

Feeling Blue for Blue Beans



The effect of seed coat colouration on *C. maculatus* oviposition

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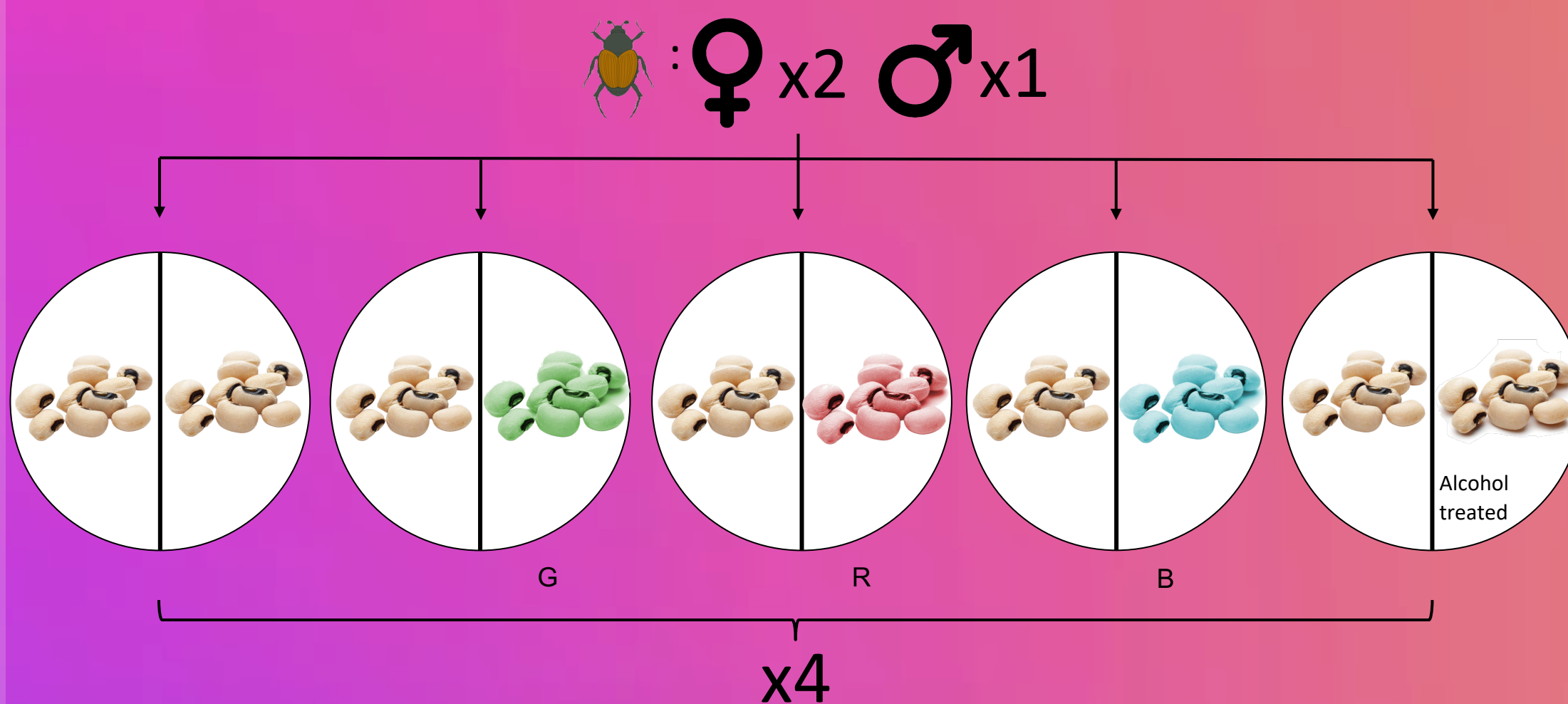
Objective

The bean beetle lays their eggs on beans of several colours. **We sought to find if colour affects the attractiveness of the beans for oviposition.**

Hypothesis

While red and green beans are found in nature, *blue* beans are not. We expect to see a clear preference towards “natural” colours.

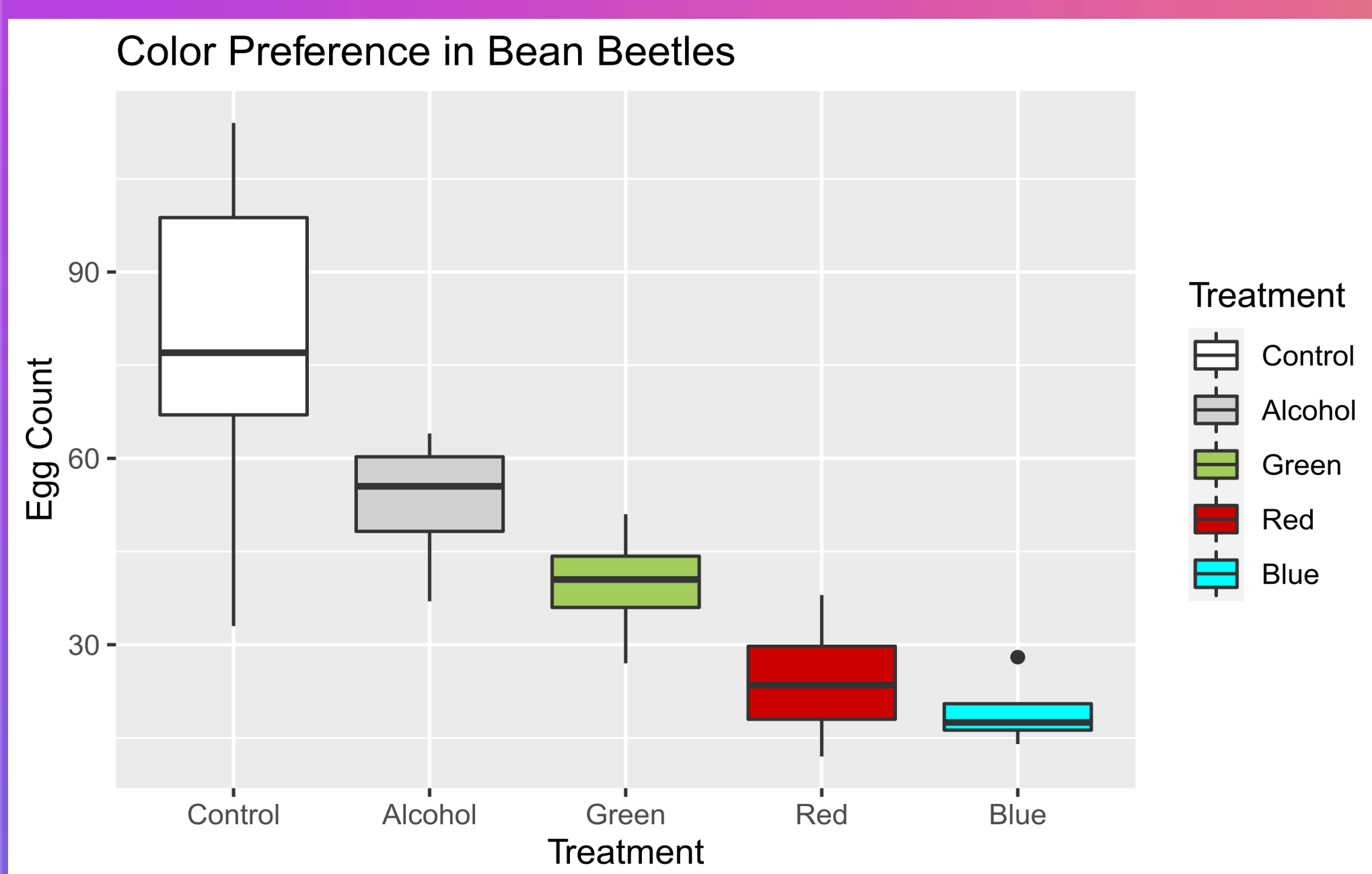
Methods



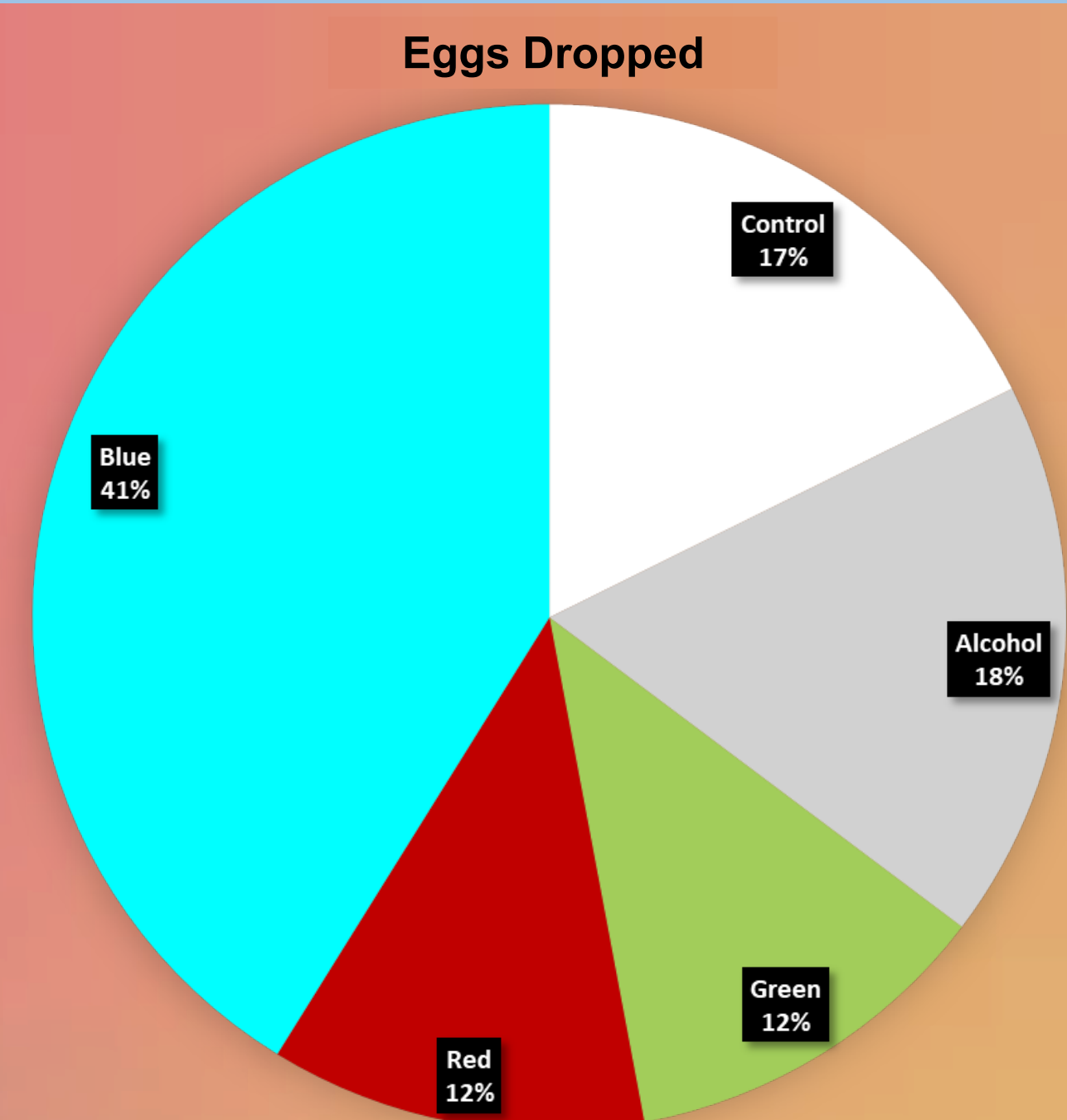
Cow beans were dyed using food colouring and alcohol.

5 treatments – control, green, red, blue and alcohol.
4 replications with two females and one male in each.

Findings



Oviposition frequency – Oviposition frequency on the control was significantly higher ($p < 0.0001$) compared to all treatment groups



Percentage distribution of wasted eggs that won't develop – Eggs dropped signify the beetles' dissatisfaction with the available beans

Conclusions

The results suggest that the **colouration** of the seed coat **does affect** the bean beetles' decision in **oviposition**.

Each treatment had a **significant** impact on oviposition.

However, **natural bean colours are still favoured over unnatural coloured beans, such as blue.**

Future research

- Treatments with coloured vs. coloured beans.
- Treatment with beans soaked in sugar water.
- Find other ways that make beans unsuitable.



Application

This knowledge can be used in the cultivation of beans prone to bean beetle infestation. (1)
Larval and adult mortality has been found to be higher in mung beans than cow beans. (2)

References

- (1) Baidoo, P., Kwansa, N. and Annin, C. (2015) The Role of Seed Coat and Its Pigmentation on the Acceptance of Bambara Groundnut (*Vigna subterranea* L. Verdc.) Cultivars by the Cowpea Beetle, *Callosobruchus maculatus* (F.). *Advances in Entomology*, **3**, 125-131. doi: 10.4236/ae.2015.34015.
- (2) Paukku, S., Kotiaho, J.S. Female Oviposition Decisions and Their Impact on Progeny Life-History Traits. *J Insect Behav* 21, 505–520 (2008). <https://doi.org/10.1007/s10905-008-9146-z>

