

ACADEMIC YEAR

2019-20



IES College of Engineering

Best Practices
Academic Year 2019-20

Practice I:

1. Title of the Practice:

“Agro Tools” - Farmers Friend

2. Objective of the practice

Agricultural tools such as sickle, plough, hoe, drills, etc. are implemented in agricultural activities to make the process more productive and efficient. There are a large number of agricultural tools used by the farmers for cultivation. Our main objective is to produce cost effective and user friendly agricultural tools to help farmers.

3. Context

- In Kerala most of the people are having small cultivatin land around there surrounding.
- Such people are in search of small agro tools for cultivating small area of land.
- Surveys were taken from Agro Consortium and discussion was made regarding the concept.

4.The practice

The following Agro tools were made from waste materials to help small cultivators.

BEEHIVE STAND

- The Beehive stand also helps to support beehive away from damp ground that causes damp rot and shortens the life of the wood.

HAND ESCAVATOR

- This hand tool is used to remove soil and making medium level pits with less effort. It also uses to relocate the plants.

FRUIT PICKING TOOL

- *Fruit pickers* are the best *tools* that you can *use* to *harvest fruits* because they maintain the quality of fresh *fruits*. Mango, Orange, Tamarind, Guava etc. Also uses to honey harvest.

WHEEL HOE



For weeding and intercultural operations in vegetables and other crops sown in rows. It is used in pushing and pulling mode for removing weeds.

WHEEL TILLER

- A Wheel tiller is a manually operated tool that helps to break up the ground for planting and aerate the soil, loosens and mixes the dirt. It is the easiest and most dependable method and it reduces time and efforts.

HAND TILLING TOOL

- This is a mechanical tool for household purpose. This product is dedicated to common man who wants to make his surrounding area a productive micro farm by making tilling an inexpensive and easy task.

PLANT TRANSPLANT TOOL

- This is a tool meant to transplant plant from one location to other. We might come across sapling generation, budding and such developments in initial stages of a plant nurturing. This may require replanting or relocating in the next stage. This is an effective toolkit for old age or young farmers to reduce their efforts in farming or planting.

HAND PLOUGHING TOOL

- Bringing a tractor or large equipment's for ploughing might not be a practical solution when you are planning to prepare a small area near your house for farming. This

hand ploughing tool is a solution to this problem. Land preparation can be made easy using this special tool.

ROTATING DISINTERING TOOL

- This tool helps to unearth and create holes. It also reduces the effort by eliminating the need of removing soil from the dug area. Soil automatically comes out while rotating and helps reduce time and effort to dig.

TWISING HAND TILLER

- This tool is used to loosen soil, remove weeds, roots and similar twigs with ease. A single tool can replace hoe, pickaxe and reduce operation time.

5. Evidence of Success

- Research and Development Cell, Department of Mechanical Engineering, IES college of Engineering conducted an inauguration of the “Launching of Agro Tools” on 22nd of March 2021
- Function was inaugurated by Adv. V S Sunilkumar, Honorable minister of Agriculture, Kerala State
- Tied up with Agro Consortium for further development of products
- Bee-hive stand (100 nos) were made in the department and hand over to Vydhya Amrutham Herbo Minerals , Nilambur, Malapuram District

6. Challenges

To develop the product

1. Training of manpower
2. Time management
3. Increased Physical efforts

Practice II:

1. Title of the Practice:

“IES E -Cycle” - An initiative to attain Sustainable Development Goals.

2. Objective of the practice:

The important objective of IES E –Cycle is eco friendly. This initiative mainly brings up pollution control and zero emission. Conversion of old cycles to electric cycles at very low cost .Long lasting batteries

3. Context:

1. Developing an alternate mode of transport, which has an advantage of low running and long range.
2. Developing environmentally sustainable zero emission vehicle.
3. Effective utilization of solar power.
4. Reaching grass root level population of India to make a common man’s daily commutation affordable

4. The Practice

A solar bicycle is a bicycle which runs using the electrical energy of battery to run the hub motor which ultimately runs the bicycle. Solar energy is used to charge the battery. Two or more Photovoltaic cells may be used to harness solar energy to generate voltage to charge the battery. Battery gives the required voltage to the hub motor mounted on the rear wheel to run the bicycle. Solar bicycle are not sold generally in our everyday life but there manufacturing can be increased to prevent environmental pollution. These are primarily used as practical projects and are also sometimes sponsored by government agencies. There have been many patents on electrical vehicles in different countries and thus electric vehicles are not a very new concept. Utilizing solar energy to charge the battery and combining this concept with the concept of electricity generation pedaling is a new concept and there have been very less research in this regard.

There are two types of solar panels that are generally used that is, polycrystalline panels and microcrystalline solar panels. The polycrystalline panels are having less efficiency as compared to microcrystalline panels. Polycrystalline panels have efficiency of approximately 15 – 20% while microcrystalline panels have efficiency of 50 -60%. There are different types of batteries used in electric vehicles like lead acid batteries, lithium ion batteries, Nickel cadmium batteries, etc. Different batteries they have their different advantages for different applications. As far as solar bicycles are concerned lead acid and lithium ion batteries are most commonly used. Lead acid batteries have lower cost, higher current carrying capacity but have smaller life and are heavier. While lithium ion batteries have lower weight, but have higher cost and there are chances of explosion

Slowly solar bicycle have gathered attention from all over the world and there have been many projects being done on this topic. The motor used is a permanent magnet Hub motor which will be mounted on the rear wheel. Bicycles and motorcycles are the two important form of two-wheeler transport in India. Bicycle has an advantage of very low running cost but has a drawback that, its range is mainly dependent on the physical fitness of the rider. On the other hand motorcycle has a very high range as compared to the bicycle but its running cost is very high. With increasing oil price the running cost of motorcycles will go up further in coming years. So the present need is to develop an alternate means of transport which has the advantages of both bicycle and motorcycle. Due to the increasing oil price this alternate means of transport should be powered by sources of energy like solar, wind etc that are freely available in nature and also free from pollution. Motorized bicycle powered by solar energy is an answer to all the above present needs.

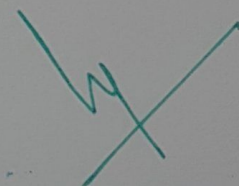
5. Evidence of Success

- In human transportation as a personalized vehicle.
- For inter departmental transportation in huge campuses.
- In industries for different level personnel to move around to inspect the work progress.
- Can be used in hospitals, Airports, Shopping malls, IT campuses, Hotels & resorts, Power stations, manufacturing units, etc.
- As it is a bicycle therefore it also works manually using pedals hence helps in exercise

6. Challenges

To develop the product

1. Training of manpower
2. Time management
3. Initial funding



PRINCIPAL
IES COLLEGE OF ENGINEERING
CHITILAPILLY - 680 551
THRISSUR - KERALA