

Rural and Regional Affairs and transport References Committee
Inquiry into Red Imported Fire Ants in Australia
Commonwealth Scientific and Industrial Research Organisation (CSIRO)

responses to Questions on Notice

18 March 2024

Question 1 – Hansard page 14 – Senator Canavan (Chair)

CHAIR: That's very helpful for me. Just more generally, then, we heard some evidence that perhaps there's not enough funding going to research in this space and that the effort, to the extent it has been funded, has been very much focusing on the eradication and this horseshoe plan. Are you getting any funding from the additional amounts announced a few months ago—\$200 million? Is more of that coming to CSIRO? How much do you get funded for it right now? Do you want to provide us with any pitches here about what you think you need to progress this very important work?

Ms Rose: Senator, I'll just jump in and then pass to Dr Sathyamurthy. We can always do more research with more, and it's a critically important aspect of the biosecurity program. We can certainly provide more details on notice, but we've received in the order of about \$1 million of funding that's dedicated to RIFA response. But I'll pass back to Dr Sathyamurthy for—

CHAIR: Maybe just before you do, the \$1 million—over what time frame has that been provided?

Ms Rose: It's quite a lengthy time frame—I think it's about 10 years.

Answer

CSIRO has received approximately \$585,000 (including \$135,000 from the Red Imported Fire Ants (RIFA) eradication program) from external sources specifically in relation to work on RIFA since 2015. In addition, CSIRO has invested approximately \$1.3 million over the past three years to develop RNAi technologies for biosecurity applications, with approximately \$300,000 of that focussed on RIFA. None of the recently announced funding is specifically being earmarked for CSIRO at present.

Question 2 – Hansard Page 16 – Senator Whish-Wilson

Senator WHISH-WILSON: Thank you. It seems as though RIFA's both, right? It's eradication and it's suppression with the suppression taskforce in Queensland. So it seems to be somewhere in between. To be honest, I'm scratching my head as to exactly what the difference is between eradication and suppression on this particular ant. Is there any early evidence at all that in Australia there may be some natural biological controls or competition from other insects that could help manage it or is it too early to judge? It has been here 20 years. Is there any work being done on that?

Dr Sathyamurthy: Not that I'm aware of. I'm happy to take that one on notice and come back to you.

Senator WHISH-WILSON: Thank you.

Answer

There is little evidence to suggest that there is any natural or endemic biological control of RIFA in Australia.

Question 3 – Hansard Page 16 – Senator Colbeck

Senator COLBECK: Thank you for being here. I just want to go from where Senator Whish-Wilson just finished off. It's been here 20 years. Its spread has been limited compared to other jurisdictions and other countries around the world. There's nothing in our natural environment that does mitigate the spread? It's effectively been the efforts that we've put in to mitigate its spread that have had the effect that we have so far?

Dr Sathyamurthy: That would be my assessment based on what we've seen thus far. But I can take that on notice and ask whether there is evidence of any natural resistance to fire ant spread. As far as we know, their spread is largely being held in check because of the efforts that are being put in place to keep them in check.

Answer

Australia has a diverse ant fauna. There is some anecdotal evidence of some native ant species competing with RIFA (e.g. Moloney & Vanderwoude 2002), and there is limited evidence from the USA to suggest that habitats with certain grass species have lower densities of fire ant mounds (e.g. Sternberg et al. 2006). It is unlikely that biotic/natural resistance is actively impeding RIFA spread in Australia.

Question 4 – Hansard Page 15 Senator Whish-Wilson

Senator WHISH-WILSON: Okay. Perhaps I could put some questions on notice to you about what you might need to expedite that or whether it's just the scientific process as it is and you're not going to be able to go any faster. In relation to the biological controls and landscape-scale management options, you're looking at doing some lab tests for some proven overseas, I suppose, disruptors of RIFA. Even if they were successful in your labs and you could reproduce what's been done overseas, what process would you need to go through then to get them registered to be used or to get them used in the field, given the experience Australia has had with bringing in biological controls from overseas and having disastrous unintended consequences?

Dr Sathyamurthy: Australia has had a strong legacy of quite successful biological control. Since the control of prickly pear well over 100 years ago using biological control, we have had many recent successes as well. I think Australia has one of the best regulated biological control processes. It's when biological control is thought to occur outside of those processes that unintended consequences have been seen. Any consideration of biological control in the context of red imported fire ant would also go through that well-regulated process where we would do detailed risk assessments in quarantine laboratories in order to be able to establish both through the agriculture and the environment departments that there is an acceptable level of protection for release into an Australian context or into the Australian environment. Pending approval from both of those agencies under both the Biosecurity Act and the EPBC Act, that is when we would move towards release of any particular biological control agent into the landscape.

Answer

To expedite biosecurity research related to RIFA, the following research areas could be considered:

- Data science and modelling to assess feasibility and progress towards eradication; this would build on methods developed in other eradication programs (e.g. eradograph; Panetta & Lawes 2007; Burgman et al. 2013) to guide the adaptive eradication/management efforts for RIFA.
- Development of biological control solutions for RIFA; this could include testing the safety and efficacy of biological control (e.g. the microsporidium pathogen *Kneallhazia* (= *Thelohania*) *solenopsae* (Oi & Valles 2009), the viruses SINV2 and SINV3 (Valles, 2012), phorid flies (Chen & Fadamiro 2018)) and deploying them pending regulatory approvals (e.g. via DAFF and DCCEW in alignment with the Biosecurity Act and the EPBC Act; [Biological control agents - DAFF \(agriculture.gov.au\)](https://www.daff.gov.au/biological-control-agents)).
- Development of novel management tools: this would include development of RNAi tools (Allen 2021) for the Australian context and deploying them through the appropriate regulatory contexts (e.g. APVMA; [Registrations and permits | Australian Pesticides and Veterinary Medicines Authority \(apvma.gov.au\)](https://www.apvma.gov.au/registrations-and-permits)).
- Integrated management of RIFA: develop an explicit and transparent integrated management framework to enable the appropriate mix of management tactics in different spatial and temporal and land-use contexts (e.g. Drees et al. 2013)
- Management of RIFA impacts to the environment and to human health: understanding RIFA venom in a biological/ecological context (Fox & Adams 2022) to anticipate and mitigate impacts, and to proactively provide treatment options for human/veterinary allergies and anaphylaxis from RIFA stings (Wanandy et al. 2022; Hoffmann et al. 2023)

Question 5 - Hansard Page 16 – Senator Colbeck

Senator COLBECK: I just want to go back to the development and the work that's being done in the US. Your submission says—and this goes to the evidence that you gave a moment ago—that the RNAi lab trials are achieving greater than 50 per cent mortality in worker ants. So clearly it's a management issue. Do you have any understanding of how much has been invested in the US into the technology? I'm just trying to get a bit of a comparison as to what we're doing here. So \$1 million over 10 years is for the CSIRO in particular, acknowledging there's other money being spent in other places. But can we ramp this up a bit with a bit more investment, I suppose, is the question that I'm asking. How much has been thrown at this in the US? It is a bigger problem over there, although the evidence we've had so far indicates they might have reached a particular scale of footprint.

Dr Sathyamurthy: I don't know the precise amount, Senator. I can take that on notice and do some investigation. I do know it's a major national program of investment through the US Department of Agriculture, with quite significant resources devoted to that in terms of personnel and in terms of science over multiple decades.

Answer

CSIRO has been advised by the USDA that they have invested approximately USD3.7M per year (approximately USD5M per year in 2024 dollars) for the past twenty years (totalling approximately USD77.6M; ca USD106.4M in 2024 dollars) in research and development on RIFA. This is in addition to the investments by state agencies managing RIFA in their jurisdictions.

Question 6 - Written question – Senator Glenn Sterle

What role does the CSIRO play in the efforts to eradicate Fire Ants?

Answer

CSIRO's role is to provide scientific expertise and advice through the scientific advisory committees on which we have representation.

Question 7 - Written question – Senator Glenn Sterle

Does the CSIRO believe we would benefit from a Cooperative Research Centre to research Fire Ants?

Answer

This question is more appropriately answered by government, as CSIRO's role is to provide scientific expertise and advice.

Question 8 - Written question – Senator Glenn Sterle

Can you explain the advantages of the novel genetic bait the CSIRO is developing? How will it be an improvement on the bait currently in use?

Answer

The current baits utilise a food resource in combination with either an insect growth regulator or an insecticide. These chemicals are broad-spectrum in that they have the potential to impact species besides RIFA. The advantage of RNAi-based baits is that they have the potential to be specific to RIFA, enabling their use in environmentally sensitive contexts (e.g. riparian areas).

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