



AVOCADO WASTE: BIOPLASTIC & MOLDS

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THE AVOCADO BOOM

ENVIRONMENTAL CONCERNS



Seeds and skins end up in a landfill.



Byproduct of landfill waste emits greenhouse gasses.

|STRATEGY

Find a way to lower the negative impacts of waste generated from the pit while also offsetting emissions and health concerns.

1.9B

“Nearly 5 million tons of avocados are produced worldwide annually. Americans consume almost 1.9 billion pounds each year.” - Hass Avocado Board

75GAL

Growing 2 medium avocados requires 75 gallons of water. Production is causing deforestation.

80%

80% of avocados are transported in plastic and cardboard containers.



AVOCADO POWDER

PROCESS

- 1 Analyze the full lifecycle of avocado pits.
- 2 Find a systems solution to capture the waste before ending up in a landfill.
- 3 Develop method to break seed down into a powder.

STEPS

1. Bake avocado pit whole at 200F for 2 hours
2. Blend in a food processor or blender
3. Bake blended avocado pit mixture again at 200F for 2 hours
4. Blend in a food processor or blender until powder consistency
5. Keep in closed container until use



BIOPLASTIC & MOLDS

The process explore potential leverage points not only to transcend the negative impacts of waste generated from the pit, but also offset the emissions and health concerns regarding plastic production and consumption if the material (in the future) could replace certain single-use plastics.



| PROCESS

1 Drew upon how nature works in symbiosis to create circular economies.

2 Use avocado seed as a feedstock to create new biomaterials that could possibly offset single-use plastics and packaging.

3 Brainstormed possibilities to repurpose avocados and monetize their potential while reducing waste.

| INGREDIENTS

1 tablespoon agar agar
1.5 tablespoon glycerol
2 cups water
4 teaspoons gelatin
2 tablespoons
avocado powder

| STEPS

1 Add the gelatin, agar, avocado powder and glycerol to a pot and stir until combined.

2 Add boiling water and stir until agar and gelatin dissolve completely.

3 Once the mixture is warm, pour into a mold.

4 Air dry for 1-2 days.

BIOPLASTIC RECIPE



| INGREDIENTS

3/4 cups water
1.3 tablespoons vinegar
2 tablespoons chitosan
1 teaspoon glycerol
2 tablespoons
avocado powder

| STEPS

1 Add 200 ml of hot tap water at 70 to 80 deg C. Add 20 ml of vinegar. Stir with a blender.

2 Add 2 tbs avocado powder and chitosan. Then, add 5 ml of glycerol until a homogeneous solution is obtained.

3 Cast the mix on a flat surface or on a mold. The thickness of the dried object will be 10 to 30% of the thickness of the cast solution.

4 Leave the material drying in the open air. Demold it soon enough to avoid bending.

MOLD RECIPE



COMPARISON



1. PACKAGING

- Generates 50 times more water pollutants and 70% more air pollutants during production
- Deforestation
- More renewable than plastic

2. SUGGESTED APPLICATIONS

- Hard structure can be molded to fill packaging
- Individuals can use recipe to create mold shape to their needs and intended use

3. PLASTIC

- Made from non-renewable resources like natural gas or crude oil
- Plastic pollution can afflict land, waterways and oceans
- Single-use

4. SUGGESTED APPLICATIONS

- Flexibility determined by gelatine & avocado powder ratio
- Can be made as stiff or flexible depending on need
- Parchment like texture with increased avocado powder
- Can be molded into a variety of shapes

LEARNINGS



- Individuals can use recipe to create molds to their needs
- Cost effective
- Individuals can be more self-sustainable
- Reduce individuals carbon footprint
- Potential commercial value

