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QUARTERLY REPORT ON GLOBAL CROP PRODUCTION

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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.

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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 April-July periods from 2010 to 2014; one of the standard reference periods.
14YA	Fourteen-year average, the average for the April-July periods from 2001 to 2014; one of the standard reference periods and typically referred to as “average.”
BIOMSS	Agroclimatic indicator for biomass production potential
BOM	Australian Bureau of Meteorology
CALF	Cropped Arable Land Fraction
CAS	Chinese Academy of Sciences
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
GMO	Genetically Modified Organism
GVG	GPS, Video, and GIS data
ha	hectare
kcal	kilocalorie
MPZ	Major Production Zone
MRU	Monitoring and Reporting Unit
NDVI	Normalized Difference Vegetation Index
OCHA	UN Office for the Coordination of Humanitarian Affairs
PAR	Photosynthetically active radiation
RADI	CAS Institute of Remote Sensing and Digital Earth
RADPAR	PAR agroclimatic indicator
RAIN	Rainfall agroclimatic indicator
SOI	Southern Oscillation Index
TEMP	Air temperature agroclimatic indicator
Ton	Thousand kilograms
VCIx	Maximum Vegetation Condition Index
VHI	Vegetation Health Index
VHIn	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 April 1 and July 31, 2015. It is the 98th bulletin produced by the CropWatch group at the Institute of Remote Sensing and Digital Earth (RADI) at the Chinese Academy of Sciences, Beijing. CropWatch analyses are based mostly on several standard and new ground-based and remote sensing indicators, following a hierarchical approach. The analyses cover large global zones; major producing countries of maize, rice, wheat, and soybean; and detailed assessments of Chinese regions.

In parallel to the increasing spatial precision of the analyses, indicators become more focused on agriculture as the analyses zoom into smaller spatial units. CropWatch uses two sets of indicators: (i) agroclimatic indicators—RAIN, TEMP, and RADPAR, which describe weather factors; and (ii) agronomic indicators—BIOMSS, VHIn, CALF, and VCIx, describing crop condition and development. The indicators RAIN, TEMP, RADPAR and BIOMSS do not directly describe the weather variables rain, temperature, radiation, or biomass, but rather are spatial averages over agricultural areas, which are weighted according to the local crop production potential. For more details on the CropWatch indicators and spatial units used for the analysis, please see the quick reference guide in Annex C, as well as online resources and publications posted at www.cropwatch.com.cn.

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	31 key countries (main producers and exporters)	As above plus NDVI
Chapter 4	China	As above
Chapter 5	Special topics: Production outlook, disaster events, trends in North America, and El Niño.	
Online Resources	www.cropwatch.com.cn	

Newsletter and online resources

The bulletin is released quarterly in both English and Chinese. To sign up for the mailing list, please e-mail cropwatch@radi.ac.cn or visit CropWatch online at www.cropwatch.com.cn. Visit the CropWatch Website for additional resources and background materials about methodology, country agricultural profiles, and country long term trends.

Executive summary

The CropWatch bulletin, prepared by the Institute of Remote Sensing and Digital Earth (RADI) at the Chinese Academy of Sciences, relies on environmental and satellite-based agronomic indicators to qualitatively and quantitatively assess worldwide food production. In addition to China, analyses focus on all major production areas and important exporting countries. The bulletin further reports on ongoing trends, disaster events, and other circumstances and events of interest to global agriculture and food security, such as a perspective on the occurrence of El Niño. This bulletin also introduces a new section about the phytosanitary condition of crops in China.

The current reporting period from April to July 2015 covers the harvest of winter crops and the growth of summer crops in the northern hemisphere, as well as the growth of winter crops in the southern hemisphere. After providing an overview of global agroclimatic conditions with some typical agronomic impacts in the major production zones (MPZs), the Bulletin looks in detail at the major producers, including China, focusing on maize, rice, wheat, and soybeans.

Overall agro-environmental and agronomic conditions between April and July 2015

Globally, rainfall—as indicated by the CropWatch RAIN indicator—exceeded average by 4%, while temperature (TEMP) was 0.4°C above average; July was also the warmest July on record so far. The resulting biomass production potential was 1% above the five-year average. Sunshine (measured by RADPAR) was average. On the whole, the reporting period was characterized by an unusual frequency of extreme conditions, some of them clearly associated with El Niño. Selected extreme conditions include:

- *High temperature and rainfall in parts of central Asia.* Parts of central Asia (southern Mongolia, Gansu-Xinjiang in China, and the Ural to Altai mountains and adjacent areas) recorded high temperature combined with abundant rainfall, sometimes more than the double the expected amounts. Some major pastoralist areas have enjoyed particularly favorable biomass production conditions for rangeland and crops. For instance, CropWatch estimates the wheat output of Kazakhstan to increase 15%, resulting from favorable conditions and one of the largest national increases in cropped arable land (9%).
- *Drought in selected temperate areas in Asia and Africa.* A number of mostly temperate areas (including some tropical highlands) in both hemispheres suffered drought, resulting in reduced biomass production. Areas involved are eastern and southern Africa, including the East African highlands and Madagascar. As a result, CropWatch puts the maize production of South Africa at -25% below last year's output and includes Ethiopia's among the countries that deserve close monitoring.
- *Rainfall deficit in East Asia.* In eastern Asia, a severe rainfall deficit affected the Republic of Korea (-51%) and Korea DPR (-63%), as well as the region including the China Loess and Huanghuaihai region, Northeast China, Taiwan Province, and eastern Central Asia where the average deficit was up to -50% for rainfall, while temperatures were average and radiation increased 2% above average.
- *Rainfall deficit and high temperature in Eurasia.* Western Eurasia, including much of Western Europe and Caucasus, experienced a reduction in rainfall with an average deficit of about -25% along with high temperature. CropWatch estimates that maize production will drop 2% in France,

8% in Romania (where the fraction of cropped arable land also fell 3 percentage points), and 10% in Ukraine, despite that country's increase in the fraction of cropped arable land.

- *Cyclones and storms in Asia.* In southern and eastern Asia, cyclones, storms, and intense monsoon precipitation created havoc through loss of life, flooding, damage to infrastructure, and crop loss. For instance, typhoon Chan-hom caused about US$1.5 billion in damage to agriculture and transportation in Zhejiang and Jiangsu provinces in China at the end of June. India, Bangladesh, and Myanmar were also the victims of severe floods during the same period and at the end of July. India rice production is projected by CropWatch to decrease 3%.
- *Drought and flood in North America.* In North America, losses due to drought in the west and center were compounded by floods in some areas. In Canada, rainfall was only half the expected amounts in Alberta and Saskatchewan. The cropped arable land fraction dropped by 6 percentage points in Canada. CropWatch estimates a national wheat output in Canada at 6% below last year's level.

Global production estimate

The latest CropWatch production estimate for the 2015 season puts global maize output at 987 million tons and rice production at 741 million tons (both are comparable to 2014), while the production of wheat and soybean are expected to increase by 1% to 725 million tons and 310 million tons, repectively. The global percentages of change are identical with those of the major producers for rice and wheat.

Among the major exporters, maize and soybeans stay at the same output level as for 2014, while rice output decreases by 2% and wheat output increases by the same percentage. In the United States, maize and soybean production also stay at their 2014 level, while wheat production increases 3%. This may result in some impact on the markets for maize, rice, and soybean.

China

CropWatch puts the total annual output at 567.7 million tons, 0.7% up from 2014 (3.9 million tons increase). Winter crops in China enjoyed favorable conditions while in their grain filling stage: CropWatch revised the total production of winter crops in China for 2015 to 125.7 million tons, an increase of 2.2 million tons or 2% compared to 2014. The total summer production is forecast at 406.9 million tons, 0.5% increase or 2 million tons increase from last drought year, slightly above 2013 summer crop production. Early rice production is at 35.1 million tons, 1% decrease from the previous year.

According to the updated summer crop estimates in this bulletin, 2015 maize production remains comparable to 2014, at 192.8 million tons. The largest increases were achieved in Chongqing, Gansu, Hebei, Henan, and Xinjiang (+3% each), while large decreases are observed in Inner Mongolia, Ningxia, Shaanxi, and Shanxi provinces. The factors behind the decreases vary from province to province and include drought and pests in Inner Mongolia and drought in Shaanxi.

Soybean continues its long-term negative production trend in China and reaches 12.7 million tons (a drop of 3% from 2014 levels), mostly because of a decrease in planted area compared to last year.

Rice production in China is projected to increase by 1% over 2014 to an output of 202.3 million tons, resulting from a 2% increase in single rice production and despite decreases in the production of early (-1%) and late (-2%) rice. The aggregated rice production shows a decrease in Guangdong, Hunan, Jiangxi, Yunnan, and Zhejiang provinces. Generally, areas that practice double cropping show a decrease, while single rice planting areas increased over recent years. As stressed in a new section describing phytosanitary conditions in China, about two thirds of all rice growing areas were affected by

planthoppers (mostly in the Yangtze River Basin) and a third (mostly in the Lower Yangtze area) suffered from rice sheath blight. Maize was slightly affected by armyworms.