PEST-O-FLASH PEST CONTROLLER IN FARMING APPLICATION

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ABSTRACT

Arthropods are the species of insects which are found abundant in agriculture as they can either be pros or cons to our crops and animals. The most harmful ones are pest and parasite which affect agriculture in many ways causing a lot of trouble to farmers and also it reduces the soil fertility due to this, upcoming production rate of crops in farm will get reduce. To prevent this from happening they opt for chemical pesticide. By using chemical pesticide, crops are protected from pest and parasite but it has toxic effect on the test and quality of food and the chemicals found in pesticide are absorbed into the plant and enter the food chain of vegetables and grains. However, the largest health hazard is when the chemical flows into groundwater, which is then extracted for drinking purpose. Here a new methodology is used which aims to introduce a remedy against the effect of flying insect on farming without the help of any organic pesticide, introducing a pest-o-flash pest controller. This pest-o-flash pest controller mainly consists of ultra violet light which attracts the insect and high tension voltage is used to kill an insect. By using pest-o-flash, Funds invested in pesticides and its spraying can be saved resulting in more profit. Also, the product obtained will be free from any toxic material like pesticides and insects. For spraying chemical pesticides there is need of Manpower, but with the help of pest-o-flash we can overcome these problems.

Keyword: - *Arthropods, Parasite, pest-o-flash*

1. INTRODUCTION

Enormous use of pesticides on crops increases hazard not only to human health but also to environment. According to appraisal of the World Health Organization, each year there are 3 million instance of pesticide poisoning and death of around 220,000 people. Farmers do not have statistics about unambigious petition of pesticides and it causes harmful effect on other creature including human . Pesticide subjection causes neurological health effects like memory loss, loss of coordination, reduced speed of counter to stimuli, altered or uncontrollable mood and lower ocular ability. Other health problems like hypersensitivity, cancer, asthma and susceptibility can occur as side effects of chemical pesticides. In this project we are going to use UV lamp (Ultraviolet lamp) and UV lamp cover with a mesh ,in this mesh high tension voltage is given. This mesh act as an capacitor bank high potential across the capacitor .The capacitor has low time constant due to this capacitor is quick charging and quick discharging. Ultraviolet light is not visible to the human eye, but can be found slightly to the right of visible light on the light spectrum .Measured in nanometers, UV light has a wavelength lying between 100 and 400 nanometers in length. Once the insect attract towards the UV lamp that insect touches the mesh. due to capacitor action the capacitor get short circuit and small amount of current starts flow through the insect and insect get burn (died).

2. PRESENT SCENARIO

In a present scenario in farming to control pests few traditional methods are used i.e. blue-yellow sticky trap, homemade trap, pheromone trap, light trap, etc. This methods are not more effective to control or killing the pests . So that farmers are used pesticides to control the pests because this is one of the best methods among above, due to use chemical pesticides at agricultural field it reduces the nutrition value of soil and also harmful to human health. In some places like hospital and restaurants there we are not allow to spraying pesticides to remedy on this we install pest-o-flash

as a pest controller. Nowadays it is most popularly use in malls, shops , commercials, etc. Until it is not use in farming applications.

3. TIME ANALYSIS OF INSECT ATTACK

In our surrounding many of the insects are plant feeders, and when the plants are from agriculture field, man is tried to enforced the strive with these insects . population of the insects are opposed by some factors such as unstable weather conditions, pillagers and parasites, and viral, bacterial and fungal infections, for modern agriculture method need efficient equipment's to overcome those problems which are seen by these type of insects which are responsible to reduced the plant growth and reduced the production rate. This has increased the rate of growth of attacking insects. The following table the number of major insects attacking to the field crops at different time intervals. The larger number of insects are attacking to the agricultural crops is observed between the timings of 7 P.M. and 9 P.M.

INSECTS	6-7 P.M.	7-8 P.M.	8-9 P.M.	9-10 P.M.	10 P.M.-2 A.M.	2-7 A.M.
ORTHOPTERA	549	592	332	338	563	124
EPHEMEROPTERA	1,123	81,655	76,349	592	19	64
HOMOPTERA	381	615	542	253	554	430
COLEOPTERA	48	711	1,376	738	31	44
LEPIDOPTERA	62	89	49	112	457	295
TRICHOPTERA	752	3,704	11,926	447	605	401
DIPTERA	190	224	705	161	301	213

4. SYSTEM OVERVIEW

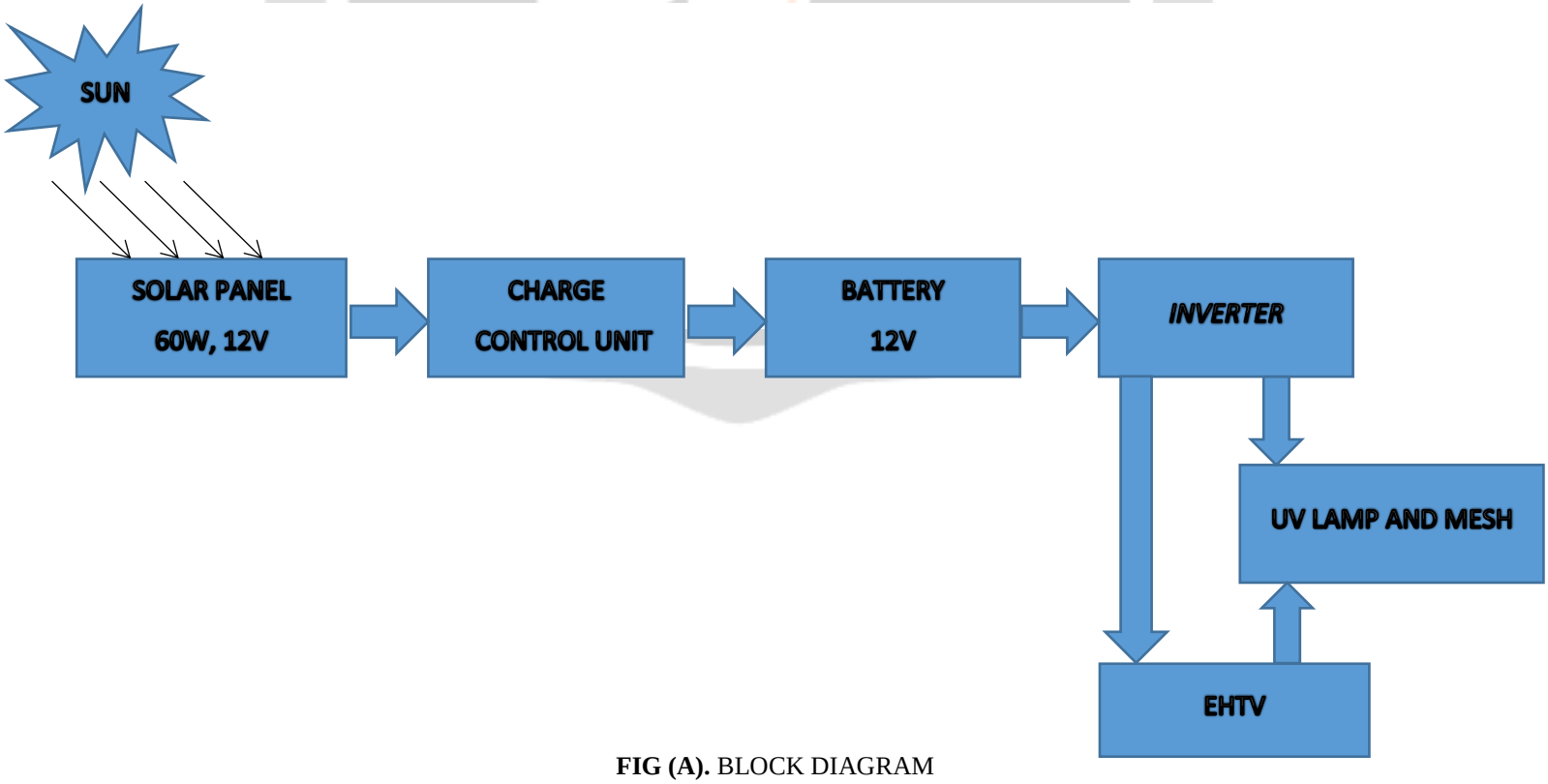


FIG (A). BLOCK DIAGRAM

SOLAR PANEL

A solar panel works by permit photons, or fleck of light, to thump electrons free from atoms, producing a flow of electricity. Solar panel actually contain many, smaller units called photovoltaic cells. (photovoltaic simply means they transform sunlight into electricity). Many cells tied together make up a solar panel. Each photovoltaic cells is essentially form by layered slices of semiconducting materials, generally used silicon- the same stuff used in microelectronics.

CHARGE CONTROL UNIT

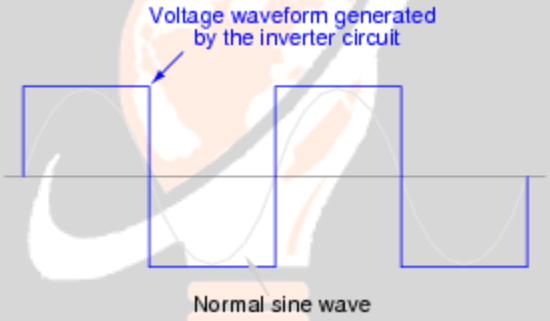
Charge control unit is placed in between battery and solar panel. Charge control unit is used to charge the battery. When battery get completely charge it does not allow flow of charge from battery to solar panel. And charge controller is also used for protection of battery when battery get completely charge it automatically disconnect it from solar panel.

BATTERY

After charge controller battery unit is there, the purpose of this battery which stored electric energy at limiting value. It consist of one or more electrochemical cells having external connections to power electrical components such as connecting loads like flashlights, smartphones, etc.

INVERTER

This device is use to convert DC voltage into AC voltage. So to make this inverter circuit the main components are required IC 555, timer IC this IC is tuned at 50Hz to make it as 50Hz oscillator. BC 547 transistor as a phase inverter and power MOSFET in the output stage which alternately switch at 50Hz frequency the output .This 50Hz 12 volt AC is given to the input of 12-0-12 transformer which step up to 230 volt 50 Hz Ac. This out put is square wave. Show in fig[B] below.



FIG[B]. OUPUT WAVEFORM OF INVERTER

EHTV (EXTRA HIGH TENSION VOLTAGE)

To get extra high tension voltage we use fly back transformer. The fly back converter is used in both AC/DC and DC/DC conversion with galvanic isolation between the input and any outputs.

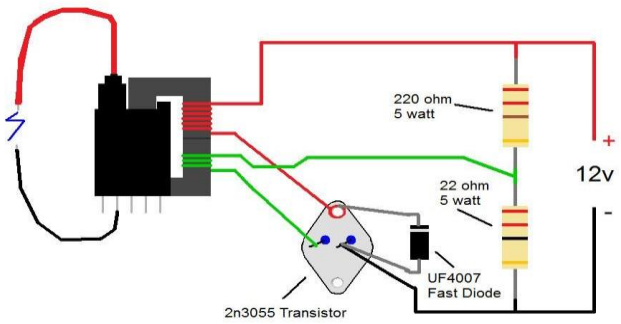


FIG [C]. CIRCUIT DIAGRAM OF FLYBACK TRANSFORMER

When the switch is turned on, energy is stored in the primary (within the core material). As shown in Figure C, the polarity dots on the transformer and the diode are arranged such that there is no energy transferred to the load when the switch is on. When the switch is turned off, the polarity of the transformer winding reverses due to the collapsing magnetic field, the output rectifier conducts and the energy stored in the core material is transferred to the load. This activity continues until the core is depleted of energy or the power switch is once again turned on. The fly back regulator can operate in either discontinuous or continuous mode. In the discontinuous mode, the energy stored in the core when the FET is on/off is completely emptied from the core during the fly back period. In the continuous mode, the FET is turned on before the core empties of fly back energy. A typical fly back transformer may operate in both modes depending on the load and input voltage. Designers should consider the maximum load at low voltage, including all conditions within the operating range of the fly back, as it will simply shut down (discontinuous mode) between cycles and wait for the load demand to catch up with the power-delivery capability. This is one of the most dynamic characteristics of the fly back, regulated over a wide range of input voltage and load.

ULTRA VIOLET LAMP

The ultra violet lamp is use to attract the insect towards itself. The light is not visible to the human eye, but can be found slightly to the right of visible light on the light spectrum .Measured in nanometer, UV light has a wavelength lying between 100 and 400 nanometers in length.

5. WORKING

As shown in FIG[A] the block diagram of module. Firstly the energy from the sun is collected by solar panel and is stored in a battery through charge control unit. The battery is charge upto12 volt DC. This 12 volt voltage supply to inverter. In inverter 12 volt DC is converted into 12 volt AC by using IC 555, timer IC this IC is tuned at 50Hz to make it as 50Hz oscillator. BC 547 transistor as a phase inverter and power MOSFET in the output stage which alternately switch at 50Hz frequency the output .This 50Hz 12 volt AC is given to the input of 12-0-12 transformer which step up to 230 volt 50 Hz Ac. This output is square wave and given to the UV lamp. The another output of inverter is given to the PCB, this PCB converts 1 volt DC and 5 volt by using bridge rectifier then that 12 volt DC is given to fly back transformer. The flyback transformer step up 12 volt DC upto 1 KV and given to metallic mesh and it gets charge, this metallic mesh act as an capacitor bank high potential across the capacitor. As any insect touches the mesh the circuit get short circuit and small amount current flow through that insect insects get kill. .The capacitor has low time constant due to this capacitor is quick charging and quick discharging. The 5 volt is given to rain sensor, light sensor and obstacles sensor this sensors are for the protection of devices.

6. REFRENCE

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