

# SOLAR POWERED CROP CUTTER AND PESTICIDE SPRAYER ROBOT

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## **Abstract:**

Rapid growth of various high-tech tools and equipment's makes our jobs done comfortable and sophisticated. The project aims at fabricating a grass cutting machine system which makes the grass. The living standard and prosperity of a nation vary directly with the increase in the use of power. The electricity requirement of the world is increasing at an alarming rate due to industrial growth, increased cutter-based motor running through solar energy. Power plays a great role wherever man lives and works and extensive use of electrical gadgets. The best alternative source is smart operated solar energy.

Solar energy plays an important role in drying agriculture products and for irrigation purpose for pumping the well water in remote villages without electricity. This technology on solar energy can be extended for spraying pesticides, fungicides and fertilizers etc., using solar sprayers.

## **Introduction:**

Moving the grass cutters with a standard motor-powered grass cutters is an inconvenience, and no one takes pleasure in it. grass cutter machine with engine creates noise pollution due to the loud engine, and local air pollution due to the combustion in the engine. also, a motor-powered engine requires periodic maintenance such as changing the engine oil. even though electric solar grass is environmentally friendly, they too can be an inconvenience. along with motor powered grass cutter, electric grass cutters are also hazardous and cannot be easily used by all and moving could prove to be problematic and dangerous grass cutter machines have very popular today. most common machines are used for soft grass furnishing. in our project grass cutter machine, we are aimed to develop for operation and construction. the main parts of the grass cutting machines are dc motor, battery for charging it through solar panel. it is placed in a suitable machine structure. the motor has 8000 rpm and it is connected to the electric supply by the use of a cutter. motor controlled by an electric switch for easy operation. the raw materials mainly used are motor, switch, wheel, wire, square pipe, paint, insulating material and other standard item like nuts, bolts, and washer and reverts. the machines required for manufacturing includes welding machine, grinding machine, cutting machine the aim of the project is to make the grass cutter which operate on solar energy hence save the electricity and reduce manpower.

grass cutter connected to shaft of the pm dc motor which rotates the blade by using dc supply. at present in order curtail global warming and ozone depletion, the government of india is offering subsidy for the solar equipment. the industries are producing these components in mass production, so the cost of system may come down. so in future it is expected to run on equipment's by using smart operated solar energy

### Reason For Selecting the Problem

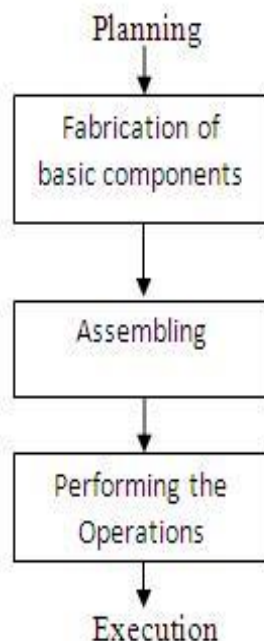
- Lack of mechanization in farming
- Required excess efforts for different process.
- Required more man power.
- Excess time consumption for performing individual process.

### Objectives:

The objective of this paper is to present the status of the current trends and implementation of Agricultural and autonomous systems and outline the potential for future applications. Different applications of autonomous vehicles in agriculture have been examined and compared with conventional systems and are proved as efficient and effective

- To reduce human effort in the agricultural field with the use of small robot.
- To perform al at single time, hence increases production and saves time.
- To complete large amount of work in less time.
- Farmer can operate this robot through remote by sitting at one side and he can operate easily.
- The usage of solar can be utilized for Battery charging. As the Robot works in the field, the rays of the sun can be used for solar power generation.
- To increase the efficiency, the solar power is used and the Power output can be increased.

### Methodology:



## **Working principle:**

In this project the main part is which control the all assembly of project. The user is with the control manual smart solar operated grass cutter and agro sprayer the user has to select that in which mode the system has to operate either it is in manual mode and the auto mode in manual mode the user has to decide that where to move robot but in auto mode the robot will decide that where it wants to go. By using ultrasonic sensor the robot will move. The blade of the robot is handmade design the motor used for the cutter is the brush less dc motor and it has the rpm of 5000 it operates on 12v dc supply. The battery is source part for the project the battery is supplying the 12v dc for the motor and pump. The Charged on the solar plate once the battery is fully charged the robot will move properly. Also the second application is the pesticide spreading here we use the 12v dc operated pump with the 1.5m length pipe and the spreading nozzle is connected at the one end of the pipe. For supplying water to the and storing pesticide we use the water tank of 2 liter.

## **Advantages, disadvantages and applications:**

Advantages: -

1. There is no need of field excitation is required in case of permanent magnet DC motor.
2. It does not cause any environmental pollution like the fossil fuels and nuclear power.
3. Environmentally friendly.
4. Maintenance-free operation.

Disadvantages:-

1. There is also a chance of getting the poles permanently demagnetized (partial) due to excessive armature current during starting, reversal and overloading condition of the motor.
2. Another major disadvantage of PMDC motor is that, the field in the air gap is fixed and limited and it cannot be controlled externally.

Applications:-

1. PMDC motor is extensively used where small DC motors are required and also very effective control is not required, such as in automobiles starter, toys, wipers, washers, hot blowers, air conditioners, computer disc drives and in many more.
2. This project is used as a Lawn mover.