



Grebri

# **INTRODUCTION**

Every year in India, heavy rains and floods cause great damage to the rice crop. Due to which farmers suffer a lot financially. We have come up with a solution that will save farmers from huge economic loss. The name of our solution is Grebri. Grebri will buy damaged rice crops from farmers and extract the starch from those rice to make biodegradable photo frame. We will put motivational quotes in photo frames and sell them online.

# **PROBLEM**

Every year in India, heavy rains and floods cause a lot of damage to the rice crop. Due to which farmers suffer a lot financially. Hence many farmers commit suicide due to nonpayment of loans and other losses.

The recent floods in Maharashtra have damaged crops on over 4lakh hectares in western and northern parts of the State. State Government of Maharashtra has reported that the total area of crop damage (more than 33%) due to unseasonal rainfall in the month of October-November, 2019, is 94.53 lakh hectares. Approximately,103.52 lakh farmers have been affected.

Secondly, Many young generation in India feel stress due to study, job, unemployment, sexual abuse. Stress levels are rising with 43 percent of Indians. According to a new UNICEF report, one in seven 15- to 24-year-olds in India often feel depressed or have no interest in working.

# **SOLUTION**

Our solution is Grebri. Grebri makes biodegradable photo frame from rice crops damaged by floods and heavy rains.

First we will collect the damaged rice crop from the farmers and pay them for it. The rice crop damaged by floods contains enough starch that we can make bioplastics in good quality and quantity. The how much destruction of starch from the rice crop will depend on how long the rice has been soaked in water. On an average 14-16% of rice starch is lost due to fermentation.

After Collecting damaged rice crops we will process on them and remove starch from rice. After that we will make biodegradable photo frame from rice starch.

Once the photo frame is created, we will put well designed motivational quotes on the photo frame. Due to motivation people feel stress free and a positive energy created in them.



This photo frame will be made from starch base biodegradable plastic. We will also design our motivational poster in a creative way.

**With this idea we are trying to solve the three SDG goals**



# Farmers Feedback

Due to the COVID-19 pandemic, we were not able to collect much farmers Feedback but we went to nearby villages for taking the customer feedback. There we asked Some questions to farmers just like Whenever flood or heavy rain comes, what impact does it have on rice fields? How does it affect your financial condition? How much you are paid for the destroyed rice? How do you survive after that? After asking questions, we told them our solution. Our solution was the idea of Grebri where We provide sufficient pricing for their damaged rice crops and produce biodegradable photo frame. In response to this, he said that such a solution will save us from a lot of damage. And also Good for environment.



MVP OF Biodegradable plastic

# Initial stage Prototyping (MVP)

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## INTRODUCTION

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- Every year the situation like flood and heavy rains cause damage to farms. Rice crops is one of it. Farmers affected by this will through it, burn it, or use it as fodder for animals which decreases its value and heavy financial losses to farmers. Rice crops affected by rain and flood can be used to make bioplastic to cover the financial losses of farmers and protect our environment from harmful synthetic plastic.
- The plastic we made is made domestically(home made) the plastic we got also has good characteristics. We will further improve the quality of bioplastics through the industrial process that will allow for commercial use.

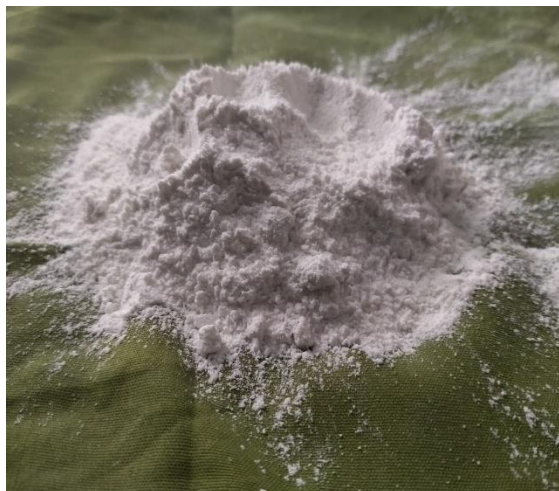
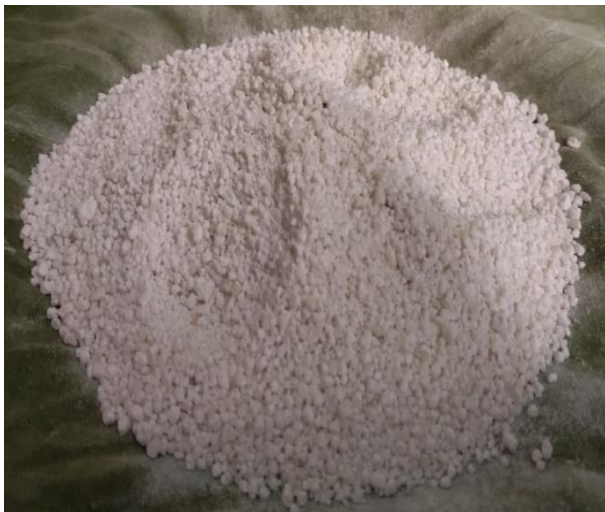
# **PROCEDURE**

Our process starts by going to the village and talking to the farmers about this problem. There we asked Some questions to farmers just like Whenever floods or heavy rain come, what impact does it have on rice fields? How does it affect your financial condition? What do you do with a damaged rice crop? How much you have repaid for the damaged rice? After asking questions, we told them our solution. Our solution was the idea of Grebri where We provide sufficient pricing for their damaged rice crops and produce biodegradable plastic. In response to this, he said that such a solution will save us from a lot of damage. And also Good for the environment. On our way back we took samples of some damaged rice from the farmers. Then we started making homemade biodegradable plastic prototypes from that rice sample.



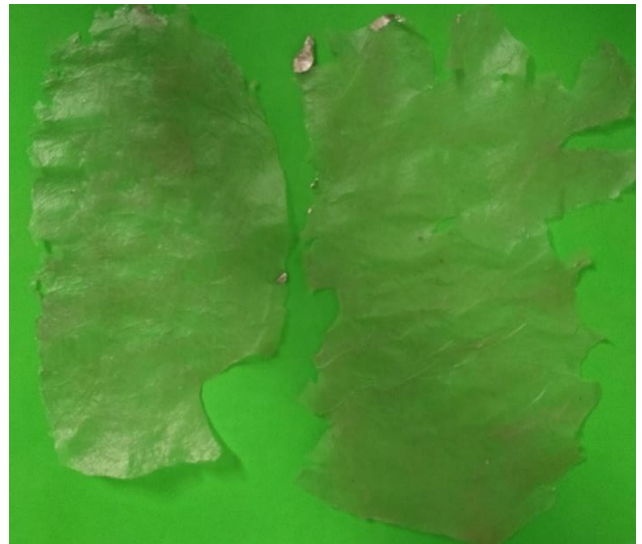
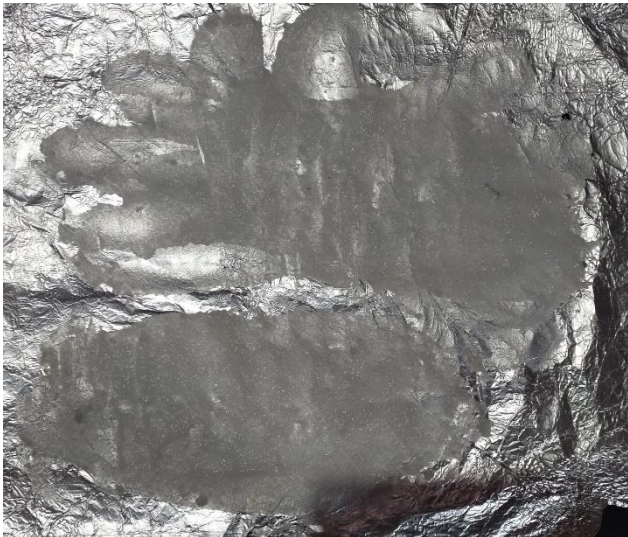
# STARCH EXTRACTION

The how much destruction of starch from the rice crop will depend on how long the rice has been soaked in water. On average 14-16% of rice starch is lost due to fermentation. First, wash the damaged rice sample throughout which remove all the microbes and fermented portion of rice away. Water content is removed from rice by keeping it dry for 2 days to remove foul odor. Dry rice is then converted into powder form and starch is extracted from it.



# BIOPLASTIC MAKING

To produce bioplastic we have taken 10 gram of rice starch in 40 ml of water to with we add 5-5 ml of glycerin and vinegar and boiled under low flame till it is converted into a semi-solid gel. This semi-solid gel is spread on aluminum foil and dried for 2 days. From a total of 65 grams of rice starch, we get 2.2-meter square thin bioplastic produce.



# TESTING

- **Water Resistant Test**

Water resistance is very important property for any bioplastic. For this we have taken water at 3 different temperatures ( cold, normal and hot)and soak the bioplastic into it . In cold and normal water no differ is seen after ½ hour but in hot water after ½ hour it slightly dissolving.



**Cold Water.**



**Hot Water.**



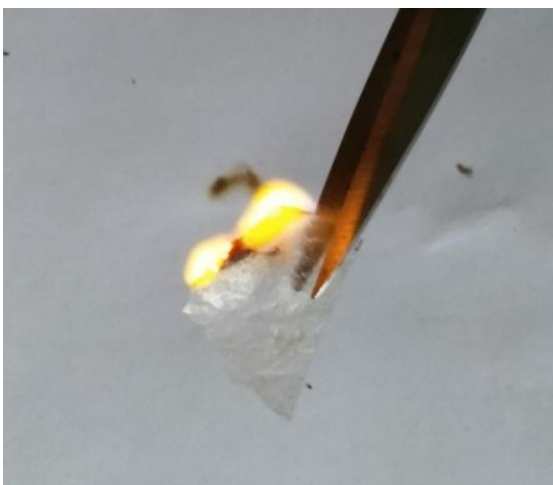
**Normal Water**

- **Strength Test**

This bioplastic can handle up to 1300 grams of weight. This is a good strength for homemade bioplastics. We can increase the strength of bioplastic by using industrial processes.

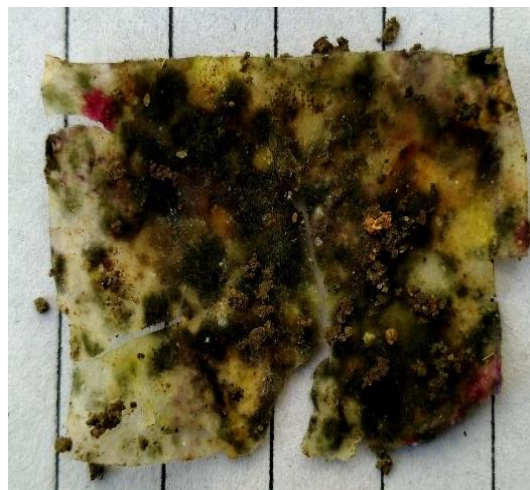
- **Flammability Test**

The bioplastic burns at normal speed and no harmful fumes are produced.



- **Decomposition Test**

Sample of Bioplastic film is keep under the soil for 8 days. In 8 days Bioplastic start to degrade. Microbial growth is seen like fungal, Algal and red colony forming bacteria. This shows bioplastic is eco-friendly, non-toxic and easily degradable.



## **CONCLUSION**

We can make bioplastic from rice crop damaged by flood and heavy rain. There is so much starch in the rice crop spoiled by floods and heavy rains, from which we can make bioplastic in good quality and quantity.

**THANKYOU**