University of Guam Coconut Rhinoceros Beetle Biological Control Project
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https://github.com/aubreymoore/rearing3

Bioassay Report: MALB

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https://github.com/aubreymoore/rearing3/raw/master/bioassay-MALB.pdf

Contents

1 Summary

Table 1: Bioassay summary.

	bioassay_name	date_start_bioassay	date_end_bioassay	bioassay_treatment	N
0	MALB-1	2019-01-18	2019-02-18	control	5
1	MALB-1	2019-01-18	2019-02-18	heat inactivated	5
2	MALB-1	2019-01-18	2019-02-18	virus	5
3	MALB-2	2019-01-23	2019-02-19	control	5
4	MALB-2	2019-01-23	2019-02-19	heat inactivated	5
5	MALB-2	2019-01-23	2019-02-19	virus	5

Adult beetles incubated at 30℃ and 80% RH for more than 2 weeks to observe possible contamination from green muscardine fungus infection were employed in a bioassay to determine the susceptibility of adults to infection by a virus isolate collected from Malaysia (**Mal B**). Treatment 1 consisted of 10-20 µl sterile filtered water injected at a point on the ventral surface at the junction of the hind leg and the thoracic using a sterile needle. Treatment 2 consisted of 10-20 µl heat-inactivated virus injection while in the treatment 3, beetles were injected with 10-20 µl of untreated virus preparation. Adults were then placed in clean glass mason jars (bleach-treated) with a piece of banana added for food. Beetles were incubated at 30℃ and 80% RH in a Percival incubator. All beetles were weighted every other day but monitored daily for four weeks to observe any possible signs of mortality.

1.1 Replicate 1

A total of nine adult females and six adult males distributed among the three treatments were employed in this replicate.

1.2 Replicate 2

A total of nine adult females and six adult males distributed among the three treatments were employed in this replicate.

2 Mortality

Table 2: Mortality summary.

	bioassay_treatment	ntotal	ndead	mortality	adjusted_mortality	significance
0	control	10	4	0.4	0.0	1.00000
1	heat inactivated	10	4	0.4	0.0	1.00000
2	virus	10	7	0.7	0.5	0.36985

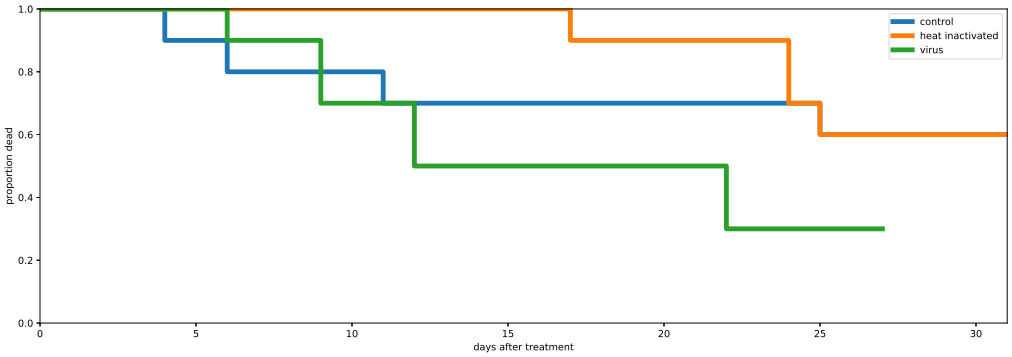

Table 3: Pairwise differences among mortality curves.

		test_statistic	p
control	heat inactivated	0.045611	0.830884
	virus	1.254277	0.262737
heat inactivated	virus	3.500311	0.061357

3 Change in Mass

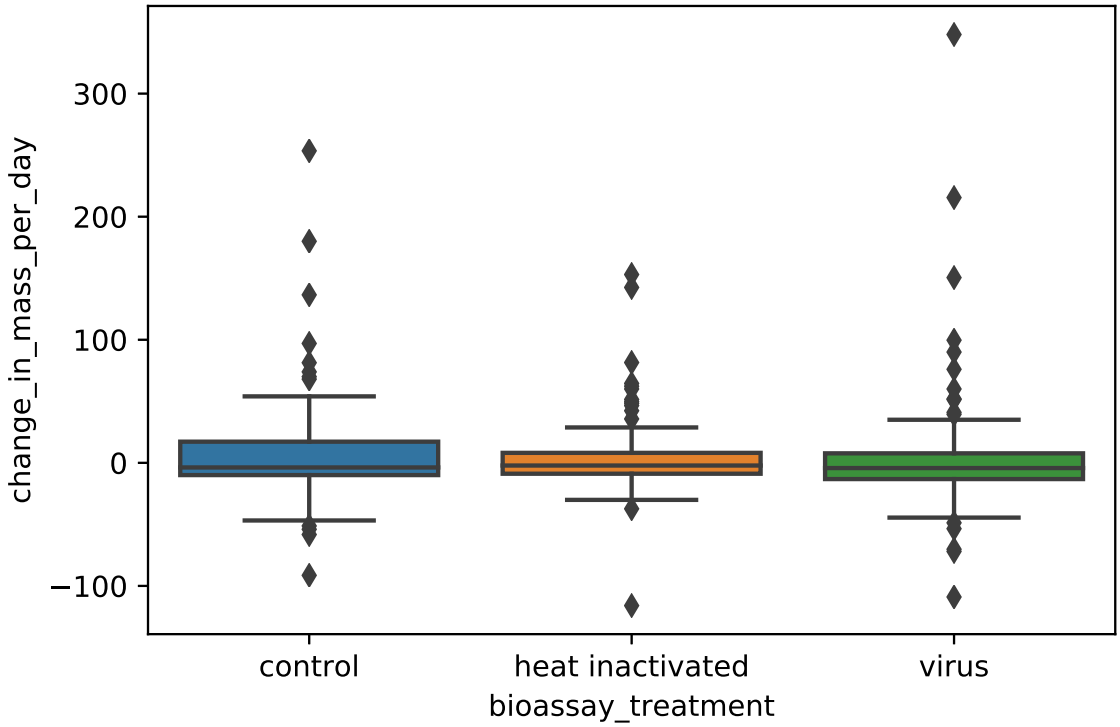

Table 4: Results of pairwise significance tests for differences in change in mass.

	control	heat inactivated	virus
control	-1.000000	0.856799	0.856799
heat inactivated	0.856799	-1.000000	0.759809
virus	0.856799	0.759809	-1.000000