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## Crop pests and diseases monitoring and forecasting in China

Late April 2020

### Severe infestation of pests and diseases on wheat

Affected areas are estimated to reach 7.4 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, the research team 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 late April 2020, due to the higher temperature and precipitation with previous years, and the more basic number of main pests and diseases before winter, pests and diseases will severely occur in winter wheat regions of China. The total areas affected by wheat yellow rust (*Puccinia striiformis*), sheath blight (*Rhizotonia cerealis*) and aphid (*Sitobion avenae* & *Rhopalosiphum padi*) are estimated to reach 7.4 million hectares.

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#### Review of meteorological conditions

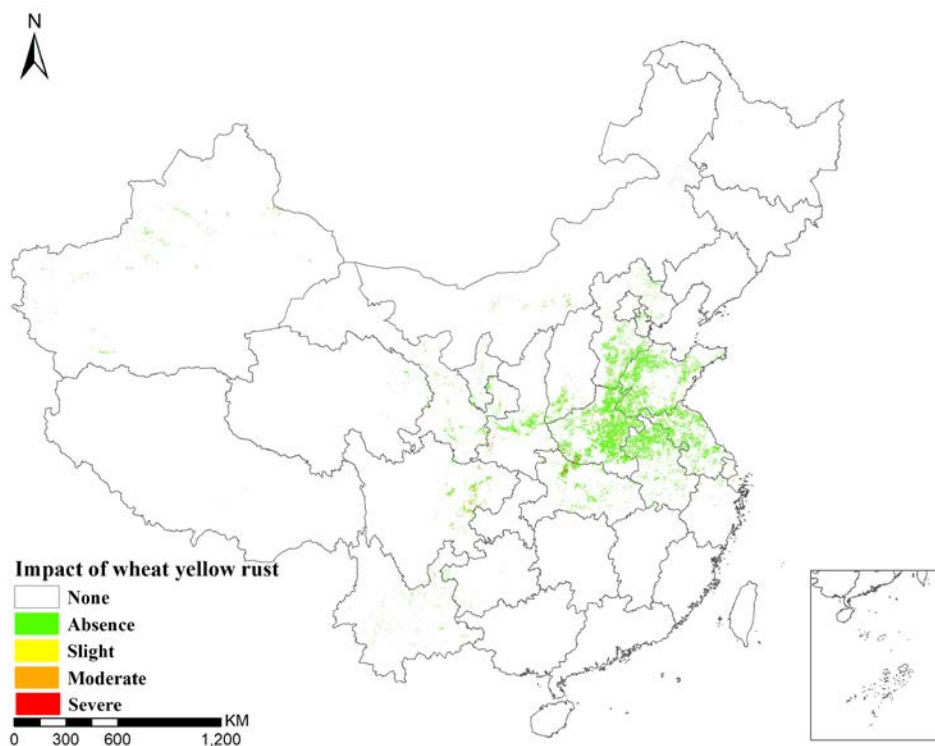
The national average temperature of winter wheat regions of China in April 2020 is similar with or higher than that in previous years. In the east of North China, east of Huanghuai and east of Jianguhai, the average temperature is 0.5-1°C higher than that in previous years.

In April 2020, the precipitation of winter wheat regions of China is 10-20 % more than that in previous years. In the middle and lower reaches of the Yangtze River, Jianguhai Region, southern area of Huanghuai and most area of south-west region of China, the precipitation are 20-50% more than that in previous years.

## Wheat yellow rust

In late April 2020, the affected areas of yellow rust are estimated to reach 1.0 million hectares, mainly in Central China, Northwest China and Southwest China. The specific distributions and severities are shown in Figure 1 and Table 1.

Specifically, the yellow rust is estimated to be severely occur in southwest Gansu, southern Henan and northeast Sichuan, moderately occur in central Henan, central Sichuan and northern Yunnan, and slightly occur in southwest Shandong, northern Henan, southern Hebei and central Shaanxi.



*Figure 1 Spatial distribution of wheat yellow rust in China (late April 2020)*

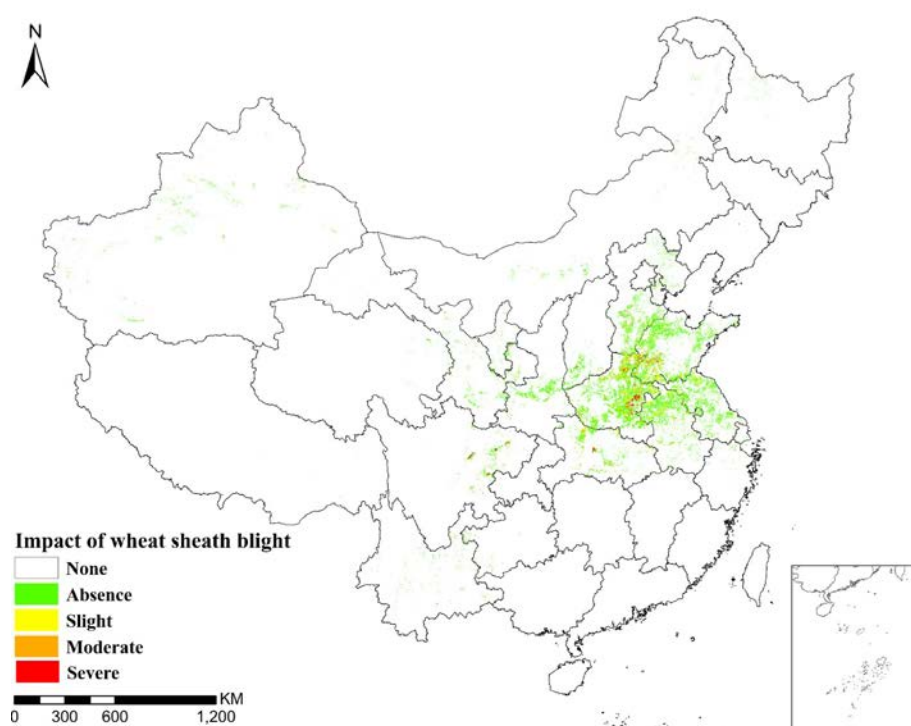
*Table 1 Statistics of wheat yellow rust in China (late April 2020)*

Region	Area / Ten thousand hectare					Occurrence ratio/%
	Absence	Slight	Moderate	Severe	Total area	
Northeast China	11.2	0	0	0	11.2	0
North China	337.2	5.7	2.3	0.9	346.1	3
East China	940.6	4.7	1.5	0.1	946.9	1
South China	0.3	0	0	0	0.3	0
Central China	647.8	15.8	10.2	14.7	688.5	6
Northwest China	281.4	4.1	1.7	7.1	294.3	4
Southwest China	92	10.5	13.3	6.3	122.1	25
<b>Total</b>	<b>2310.5</b>	<b>40.8</b>	<b>29</b>	<b>29.1</b>	<b>2409.4</b>	<b>4</b>

## Wheat sheath blight

In late April 2020, the affected areas of sheath blight are estimated to reach 4.5 million hectares, with the disease mainly in Central 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 severely occur in east Henan and southwest Shandong, moderately occur in northern and southern Henan, central Hebei and central Hubei, and slightly occur in central Henan, northern Anhui and northern Jiangsu.



*Figure 2 Spatial distribution of wheat sheath blight in China (late April 2020)*

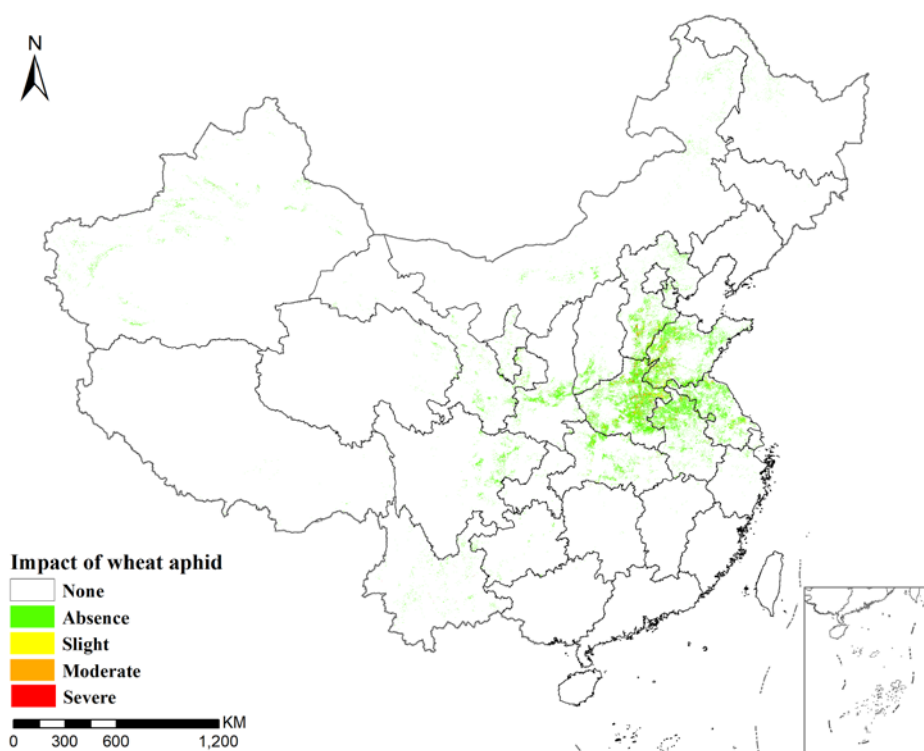
*Table 2 Statistics of wheat sheath blight in China (late April 2020)*

Region	Area / Ten thousand hectare					Occurrence ratio/%
	Absence	Slight	Moderate	Severe	Total area	
Northeast China	11.2	0	0	0	11.2	0
North China	314.1	17.8	9.9	4.3	346.1	9
East China	765	151.5	21.9	8.5	946.9	19
South China	0.3	0	0	0	0.3	0
Central China	476.3	136.1	48.6	27.5	688.5	31
Northwest China	284.6	7.7	1.5	0.5	294.3	3
Southwest China	106.6	1.2	2.3	12	122.1	13
<b>Total</b>	<b>1958.1</b>	<b>314.3</b>	<b>84.2</b>	<b>52.8</b>	<b>2409.4</b>	<b>19</b>

## Wheat aphid

In late April 2020, the affected areas of aphid are estimated to reach 1.9 million hectares, mainly in East China, North China and Central China. The specific distributions and severities are shown in Figure 3 and Table 3.

Specifically, the aphid is estimated to be severely occur in central Hebei, northern Henan and northern Shandong, moderately occur in central Henan and northern Anhui, and slightly occur in southwest Shandong, east Henan and southern Jiangsu.



*Figure 4 Spatial distribution of wheat aphid in China (late April 2020)*

*Table 4 Statistics of wheat aphid in China (late April 2020)*

Region	Area / Ten thousand hectare					Occurrence ratio/%
	Absence	Slight	Moderate	Severe	Total area	
Northeast China	11.2	0	0	0	11.2	0
North China	320.7	13.4	7.3	4.7	346.1	7
East China	869.2	49.1	18.7	9.9	946.9	8
South China	0.3	0	0	0	0.3	0
Central China	608.3	43	23.1	14.1	688.5	12
Northwest China	286.2	4.7	2.1	1.3	294.3	3
Southwest China	120.9	0.3	0.2	0.7	122.1	1
<b>Total</b>	<b>2216.8</b>	<b>110.5</b>	<b>51.4</b>	<b>30.7</b>	<b>2409.4</b>	<b>8</b>

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The Crop Pests and Diseases Monitoring and  
Forecasting system are available under:  
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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.

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