## **GROUNDS FOR NUTRITION**

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#### CAFES BY THE NUMBERS

Spent Coffee Grounds (SCG), grounds left after a cup of coffee is brewed, are a fundamentally unavoidable waste product in the Cafe industry, but how much is really produced each year?



There are ~24,000 Cafes in the US

An average Cafe can sell between 200-300 cups of coffee per day



If we assume a cafe is open ~250 days a year, one cafe can sell ~62500 cups/year

~14g SCG produced/cup. This means 1 cafe produces ~875 kg SCG per YEAR



## THE ISSUE WITH COFFEE GROUNDS

Green House Gas (GHG) Emissions:
most coffee grounds produced by cafes wind up in landfills where they decompose anarobically, proucing methane, CO2 and other harmful GHGs

> -1 ton of coffee grounds in landfill produces ~580kg CO2 equivalent methane and CO2 = 26kg CO2 eq.

## Leachate:

-Coffee grounds in landfills are also acidic and high in caffeine, which can leach into nearby soil systems via groundwater

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In 2022, 12.8% of US Households were food insecure at some point throughout the year. That's 17 million families, or approximately 44.2 million people who experienced food insecurity in that year. 7.3 million of these people are children.

This figure has increased each year since 2020, a trend projected to continue.

#### PRIMARY SDGs







Growing Oyster Mushrooms on coffee grounds can provide urban households with a nutritious, vitamin-rich food source while minimizing environmental impact and reducing greenhouse gas emissions from cafe businesses

## **OUR SOLUTION**

Feed Community Members With Mushrooms
Grown on Spent Coffee Grounds

#### **Waste or Resource?**

Coffee grounds can be used successfully to grow oyster mushrooms (Pleurotus Ostreatus)

1kg of Coffee grounds can produce ~430 grams of Oyster Mushrooms on Average

Oyster Mushrooms are delicious, nutritious, and rich in vitamins, proteins and antioxidants.

#### **IDEAL SUBSTRATE**

Typically, mushroom substrate requires sterilization at high pressure and temperature to be suitable for cultivation.

Coffee grounds from cafes are sterilized through extraction, greatly reducing the energy required for preparation compared to traditional

-Started in 2013 in

Rotterdam, NL

substrates.



# IMPACT Per Partnered Cafe

(Per Partnered Cafe/year)

-Reduction of up to 559kg CO2 equivalent GHG

-Diversion of nearly 1 ton of solid waste from landfills

-Estimated caloric production upwards of 125,900 kcal

-Enough to feed 42 people a year!

-Nearly 12,627 grams of protein (as much as 1/4 of a cow!)

# Zero Waste Collection

-Given to partner cafes to dispose of used grounds -Bins are collected daily to ensure freshness of grounds -Recycled Cardboard construction allows bins to be used as-they-are to grow mushrooms completely, or can be broken down

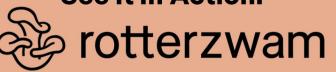
-Mailbox-Style Opening to reduce outside

and mixed into garden

containers

contamination

### **See It In Action!**



 Offer at home grow kits so consumers can collect their own grounds!

-Has diverted 300k tons of coffee grounds from landfills in total! That's equal to 114,635 kg CO2 eq!

-Primarily Operating within the Netherlands and in partnership with European groups. Our program would focus on the US, avoiding huge overlap

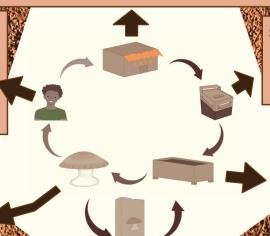
(https://www.rotterzwam.nl/)

## **IMPLEMENTATION**

Partner with Local Cafes to Collect their Coffee Grounds. Their waste disposal costs are reduced and their participation in sustainability entices new customers.

**Oyster Mushrooms are distributed** to community members in need. Excess may be sold at local farmers markets, or be processed into ready-to-go food items that can be sold at partnering cafes

Mushrooms grow, visitors can see and interact with the process of decay and fungal growth, as well as seeing where their cup of coffee ends up.



Specially Designed SCG Collection Boxes are Distributed to Partner Cafes and are Replaced at the end of each day

The Grounds are then inoculated with ovster mushroom mycelium. This mixture is put in raised beds in local community gardens to be grown.

Substrate leftover after mushrooms grow can be composted and returned to communities gardens as valuable mushroom compost

## **Challenges**

- -Difficulty partnering officially with independent cafes
  - -Solution: Identify larger chains to partner initially & Develop case study for smaller, independent shops.
- -Mushrooms may not be a usual part of people's diet
- Development of accessible recipes to process mushrooms, or partner with groups like Windy City Mushrooms that do so with

## **Progress**

**Development of Oyster mushroom** strain suited for growth on pure coffee grounds and development of processing procedure -est. completion Spring 2024 -Trial collection programs with local coffee shops in CU -2 unofficial, partial partnerships as of November 2023

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## **Next Steps**

- -5 Official Partnerships by Spring
- -Establishment of a trial community garden bed in the Champaign-Urbana area by 2024
- -Progress from there will be monitored based on kg SCG collected and kg mushrooms produced -Collaborate with Rotterzwam?

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- Special Thanks to Professor Hodgin Jones, Teaching Assistant Studio of Art and Coordinator of UIUC's Sustainable Design Program for Guidance on this project. khodgin2@illinois.edu