

Cost of Reproduction in Bean Beetles

Sample Data

Preliminary data were collected by University of Richmond Integrated Physiology students in the spring of 2013. Fifty replicates of female unmated, male unmated, female mated, male mated and female mated with beans were initially set up in 150mm petri dishes. Due to time constraints at the end of the semester we had to end the experiment after 30 days even though not all of the beetles had died so some treatment groups had fewer than 50 data points collected. We found reproduction had a significant affect on lifespan (ANOVA: $F(4,218) = 28.42$, $p < 0.0001$) (Figure 1). There was no difference in lifespan between unmated males ($n=46$) and either unmated ($n=52$) ($p=0.8560$, Tukey's) or mated females without beans ($n=25$) ($p=0.9763$, Tukey's). Similarly, there was no significant difference between mated females without beans ($n=25$) and unmated females ($n=52$) ($p=0.9999$, Tukey's). Mated males ($n=50$) however had shorter lifespans than either unmated sex ($n=52$ female, 50 male) or mated females without beans ($n=25$) ($p<0.01$, Tukey's.). Mated females housed in dishes with a layer of mung beans ($n=50$) had lifespans considerably shorter than all other treatments ($P<0.01$, Tukey's). However, no correlation was found between the lifespan of females and the number of eggs that they laid (Linear regression: $t = -1.55$, $r^2=0.048$, $p=0.064$, one-tailed, $df=47$).

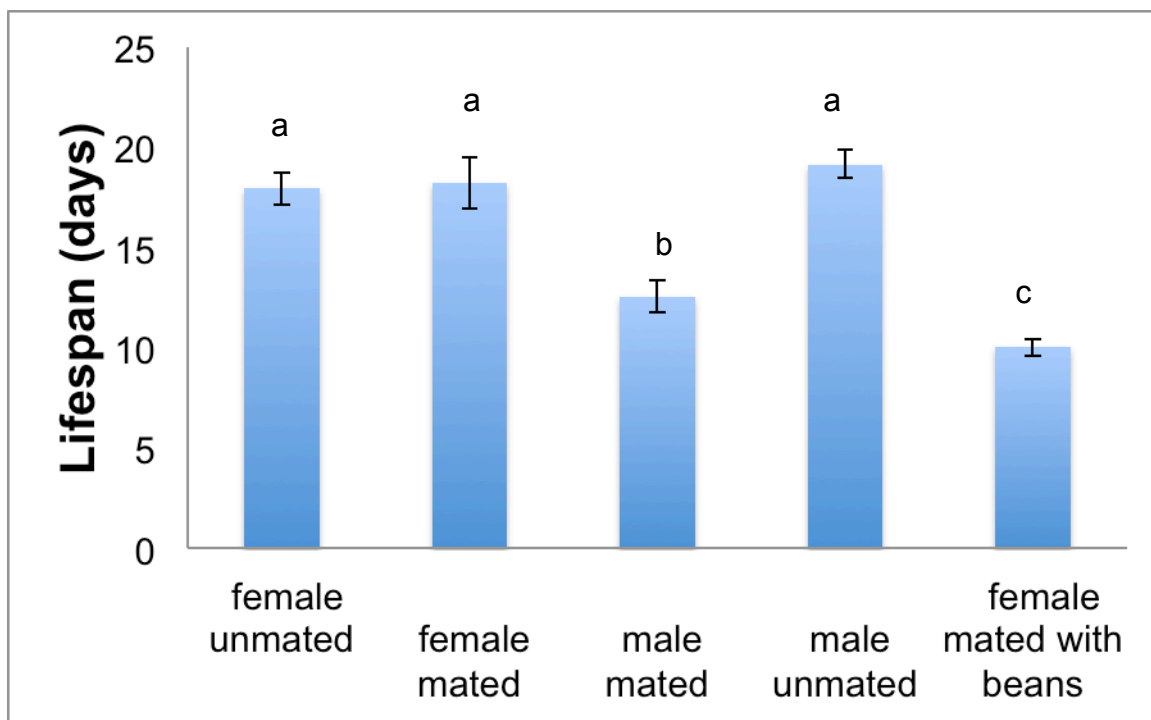


Figure 1. Average (mean±SE) lifespan of virgin bean beetles compared to those allowed to mate in the presence or absence of mung beans. Unless noted otherwise, all females were housed in dishes without access to beans on which to lay eggs. Mating by males and egg laying by females had significant negative affects on lifespan (ANOVA: $F(4,218) = 28.42$, $p < 0.0001$).

This experiment was written by Emily Boone, 2014 (www.beanbeetles.org).