Chapter 4. China

This chapter starts with a brief overview of the agro-climatic and agronomic conditions in China over the reporting period (section 4.1). Next it presents an updated estimate of national winter crop production (4.2) and describes the situation by region, focusing on the seven most productive agro-ecological regions of the east and south: Northeast China, Inner Mongolia, Huanghuaihai, Loess region, Lower Yangtze, Southwest China, and Southern China (4.3). Section 4.4 describes trade prospects (import/export) of major crops. Additional information on the agroclimatic indicators for agriculturally important Chinese provinces are listed in table A.11 in Annex A.

4.1 Overview

This report covers the main growing period of winter wheat and rapeseed. The sowing of the first summer crops, such as spring maize and early rice started in March. Generally speaking, agro-climatic conditions over the major winter crops producing regions were favorable. For China, RAIN and RADPAR decreased by 11% and 3%, respectively, as compared to the 15-year average, whereas TEMP increased by 0.9°C. Consequently, BIOMSS was 5% average average and VCIx was quite fair, with a value of 0.88.

Spatially, 57.7% of the arable land experienced average precipitation throughout the reporting period. The south-eastern region (12.2% of cropland) went through rainfall fluctuations over time, mainly negative anomalies, with the largest negative rainfall anomalies (more than 30 mm below average) occurred in late January and late March. Average rainfall was 24% below the 15YA in that region. The remaining regions with green color went through some rainfall fluctuations, but they were mainly positive departures. Temperature anomalies varied over time across the whole country. The blue marked areas had the biggest positive temperature departure (almost +5.0℃) in mid-Februrary. They included the provinces of Shaanxi, Henan, Shandong, Jiangsu, Anhui, Hubei, and Hunan. Uncropped areas mainly occurred in the North-west and North-east regions and the provinces of Gansu, Ningxia, Shanxi, and some parts of Hebei and Shaanxi in Northern parts of China (Figure 4.4).

In April, the cropping season is well underway in southern and central China. According to the spatial VCIx patterns (Figure 4.5), favorable crop conditions (VCIx larger than 0.8) occurred widely all across China especially in the Huanghuaihai; values between 0.5 and 0.8 were observed for the provinces of Shanxi, Shaanxi, Hebei, and Ningxia where cropland was not fully cultivated during the monitoring period according to the CALF map. The potential biomass (Figure 4.6) showed significant variability across regions. Positive anomalies (more than 20%, marked in blue) occured in south-eastern regions of the country, including Guangdong, Fujian and some parts in Guangxi, Jiangxi and Zhejiang, while negative anomalies (-20% or more) were mainly observed in the provinces of Guizhou, Hunan, Hubei, Sichuan, and Gansu, as well as in some parts of Ningxia, Shanxi, Shandong, Henan, Xinjiang, and Anhui. When it comes to VHIn (Figure 4.7), high values (above 36) are widespread in China, indicating limited water deficit effects on most of the winter crops.

As for the main producing regions at the sub-national level, rainfall was above average, ranging from +12% to +46%, except for Lower Yangtze region and Southeastern China. Temperature departures were all positive, ranging from +0.6℃ to +1.3°C, with the highest positive departure in

Lower Yangtze region. RADPAR was below average, except for Lower Yangtze region and Southeastern China. Consequently, BIOMSS increased in almost all the regions compared to average with the anomalies ranging from 4% to 25%, except for Lower Yangtze Region and Southern China. CALF in all regions was quite different, ranging from 11% below average in Loess region to 7% above average in Huang Huaihai. As for VCIx, the values were quite high for all the regions, ranging between 0.81 and 0.94, with the lowest value occurred in Loess region mainly related to the reduced planted area.

Table 4.1 CropWatch agro-climatic and agronomic indicators for China, January to April 2021, departure from 5YA and 15YA

Region	Agroclimatic indicators				Agronomic indicators	
	Departure from 15YA (2006-2020)				Departure from 5YA (2016-2020)	Current period
	RAIN (%)	TEMP (°C)	RADPAR (%)	BIOMSS (%)	CALF (%)	Maximum VCI
Huanghuaihai	46	0.8	-8	25	7	0.94
Inner Mongolia	32	0.8	-5	20	/	0.88
Loess region	31	0.8	-8	12	-11	0.81
Lower Yangtze	-23	1.3	1	0	1	0.91
Northeast China	26	0.9	-5	24	/	0.89
Southern China	-24	1.1	11	-9	-2	0.88
Southwest China	12	0.6	-10	4	0	0.92

Figure 4.1 China crop calendar

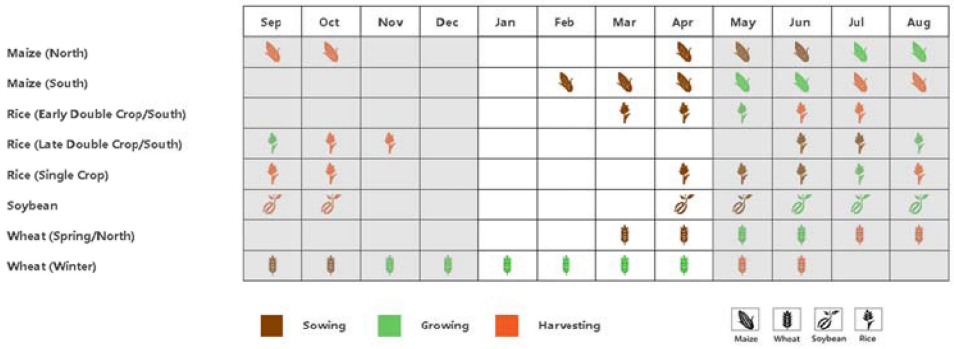


Figure 4.2 China spatial distribution of rainfall profiles, January - April 2021

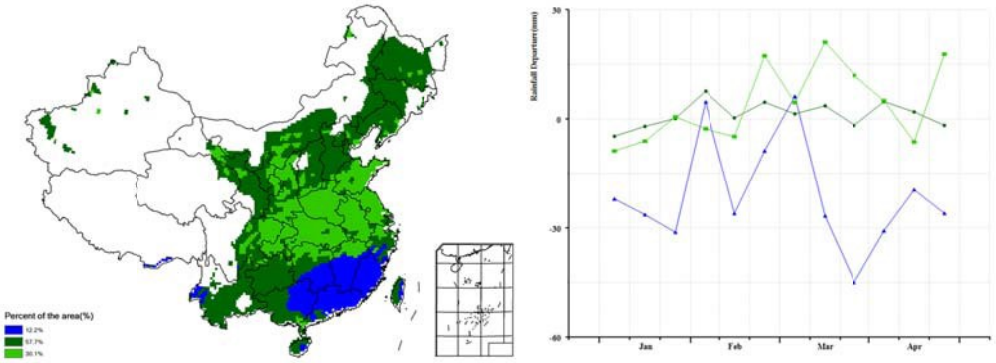


Figure 4.3 China spatial distribution of temperature profiles, January - April 2021

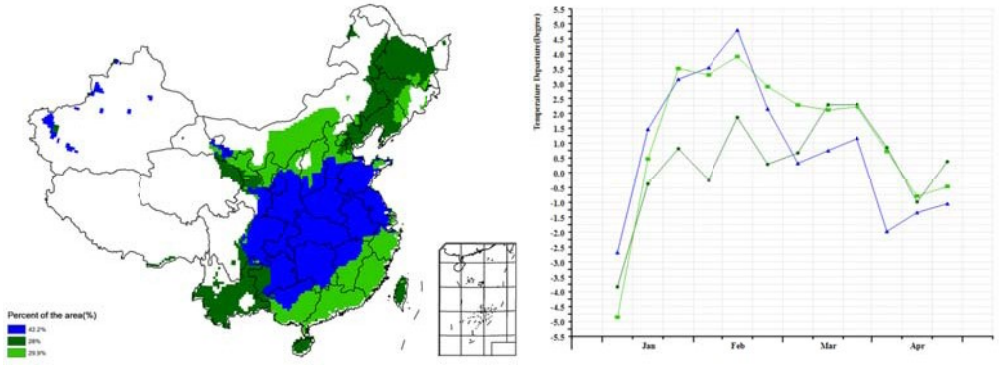


Figure 4.4 China cropped and uncropped arable land, by pixel, January - April 2021

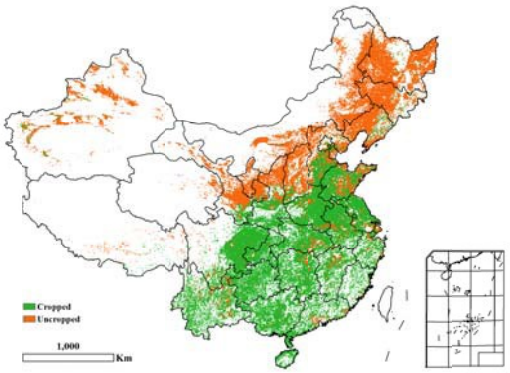


Figure 4.5 China maximum Vegetation Condition Index (VCIx), by pixel, January - April 2021

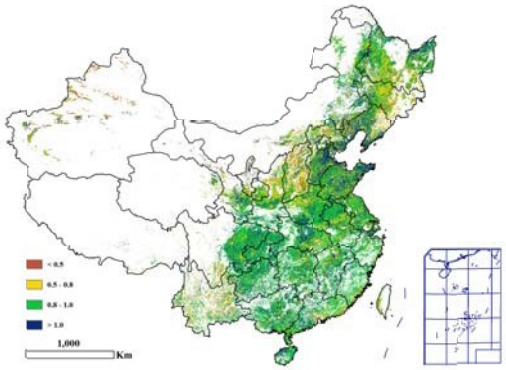


Figure 4.6 China biomass departure map from 15YA, by pixel, January - April 2021

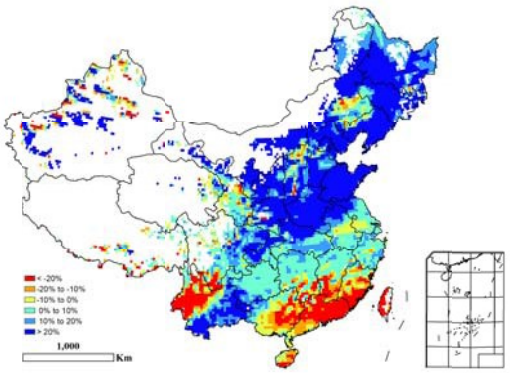
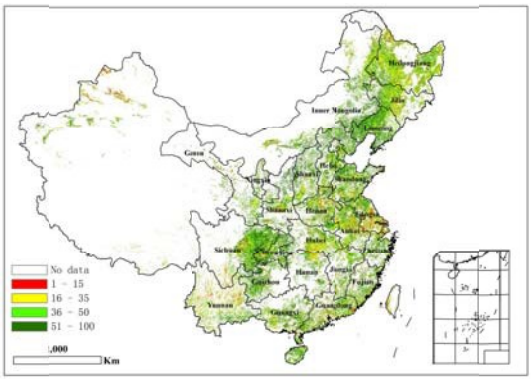


Figure 4.7 China minimum Vegetation Health Index, by pixel, January - April 2021



4.2 China crops prospects

Multi-source high resolution satellite images, agro-climatic and agronomic indicators as well as field surveys from winter crop producing provinces were integrated into the forecast of winter crop production.

(1) Winter crop production

The overall favorable weather conditions benefitted winter crops. During the overwintering to regreening and jointing stages, RAIN and TEMP were above average (+25% and +0.8°C). Benefitting from good agro-climatic conditions and proper crop management, winter crop conditions are overall favorable. CropWatch puts the total output of winter crops at 132.46 million tons, up by 0.7% or 0.96 million tons from 2020 (Table 4.2).

The planted area of winter crops in the Huanghuaihai Plain has expanded compared with 2020, especially in Shandong, Hebei, and Anhui with an increase of 2.8%, 1.7%, and 0.3%, respectively. The production also increased, which prompted the total output of winter crops in these provinces to increase by 1.13 million tons (+4.4%), 0.317 million tons (2.6%), and 0.106 million tons (0.9%), respectively. As the largest winter crop producting province, Henan has a slight decline in winter crop planted area and yield, resulting in a decrease of winter crop production by 0.257 million tons. Affected by the drier weather during the sowing period in the autumn of 2020, the winter crop planted area on the Loess region including Shanxi, Shaanxi and Gansu has decreased by 2.3%, 3.5% and 4.3%, respectively. During the re-greening to jointing stages of winter wheat, Shaanxi and Gansu received significantly above average precipitation, which provided favorable soil moisture conditions for the winter crops. The increase in yield partly compensates for the reduction in planted area, resulting in a reduction of winter wheat production by only 2.4% in these provinces. In contrast, RAIN has continued to be low since the wintering period in Shanxi Province, the decline in both yield and planted area has led to a 3.5% reduction in winter crop production, which is the largest reduction of production percentage wise among all provinces. The area of winter crop planted in the three provinces of Hubei, Chongqing and Sichuan has also been reduced. However, the increase in yield in the three provinces compensated for the reduction in area, and only minor production changes in those three provinces resulted.

Table 4.2 China, 2021 winter crop production (thousand tons) and percentage difference with 2010, by province

	2020	2021			
Provinces	Production (kton)	Area change (%)	Yield change (%)	Production change (%)	Production (kton)
Hebei	12336	1.7	0.9	2.6	12653
Shanxi	2352	-2.3	-1.3	-3.5	2270
Jiangsu	10216	-1.1	-0.6	-1.6	10049
Anhui	12042	0.3	0.6	0.9	12148
Shandong	25638	2.8	1.6	4.4	26771
Henan	28081	-0.4	-0.5	-0.9	27824
Hubei	5492	-1.4	0.4	-1.0	5435
Chongqing	2318	-0.8	1.3	0.5	2329
Sichuan	5785	-1.2	1.8	0.6	5820
Shaanxi	4223	-3.5	1.1	-2.4	4121
Gansu	3605	-4.3	1.9	-2.4	3517
Sub total	112087	0.0	-	0.8	112938
Other provinces	19415	0.0	-	0.6	19524
National total*	131502	0.5	0.3	0.7	132463

* Production of Taiwan province is not included.

(2) Winter wheat output

The total winter wheat output in 2021 is expected to be 122.26 million tons, an increase of 1.11 million tons compared to 2020, or up by 0.9%. The total planted area of winter wheat is estimated at 23.95 million hectares, with an increase of 0.5%, and the average yield of winter wheat is predicted at 5104 kg/ha, up by 0.4% from 2020(Table 4.3).

As far as the main producing provinces are concerned, both the planted area and yield of winter wheat in Hebei, Anhui and Shandong increased from 2020, and the output of winter wheat increased by 0.309 million tons, 0.123 million tons and 1.12 million tons respectively. Water deficit affected Shanxi's winter wheat, and both the yield and planted area decreased, resulting

in a 3.5% decrease in winter wheat output. The winter wheat planted area in Jiangsu and Henan decreased slightly. The two provinces were affected by strong winds and heavy rains in May. The adverse weather resulted in wheat lodging in parts of Jiangsu and Henan, leading to a slight decrease of wheat yield by 0.6% and 0.5%, respectively. As a result, winter wheat output dropped by 0.163 million tons and 0.269 million tons in Jiangsu and Henan, respectively. The area of winter wheat in Hubei, Chongqing, Sichuan, Shaanxi, and Gansu has decreased, while the average winter wheat yield has increased. The departure of winter wheat production from 2020 is less than 0.1 million tons.

Table 4.3 China, 2021 winter wheat area, yield, and production and percentage difference with 2020, by province

	Area (kha)			Yield (kg/ha)			Production (kton)		
Provinces	2020	2021	Δ(%)	2020	2021	Δ(%)	2020	2021	Δ(%)
Hebei	1965	1998	1.7	6123	6177	0.9	12032	12341	2.6
Shanxi	517	505	-2.3	4406	4351	-1.3	2277	2197	-3.5
Jiangsu	1978	1956	-1.1	5052	5023	-0.6	9990	9828	-1.6
Anhui	2430	2442	0.5	4745	4770	0.5	11527	11650	1.1
Shandong	4281	4399	2.8	5935	6032	1.6	25409	26532	4.4
Henan	5373	5350	-0.4	5205	5177	-0.5	27963	27694	-1.0
Hubei	984	971	-1.3	4007	4022	0.4	3945	3907	-1.0
Chongqing	343	340	-0.9	3332	3372	1.2	1143	1146	0.3
Sichuan	1289	1284	-0.4	3833	3899	1.7	4941	5004	1.3
Shaanxi	1072	1034	-3.5	3861	3905	1.1	4138	4040	-2.4
Gansu	452	433	-4.3	3980	4057	1.9	1801	1757	-2.4
Sub total	20684	20713	0.1	5085	5122	0.7	105167	106096	0.9
Other provinces	3156	3240	2.7	5065	4990	-1.5	15983	16165	1.1
National total*	23839	23953	0.5	5082	5104	0.4	121150	122261	0.9

* Production of Taiwan province is not included.

(3) Early rice planted area

In 2021, the total area of early rice in the eight major producing provinces of China is estimated at 5.029 million hectares. Compared with the expanded early rice area in 2020, when the government had encouraged early rice cultivation, the area in 2021 was reduced by 0.715 million hectares, but it is still larger than in 2019. With the exception of the early rice planted area in Anhui Province, which increased from 2020, all other seven major early rice producing provinces presented a decrease in planted area compared to 2020. Hunan and Jiangxi are the two largest early rice producing provinces in the country. The early rice area is estimated at 1.5223 million hectares for Hunan (-1.4%) and 1.1447 million hectares for Jiangxi (-1.9%). Early rice in Hubei Province shrank by 1.8% from 2020, resulting in 0.1507 million hectares only. The main reason is that farmers switched to shrimp-rice farming or crab-rice farming, because it is more profitable. This new farming practices even caused a reduction in winter wheat cultivation in this province.

4.3 Regional analysis

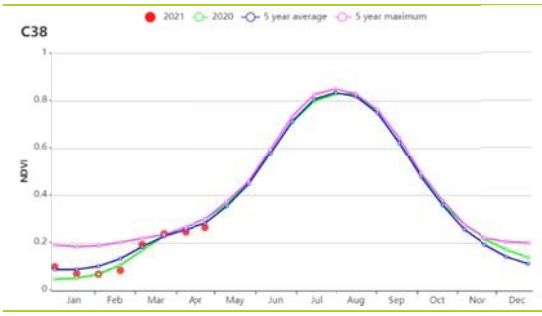
Figures 4.8 through 4.14 present crop condition information for each of China's seven agricultural regions. The provided information is as follows: (a) Phenology of major crops; (b) Crop condition development graph based on NDVI, comparing the current season up to October 2019 to the previous season, to the five-year average (5YA), and to the five-year maximum; (c) Spatial NDVI patterns for January - April 2021 (compared to the (5YA)); (d) NDVI profiles associated with the spatial patterns under (c); (e) maximum VCI (over arable land mask); and (f) biomass for January - April 2021. Additional information about agro-climatic indicators and BIOMSS for China is provided in Annex A.

Northeast region

Due to the cold winter weather, no crops were grown in the northeast of China during this monitoring season (January to April 2021). CropWatch Agroclimatic Indicators (CWAIs) show that the precipitation greatly deviated from the average level. The total precipitation increased by 26%. It was above average level in mid-January, late January, mid-February, mid-March, and late March. The photosynthetically active radiation was below average (RADPAR, - 5%) and the temperatures were above average (TEMP +0.9 °C). Altogether, the potential biomass was 24% above the fifteen-year average level.

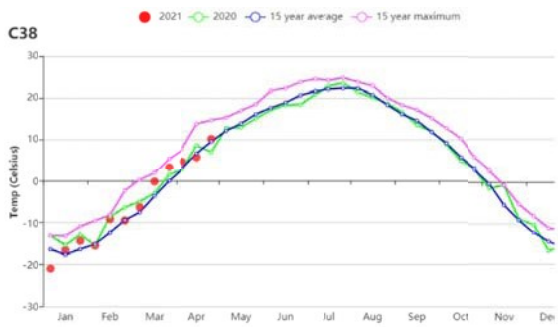
Overall, higher precipitation and warmer temperatures are beneficial to the spring sowing in the northeast of China. However, sowing dates in some low-lying areas in Northeast China were delayed due to waterlogging caused by above average rainfall. Warmer temperatures in May will facilitate the germination and good establishment of the summer crops.

Figure 4.8 Crop condition China Northeast region, January - April 2021

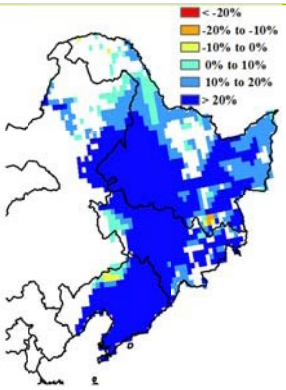


(a) Crop condition development graph based on NDVI

(b) Time series rainfall profile



(c) Time series temperature profile



(d) Potential biomass departure from 15YA

(e) Waterlogged fields of Youyi farm in HeiLongjiang province (2021-3-22)

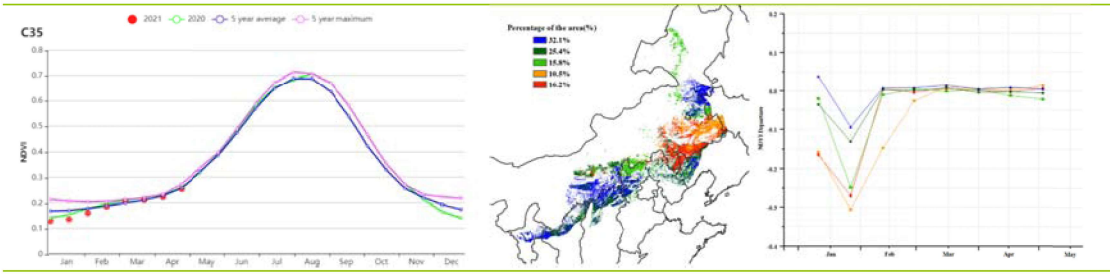
(f) Waterlogged fields of Youyi farm in HeiLongjiang province (2021-4-22)

Inner Mongolia

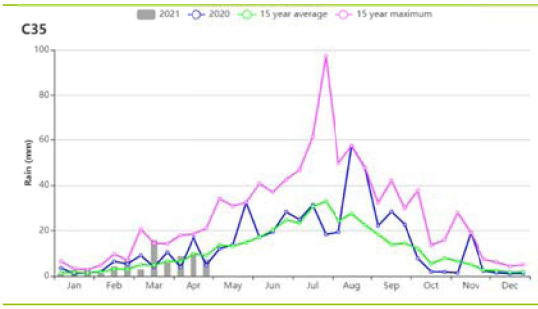
During the reporting period, the main summer crops in Inner Mongolia were maize and soybean. Generally, their condition was favorable.

Rainfall was above average (RAIN +8%), TEMP was slightly higher than average by 0.3°C, and RADPAR was just average. The resulting BIOMSS was significantly above average (20%). The NDVI development graph indicates good crop condition from June to August, almost at the same level as the maximum of the 5YA. This is also confirmed by high maximum VCI values in the whole region. National VCIx averages 0.97. In July, about 34.4% of the region was below average, in particular central and eastern Inner Mongolia, northern Hebei, northern Shanxi and western Liaoning, which suffered from moderate drought. Thereafter, crop condition improved and reached— and sometimes exceeded — the maximum of the 5YA from July to August. Favorable rainfall boosted crop growth, as clearly shown by above-average NDVI and confirmed by the spatial NDVI patterns and profiles in the area mentioned above. After September, as crops were reaching ripeness, weather conditions had limited effects on crop yield. CALF in this region was above average by 8% compared to the 5YA. At the same time, cropping intensity was 4% above average at 94%. On the whole, good production is expected from Inner Mongolia.

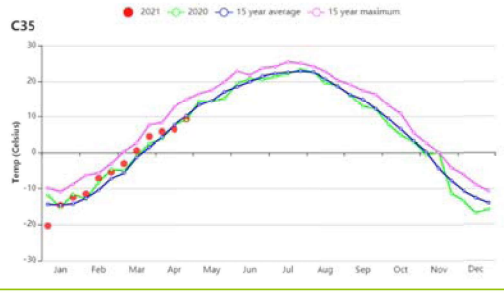
Figure 4.9 Crop condition in China Inner Mongolia, January - April 2021



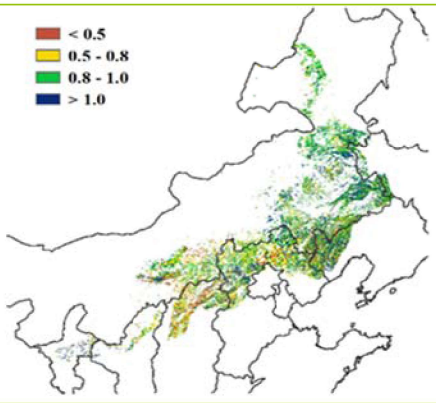
(a) Crop condition development graph based on NDVI (b) Spatial patterns of NDVI departures from 5YA (c) NDVI departure profiles



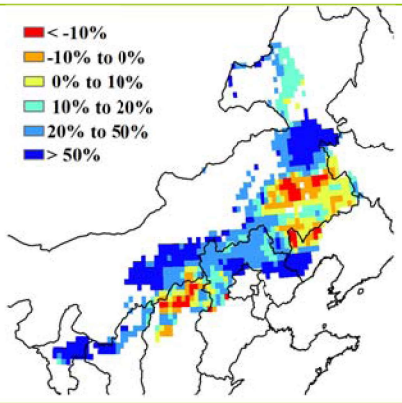
(d)Time series rainfall profile



(e)Time series temperature profile



(f) Maximum VCI



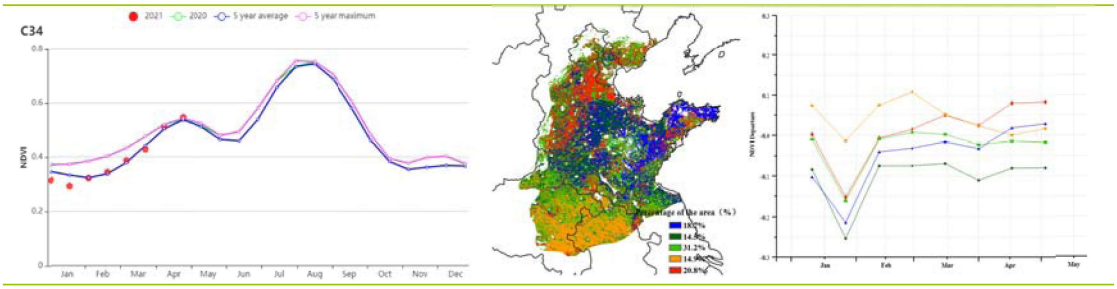
(g) Potential biomass departure from 15YA

Huanghuaihai

The Huanghuaihai region is in the North China Plain, where winter wheat - summer maize double cropping is the major cropping practice. The monitoring period of this report is from January to April, during which the winter wheat progressed from winter dormancy to the flowering stage. Harvest will be completed in mid-June.

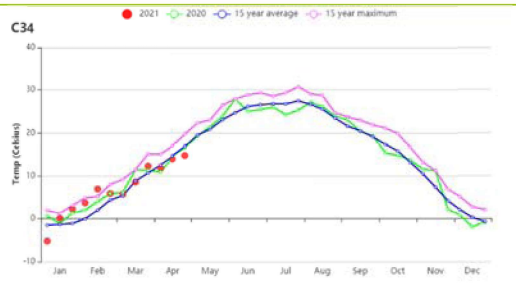
Agro-climatic indicators showed that precipitation increased by 46%, radiation decreased by 8% and temperature rose by 0.8℃ compared to the 15YA. Altogether, it led to a 25% increase in BIOMSS compared to the 15YA. The CALF exceeded the 5YA by 7%. The VCIx value was 0.94. The NDVI-based crop growth profile shows that the growth of winter wheat was slightly lower than 5YA before February and then slowly recovered to reach the maximum conditions observed in the previous 5 years by the end of April. As shown by NDVI clusters and profiles, 14.9% of cropland over northern Anhui and eastern Henan presented positive NDVI departures. In Shandong province, 14.5% of cropland over Northern and southern Shandong were negative, indicating that crops in these areas were in slightly less favorable conditions. The maps of maximum VCI show a similar distribution as the spatial NDVI patterns. The potential biomass departure map shows that biomass in the most part of the region was higher than the average level. All in all, conditions for winter wheat in the Huanghuaihai region are favorable.

Figure 4.10 Crop condition China Huanghuaihai, January - April 2021

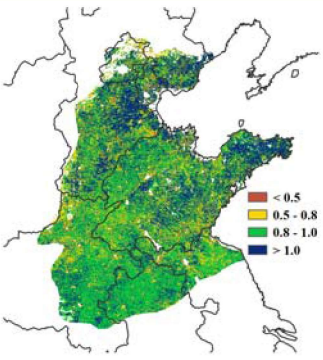


(a) Crop condition development graph based on NDVI (b) Spatial patterns of NDVI departures from 5YA (c) NDVI departure profiles

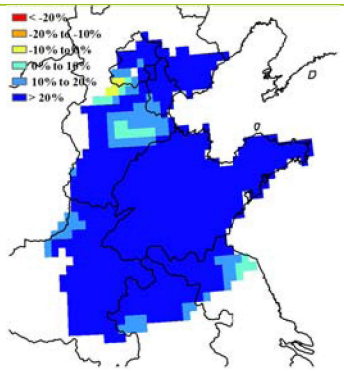
(d)Time series rainfall profile



(e)Time series temperature profile



(f) Maximum VCI



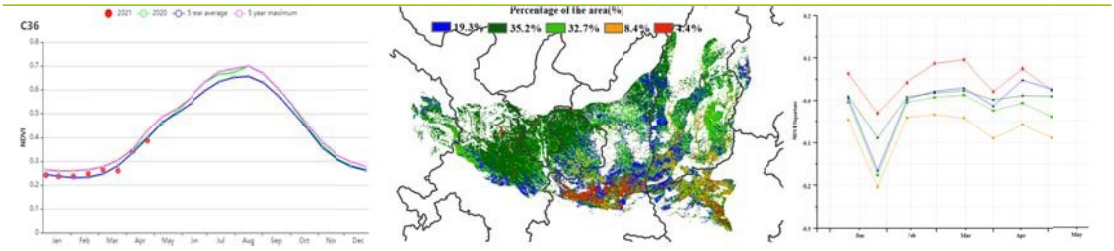
(g) Potential biomass departure from 15YA

Loess region

During this reporting period, winter wheat, spring wheat and spring maize were the main crops grown in this region. Winter wheat was sown from late September to mid-October and will be harvested in mid-June. Spring wheat and spring maize were sown in late March to April. Crop conditions in the Loess region were close to average compared to the previous five years.

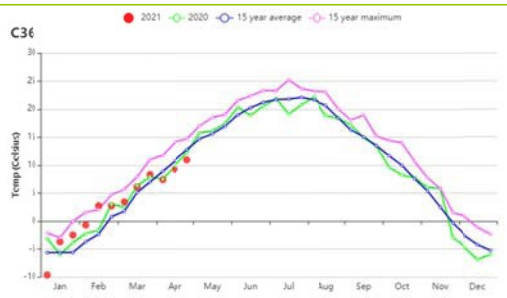
The CropWatch Agroclimatic Indicators (CWAIs) for this region were above the 15YA, precipitation was above average (RAIN, +31%), and so was the temperature (TEMP, +0.8°C). Radiation was below average (RADPAR, -8%). Altogether, it resulted in a above-average estimate of biomass (+12%). According to the regional NDVI development graph, the crop conditions were close to the 5-year average from January to February, but slightly below average from late March to April. Temperatures were slightly above average between January and March and then dropped to slightly cooler-than-average levels. The precipitation was also close to the 15-year average without drastic changes. NDVI clusters and profiles show that crop conditions were close to average in most areas of the region; about 8.4% of the areas were below the 5-year average from February to April, mainly in the northwest part of Henan Province. The Maximum VCI map shows a relatively low value of VCIx (0.81). According to the CALF map, 33% of the farmland was cultivated, which was 11% below the 5YA. In general, the agricultural conditions in the Loess region were slightly below average.

Figure 4.11 Crop condition China Loess region, January - April 2021

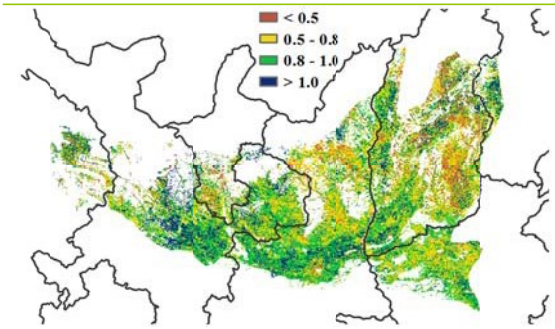


(a) Crop condition development graph based on NDVI (b) Spatial patterns of NDVI departures from 5YA (c) NDVI departure profiles

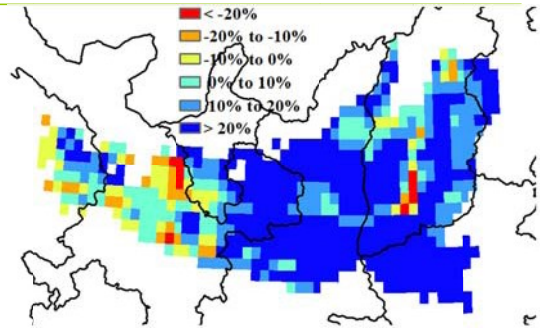
(d)Time series rainfall profile



(e)Time series temperature profile



(f) Maximum VCI



(g) Potential biomass departure from 15YA

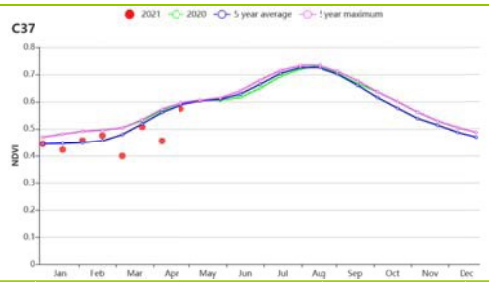
Lower Yangtze region

During this monitoring period, only winter crops such as wheat and rapeseed were in the field, essentially in the north of the region, including parts of Hubei, Henan, Anhui, and Jiangsu provinces. No crops were growing in the field in Fujian, the southern Jiangxi, and Hunan provinces.

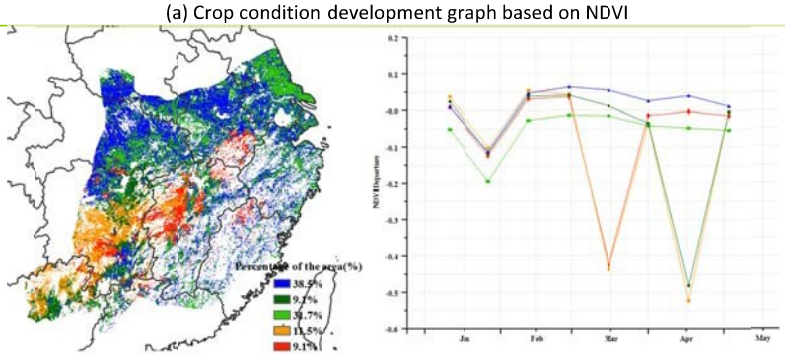
According to the CropWatch agroclimatic indicators, the Lower Yangtze region experienced a dryer season compared to the 15YA, with accumulated precipitation at 23% below average. The temperature and photosynthetically active radiation were slightly above average (TEMP 1.3 ℃, RADPAR 1%). The agroclimatic conditions resulted in average biomass production potential compared to the 15YA. As shown in the NDVI development graph, crop conditions were slightly below the 5-year average. Only 38.5% of the area, primarily distributed in the north of this region, including Jiangsu, Anhui, Hubei, and Henan provinces, showed slightly better crop conditions than the 5YA. NDVI in the remaining areas presented below-average levels. The potential biomass departure map showed that most places in this region had positive anomalies up to 20%, especially in the Hubei and Henan province. The average VCIx of this region is 0.91, and most area had VCIx values ranging from 0.8 to 1.

The crop conditions in the Lower Yangtze region are currently assessed as close to but below average.

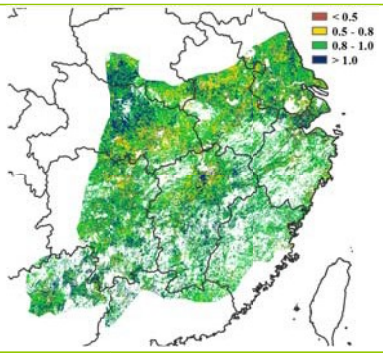
Figure 4.12 Crop condition China Lower Yangtze region, January - April 2021



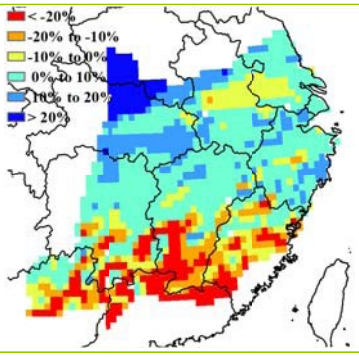
(a) Crop condition development graph based on NDVI



(b) Spatial patterns of NDVI departures from 5YA (c) NDVI departure profiles



(d) Maximum VCI



(e) Biomass departure

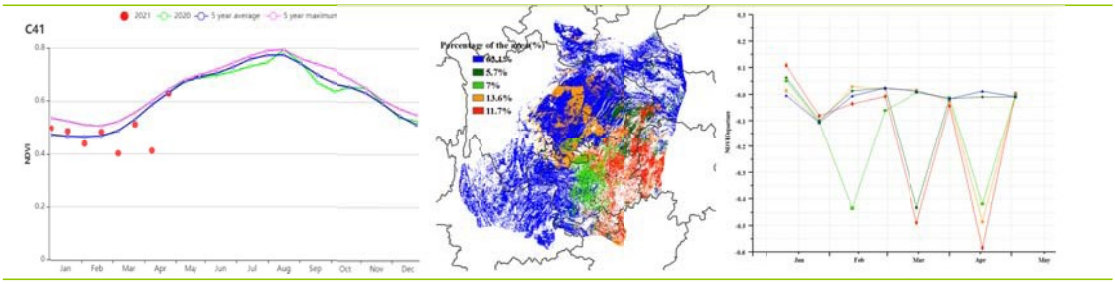
Southwest region

This reporting period covers the dormancy to flowering stage of winter wheat in southwestern China. According to the regional NDVI profile, crop conditions were generally close to the 5-year average.

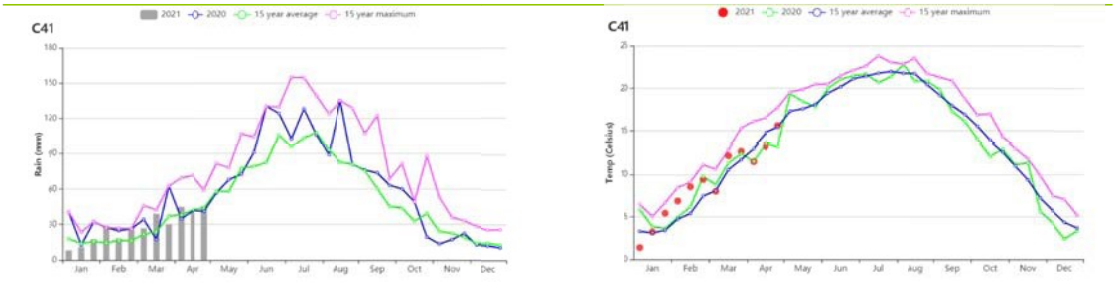
On average, rainfall was above the fifteen-year average (Rain +12%), whereas solar radiation was below average (RADPAR -10%). Temperature was close to average (TEMP +0.6 °C). The resulting BIOMSS was 4% above average mainly due to lower radiation. The cropped arable land fraction remained at the same level as in the last five years, which indicated there was no change in crop planting for this period.

According to the NDVI departure clustering map and the profiles, values were close to average in general, except in Yunnan, central Sichuan and neighboring areas in south-western Chongqing. In January, the overall NDVI in the region was close to the average level. Rainfall and RADPAR were below average for Yunnan (-5% and -1% respectively), but Chongqing experienced above-average rainfall accompanied by cloudier skies (RAIN +25%, RADPAR -14%). Average NDVI throughout the monitoring period was observed in eastern Guizhou and Sichuan, where radiation was below average and precipitation above average (See Annex A.11). The maximum VCI reached 0.92, indicating that peak conditions were comparable to the last five years. The winter crops had reached the flowering period at the end of April. If the rainy and cloudy weather conditions persist in May, wheat yield losses may occur. Conditions were mixed, but generally close to average.

Figure 4.13 Crop condition China Southwest region, January - April 2021

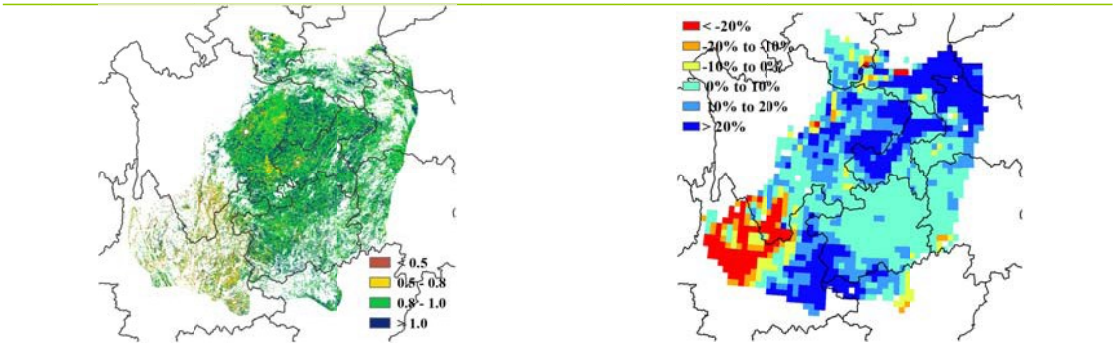


(a) Crop condition development graph based on NDVI (b) Spatial patterns of NDVI departures from 5YA (c) NDVI departure profiles



(d)Time series rainfall profile

(e)Time series temperature profile



(f) Maximum VCI

(g) Potential biomass departure from 15YA

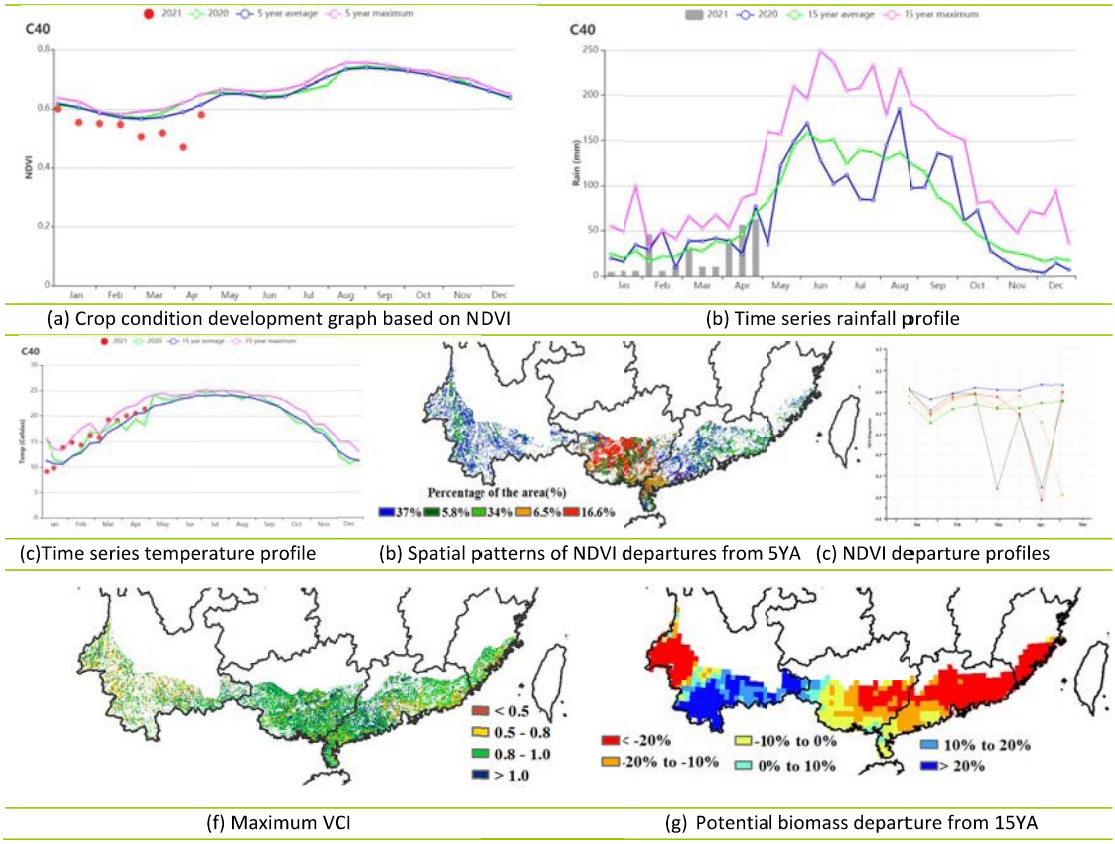
Southern China

During this monitoring period, winter wheat reached flowering stage in March and was approaching maturity by the end of April. Also, the transplanting of early rice was almost concluded. According to the crop condition development graph based on NDVI, crop conditions were below the 5-year average.

For the whole region, rainfall was below the 15YA (-24%), whereas radiation was above average (+11%). Temperature was higher than average (+1.0°C). Low rainfall resulted in a 9% drop in BIOMSS but with great spatial variation across the region. It was below average in western Yunnan, Guangxi, Guangdong and southern Fujian mainly due to the low precipitation. As shown by the NDVI departure clustering map and the profiles, values were obviously below average during the reporting period. This was mainly due to the reduced precipitation which caused drought conditions in Yunnan. The average rainfall since April benefitted the land preparation and transplanting of early rice in Guangdong and Guangxi. The cropped arable land fraction was 2% below average, a drop from the planted area of early rice in the bumper 2020. The average VCIx of the Southern China region was 0.88, and most area had VCIx values ranging from 0.80 to 1.00. Low VCIx values were mostly scattered in Yunnan province which was consistent with the below-average BIOMSS map.

Overall, the crop conditions during the monitoring period were below average for this region.

Figure 4.14 Crop condition in Southern China, January - April 2021



(a) Crop condition development graph based on NDVI (b) Time series rainfall profile

(c)Time series temperature profile (b) Spatial patterns of NDVI departures from 5YA (c) NDVI departure profiles

(f) Maximum VCI (g) Potential biomass departure from 15YA

4.4 Major crops trade prospects

This section analyzes the import and export situation of maize, rice, wheat and soybean in the first quarter of 2021 in China.

Rice

In the first quarter, China's rice import was 1.454 million tons, up 158.3% over the previous year. The main import source countries were Pakistan, Myanmar, Vietnam, Thailand and India, accounting for 29.4%, 26.4%, 15.3%, 10.3% and 10.2% of the total import respectively, with an import value of US$310 million. The export of rice was 657.2 kilotons, an increase of 26% over the previous year, and the export value was US$282 million.

Wheat

In the first quarter, China imported 2.92 million tons of wheat and wheat products, an increase of 131.2% over the previous year, and the import value was US$728 million.

Maize

In the first quarter, China's maize imports were 6.7266 million tons, an increase of 437.8% over the previous year. The main source countries of imports were the United States, Ukraine and Russia, accounting for 51.8%, 47.5% and 0.5% of the total imports respectively, and the import value was US$1.658 billion.

Soybean

In the first quarter, China imported 21.1739 million tons of soybeans, an increase of 19% over the previous year. The main source countries of imports were the United States, Brazil and Argentina, accounting for 90.3%, 6.4% and 0.5% of the total imports respectively, and the import value was US$10.199 billion. The export of soybean was 18.6 kilotons, down 32.1% from the previous year.

On the basis of the remote sensing-based predictions of production in major agricultural producing countries in 2021 and the Major Agricultural Shocks and Policy Simulation Model, which is derived from the standard GTAP (Global Trade Analysis Project), it is estimated that the import of major grain crop varieties will increase in 2021. The details are as follows:

Rice imports will increase by 23.6% and exports will decrease by 1.4% in 2021. Under the influence of COVID 19 pandemic, the import demand will expand with a slight increase in demand for different quality and brand rice. The import demand will expand in 2021, and the import of rice will continue to increase in the year of 2021.

China's wheat import will increase by 16.2% and its export will decrease by 3.5% in 2021. From the overall supply and demand situation of domestic wheat, it is less likely to maintain a high level of import in the future, and it is expected that wheat import will increase in 2021.

China's import of maize is expected to increase by 65.9% in 2021 while its export will be basically flat. The large increase will be promoted by the tight relationship between supply and demand of maize in China. In addition, China's domestic maize price, as a result of rising produciton cost, will still be higher than the international market price.

China's soybean import will increase by 6.4% in 2021, and its export will be basically flat. Due to the steady growth of China's soybean consumption demand and limited domestic soybean production, it is expected that China's soybean import will continue to increase in 2021.

Figure 4.15 Rate of change of imports and exports for rice, wheat, maize, and soybean in China in 2021 compared to those for 2020(%)