.Porto.

Waste to Fungi

.Sustainable Mushroom Farm.

FINAL PRESENTATION TEAM 3

1

# Presentation Summary

## OUTLINE OF TOPICS

Introduction
Project Management
Marketing Plan
Project Development
Conclusions

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# Introduction



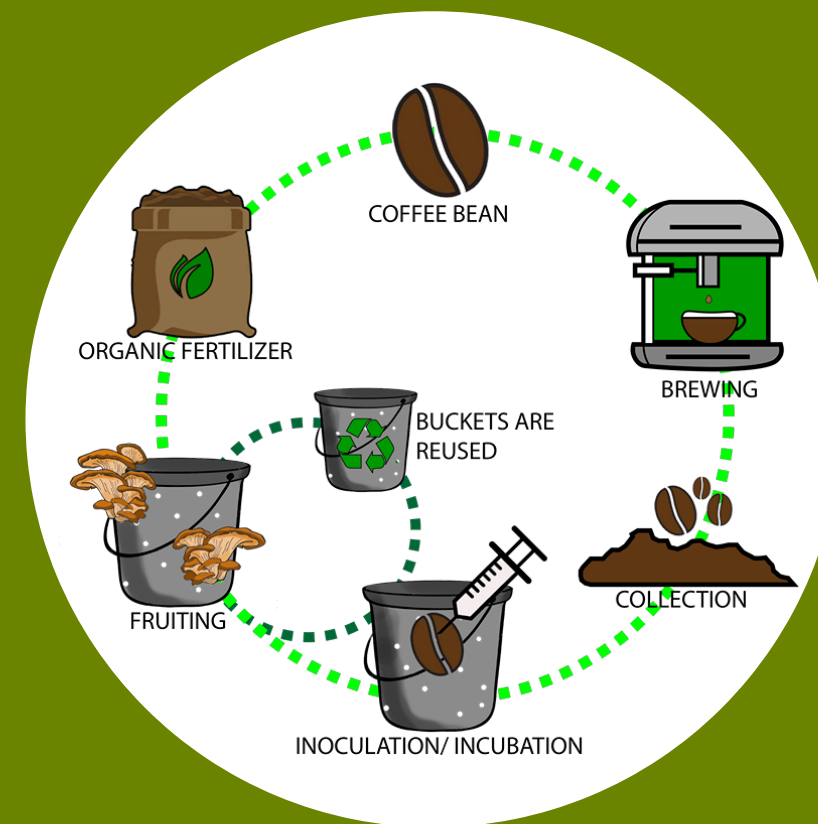## Problem

99%
of waste

## Solution



COFFEE BEAN

BREWING

COLLECTION

INOCULATION/ INCUBATION

FRUITING

BUCKETS ARE REUSED

ORGANIC FERTILIZER

# Project Management

| Initial | Design | Interim | Creation | Testing | Final |
|---------|--------|---------|----------|---------|-------|
| **RESEARCH** | **SCHEMATICS** | **REPORT** | **HARDWARE** | **FUNCTIONAL** | **DELIVERABLES** |
| • marketing<br>• sustainability<br>• ethics | • sketches<br>• solidworks | • fulfill Wiki | • buying devices<br>• assembly | • cultivation process<br>• sensors/actuator<br>• material analysis | • visuals<br>• prototype<br>• presentation |
| **PLANNING** | **MATERIALS** | **PRESENTATION** | **SOFTWARE** | **IMPROVE** | **REPORT** |
| • agile planning<br>• duties<br>• roles | • list of components<br>• table of costs | • Canva | • system<br>• programming | • hardware<br>• software<br>• general | • Wiki final version<br>• final report |

# Project Management

## Risks

cultivation process

functional prototype

management
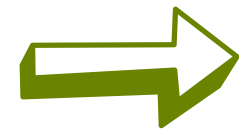
## Strategy

⇒ reevaluation of the process

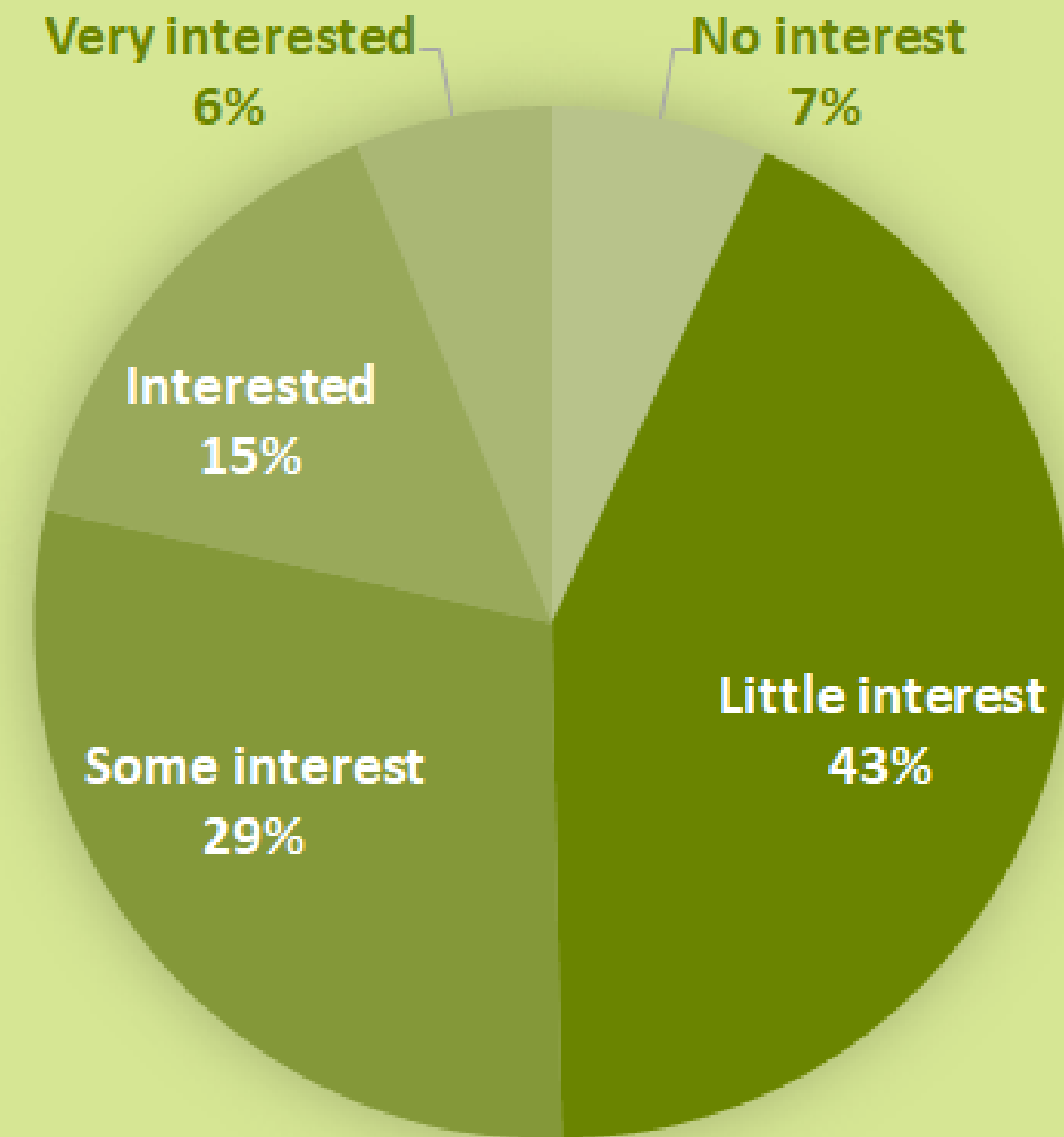⇒ testing components seperately

⇒ distribution of responsibilities

# Marketing Plan

## Marketing Analysis

Min :5€
Max:45€
Real:97€

**Chamber pricing**

## How much interest people have to grow mushrooms in our chamber ?

Very interested
6%

No interest
7%

Interested
15%

Little interest
43%

Some interest
29%

# Pricing & Strategy

## Pricing

### Subscription types

| DISCOVERY | LOVER | FREAK |
|-----------|-------|-------|
| BUCKET | BUCKET | BUCKET |
| SMALL size:1kg | MEDIUM size:3kg | LARGE size:5kg |
| 8 € | 15 € | 20 € |

## Strategy

Poster distribution

Promotional video

Brand ambassadors

Social media

# Brand

.Porto.

Waste to Fungi

.Sustainable Mushroom Farm.

*Grow your own organic mushrooms and lower your Carbon Footprint !*

*Think Global, Act local*

**REDUCE REUSE RECYCLE** promoting circular economy

**Reducing the carbon footprint of your food**

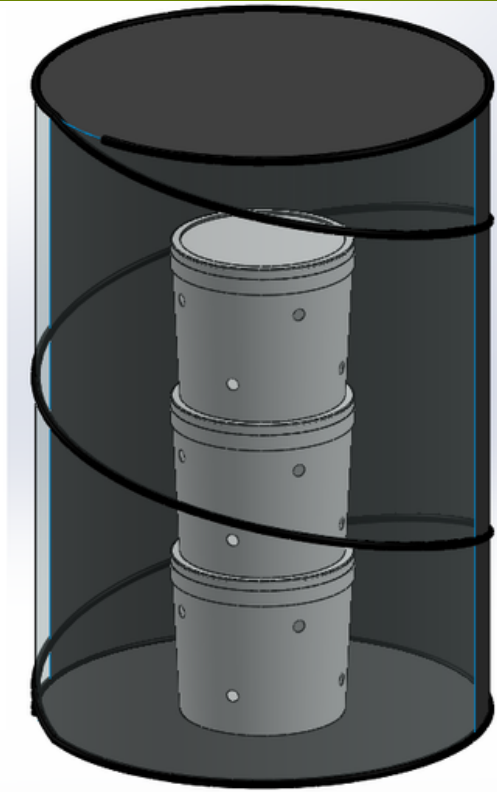**Environmentally, Economically and socially sustainable**

# Product & Service Development
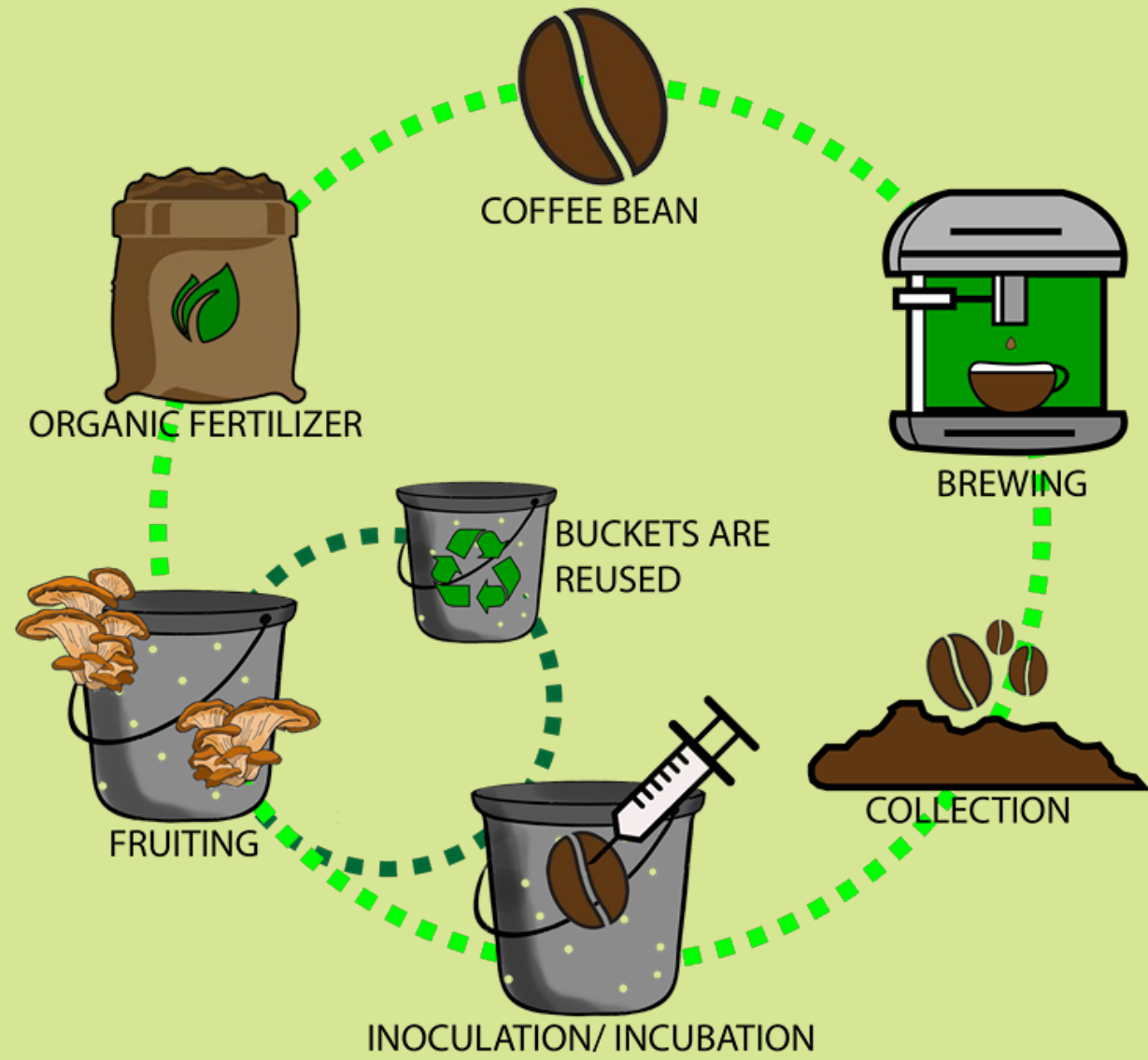


Service idea

Solidworks Model

Cardboard Model

# Chamber

- Automatically regulates mushroom's environment
- Modular to allow to cultivate more or less depending on the needs
- Foldable for easy storage and reduced gas emissions
- Enables to track and improve inoculation and fruiting processes
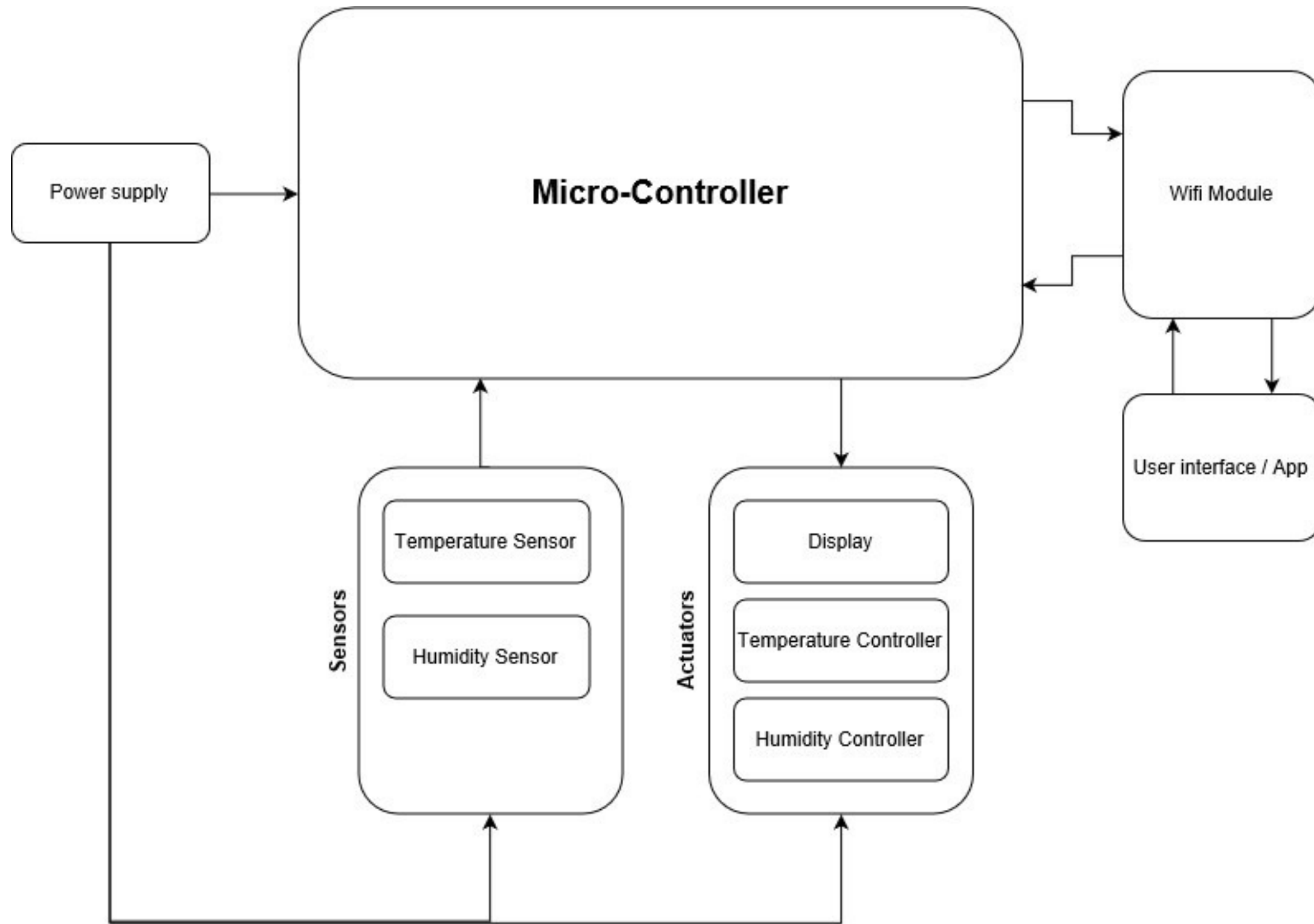
# Bucket

- Made out of coffee waste from our partnering restaurants
- Produced locally to reduce our global footprint
- Allows you to produce fresh, tasty and healthy mushrooms at home
- Buckets are repurposed and then reused to avoid waste creation
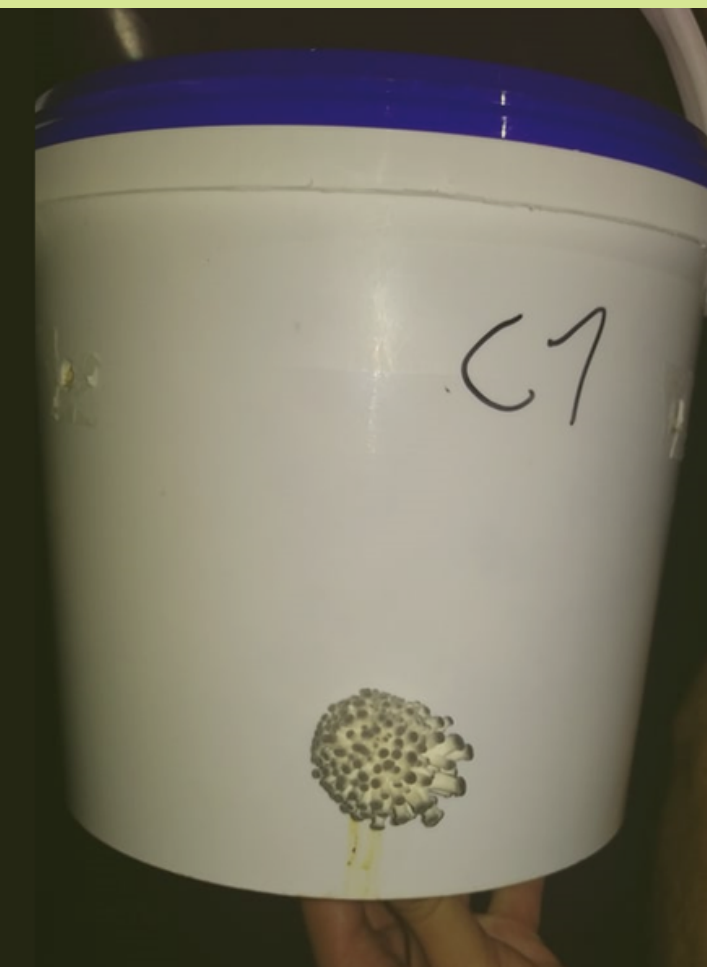
# Electronic Design
## Black box diagram

The chamber is designed with a system that can accurately read

## temperature & humidity

and using those values, automatically maintain the chamber in the right condition for the mushrooms to thrive.

# Electronic Design
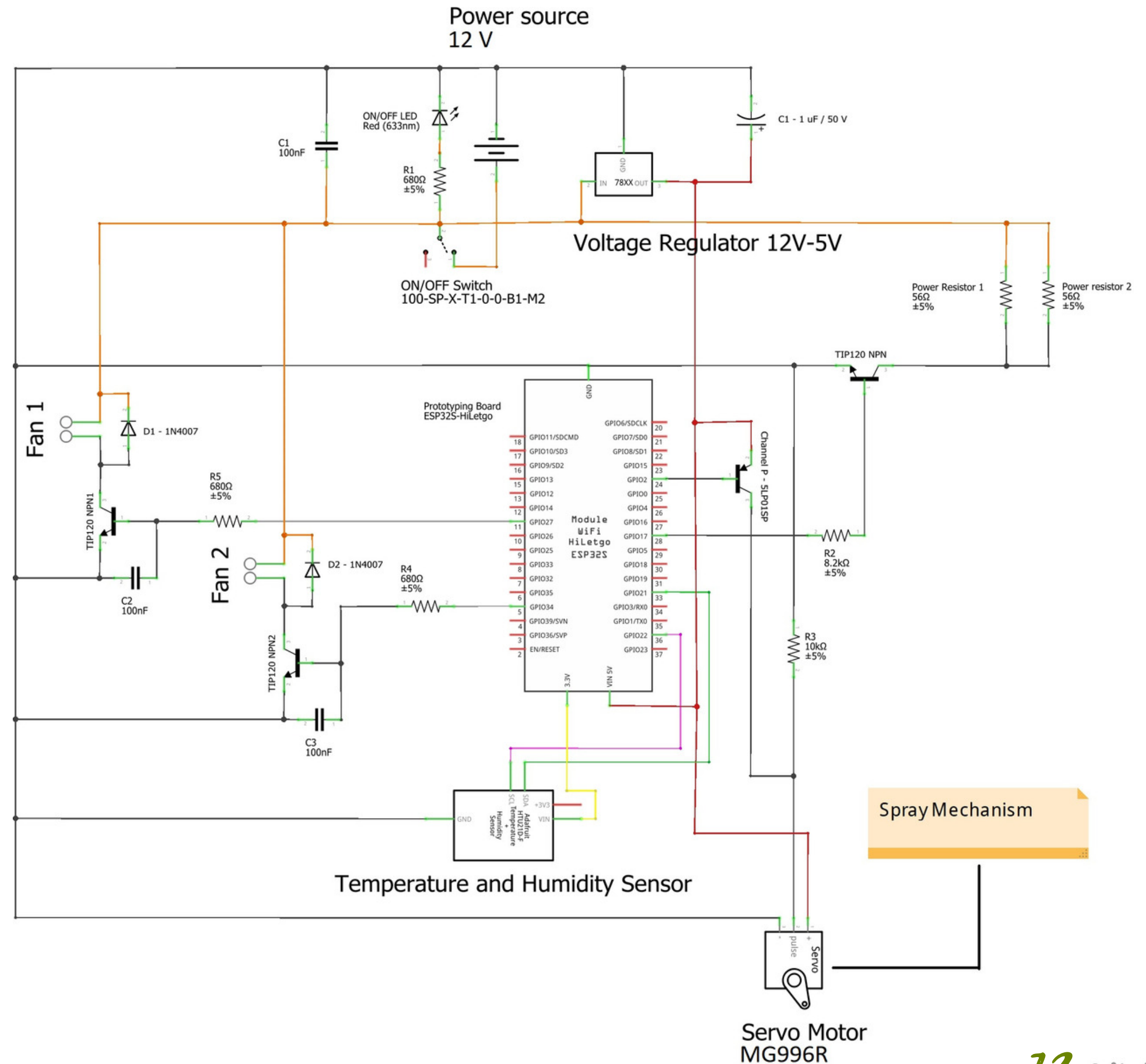## Detailed Schematic & Overal system

**DHT22**
(sensor)

**Actuators**
Cool (fans)
Warm (power resistors)
Increase humidity (servo motor)

**WiFi module**
send data to ThingSpeak
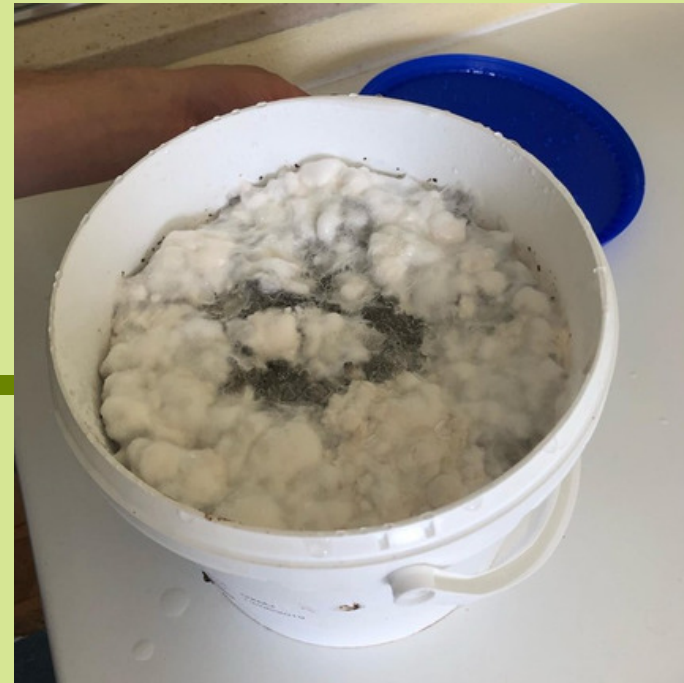(downloading data
+ analyzing data)

# Cultivation of Mushrooms



**15/05 - 21/05**

Mycelium is beginning to colonize.



**22/05 - 28/05**

Healthy mycelium development. Internal humidity is too high.



**29/05 - 04/06**

Healthy mycelium development. Internal humidity is too high.



**05/06 - 11/06**

Healthy mycelium development. Internal humidity is decreasing.
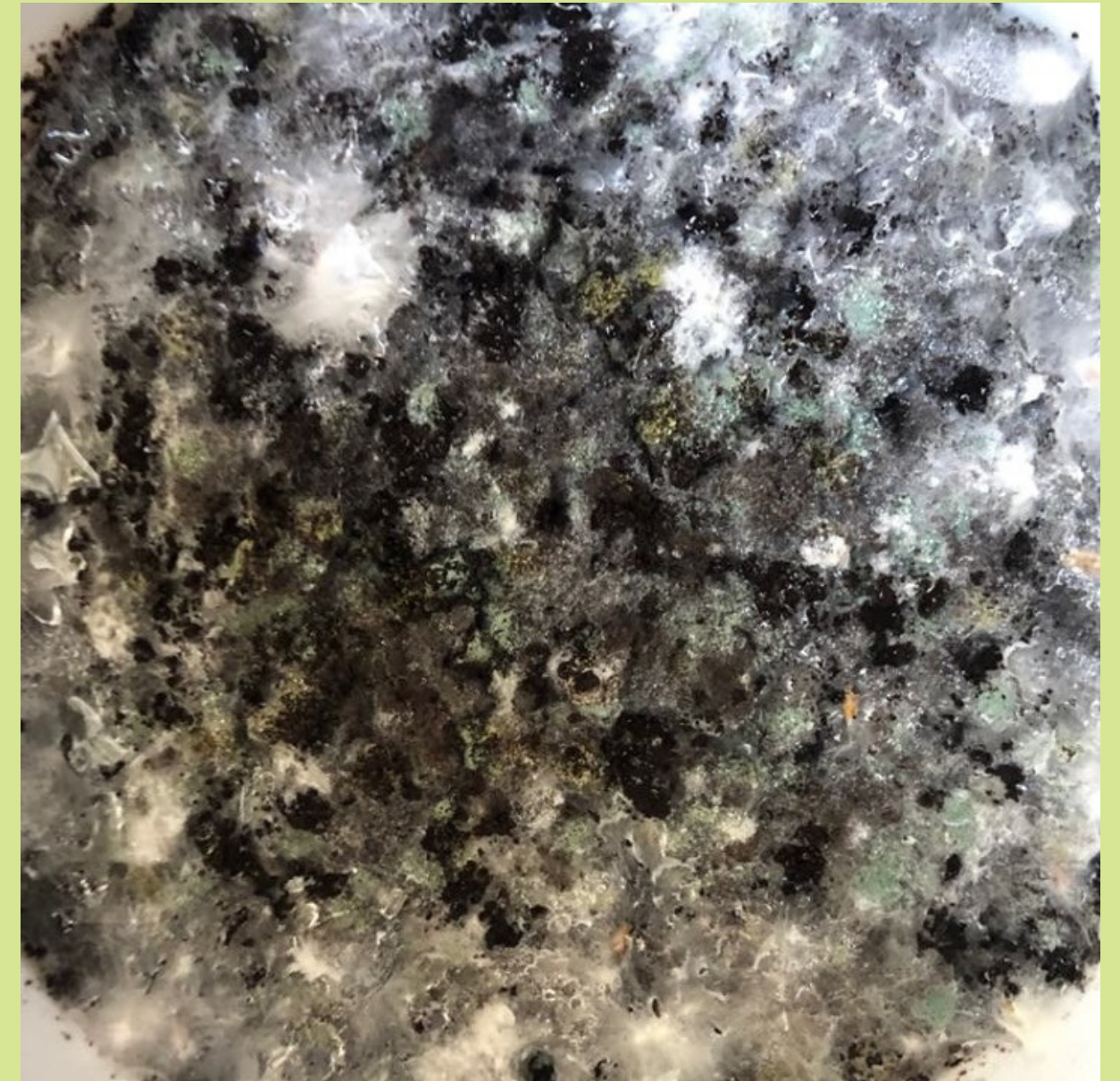
# Time to fruit!



Day 1



Day2



Day3



Day4

# Neurospora

# Green Mold

# Conclusions

## Product

- 🍄 Inefficient cooling system
- 🍄 Successful monitoring system
- 🍄 Successful fruting bucket
- 🍄 Contamination problems

## Business

- 🪣 Inapropriate cultivation location
- 🪣 Unmatching chamber pricing
- 🪣 High interest given to marketing preposition

# Prospectives

## In order to be more efficient:

Improve their planning by selecting a team manager, who would make sure tasks and requirements are met on time.

Define and secure a room dedicated to Waste to Fungi allowing to work in an optimal environment for cultivation.

## In order for the project to be fully functional:

Test various kinds of hole covers allowing airflow, in order to reduce contamination risks.

Develop a fully functional inoculation chamber for production purposes.

Develop an effective partnership with restaurants and coffee shops in Porto.

Develop an application and the chamber further, if the need for it appears.

Create a workshop scheme.

# Video



WASTE TO FUNGI - European Project Semester at ISEP (Team 3)

0:01 / 3:00

Przewiń, aby poznać szczegółowe informacje

# Acknowledgements

The team would like to thank **ISEP** and the **EPS supervisors** for the opportunity to take part in this great learning experience.

We would like to give a special thanks to professor **Abel Duarte** and the microbiology technicians for their help and support.

A special Thanks to **Paulo Ferreira** for all his availability and support with the Electronics.

We would also like to give a special thanks to **INESC TEC** for providing an area to test our cultivation process.

Always do your best.
What you plant now,
you will harvest later.

**Og Mandino**