

VISVESVARAYA TECHNOLOGICAL UNIVERSITY

BELAGAVI



A Project Report

On

“SOLAR OPERATED REMOTE CONTROLLED  
PESTICIDE SPRAYER”

Submitted in Partial fulfillment of requirement for the  
Bachelor of Engineering

in

MECHANICAL ENGINEERING

By

ANIL KITTUR

JVC17ME003

DODDA BASAVA B

JVC17ME008

JAFERSADIQ M ABDUL KHADER BASHA

JVC17ME023

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JVC17ME028

Under the guidance of

**Dr. SHIVA KUMAR MODI**

Professor,

Department of Mechanical engineering



DEPARTMENT OF MECHANICAL ENGINEERING

RAO BAHADUR V MAHABALESWARAPPA ENGINEERING COLLEGE

(FORMERLY VIJAYANAGAR ENGINEERING COLLEGE)

CANTONMENT, BALLARI-581004, KARNATAKA

2020-2021

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VEERASHAIVA VIDYAVARDAHKA SANGHA'S  
RAO BAHADUR Y MAHABALESHWARAPPA ENGINEERING COLLEGE  
(FORMERLY VIJAYANAGAR ENGINEERING COLLEGE)  
(AFFILIATED TO VTU, BELGAVI )  
BALLARI-583104, KARNATAKA

DEPARTMENT OF MECHANICAL & ENGINEERING

**CERTIFICATE**



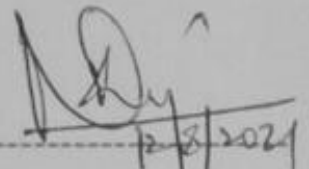
This is to Certify that project work entitled "SOLAR OPERATED REMOTE CONTROLLED ESTICIDE SPRAYER" carried out by bonafide students of Rao Bahadur Y Mahabaleswarappa Engineering College Anil Kittur (3VC17ME003), Dodda Basava B (3VC17ME008), Jafersadiq M Abdul Khader Basha (3VC17ME023), KaisarAhmed D (3VC17ME028) in partial fulfillment for the award of **Bachelor of Engineering in Mechanical engineering** of the Visveswaraiah Technological University, Belgaum during the year 2020-2021. It is certified that all corrections/suggestions indicated for internal Assessment have been incorporated in the Report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed for the said Degree.



Dr. S k MODI  
Project Guide



Dr. Hanumantha Reddy  
Principal



12/8/2021

Dr. KORI NAGARAJ  
Head of the Department

## ABSTRACT

Today's Energy Demand is the great challenge for our Society. Conventional Energy (fossil fuel, coal, nuclear energy etc.) can be widely used in India such as industry, Power plant etc. using Conventional Energy there is any Exhaust that can be come out after pollutant which is harmful to our Environments, In Such situation we should move towards some Non-conventional energy (Solar energy, Wind energy, Tidal energy) Non-conventional becomes very popular for all kinds of developments activates such as drying agriculture products for irrigation purpose and for spraying purpose. In this paper we are trying to make unique equipment for cultivators. My contribution on my project is that from enquire on 20 farmer I can collect data regarding spraying and how exactly farmer can facing problem while spraying. Farmers mainly use hand operated or fuel operated spray pump for this task. this conventional sprayer causes user fatigue due to excessive bulky and heavy construction. This motivated us to design and fabricated a model that is basically trolley based solar sprayer. In our project here we can eliminating the back mounting of sprayer because Ergonomically it is not good for farmer health point of view during spraying in this way here we can reduce the users fatigue level.

There are many types of pesticides sprayer are available in India. But mostly used sprayer is backpack sprayer which is used by farmers because it is cheaper, easy to use and main thing about it is less costly. With the help of this machine farmer spray pesticides in their farm, but it requires lot of time and thus high operational cost. Also, the farmer which is spraying pesticides is affected by it as it is harmful to human health and human also affect by the lumbar pain due to weight of equipment.

This method used lots of time and affects human health adversely. This paper suggests machines which save time and operational cost. Also saves human from affecting adversely.

## CONSTRUCTION PRINCIPAL

The machine consists of the main body frame, solar, battery, DC Motor, Nozzles, Pipes, Wheels, Tank and DC Pump. This is the four wheel drive machine. All the four wheels are individually driven by 30 RPM DC Motor. Frame is made up of mild steel. Its width 35 cm, length 50 cm and height is 30 cm. The main frame is covered from all the sides with plywood sheets. Vertical arm is attached at centre of back side of main frame, carrying horizontal arm. The nozzles are fitted to the pipes which are attached with the vertical and horizontal arm. The horizontal arm is movable on vertical arm. The tank is kept at the centre of the body. The DC Pump is kept at the back side of the tank while the battery is kept at the front side of same. The Remote is used to operate the vehicle. Range of the remote is 2-3 m.

### SOLAR PANEL



FIG. 1. SOLAR PANEL

A **solar panel** (**photovoltaic module** or **photovoltaic panel**) is a packaged interconnected assembly of solar cells, also known as *photovoltaic cells*. The solar panel can be used as a component of a larger photovoltaic system to generate and supply electricity in commercial and residential applications. Because a single solar panel can only produce a limited amount of

**Wheel:** Wheel is used to transfer machine from one place to another by rotary motion of it. Specifications of wheels are as follows: Radius – 8" Wheel material – nylon and plastic



FIG. 4 WHEEL

**Nozzle :-** Nozzle is the main device in any spraying machine. It decides how much area is covered by spray. It generates spray pattern. Following are nozzle specification:

Nozzle Type – Nylon plastic Nozzle

Nozzle Angle – 90 degree

Nozzle radius – 1 mm = 0.039 inch

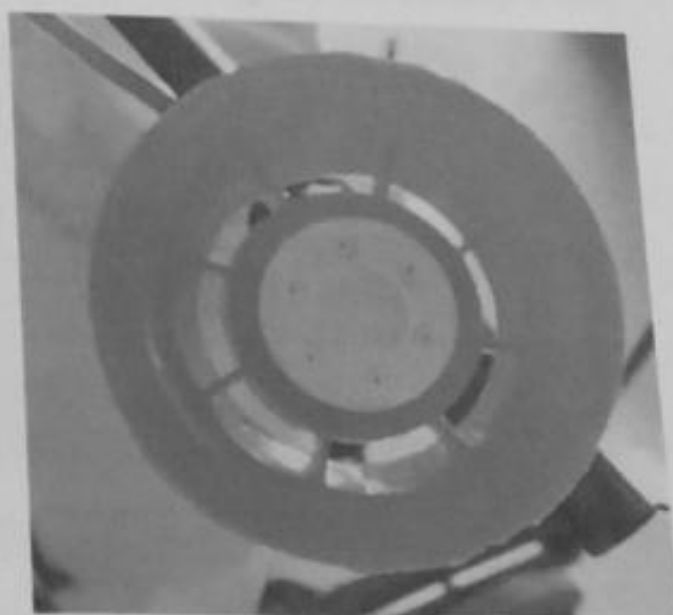


FIG. 5 NOZZLE

**DC Motor** :- DC Motor is used to rotate the wheel which is used to move the machine from one place to another.

Following are the specification of DC Motor :

90 RPM DC Motor

Current:- 30 watt

Voltage:- 12 V



FIG. 6 DC MOTOR

**Pipe** :- Pipe is the unit used to carry water from sump or tank to DC Pump and from DC Pump to nozzles. To reduce cart weight and to eliminate corrosion effect it is made up of plastic

**Metallic T & square** :- T is nothing but the 3 way joint in which it accepts the liquid flow from one direction and transfers it to other 2 directions and vice versa. Also square is same to it but having 4 directions. Both are made up of metal and having internal diameter 8 mm.



FIG. 7 T FRAME

## CONCLUSION

- ✓ The prototype gave a fairly good rate of area coverage with a reasonably low operating cost. The system addresses the issue of dearth of agricultural labour and ensures safe agricultural practices by completely eliminating, handling of harmful chemicals and extensive labour by the farmer as it can be operated remotely.
- ✓ The proposed spraying robot is suitable for small and medium scale farmers. Large scale production of the spraying unit will reduce the cost significantly giving partial thrust to Indian agriculture practices.
- ✓ The unit can be scaled up based on the requirement. The developed system can not only be used for spraying fertilizer, pesticides, fungicides, lawn watering and also for maintenance of sports fields like cricket ground.
- ✓ With the proposed design of the robot in this project, the above-mentioned gaps can be eliminated completely. This project integrates two of the major activities in agriculture which are Pesticide spraying.
- ✓ Workload on the farmers is decreased and health problems also. Successful in constructing robot which can be travelled on rough, uneven surfaces also and weighing enough load of pump and other equipment. Successful in developing a robot whose construction is enough to withstand the challenges of the field.





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Estd. 1980  
 Approved by AICTE, New Delhi  
 (Affiliated to Visvesvaraya Technological University, Belgaum)

Academic Year 2020-21  
 DEPARTMENT OF MECHANICAL ENGINEERING

**UG PROJECT PHASE - 1**  
**EVALUATION SHEET**  
 (17MEP78 / 15MEP78)

Date: 22/01/2021

1. TITLE OF THE PROJECT:

Solar Operated RF Controller, Room Sprayer

2. NAME OF THE PROJECT GUIDE: Dr. Shiva Kumar Modi.

3. DETAILS OF PROJECT ASSOCIATES:

Batch #	Name of the Student	USN	Phone #	E-Mail ID
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	Anil S. Kittur	17ME003	9114000000	Anilkittur123@gmail.com

4. EVALUATION:

Sl#	Name of the Student	USN	Project Phase - 1 Marks (Refer rubrics on next page)						Total Marks Obtained (For 100)
			1	2	3	4	5	6	
1	Dodda Basava B	17ME008	10	10	10	10	05	50	95
2	J.M. Abdul Khader Basha	17ME023	10	10	10	10	05	50	96
3	Kaiser Ahmed	17ME028	10	10	10	10	05	50	96
4	Anil S. Kittur	17ME003	10	10	10	10	05	50	97

5. Viva-Voce (C. I. E.) Committee Members:

Sl#	Name of the Faculty	Signature
1	Dr. Veerabachappa Atgus	
2	Prof. Mangunath Suresh	
3	Prof. Basava Prakash	

6. SIGNATURE OF THE GUIDE:

7. SIGNATURE OF H. O. D: