

福建省白背飞虱前期迁入虫源分析

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Analysis of the source areas of the early immigration of the white-backed planthopper, *Sogatella furcifera* (Horváth) (Homoptera: Delphacidae), in Fujian Province, China

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摘要 近年来, 福建省白背飞虱 *Sogatella furcifera* (Horváth) 危害严重, 尤其2007年, 全省早稻白背飞虱特大发生, 迁入峰不但比常年偏早, 且虫量异常偏多。本文利用由美国国家大气与海洋局与澳大利亚国家气象局共同开发研制的大气质点轨迹分析平台模型HYSPLIT, 和气象图形分析显示软件GrADS对2007-2010年4-5月福建省白背飞虱早期主要迁入峰次进行了轨迹模拟, 并对2007年5月份的主要迁入过程进行了天气学背景分析。结果显示: (1) 福建省白背飞虱早期迁入虫源主要来自广东、海南省, 台湾省、菲律宾仅在个别年份提供少量虫源, 非主要虫源地; (2) 低空急流与持续降水的配合是导致2007年白背飞虱集中降落的直接原因。2007年5月稻飞虱迁入同期, 福建850 hPa上空低空急流频繁, 5月份西太平洋副高比往年偏西、偏强, 且北跳推迟, 使得华南地面准静止锋形成, 雨季延长; (3) 2007年广东、海南3月底至4月初的1代成虫迁入种群较多造成的田间2代白背飞虱虫源基数的增加是造成2007年福建白背飞虱迁入量增加的最根本原因。福建白背飞虱的主迁入虫量取决于两广早期田间虫源基数的多寡, 在副高偏强、雨水较多年份, 提前对两广、海南地区田间稻飞虱发生情况进行了解将有助于福建稻飞虱的预防与治理。

关键词: 白背飞虱 迁飞 灯下虫量 虫源 轨迹分析

Abstract: The white-backed planthopper (WBPH), *Sogatella furcifera* (Horváth), is a serious pest of rice in South China including Fujian Province. The earlier huge immigration peaks of WBPH had been seen from April to May 2007. In this study, HYSPLIT (Hybrid Single-particle Lagrangian Integrated Trajectory), a trajectory analysis platform developed by the National Oceanic and Atmospheric Administration (NOAA) of US and Australian Bureau of Meteorology, was used to simulate the early migratory pathways of WBPH from their source areas in April and May from 2007 to 2010. GrADS (Grid Analysis and Display System), a meteorological data analysis and displayed software, was used to analyze and display the synoptic meteorological background during the early immigration periods in May 2007. The results showed that: (1) the source areas of the earlier mass immigration population of WBPH occurred from 2007 to 2010 were mostly in Guangdong and Hainan Provinces, and a few sources were from Taiwan Province and Philippines. (2) The co-occurrence of low-level jet and continuous rainfall directly resulted in the concentration of the airborne migrants and the mass immigration of WBPH in 2007. During the appearance of major immigrants in May, 2007, there were strong southwest lowlevel jets at 850 hPa simultaneously. Meanwhile, the West Pacific subtropical high was stronger than normal and extended towards west, and the northern jump of its ridge postponed, that caused the formation of a stationary front in South China and brought the sustained rainfall. (3) The high early-immigration of the 1st generation of WBPH from late March to early April in Guangdong and Hainan, and their high offspring population of the 2nd generation bred during March to May in 2007 was the key reason for mass immigration in Fujian. It is assistant to the forecasting and management work for rice planthopper in Fujian Province to investigate the rice planthopper situation in Hainan, Guangdong and Guangxi, in more rain and stronger West Pacific subtropical high years.

Key words: White-backed planthopper (*Sogatella furcifera*) migration light trap catches source area trajectory analysis

收稿日期: 2011-01-13; 出版日期: 2011-06-20

基金资助:

国家“973”计划项目 (2010CB126200); 农业公益性行业科研专项 (200903051); 国家水稻产业技术体系建设专项 (nycytx-

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引用本文:

沈慧梅,孔丽萍,章霜红等. 福建省白背飞虱前期迁入虫源分析[J]. 昆虫学报, 2011, 54(6): 703-713.

SHEN Hui-Mei, KONG Li-Ping, ZHANG Shuang-Hong et al. Analysis of the source areas of the early immigration of the white-backed planthopper, *Sogatella furcifera* (Horváth) (Homoptera: Delphacidae), in Fujian Province, China[J]. ACTA ENTOMOLOGICA SINICA, 2011, 54(6): 703-713.

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