Elimination Of Weed By Using Solar Powered Robot

Prof. Ganesh.B.Murade[1], Mr.Ajay.S.Shirsath[2], Mr.Vikram.B.Shirsath[3], Mr.Prashant.V.Narwade[4]

[1]Assistant Professor, Dept of Electrical Engineering
[2, 3, 4]Dept of Electrical Engineering
[1, 2, 3, 4, 5] Dr.VithalraoVikhePatil College Of Engineering, Ahmednagar,
Maharashtra, India

Abstract- *Elimination of weeds by using solar powered robots, these technique is new and these robots are totally works on solar energy .robot absorb the solar energy and stored in battery and its efficient operation, due to the robotic work reduces the human extra efforts and weeds are in field are reduces*

By using these solar powered robots it having so many advantages like time required is less, and fast operation, system is totally automatic.

Keywords- solar robot, agricultural, weeds, diposal, Image processing.

I. INTRODUCTION

India is developing country & it is depends upon agriculture. India is Country of agrarian most of the people depends on farming for life our country is the 2nd largest producer of agricultural product. In Fact Agricultural Sector contributes as much as 6.1%. (as of 2017) to our gross domestic product(GDP).

Farming is the oldest activity in our country. The major problem occurring is the weed which is unwanted substance. These weed is eliminated by weed cutting robot is solar energy. This robot having clean operation. It not does pollute the air, also it does not having any type of noise pollution.
This robot also used for spray the fertilizers on crop.

II. DEFINATION OF WEED IN AGRICULTURE.

- "Weed is defined as unwanted plant not sown in the agriculture by the farmer is known as weeds."
- Weeds are shown in any place. Weed is unwanted &undesirable plants. Weeds are harmful for main crops & due to weeds is decrease production strength of crops.
- It is also defines as the plant growth in same line in main crop which is unwanted parts.

III. WEEDS DISPOSAL AND ITS IMPORTANT

Weeds disposal plays important role in agricultural economy. Weeds disposal is affected on the crop production. In agricultural sector weeding is the most important part for the growth of production of crops.

Now a days mechanical equipment is used for weeding is hoe and khurpetrowel and also used for destroyed the weed flame weeded which is destroyed the weed by applying fire on weed plant. The weeds are in the contacts of land and water resources. Weeds are sometimes useful for mulching and it is also harmful for crops.

Total annual losses in agricultural sector in India are following below

1. Weeds: 45%
2. Insects: 30%
3. Diseases: 20%
4. Other losses: 5%

Annual losses in India by the agricultural sector are about RS1980cr.weeds losses are more than the combination of insects and diseases.

IV. IMAGE PROCESSING

Image processing is the important part of the elimination of weeds by using solar powered robot .in image processing image will be captured by camera module these camera module is front side of the robot and the these signal can be transmitted to the raspberry-module .after these process of image processing the module detects the weeds and send the command to the circuit the weeder blade is operate and the weed will be cut. These require very short time of operation. The speed of the image captured is fast as possible.

V. METHODOLOGY

The solar operated robot is used in onion field during growth and having in large area .the robot is operated in solar energy thus it required solar panel. The robot mainly consist two parts hardware and software.

Hardware part having Raspberry pi module, camera, IR sensor, relay, motor, solar panel, etc. Software part consist python codes which will executed in raspberry pi model.

VI. FIELD STUDY

Major onion are producing states are Maharashtra, Karnataka, Madhyapradesh, Gujarat, Bihar, Tamilnadu, etc

Observation from onion field are noted given below

Table 1: field data

Space between two rows of onion	Approximately 75cm
Space between two plants of onion	Approximately 15 cm
Period of until onion plant until harvesting	6-10 weeks depending on soil
Weeding process	At least 3 times 1. When plant is not mature. 2. When plant is mature. 3. After rain

A. FIELD AFFECTED BY WEEDS IN ONION FIELD


VII. ARCHITECTURE
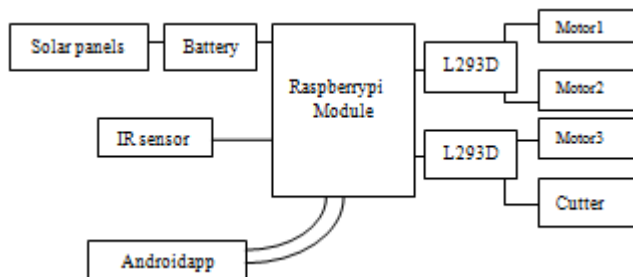
When light is incident on solar panel of the robot it receive solar energy and these energy is converted into electrical energy and stored in batteries these battery having dc supply is useful for run the motor and start the working of the robots and IR sensor detect the obstacle between the agricultural field . The main part of the robot is camera. it detects the weeds and crops and weed signal send to the raspberry pi modules .it senses the signal and give the signal to the motor the motor will operates and which connected J-Shaped blades and cut the weeds. the robot also operated by sing mobile apps.the camera detect the image and raspberry pi module and having in module already stored the image and then it will compare the crop and weeds and then it send signal to blades to cut it.

VIII. COMPONENTS USED IN ROBOTS

- Raspberry Pi module
- Solar panel
- Power supply
- Apps
- IR Sensor
- Raspberry pi Camera module
- Charging circuit
- Buzzer
- Ultrasonic sensor
- L298 Motor driver
- Wheel
- DC Motor Raspberry Pi module

IX. FLOW CHART FOR WEED DETECTION
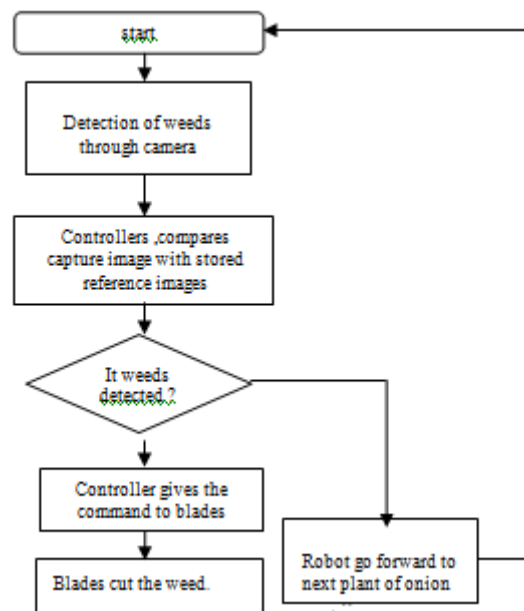
X. CONCLUSION

Due to solar powered robot to increase the efficiency of crops, and productivity of crops and reduce the manpower, reduces the fuel cost.

In atmosphere the free and non exhausted solar energy is used for robot.

REFERENCES

[1] Anurag Dwivedi, Ankush Doltade, Sarthak Lahane, Prof.Amol Bhagat," design and development of solar powered weeding machine", International Journal of Scientific & Engineering Research Volume 9, Issue 5, May-2018.

[2] Himani Patel, AnkitPrajapati, RakeshMaheshwari," Design & implementation of solar weeding robot for cotton field", IRJET Volume: 05 Issue: 04 | Apr-2018

[3] Amir H. Kargar B. And Ali M. Shirzadifar, "Automatic Weed Detection System and Smart Herbicide Sprayer Robot for com fields" in IEEE RSI/ISM International Conference on Robotics and Mechatronics, Tehran, Iran, 2013

[4] TejasBadkhal, Rohit Sharma, IgveSonu, SanketPatil, Dr. Rahul Mapari," Automatic Weed Killing Robot for Agriculture Purpose and Insect Killing", International Journal of Research in Advent Technology, Vol.7, No.1, January 2019

[5] Vicky Jain, Sagar Patil ,Prashant Bagane, Prof.Mrs.S.S.Patil,"Solar Based Wireless Grass Cutter",IJSTE - International Journal of Science Technology & Engineering | Volume 2 | Issue 11 | May 2016

[6] M. Govardhini , Prof. K. Hemachandra Reddy,"design and fabrication of solar powered multi-crop weeder",International Journal of Technical Innovation in Modern Engineering & Science (IJTIMES),Volume 3, Issue 10, October-2017