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Glyphosate's Effects on Honeybee Thermoregulation

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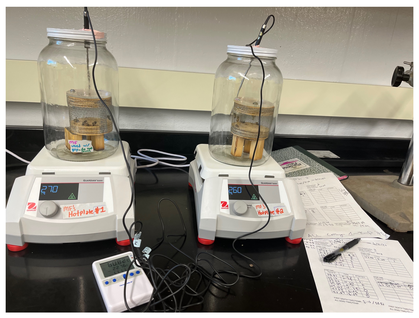
INTRO

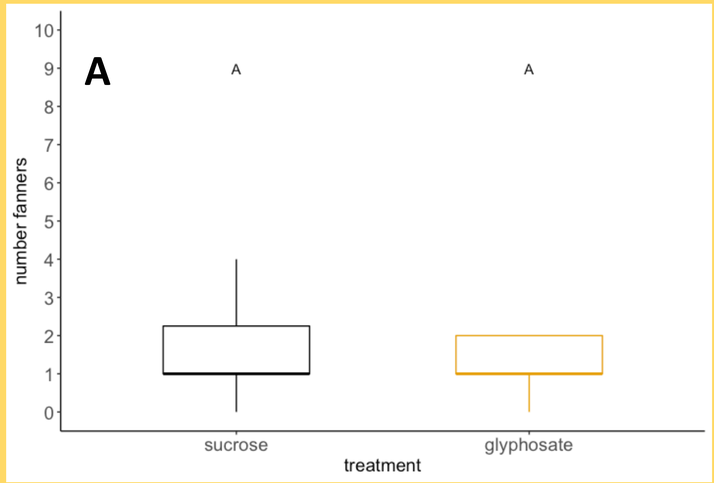
- Glyphosate is the main chemical found in roundup and is a a common herbicide that can be purchased at Home Depot
- Experiment paralleled Dr. Weidenmueller's experiment on glyphosate and bumblebees
- **If high concentrations of glyphosate are added to sucrose, then the bee will have a decreased ability to thermoregulate**

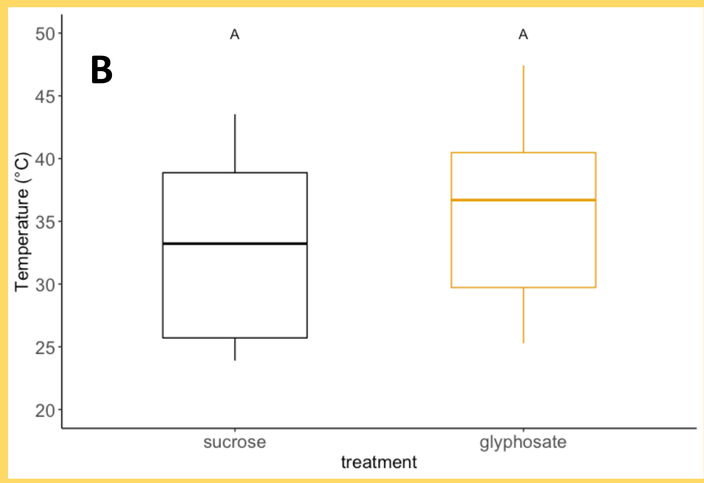
METHODS

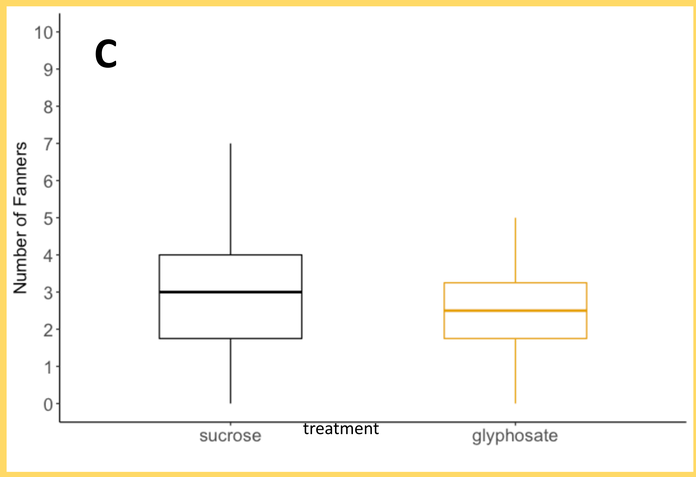
- Bees were in fed a sucrose or a sucrose + glyphosate mixture for 7 days
- Bees were placed in fanning cage and acclimated
- Bees were incrementally heated and their fanning behavior was observed
- Then the following were recorded
  - Temperature at which the first bee fanned
  - Max number of bee's fanned
  - First temperature that bee's fanned at
  - Temperature at which max number fanned at

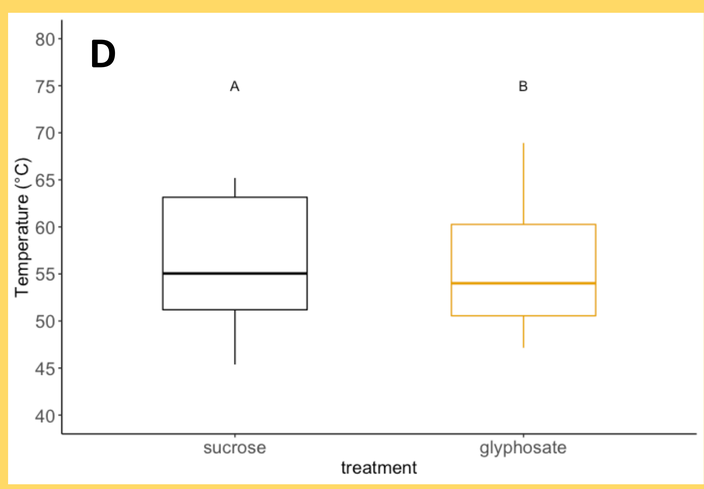


Glyphosate has minimal impacts on bee's fanning abilities









A: When the bees started fanning, this was the initial number that fanned
B: The initial temperature that fanning began at
C: The maximum number of bees fanning at once
D: When the maximum number of bees were fanning, this was the temperature

DISCUSSION AND RESULTS

- The first sucrose bees to fan began fanning at higher temps than the glyphosate bees ($p=0.3315$)
- Glyphosate bees were unable to sense temperature changes and start fanning as well as sucrose bees could. ($p=0.2134$)
- More sucrose bees fan at one time as opposed to glyphosate bees ($p=0.7617$)

THANK YOU

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SOURCES

"Glyphosate Impairs Collective Thermoregulation in Bumblebees" Weidenmueller, et. all