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Crop pests and diseases monitoring and forecasting in China

Early September 2019

Medium infestation of pests and diseases on rice so far

Affected area reached 14.8 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 and HJ 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.

Early September in 2019, due to the higher temperature and higher precipitation than previous years, pest and disease are moderately occurred in rice regions of China. The total area affected by rice planthopper (*Nilaparvata lugens*), leaf roller (*Cnaphalocrocis medinalis*) and sheath blight (*Rhizoctonia solani Kühn*) has reached 14.8 million hectares.

Review of meteorological conditions

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In early September 2019, the averaged field temperature of the rice planting areas in Northeast China and Central China was higher 1-3°C than the same period of previous years.

Field precipitation in Northeast China and Southwest China are higher than previous years. According to the rainfall process in Southwest China, Northeast China, South China and eastern China in early September, field humidity reached a suitable level for pests and diseases development.

Rice planthopper

In early September 2019, the occurrence of rice planthopper reached 6.0 million hectares, with the pest mainly occurred in Northeast China, Central China and East China. The specific distributions and severities are shown in Figure 1 and Table 1.

Specifically, the rice planthopper severely

occurred in southwest Heilongjiang, north Zhejiang, north Hunan and central Anhui, moderately occurred in northeast Heilongjiang, south Anhui, south Hubei, central Zhejiang and north Guangxi, while slightly occurred in central Guizhou, central Hubei, central Jiangxi, central Jiangsu and south Henan.

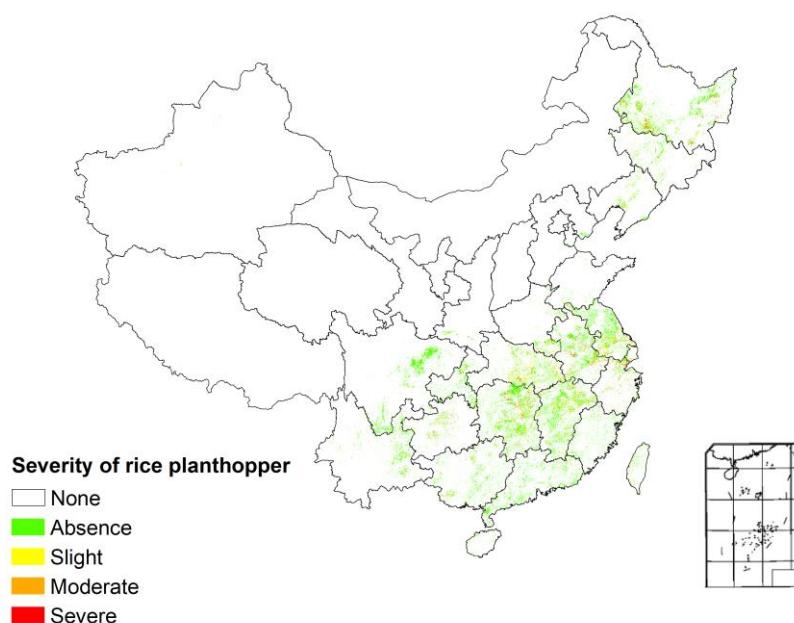


Figure 1 Spatial distribution of rice planthopper in China (early September 2019)

Table 1 Statistics of rice planthopper in China (early September 2019)

| Region | Area / Thousand hectare | | | | Total area | Occurrence ratio/% |
|------------------------|-------------------------|---------------|---------------|---------------|--------------|--------------------|
| | Absence | Slight | Moderate | Severe | | |
| Northeast China | 3526 | 550 | 286 | 184 | 4546 | 22 |
| North China | 60 | 27.3 | 8 | 4 | 99.3 | 40 |
| East China | 7532 | 1168 | 601.3 | 385.4 | 9686.7 | 22 |
| South China | 3730.7 | 203.3 | 122 | 81.3 | 4137.3 | 10 |
| Central China | 5366.7 | 834.7 | 407.3 | 257.3 | 6866 | 22 |
| Northwest China | 210 | 35.4 | 10 | 5.3 | 260.7 | 19 |
| Southwest China | 3685.3 | 500.7 | 190 | 110 | 4486 | 18 |
| Total | 24110.7 | 3319.4 | 1624.6 | 1027.3 | 30082 | 20 |

Rice leaf roller

In early September 2019, the occurrence of rice leaf roller reached 5.1 million hectares, with the pest mainly occurred in Northeast China, Central China and East China. The specific distributions and severities are shown in Figure 2 and Table 2.

Specifically, the rice leaf roller severely in

southwest Heilongjiang, central Anhui and north Zhejiang, moderately occurred in northeast Heilongjiang, north Guangxi, northeast Hunan, south Hubei and central Zhejiang, while slightly occurred in southwest Jiangsu, east Hubei, central Jiangxi and central Guizhou.

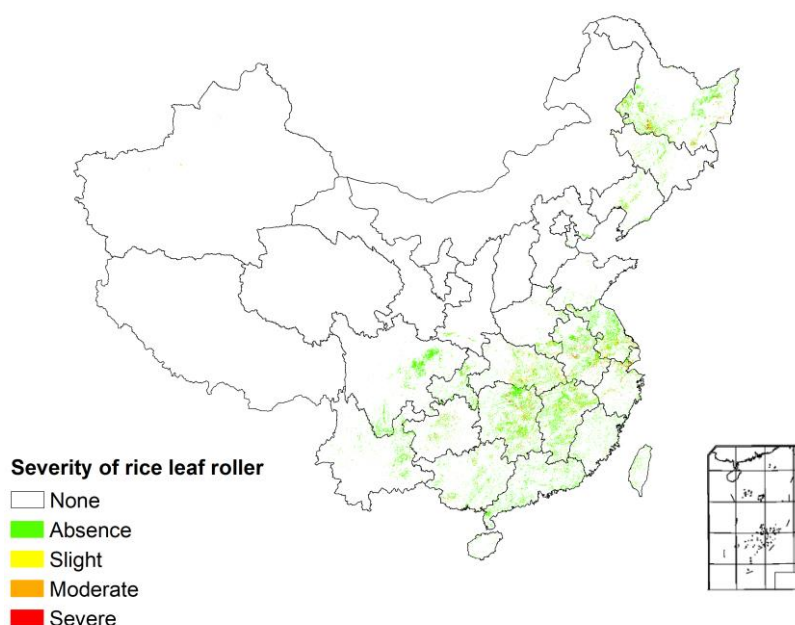


Figure 2 Spatial distribution of rice leaf roller in China (early September 2019)

Table 2 Statistics of rice leaf roller in China (early September 2019).

| Region | Area / Thousand hectare | | | | Total area | Occurrence ratio/% |
|------------------------|-------------------------|---------------|---------------|--------------|--------------|--------------------|
| | Absence | Slight | Moderate | Severe | | |
| Northeast China | 3685.3 | 464 | 241.4 | 155.3 | 4546 | 19 |
| North China | 66 | 23.3 | 6.7 | 3.3 | 99.3 | 34 |
| East China | 7856 | 992.7 | 510.7 | 327.3 | 9686.7 | 19 |
| South China | 3792 | 172.7 | 103.3 | 69.3 | 4137.3 | 8 |
| Central China | 5592.7 | 708.7 | 346 | 218.6 | 6866 | 19 |
| Northwest China | 218 | 30 | 8.7 | 4 | 260.7 | 16 |
| Southwest China | 3808 | 424 | 160.7 | 93.3 | 4486 | 15 |
| Total | 25018 | 2815.4 | 1377.5 | 871.1 | 30082 | 17 |

Rice sheath blight

In early September 2019, the occurrence of rice sheath blight reached 3.7 million hectares, mainly occurred in Northeast China and East China. The specific distributions and severities are shown in Figure 3 and Table 3.

Specifically, the rice sheath blight severely occurred in southwest Heilongjiang, central

Anhui, central Jiangsu and north Hunan, moderately occurred in northeast Heilongjiang, north Hubei, north Guangxi and south Henan, while slightly occurred in southeast Jiangsu, north Jiangxi, central Guizhou and central Fujian.

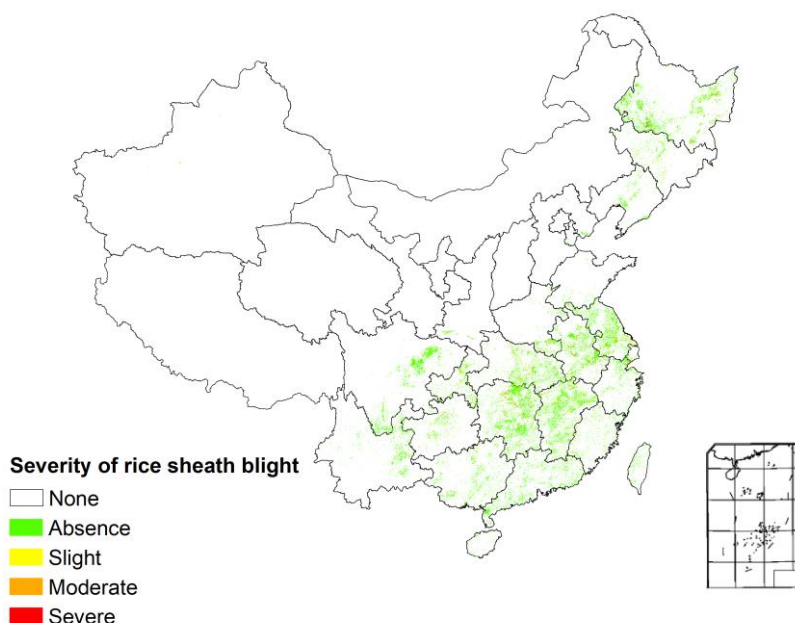


Figure 3 Spatial distribution of rice sheath blight in China (early September 2019)

Table 3 Statistics of rice sheath blight in China (early September 2019).

| Region | Area / Thousand hectare | | | | Total area | Occurrence ratio/% |
|------------------------|-------------------------|-------------|---------------|--------------|--------------|--------------------|
| | Absence | Slight | Moderate | Severe | | |
| Northeast China | 3932 | 332 | 173.3 | 108.7 | 4546 | 14 |
| North China | 75.3 | 16.7 | 5.3 | 2 | 99.3 | 24 |
| East China | 8366 | 717.3 | 370.7 | 232.7 | 9686.7 | 14 |
| South China | 3846 | 145.3 | 87.3 | 58.7 | 4137.3 | 7 |
| Central China | 5950.7 | 510 | 249.3 | 156 | 6866 | 13 |
| Northwest China | 235.4 | 18 | 5.3 | 2 | 260.7 | 10 |
| Southwest China | 3994.7 | 308.7 | 115.3 | 67.3 | 4486 | 11 |
| Total | 26400.1 | 2048 | 1006.5 | 627.4 | 30082 | 12 |

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

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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.

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