

Mobile Robotic Lab for In-Situ Sampling and Measurement

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USDA/NIFA Award #2021-67022-33452

2021 NRI & FRR Principal Investigators Meeting — March 2021

Session #3 Presentation #18

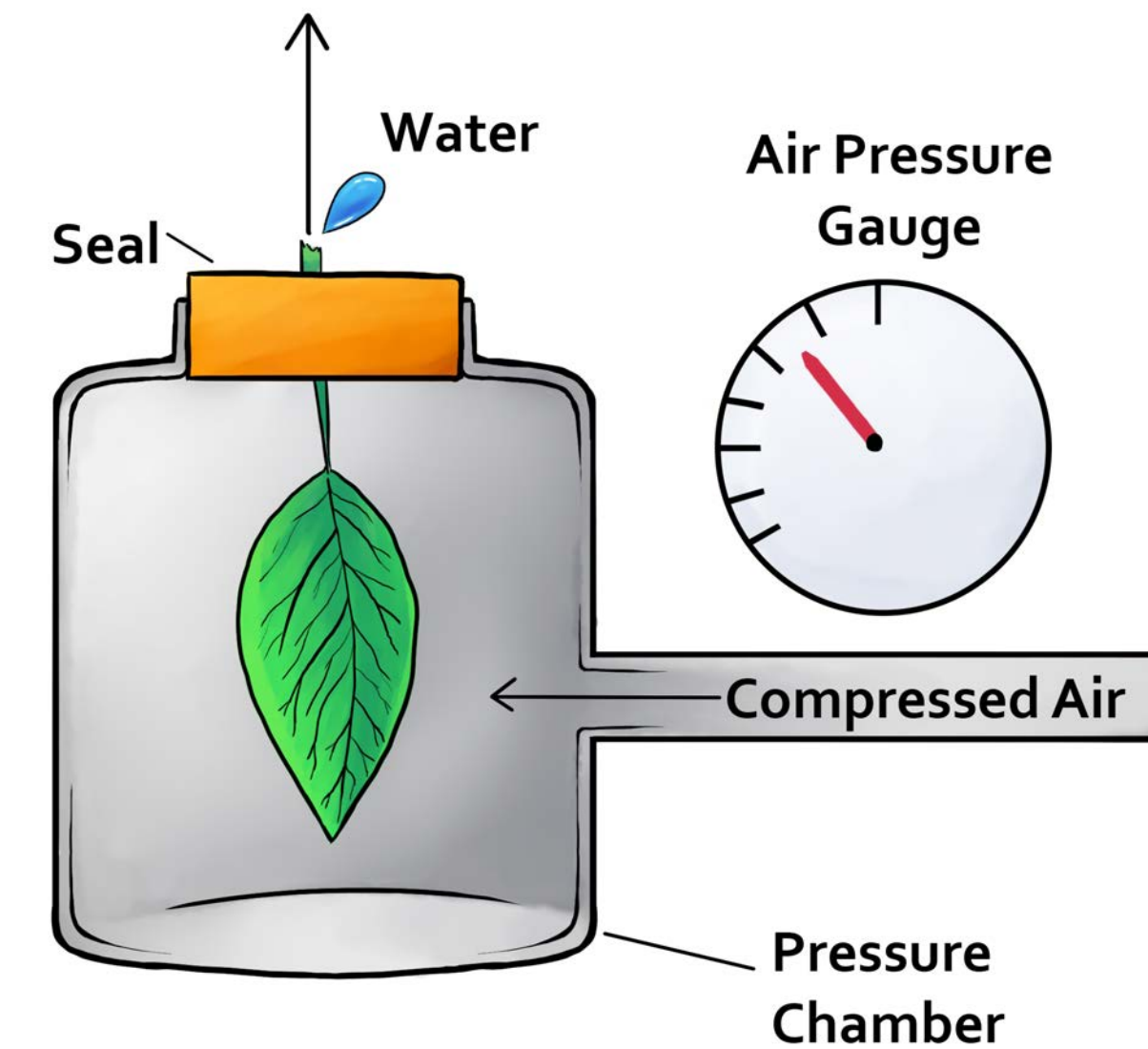
Problem and Proposed Solution

- Precision agriculture relies on timely, accurate data



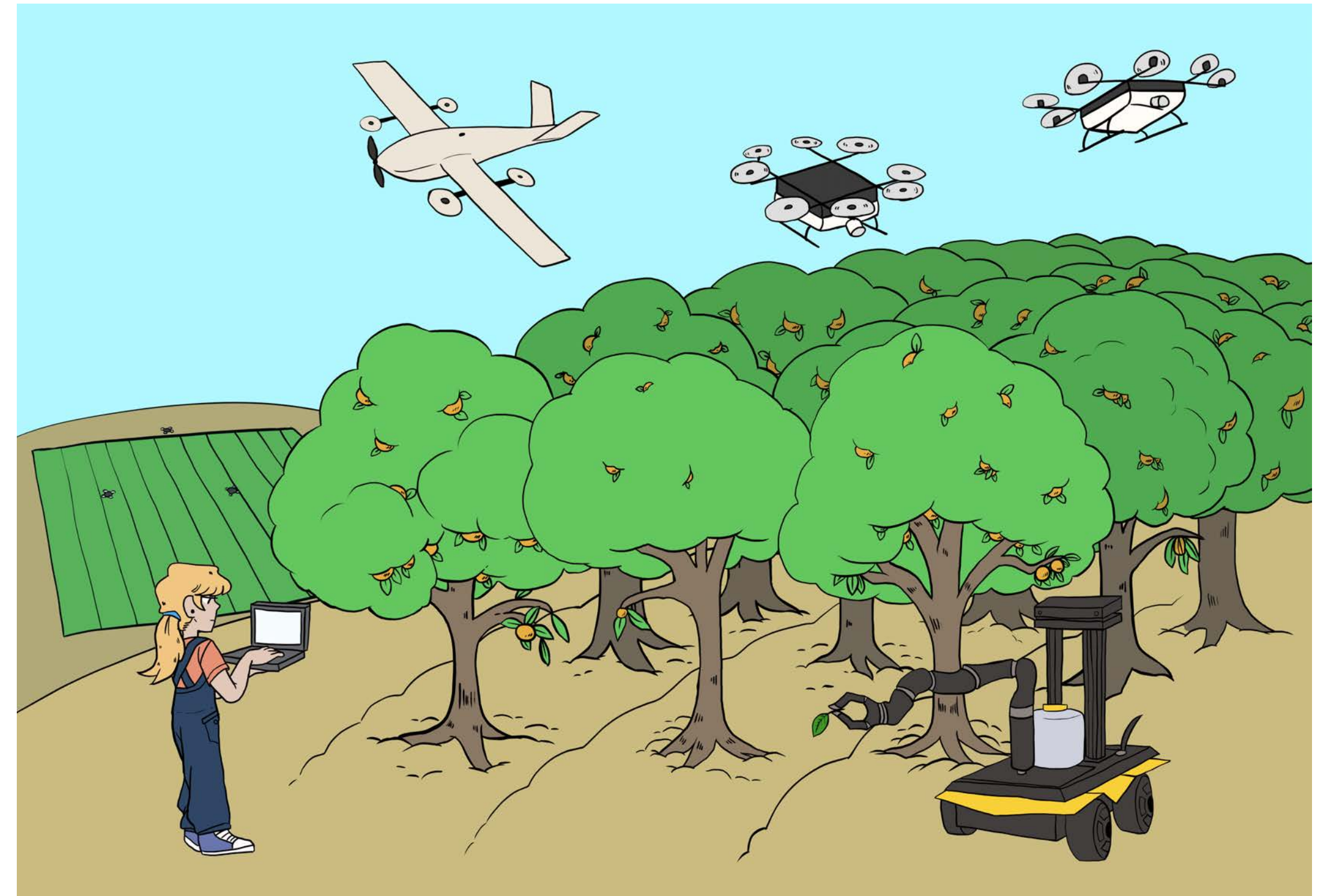
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- Precision agriculture relies on timely, accurate data
- Leaf water potential measurements rely on time consuming pressure chamber measurements
- Need for more frequent, denser, and targeted measurements



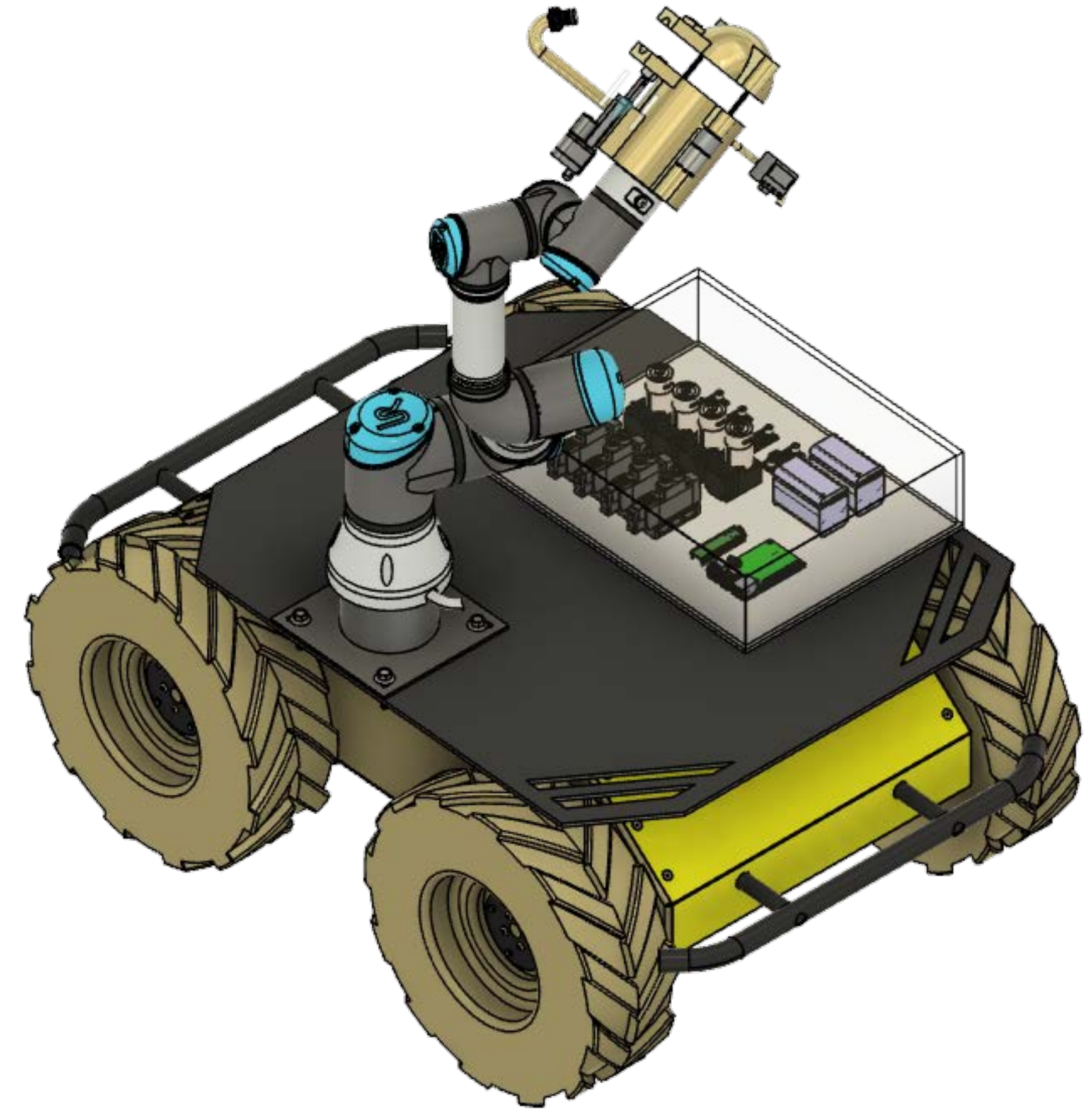
Problem and Proposed Solution

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- Leaf water potential measurements rely on time consuming pressure chamber measurements
 - Need for more frequent, denser, and targeted measurements
- Automate sampling process
- NRI themes: *scalability, customizability*



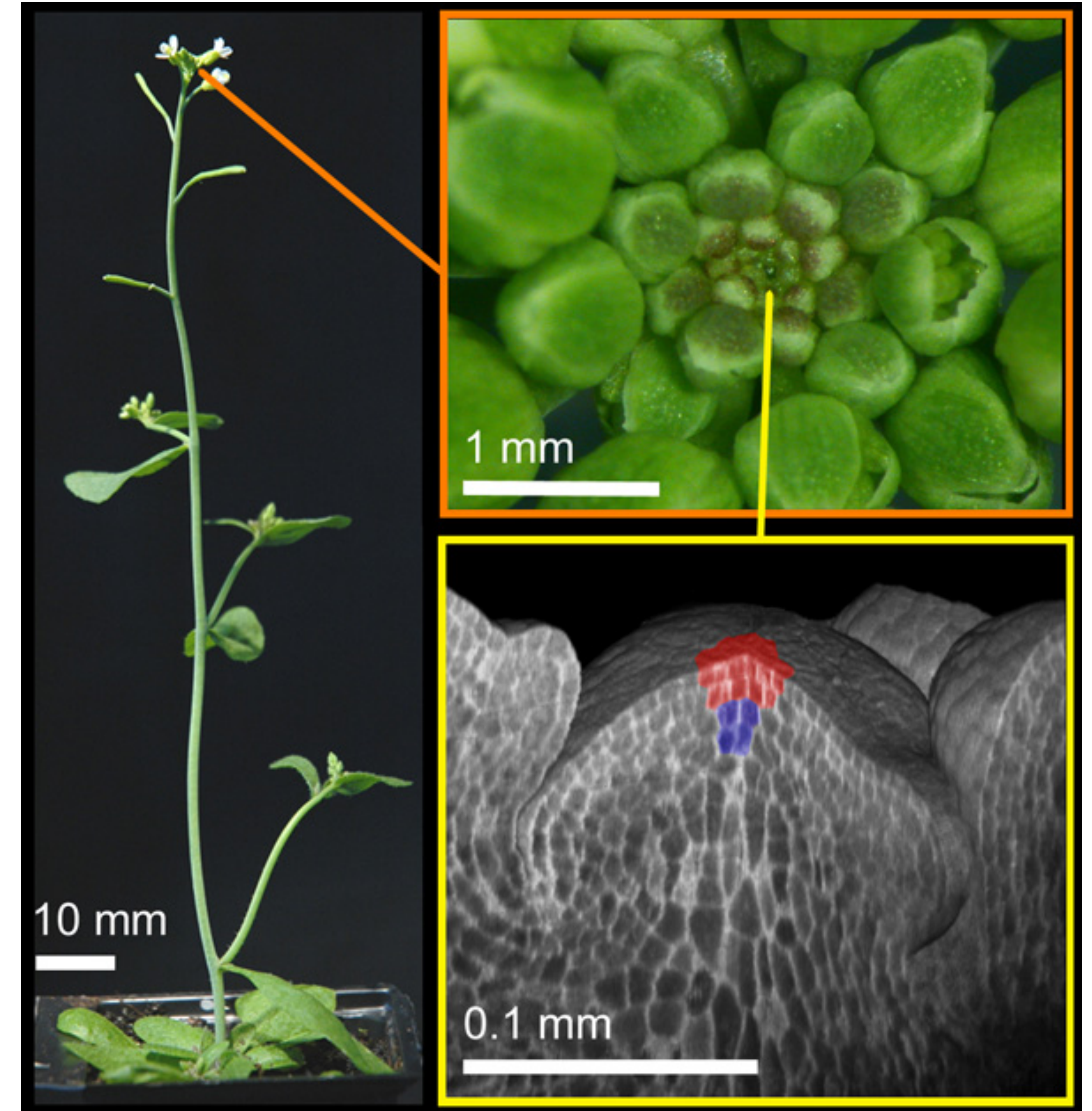
Technical Tasks

1. Robotized Pressure Chamber Development



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2. Visual Sensing for Accurate Determination of Leaf Water Potential



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3. Multi-Robot Coordination and Planning



Technical Tasks

1. Robotized Pressure Chamber Development
2. Visual Sensing for Accurate Determination of Leaf Water Potential
3. Multi-Robot Coordination and Planning
4. Field Evaluation



Evaluation

- Hypotheses
 - variability across testbeds
 - variability in time and space



Evaluation

- Hypotheses
 - variability across testbeds
 - variability in time and space
- Testbeds

Location	Crop	Area
Firebaugh	Grapes	77
Merced	Almonds	156
Riverside	Citrus	450
Coachella	Avocados	540

Evaluation

- Hypotheses
 - variability across testbeds
 - variability in time and space
- Testbeds
- Experiments



Evaluation

- Hypotheses
 - variability across testbeds
 - variability in time and space
- Testbeds
- Experiments
- Data analysis

