

Aerospace Information Research Institute, Chinese Academy of Sciences
Institute of Remote Sensing and Digital Earth, Chinese Academy of Sciences
Key laboratory of Digital Earth Science, Chinese Academy of Sciences
Sino-UK Crop Pest and Disease Forecasting & Management Joint Laboratory
Key Lab of Aviation Plant Protection, Ministry of Agriculture and Rural Affairs, P.R. China

Crop pests and diseases monitoring and forecasting in China

Late April 2019

Minor infestation of pests and diseases on wheat so far Affected area reached 6.3 million ha in China

Overview

Integrated with multi-source Earth Observation data, e.g. meteorological data, field data, and remote sensing data (such as GF series in China, MODIS and Landsat series in US, Sentinel series in EU), and self-developed models and algorithms for crop pest and disease monitoring and forecasting, AIR (RADI) constructed the 'Crop pests and diseases monitoring and forecasting system', which could regularly release thematical maps and reports on main crop pests and diseases in whole China.

Late April in 2019, due to the higher temperature and precipitation than previous years, pest and disease are slightly occurred in winter wheat regions of China. The total area affected by wheat yellow rust (*Puccinia striiformis*), sheath blight (*Rhizotonia cerealis*), and aphid (*Sitobion avenae* & *Rhopalosiphum padi*) has reached 6.3 million hectares.

Review of meteorological conditions

Field temperature in China is similar or

Content

Overview	1
Wheat yellow rust	1
Wheat sheath blight	3
Wheat aphid	4
Contact us	5

higher than previous years. In April 2019, the averaged field temperature of the plant areas in China reached 12.6°C, and higher 2.0°C than previous years.

In April 2019, the average field precipitation in China reached 41.2 mm, increased by 3.9% than previous years. In North China, West China, the Huanghuai area, and the central and western regions of South China, precipitation was higher than previous years. Field humidity reached a suitable level for pests and diseases development.

Wheat yellow rust

In late April 2019, the occurrence of yellow rust reached 0.3 million hectares, with the disease mainly occurred in Northwest China, East China, and Central China. The specific distributions and severities are shown in Figure 1 and Table 1.

Specifically, the yellow rust severely

occurred in eastern regions of Gansu, northern regions of Anhui, southern regions of Henan and southern regions of Shandong; moderately occurred in northern regions of Jiangsu and southern regions of Hubei; slightly occurred in southern regions of Gansu, eastern regions of Henan and southern regions of Shaanxi.

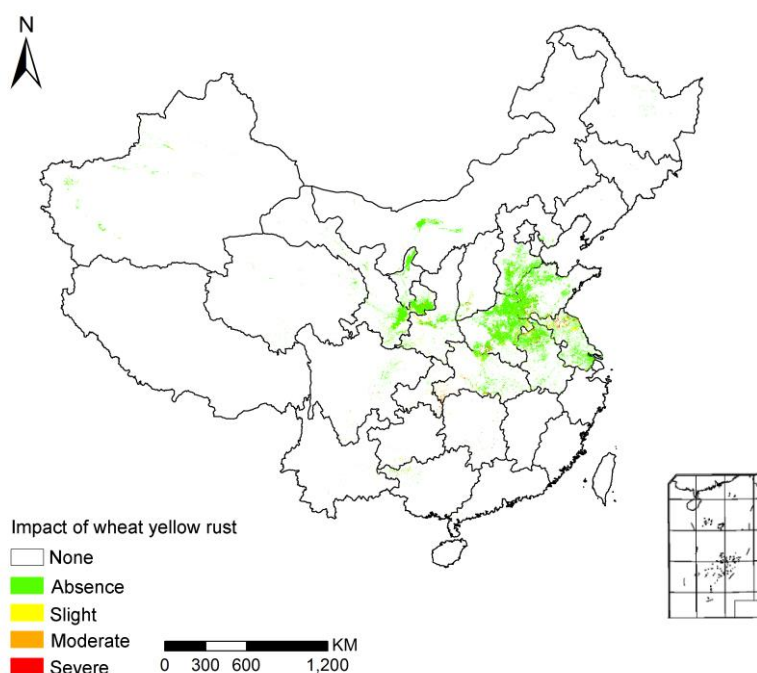


Figure 1 Spatial distribution of wheat yellow rust in China (late April 2019)

Table 1 Statistics of wheat yellow rust in China (late April 2019)

Region	Area / Thousand hectare					Total area	Occurrence ratio/%
	Absence	Slight	Moderate	Severe			
Northeast China	85.3	0	0	0	85.3	0	
North China	3542	18.7	11.3	7.3	3579.3	1	
East China	8444.7	42	40	29.3	8556	1	
South China	16.7	0	0	0	16.7	0	
Central China	6622.7	44.7	25.3	17.3	6710	1	
Northwest China	3330.7	22.7	14	8.6	3376	1	
Southwest China	1805.3	16	4.7	2.7	1828.7	1	
Total	23847.4	144.1	95.3	65.2	24152	1	

Wheat sheath blight

In late April 2019, the occurrence of sheath blight reached 4.2 million hectares, with the disease mainly occurred in Northwest China, Central China, North China, and East China. The specific distributions and severities are shown in Figure 2 and Table 2.

Specifically, the sheath blight severely occurred in northern regions of Jiangsu and

eastern regions of Gansu; moderately occurred in eastern regions of Sichuan, southern regions of Hebei, northern regions of Henan and northern regions of Anhui; slightly occurred in southern regions of Shandong, southern regions of Gansu, central and southern regions of Henan.

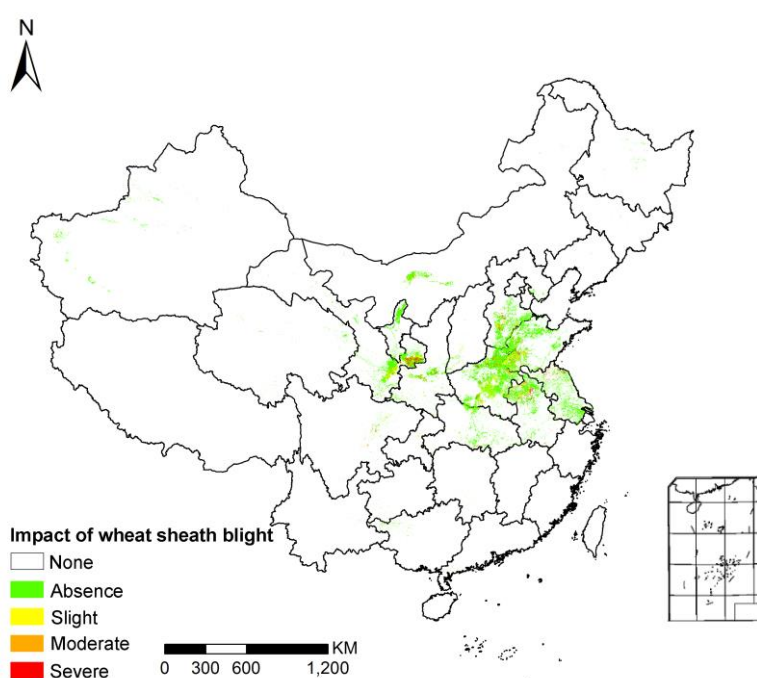


Figure 2 Spatial distribution of wheat sheath blight in China (late April 2019)

Table 2 Statistics of wheat sheath blight in China (late April 2019)

Region	Area / Thousand hectare				Total area	Occurrence ratio/%
	Absence	Slight	Moderate	Severe		
Northeast China	79.3	2.7	2	1.3	85.3	7
North China	3046	266.7	160.6	106	3579.3	15
East China	7036.7	1010	329.3	180	8556	18
South China	14	1.3	0.7	0.7	16.7	16
Central China	5523.3	813.3	246.7	126.7	6710	18
Northwest China	2769.3	304	182	120.7	3376	18
Southwest China	1518.7	156	92.7	61.3	1828.7	17
Total	19987.3	2554	1014	596.7	24152	17

Wheat aphid

In late April 2019, the occurrence of aphid reached 1.8 million hectares, mainly occurred in East China, North China, Central China and Northwest China. The specific distributions and severities are shown in Figure 3 and Table 3.

Specifically, the aphid severely occurred in

Henan, northern regions of Jiangsu and central regions of Shaanxi; moderately occurred in central regions of Anhui, eastern regions of Gansu and eastern regions of Sichuan; slightly occurred in southern regions of Hebei and northern regions of Shandong.

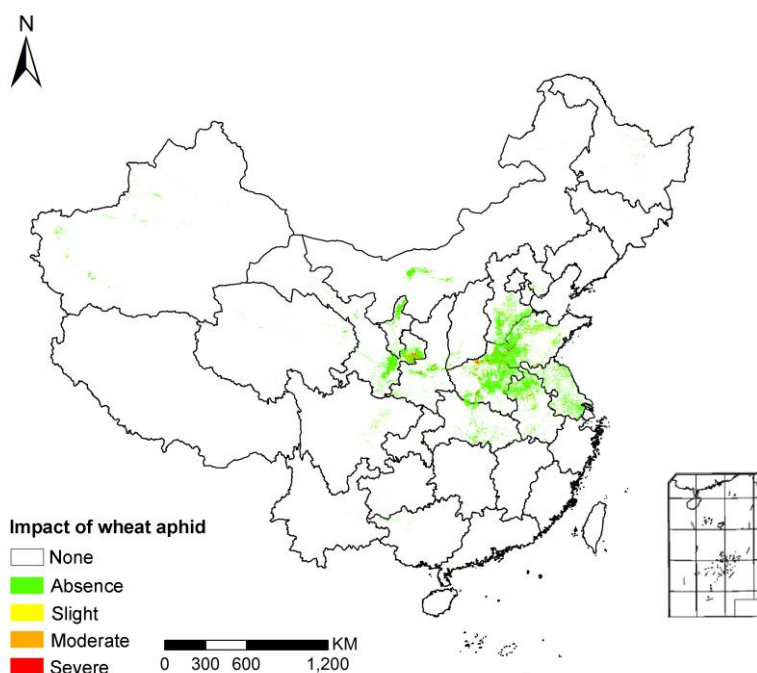


Figure 3 Spatial distribution of wheat aphid in China (late April 2019)

Table 3 Statistics of wheat aphid in China (late April 2019)

Region	Area / Thousand hectare				Total area	Occurrence ratio/%
	Absence	Slight	Moderate	Severe		
Northeast China	82.7	1.3	0.7	0.6	85.3	3
North China	3332	143.3	64.7	39.3	3579.3	7
East China	7910.7	412.7	148.6	84	8556	8
South China	15.3	0.7	0.7	0	16.7	8
Central China	6204.7	154.7	200.6	150	6710	8
Northwest China	3116.7	120	82.7	56.6	3376	8
Southwest China	1711.3	36.7	46.7	34	1828.7	6
Total	22373.4	869.4	544.7	364.5	24152	7

Contact us

Institute of remote sensing and digital earth
Chinese academy of sciences

No.9 Dengzhuang South Road, Haidian District,
Beijing 100094, P.R.China.

<http://rscrop.com/>

<http://www.rscropmap.com>

<http://www.wechat.com/en/>



Chinese English

The crop pests and diseases monitoring and forecasting system are available under:

<http://www.rscropmap.com/>

Legal Notice

Neither the institution of remote sensing and digital earth nor any person action on behalf of the institute is responsible for the use which might be made of the publication.

Disclaimer

The geographic borders are purely a graphical representation and are only intended to be indicative. The boundaries do not necessary reflect the official position.

Mission statements: As the science and knowledge service, the Sino-UK Crop Pest and Disease Forecasting & Management Joint Laboratory is to support independent evidence for crop monitoring.

Supported by the Strategic Priority Research Program of the Chinese Academy of Sciences (XDA19080304), National Key R&D Program of China (2017YFE0122400, 2016YFB0501501), National Natural Science Foundation of China (61661136004/ST/N006712/1, 41801338, 41871339), Science and Technology Service program of Chinese Academy of Sciences (KFJ-STZ-ZDTP-054).

Contact us Email: rscrop@radi.ac.cn

Corresponding author

Professor Wenjiang Huang

Institute of Remote Sensing and Digital Earth,
Chinese Academy of Sciences

Email: huanwj@radi.ac.cn

Tel: +86-10-82178178

FAX: +86-10-82178177

Main contributors

This crop pest and disease monitoring and forecasting report was released by Professor Wenjiang Huang's research group in AIR-CAS.

Chinese contributors: Yingying Dong, Huichun Ye, Huiqin Ma, Linyi Liu, Chao Ruan, Yue Shi, Qiong Zheng, Jingcheng Zhang, Jingfeng Huang, Bei Cui, Linsheng Huang, Juhua Luo, Jinling Zhao, Dongyan Zhang, Dailiang Peng, Xiaoping Du, Xiaodong Yang, Yanhua Meng, Wenjie Fan, Yue Liu, Binyuan Ren, Hong Chang, Muyi Huang, Xiangqun Nong, Bo Liu, Qing Zhang, Dacheng Wang, Gang Sun, Longlong Zhao, Wei Feng, Chao Ding, Xianfeng Zhou, Qiaoyun Xie, Weiping Kong, Naichen Xing, Yun Geng, Anting Guo, Yu Ren, Bin Wu, Jing Jiang, Zhaochuan Wu, Yu Jin, Cuicui Tang, Fang Xu, Jianli Li, Wenjing Liu, Junjing Lu, Furan Song, Qingsong Guan, Qinying Yang, Chuang Liu, Xiangmei Qin.

Foreign contributors: Belinda Luke, Pablo Gonzalez-Moreno, Sarah Thomas, Timothy Holmes, Bryony Taylor, Hongmei Li, Wenhua Chen, Martin Wooster, Bethan Perkins, Jason Chapman, Stefano Pignatti, Giovanni Laneve, Raffaele Casa, Simone Pascucci.

Advisory Experts: Bing Zhang, Jihua Wang, Qiming Qin, Puyun Yang, Yuying Jiang, Jingquan Zhu, Zhonghua Zhao, Yubin Lan, Anhong Guo, Zhanhong Ma, Yilin Zhou, Wenbing Wu, Feng Zhang, Zhiguo Wang, Lifang Wu, Dong Liang, Yanbo Huang, Chenghai Yang, Ruiliang Pu, Hugh Mortimer, Jon Styles, Andy Shaw, Liangxiu Han, Jadu Dash.