

NOTES FROM THE FIELD

A brief history of the red imported fire ant eradication program
by Craig Jennings

Introduction

The discovery of the Red Imported Fire Ant (*Solenopsis invicta* Buren—RIFA) in Brisbane on 22 February 2001 led to an emergency response that ultimately resulted in the implementation of the Red Imported Fire Ant Eradication Program and the formation of the Fire Ant Control Centre (FACC).

The Eradication Program is funded through a national cost sharing arrangement under the control of the Natural Resource Management Ministerial Council. It is an intensive whole-of-government response led by the Queensland Department of Primary Industries and Fisheries (DPI&F). The DPI&F has received strong support from the Department of Natural Resources, Queensland Mines and Energy, Department of State Development and Innovation and the Environmental Protection Agency.

The Fire Ant Control Centre

The FACC is made up of a number of sections including Operations (treatment and surveillance); Risk Management and Security (managing quarantine issues); Public Relations, Community Engagement and Industry Liaison (ensuring community and industry support and participation); Information Services (data base management and mapping) and Scientific Services (diagnostics, ecology and research and development) that work together to deliver the Program.

The FACC is an amazing organisational accomplishment. Between the date when the ant was discovered in February



Figure 1. A worker Red Imported Fire Ant, *Solenopsis invicta*

2001 and the first treatment in September 2001, an eradication plan was developed, funding was secured, over 500 people were employed, a base was found and equipped, and all resources and vehicles were purchased.

The infestation

The initial discovery resulted from two separate samples of RIFA submitted for identification on the same day from a resident at Richlands, a southwestern suburb of Brisbane, and from gardeners at Fisherman Islands, Port of Brisbane. The immense impact that RIFA had in the USA led to the approval of a scoping study to delineate the extent of the infestation and the potential risk to Australia. A decision was made to attempt eradication based on the study and modelling predictions that RIFA could spread throughout the majority of Australia.

In addition, a cost analysis by Australian Bureau of Agricultural

and Resource Economics ABARE based on the potential spread of the ant, indicated that if left unchecked RIFA would cost more than \$8.9 billion over the next 30 years. This analysis did not take into account the loss of social and environmental values, which are the major impacts of this ant.

The initial scoping study found a radial spread of infestation out from two major epicentres of infestations. An area of 27,807 ha was enclosed in the initial treatment area. Given that the initial delineating survey was conducted with limited resources it was expected that the infested area would grow following intensive active surveillance by FACC field staff and increased public awareness.

In recognition of the potential environmental impacts of RIFA, it was declared a 'Key Threatening Process' by the Australian Department of the Environment and Heritage.



Figure 2. A typical dome shaped nest. Note the lack of entry hole on the dome and the lack of vegetation



Figure 3. This photo was taken 24 hours after the person was stung and shows the characteristic pustules from multiple Red Imported Fire Ant stings

RIFA is a native of South America introduced to the United States in the late 1930's where, in the absence of natural parasites and predators, it has become a major environmental and economic pest in the southern states. The ant has spread to at least nine southern US States with estimates of a total spread of 275 million acres. For urban areas alone in Texas, the cost from RIFA is estimated at more than \$US 581 million a year. In over nine heavily infested states in the USA losses are estimated at \$US2.77 billion annually.

RIFA are small ants, reddish-brown in colour on the head and body, with a darker abdomen and come in a variety of sizes within one nest, ranging from 2mm to 6 mm. Overall they are similar to many native species and this is probably why they were in Australia for at least five years before they were reported. The major distinguishing features of the ant are their nests that usually appear as dome-shaped mounds up to 40cm high, and their aggressive behaviour.

It has a sting like a bee or wasp, which causes blisters and allergic reactions leading to death in some instances. RIFA is predominantly an issue for public health and the environment, but also has impacts on agricultural systems by virtue of its attacks on animals, seed harvesting, soil nesting habits, and the indirect impacts on markets from quarantine measures that are implemented to restrict the spread and aid the eradication of infestations.

Apart from its sting, its nuisance value arises from interference with urban infrastructure. This includes severely limiting the use of private and public recreational and sporting areas with a consequent significant impact on real estate and tourism. Fire Ants also invade electrical components such as domestic fuse boxes, traffic light signal boxes

and underground cableways, often causing short circuits or other malfunctions. The building of nests under roads and footpaths may lead to collapse and/or potholing.

RIFA is particularly aggressive in the environment, out-competing other ant species, attacking invertebrate and vertebrate animals, and wiping out bird life (especially ground nesting birds). It has been observed to affect most animals, from other ants to crocodiles.

The eradication plan

The five-year eradication plan was developed with the aid of experts from the USA and involved baiting the entire infested area three or four times a year for three years. The infested area was delineated by drawing a boundary 2 km out from all known infested properties. Another boundary was drawn at 5 km and all of the area between the 2 km and 5 km boundaries received surveillance once a year. Following the three years of baiting, the treatment area received two rounds of surveillance over two years to confirm that eradication had been successful.

The baits consist of oil soaked corn infused with one of two insect growth regulators (methoprene or pyriproxyfen) or a metabolic inhibitor (hydramethylnon). These are delivered by granular spreaders that are hand held, mounted on ATV quad bikes, or on helicopters for large areas.

The total area to be baited during the Eradication Program is 71,000 ha, centred on three major epicentres. Within this area, 1,236 properties were found with RIFA infestations.

Since September 2001, an enormous amount of effort has occurred to eradicate RIFA from Australia with over one million property treatments occurring over the three treatment seasons. There have been approximately 350,000 inspections completed in the surveillance buffers throughout the life of the program and an



Figure 4. Treatment methods used by the Fire Ant Control Centre include a) ATV quad bikes, b) Helicopters, and c) rotary hand held spreaders

additional 10,000 ha surveyed beyond these buffers during targeted surveillance. There has also been extensive active and passive surveillance across Australia and with no infestations detected; it appears RIFA are confined to southeast Queensland.

Progress towards eradication to date has been excellent. Monitoring results from the core treatment zone show that after two years approximately 97.6 percent of previously infested properties no longer have viable nests. This is an increase from 75 percent following the first year of treatment and large areas of the original infested area now appear to be free of RIFA. A further survey of the infested properties is currently being conducted and it is expected that few if any infested properties will remain.

Compared with February 2001, the threat from fire ants has been significantly reduced, but the risk to the Australian lifestyle and environment could rapidly re-establish if the program is not continued. At this point in time, total eradication is within striking distance.



Community support

Community and industry acceptance of the eradication program has been essential to its success. Following the fourteen initial community meetings conducted within the treatment area before the start of baiting, there was extensive public relations and industry liaison campaign. These campaigns have aimed to keep the public and industry well informed and to maintain support for the program.

Community involvement in the program has continued at an exceptionally high level with latest survey results showing 99.5 percent of people in Brisbane have heard about RIFA and 74 percent of people checked their yard in 2003. Public submissions of suspect ant samples to the FACC have remained high throughout the program with approximately half of the outlying infestations reported by the public.

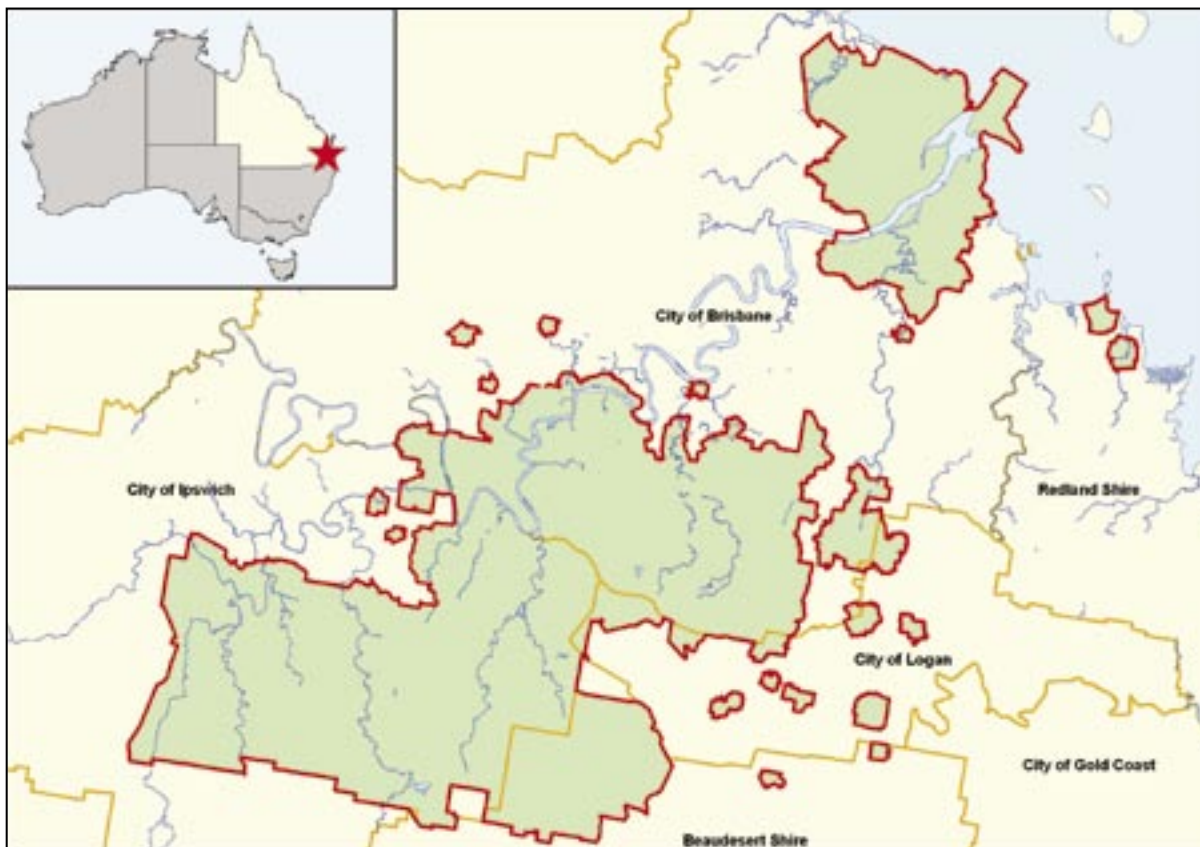


Figure 5. This map shows the total area (in green) that will be baited for red imported fire ants

The future

The Program is about to conclude its third year of treatment. While there have been changes to the initial Program, the concept of three years of treatment followed by two years surveillance remains the same. Changes include the addition of a sixth year to the entire program and treatment throughout the fourth year of the program for some areas. These changes became necessary following the discovery of a third epicentre of spread that was found at Swanbank in June 2002. The Swanbank epicentre most likely occurred because of an historic concentration of waste from disposal and recycling industries that used the abandoned coal-mining area. Flights from the Swanbank epicentre have resulted in a number of infestations to the southwest of the treatment area and were discovered in winter 2002.

Conclusion

The Red Imported Fire Ant Eradication Program was an audacious plan that has been a superb example of government co-operation at both national and state level. The speed of the response and the success to date, despite a program of this type not being attempted before, highlights the processes that are in place for dealing with invasive species. Many lessons have been learned thus far and it is essential that the knowledge and systems that has been developed through the management of the Program be maintained for future use.

For further information on the eradication program, see www.dpi.qld.gov.au/fireants

Author

Craig Jennings is the Principal Policy Officer at the Fire Ant Control Centre. Having started at the Centre as the environmental scientist he has now been there for three years. Craig's role with the Centre is to engage environmental groups to ensure support of the program, dealing with concerns about the chemicals in the baits and investigation of all outlying infestations. In addition, he performs policy duties and runs the Quality Assurance for the Treatment and Surveillance Program. Before starting with the Fire Ant Control Centre he worked in local government designing and managing pest plant and animal control programs with an emphasis on mosquito control.