A tangy tale: The impact of stone fruit fermentation on the attraction of *Drosophila melanogaster*

PRESENTERS:

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BACKGROUND: Since the *Drosophila* species is a major international pest, studying their behaviour towards fruit may help reduce their economic impact in commercial settings.

METHODS

1. We conducted a two-choice bioassay with these combinations: mango versus apricot, mango versus fermented mango, and apricot versus fermented apricot (Fig. 1).
2. Fermentation was done over 12 days with a 3.5% non-iodized brine solution. Then, we added each fruit into their vial.
3. After 24 hours, the containers were put into a freezer, and the number of flies were counted in each vial.
4. We used JMP17 to run ANOVA on the mean percentage of *D. melanogaster* caught.

RESULTS

- Mango caught significantly more *D. melanogaster* than apricot (Fig. 2; $F(1, 14) = 4.9767$, $p = 0.0426$).
- A strong statistical difference in the attraction of mango over fermented mango (Fig. 3; $F(1,14) = 21.4402$, $p = 0.0004$) and for fermented apricot over apricot (Fig. 4; $F(1,14) = 4.6663$, $p = 0.0486$) were found.

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Fermentation **affects** fruit fly attraction, but the effect **depends** on the fruit.

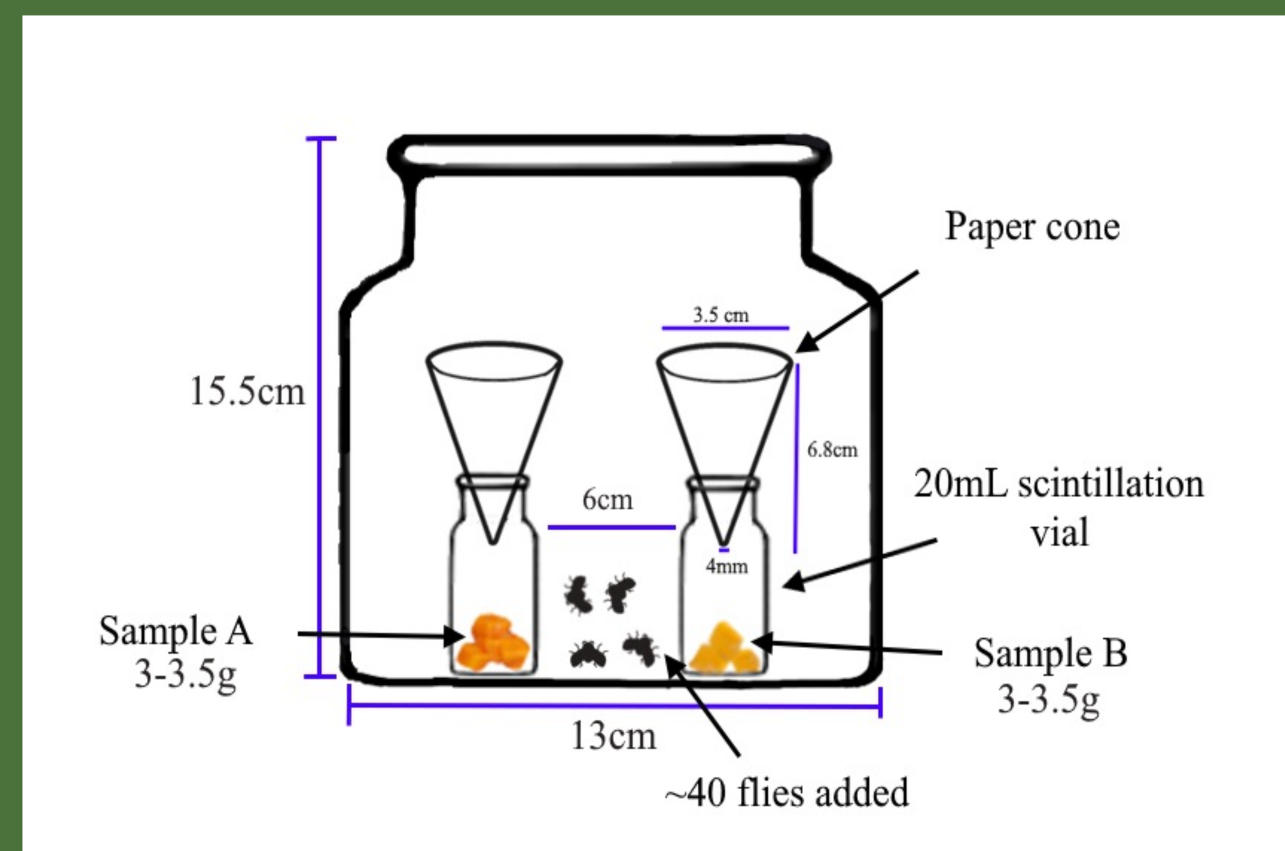

Figure 1: Experimental setup of the cages.
For each experiment, eight replicates were used with a total of 16 vials.

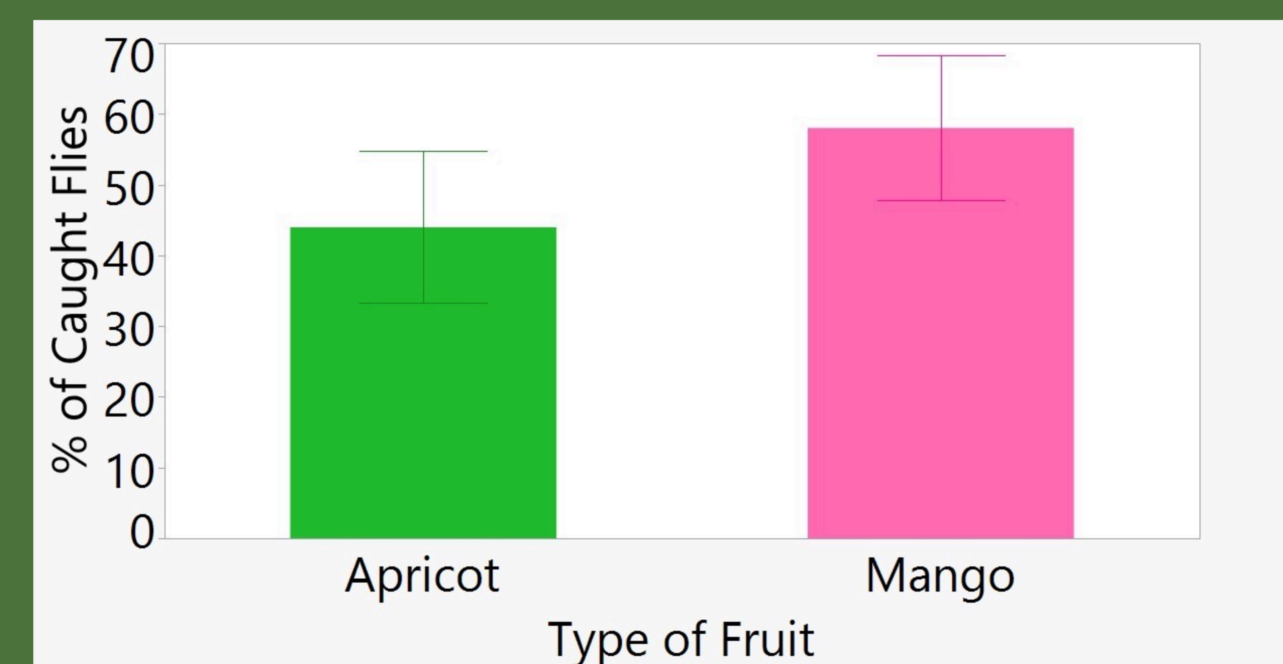

Figure 2: The mean percentage of *D. melanogaster* caught in apricot and mango.
Error bars represent 95% confidence intervals.

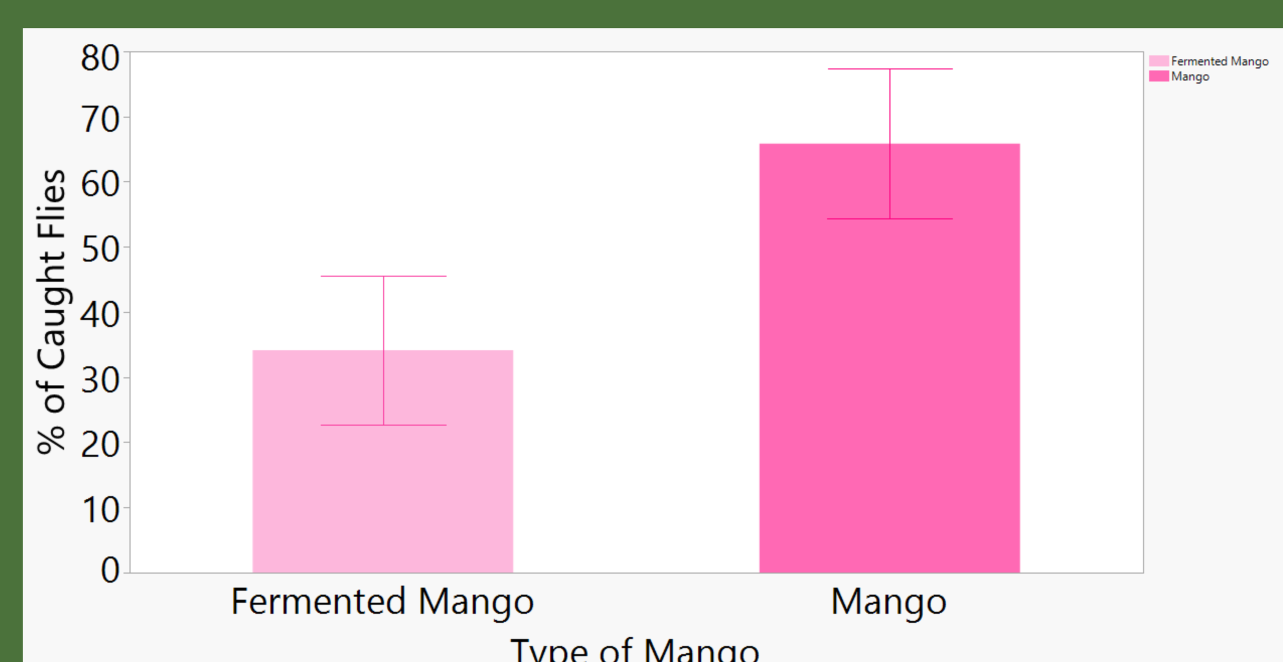

Figure 3: The effect of lacto-fermentation on the attractiveness of mango for *D. melanogaster*.
Error bars represent 95% confidence intervals.

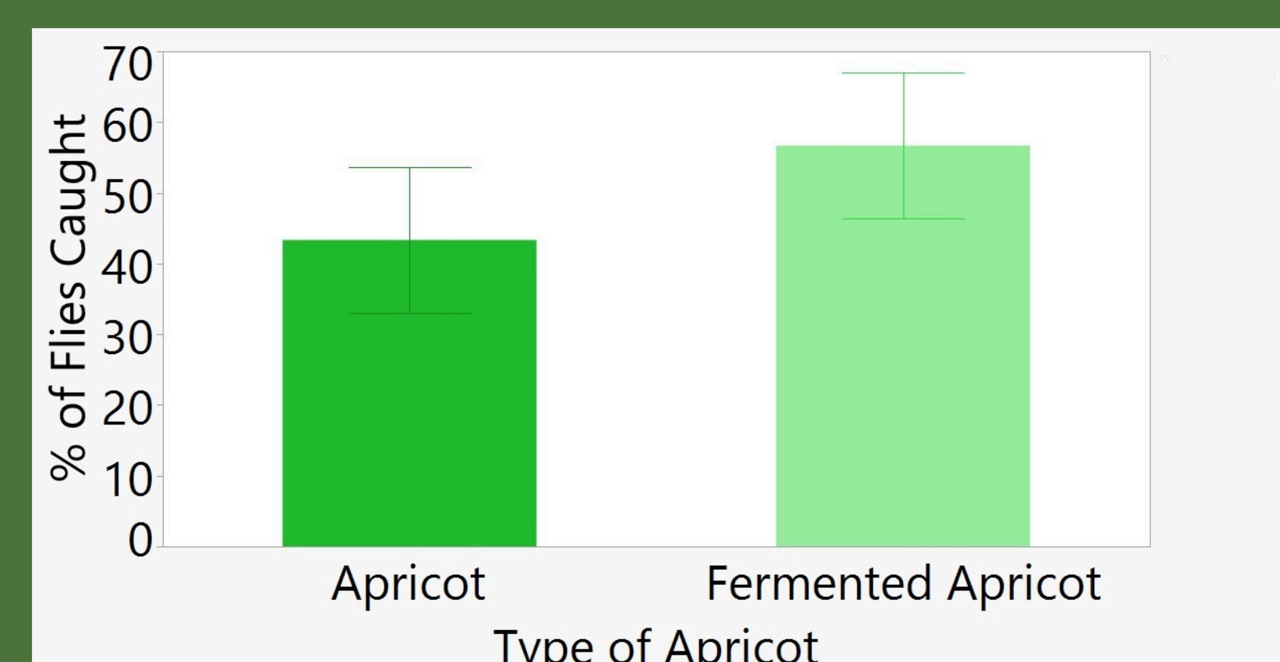

Figure 4: The effect of lacto-fermentation on the attractiveness of apricot for *D. melanogaster*.
Error bars represent 95% confidence intervals.

DISCUSSION

- *D. melanogaster* showed a stronger attraction for mango over apricot (Fig. 2), likely due to higher sugar content, which provides an energy source and supports egg production[7-10].
- Mango was more attractive than fermented mango (Fig. 3), possibly due to hydroxycinnamic acids, which have antioxidant properties that may benefit lifespan and reduce oxidative stress[11-13].
- Apricots attracted more fermented (Fig. 4), potentially due to volatile compounds produced by mould spores[14, 15], even though no mouldy pieces were used.
- Overall, we found that attraction in *D. melanogaster* is fruit-dependent.
- Future field studies could increase understanding of *D. melanogaster*'s feeding priorities, which could help reduce economic losses by developing lures for more effective traps.

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