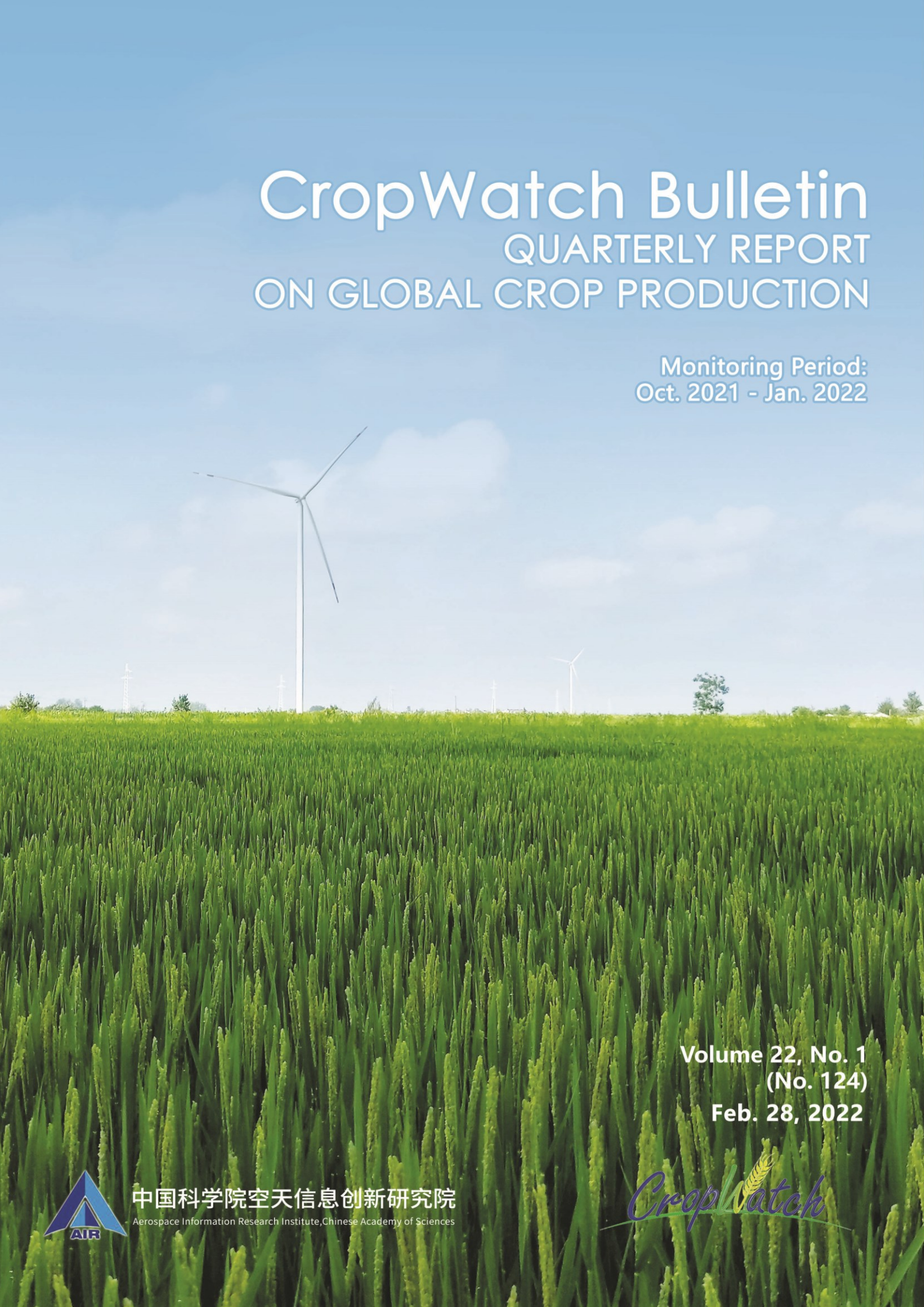
CropWatch Bulletin

QUARTERLY REPORT ON GLOBAL CROP PRODUCTION

Monitoring Period:
Oct. 2021 - Jan. 2022



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中国科学院空天信息创新研究院
Aerospace Information Research Institute,Chinese Academy of Sciences

CropWatch

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Aerospace Information Research Institute (AIR), Chinese Academy of Sciences
P.O. Box 9718-29, Olympic Village Science Park
West Beichen Road, Chaoyang
Beijing 100101, China

This bulletin is produced by the CropWatch research team, Aerospace Information Research Institute (AIR), Chinese Academy of Sciences, under the overall guidance of Professor Bingfang Wu.

Contributors are Diego de Abelleyra (Argentina), Rakiya Babamaaji (NASRDA, Nigeria), Jose Bofana (Mozambique), Sheng Chang, Abdelrazek Elnashar (Egypt), Li Fu, Zhijun Fu, Yu Fu (Hubei, China), Wenwen Gao (Shanxi, China), Yueran Hu, Yang Jiao (Hubei, China), Kangjian Jing, Hamzat Ibrahim (NASRDA, Nigeria), Mengxiao Li, Yuanchao Li, Zhongyuan Li (Hubei, China), Wenjun Liu (Yunnan, China), Xiaoyan Liu (Anhui, China), Yuming Lu, Wenwen Ma (Hubei, China), Zonghan Ma, Linghua Meng (Jilin, China), Elijah Phiri (Zambia), Elena Proudnikova (Russia), Xingli Qin, Mohsen N. Ramadan (Egypt), Igor Savin (Russia), Urs Christoph Schulthess (CIMMYT), Grace Simon Mbaiorga (NASRDA, Nigeria), Binfeng Sun (Jiangxi, China), Fuyou Tian, Huanfang Wang, Linjiang Wang, Qiang Wang (Anhui, China),Tian Wang (Hubei, China), Yixuan Wang, Yuandong Wang (Jiangxi, China), Zhengdong Wang, Bingfang Wu, Cong Xu, Jiaming Xu (Zhejiang, China), Nana Yan, Leidong Yang, Zhishan Ye (Anhui, China), Hongwei Zeng, Miao Zhang, Xiwang Zhang (Henan, China), Dan Zhao, Hang Zhao, Xinfeng Zhao, Yifan Zhao (Henan, China), Liang Zhu, Weiwei Zhu, and Qifeng Zhuang (Jiangsu, China).

Editor: Xingli Qin

Corresponding author: Professor Bingfang Wu
Aerospace Information Research Institute, Chinese Academy of Sciences
Fax: +8610-64858721, E-mail: **cropwatch@radi.ac.cn**, **wubf@aircas.ac.cn**

CropWatch Online Resources: This bulletin along with additional resources is also available on the CropWatch Website at http://www.cropwatch.cn and http://cloud.cropwatch.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 October of the previous year to January of the current year for 2017-2021; one of the standard reference periods.
15YA	Fifteen-year average, the average for the four-month period from October of the previous year to January of the current year for 2007-2021; 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	El 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	Mapping and Reporting Unit
NDVI	Normalized Difference Vegetation Index
OISST	Optimum Interpolation Sea Surface Temperature
PAR	Photosynthetically active radiation
PET	Potential Evapotranspiration
AIR	CAS Aerospace Information Research Institute
RADPAR	CropWatch PAR agroclimatic indicator
RAIN	CropWatch rainfall agroclimatic indicator
SOI	Southern Oscillation Index
TEMP	CropWatch air temperature agroclimatic indicator
Tonne	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 2021 and January 2022, a period referred to in this bulletin as the ONDJ (October, November, December and January) period or just the "reporting period." The bulletin is the 124th such publication issued by the CropWatch group at the Aerospace Information Research Institute (AIR) of the 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 and vegetation indices, describing crop condition and development. (iii) 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.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 217 Agro-Ecological Zones (AEZs).

This bulletin is organized as follows:

Chapter	Spatial coverage	Key indicators
Chapter 1	World, using Mapping 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 210 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.cn**, **http://cloud.cropwatch.cn/**

Executive summary

The current CropWatch bulletin describes world-wide crop condition and food production as appraised by data up to the end of January 2022. It is prepared by an international team coordinated by the Aerospace Information Research Institute, Chinese Academy of Sciences.

The assessment is based mainly on remotely sensed data. It covers prevailing weather conditions, including extreme factors, at different spatial scales, starting with global patterns in Chapter 1. Chapter 2 focuses on agro-climatic and agronomic conditions in major production zones in all continents. Chapter 3 covers the major agricultural countries that, together, make up at least 80% of production and exports (the "core countries") while chapter 4 zooms into China. Special attention is paid to the production outlook of major cereal and oil crops (maize, rice, wheat and soybean) countries in the Southern Hemisphere and some tropical and sub-tropical countries. Subsequent sections of Chapter 5 describe the global disasters that occurred from October 2021 to January 2022.

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 temperatures continued their upward trend in 2021. It was slightly slowed by La Niña, which is expected to last until April 2022. Nevertheless, 2021 was the sixth warmest year on record. Temperatures were 0.84ºC above the average of the 20th century. In Brazil, deforestation, fueled by high prices for soybean, maize and beef intensified even more in 2021. It had hit the highest point in the last 15 years. A new study found that a warmer, dryer environment already has pushed 28% of Amazonian agricultural space out of its optimum climate conditions. The research predicted that 51% of the region's agricultural land would move out of its ideal climate by 2030.

As expected, La Niña had a negative effect on precipitation in the south of Brazil and Paraguay and eastern Africa. However, other regions were also plagued by drought as well, such as the Maghreb and Morocco in particular. That country is experiencing the most severe drought conditions of the last 30 years. Heavy rainfall in January brought some relief to Central Asia and especially Afghanistan, which had suffered from a prolonged drought. Most of Africa south of the Sahara received below average rainfall. The monsoon rains north of the equator stopped earlier than normal and in the south, they started with a delay. This has caused drought conditions in northern Zimbabwe, Mozambique, Zambia, Malawi, Tanzania and Madagascar. The southern Plains, an important winter wheat production region of the USA encompassing Texas, Oklahoma and Kansas has experienced moderate to extreme drought conditions starting last fall. Rainfall was below average for most of Europe in October and early November, when precipitation returned to average levels for Central and Eastern Europe. Rainfall was near average for the important rice production countries in Southeast Asia. It was more abundant than usual in regions along the Yellow River in China. It caused localized flooding, which in turn delayed sowing of winter wheat. Above average rainfall, which is attributed to La Niña, provided favorable conditions for wheat production in Australia.

Key findings of this report

Maize: Favorable weather conditions helped ensure good harvest conditions in the USA and Europe. The drought in the south of Brazil is impacting its maize production, causing a drop by 5%. Conditions have been favorable in Argentina, CropWatch estimates an increase in production by 9% in Argentina. Africa south of the equator: Sowing was impacted by a delay in the onset of the monsoon season. Below average rainfall is causing drought conditions and yield losses. Conditions are favorable for winter maize production in south and south-east Asia.

Rice: Conditions during the monsoon season were favorable in South and Southeast Asia, thus harvest conditions were favorable. The combined output from the 12 countries monitored by CropWatch, accounting for 36% global rice production, is expected to increase by 1.5%.

Wheat: Conditions for wheat production in the Southern Hemisphere were generally favorable, apart from Brazil, which suffered from drought conditions. Argentina, South Africa and Australia benefitted from above average rainfall which resulted in record yield levels. Winter wheat was off to a slow start in Europe and Turkey, but conditions returned to average starting in mid-November. Winter wheat in the southern Plains of the USA is impacted by drought conditions. Sowing was delayed in regions along the Yellow River in China due to abnormally high rainfall in the autumn. Overall, global wheat production is projected to drop by 2% from 2021.

Soybean: Conditions are mixed in Brazil: Favorable in Mato Grosso, while the south of Brazil and Paraguay are impacted by drought conditions. Conditions in Argentina are favorable. CropWatch estimates an increase in production by 1% in Brazil and 4% in Argentina over the last year.