# Honeydew-Mediated Behavioral Responses in Aphids

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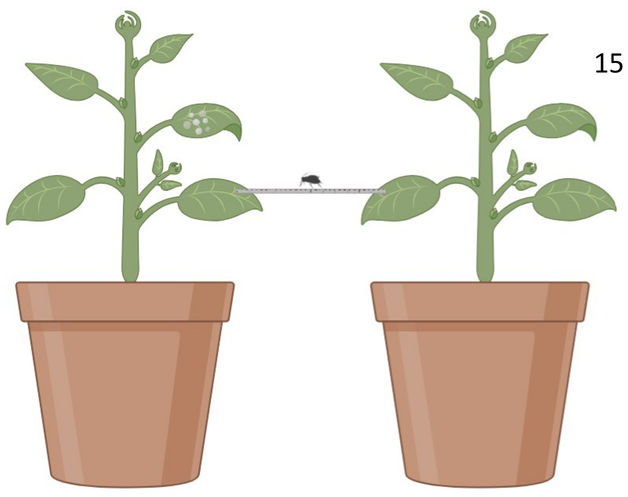
Aphid honeydew is known to attract natural enemies and is being explored as a biocontrol tool. However, its impact on aphids themselves remains poorly understood. In the field, aphid colonies are often found near one another, suggesting that honeydew might act as a cue to locate feeding sites. To explore this, we investigated the effect of honeydew on the chilean pea aphid behavior at three levels: attraction, acceptance, and feeding.

## DOES APHID HONEYDEW INFLUENCE THE ATTRACTION OF CONSPECIFIC APHIDS?

### Methodology

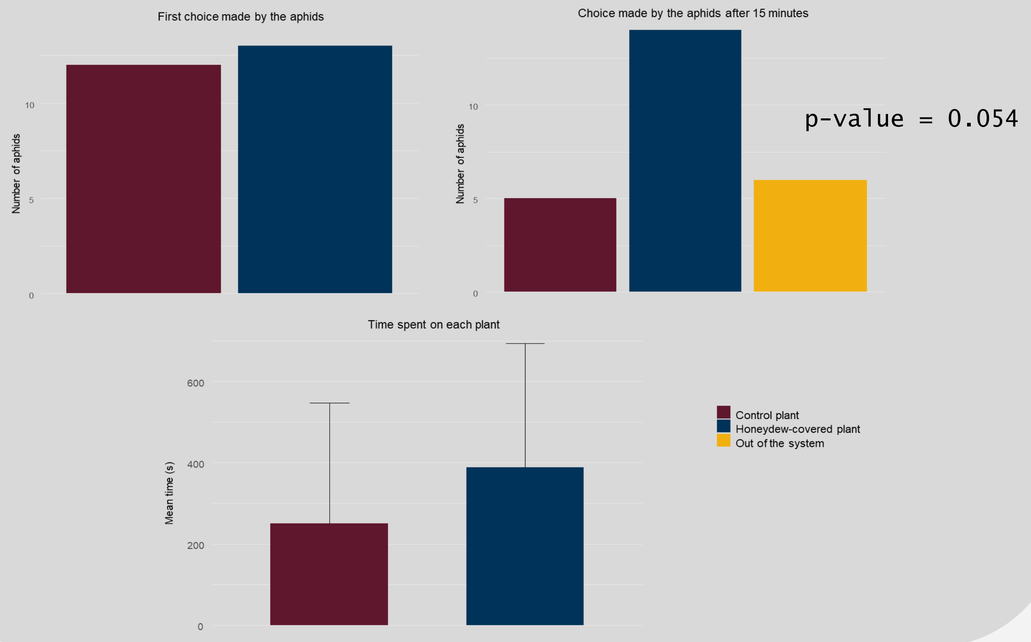
**Two-choice experiment**



15 minutes recording

25 repetitions

### Results




## DOES HONEYDEW ON LEAF SURFACES MODULATE APHID HOST ACCEPTANCE BEHAVIOR?

### Methodology

**No-choice experiment**

15 minutes recording

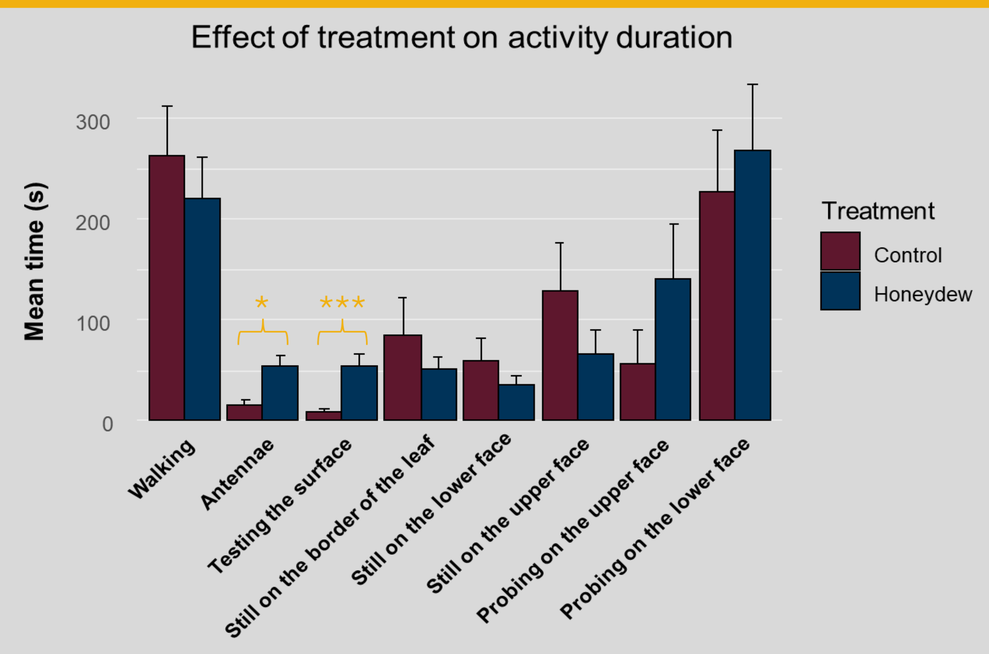
20 repetitions/modality

11 behaviors recorded



| Behaviors |
|---|
| Honeydew production |
| Antennal movement |
| Walking |
| Probing on the upper surface |
| Probing on the lower surface |
| Still on the upper surface |
| Still on the lower surface |
| Still on the border |
| Falling |
| Testing the surface |
| Escaping |

### Results

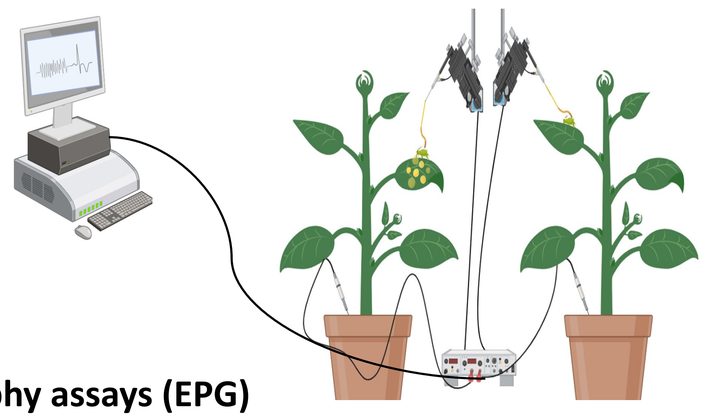



## COULD THESE DIFFERENCES BE ATTRIBUTED TO VARIATIONS IN FEEDING BEHAVIORS?

### Methodology

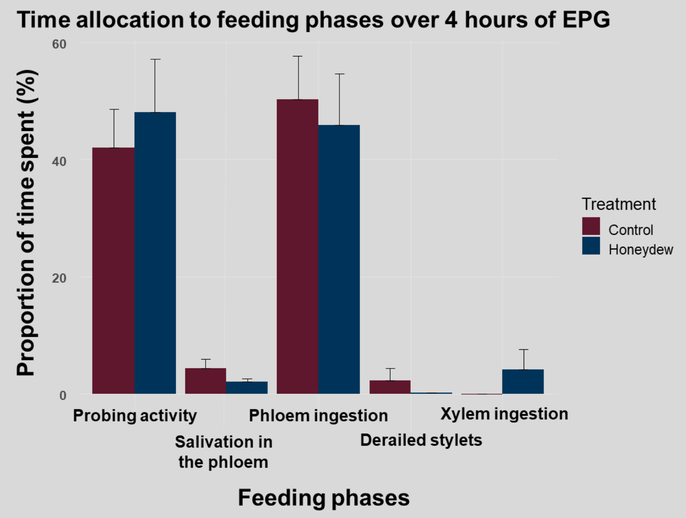
4 hours recording

13 repetitions/modality



**Electropenetrography assays (EPG)**

### Results




The presence of honeydew **modifies aphid behavior before feeding** by enhancing exploration and sensory activity.

Aphids show a **preference tendency** towards honeydew-treated plants.

Overall, **honeydew acts as a behavioral cue**—most likely involved in host plant assessment **rather than directly affecting feeding success**.