

Forecasts on Crop Pests and Diseases in China

The Second Edition

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1. Introduction

In recent years, although the rising trend of the occurrence of pests, diseases, weeds and rodents has slowed down in China, the situation remained very serious. According to the National Agro-tech Extension and Service Centre (NATESC), the average annual occurrence area of pests, diseases, weeds and rodents in 2011–2021 was 445.95 million ha, thereinto, it was between 400 million ha and 447 million ha in 2016–2021 collectively, with the average annual occurrence area of 419.15 ha, down by 11.53% compared with 2011–2015.

After comprehensive analysis of previous occurrence of pests and diseases, crop distribution, planting methods, climatic trend and other factors, it is predicted that major pests and diseases will occur heavily in China in 2022 on main crops such as wheat, rice, corn, potato, etc., with a nationwide occurrence area of 135.13 million ha. The occurrence will pose threats on approximately 70% of the growing areas of food crops.

In addition, wheat scab will hit hard on the wheat-growing regions such as the middle and lower reaches of Yangtze River, Jiang-Huai Region and the southern part of the Huang-Huai Region. Brown planthopper will affect an area of 10.67 million ha across the country and occur heavily in the rice-growing regions. It is expected that *Loxostege sticticalis* will occur heavily in parts of Inner Mongolia Autonomous Region (representing 60% of the total occurrence area) and its surrounding areas.

In this report, CCM will provide the overview of occurrence, control and yield loss of crops resulted by pests, diseases, weeds and rodents in 2011-2021, as well as forecasts on the occurrence of pests and diseases in China in 2022 from the following aspects:

- ✓ Wheat
- ✓ Rice
- ✓ Corn

2. Methodology

The report is drafted by diverse methods as follows:

- Desk research

The sources of desk research are various, including published magazines, journals, government websites and statistics, industrial statistics, association seminars as well as information from the Internet. A lot of work has gone into the compilation and analysis of the obtained information.

- Internet

CCM visited government websites and contacted with players in the domestic agrochemical industry through B2B websites and software as well as obtained registration information on the internet.

- Data processing and presentation

The data collected and compiled are sourced from:

- CCM's database
- Published articles in periodicals, magazines, journals and third-party databases
- Statistics from governments and international institutes
- Telephone interviews with domestic producers, joint ventures, service suppliers and governments
- Third-party data providers
- Comments from industrial experts
- Professional databases from other sources
- Information from the internet

The data from various sources have been combined and cross-checked to make this report as precise and scientific as possible. Throughout the process, a series of internal discussions were held in order to analyse the data and draw the conclusions.

3. Executive summary

Due to the influence of global climate change and other factors in recent years, China has been under attack by pests such as *Spodoptera frugiperda*, *Schistocerca gregaria*, *Ceracris kiangsu Tsai*, and rice planthopper; and diseases such as wheat stripe rust, southern rice black-streaked dwarf disease and rice ragged stunt. According to the National Agro-tech Extension and Service Centre (NATESC), the overall occurrence of pests, diseases, weeds and rodents on crops in China was severe in general during 2011–2021. In 2021, lands of three main crops (i.e. wheat, rice and corn), we can learn that the occurrence of major pests and diseases varied.

After comprehensive analysis of previous occurrence of pests and diseases, crop distribution, planting methods, climatic trend and other factors, it is predicted that major pests and diseases will occur heavily in China in 2022 on main crops such as wheat, rice, corn, potato, etc., with a nationwide occurrence area of XXX million ha. The occurrence will pose threats on approximately XXX% of the growing areas of food crops such as wheat, rice, corn and potato.

More issued by NATESC on 30 Dec., 2021, concern about the demand forecasts on pesticides in China for 2022.

4. What's in this report?

Note: Key data/information in this sample page is hidden, while in the report it is not.

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1 Overview

1.1 Occurrence, control and yield loss of crops resulted by pests, diseases, weeds and rodents, 2011-2021

In recent years, although the rising trend of the occurrence of pests, diseases, weeds and rodents has slowed down in China, the situation remained very serious. According to the National Agro-tech Extension and Service Centre (NATESC), the average annual occurrence area of pests, diseases, weeds and rodents in 2011–2021 was XXX million ha, thereinto, it was between XXX million ha and XXX million ha in 2016–2021 collectively, with the average annual occurrence area of XXX ha, down by XXX% compared with 2011–2015.

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Table 1.1-1 Occurrence area, control area and yield loss of crops resulted from pests, diseases, weeds and rodents in China, 2011-2021

Year	Occurrence area, million ha	Control area, million ha	Retrieved loss, million tonne	Actual loss, million tonnes	Yield, million tonnes	Ratio of retrieved loss to yield	Ratio of actual loss to yield
2011	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2012	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2013	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2014	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2015	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2016	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2017	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2018	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2019	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2020	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2021	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Average	XXX	XXX	XXX	XXX	XXX	XXX	XXX

Source: NATESC & National Bureau of Statistics (NBS)

2 Situation of pests and diseases on three major crops in China, 2016-2021

2.1 Review on control of crops resulted by pests, diseases, weeds and rodents in China in 2021

According to the 2021 data from NATESC, the total occurrence area of pests, diseases, weeds and rodents was XXX million ha and the control area was over XXX million ha in China with the retrieved loss up to XXX million tonnes accounting for about XXX % of the annual total yield of grains. In lands of three main crops (i.e. wheat, rice and corn), the occurrence of major pests and diseases varied: In the first half of 2021, wheat stripe rust and wheat scab, both have occurred severely; while entering the second half, some production areas of rice and corn suffered severe damages caused by rice borer, rice planthopper, rice blast and southern rice black-streaked dwarf disease, as well as some specific regions were under attacks of *Spodoptera frugiperda*, corn borer and other pests at ear stage of corn.

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2.2 Occurrence of pests and diseases on three major crops in China, 2016-2021

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Table 2.2-1 Occurrence area, control area and yield loss of wheat pests and diseases in China, 2016-2021

Year	Occurrence area, million ha	Control area, million ha	Retrieved loss, million tonnes	Actual loss, million tonnes	Yield, million tonnes	Ratio of retrieved loss to yield	Ratio of actual loss to yield
2016	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2017	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2018	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2019	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2020	XXX	XXX	XXX	XXX	XXX	XXX	XXX
2021	XXX	XXX	XXX	XXX	XXX	XXX	XXX
Average	XXX	XXX	XXX	XXX	XXX	XXX	XXX

Source: NATESC & NBS

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3 Forecasts on pests and diseases of major crops in China in 2022

3.1 Forecasts of major pests and diseases on wheat in China in 2022

In recent years, attacks of wheat pests and diseases have come severely and frequently, especially of the Class-I crop ones, affecting the yield and quality of wheat. The 2022 estimate on the occurrence area of the selective wheat pests and diseases, will reach 30.02 million ha, representing increases of XXX and XXX compared with that of 2021 and the average of 2016-2020, respectively. Here, the selective types are three diseases (i.e. wheat scab, wheat stripe rust and wheat sheath blight), and one pest (i.e. wheat aphid).

Wheat scab

The occurrence area of wheat scab is projected to cover XXX million ha and the control area to over XXX million ha in 2022. Thereinto, this disease will hit hard on the wheat-growing regions such as the middle and lower reaches of Yangtze River, Jiang-Huai Region and the southern part of the Huang-Huai Region—these regions spread across provinces such as Hubei, Anhui, Jiangsu, Henan, Shandong (mainly the southern part), etc. Other wheat-growing regions in North China, Southwest China and Northwest China will mark moderate occurrence of wheat scab.

Wheat stripe rust

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Wheat sheath blight

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Wheat aphid

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Table 3.1-1 Forecasts on occurrence area of wheat pest and diseases in China, 2018–2022

No.	Pest and diseases	Occurrence area, million ha				
		2018	2019	2020	2021	2022
1	Wheat aphid	XXX	XXX	XXX	XXX	XXX
2	Wheat sheath blight	XXX	XXX	XXX	XXX	XXX
3	Wheat scab	XXX	XXX	XXX	XXX	XXX
4	Wheat stripe rust	XXX	XXX	XXX	XXX	XXX

Source: National Agro-Tech Extension and Service Center (NATESC)

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