USDA Foreign Agricultural Service
U.S. DEPARTMENT OF AGRICULTURE

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Commodity Intelligence Report

Middle East Wheat: Water Availability and Input Costs Raise Concerns about the MY 2022/23 Crop

USDA estimates marketing year (MY) 2022/23 Middle East wheat production higher relative to last year's poor outcome. Wheat production across the Middle East, however, is still projected significantly below the 5-year average (Table 1).

In terms of world production, the Middle East accounts for just under 5 percent, however it is a significant importer of wheat. USDA groups Turkey, Iran, Iraq, Syria, Saudi Arabia, Lebanon, Yemen, Oman, Israel, and Jordan into the Middle East region. About 97 percent of the wheat produced in the region is grown in Turkey, Iran, Iraq, and Syria (Table 2).

The Middle East is one of the most water-scarce regions in the world. Adequate water availability is essential for agricultural production and, thus, can have an important impact on crop growth and food security. Dryness caused by below-average precipitation and insufficient water for irrigation is a common and regularly occurring challenge for the agriculture across the whole region.

Typically, winter wheat in the Middle East is planted in the fall, between October and November, and harvested between May and August. A small part of the crop in the region is irrigated. The vast majority of winter wheat, however, is rainfed and relies on adequate seasonal precipitation. Even though soil moisture conditions during planting are important, yield formation is highly dependent on the amount of precipitation the crop gets during the spring months.

Problems with the MY 2022/23 season had their roots in the poor outcome of the MY 2021/22 season. The MY 2021/22 growing season was one of the hottest and driest periods on record for many of the countries in the Middle East. Dryness began in the fall of 2020 and persisted until the end of the growing season. The northern regions of Syria and Iraq were among the most affected areas by the abnormally low 2020/21 seasonal precipitation and soaring temperatures during early-to-mid-May. Agriculture in these predominantly winter grains producing regions is rainfed. This caused substantial crop failure and significant production losses. In its Wheat and Barley 2021 Annual, Iraqi's Central Statistical Organization reported 74 percent and 97 percent damaged area for wheat and barley, respectively, for the Ninawa governorate alone, a key winter grains growing region and the heart of Iraq's wheat growing area. Satellite imagery revealed similar conditions across most of the Mesopotamian plain in the Fertile Crescent (Figure 1).

The dryness that impacted the 2021/22 crop continued into the fall of 2021 and partially the early winter of 2022. This dry weather facilitated sowing of the 2022/23 winter grain crops, however, poor crop emergence occurred due to suboptimal soil moisture conditions; as a result, the crop went into dormancy under less than favorable conditions (Figures 2 and 3).

Some of the key wheat-growing areas in the Middle East include Turkey's Anatolian Plateau and the GAP region, which stands for Güneydoğu Anadolu Projesi, Syria's Al-Hasakah governorate and Iran's northwest region. As captured by the cumulative precipitation curves shown in Figure 4, precipitation during the October to mid-November period was minimal and significantly below-average. The first notable rainfall arrived in the region in early November; moderate to heavy rainfall (10-75 mm) over western and southern Turkey as well as from eastern Turkey into western and northern Iran provided some much-needed moisture for the winter grains. Iran and northern Turkey received additional rain in mid-November, however, the Anatolian Plateau, one of Turkey's key wheat-growing regions, which accounts for roughly 40 percent of Turkey's wheat production, by then had received less than 25 percent of its normal rainfall. Precipitation remained uneven and irregular across the region during the winter and spring months causing some concerns about water availability and its impact on crop growth. Late-season rains, however, provided improved moisture for winter crops in the central portions of the region (Figure 5). Overall, the water availability remains below average, but in several instances, precipitation was better than last year. Figure 6 provides an overview of the current crop status over the key wheat growing regions in Syria and Iraq.

Water availability and suitable soil moisture supplies are only part of the factors that determine yield returns. Fertilizer usage is also essential for proper crop development and achieving optimal yields. As explained by the USDA office in Ankara, many farmers reduced fertilizer usage due to the increase in fertilizer prices. The reduced application rates may hamper crop growth and lead to sub-optimal vegetation conditions. Along with the increasing costs of fertilizer, farmers in the Middle East also face skyrocketing prices of fuel and seeds.

The above-mentioned late season rains and assuming favorable weather until the end of the growing season, could provide suitable conditions for boosting winter crop yield prospects. Colder-than-normal weather during March, however, temporarily slowed crop development, but subsequent warmth has eased those delays and winter grains are now developing 5 to 10 days behind the long-term average. Harvest is expected to begin soon.

Commodity	Attribute	Country	2021/22	2022/23	5-year average	Change relative to the 5-year average	Change relative to last year
Wheat	Area Harvested	Iran	6,000	6,200	6,280		
Wheat	Production	Iran	12,000	13,200	13,950	-5%	10%
Wheat	Yield	Iran	2.00	2.13	2.23		
Wheat	Area Harvested	Iraq	2,000	2,000	2,140		
Wheat	Production	Iraq	3,500	3,000	3,987	-25%	-14%
Wheat	Yield	Iraq	1.75	1.50	1.85		
Wheat	Area Harvested	Syria	1,100	1,300	1,300		
Wheat	Production	Syria	2,000	2,500	3,100	-19%	25%
Wheat	Yield	Syria	1.82	1.92	2.29		
Wheat	Area Harvested	Turkey	7,050	7,000	7,313		
Wheat	Production	Turkey	16,000	17,500	18,350	-5%	9%
Wheat	Yield	Turkey	2.27	2.50	2.51		

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Table 1. Wheat harvested area (1,000 HA), production (1,000 MT), and yield (MT/HA) for the major wheat growing countries in the Middle East for MY 2021/22 and MY 2022/23. Source: USDA PSD Online.

WHEAT Middle East				
Country	Rank	Qty(K.MT)	Region Share	World Share
Turkey	11th	17,500	46.55%	2.26%
Iran	13th	13,200	35.12%	1.70%
Iraq	22nd	3,000	7.98%	0.39%
Syria	24th	2,500	6.65%	0.32%
Saudi Arabia	37th	1,000	2.66%	0.13%
Yemen	56th	140	0.37%	0.02%
Lebanon	57th	135	0.36%	0.02%
Israel	61st	85	0.23%	0.01%
Jordan	65th	30	0.08%	< 0.01 %

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Table 2. Middle East wheat percent of region share for MY 2022/23. Turkey, Iran, Iraq, and Syria are the region's major winter crop producing countries. Source: USDA PSD Online.

Turkey, Iraq and Syria: 10-day spectral reflectance from mid-/late-April 2021

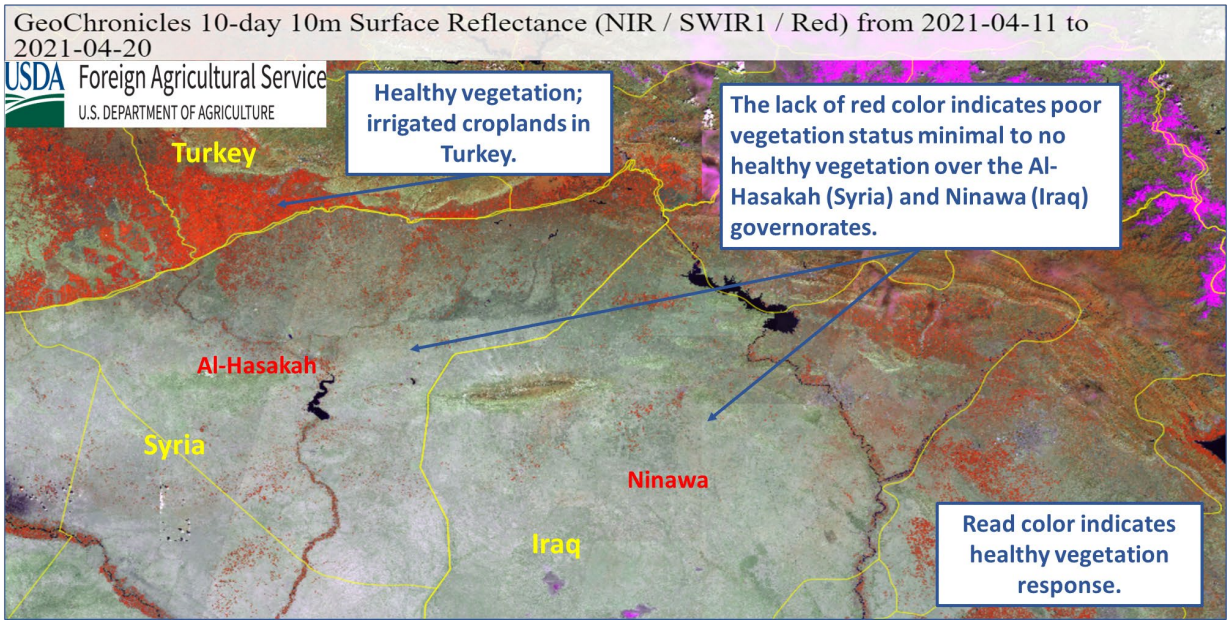

Figure 1. Composite satellite imagery illustrating the drought-stricken 2021/22 crop over Ninawa, Iraq and Al-Hasakah, Syria. Source: GDA Corp, Sentinel-2/Landsat-8 (10m) 10-day composite imagery.

Middle East: Monthly Soil Moisture Anomaly

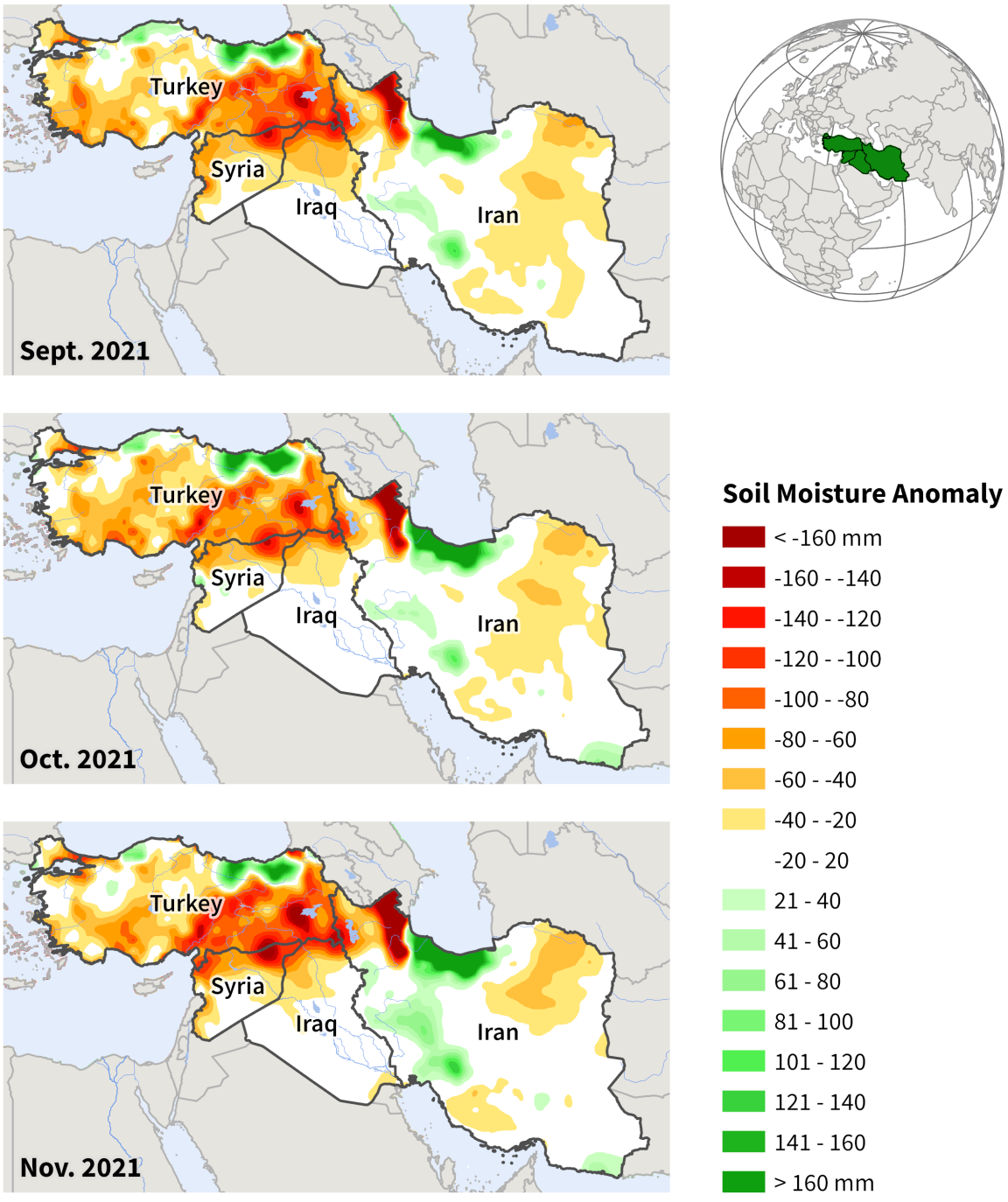

Figure 2. Monthly soil moisture anomaly conditions over the key wheat producing countries in the Middle East during planting and emergence (i.e., fall of 2021). Source: CPC.

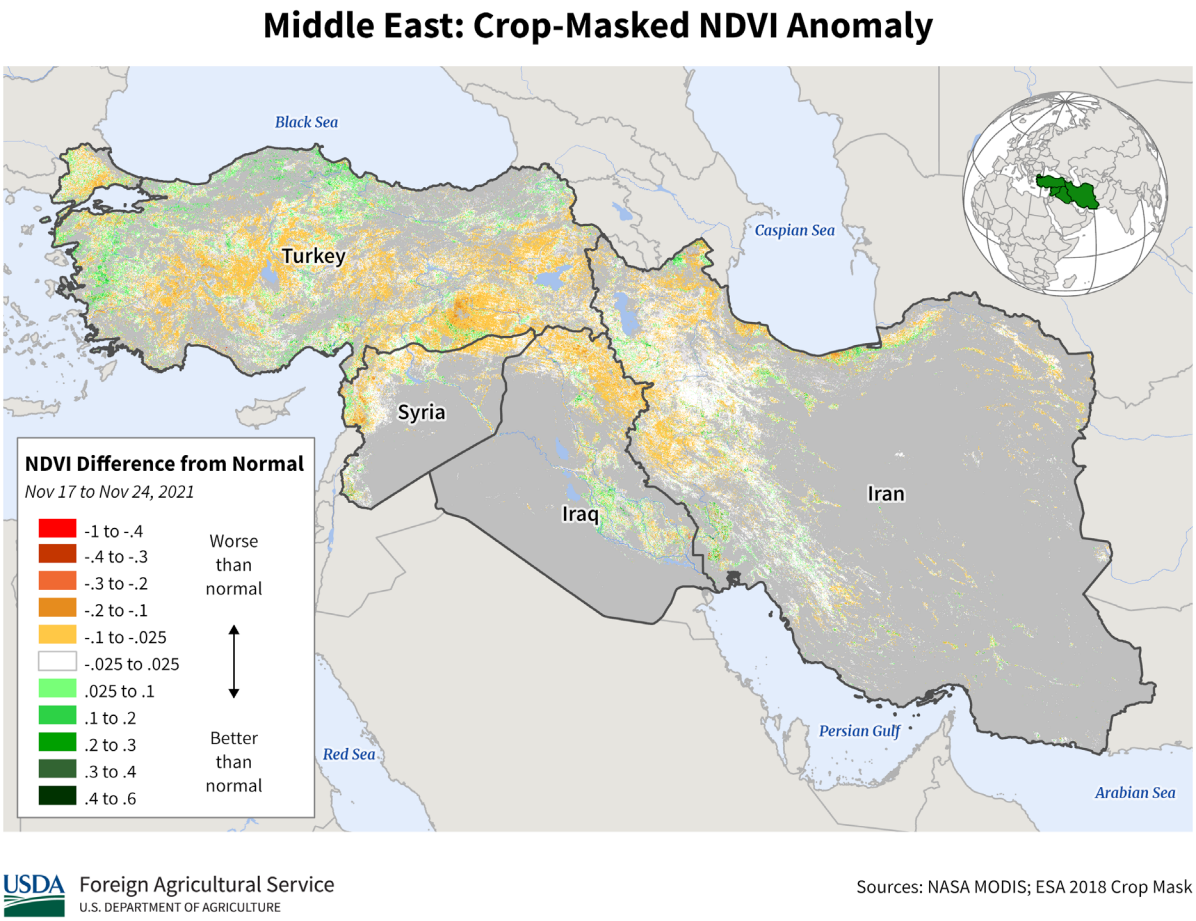

Figure 3. Crop-masked 8-day Normalized Difference Vegetation Index (NDVI) anomaly map ending November 24, 2021. Orange-red colors indicate below-average vegetation status during emergence caused by the lack of adequate soil moisture availability during and after planting. Source: NDVI – USDA/NASA NDVI Anomaly, Global Agricultural Monitoring (GLAM) System; crop mask – non-cropland 300 m ESA 2018.

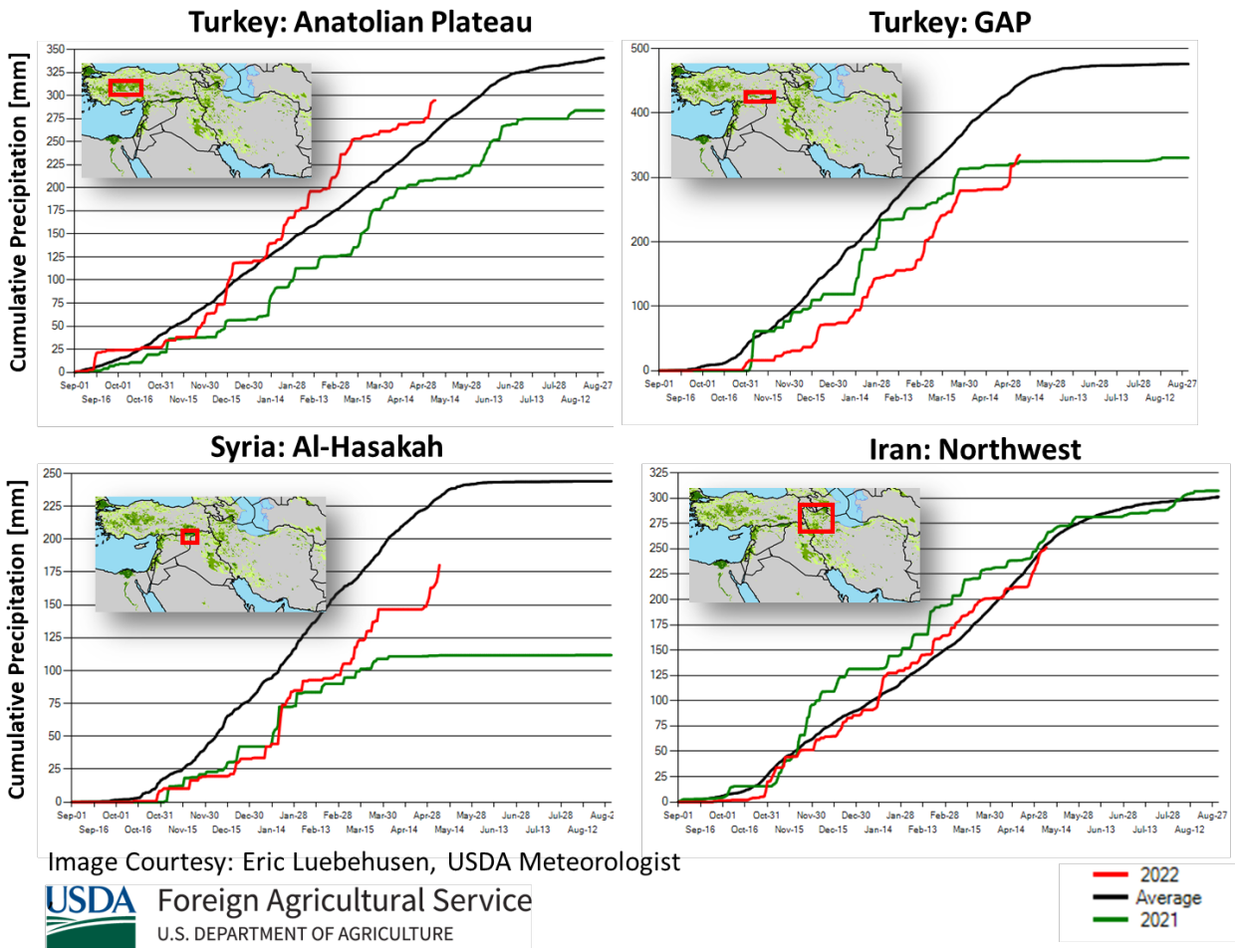

Figure 4. This season and last season's cumulative precipitation relative to the long-term average over some of the key wheat growing regions in the Middle East. Source: WMO.

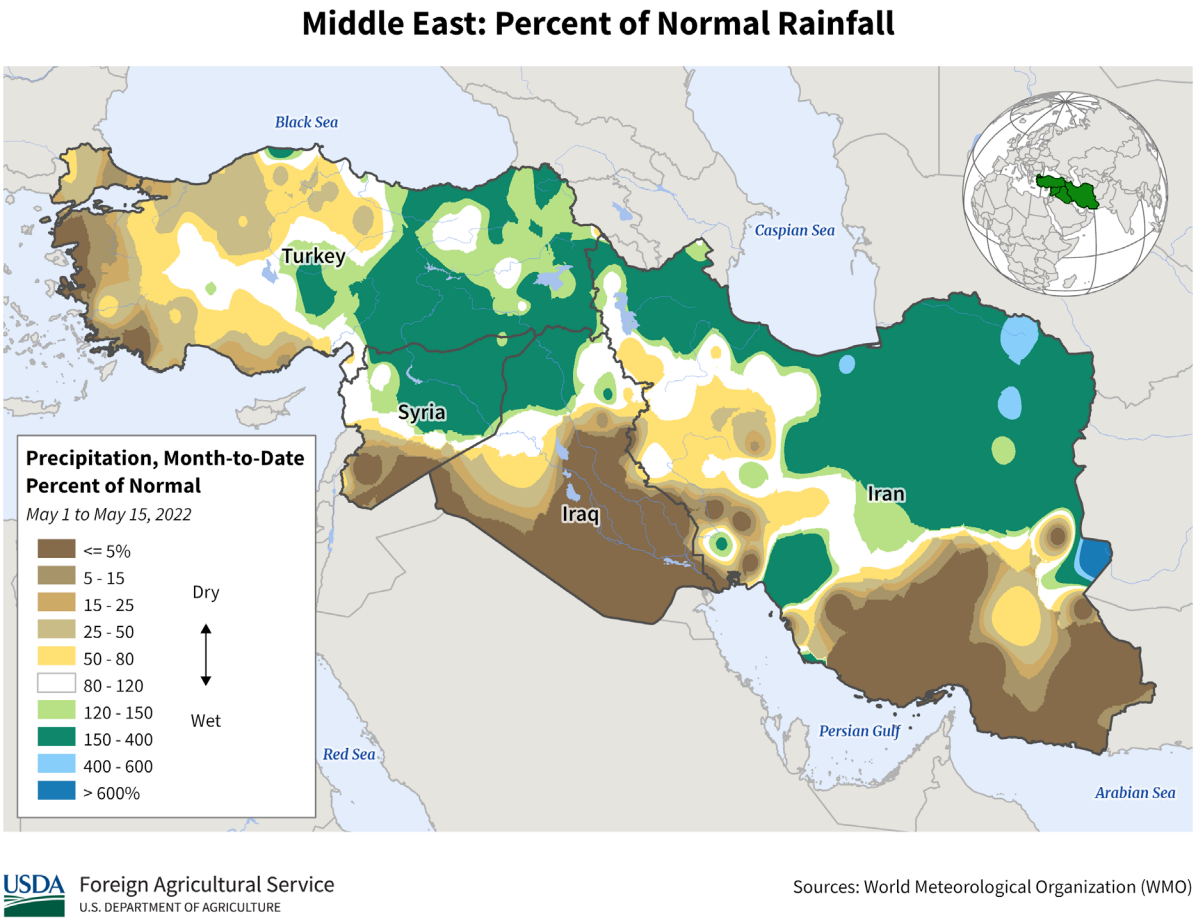

Figure 5. Middle East percent normal rainfall for the May 1-14, 2022 time frame indicating some needed late-season precipitation occurred, which led to improved soil moisture conditions. Source: WMO.

Syria [A and B] and Iraq [C]: 10-day spectral reflectance from early-April

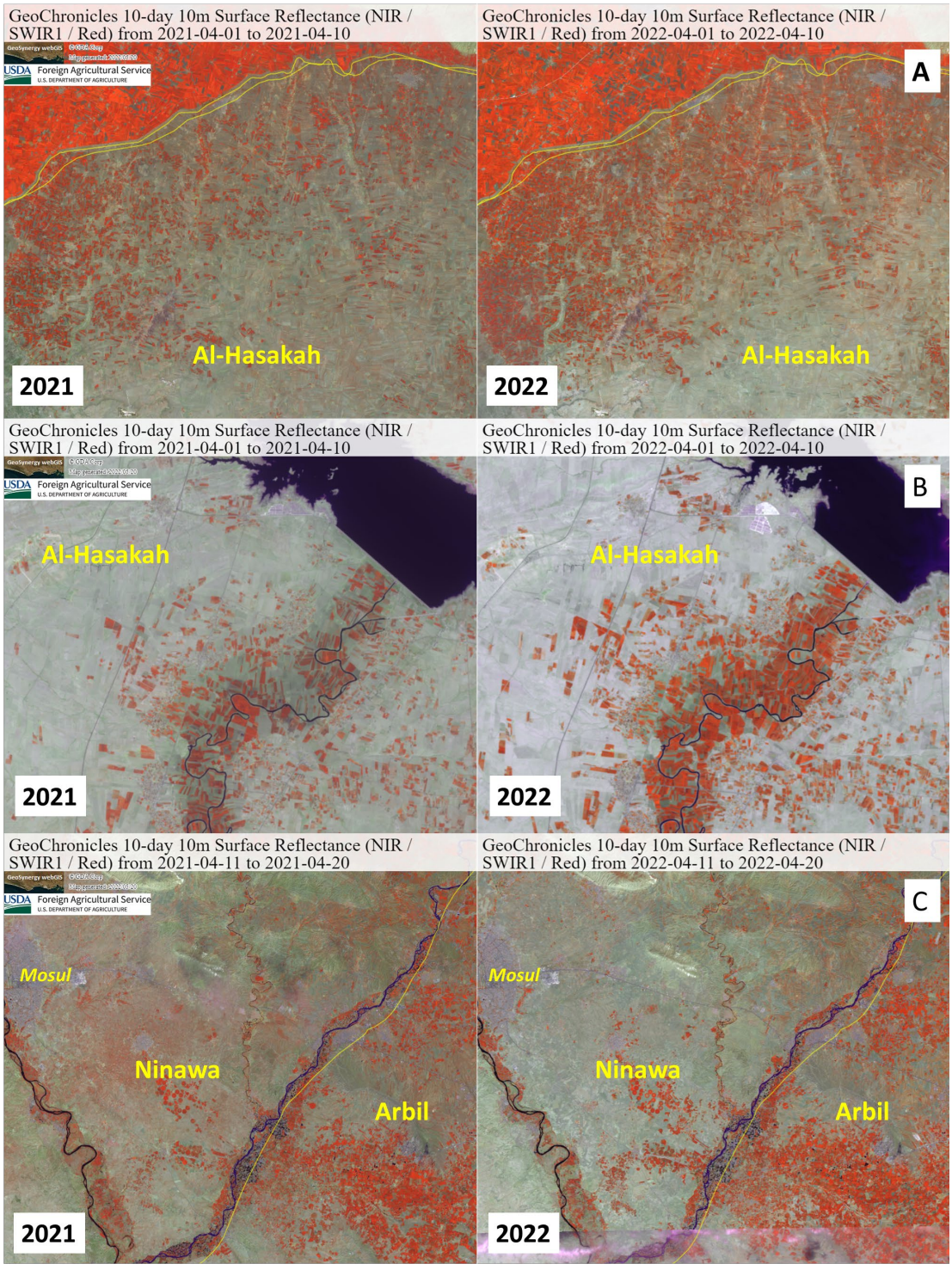

Figure 6. Composite satellite imagery illustrating the current (right column) against last year's (left column) crop condition over Al-Hasakah, Syria (images A and B) and Ninawa, Iraq (Image C). Red color indicates healthy vegetation. The change in red color noticeable over Al-Hasakah, Syria suggests an increase in planted area and/or improved crop conditions. Crop status over Ninawa, Iraq appears to be similar. Source: GDA Corp, Sentinel-2/Landsat-8 (10m) 10-day composite imagery.

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