in moving the outlook for the future harvest (yield, quality).

Disclaimer

The geographic borders in the present bulletin are purely a graphical representation and are only intended to be indicative. The boundaries do not necessarily reflect the official position of CIHEAM-IAMM and of the European Commission.

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