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Crop pests and diseases monitoring and forecasting in China

May 2020

Severe infestation of pests and diseases on wheat

Affected areas are estimated to reach 18.1 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 May 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*), fusarium head blight (*Fusarium graminearum*), sheath blight (*Rhizotonia cerealis*) and aphid (*Sitobion avenae* & *Rhopalosiphum padi*) are estimated to reach 18.1 million hectares.

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Review of meteorological conditions

The national average temperature of winter wheat regions of China in May 2020 is similar with or higher than that in previous years. Meteorological conditions in these areas were conducive to the overwintering and occurrence of wheat pests and diseases.

The precipitation of winter wheat regions of China is higher than that in previous years. In most area of south-west region of China, the precipitation are 20-60% more than that in previous years, this will increase the occurrence and development of wheat pests and diseases.

Wheat yellow rust

In May 2020, the affected areas of yellow rust are estimated to reach 2.4 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 central Shaanxi, southwest

Henan and northeast Sichuan, moderately occur in central Henan, southwest Shanxi, central Hebei and southwest Shandong, and slightly occur in northern Shandong, southern Henan, southern Hebei and southern Hubei.

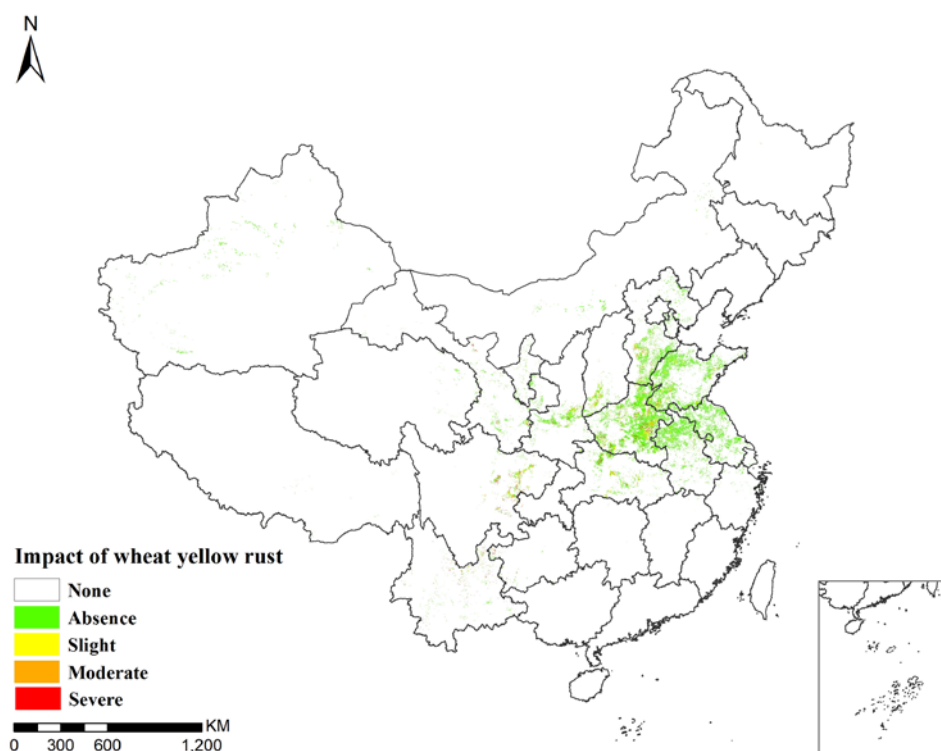


Figure 1 Spatial distribution of wheat yellow rust in China (May 2020)

Table 1 Statistics of wheat yellow rust in China (May 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	305.2	20.1	14.1	6.7	346.1	12
East China	898.5	24.4	9.5	14.5	946.9	5
South China	0.3	0	0	0	0.3	0
Central China	589.6	44.7	29.1	25.1	688.5	14
Northwest China	273	9.9	6.1	5.3	294.3	7
Southwest China	88.1	10.1	13.7	10.2	122.1	28
Total	2165.9	109.2	72.5	61.8	2409.4	10

Wheat fusarium head blight

In May 2020, the affected areas of sheath blight are estimated to reach 1.1 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 southern Jiangsu, central Anhui and central Hubei, moderately occur in northern Anhui, southern Henan and southern Shandong, and slightly occur in southwest Shandong and central Henan.

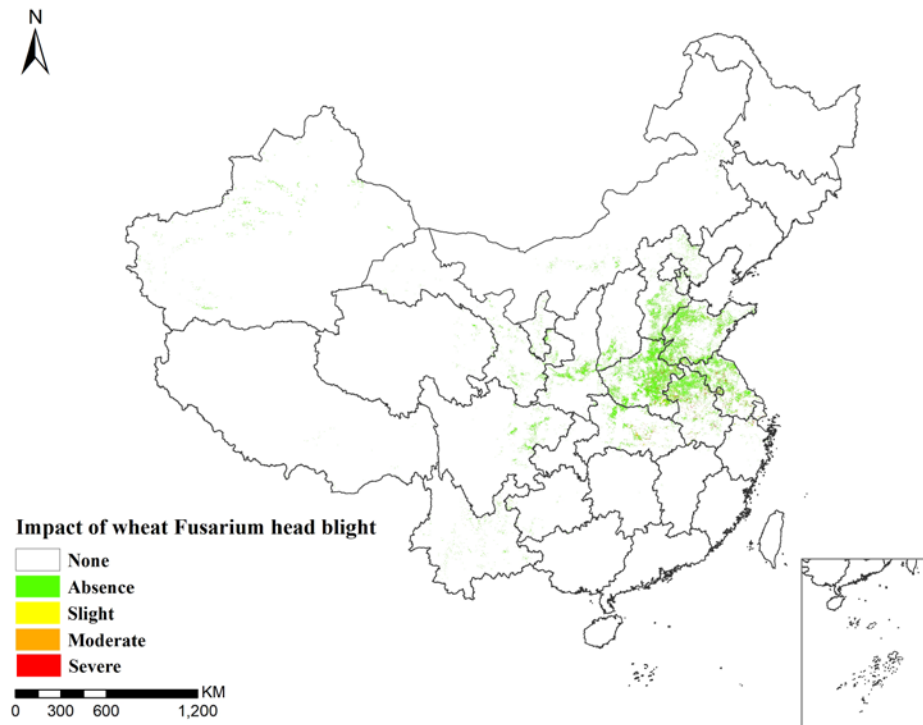


Figure 2 Spatial distribution of wheat fusarium head blight in China (May 2020)

Table 2 Statistics of wheat fusarium head blight in China (May 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	341.2	1.5	1.8	1.6	346.1	1
East China	881	15.3	19.5	31.1	946.9	7
South China	0.3	0	0	0	0.3	0
Central China	650.4	9.1	12.3	16.7	688.5	6
Northwest China	291.4	0.9	1.1	0.9	294.3	1
Southwest China	121.7	0.1	0.2	0.1	122.1	0
Total	2297.2	26.9	34.9	50.4	2409.4	5

Wheat sheath blight

In May 2020, the affected areas of sheath blight are estimated to reach 6.8 million hectares, with the disease mainly in Central China, North China and East China. The specific distributions and severities are shown in Figure 3 and Table 3.

Specifically, the sheath blight is estimated to be severely occur in central and northern Henan

and southwest Shandong, moderately occur in southwest Henan, central and northern Hubei and central Hebei, and slightly occur in northern Shandong, central Henan, northern Anhui and northern Jiangsu.

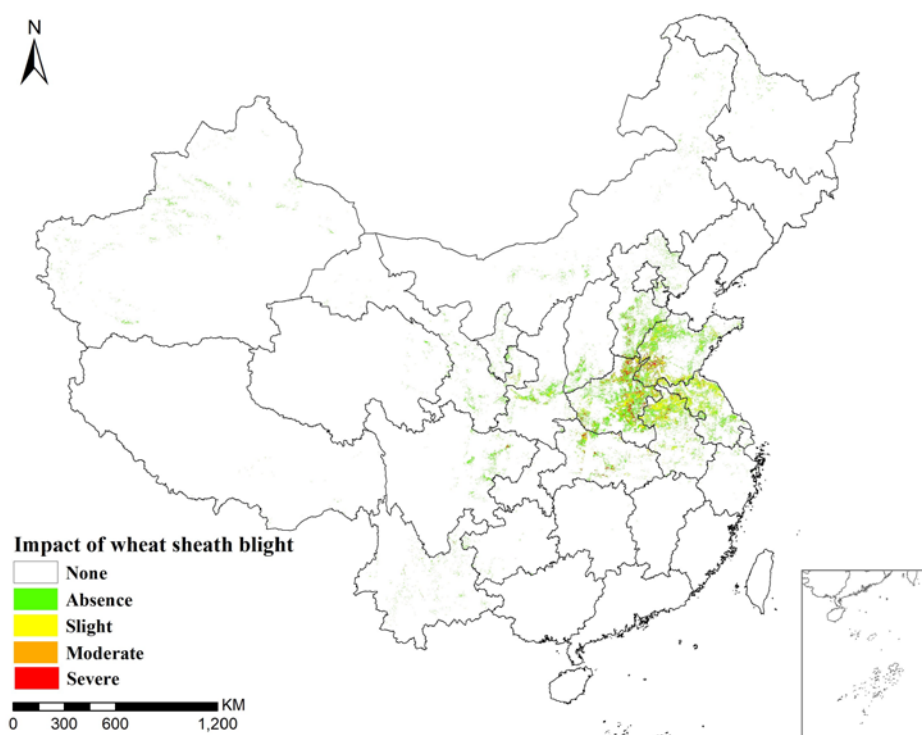


Figure 3 Spatial distribution of wheat sheath blight in China (May 2020)

Table 3 Statistics of wheat sheath blight in China (May 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	311.4	8.9	11.2	14.6	346.1	10
East China	564.9	244.1	98.7	39.2	946.9	40
South China	0.3	0	0	0	0.3	0
Central China	451.8	61.9	96.1	78.7	688.5	34
Northwest China	274.3	12.5	5	2.5	294.3	7
Southwest China	117.1	0.6	0.7	3.7	122.1	4
Total	1731	328	211.7	138.7	2409.4	28

Wheat aphid

In May 2020, the affected areas of aphid are estimated to reach 7.8 million hectares, mainly in North China and Central China. The specific distributions and severities are shown in Figure 4 and Table 4.

Specifically, the aphid is estimated to be severely occur in southern Henan, central Hebei,

northern Anhui and northern Shandong, moderately occur in central Henan, southwest Shandong and southwest Shanxi, and slightly occur in northwest Henan, east Shandong, central Anhui and southern Jiangsu.

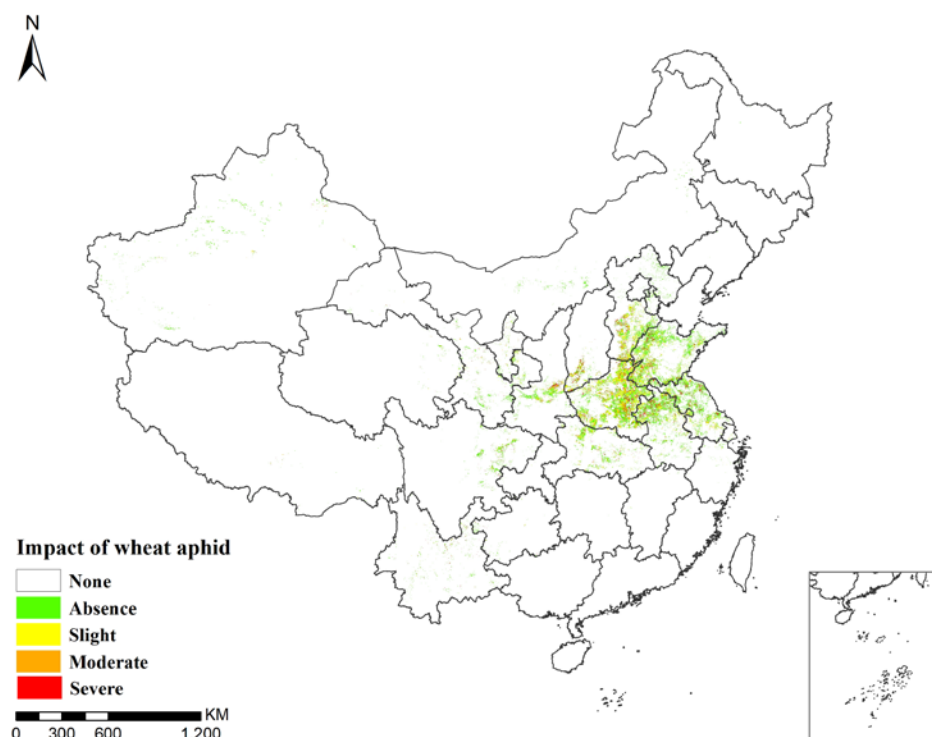


Figure 4 Spatial distribution of wheat aphid in China (May 2020)

Table 4 Statistics of wheat aphid in China (May 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	220.6	54.8	41.5	29.2	346.1	36
East China	683.7	145	37.3	80.9	946.9	28
South China	0.3	0	0	0	0.3	0
Central China	374.5	174.6	83.3	56.1	688.5	46
Northwest China	242.7	26.1	15	10.5	294.3	18
Southwest China	101.1	4.3	6.6	10.1	122.1	17
Total	1634.1	404.8	183.7	186.8	2409.4	32

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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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