

Research Article

Multi-Purpose Seed Drill

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Abstract: This Multi Purpose Seed Drill is a tool that was developed specifically for use by small farmers working on a smaller scale to simplify the process of sowing seeds in their crop areas. They gain various benefits from the product that is created, and at the same time, it contributes to the improvement of the agricultural industry in Malaysia. This product is an invention that can and has immense potential since the cost is not thousands of Ringgit like the existing automatic machine with a high-quality power engine as well as a product that is environmentally and friendly used to human health. This product also emphasizes smaller plants like vegetables and fruits that range in size from one centimetre to one and a half centimetres. It should come as expected that the product has a beneficial effect on both the people within the community and the agricultural industry in Malaysia.

Keywords: tools, seeds sowing, small farmers



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1. INTRODUCTION

The use in the creation of this Multi Purpose Seed Drill is that use materials that do not cost too much and are also available around. This is because the product makes it easier for small farmers who want to plant seeds in large quantities and also the use can save energy. The function of this Multi Purpose Seed Drill as mentioned above can make it easier by just pushing the seed drill and then this seed drill is able to make its hole and then the seed is directly planted and this seed drill can then bury the surface of the hole.

2. METHOD & MATERIAL

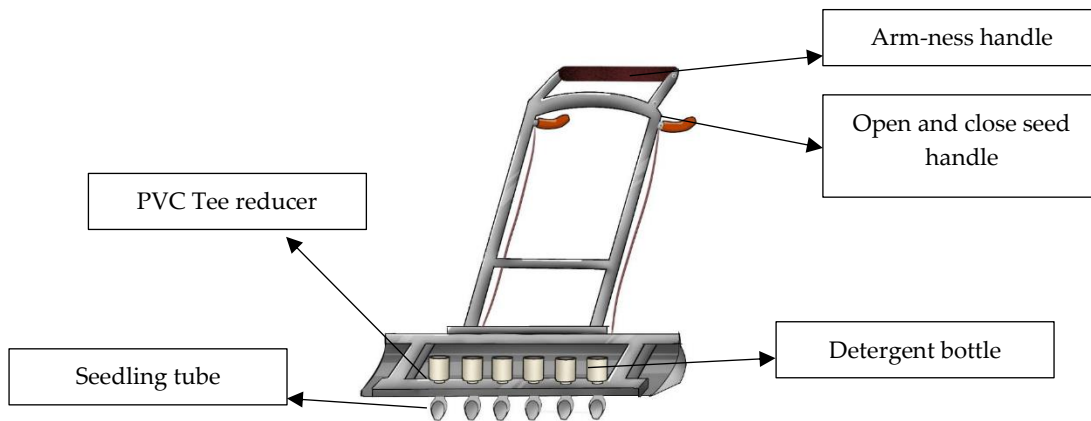


Figure 1: Front view of Multi Purpose Seed Drill



Figure 2: Back view of Multi Purpose Seed Drill

Arm-ness handle:

The place that uses to push and pull the Multi Purpose seed drill. It is made from aluminium alloy which is a nonferrous metal that durable, sturdy and versatile. It is humanized design that provides reasonable support for hands and a comfortable grip. Also, it has protection rubber which is easy to move and not easy to slip.

Open and close seed handle:

Place between arm-ness and function as open, close valve and actuator to change the position of seed holes by remoting the movement of seeds flow.

Seedling tube:

Place between aluminium alloy and made from durable reinforced stainless steel. It may function as a convenient tool to sow the seeds and has depth markings in both centimetres and inches. It also has a comfortable grip as the soil release mechanism. Using waste materials detergent bottle which is recyclable 100% that made from HDPE which is hydrocarbon polymer from ethylene. This detergent

bottle may function as a seed tank that is placed the storage of the seeds. Basically, it is long-lasting, weather resistant, lightweight and super strong. It also resists mould, mildew and rotting.

E-bike:

The special part of the Multi Purpose Seed Drill is by installing an E-bike system which is a durability component. It is a small motor that engages and gives a boost, can zip up hills and cruise over tough terrain without gassing ourselves. The motor will get its power from a rechargeable battery mounted on the seed drill.

Pneumatic tyres:

It can handle a range of surfaces. It also has to absorb what is underneath and make it a more smoother ride and minimize any shaking.

Aluminium alloy:

The below body part since it is light, durable, and strong enough to go in any sort of soil.

PVC:

For the body part, as it is resilient which is it resistant to weathering, rotting, shock and abrasion. It is also cost-effective, yet has the value of durability, a long lifespan, and minimal care requirements. It is also safe since PVC is a non-toxic inert polymer that meets all international safety and health guidelines for both the products and applications for which it is used.

Handle:

Choose aluminium alloy because it is durable, easy to store, firm and sturdy.

PVC tee:

Reducer for the seedling part since it is simple to install and remove. Furthermore, it is dependable in that it provides a leak-proof seal when properly placed.

3. FINDINGS

3.1 PROBLEM STATEMENT

Generally, modern farmers mostly cultivate their crops with high-tech machinery and do not require many workers. This is due to the fact that using a machine has made their labour easier, cultivated crops grow quickly, and able to harvest in a large number of crops. However, due to the high expense, there are still some farmers particularly small farmers, who grow their crops using hand tools instead of machines. Additionally, small farmers get body problems as a result of the labour-intensive growing process because some of them spend a lot of time in the garden to finish their cultivation crop process.

3.2 SOLUTION TO THE PROBLEM

To solve the issue, E-bike system is being integrated, adjustable seed bottles, pneumatic tyres, use PVC for body part, open and close seed handle into this Multi Purpose Seed Drill, which has already been implemented and tested to provide the small farmers numerous functions. This makes sure that with the help of this equipment, small farmers can be entirely safe and protected. In addition, ergonomics is specifically made to focus on physical comfort and promote good posture.

3.3 KNOWLEDGE IMPACT

By using current knowledge and creativity to develop the product and make it more helpful and convenient for Multi Purpose Seed Drill.

3.4 CONTRIBUTION TO COUNTRY AND SOCIETY

This device is really affordable and simple to use. For small farmers who cannot afford to utilize expensive machinery, it is quite helpful. Additionally, it is particularly appropriate for people of all ages, from young to the elderly. To make it useful for small farmers themselves and assist the nation in using the innovative seed drill device to produce income in the agricultural sector generally.

3.5 COST IMPACT

For this product, the range cost that is estimated is between RM500 to RM550.

3.6 NOVELTY

Firstly, making product innovations by using high-quality materials such as E-bike systems. E-bike systems use a battery to support movement, protect the environment, and increase efficiency. Furthermore, adjustable seed bottles had created that can use in a variety of vegetables and fruits that have different plant distances ranging from 1.0cm to 1.5cm. Pneumatic tyres are also being used to help with tool movement over the land area. Other than that, an open and closed seed handle had been installed to make it easier to plant the seed into the hole. Last but not least, PVC for the body and an aluminium cover since it is made of lightweight materials that make the operation of handling tools much easier.

4. DISCUSSION

The products are focused on several groups such as lower costs help small farmers who are unable to use expensive and advanced machineries. In general, machines in the farming sector are very expensive and small farmers do not take advantage of the opportunity to buy due to financial constraints in terms of buying machines and maintaining its. Secondly, it is eco-friendly to dispose of waste materials found around the area and it can also properly dispose of hazardous waste materials. The products also are environmentally friendly and are often produced using renewable and biodegradable sustainable resources. It is frequently safer for consumers to utilize eco-friendly items. Besides, it is a long-term financial saving which is another benefit of purchasing eco-friendly items. Third, this effortless product may attract young people to become farmers to be active in agriculture. Other than that, usually, the small farmers will feel tired and sick due to doing heavy work and this affects their health. The products, are ergonomic and specially designed for focuses on bodily relaxation and give comfortable body posture. This is because ergonomic posture is important in maintaining a good posture and it helps reduce stress and strain on the body, especially a part of the neck, shoulders, and back. In turn, it may help to avoid muscle and joint pain, fatigue, and discomfort. Additionally, good posture helps improve breathing, digestion, and circulation. Lastly, the product is portable easy to carry to any other place and easy to store in the store or anywhere. The product material uses is light and makes it easy for small farmers to move anywhere even it has to go through hilly areas.

5. CONCLUSION

In conclusion, the Multi Purpose Seed Drill proved effective in planting several types of seeds with precision and accuracy. This idea has the potential to significantly increase agricultural productivity and efficiency. Small farmers can save time and work by seeding in many rows and depths. The Multi Purpose Seed Drill may also be programmed to plant a wide range of crop varieties, making it helpful to a wide range of small farmers. The Multi Purpose Seed Drill is an environmentally friendly agricultural equipment, each component is easily replaceable and recyclable and it is also user-friendly as its durability helps small farmers maintain their body posture. Overall, the Multi Purpose Seed Drill is a game changer in the agricultural industry, offering a cost-effective and sustainable answer for current farming practices.

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