USDA Foreign Agricultural Service
U.S. DEPARTMENT OF AGRICULTURE

Foreign Agricultural Service
Global Market Analysis
International Production Assessment Division
Web: https://ipad.fas.usda.gov

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Commodity Intelligence Report

Thailand Rice: Recent Dry Conditions After a Promising Start; Optimism Still Remains for this Crop Season

USDA forecasts Thailand rice production for market year 2021/22 at 19.5 million metric tons (milled basis), up 4 percent from last year (Figure 1). The year-to-year production increase is primarily due to favorable seasonal rainfall that benefited early planting and development. In Thailand, the seasonal rainfall arrives as the southwest monsoon, which typically begins its heaviest rainy pattern in June and extends through September (Figure 2). Thailand rice is predominantly dependent on these seasonal rains for germination and development. Early seasonal rains through the month of April supplied adequate soil moisture that benefited early cultivation; rains were about two weeks ahead of last year (Figure 3). Early production reports cited a strong rebound of rice production due to the rains observed which were more abundant compared to the two previous seasons. From early April to the beginning of August, observed rainfall was average to slightly above average in Thailand's main rice growing regions; the crop continued to progress favorably. In mid-August through early September, however, a moderate dry spell lingered across much of the rice producing areas in the southern North East region, which signaled modest concerns toward rice yield potential (Figure 4). With the main season rice cycle still in the middle of its development stages, soil moisture is adequate; however, the water requirement at this stage is essential.

Rice is mainly cultivated in Thailand throughout two seasons, a wet season (main), followed by a dry season (offseason) (Figure 5). It is possible for localized farmers to cultivate a second rice crop for the main season if they have access to irrigation.

The start of the 2021/22 main season rice campaign began at the end of April and is expected to be harvested in November 2021. On average, main season rice accounts for 80 percent of the national crop (Figure 6). The largest main season rice area is in the North East region which produces 46 percent of the season's crop. Major rice cultivated areas in the North East region are situated along Thailand's southeastern border. Provinces such as Nakhon Ratchasima, Ubon Ratchathani, SiSaket, and Surin provide the bulk of rice production in the North East region. The other two main season rice production regions are the North and Central Plain, accounting for 32 percent and 21 percent, respectively. The main provinces in the North region include Phichit and Nakhon Sawan, and in the country's Central Plain region the northern provinces along the Chao Phraya River are the most significant (Figure 7).

The dry season – also known as the offseason – rice crop is cultivated in December and harvested in March. Offseason rice production is mainly produced in the North and Central Plains region, accounting for 44 percent and 37 percent, respectively (Figure 8). Provinces centrally located along the Chao Phraya River Basin produce the bulk of the dry season rice. Nearly all the rice crop in the dry season is irrigated, with 80 percent of irrigation water being supplied from the Bhumibol and Sirikit reservoirs located in the country's North region (Figure 9).

Bhumibol is in Tak province and Sirikit is in Uttaradit province. These reservoirs are the top two water storage facilities that supply the Chao Phraya Basin. The amount of irrigation water available depends on the seasonal rainfall which is key to reservoir replenishment. Over the previous two years, rainfall underperformed resulting in insufficient water supplies to fuel cultivation of the offseason rice crops, as the government restricted water use to save for domestic household consumption. This restriction led to near record lows for offseason production in both seasons. To date, rainfall in the North region has been variable. However, Bhumibol reservoir water storage capacity has fared better this year compared to Sirikit. Since April, observed rainfall in Tak province has been average to well above average. However, due to extensive dryness in the past two years, Bhumibol reservoir water levels have yet to rebound to adequate levels (Figure 10). While Uttaradit province has experienced near average conditions throughout the onset of the seasonal rains, August rainfall fared below average. This has led to Sirikit reservoir remaining well below adequate levels (Figure 11). According to the Thai Meteorological Department, a La Niña effect is expected between the months of October 2021 and January 2022, leading to a high chance of favorable rainfall. In turn, this has resulted in a continued optimistic outlook of water availability for farmers to cultivate dry season (offseason) rice.

Thailand rice harvested area is forecast at 10.5 million hectares, up 1 percent from last year (Figure 12). Year-to-year area increases were driven by favorable weather which enticed farmers to plant main season rice earlier than expected. Satellite derived indicators such as the Normalized Difference Vegetation Index (NDVI) validated rice cultivation in a more advanced stage compared to last year (Figure 13). Additionally, satellite imagery was used to verify more fields cultivated nearly two weeks earlier than last year (Figures 14 and 15). Main season rice area represents 85 percent of the country's total acreage. Dry season (offseason) rice area cultivation will be contingent on water availability in the main reservoirs at the start of the growing season. Though rice in Thailand makes up over half of the arable land, the rice area has remained relatively flat over the past 10 years. Increased competition in the international market, competition from other more profitable crops, and the burden of labor costs are main factors that have led to the plateau of rice acreage in Thailand.

USDA forecasts Thailand rice yield at 2.81 tons per hectare (rough basis), up 3 percent from last year and up 2 percent from the 10-year trend (Figure 16). In the past two consecutive years, rice yields were considerably low due to the insufficient rains for the main season crop coupled with low water availability for the offseason crop. Over the past 10 years, trend yield has remained relatively flat which is primarily due to the slowed pace

of technical advancements to enhance seed varieties, but most importantly due to farmers' preference to grow high quality, low-yielding traditional varieties which are more profitable in both the domestic and international markets. The major fluctuations observed in the historical yield data time series are in direct relationship to the variability of seasonal rainfall. The Thai government recently proposed a new rice strategy effort focused on funding for research and development aimed at increasing the national average yield by 2024.

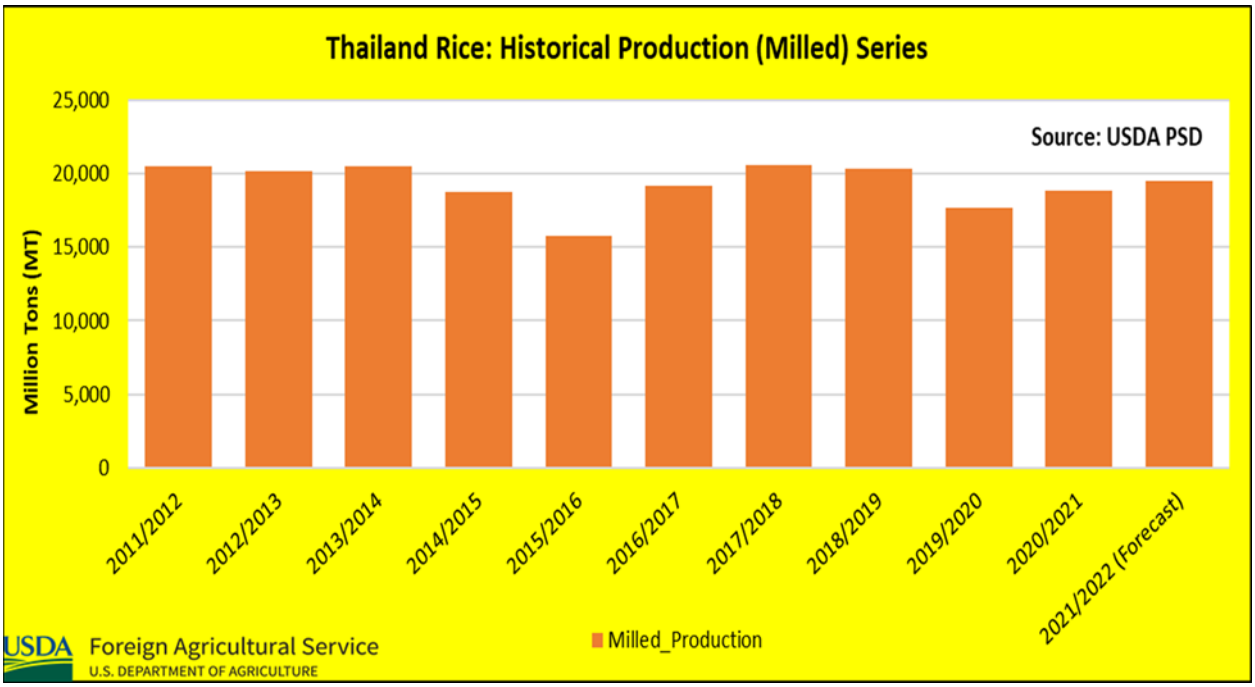

Figure 1. Thailand rice production (milled basis) historical time series. The current rice forecast indicates a rebound from the past 2 years. Source: USDA PSD Online

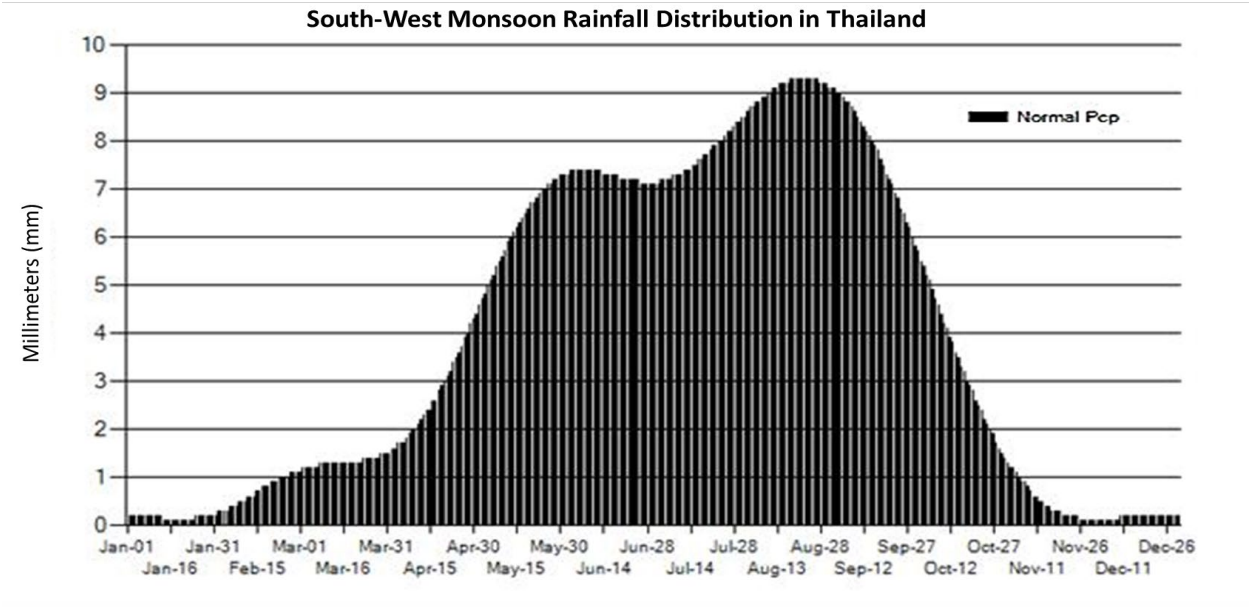

Figure 2. Southwest Monsoon rainfall distribution in Thailand. Source WMO

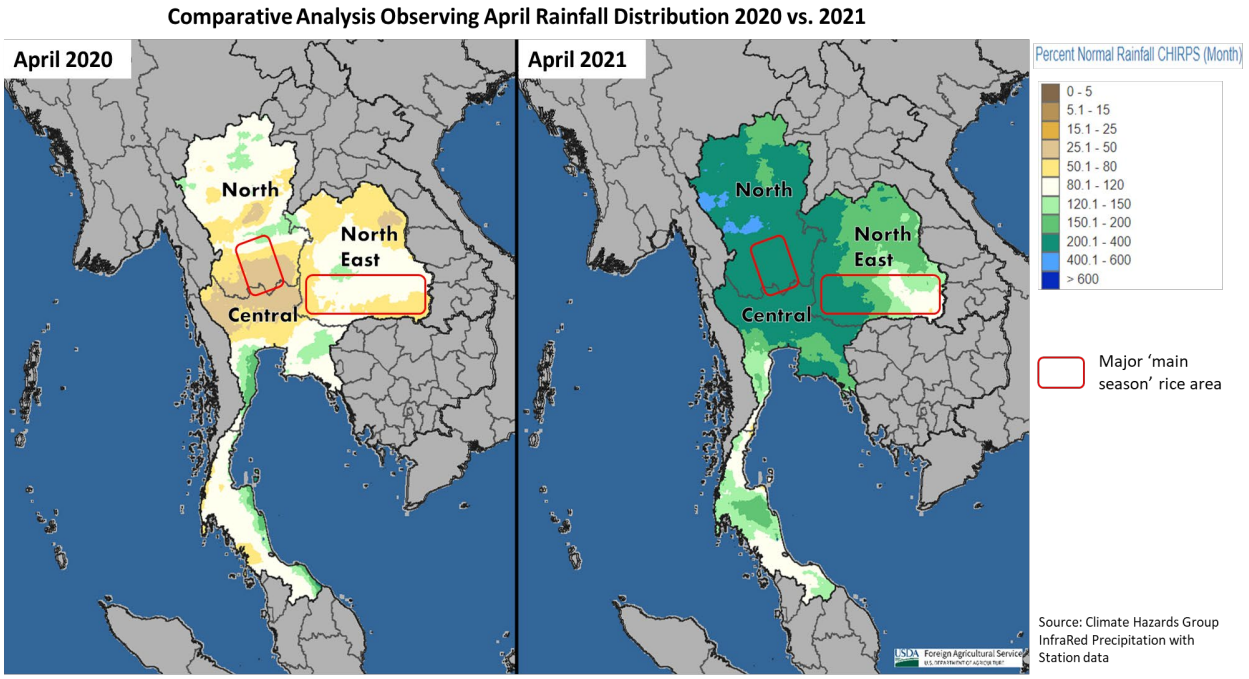

Figure 3. 2020 vs 2021 April rainfall distribution using CHIRPS, signaling favorable weather to facilitate early rice cultivation. Source: UC Santa Barbara, Climate Hazards Center, Climate Hazards Group

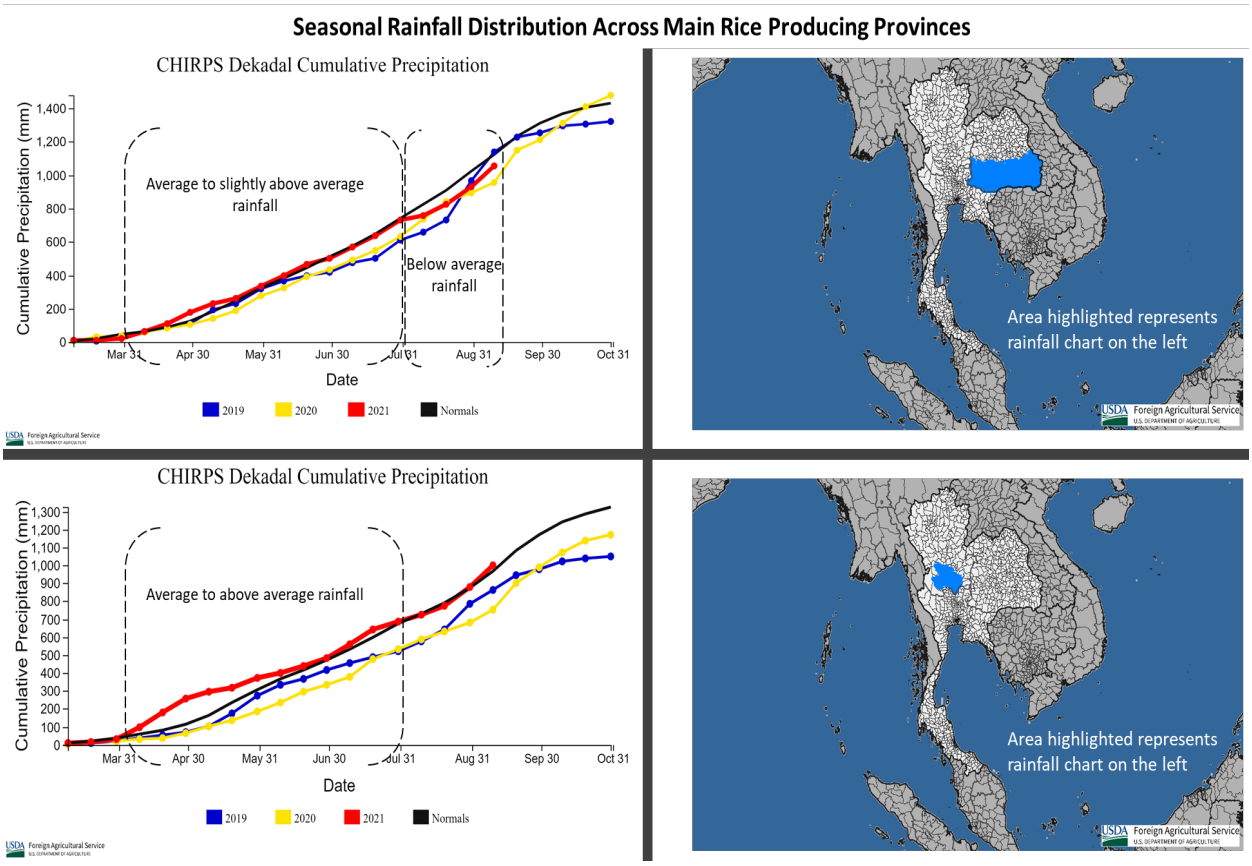

Figure 4. Rainfall observed from March to August using CHIRPS to verify adequate soil moisture for favorable rice development. Concerns of modest dryness in August through early September for the main rice growing regions in the southern provinces of the North region. Source: UC Santa Barbara, Climate Hazards Center, Climate Hazards Group

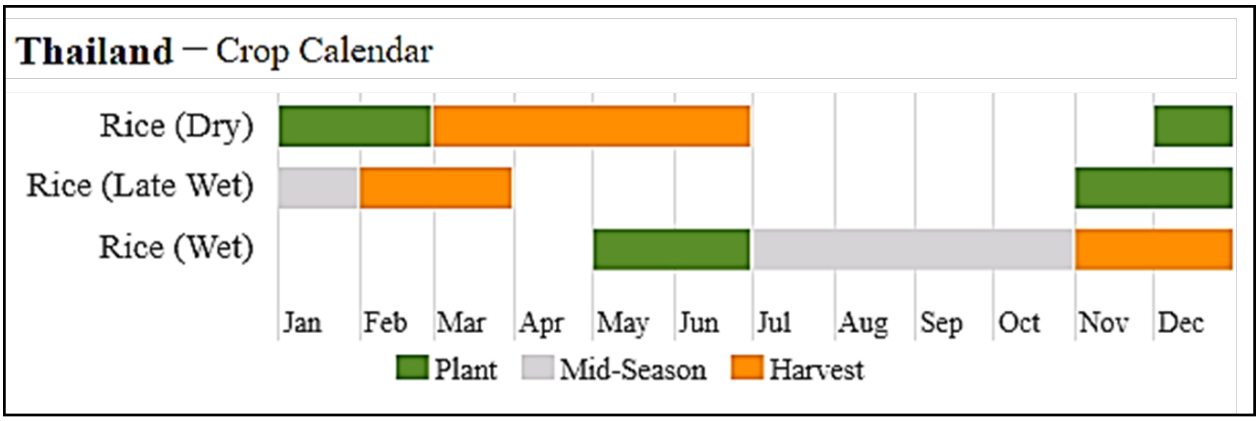

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Figure 5. Thailand rice crop calendar highlighting the seasonal breakdown of the two main crop cycles. Farmers cultivate a third rice cycle (a secondary crop during the main season) contingent on water availability. Source: USDA Crop Explorer

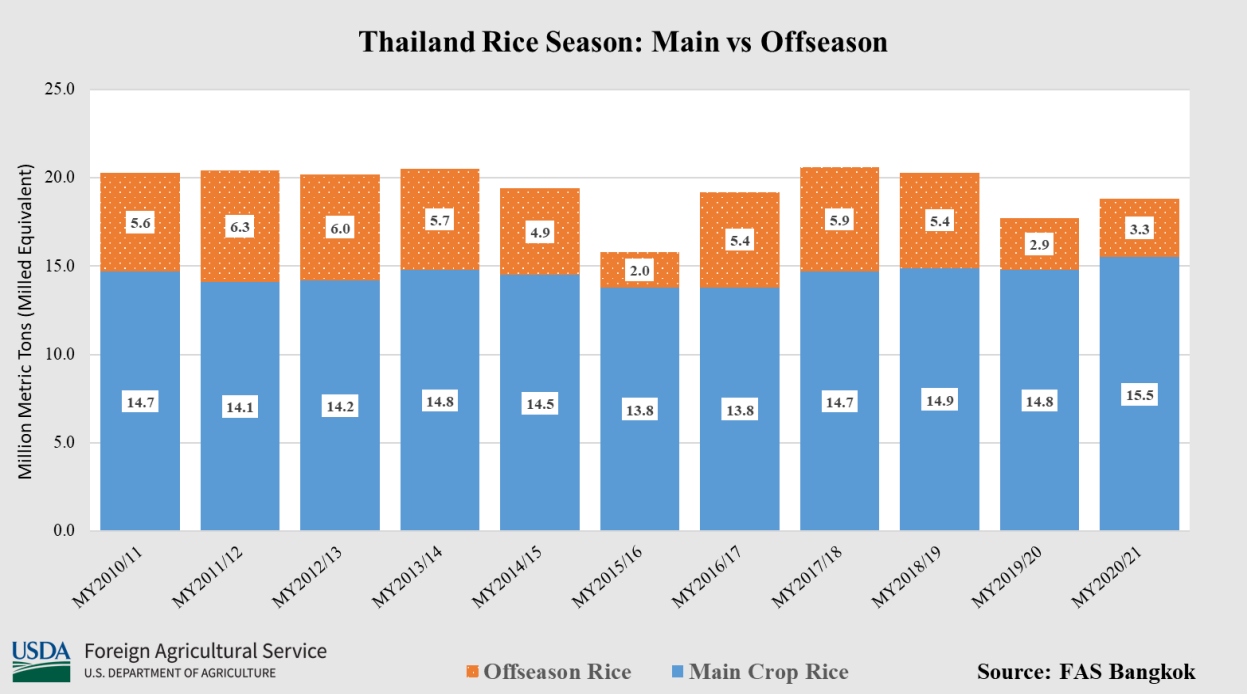


Figure 6. Thailand rice main vs offseason production breakdown. Source: USDA-FAS Bangkok

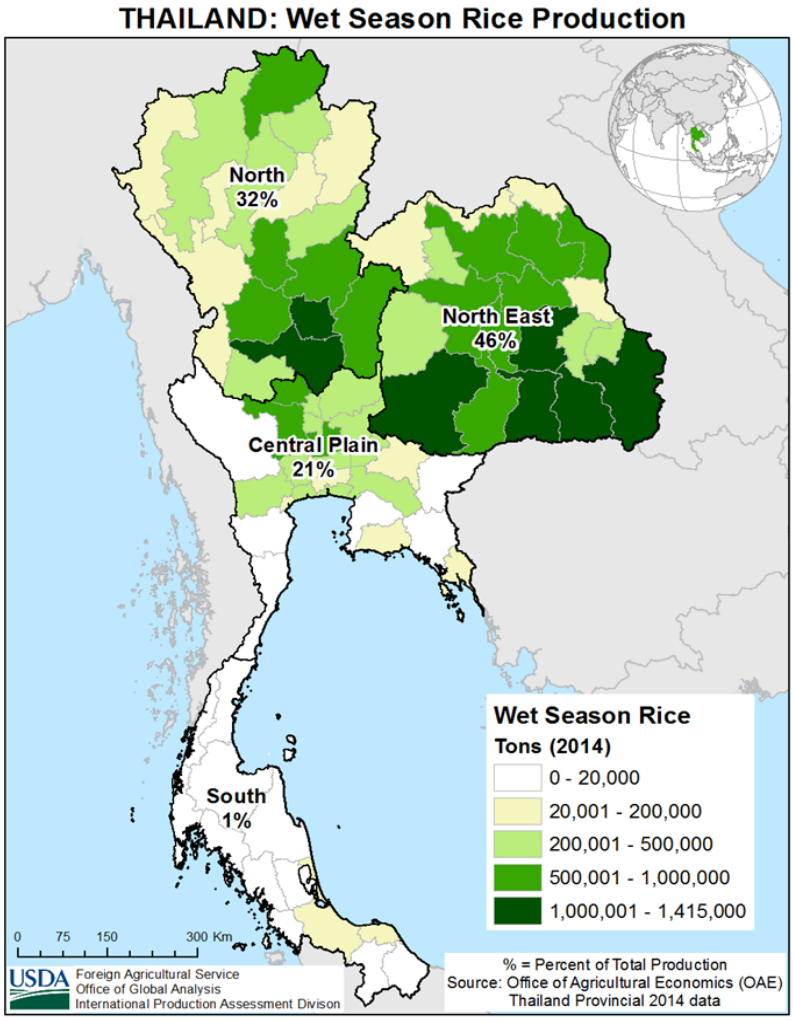


Figure 7. Wet season (main) rice production map, highlighting major producing rice provinces. Source: USDA Crop Explorer

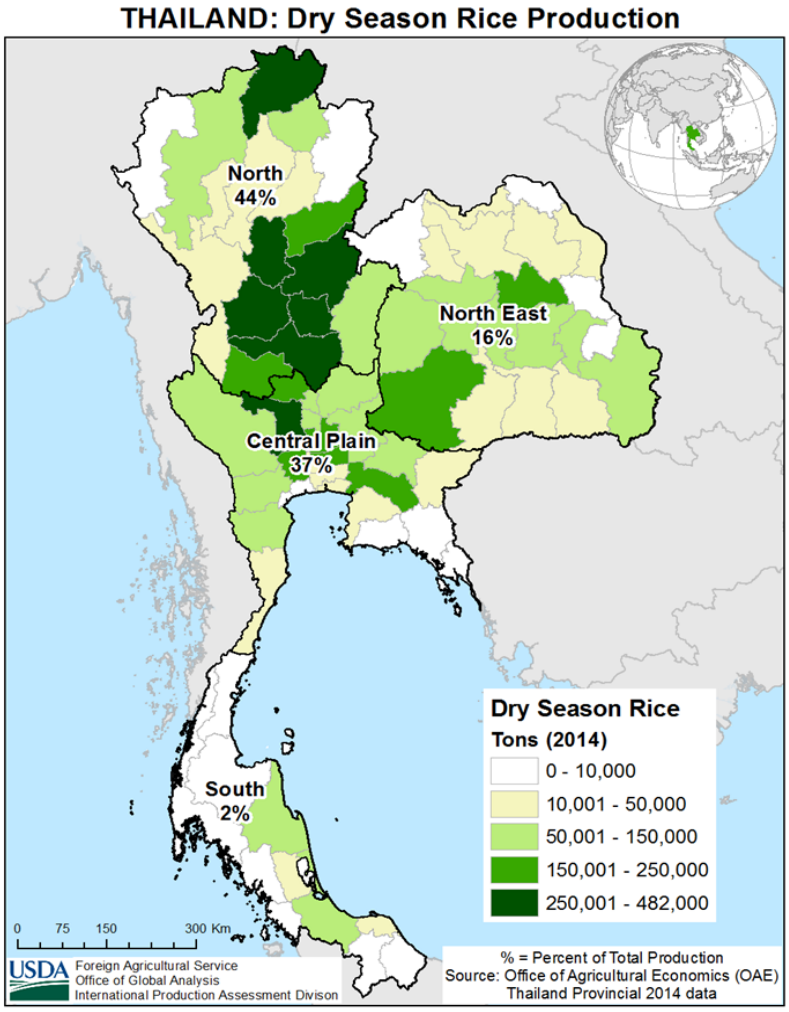


Figure 8. Dry season (offseason) rice production map, highlighting major producing rice provinces. Source: USDA Crop Explorer

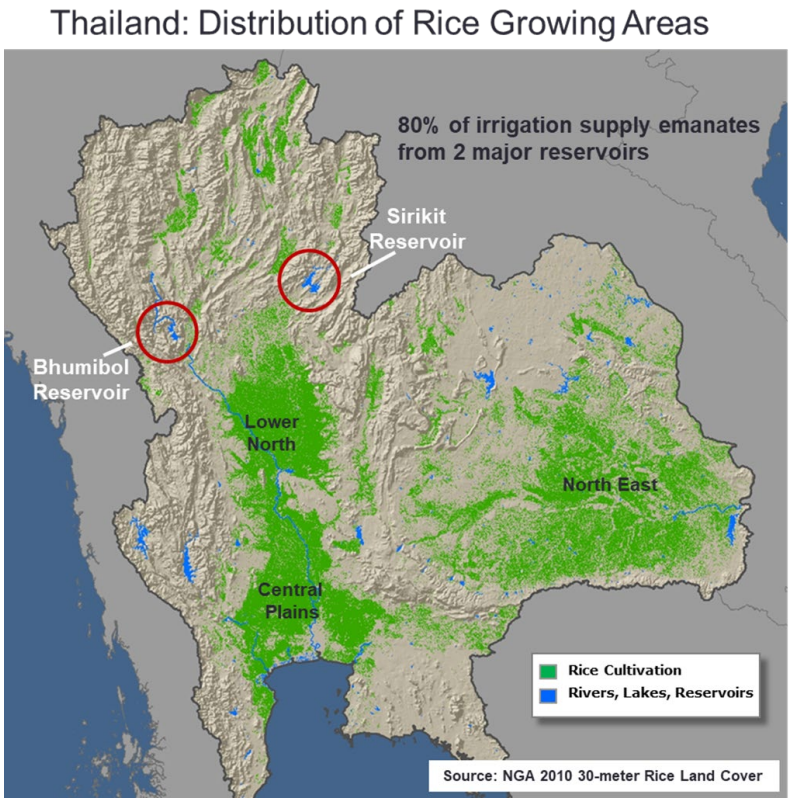
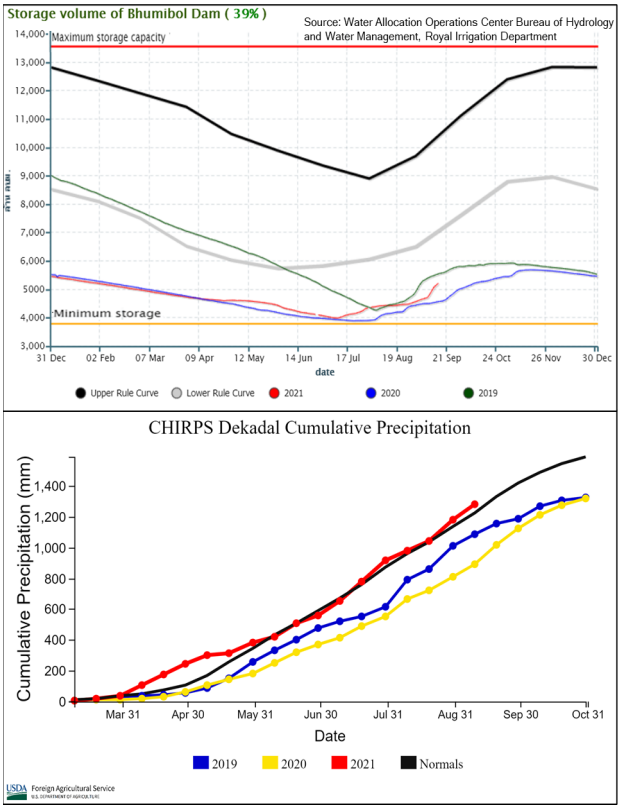


Figure 9. Highlighting areas where the main reservoirs of Bhumibol and Sirikit are located. These two reservoirs feed into the Chaya Phraya Basin and account for approximately 80 percent of irrigation for the dry season (offseason) crops.



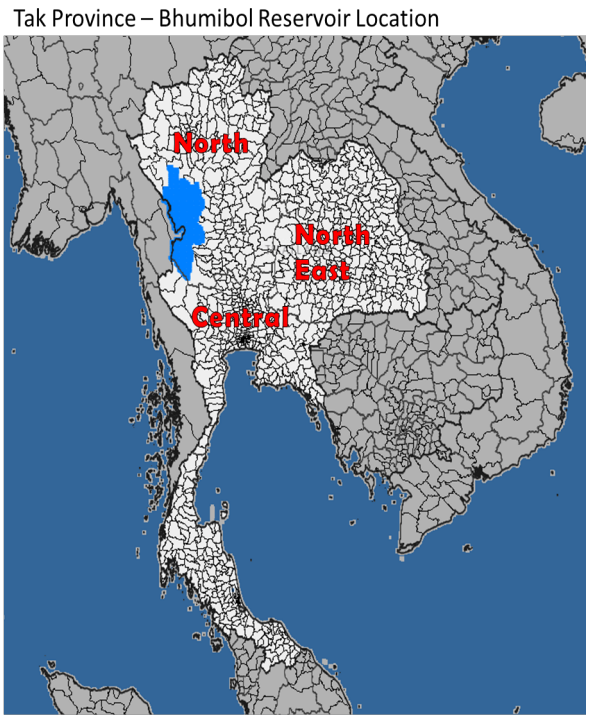
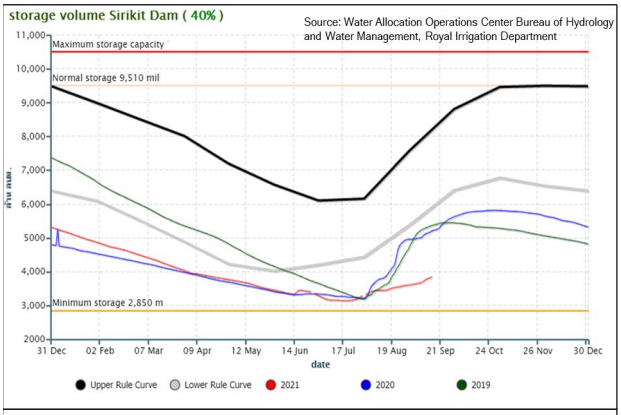
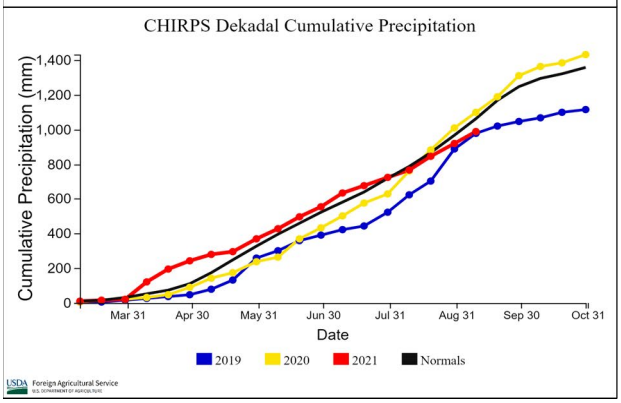


Figure 10. Rainfall observed through the course of the wet season to gauge Bhumibol reservoir water levels is significant for the dry season (offseason) crop. Source: Thailand Royal Irrigation Department; UC Santa Barbara Climate Research Group





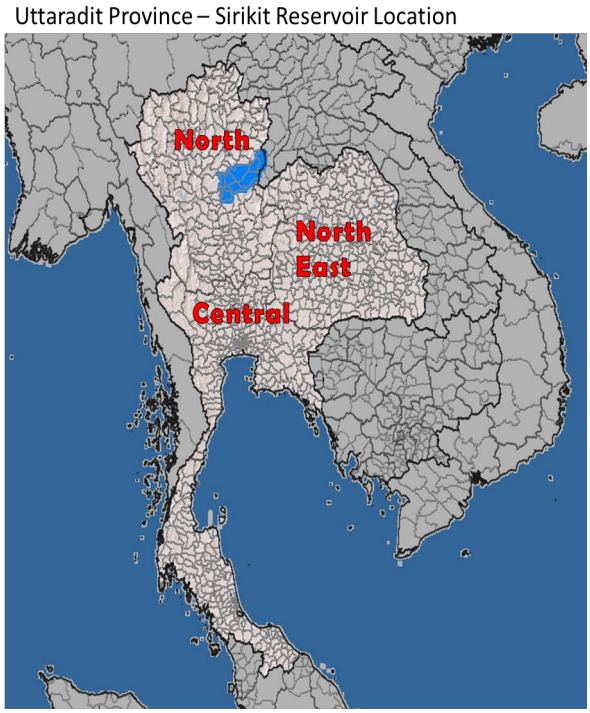


Figure 11. Rainfall observed through the course of the wet season to gauge Sirikit reservoir water levels is significant for the dry season (offseason) crop. Source: Thailand Royal Irrigation Department; UC Santa Barbara Climate Research Group

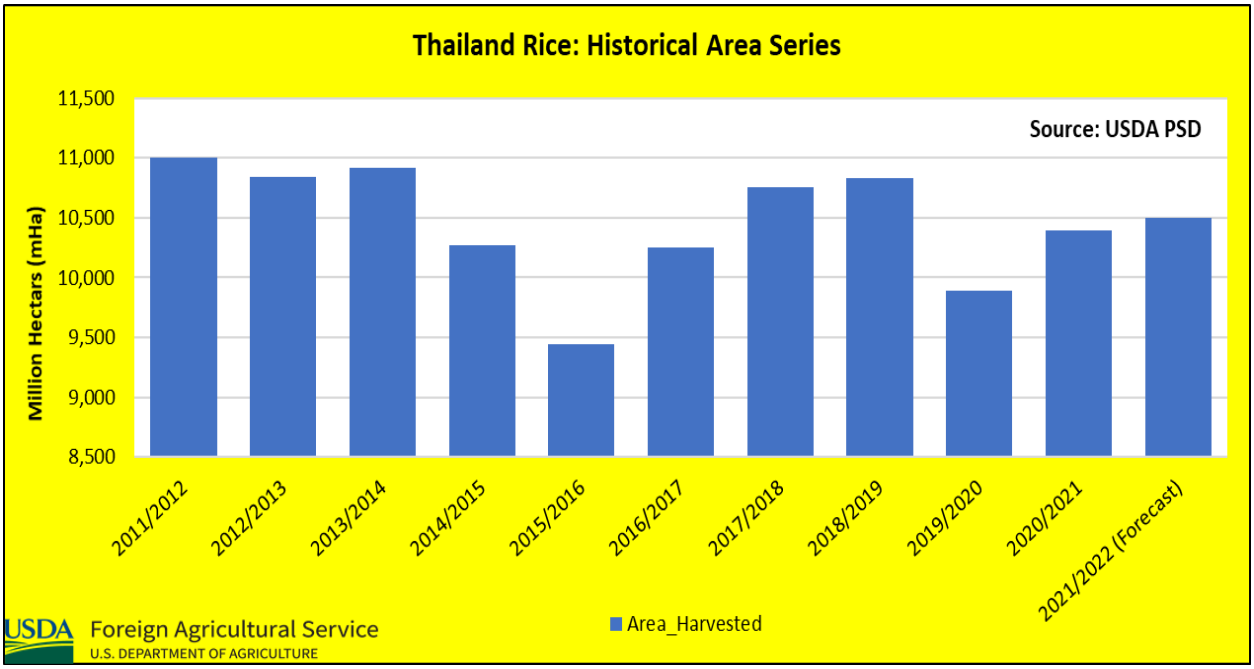


Figure 12. Thailand rice area harvested historical series. Source: USDA PSD Online

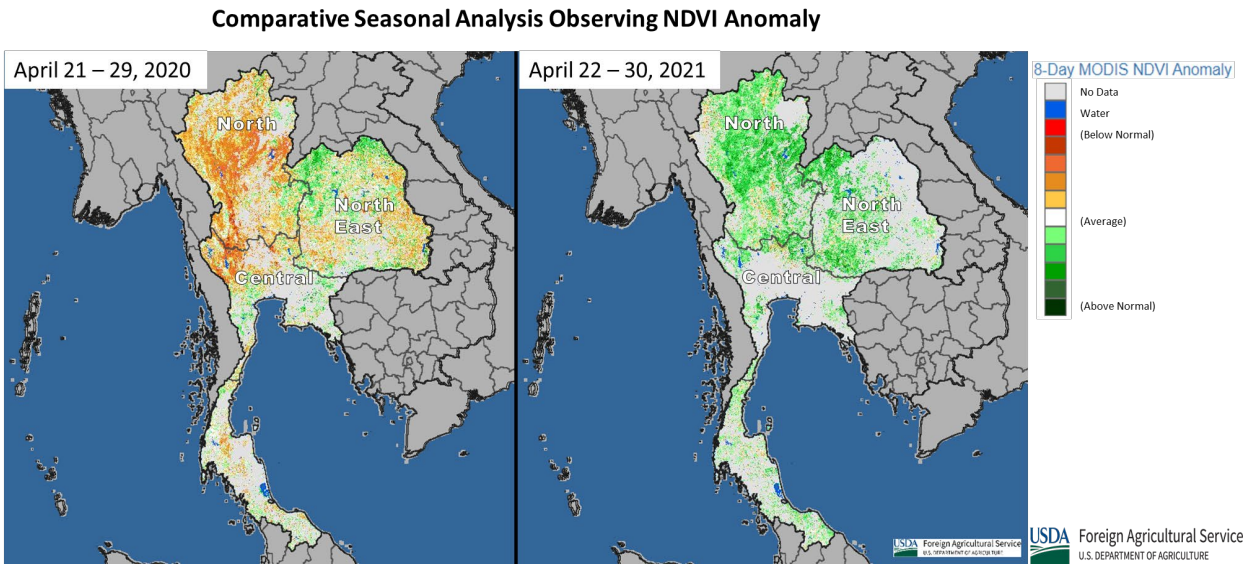


Figure 13. Comparing the last week of April 2021 to the same time last year using the satellite derived indicator NDVI reveals a better start to the 2021/22 main rice crop season. Source: USDA/NASA NDVI Anomaly, Global Agricultural Monitoring (GLAM) System

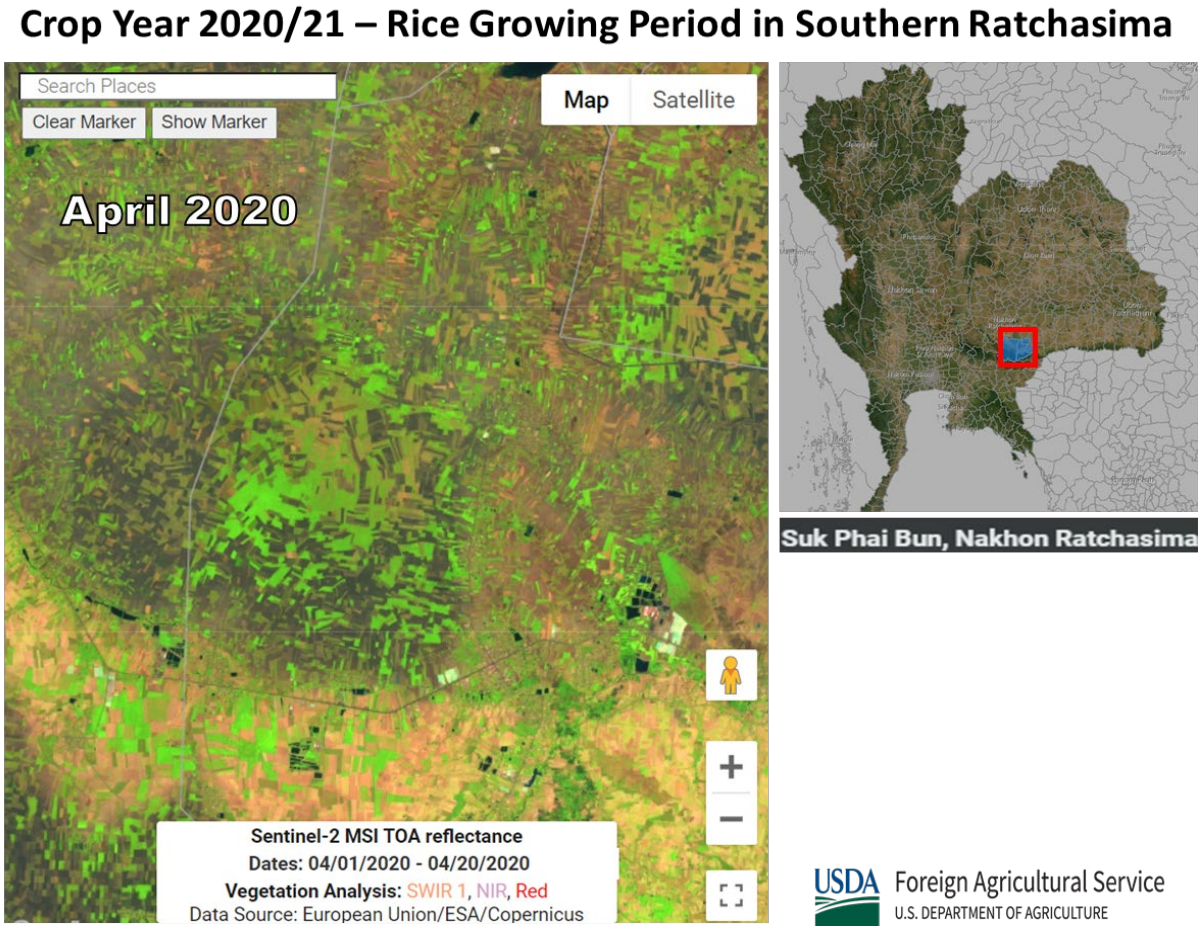


Figure 14. Sentinel 2 imagery depicting cultivated rice for the main crop season in the Nakhon Ratchasima for April and May 2020. Source: Copernicus, Sentinel-2 (20m) imagery

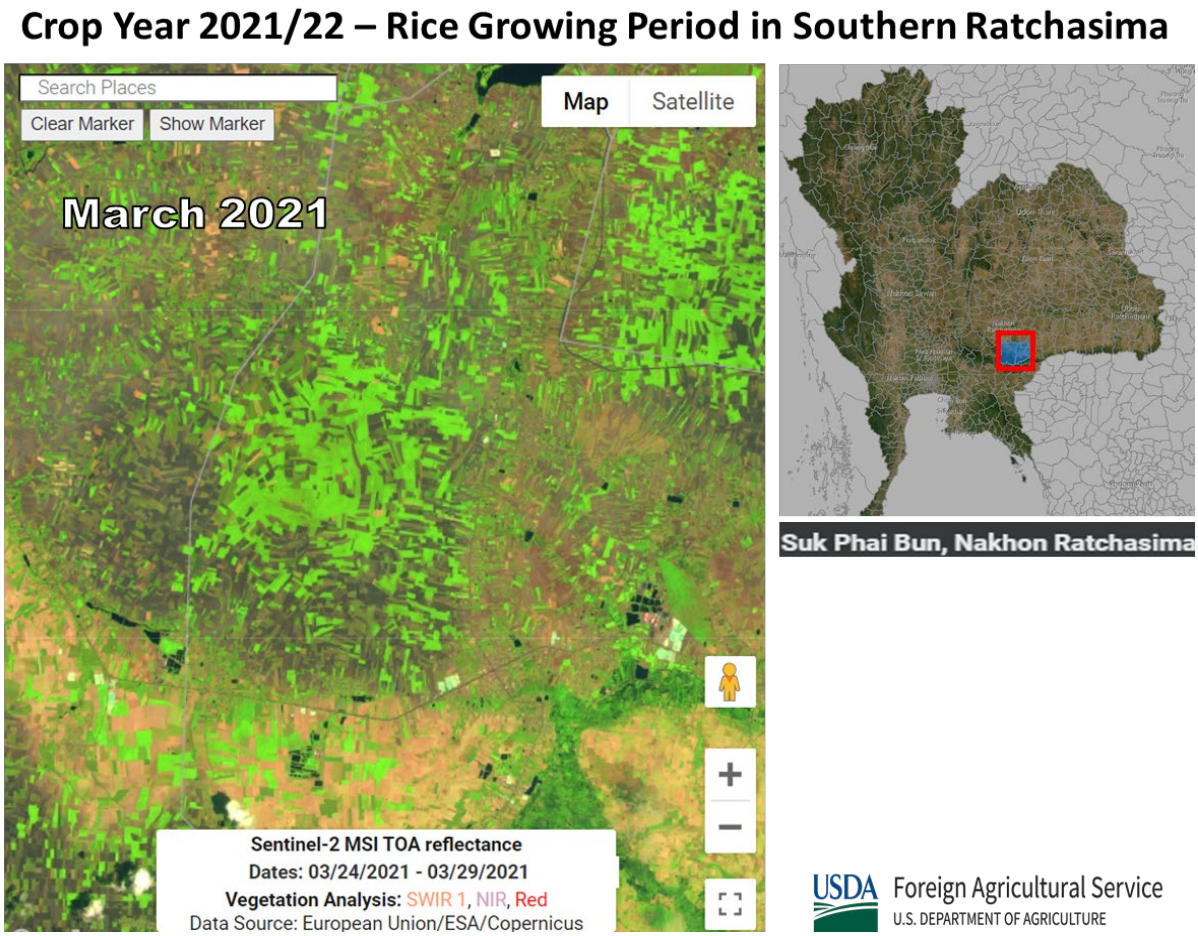


Figure 15. Comparing April and May 2021 main season rice cultivation to last year. Favorable weather resulted in earlier cultivated rice area for the main 2021/22 season. Source: Copernicus, Sentinel-2 (20m) imagery

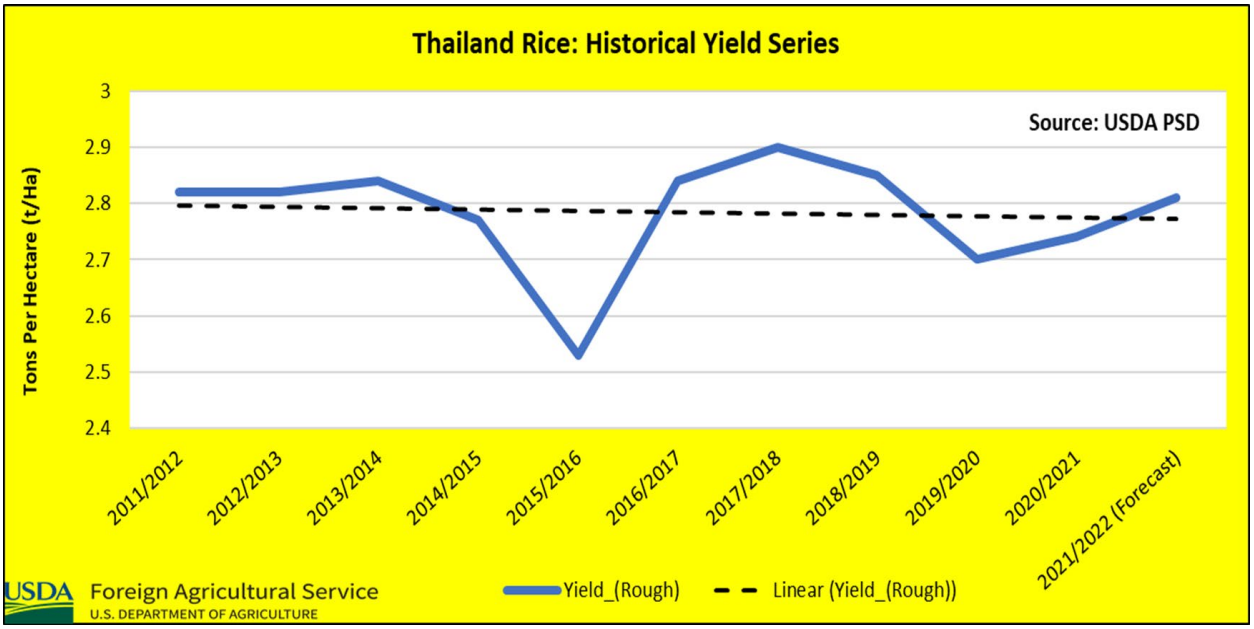


Figure 16. Thailand rice yield historical time series. Source: USDA PSD Online

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