October 2019
No.14 Total: 31

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Crop pests and diseases monitoring and forecasting in China

Rice 2019

Affected area reached 15.3 million ha, decreased 35.2%

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 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*), rice leaf roller (*Cnaphalocrocis medinalis*) and rice sheath blight (*Rhizoctonia solani* Kühn) has reached15.3 million hectares, compared with the previous year decreased 35.2%.

Content

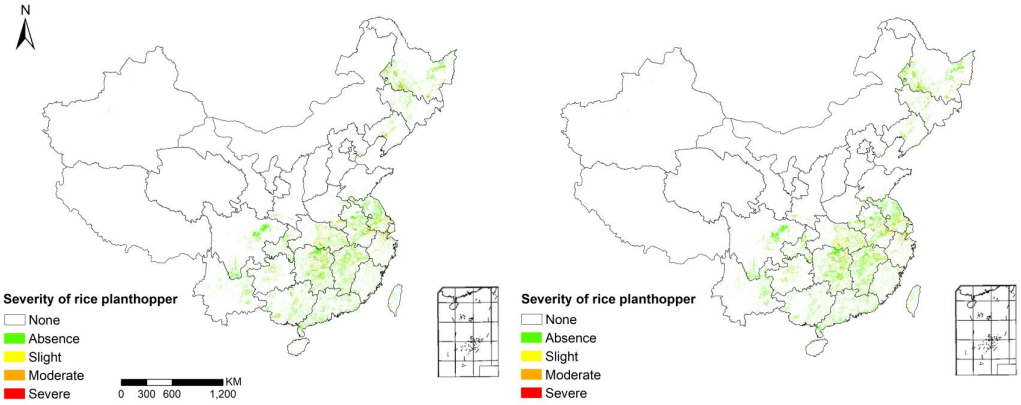
Review of meteorological conditions

Field temperature are higher than previous years. From August to September, the averaged field temperature in rice regions of China is 1-2℃ higher than previous years.

Field precipitation from August to September are higher than previous years. According to the rainfall process in Northeast China, South China, and eastern regions of East China, field humility reached a suitable level for pests and diseases development.

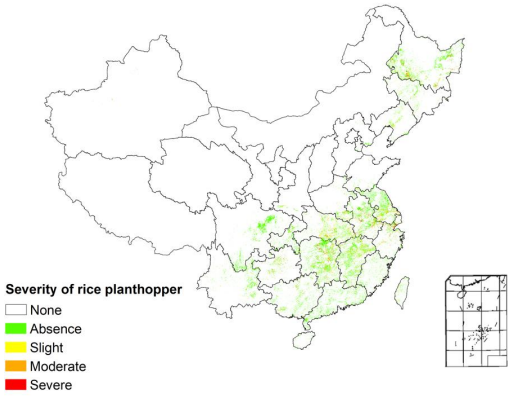
Rice planthopper

In 2019, the occurrence of rice planthopper reached 6.1 million hectares. The pest first appeared in Northeast China, Central China and East China in mid August. The full incidence period was during early September to mid to late September, mainly occurred in East China, and Central China. The specific distributions and severities are shown in Figure 1 and Table 1.



A. Mid August

B. Early September



C. Mid to late September

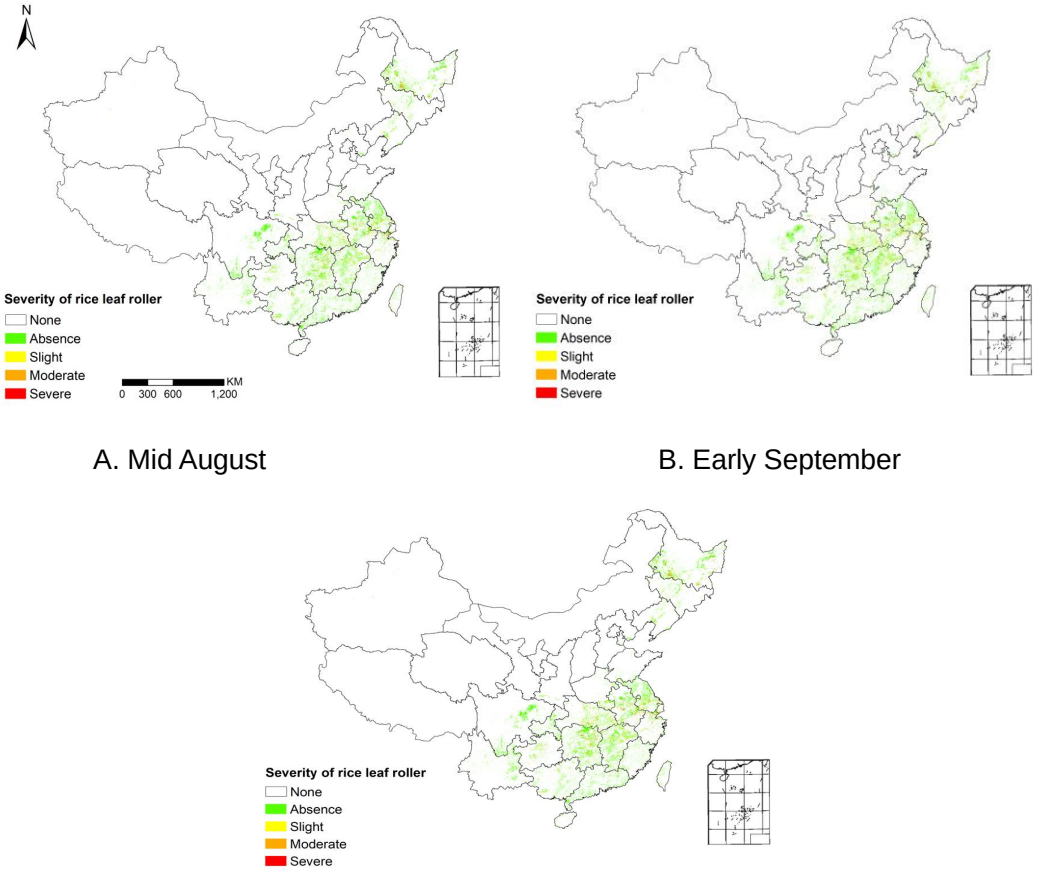
Figure 1 *Spatial distribution of rice planthopper in China (2019)*

Table 1 *Statistics of rice planthopper in China (2019)*

Region	Area / Thousand hectare			
	Mid August	Early September	Mid to late September	Total area
Northeast China	963.3	1020	1034	4546
North China	36.6	39.3	40	99.3
East China	2030.7	2154.7	2200	9686.7
South China	381.3	406.6	414	4137.3
Central China	1414	1499.3	1526.7	6866
Northwest China	47.4	50.7	51.3	260.7
Southwest China	753.3	800.7	814.6	4486
Total	**5626.6**	**5971.3**	**6080.6**	**30082**

Rice leaf roller

In 2019, the occurrence of rice leaf roller reached 5.2 million hectares. The pest first appeared in Northeast China, Central China and East China in mid August. The full incidence period was during early September to mid to late September, mainly occurred in northern regions of Northeast China, East China, and southern regions of Central China. The specific distributions and severities are shown in Figure 2 and Table 2



A. Mid August

B. Early September

C. Mid to late September

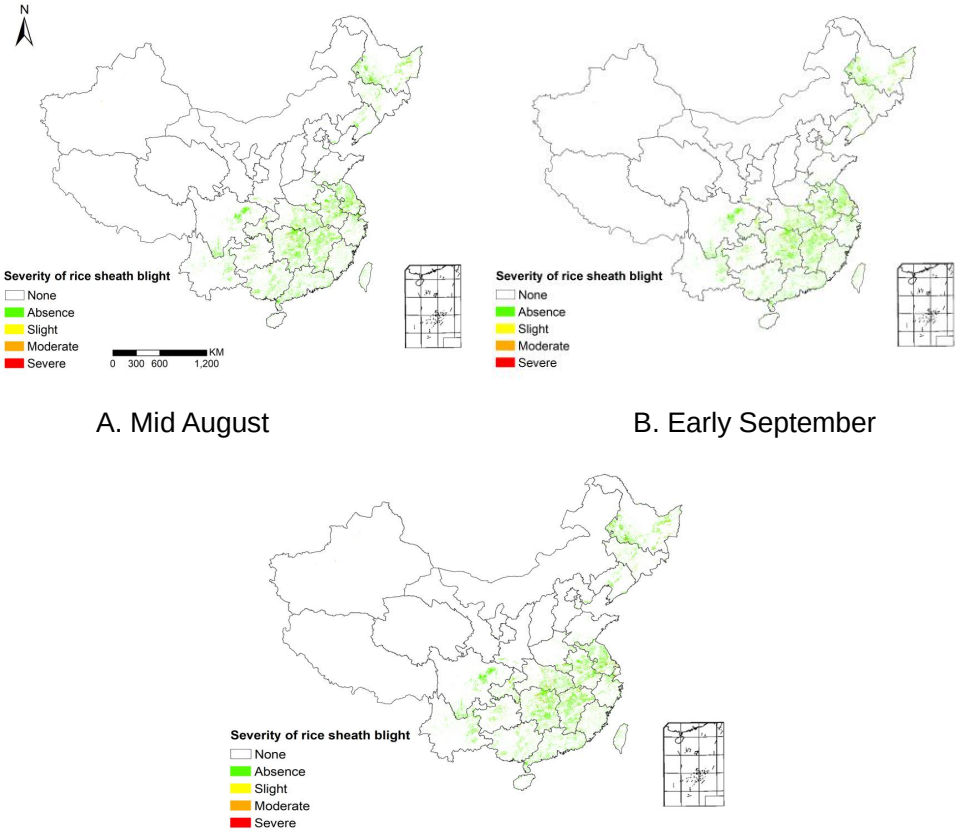
Figure 2 *Spatial distribution of rice leaf roller in China (2019)*

Table 2 *Statistics of rice leaf roller in China (2019)*

Region	Area / Thousand hectare			
	Mid August	Early September	Mid to late September	Total area
Northeast China	755.3	860.7	877.4	4546
North China	28.6	33.3	33.3	99.3
East China	1587.4	1830.7	1864.7	9686.7
South China	297.3	345.3	349.3	4137.3
Central China	1101.3	1273.3	1290.7	6866
Northwest China	37.4	42.7	44.1	260.7
Southwest China	588	678	691.4	4486
Total	**4395.3**	**5064**	**5150.9**	**30082**

Rice sheath blight

In 2019, the occurrence of rice sheath blight reached 4.0 million hectares. The disease first appeared in Central China, East China and Northeast China in mid August. The disease has spread rapidly in Central China, Northeast China and Southwest China in early September. The full incidence period was in mid to late September, which mainly occurred in Northeast China, Southwest China, Jianghuai and Jianghan. The specific distributions and severities are shown in Figure 3 and Table 3



A. Mid August

B. Early September

C. Mid to late September

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

Table 3 *Statistics of rice sheath blight in China (2019)*

Region	Area / Thousand hectare			
	Mid August	Early September	Mid to late September	Total area
Northeast China	572	614	656	4546
North China	22.6	24	25.3	99.3
East China	1228.7	1320.7	1414.7	9686.7
South China	273.3	291.3	313.3	4137.3
Central China	851.3	915.3	979.3	6866
Northwest China	24	25.3	28	260.7
Southwest China	458	491.3	526.7	4486
Total	**3429.9**	**3681.9**	**3943.3**	**30082**

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

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-STS-ZDTP-054).

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