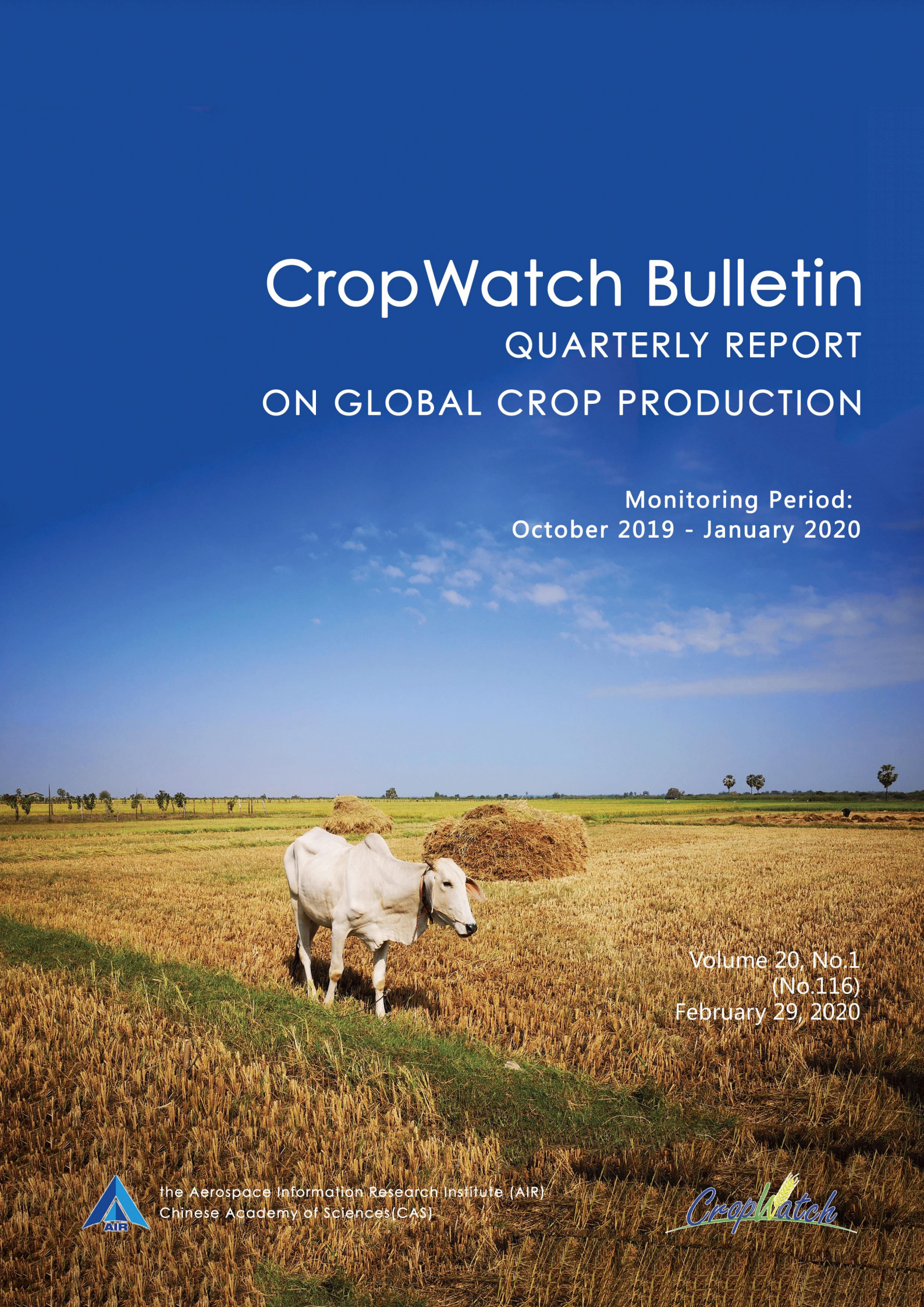
CropWatch Bulletin

QUARTERLY REPORT

ON GLOBAL CROP PRODUCTION

Monitoring Period:
October 2019 - January 2020



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CropWatch Online Resources: This bulletin along with additional resources is also available on the CropWatch Website at http://www.cropwatch.com.cn and http://cloud.cropwatch.com.cn/.

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NOTE: **CROPWATCH RESOURCES, BACKGROUND MATERIALS AND ADDITIONAL DATA ARE AVAILABLE ONLINE AT WWW.CROPWATCH.COM.CN.**

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Abbreviations

5YA	Five-year average, the average for the four-month period from July from 2014 to 2018 to October next year; one of the standard reference periods.
15YA	Fifteen-year average, the average for the four-month period from July from 2004 to 2018 to October next year; one of the standard reference periods and typically referred to as “average”.
AEZ	Agro-Ecological Zone
BIOMSS	CropWatch agroclimatic indicator for biomass production potential
BOM	Australian Bureau of Meteorology
CALF	Cropped Arable Land Fraction
CAS	Chinese Academy of Sciences
CWAI	CropWatch Agroclimatic Indicator
CWSU	CropWatch Spatial Units
DM	Dry matter
EC/JRC	European Commission Joint Research Centre
ENSO	EI Niño Southern Oscillation
FAO	Food and Agriculture Organization of the United Nations
GAUL	Global Administrative Units Layer
GVG	GPS, Video, and GIS data
Ha	hectare
Kcal	kilocalorie
MPZ	Major Production Zone
MRU	Monitoring and Reporting Unit
NDVI	Normalized Difference Vegetation Index
OISST	Optimum Interpolation Sea Surface Temperature
PAR	Photosynthetically active radiation
PET	Potential Evapotranspiration
RADI	CAS Institute of Remote Sensing and Digital Earth
RADPAR	CropWatch PAR agroclimatic indicator
RAIN	CropWatch rainfall agroclimatic indicator
SOI	Southern Oscillation Index
TEMP	CropWatch air temperature agroclimatic indicator
Ton	Thousand kilograms
VCIx	CropWatch maximum Vegetation Condition Index
VHI	CropWatch Vegetation Health Index
VHIn	CropWatch minimum Vegetation Health Index
W/m^2	Watt per square meter

Bulletin overview and reporting period

This CropWatch bulletin presents a global overview of crop stage and condition between October 2019 and January 2020, a period referred to in this bulletin as the JASO (October, November, Desember, and Jaunary) period or just the "reporting period." The bulletin is the 116th such publication issued by the CropWatch group at the Aerospace Information Research Institute (AIR), Chinese Academy of Sciences, Beijing.

CropWatch indicators

CropWatch analyses are based mostly on several standard as well as new ground-based and remote sensing indicators, following a hierarchical approach.

In parallel to an increasing spatial precision of the analyses, indicators become more focused on agriculture as the analyses zoom in to smaller spatial units. CropWatch uses two sets of indicators: (i) agroclimatic indicators—RAIN, TEMP, RADPAR, and potential BIOMSS, which describe weather factors and its impacts on crops. Importantly, the indicators RAIN, TEMP, RADPAR, and BIOMSS do not directly describe the weather variables rain, temperature, radiation, or biomass, but rather they are spatial averages over agricultural areas, which are weighted according to the local crop production potential; and (ii) agronomic indicators—VHIn, CALF, and VCIx, Cropping Intensity, and vegetation indices, describing crop condition and development. (ii) PAY indicators: planted area, yield and production.

For each reporting period, the bulletin reports on the departures for all seven indicators, which (with the exception of TEMP) are expressed in relative terms as a percentage change compared to the average value for that indicator for the last five or fifteen years (depending on the indicator).For more details on the CropWatch indicators and spatial units used for the analysis, please see the quick reference guide in Annex B, as well as online resources and publications posted at www.cropwatch.com.cn.

CropWatch analysis and indicators

The analyses cover large global zones; major producing countries of maize, rice, wheat, and soybean; and detailed assessments for Chinese regions, 42 major agricultural countries, and 201 Agro-Ecological Zones (AEZs).

This bulletin is organized as follows:

Chapter	Spatial coverage	Key indicators
Chapter 1	World, using Monitoring and Reporting Units (MRU), 65 large, agro-ecologically homogeneous units covering the globe	RAIN, TEMP, RADPAR, BIOMSS
Chapter 2	Major Production Zones (MPZ), six regions that contribute most to global food production	As above, plus CALF, VCIx, and VHIn
Chapter 3	42 key countries (main producers and exporters) and 206 AEZs	As above plus NDVI and GVG survey
Chapter 4	China and regions	As above plus high resolution images; Pest and crops trade prospects
Chapter 5	Production outlook, and updates on disaster events and El Niño.	

Regular updates and online resources

The bulletin is released quarterly in both English and Chinese. E-mail **cropwatch@radi.ac.cn** to sign up for the mailing list or visit CropWatch online at **www.cropwatch.com.cn**, **http://cloud.cropwatch.com.cn/**

Executive summary

This bulletin covers the beginning of the rainy season in the southern hemisphere, as well as the sowing period and early vegetative growth of (winter) wheat in the northern hemisphere.

Agro-climatic conditions

Global agroclimatic conditions are assessed based on CropWatch Agroclimatic Indices which describe weather and climate over agricultural areas only. They are referred to as RAIN, TEMP and RADPAR and expressed in the same units as the corresponding climatological variables (rainfall, temperature and photosynthetically active radiation). BIOMSS is an estimate of the plant biomass production potential.

During this reporting period, yet another temperature record was set: No other month of January in NOAA's 141-year global temperature dataset was as warm as January 2020. The CropWatch TEMP indicator, which is calculated over cropped areas only, also showed that the average temperature between October 2019 and January 2020 was 0.3ºC above the 15 year average. This was not the only alarming news during this monitoring period: In Australia, wheat was negatively affected by drought conditions and above average temperatures. Similarly, dry conditions, partly caused by a delayed onset of the rains, induced yield losses for the main rice crops in South-East Asia.

On the positive side, rainfall in South America returned to normal after the delayed onset of the rainy season, ensuring normal to favorable conditions for wheat, maize and soybean production.

Wheat is the main crop that was sown and grown in the northern hemisphere during this monitoring period. Rainfall was above average in the southern USA and winter wheat production in the Southern Plains stands to benefit. Drier than normal conditions were observed for the north-west of the USA. The winter wheat production regions of Canada experienced normal conditions. In Europe, Siberia and the North China Plain, conditions for wheat sowing and its early vegetative growth were also favorable. However, below-average rainfall was observed for Romania and the Ukraine. But we are still early in the season: Soil moisture during spring green up in March and April will mainly determine the production potential for winter wheat. Conditions for wheat production in Pakistan and India are also favorable. In those countries, wheat is predominantly irrigated and does not go dormant.

Rainfall in many parts of Africa was more than 30% above average, partly due to a prolonged rainy season in the Sahel. A phenomenon called positive Indian Ocean Dipole, which is caused by warmer temperatures in the Indian Ocean, brought torrential rains to many East African countries. Similarly, the Arabian Peninsula, the Middle East, Pakistan and India experienced above average rainfall as well. For the Sahel, Horn of Africa and South Asia, the monitoring period covered the grain-filling phase of the cereals, which were predominantly harvested in October and November. Yield of these crops may have benefitted from above-average rainfall, as biomass production estimates were above average. Rainy and favorable conditions for crops and pastures also favored the outbreak of Desert locusts. Although losses of cereal crops as a result of desert locusts were limited and at local scales, locusts still pose a threat to other crops such as potatoes and to the crops in the coming season not only on the Horn of Africa, but on the on the Arabian Peninsula, Iran and Pakistan as well (See section 5.2 DISASTER EVENTS for more details).

Global Agricultural production estimates

The current production outlook focuses on major cereal and oil crops (maize, rice, wheat and soybean) producing countries in the southern Hemisphere and some tropical and sub-tropical countries. Production forecasts are generally favorable for all crops.

The production forecasts for the 2019/20 maize season in Brazil and Argentina, the 2nd and 3rd largest exporters of maize, are up by 1% and 3% compared to last year. Of the 10 maize producing countries being monitored, only Zambia and Mexico showed decreases in maize production by 5% and 7% respectively. The outlook for maize production in southern Africa is favorable, as the region is recovering from last year's drought: Forecasts for South Africa (+20%) and Angola (+5%) are positive. Rice production in the key 14 rice-producing countries in South and South-East Asia is also expected to recover from last year's dry conditions, with the exception of Indonesia (-3%). For most of the other countries, production is expected to be stable or even increase by more than 3%. Wheat is still in the vegetative stage in the five countries being monitored: Egypt, Ethiopia, Morocco, India and Pakistan. It will reach the flowering stage in early March. For Morocco, the only country where most wheat is rainfed, a yield decline of 25% is forecasted, due to the shortage of rain. In Egypt, India and Pakistan, which are predominantly irrigated, production is expected to be stable or increase by up to 4-5%. Brazil and Argentina combined account for about half of the world's soybean exports. Production in the two countries is expected to increase by 1-2% over last year.

China

This monitoring period covered the harvest of rice and maize, as well as the sowing of winter wheat in northern China. Weather conditions were favorable for harvest and the establishment of the wheat crop. Cropped area land fraction (CALF) is up for Huanghuaihai (+10%) and the Loess Region (+21%), although this could be partly due to above-average temperatures, which advanced the development of winter crops. BIOMSS estimates are also up for most regions, except for the Loess Region and southern China. Precipitation in the South and South East was below average. However, rice planting will start during the next monitoring period only.