



**Roger's Urban
Farmlab**

Interdisciplinary Innovation

Mushrooms from Campus Waste

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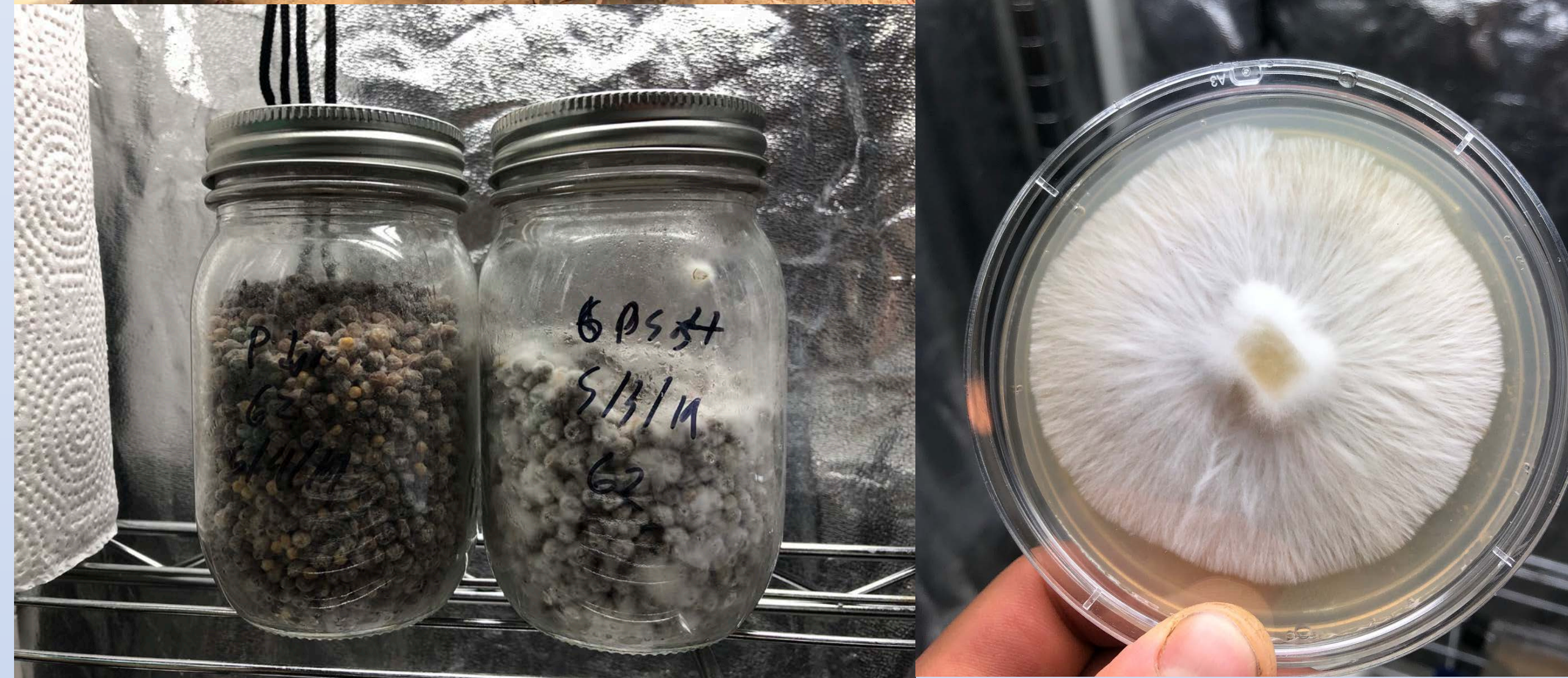


Motivations and Goals

- Coffee and tea waste (C/T) is the most abundant type of food waste at UCSD with around 50% of Price Center's food waste being C/T waste
- Estimated 1 ton of C/T waste produced at UCSD per week
- Cultivation of edible fungi on this substrate allows us to simultaneously solve a food and waste issue by converting waste biomass directly to food biomass.
- High value of edible mushrooms creates a profitable business model to allow for economic and environmental sustainability. 1 ton of C/T waste can hypothetically yield 500-800lbs of mushrooms per week.
- Development of student-run compost program and mushroom farm to reduce waste disposal costs to students while alleviating food insecurity. ("By Students, For Students")

Methods and Materials

- Coffee and tea waste was collected from PC vendors as part of RCG compost program including Starbucks, Perks and Tapioca Express. Freshly brewed waste is best due to heat treatment and short exposure to dirty air.
- Straw was obtained locally and was shredded using a either a wood chipper or line trimmer followed by pasteurization using either steam, hot water, or calcium hydroxide immersion.
- C/T waste was mixed with shredded and pasteurized straw. Experiments were also performed using chipped and pasteurized Eucalyptus branches mixed with coffee grounds or used alone.
- Custom-length polyethylene tubing was used to bag the substrate allowing for the maximization of vertical space inside the greenhouse.
- Bags were placed in new custom mushroom greenhouse to incubate and fruit



Results and Key Findings

- Despite limited environmental control, reasonable yields of up to 1lb per square foot per harvest day.
- Addition of shredded straw to C/T waste reduces incubation time and contamination rate by mold. Eucalyptus chips produced fruitbodies but only after extended incubation and gave a lower yield.
- Outdoor fruiting methods are low maintenance and integrate into "food forest" concept. Spent mushroom blocks on forest floor become hubs of insect life due to nutritious mycelium.

Moving Forward

- Find inexpensive ways to increase my available greenhouse space in order to increase production to meet campus demands.
- Working to determine the week-to-week demand for mushrooms on campus beginning with HDH services.
- Honing skills and technique to allow precise timing of cropping and fruiting cycles to improve flexibility of production cycles.

