

Prevention and Control of Red Fire Ant in China

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Shocking Appearance of the Red Fire Ant in Wuchuan

At the end of 2004, the harmful invasive species red fire ant (fire ant) was found in Wuchuan City, Guangdong Province. As soon as it was reported, the Department of Agriculture (DOA) organized biologists to recognize and detect the situation. Local branch of DOA took several prevention and controlling activities in affected areas. Meanwhile, DOA immediately organized a national-wide investigation of fire ants.

Why did the ant raise such fear?

Fire ant also called the invasive red fire ant. It is a very destructive pest insect. It originates from South America. After continuous invasive dispersal it has been found in more than 10 countries and brought serious damages.

Fire ants resemble domestic ants, but they bring many problems to human health and local species. After bitten by fire ants, one can feel sharp burning pain. Severe bites can cause allergic coma or even death. Fire ants prey on other species, which can dramatically reduce the diversity and abundance of local species. They also feed on various parts of crops which including: seeds, fruits, sprouts, young branches and roots. These damages are very destructive.

Moreover, fire ants are highly productive. There are a great variety of dispersal pathways that are very hard to control. Queen lays 1500 – 5000 eggs per day and lives up to 6 - 7 years. They can spread by crawling, flying, stream flowing or human-mediated pathways such as: rubbish transportation, garden plants contamination, lawn contamination, waste soil movements, composting, agriculture/horticulture equipments, empty containers, vehicle contaminations etc.

The national survey revealed that fire ants exist in 16 cities of 4 provinces (Guangdong, Guangxi, Fujian and Hunan Provinces). The total land area is 195,000 *mu* (equals around 13,000 hectares).

Fire ants distribute in a variety of areas that including: farming lands, hills, rural pathways, waste yards, dwelling areas, schools, orchards, parks, green belts, lawns and golf lands etc. In heavily affected areas, there are large amounts of fire ants and ant nests. Established ant mounds are 5 – 30cm high with basal diameters of 5 – 50cm.

The invasion of fire ants has brought serious damages to agriculture, human health and ecological balance. In some affected areas, crops and vegetables have little new sprouts; rice paddy and orchards are abandoned. Wires, electric facilities and dams were broken, human and livestock were bitten. Local's lives were disturbed severely. In affected areas, around 15,000 human were bitten and more than 200 people need specific medical treatments. According to authority estimation, in future 35 years, if

no effective prevention and controlling activity are taken, fire ants will cause a total loss of 128.04 billion Yuan (equals about 15.5 billion US dollars).

A Mature Stable Government

Due to the attack of fire ants, many countries have suffered huge economic lost. In the United States, over 100 million acres of land have been invaded by fire ants. It is estimated that in affected areas, the annual economic damages worth around 5 billion US dollars and agriculture costs are more than 0.75 billion US dollars.

What kind of damages will this species bring to China? In contrast to the United States, what kind of resolutions can our government find?

By the end of 2005, the answer has been clear. Fire ants invasion has been controlled effectively. In attacked areas, fire ants distribution, abundance, activity and their disturbance have been reduced considerably. Locals' lives have gone back to normal. So far, prevention rates of 97% and 80% have been achieved in most invaded areas of Guangdong and Guangxi Province respectively.

How did our government achieve this?

Quick Response

For such a prolific species, time is quite important. If the disperse pathways can be stopped in time and spread are under the control quickly, the prevention rate will be much more efficient. Otherwise, if waits until they spread widely, tens times of human, resource and money will be required. The government responded quickly.

On 10th Oct 2004, as soon as the DOA learnt about the situation, the Agriculture Management Office and the National Agriculture and Techniques Centre sent the investigation group to Wuchuan City to detect the situation and organize biologists to identify the species.

According to the growth situation, it was proposed that fire ants were not just arrived. It had around and bred for a period of time. Thus, it is very likely that fire ants also exist in other areas of the country. The DOA immediately organized national investigation.

During 13th – 14th Nov 2004, the DOA had a meeting about fire ants prevention and control in Wuchuan City. Forty biologists from the Chinese Science Association, the University of Huanan Agriculture, the National Termite Prevention Centre, the National Quality Branch and the National Forestry Branch joined the meeting and discussed the “Invasive Species Prevention Action Plan” of the Guangdong Province.

On 17th Jan 2005, after further studies, fire ants affection in Wuchuan City had been recognized. The DOA published announcements of fire ants invasion and listed the species as the harmful import pest insects for further prevention.

After fire ants invasion occurred, some areas worried that reports and announcements would affect locals' trade, travel, investment and economics. Towards this attitude, the DOA talked to local governments and agriculture subdivisions in order to avoid negative thoughts and make proper prevention plans. As a result, the local fire ants invasions were reported in time and effective activities have been carried out. In order to improve the prevention activities and organization, the leader of DOA (Du Qinglin) wrote to the leader of Guangdong Province (Huang Hua) and suggested some further prevention and controlling plans. The DOA sent 16 teams to the Guangdong and Guangxi Provinces to organize the prevention works. They separated the infected areas into "occurring area" and "supervising [surveillance] area" to stop the spread of fire ants. Leaders of DOA went to the infected areas for 8 times to organize the local prevention works.

Scientific Prevention

Successful prevention of fire ants depends on scientific information such as their natural growth and life history strategies.

As soon as the invasion occurred, the DOA organised biologists to investigate the spread pathways, risks and prevention strategies of fire ants. Although fire ants are dangerous, they can be prevented and controlled. As long as they are found in time, fire ants can be eradicated. Based on the investigations, the DOA released the "Fire Ants Eradication and Prevention Training Plans", 5000 copies of fire ants prevention booklets, 150,000 copies of prevention knowledge graphs and 2000 CDs to orient prevention and control activities in affected areas. The biological and preventive knowledge were widely known. As a result, publics learnt the harmfulness of the species and avoided under-estimation of its potential damages.

The "National Fire Ants Eradication Strategy" clarified the final goals, annual goals, technical activities, working plans etc. Its final goals are: eradication in 3 years at small detached affected areas; eradication in 6 years at connected affection areas; national eradication of fire ants by 2013.

Meanwhile, biological study and effective controlling techniques need to be improved. Fire ants activities will be supervised all the time. The information will be reported on time and accuracy will be further improved. Several safe and effective drugs against fire ants and ant nests will be released. Fire ants eradication management information system will be developed to locate the infected areas with GPS and improve prevention.

Scientific prevention activities will assure the quick effective control of fire ants.

Fire Ant Alarm

After a year's prevention and control work, many problems were found in our agriculture prevention works. In our country, the prevention works of invasive species are facing a hazardous situation. It is estimated that tens of invasive species are occurring in China; hundreds of invasive species are getting into the border; thousands of invasive species are potential pests. The prevention tasks are hard and the situation should never be under-estimated.

To improve prevention works, three changes need to be highlighted: change the technical agricultural prevention to strategy prevention; change the responsible authority from local agricultural branch to government; change the production management and services to public management and services. Moreover, our prevention ability, techniques and public awareness will be further developed by increasing the funding and supervisions.