

SOLAR OPERATED AUTOMATIC PESTICIDES SPRINKLER

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Abstract - In India, Agriculture is the farmer's vocation. According to a 2019 study, 50-60% of India's population is dependent on agriculture and 88% of farmers are small and medium-sized. Pesticides are very important in farming. They enable farmers to grow more food in the subsoil by protecting crops from pests, diseases and weeds and increasing productivity per acre. We make a sun-sprayed pesticide spray that sprays pesticide on the leaves of plant and protects the crop from pests. Solar Pesticide Spray is a four-wheeled electric-powered system powered by photovoltaic panels or thermal energy obtained from sunlight. So it saves the fuel. The effectiveness of the sunscreen spray is very economical, as it requires very low maintenance costs. So by using this spraying efficiency get increased and labour power get reduced.

Key Words: solar, pesticides, sprinkler, pests, electric power, photovoltaic panels.

1. INTRODUCTION

In India for farmer people, agriculture is a livelihood. Our motive is to increase the yield. People uses hand-operated irrigation pumps and spray oil for pesticides. There is a direct connection between pesticides and human potential in unity. This motivated us to build and design the correct model defined in a moving motion. Pesticide is the substance used to control, prevent and destruction of pests. Solar-powered insecticide a sprinkler rudiment character who is an example that will help in agriculture field spraying insecticides and pesticides on leaves of plants. Thousands of unintended insects are an additional partner killed by this pesticide. Solar energy can be stored for use when there are clouds conditions. Saving is an important problem in solar formation energy because continuous discovery is an important modern necessity for power consumption. Solar energy is stored in the form of heat or electrical power. The power of the sun too stored as mechanical force in the form of a flywheel.

In this paper we are trying to make equipment for agricultural purpose. Most of farmer use chemical to spraying pesticide on food. So in this paper we trying make something special equipment for this application. Also our motive is to reduce the weight and labour cost. From this we get pollution free things.

Precaution for safety is,

- All chemical products are harmful to humans and wild life.
- They kept out of reach of wild life, pets and children.

1.1 PROBLEM IDENTIFICATION

In India, 75% of the population is direct or indirect depend on the farming. Hence India is now an Agricultural-based country. But till now farmers face so many problems Farmer's productivity is threatened by pests.

1.2 PESTS

Insects are a major food hazard production. Climate change brings warmer temperatures and increases CO₂ gases, rain and drought that promote disease, pests and weeds. Its better knowledge and understanding of insect behavior under the variations presented conditions are required to adopt and develop new technologies to respond to the threats posed by climate change.

Rural areas are facing serious problems about the reliability of the electricity supply. In India most people in rural areas depend on agriculture. They also face the problem of random and unplanned electricity supplies in the valleys. Because of this, farmers have to visit farms more often than not time to turn on the pumps.

1.2 WORKING

A solar panel is a device that collects and converts solar energy into electricity or heat. It converts solar energy into electricity or heat that can be used by nearby buildings. Solar panels can be made to make the sun's energy pleasing to the atom a layer of silicon between the two protective panels. Atoms separate from electrons down the ropes you go into the house to get electricity. Solar panels were used more than once a hundred years ago to heat hot water in homes. Solar panels can also be made with a specially designed mirror.

The system consists of Solar panel, battery, pump and sprayer and etc. The panel gives an output of 12 volts and 20 Watts power to the charging unit. The charging unit send and get the signal which charges the battery. The pump operates by getting power from battery, so that the sprayer work. Here pest and fertilizer can be stored in tank. When sun rises then panel electric power will be produces through the solar cells and then it get stored in the battery. By the electric energy in the battery the pump operates and therefore fertilizers from the tank is sprayed out. Working is very easy.

1.3 SPECIFICATIONS

Weight of Motor	1 kg
Operating Voltage	12 V
Operating current	2.1 A
Motor cost	Rs 350-400

Table (1) specifications of motor

Weight of Battery	2.7 Kg
Operating voltage	12 V
Output Power	86.4 Watt
Cost	Rs 500- 600

table (2) specification of Battery

Weight of Panel	1 Kg
Operating voltage	15 V
Output power	75 Watt
Cost	Rs 700- 1000

table (3) specification of Solar Panel

2. ADVANTGES

- The pesticide sprinkler operates with no pollution.
- Low maintenance cost and low operating cost.
- The prepared solar operated sprinkler is ecofriendly and cost-efficient
- The prepared solar operated sprinkler can be used largely in the agriculture field effectively.

- It does not create air pollution and noise pollution.
- It is a zero fuel operated equipment.
- It is easy to operate and portable

3. CONCLUSION

Motive of the project was to utilize inherently available solar energy in sprinkling operations thus achieving zero electric power. Analyzing the function v/s cost with available equipment in the market, solar sprinkler equipment is more efficient with lesser cost as compare to other. So this most useful to all farmer.

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