

# Design and Fabrication of Electric Weeder Machine

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**Abstract:** Weed is a plant that is considered undesirable in a particular situation, it is basically “a plant in the wrong place”. Weeds are needed to be controlled because it reduces crop quality by contaminating the commodity. Weeds reduce farm productivity, they invade crops, smother pastures and in some cases can be harmful for the livestock. They aggressively compete for water, nutrients and sunlight, resulting in reduced crop yield and poor crop quality. Weed control is one of the most difficult tasks on an agricultural farm. Mechanical weed control is easily adopted by farmers once they get convinced of its advantages. Motorized agriculture weeding machine not only uproots the weeds between the crops rows but also keeps the soil surface loose, ensuring better soil aeration and water intake capacity. Weeding by motorized Weeder reduces the cost of labour and also saves time. In human operated Weeder, muscle power is required and so it cannot be operated for long time. The traditional method of hand weeding is time consuming. In this Battery drive motorized weeder we use motorized system, which is powered by battery.

**Keywords:** Weeder, Motor, Battery, blade

## I. INTRODUCTION

Weed control is one of the most difficult tasks in agriculture that accounts for a considerable share of the cost involved in agriculture production. Farmers generally expressed their concern for the effective weed control measures to arrest the growth and propagation of weeds. In Indian agriculture, it's a very difficult task to weed out unwanted plants manually as well as using bullock operated equipment which may further lead to damage of main crops. More than 33 percent of the cost incurred in cultivation is diverted to weeding operations there by reducing the profit share of farmers. A weed is essentially any plant which grows where it is unwanted. A weed can be thought of as any plant growing in the wrong place at the wrong time and doing more harm than good (Parish, 1990). It is a plant that competes with crops for water, nutrients and light. This can reduce crop production. Some weeds have beneficial uses but not usually when they are growing among crops.

### 1.1 Types of Weeder

Power weeders are used in farming activities to remove the weeds and control the plant from degrading the top fertile layer of the soil or say the fertility of the soil.

- Front tine
- Rear Tine
- Mini Cultivator

#### Front Tine:

Front tine tillers are designed for breaking up light soils, weeding, and general garden maintenance. They have several features that make them ideal for use in small-to-medium-size gardens with soft soil conditions.

#### Advantages:

1. Adjustable tine width.
2. It can narrow gaps between plants to rows up to two feet wide.

**Disadvantages:**

1. Require more effort and potentially multiple passes.
2. A rear tine tiller on small patches of garden and maintenance is overkill

**Rear Tine:**

Rear tine tillers break up hard ground and till it into soft garden soil that can easily be cultivated and sowed. They allow you to loosen soil effortlessly without the exhausting labour. As the powerhouses of the tiller family, rear tine tillers are the tool to choose when you're working with large plots of soil that's hard and rocky or heavy with high clay content.

**Advantages:**

1. Rear tine tillers are considered stronger, can turn the soil deeper.
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**Disadvantages:**

1. It tends to be more difficult to use.

**Mini Cultivator:**

Mini tillers might be useful for home gardeners because their narrow size and increased maneuverability often makes them more practical for working around shrubs, trees, and perennial plants.

**Advantages:**

1. The mini cultivator reduces a lot of manual labor and time.
2. It also helps in pumping water, harvesting, threshing & transporting crops.

**Disadvantages:**

1. Low productivity
2. It need to replace discs in manual rotary cultivators

## II. LITERATURE REVIEW AND OBJECTIVE

### 2.1 Objectives

The objective of the project is to design, construct and test battery operated weeder, to provide the best opportunity to farmer's to easily control and removing the weed from farm. Weeding with the use of tools like cutlass and hoe requires high labor force in a commercial farming system hence mechanical weeder is necessary to reduce the labor force. Environmental degradation and pollution caused by chemical is reduced by the use of Mechanical weeder. Low effective operation, high work effort and high time requirement for different types of hoe or cutlass, can be over come with the use of mechanical weeder.

### 2.2 Literature Review

For the project we studied reviews having Authors namely R. Mangesh Kumar, M. Mayakannan : Design and fabrication of battery operated weeder machine.

Pream Kumar, Sumit A : Battery Powered Weeder

Akash Singh, Kartik shriwastav : Desing and Fabrication of Battery Operated Agriculture Weeder

Mr Sanket Desai, Shuham Joshilkar : Design and Fabrication of Battery Operated Multicrop Weeder Machine. And so many other reviews

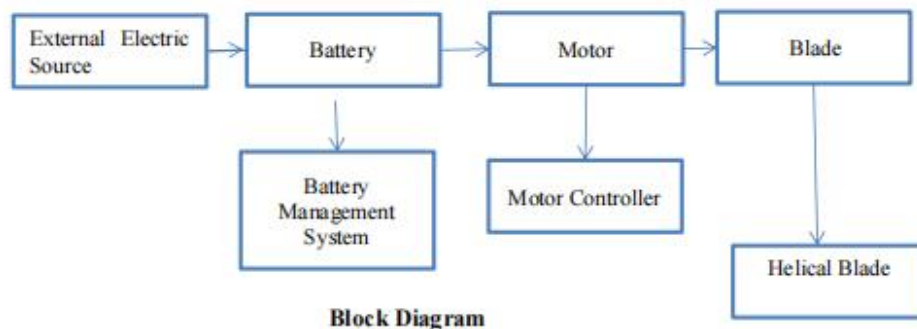
### Summary

Weed control is one of the most difficult tasks in agriculture that accounts for a considerable share of the cost involved in agriculture production. Farmers generally expressed their concern for the effective weed control measures to arrest the growth and propagation of weeds In can agriculture, it's a very difficult task to weed out unwanted plants manually

as well as using bullock operated equipment which may further lead to damage of main crops. More than 33 percent of the cost incurred in cultivation is diverted to weeding operations there by reducing the profit share of farmers.

### III. WORKING PRINCIPLE

An electric weeder is a piece of garden machinery that is powered using a battery or mains electricity, used to improve soil quality and drainage by breaking up compacted soil ready for planting. Electric weeder are used in small to medium-sized gardens to break down hard ground and compact soil. They get the earth nicely loosen up so that it's ready for planting. The tines on an electric weeder work at a rapid rate and get deep into the ground, so it'll save you from hours of manual labour with a garden fork.



### IV. CONCLUSION

Agricultural development plays important role as a driver of rural poverty reduction. The effort required to develop a weeder will meet the demand of farmers. The efficiency of weeder should be satisfactory and it is easy to operate. It was faster than the traditional method of removing weed. Less labor needed and it is more economical than hand weeding. Here do not use any fuel and power. Hence maintenance cost is very less. Cost of weeding by this machine comes to only one-third of the corresponding cost by manual laborers. The fabrication of Low cost Weeder is done with locally available material. The overall performance of the weeder was satisfactory.

### ACKNOWLEDGMENT

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**APPENDIX**

