



UNIVERSITY OF HAWAII SYSTEM

‘ŌNAEHANA KULANUI O HAWAII

Legislative Testimony

Hō'ike Mana'o I Mua O Ka 'Aha'ōlelo

Testimony Presented Before the
Senate Committee on Higher Education
Senate Committee on Agriculture and Environment
Monday, April 1, 2024 at 1:30 p.m.

By

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And

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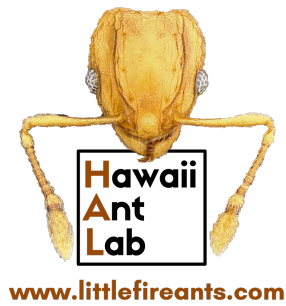
SCR 153 – REQUESTING THE UNIVERSITY OF HAWAII TO CONDUCT A STUDY
EVALUATING THE FEASIBILITY OF USING MYCOPESTICIDES AS A METHOD TO
CONTROL WASMANNIA AUROPUNCTATA

Chairs Kim and Gabbard, Vice Chair Kidani and Richards, and Members of the
Committees:

Thank you for the opportunity to testify and offer these comments on Senate Concurrent
Resolution 153, requesting that the University of Hawai'i conduct a study evaluating the
feasibility of using mycopesticides as a method to control *Wasmannia auropunctata*.

The University of Hawai'i, as well as the Hawai'i State Department of Agriculture, works
closely with Hawai'i Ant Lab, which leads the State's efforts to provide solutions for the
many impacts caused by *Wasmannia auropunctata* (little fire ant). The University
reached out to the Hawai'i Ant Lab for their comments on SCR 153; they offer the
attached response, for your reference.

The University of Hawai'i will assist the Hawai'i Ant Lab to coordinate further
discussions with the authors of SCH 153 and HCR 168 in addressing this matter. As
such, the University of Hawai'i requests that this matter be deferred.



With regards to SCR 153 relating to research on mycopesticides for control of the little fire ant (*Wasmannia auropunctata*). While the Hawaii Ant Lab does support all research to further knowledge gaps and expand options for the control of little fire ants in Hawaii, we suggest SCR 153 and companion bill HCR 168 be revised to more clearly specify what work, exactly, is expected to be performed under this resolution.

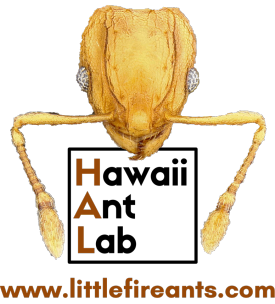
Mycoinsecticides (entomopathogenic fungi to control insects) are fungal pathogens that infect and kill various insect taxa and in essence, they are biocontrol agents. As the resolution indicates, knowledge of mycoinsecticides stretches back to the late 1800's. Public awareness of entomopathogenic fungi has grown considerably over the past decade. However, the public awareness comes with a lot of misconceptions surrounding efficacy feasibility and practicality of using entomopathogenic fungi to control certain insect pests, especially ants. Several factors have limited their use in commercial insecticide products. Pathogenic fungi [insects] are typically host specific to a single or select few insect species, require special culture or fermentation processes, and often require microencapsulation for utilization as a pesticide in the field. *Beauveria bassiana* and *Metarhizium anisopilae* are two species of broad-spectrum entomopathogenic fungi that have been successfully isolated and manufactured into commercially available insecticide products and have been documented affecting some ant species. Although considered "broad-spectrum" and affecting a wide variety of insects, pathogenicity toward a specific target is dependent on isolation of specific fungal strains because different strains are known to affect specific insect taxa.

According to Jiang and Wang 2023, where the background section of this resolution was sourced from, there are currently 25 mycoinsecticides registered for use globally, 10 of which are registered in the USA. Of all mycoinsecticides listed, only 2 are listed as affecting ants (*Beauveria bassiana* strain 447 and strain ATCC 74040), neither of which are registered for use in Hawaii.

SCR 153 stipulates:

"... that the University of Hawaii is requested to conduct a study evaluating the feasibility of using mycopesticides as a method to control Wasmannia auropunctata; and

"BE IT FURTHER RESOLVED that this study is requested to determine which species of mycopesticides, if any, could be used as a method to control Wasmannia auropunctata and, if a species



is found, to determine what potential:

(1) Advantages, if any, this mycopesticide could have compared to current methods of control, including but not limited to factors related to cost, human health, and environmental health; and

“(2) Negative impacts, if any, this mycopesticide could have if released into Hawaii’s ecosystem; and

“BE IT FURTHER RESOLVED that the University of Hawaii is requested to submit a report of its findings and recommendations, including any proposed legislation, to the Legislature no later than twenty days prior to the convening of the Regular Session of 2025...”

The timeframe indicated in this resolution is short and might only provide enough time to compile a literature review on the use of mycopesticides on ants in general. It is unlikely to be sufficient for identifying candidate species for further investigation and compile risk assessments on potential impacts to native arthropods, especially Hawai’i’s threatened and endangered species of damselflies, picture wing *Drosophila*, Lepidoptera, and *Hylaeus* yellow faced bees. A more realistic final reporting timeframe would be prior to the 2026 legislative session rather than prior to the 2025 legislative session.

It is my understanding, based on the wording of the resolution, that there is no expectation of fungal isolation, propagation, or efficacy testing of mycopesticides. Should fungal species be identified as candidates for further testing during the investigatory study mandated by this resolution, the final report should also include a detailed assessment of available biocontainment facilities in the state and whether they meet the minimum biosafety standards for testing fungal biocontrol agents.

References:

Jiang, Y., Wang, J. 2023. The registration situations and use of mycopesticides in the world. *Journal of Fungi* 9(9): 940. Doi:10.3390/jof9090940
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10532538/>