

Chapter 1995) showed that the application of cassava

[Environment](#), [Climate Change](#)



CHAPTER 1 INTRODUCTION

Plastics are made of polymers, since starch is a natural polymer and it is biodegradable, starch is a very favorable raw material in plastic making. Plastic does not decompose easily in the environment, so we come up with an idea in making biodegradable plastic. Biodegradable plastic is a plastic that decomposes naturally in the environment that ends up with a result of having a less harmful environment. In this study, the researcher would like to obtain biodegradable plastic derived from starch-based material.

The cassava starch will be used to make biodegradable plastic to reduce non-biodegradable plastics. This will help solve the concern in environmental problem, climate change, pollution problem that plastics contribute that end up in destroying the environment. Our environment is now polluted, one of the reasons is the non-biodegradable plastic. Plastic can give us environmental issues and pollution. Cassava starch has an effective component in making ideal biodegradable can help replace the conventional non-biodegradable plastic that causes big problems to the earth. Cereda et al. (1992, 1995) showed that the application of Cassava starch have been providing a great appearance, without stickiness, exhibiting luster and also transparency. Using raw material in making biodegradable plastic will help the environment in reducing and recovering issues and pollution.

This study will be able to help the society with its environmental issues and practice us to use environmental-friendly materials that does not add pollution problems. Since plastic are composed of artificial polymers, it takes time to degrade but it was predicted to be decompose a hundred

orthousands of years (Kershaw et al., 2011). Plastic products createlitter, hurt wild life and marine life and threaten the basis of life on earth. So people need an alternative and effective component of plastic that is safe. Through this study, the researcher will able to help the animals, people andenvironment.

It also helps the earth in reducing the pollutants and toxic orharmful wastes. Biodegradable plastic could be an effective solution to thoseproblems and could save many lives in earth including the environment and canbe preserve in future generation. Thisstudy only covers plastic sheets not including other plastic materials such asplastic bags, plastic container, plastic cups and other plastic utensils. Mostof the materials used in experiment are accessible. However, there are fewmaterials that are not available in nearby store.

This experimentation includessun-drying that can end up with a result of long process. It will test thecapability of the cassava starch if it will be an effective component for anideal biodegradable plastic. The researchers started this project on August 2, 2017 up to and conducted it in . Plastic are non-biodegradable (Kržan, 2012)that's why microorganism cannot easily decompose plastic waste (Hasan, 2006) becauseplastics are typically composed of artificial synthetic polymers. Starch-based materials has been marked advancing thedevelopment of biodegradable plastic (Smith and Sangseethong, 2006) one of theexample of renewable natural material that can be use in plastic making iscassava starch (Harsojuwono and Arnata, 2014).

Cassava starch gives a big possibility of being an effective component for an ideal biodegradable plastic. Chapter 2 In order for us to have a successful experiment, we should prepare the following materials. Stove, the stove supply enough heat to achieve the right consistency of the mixture. Next is pot, it is where the mixture of the bioplastic will be mix. Next is measuring spoon, we highlight using tablespoon and teaspoon, this measures the ingredient for the bioplastic making and we also need a whisk for mixing. Lastly a flat container, it is where the finish mixture will be put with the help of spatula by scraping it and it is where the drying method will happen. In conducting our ideal bioplastic, we should have the following ingredients. First is the cassava starch, it is the base or the backbone of the plastic.

Next is the water, the water's role is used as a solvent to get and alter the biopolymer which is the starch into the solution. Next is vinegar, it has acetic acid that helps the starch to dissolve easily because of the presented ions in the mixture. Lastly is the glycerine or glycerol, it act as a plasticizer in which it makes the plastic flexible. To make our ideal bioplastic, we should follow the proper procedures. First, prepare all the things needed. Second, get the pot and put the proper measurements of the ingredients with the use of measuring spoon, the measurements are the following: 1 tbsp cassava starch, 4 tbsp water, 1 tsp vinegar and 1 tsp glycerine; then mix it with the use of whisk until it will look like a milk.

Next is turn the stove on and put the pot on it and start stirring it, in a couple of minutes, it started to change its form like a molding glue, then turning into white gel, just keep stirring until it achieve the thick consistency and a clear

and transparent appearance excluding the bubbles, once you achieve it, stir it again in a couple of minutes. After that, turn off the stove, cool it down for a few minutes and put it in a flat container but you can also directly put finish mixture of bioplastic in a flat container. Then proceed to the drying method, there are many kinds of drying method when it comes in bioplastic: sun-drying method is also a method of it but it takes a couple of days even weeks, but you can also place it in a dry cool place, a perfect condition for drying. You can also use oven but the temperature must be low or else it will melt again and lastly is the hair blower. In this study, the researcher came up with sun-drying method first but it takes so long to dry up to we decided to use the hair blower and oven method in separate bioplastic.