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Crop pests and diseases monitoring and forecasting Global

April to May 2019

Pests occurred heavier than diseases on winter wheat

Affected area reached 27 million ha Global

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 Global.

During April to May 2019, pests occurred heavier than diseases in eleven main winter wheat production countries, including Russia, China, United States, Pakistan, Iran, France, Turkey, Germany, Canada, Uzbekistan and United Kingdom. The total affected area by wheat rust (*Puccinia striiformis*) and aphid (*Sitobion avenae & Rhopalosiphum padi*) has reached 27 million hectares.

Content

Wheat rust

The distribution, occurrence area and ratio of wheat rust in these eleven countries is shown in Figure 1 and Table 1. The total wheat area in Russia is about 31 million hectares, the affected area of rust in Russia is about 131 ten thousand hectares, accounting for 4% of the total planting area, mainly occurred in Volga Basin, and the Caucasus. The total wheat area is about 24 million hectares in China, the affected area of rust is about 66 ten thousand hectares, accounting for 3% of the total planting area, mainly occurred in Northwest China, North China and Central China. The total wheat area is about 16 million hectares in United States, the affected area of rust in is about 92 ten thousand hectares, accounting for 6% of the total planting area, mainly occurred in Northwest, Northern Plains, and Southern Plains. The total wheat area is about 14 million hectares in Pakistan, the affected area of rust is

about 115 ten thousand hectares, accounting for 8% of the total planting area, mainly occurred in northern highlands, northern Punjab, and the northern regions of Lower Indus river basin in south Punjab and Sind. In Iran, the total wheat area is about 10 million hectares, the affected area of rust is about 81 ten thousand hectares, accounting for 8% of the total planting area, mainly occurred in semi-arid to sub-tropical hills of the west and the north. In France, the total wheat area is about 8 million hectares, the affected area of rust is about 30 ten thousand hectares, accounting for 4% of the total planting area, mainly occurred in northern barley zone, rapeseed zone of eastern France, and mixed maize/barley and rapeseed zone from the Centre to the Atlantic Ocean. The total wheat area is about 8 million hectares in Turkey, the affected area of rust is about 23 ten thousand hectares, accounting for 3% of the total planting area, mainly occurred in eastern Anatolia region. The total wheat area is about 5 million hectares in Germany, the affected area of rust is about 13 ten thousand hectares, accounting for 3% of the total planting area, mainly occurred in wheat zone of Schleswig-Holstein and the Baltic coast, mixed wheat and sugar beets zone of the north-west, western sparse crop area of the Rhenish massif, and central wheat zone of Saxony and Thuringia. The total wheat area is about 4 million hectares in Canada, the affected area of rust is about 22 ten thousand hectares, accounting for 5% of the total planting area, mainly occurred in the western regions of Prairies. The total wheat area is about 2 million hectares in Uzbekistan, the affected area of rust is about 12 ten thousand hectares, accounting for 6% of the total planting area, mainly occurred in the western regions of eastern hilly cereals zone. The total wheat area is about 2 million hectares in United Kingdom, the affected area of rust is about 14 ten thousand hectares, accounting for 7% of the total planting area, mainly occurred in south English mixed wheat and Barley zone.

Figure 1 *Distribution of wheat rust in eleven production countries*

Wheat aphid

The distribution, occurrence area and ratio of wheat aphid in these eleven countries is shown in Figure 2 and Table 1. The total affected area of aphid in Russia is about 393

ten thousand hectares, accounting for 13% of the total planting area, mainly occurred in central Economic region, the Caucasus, and Volga Basin. The total affected area of aphid in China is about 648 ten thousand hectares, accounting for 27% of the total planting area, mainly occurred in Northwest China, North China, Central China, and East China. The total affected area of aphid in United States is about 212 ten thousand hectares, accounting for 13% of the total planting area, mainly occurred in Northwest, Northern Plains, and northwestern regions of Corn Belt. The total affected area of aphid in Pakistan is about 304 ten thousand hectares, accounting for 22% of the total planting area, mainly occurred in northern Punjab, and the northern regions of lower Indus river basin in south Punjab and Sind. The total affected area of aphid in Iran is about 210 ten thousand hectares, accounting for 21% of the total planting area, mainly occurred in semi-arid to sub-tropical hills of the west and the north. The total affected area of aphid in France is about 68 ten thousand hectares, accounting for 8% of the total planting area, mainly occurred in mixed maize/barley and rapeseed zone from the Centre to the Atlantic Ocean, and southwest maize zone. The total affected area of aphid in Turkey is about 93 ten thousand hectares, accounting for 12% of the total planting area, mainly occurred in central Anatolia region, eastern Anatolia region, and Marmara, Aegean, Mediterranean lowland region. The total affected area of aphid in Germany is about 46 ten thousand hectares, accounting for 9% of the total planting area, mainly occurred in central wheat zone of Saxony and Thuringia, western sparse crop area of the Rhenish massif, and Bavarian Plateau. The total affected area of aphid in Canada is about 46 ten thousand hectares, accounting for 11% of the total planting area, mainly occurred in Prairies. The total affected area of aphid in Uzbekistan is about 39 ten thousand hectares, accounting for 18% of the total planting area, mainly occurred in eastern hilly cereals zone. The total affected area of aphid in United Kingdom is about 15 ten thousand hectares, accounting for 8% of the total planting area, mainly occurred in south English mixed wheat and Barley zone.

Figure 2 *Distribution of wheat aphid in eleven production countries*

Table 1 *Statistics of wheat diseases and pests in eleven production countries*

Winter wheat production countries	Rust occurrence area and ratio		Aphid occurrence area and ratio		Total planting area / million hectares
	Area / ten thousand hectares	Ratio / %	Area / ten thousand hectares	Ratio / %	
Russia	131	4	393	13	31
China	66	3	648	27	24
United States	92	6	212	13	16
Pakistan	115	8	304	22	14
Iran	81	8	210	21	10
France	30	4	68	8	8
Turkey	23	3	93	12	8
Germany	13	3	46	9	5
Canada	22	5	46	11	4
Uzbekistan	12	6	39	18	2
United Kingdom	14	7	15	8	2

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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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