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Pusat
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Bike – Hoe

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ABSTRACT

Agriculture tools are devices which useful in farm practices to assist farmers in various tasks related to cultivation, planting, harvesting and other agricultural activities. This Bike-Hoe main function is to lose the soil for gardening and watering the plant. It was fabricated with some improvements from the existing equipment in term of function. This innovation consists of a bicycle frame with a wheel and a blade or tines attached to the frame. The previous version of Wheel Hoe is required large physical effort to push and manoeuvre. The farmer must bend over from the waist to reach the ground. The objective of this project is to design and fabricate loosen soil equipment with additional function which less effort needed during the loosen soil process for gardening using waste materials. Some fabrication process has been made like designing, measuring, cutting, welding, joining, and installing process. This Bike – Hoe successfully fabricated and function well. Therefore, it can help gardeners and farmers to work more efficiently and effectively in their fields, resulting in healthier crops and greater yields as well as has commercial potential for future.

Keywords: bike; hoe; loosen; soil; agricultural.

1. INTRODUCTION

Previously, soil was loose for gardening by using a hoe manually. Therefore, how to make it easier and at the same time enjoying during gardening? Bike-Hoe is a gardening tool which is used to cultivate soil and weed gardens. It was developed to make gardening and farming tasks easier and more efficient (Kumar et al., 2014). It consists of a bicycle frame with two wheels and a blade or tines attached to the frame. The wheels make it easy manoeuvrability and control, while the blade or tines are used to break up soil, remove weeds and create furrows for planting. The previous version of Wheel Hoe is required large physical effort to push and manoeuvre. The farmer must bend over from the waist to reach the ground. The objective is to make it easier for gardeners to plant seeds or transplant seedlings. This versatile tool is a great alternative than traditional garden hoe, and it is helpful for gardeners with larger plots of land (Chethan, Chender and Kumar, 2018).

Some fabrication process has been made like designing, measuring, cutting, welding, joining, and installing process. The idea behind the Bike-Hoe is to provide an efficient tool that can be easily cycled through the soil, allowing the gardener to cultivate the soil around their plants without damaging the plants themselves (Chethan and Krishnan, 2017). The type of soil that is targeted for this product is peat soil. Overall, this Bike-Hoe was making more efficient, and

sustainable tool for farmers and gardeners, making it a significant innovation in the field of agriculture.

2. METHODOLOGY

Several fabrication processes were used to fabricate the product included designing, cutting, welding, grinding and assembling all the parts. Figure 1 show the flow diagram of the fabrication process. Some of the part of the Bike-Hoe should be made through these processes and the best practice for this product design. Main frame of body through welding method with the base of the water tank backward of the Bike-Hoe. Then the water tank was assemble using bolt and nut.

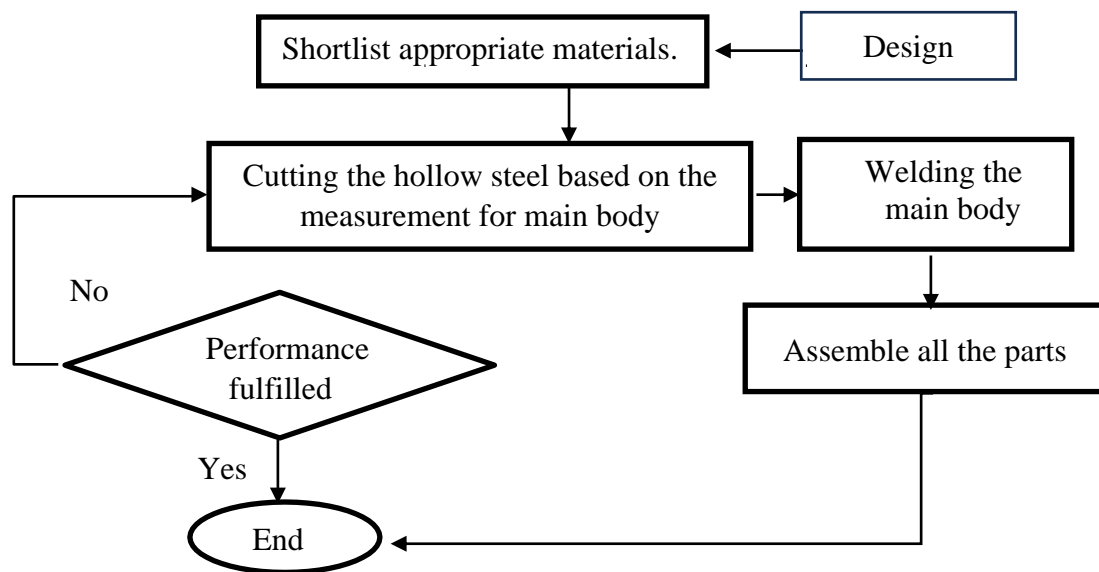


Figure 1. Flowchart of the fabrication process

3. RESULTS AND DISCUSSION

The main function of the prototype is to loosen the soil at small farms such as vegetable farms. Even though the prototype is eligible to be used in small farms, the target market has been reduced to a smaller scale to ensure that the prototype will provide the best outcome to the user while loosening the soil. The farmer usually uses the wheel hoe which they must walk while using it but with this product they can reduce the time at the farm because they just cycle the bicycle, and the cultivator can reach more than the wheel hoe. The time expected for the product to complete the farm chores is between 1 hours for 2 km straight line, at a constant speed 10km/h. A water container is attached to the bicycle to water the soil if the soil is too hard. Figure 2 (a) shows the final prototype of the Bike-Hoe, Figure 2 (b) shows an isometric view of the Bike-Hoe and Figure 2 (c) shows bill of materials. There are some advantages that have been discovered of this product included easy to handle, low maintenance and user friendly.

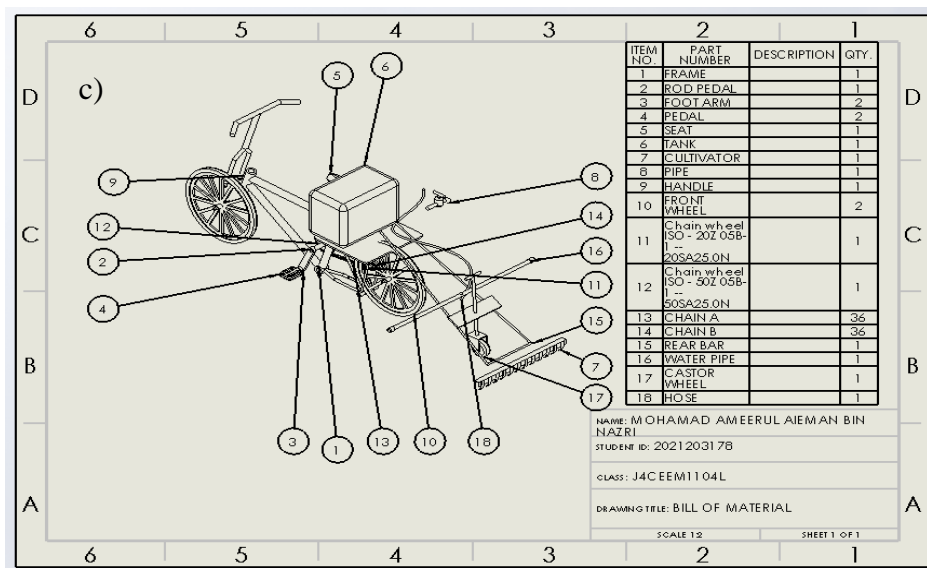
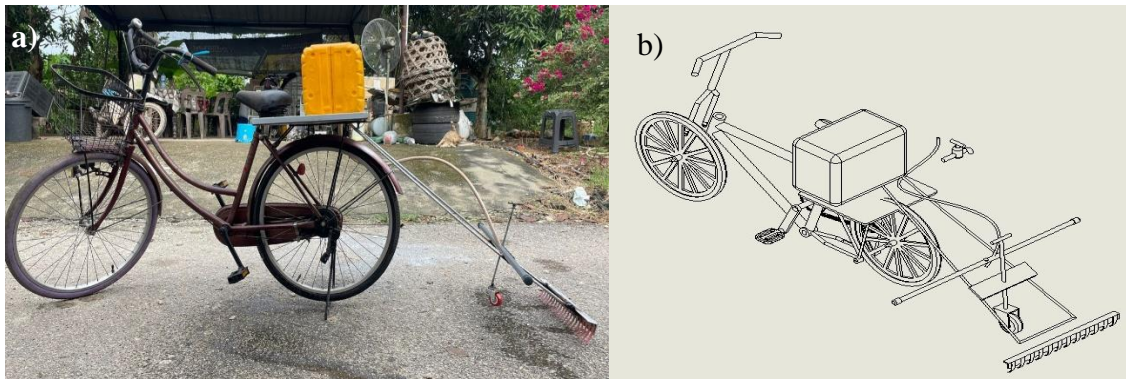


Figure 2. a) Prototype of the Bike-Hoe, b) isometric view of the Bike-Hoe and c) bill of materials of the Bike-Hoe

4. CONCLUSION

The loosen soil bicycle can helps to overcome the problem which is ease the burden to loosen hard soil by watering it through the water pipe. They can easily reduce the time taken to complete the farm chores as well as the energy usage also being decreased. Furthermore, this project also benefits the farmer by loosening the soil more quickly and efficiently. It has a potential for commercialize as low-cost product.

ACKNOWLEDGEMENT

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