



University of Guam Coconut Rhinoceros Beetle Biological Control Project

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<https://github.com/aubreymoore/rearing3>

# Bioassay Report: DUG42

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<https://github.com/aubreymoore/rearing3/raw/master/bioassay-DUG42.pdf>

## Contents

<b>1</b>	<b>Summary</b>	<b>2</b>
1.1	Replicate 1 . . . . .	2
1.2	Replicate 2 . . . . .	2
<b>2</b>	<b>Mortality</b>	<b>3</b>
<b>3</b>	<b>Change in Mass</b>	<b>4</b>

# 1 Summary

Table 1: Bioassay summary.

	bioassay_name	date_start_bioassay	date_end_bioassay	bioassay_treatment	N
0	DUG42-1	2018-12-05	2019-01-05	control	5
1	DUG42-1	2018-12-05	2019-01-05	heat inactivated	5
2	DUG42-1	2018-12-05	2019-01-05	virus	5
3	DUG42-2	2018-12-27	2019-01-26	control	5
4	DUG42-2	2018-12-27	2019-01-26	heat inactivated	5
5	DUG42-2	2018-12-27	2019-01-26	virus	5

Adult beetles incubated at 30°C 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 the Philippines (**Dug42**). 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°C 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 10 adult females and five adult males distributed among the three treatments were employed in this replicate.

## 1.2 Replicate 2

A total of seven adult females and eight 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	5	0.5	0.0	1.000000
1	heat inactivated	10	7	0.7	0.4	0.649917
2	virus	10	7	0.7	0.4	0.649917

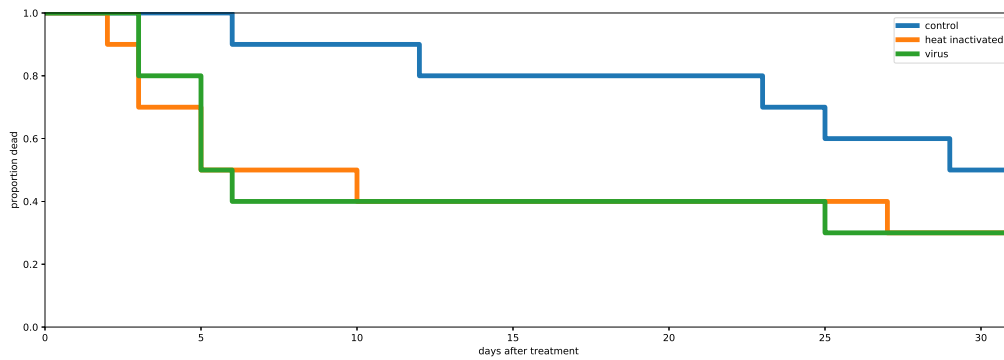


Table 3: Pairwise differences among mortality curves.

		test_statistic	p
control	heat inactivated	1.920677	0.165782
	virus	2.020872	0.155150
heat inactivated	virus	0.007094	0.932879

### 3 Change in Mass

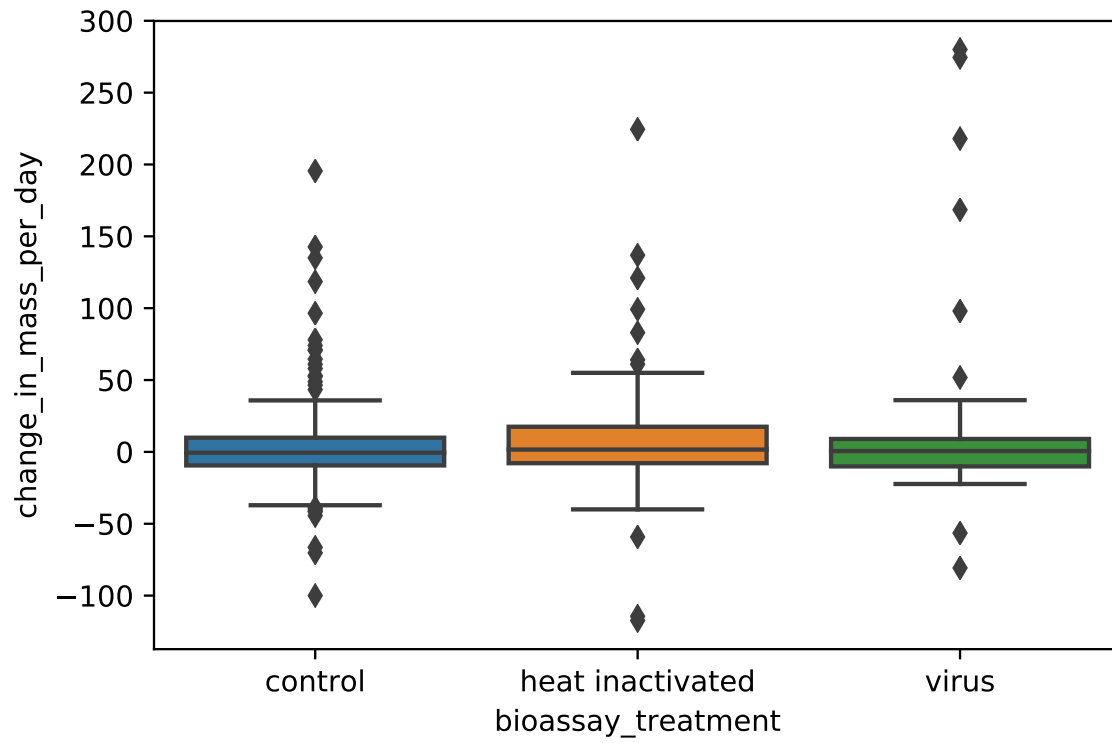


Table 4: Results of pairwise significance tests for differences in change in mass.

	control	heat inactivated	virus
control	-1.000000	0.901325	1.0
heat inactivated	0.901325	-1.000000	1.0
virus	1.000000	1.000000	-1.0