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 2019

Severe infestation of pests and diseases on wheat
Affected area is estimated to be 23.7 million ha

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.

In 2019, due to the higher temperature and precipitation with previous years, and the lower basic number of main pests and diseases before winter, pests and diseases are severely occurred in winter wheat regions of China. The total area affected by wheat yellow rust (*Puccinia striiformis*), sheath blight (*Rhizotonia cerealis*), aphid (*Sitobion avenae & Rhopalosiphum padi*) and Fusarium head blight (*Fusarium graminearum*) is estimated to

Content

be 23.7 million hectares.

Review of meteorological conditions

Temperature is higher than previous years in most wheat areas of China in the winter of 2018. In Huanghuai wheat area, the temperature is 1-2°C higher than long-term average field temperature. Meteorological conditions in these areas were conductive to the overwintering and occurrence of wheat pests and diseases.

In the spring of 2019, more precipitation in Central China, North China and East China, while Jianghuai and its southern wheat areas are more than 2-5% than previous years. Which will increase the occurrence and development of wheat pests and diseases.

Wheat yellow rust

In 2019, the occurrence of yellow rust is estimated to be 1.2 million hectares, mainly in North China, East China, and Northwest China. The specific distributions and severities are shown in Figure 1 and Table 1.

Specifically, the yellow rust is estimated to be occurred mainly in Gansu, Shaanxi, Hebei, Henan, Shandong, Anhui, and Jiangsu.
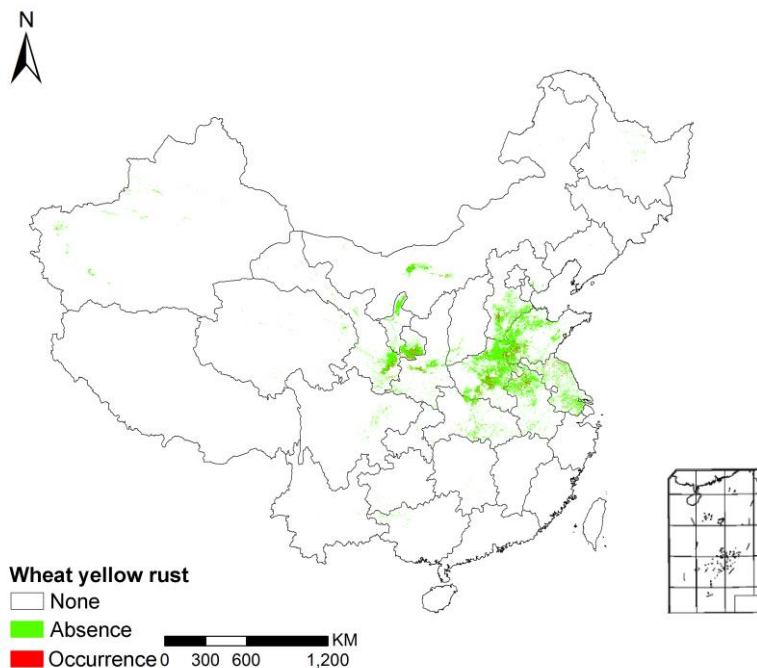

Figure 1 *Spatial distribution of wheat yellow rust in China (2019)*

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

Region	Area / Ten thousand hectare			
	Absence	Occurrence	Total area	Occurrence ratio/%
Northeast China	8.4	0.1	8.5	1
North China	342.5	15.4	357.9	4
East China	810.1	45.5	855.6	5
South China	1.6	0.1	1.7	6
Central China	635.9	35.1	671	5
Northwest China	319.4	18.2	337.6	5
Southwest China	173.6	9.3	182.9	5
Total	**2291.5**	**123.7**	**2415.2**	**5**

Wheat sheath blight

In 2019, the occurrence of sheath blight is estimated to be 7.0 million hectares, with the disease mainly in Northwest China, Southwest China, North China, and East China. The specific distributions and severities are shown in Figure 2 and Table 2.

Specifically, the sheath blight is estimated to be occurred mainly in Gansu, Sichuan, Chongqing, Hebei, Henan, Shandong, Anhui, and Jiangsu.
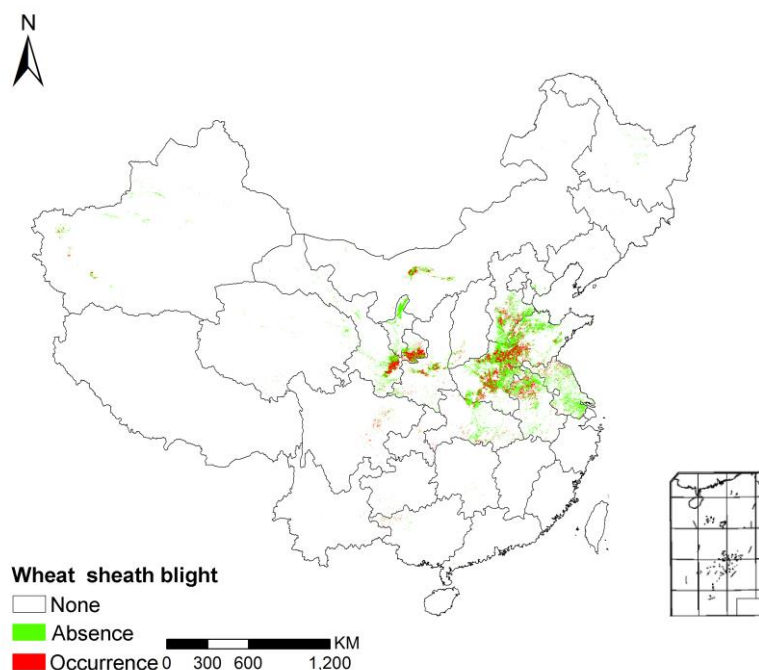

Figure 2 Spatial distribution of wheat sheath blight in China (2019)

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

Region	Area / Ten thousand hectare			
	Absence	Occurrence	Total area	Occurrence ratio/%
Northeast China	7.5	1	8.5	12
North China	265.7	92.2	357.9	26
East China	604.2	251.4	855.6	29
South China	1.2	0.5	1.7	29
Central China	472.7	198.3	671	30
Northwest China	235.9	101.7	337.6	30
Southwest China	132.9	50	182.9	27
Total	**1720.1**	**695.1**	**2415.2**	**29**

Wheat aphid

In 2019, the occurrence of aphid is estimated to be 8.9 million hectares, mainly 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 is estimated to be occurred mainly in Gansu, Shaanxi, Hebei, Shandong, Henan, Anhui, Jiangsu, Hubei.
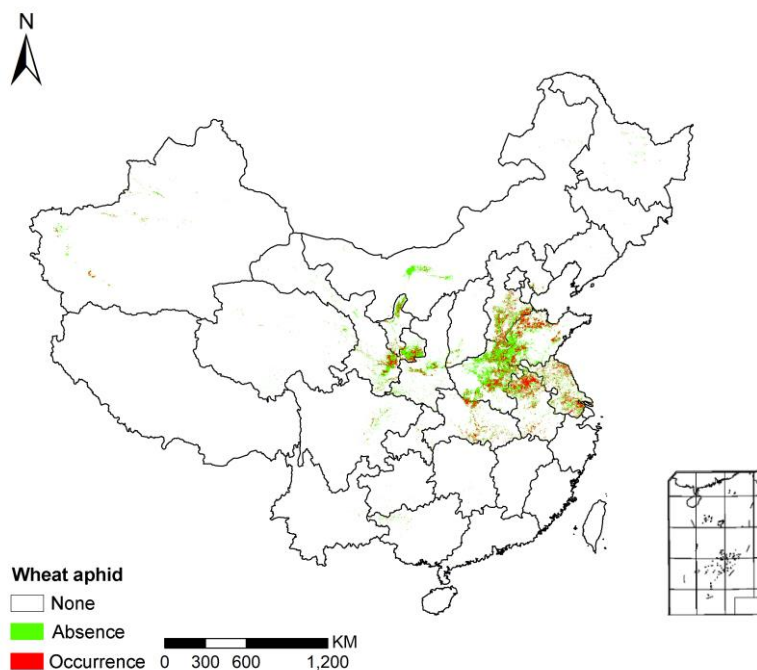

Figure 3 Spatial distribution of wheat aphid in China (2019)

Table 3 Statistics of wheat aphid in China (2019)

Region	Area / Ten thousand hectare			
	Absence	Occurrence	Total area	Occurrence ratio/%
Northeast China	6.8	1.7	8.5	20
North China	221.5	136.4	357.9	38
East China	453.5	402.1	855.6	47
South China	1.4	0.3	1.7	18
Central China	470.0	201.0	671.0	30
Northwest China	240.8	96.8	337.6	29
Southwest China	127.5	55.4	182.9	30
Total	**1521.5**	**893.7**	**2415.2**	**37**

Wheat Fusarium head blight

In 2019, the occurrence of Fusarium head blight is estimated to be 6.6 million hectares, mainly in North China, East China and Central China. The specific distributions and severities are shown in Figure 3 and Table 3.

Specifically, the Fusarium head blight is estimated to be occurred mainly in Hebei, Henan, Shandong, Anhui, Jiangsu, Hubei.
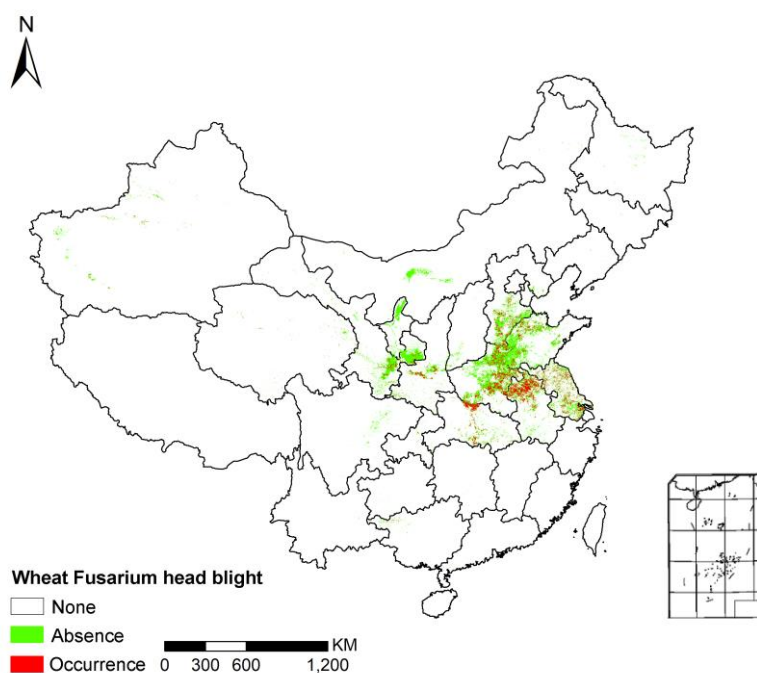

Figure 4 *Spatial distribution of wheat Fusarium head blight in China (2019)*

Table 4 *Statistics of wheat Fusarium head blight in China (2019)*

Region	Area / Ten thousand hectare			
	Absence	Occurrence	Total area	Occurrence ratio/%
Northeast China	8.0	0.5	8.5	6
North China	302.2	55.7	357.9	16
East China	566.9	288.7	855.6	34
South China	1.3	0.4	1.7	24
Central China	453.0	218.0	671.0	32
Northwest China	277.5	60.1	337.6	18
Southwest China	146.8	36.1	182.9	20
Total	**1755.7**	**659.5**	**2415.2**	**27**

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/

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The crop pests and diseases monitoring and forecasting system are available under: http://www.rscropmap.com/

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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.